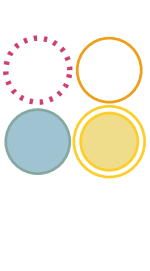
latexindent.pl

Version 3.13.2



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`latexindent.pl` is a `Perl` script that indents `.tex` (and other) files according to an indentation scheme that the user can modify to suit their taste. Environments, including those with alignment delimiters (such as `tabular`), and commands, including those that can split braces and brackets across lines, are *usually* handled correctly by the script. Options for `verbatim`-like environments and commands, together with indentation after headings (such as `chapter`, `section`, etc) are also available. The script also has the ability to modify line breaks, and to add comment symbols and blank lines; furthermore, it permits string or regex-based substitutions. All user options are customisable via the switches and the YAML interface; you can find a quick start guide in Section 1.4 on page 5.

Contents

*and contributors! See Section 11.2 on page 133. For all communication, please visit [11].

SECTION 1

Introduction

1.1 Thanks

I first created `latexindent.pl` to help me format chapter files in a big project. After I blogged about it on the TEX stack exchange [1] I received some positive feedback and follow-up feature requests. A big thank you to Harish Kumar [15] who helped to develop and test the initial versions of the script.

The `YAML`-based interface of `latexindent.pl` was inspired by the wonderful `arara` tool; any similarities are deliberate, and I hope that it is perceived as the compliment that it is. Thank you to Paulo Cereda and the team for releasing this awesome tool; I initially worried that I was going to have to make a GUI for `latexindent.pl`, but the release of `arara` has meant there is no need.

There have been several contributors to the project so far (and hopefully more in the future!); thank you very much to the people detailed in Section 11.2 on page 133 for their valued contributions, and thank you to those who report bugs and request features at [11].

1.2 License

`latexindent.pl` is free and open source, and it always will be; it is released under the GNU General Public License v3.0.

Before you start using it on any important files, bear in mind that `latexindent.pl` has the option to overwrite your `.tex` files. It will always make at least one backup (you can choose how many it makes, see page 20) but you should still be careful when using it. The script has been tested on many files, but there are some known limitations (see Section 10). You, the user, are responsible for ensuring that you maintain backups of your files before running `latexindent.pl` on them. I think it is important at this stage to restate an important part of the license here:

> *This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.*

There is certainly no malicious intent in releasing this script, and I do hope that it works as you expect it to; if it does not, please first of all make sure that you have the correct settings, and then feel free to let me know at [11] with a complete minimum working example as I would like to improve the code as much as possible.

Warning!

Before you try the script on anything important (like your thesis), test it out on the sample files in the `test-case` directory [11].

If you have used any version 2. of `latexindent.pl`, there are a few changes to the interface; see appendix F on page 143 and the comments throughout this document for details.*

1.3 About this documentation

As you read through this documentation, you will see many listings; in this version of the documentation, there are a total of 553. This may seem a lot, but I deem it necessary in presenting the various different options of `latexindent.pl` and the associated output that they are capable of producing.

The different listings are presented using different styles:

LISTING 1: `demo-tex.tex`

```
demonstration .tex file
```

This type of listing is a `.tex` file.

LISTING 2: fileExtensionPreference

```
44 fileExtensionPreference:
45     .tex: 1
46     .sty: 2
47     .cls: 3
48     .bib: 4
```

This type of listing is a `.yaml` file; when you see line numbers given (as here) it means that the snippet is taken directly from `defaultSettings.yaml`, discussed in detail in Section 5 on page 19.

LISTING 3: modifyLineBreaks `-m`

```
486 modifyLineBreaks:
487     preserveBlankLines: 1
488     condenseMultipleBlankLinesInto: 1
```

This type of listing is a `.yaml` file, but it will only be relevant when the `-m` switch is active; see Section 6 on page 65 for more details.

LISTING 4: replacements `-r`

```
618 replacements:
619   -
620     amalgamate: 1
621   -
622     this: 'latexindent.pl'
623     that: 'pl.latexindent'
624     lookForThis: 0
625     when: before
```

This type of listing is a `.yaml` file, but it will only be relevant when the `-r` switch is active; see Section 7 on page 110 for more details.

N: 2017-06-25

You will occasionally see dates shown in the margin (for example, next to this paragraph!) which detail the date of the version in which the feature was implemented; the 'N' stands for 'new as of the date shown' and 'U' stands for 'updated as of the date shown'. If you see ✨, it means that the feature is either new (N) or updated (U) as of the release of the current version; if you see ✨ attached to a listing, then it means that listing is new (N) or updated (U) as of the current version. If you have not read this document before (and even if you have!), then you can ignore every occurrence of the ✨; they are simply there to highlight new and updated features. The new and updated features in this documentation () are on the following pages:

1.4 Quick start

If you'd like to get started with `latexindent.pl` then simply type

```
cmh:~$ latexindent.pl myfile.tex
```

from the command line. If you receive an error message such as that given in Listing 5, then you need to install the missing perl modules.

LISTING 5: Possible error messages

```
Can't␣locate␣File/HomeDir.pm␣in␣@INC␣(@INC␣contains:␣
    /Library/Perl/5.12/darwin-thread-multi-2level␣/Library/Perl/5.12␣
    /Network/Library/Perl/5.12/darwin-thread-multi-2level␣
    /Network/Library/Perl/5.12␣
    /Library/Perl/Updates/5.12.4/darwin-thread-multi-2level␣
    /Library/Perl/Updates/5.12.4␣
    /System/Library/Perl/5.12/darwin-thread-multi-2level␣/System/Library/Perl/5.12␣
    /System/Library/Perl/Extras/5.12/darwin-thread-multi-2level␣
    /System/Library/Perl/Extras/5.12␣.)␣at␣helloworld.pl␣line␣10.
BEGIN␣failed--compilation␣aborted␣at␣helloworld.pl␣line␣10.
```

`latexindent.pl` ships with a script to help with this process; if you run the following script, you should be prompted to install the appropriate modules.

```
cmh:~$ perl latexindent-module-installer.pl
```

You might also like to see https://stackoverflow.com/questions/19590042/error-cant-locate-file-homedir-pm-in-inc, for example, as well as appendix A on page 135.

1.5 A word about regular expressions

As you read this documentation, you may encounter the term *regular expressions*. I've tried to write this documentation in such a way so as to allow you to engage with them or not, as you prefer. This documentation is not designed to be a guide to regular expressions, and if you'd like to read about them, I recommend [10].

SECTION 2

Demonstration: before and after

Let's give a demonstration of some before and after code – after all, you probably won't want to try the script if you don't much like the results. You might also like to watch the video demonstration I made on youtube [27]

As you look at Listings 6 to 11, remember that `latexindent.pl` is just following its rules, and there is nothing particular about these code snippets. All of the rules can be modified so that you can personalise your indentation scheme.

In each of the samples given in Listings 6 to 11 the 'before' case is a 'worst case scenario' with no effort to make indentation. The 'after' result would be the same, regardless of the leading white space at the beginning of each line which is stripped by `latexindent.pl` (unless a `verbatim`-like environment or `noIndentBlock` is specified – more on this in Section 5).

LISTING 6: `filecontents1.tex`

```
\begin{filecontents}{mybib.bib}
@online{strawberryperl,
title="Strawberry Perl",
url="http://strawberryperl.com/"}
@online{cmhblog,
title="A Perl script ...
url="...
}
\end{filecontents}
```

LISTING 7: `filecontents1.tex` default output

```
\begin{filecontents}{mybib.bib}
   @online{strawberryperl,
      title="Strawberry Perl",
      url="http://strawberryperl.com/"}
   @online{cmhblog,
      title="A Perl script ...
      url="...
   }
\end{filecontents}
```

LISTING 8: `tikzset.tex`

```
\tikzset{
shrink inner sep/.code={
\pgfkeysgetvalue...
\pgfkeysgetvalue...
}
}
```

LISTING 9: `tikzset.tex` default output

```
\tikzset{
   shrink inner sep/.code={
         \pgfkeysgetvalue...
         \pgfkeysgetvalue...
      }
}
```

LISTING 10: `pstricks.tex`

```
\def\Picture#1{%
\def\stripH{#1}%
\begin{pspicture}[showgrid}
\psforeach{\row}{%
{{3,2.8,2.7,3,3.1}},%
{2.8,1,1.2,2,3},%
...
}{%
\expandafter...
}
\end{pspicture}}
```

LISTING 11: `pstricks.tex` default output

```
\def\Picture#1{%
   \def\stripH{#1}%
   \begin{pspicture}[showgrid}
      \psforeach{\row}{%
         {{3,2.8,2.7,3,3.1}},%
         {2.8,1,1.2,2,3},%
         ...
      }{%
         \expandafter...
      }
   \end{pspicture}}
```

SECTION 3

How to use the script

`latexindent.pl` ships as part of the TEXLive distribution for Linux and Mac users; `latexindent.exe` ships as part of the TEXLive and MiKTEX distributions for Windows users. These files are also available from github [11] should you wish to use them without a TEX distribution; in this case, you may like to read appendix B on page 138 which details how the `path` variable can be updated.

In what follows, we will always refer to `latexindent.pl`, but depending on your operating system and preference, you might substitute `latexindent.exe` or simply `latexindent`.

There are two ways to use `latexindent.pl`: from the command line, and using `arara`; we discuss these in Section 3.1 and Section 3.2 respectively. We will discuss how to change the settings and behaviour of the script in Section 5 on page 19.

`latexindent.pl` ships with `latexindent.exe` for Windows users, so that you can use the script with or without a Perl distribution. If you plan to use `latexindent.pl` (i.e, the original Perl script) then you will need a few standard Perl modules – see appendix A on page 135 for details; in particular, note that a module installer helper script is shipped with `latexindent.pl`.

N: 2018-01-13

3.1 From the command line

`latexindent.pl` has a number of different switches/flags/options, which can be combined in any way that you like, either in short or long form as detailed below. `latexindent.pl` produces a `.log` file, `indent.log`, every time it is run; the name of the log file can be customised, but we will refer to the log file as `indent.log` throughout this document. There is a base of information that is written to `indent.log`, but other additional information will be written depending on which of the following options are used.

N: 2017-06-25

`-v, -version`

```
cmh:~$ latexindent.pl -v
```

This will output only the version number to the terminal.

`-h, -help`

```
cmh:~$ latexindent.pl -h
```

As above this will output a welcome message to the terminal, including the version number and available options.

```
cmh:~$ latexindent.pl myfile.tex
```

This will operate on `myfile.tex`, but will simply output to your terminal; `myfile.tex` will not be changed by `latexindent.pl` in any way using this command.

`-w, -overwrite`

```
cmh:~$ latexindent.pl -w myfile.tex
cmh:~$ latexindent.pl --overwrite myfile.tex
cmh:~$ latexindent.pl myfile.tex --overwrite
```

This *will* overwrite `myfile.tex`, but it will make a copy of `myfile.tex` first. You can control the name of the extension (default is `.bak`), and how many different backups are made – more on this in Section 5, and in particular see `backupExtension` and `onlyOneBackUp`.

Note that if `latexindent.pl` can not create the backup, then it will exit without touching your original file; an error message will be given asking you to check the permissions of the backup file.

`-o=output.tex,-outputfile=output.tex`

```
cmh:~$ latexindent.pl -o=output.tex myfile.tex
cmh:~$ latexindent.pl myfile.tex -o=output.tex
cmh:~$ latexindent.pl --outputfile=output.tex myfile.tex
cmh:~$ latexindent.pl --outputfile output.tex myfile.tex
```

This will indent `myfile.tex` and output it to `output.tex`, overwriting it (`output.tex`) if it already exists[1]. Note that if `latexindent.pl` is called with both the `-w` and `-o` switches, then `-w` will be ignored and `-o` will take priority (this seems safer than the other way round).

Note that using `-o` as above is equivalent to using

```
cmh:~$ latexindent.pl myfile.tex > output.tex
```

N: 2017-06-25

You can call the `-o` switch with the name of the output file *without* an extension; in this case, `latexindent.pl` will use the extension from the original file. For example, the following two calls to `latexindent.pl` are equivalent:

```
cmh:~$ latexindent.pl myfile.tex -o=output
cmh:~$ latexindent.pl myfile.tex -o=output.tex
```

N: 2017-06-25

You can call the `-o` switch using a `+` symbol at the beginning; this will concatenate the name of the input file and the text given to the `-o` switch. For example, the following two calls to `latexindent.pl` are equivalent:

```
cmh:~$ latexindent.pl myfile.tex -o=+new
cmh:~$ latexindent.pl myfile.tex -o=myfilenew.tex
```

N: 2017-06-25

You can call the `-o` switch using a `++` symbol at the end of the name of your output file; this tells `latexindent.pl` to search successively for the name of your output file concatenated with $0, 1, \ldots$ while the name of the output file exists. For example,

```
cmh:~$ latexindent.pl myfile.tex -o=output++
```

tells `latexindent.pl` to output to `output0.tex`, but if it exists then output to `output1.tex`, and so on.

Calling `latexindent.pl` with simply

```
cmh:~$ latexindent.pl myfile.tex -o=++
```

tells it to output to `myfile0.tex`, but if it exists then output to `myfile1.tex` and so on.

The `+` and `++` feature of the `-o` switch can be combined; for example, calling

```
cmh:~$ latexindent.pl myfile.tex -o=+out++
```

[1] Users of version 2.* should note the subtle change in syntax

tells `latexindent.pl` to output to `myfileout0.tex`, but if it exists, then try `myfileout1.tex`, and so on.

There is no need to specify a file extension when using the `++` feature, but if you wish to, then you should include it *after* the `++` symbols, for example

```
cmh:~$ latexindent.pl myfile.tex -o=+out++.tex
```

See appendix F on page 143 for details of how the interface has changed from Version 2.2 to Version 3.0 for this flag.

`-s, -silent`

```
cmh:~$ latexindent.pl -s myfile.tex
cmh:~$ latexindent.pl myfile.tex -s
```

Silent mode: no output will be given to the terminal.

`-t, -trace`

```
cmh:~$ latexindent.pl -t myfile.tex
cmh:~$ latexindent.pl myfile.tex -t
```

Tracing mode: verbose output will be given to `indent.log`. This is useful if `latexindent.pl` has made a mistake and you're trying to find out where and why. You might also be interested in learning about `latexindent.pl`'s thought process – if so, this switch is for you, although it should be noted that, especially for large files, this does affect performance of the script.

`-tt, -ttrace`

```
cmh:~$ latexindent.pl -tt myfile.tex
cmh:~$ latexindent.pl myfile.tex -tt
```

More detailed tracing mode: this option gives more details to `indent.log` than the standard `trace` option (note that, even more so than with `-t`, especially for large files, performance of the script will be affected).

`-l, -local[=myyaml.yaml,other.yaml,...]`

```
cmh:~$ latexindent.pl -l myfile.tex
cmh:~$ latexindent.pl -l=myyaml.yaml myfile.tex
cmh:~$ latexindent.pl -l myyaml.yaml myfile.tex
cmh:~$ latexindent.pl -l first.yaml,second.yaml,third.yaml myfile.tex
cmh:~$ latexindent.pl -l=first.yaml,second.yaml,third.yaml myfile.tex
cmh:~$ latexindent.pl myfile.tex -l=first.yaml,second.yaml,third.yaml
```

`latexindent.pl` will always load `defaultSettings.yaml` (rhymes with camel) and if it is called with the `-l` switch and it finds `localSettings.yaml` in the same directory as `myfile.tex`, then, if not found, it looks for `localSettings.yaml` (and friends, see Section 4.2 on page 16) in the current working directory, then these settings will be added to the indentation scheme. Information will be given in `indent.log` on the success or failure of loading `localSettings.yaml`.

U: 2021-03-14

The `-l` flag can take an *optional* parameter which details the name (or names separated by commas) of a YAML file(s) that resides in the same directory as `myfile.tex`; you can use this option if you would like to load a settings file in the current working directory that is *not* called `localSettings.yaml`. In fact, you can specify both *relative* and *absolute paths* for your YAML files; for example

U: 2017-08-21

```
cmh:~$ latexindent.pl -l=../../myyaml.yaml myfile.tex
cmh:~$ latexindent.pl -l=/home/cmhughes/Desktop/myyaml.yaml myfile.tex
cmh:~$ latexindent.pl -l=C:\Users\cmhughes\Desktop\myyaml.yaml myfile.tex
```

You will find a lot of other explicit demonstrations of how to use the `-l` switch throughout this documentation,

N: 2017-06-25

You can call the `-l` switch with a '+' symbol either before or after another YAML file; for example:

```
cmh:~$ latexindent.pl -l=+myyaml.yaml myfile.tex
cmh:~$ latexindent.pl -l "+␣myyaml.yaml" myfile.tex
cmh:~$ latexindent.pl -l=myyaml.yaml+  myfile.tex
```

which translate, respectively, to

```
cmh:~$ latexindent.pl -l=localSettings.yaml,myyaml.yaml myfile.tex
cmh:~$ latexindent.pl -l=localSettings.yaml,myyaml.yaml myfile.tex
cmh:~$ latexindent.pl -l=myyaml.yaml,localSettings.yaml myfile.tex
```

Note that the following is *not* allowed:

```
cmh:~$ latexindent.pl -l+myyaml.yaml myfile.tex
```

and

```
cmh:~$ latexindent.pl -l + myyaml.yaml myfile.tex
```

will *only* load `localSettings.yaml`, and `myyaml.yaml` will be ignored. If you wish to use spaces between any of the YAML settings, then you must wrap the entire list of YAML files in quotes, as demonstrated above.

N: 2017-06-25

You may also choose to omit the `yaml` extension, such as

```
cmh:~$ latexindent.pl -l=localSettings,myyaml myfile.tex
```

`-y, -yaml=yaml settings`

```
cmh:~$ latexindent.pl myfile.tex -y="defaultIndent:␣'␣'"
cmh:~$ latexindent.pl myfile.tex -y="defaultIndent:␣'␣',maximumIndentation:'␣'"
cmh:~$ latexindent.pl myfile.tex -y="indentRules:␣one:␣'\t\t\t\t'"
cmh:~$ latexindent.pl myfile.tex
    -y='modifyLineBreaks:environments:EndStartsOnOwnLine:3' -m
cmh:~$ latexindent.pl myfile.tex
    -y='modifyLineBreaks:environments:one:EndStartsOnOwnLine:3' -m
```

N: 2017-08-21

You can specify YAML settings from the command line using the `-y` or `-yaml` switch; sample demonstrations are given above. Note, in particular, that multiple settings can be specified by separating them via commas. There is a further option to use a `;` to separate fields, which is demonstrated in Section 4.3 on page 17.

Any settings specified via this switch will be loaded *after* any specified using the `-l` switch. This is discussed further in Section 4.4 on page 17.

`-d, -onlydefault`

```
cmh:~$ latexindent.pl -d myfile.tex
```

Only `defaultSettings.yaml`: you might like to read Section 5 before using this switch. By default, `latexindent.pl` will always search for `indentconfig.yaml` or `.indentconfig.yaml` in your home directory. If you would prefer it not to do so then (instead of deleting or renaming `indentconfig.yaml` or `.indentconfig.yaml`) you can simply call the script with the `-d` switch; note that this will also tell the script to ignore `localSettings.yaml` even if it has been called with the `-l` switch; `latexindent.pl` will also ignore any settings specified from the `-y` switch.

U: 2017-08-21

`-c, -cruft=<directory>`

```
cmh:~$ latexindent.pl -c=/path/to/directory/ myfile.tex
```

If you wish to have backup files and `indent.log` written to a directory other than the current working directory, then you can send these 'cruft' files to another directory. Note the use of a trailing forward slash.

`-g, -logfile=<name of log file>`

```
cmh:~$ latexindent.pl -g=other.log myfile.tex
cmh:~$ latexindent.pl -g other.log myfile.tex
cmh:~$ latexindent.pl --logfile other.log myfile.tex
cmh:~$ latexindent.pl myfile.tex -g other.log
```

By default, `latexindent.pl` reports information to `indent.log`, but if you wish to change the name of this file, simply call the script with your chosen name after the `-g` switch as demonstrated above.

N: 2021-05-07

If `latexindent.pl` can not open the log file that you specify, then the script will operate, and no log file will be produced; this might be helpful to users who wish to specify the following, for example

```
cmh:~$ latexindent.pl -g /dev/null myfile.tex
```

`-sl, -screenlog`

```
cmh:~$ latexindent.pl -sl myfile.tex
cmh:~$ latexindent.pl -screenlog myfile.tex
```

N: 2018-01-13

Using this option tells `latexindent.pl` to output the log file to the screen, as well as to your chosen log file.

`-m, -modifylinebreaks`

```
cmh:~$ latexindent.pl -m myfile.tex
cmh:~$ latexindent.pl -modifylinebreaks myfile.tex
```

One of the most exciting developments in Version 3.0 is the ability to modify line breaks; for full details see Section 6 on page 65

`latexindent.pl` can also be called on a file without the file extension, for example

```
cmh:~$ latexindent.pl myfile
```

and in which case, you can specify the order in which extensions are searched for; see Listing 16 on page 19 for full details.

`STDIN`

```
cmh:~$ cat myfile.tex | latexindent.pl
cmh:~$ cat myfile.tex | latexindent.pl -
```

N: 2018-01-13

`latexindent.pl` will allow input from STDIN, which means that you can pipe output from other commands directly into the script. For example assuming that you have content in `myfile.tex`, then the above command will output the results of operating upon `myfile.tex`.

If you wish to use this feature with your own local settings, via the `-l` switch, then you should finish your call to `latexindent.pl` with a `-` sign:

```
cmh:~$ cat myfile.tex | latexindent.pl -l=mysettings.yaml -
```

U: 2018-01-13

Similarly, if you simply type `latexindent.pl` at the command line, then it will expect (STDIN) input from the command line.

```
cmh:~$ latexindent.pl
```

Once you have finished typing your input, you can press

- `CTRL+D` on Linux
- `CTRL+Z` followed by `ENTER` on Windows

to signify that your input has finished. Thanks to [4] for an update to this feature.

`-r, -replacement`

```
cmh:~$ latexindent.pl -r myfile.tex
cmh:~$ latexindent.pl -replacement myfile.tex
```

N: 2019-07-13

You can call `latexindent.pl` with the `-r` switch to instruct it to perform replacements/substitutions on your file; full details and examples are given in Section 7 on page 110.

`-rv, -replacementrespectverb`

```
cmh:~$ latexindent.pl -rv myfile.tex
cmh:~$ latexindent.pl -replacementrespectverb myfile.tex
```

N: 2019-07-13

You can instruct `latexindent.pl` to perform replacements/substitutions by using the `-rv` switch, but will *respect verbatim code blocks*; full details and examples are given in Section 7 on page 110.

`-rr, -onlyreplacement`

```
cmh:~$ latexindent.pl -rr myfile.tex
cmh:~$ latexindent.pl -onlyreplacement myfile.tex
```

N: 2019-07-13

You can instruct `latexindent.pl` to skip all of its other indentation operations and *only* perform replacements/substitutions by using the `-rr` switch; full details and examples are given in Section 7 on page 110.

`-k, -check`

```
cmh:~$ latexindent.pl -k myfile.tex
cmh:~$ latexindent.pl -check myfile.tex
```

N: 2021-09-16

You can instruct `latexindent.pl` to check if the text after indentation matches that given in the original file.

The `exit` code of `latexindent.pl` is 0 by default. If you use the `-k` switch then

- if the text after indentation matches that given in the original file, then the exit code is 0;
- if the text after indentation does *not* match that given in the original file, then the exit code is 1.

The value of the exit code may be important to those wishing to, for example, check the status of the indentation in continuous integration tools such as GitHub Actions. Full details of the exit codes of `latexindent.pl` are given in Table 1.

A simple `diff` will be given in `indent.log`.

`-kv, -checkv`

```
cmh:~$ latexindent.pl -kv myfile.tex
cmh:~$ latexindent.pl -checkv myfile.tex
```

N: 2021-09-16

The `check verbose` switch is exactly the same as the `-k` switch, except that it is *verbose*, and it will output the (simple) diff to the terminal, as well as to `indent.log`.

`-n, -lines=MIN-MAX`

```
cmh:~$ latexindent.pl -n 5-8 myfile.tex
cmh:~$ latexindent.pl -lines 5-8 myfile.tex
```

N: 2021-09-16

The `lines` switch instructs `latexindent.pl` to operate only on specific line ranges within `myfile.tex`.

Complete demonstrations are given in Section 8.

3.2 From arara

Using `latexindent.pl` from the command line is fine for some folks, but others may find it easier to use from `arara`; you can find the arara rule for `latexindent.pl` and its associated documentation at [3].

3.3 Summary of exit codes

Assuming that you call `latexindent.pl` on `myfile.tex`

```
cmh:~$ latexindent.pl myfile.tex
```

then `latexindent.pl` can exit with the exit codes given in Table 1.

TABLE 1: Exit codes for `latexindent.pl`

exit code	indentation	status
0	✔	success; if `-k` or `-kv` active, indented text matches original
0	✖	success; if `-version` or `-help`, no indentation performed
1	✔	success, and `-k` or `-kv` active; indented text *different* from original
2	✖	failure, `defaultSettings.yaml` could not be read
3	✖	failure, myfile.tex not found
4	✖	failure, myfile.tex exists but cannot be read
5	✖	failure, `-w` active, and back-up file cannot be written
6	✖	failure, `-c` active, and cruft directory does not exist

SECTION 4

indentconfig.yaml, local settings and the -y switch

The behaviour of `latexindent.pl` is controlled from the settings specified in any of the YAML files that you tell it to load. By default, `latexindent.pl` will only load `defaultSettings.yaml`, but there are a few ways that you can tell it to load your own settings files.

4.1 indentconfig.yaml and .indentconfig.yaml

`latexindent.pl` will always check your home directory for `indentconfig.yaml` and `.indentconfig.yaml` (unless it is called with the `-d` switch), which is a plain text file you can create that contains the *absolute* paths for any settings files that you wish `latexindent.pl` to load. There is no difference between `indentconfig.yaml` and `.indentconfig.yaml`, other than the fact that `.indentconfig.yaml` is a 'hidden' file; thank you to [9] for providing this feature. In what follows, we will use `indentconfig.yaml`, but it is understood that this could equally represent `.indentconfig.yaml`. If you have both files in existence then `indentconfig.yaml` takes priority.

For Mac and Linux users, their home directory is `/username` while Windows (Vista onwards) is `C:\Users\username`[2] Listing 12 shows a sample `indentconfig.yaml` file.

LISTING 12: `indentconfig.yaml` (sample)

```
# Paths to user settings for latexindent.pl
#
# Note that the settings will be read in the order you
# specify here- each successive settings file will overwrite
# the variables that you specify

paths:
- /home/cmhughes/Documents/yamlfiles/mysettings.yaml
- /home/cmhughes/folder/othersettings.yaml
- /some/other/folder/anynameyouwant.yaml
- C:\Users\chughes\Documents\mysettings.yaml
- C:\Users\chughes\Desktop\test spaces\more spaces.yaml
```

Note that the `.yaml` files you specify in `indentconfig.yaml` will be loaded in the order in which you write them. Each file doesn't have to have every switch from `defaultSettings.yaml`; in fact, I recommend that you only keep the switches that you want to *change* in these settings files.

To get started with your own settings file, you might like to save a copy of `defaultSettings.yaml` in another directory and call it, for example, `mysettings.yaml`. Once you have added the path to `indentconfig.yaml` you can change the switches and add more code-block names to it as you see fit – have a look at Listing 13 for an example that uses four tabs for the default indent, adds the `tabbing` environment/command to the list of environments that contains alignment delimiters; you might also like to refer to the many YAML files detailed throughout the rest of this documentation.

[2] If you're not sure where to put `indentconfig.yaml`, don't worry `latexindent.pl` will tell you in the log file exactly where to put it assuming it doesn't exist already.

LISTING 13: `mysettings.yaml` (example)

```
# Default value of indentation
defaultIndent: "\t\t\t\t"

# environments that have tab delimiters, add more
# as needed
lookForAlignDelims:
    tabbing: 1
```

You can make sure that your settings are loaded by checking `indent.log` for details – if you have specified a path that `latexindent.pl` doesn't recognise then you'll get a warning, otherwise you'll get confirmation that `latexindent.pl` has read your settings file [3].

Warning!

When editing `.yaml` files it is *extremely* important to remember how sensitive they are to spaces. I highly recommend copying and pasting from `defaultSettings.yaml` when you create your first `whatevernameyoulike.yaml` file.

If `latexindent.pl` can not read your `.yaml` file it will tell you so in `indent.log`.

N: 2021-06-19

If you find that `latexindent.pl` does not read your YAML file, then it might be as a result of the default commandline encoding not being UTF-8; normally this will only occcur for Windows users. In this case, you might like to explore the `encoding` option for `indentconfig.yaml` as demonstrated in Listing 14.

LISTING 14: The `encoding` option for `indentconfig.yaml`

```
encoding: GB2312
paths:
- D:\cmh\latexindent.yaml
```

Thank you to [22] for this contribution; please see appendix D on page 141 and details within [21] for further information.

4.2 localSettings.yaml and friends

U: 2021-03-14

The `-l` switch tells `latexindent.pl` to look for `localSettings.yaml` and/or friends in the *same directory* as `myfile.tex`. For example, if you use the following command

```
cmh:~$ latexindent.pl -l myfile.tex
```

then `latexindent.pl` will search for and then, assuming they exist, load each of the following files in the following order:

1. localSettings.yaml
2. latexindent.yaml
3. .localSettings.yaml
4. .latexindent.yaml

These files will be assumed to be in the same directory as `myfile.tex`, or otherwise in the current working directory. You do not need to have all of the above files, usually just one will be sufficient. In what follows, whenever we refer to `localSettings.yaml` it is assumed that it can mean any of the four named options listed above.

If you'd prefer to name your `localSettings.yaml` file something different, (say, `mysettings.yaml` as in Listing 13) then you can call `latexindent.pl` using, for example,

[3] Windows users may find that they have to end `.yaml` files with a blank line

```
cmh:~$ latexindent.pl -l=mysettings.yaml myfile.tex
```

Any settings file(s) specified using the `-l` switch will be read *after* `defaultSettings.yaml` and, assuming they exist, any user setting files specified in `indentconfig.yaml`.

Your settings file can contain any switches that you'd like to change; a sample is shown in Listing 15, and you'll find plenty of further examples throughout this manual.

LISTING 15: `localSettings.yaml` (example)

```
#  verbatim environments - environments specified
#  here will not be changed at all!
verbatimEnvironments:
    cmhenvironment: 0
    myenv: 1
```

You can make sure that your settings file has been loaded by checking `indent.log` for details; if it can not be read then you receive a warning, otherwise you'll get confirmation that `latexindent.pl` has read your settings file.

4.3 The -y|yaml switch

N: 2017-08-21

You may use the `-y` switch to load your settings; for example, if you wished to specify the settings from Listing 15 using the `-y` switch, then you could use the following command:

```
cmh:~$ latexindent.pl -y="verbatimEnvironments:cmhenvironment:0;myenv:1" myfile.tex
```

Note the use of `;` to specify another field within `verbatimEnvironments`. This is shorthand, and equivalent, to using the following command:

```
cmh:~$ latexindent.pl
    -y="verbatimEnvironments:cmhenvironment:0,verbatimEnvironments:myenv:1"
    myfile.tex
```

You may, of course, specify settings using the `-y` switch as well as, for example, settings loaded using the `-l` switch; for example,

```
cmh:~$ latexindent.pl -l=mysettings.yaml
    -y="verbatimEnvironments:cmhenvironment:0;myenv:1" myfile.tex
```

Any settings specified using the `-y` switch will be loaded *after* any specified using `indentconfig.yaml` and the `-l` switch.

If you wish to specify any regex-based settings using the `-y` switch, it is important not to use quotes surrounding the regex; for example, with reference to the 'one sentence per line' feature (Section 6.5 on page 85) and the listings within Listing 341 on page 86, the following settings give the option to have sentences end with a semicolon

```
cmh:~$ latexindent.pl -m
    --yaml='modifyLineBreaks:oneSentencePerLine:sentencesEndWith:other:\;'
```

4.4 Settings load order

`latexindent.pl` loads the settings files in the following order:

1. `defaultSettings.yaml` is always loaded, and can not be renamed;
2. `anyUserSettings.yaml` and any other arbitrarily-named files specified in `indentconfig.yaml`;

3. `localSettings.yaml` but only if found in the same directory as `myfile.tex` and called with `-l` switch; this file can be renamed, provided that the call to `latexindent.pl` is adjusted accordingly (see Section 4.2). You may specify both relative and absolute paths to other YAML files using the `-l` switch, separating multiple files using commas;

U: 2017-08-21

4. any settings specified in the `-y` switch.

N: 2017-08-21

A visual representation of this is given in Figure 1.

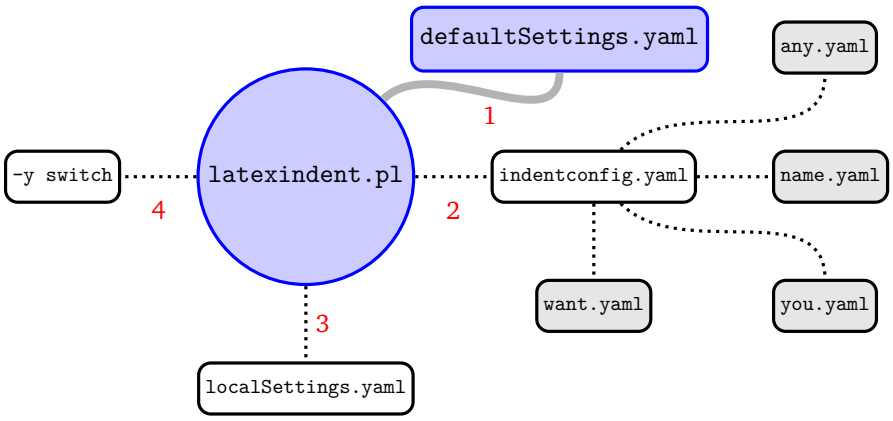

FIGURE 1: Schematic of the load order described in Section 4.4; solid lines represent mandatory files, dotted lines represent optional files. `indentconfig.yaml` can contain as many files as you like. The files will be loaded in order; if you specify settings for the same field in more than one file, the most recent takes priority.

SECTION 5

defaultSettings.yaml

`latexindent.pl` loads its settings from `defaultSettings.yaml`. The idea is to separate the behaviour of the script from the internal working – this is very similar to the way that we separate content from form when writing our documents in LaTeX.

If you look in `defaultSettings.yaml` you'll find the switches that govern the behaviour of `latexindent.pl`. If you're not sure where `defaultSettings.yaml` resides on your computer, don't worry as `indent.log` will tell you where to find it. `defaultSettings.yaml` is commented, but here is a description of what each switch is designed to do. The default value is given in each case; whenever you see *integer* in *this* section, assume that it must be greater than or equal to `0` unless otherwise stated.

For most of the settings in `defaultSettings.yaml` that are specified as integers, then we understand `0` to represent 'off' and `1` to represent 'on'. For fields that allow values other than `0` or `1`, it is hoped that the specific context and associated commentary should make it clear which values are allowed.

`fileExtensionPreference`: ⟨*fields*⟩

`latexindent.pl` can be called to act on a file without specifying the file extension. For example we can call

```
cmh:~$ latexindent.pl myfile
```

in which case the script will look for `myfile` with the extensions specified in `fileExtensionPreference` in their numeric order. If no match is found, the script will exit. As with all of the fields, you should change and/or add to this as necessary.

LISTING 16: `fileExtensionPreference`

```
44 fileExtensionPreference:
45     .tex: 1
46     .sty: 2
47     .cls: 3
48     .bib: 4
```

Calling `latexindent.pl myfile` with the (default) settings specified in Listing 16 means that the script will first look for `myfile.tex`, then `myfile.sty`, `myfile.cls`, and finally `myfile.bib` in order[4].

5.1 Backup and log file preferences

`backupExtension`: ⟨*extension name*⟩

If you call `latexindent.pl` with the `-w` switch (to overwrite `myfile.tex`) then it will create a backup file before doing any indentation; the default extension is `.bak`, so, for example, `myfile.bak0` would be created when calling `latexindent.pl myfile.tex` for the first time.

By default, every time you subsequently call `latexindent.pl` with the `-w` to act upon `myfile.tex`, it will create successive back up files: `myfile.bak1`, `myfile.bak2`, etc.

[4] Throughout this manual, listings shown with line numbers represent code taken directly from `defaultSettings.yaml`.

`onlyOneBackUp`: ⟨*integer*⟩

If you don't want a backup for every time that you call `latexindent.pl` (so you don't want `myfile.bak1`, `myfile.bak2`, etc) and you simply want `myfile.bak` (or whatever you chose `backupExtension` to be) then change `onlyOneBackUp` to `1`; the default value of `onlyOneBackUp` is `0`.

`maxNumberOfBackUps`: ⟨*integer*⟩

Some users may only want a finite number of backup files, say at most 3, in which case, they can change this switch. The smallest value of `maxNumberOfBackUps` is 0 which will *not* prevent backup files being made; in this case, the behaviour will be dictated entirely by `onlyOneBackUp`. The default value of `maxNumberOfBackUps` is `0`.

`cycleThroughBackUps`: ⟨*integer*⟩

Some users may wish to cycle through backup files, by deleting the oldest backup file and keeping only the most recent; for example, with `maxNumberOfBackUps: 4`, and `cycleThroughBackUps` set to `1` then the `copy` procedure given below would be obeyed.

```
cmh:~$ copy myfile.bak1 to myfile.bak0
cmh:~$ copy myfile.bak2 to myfile.bak1
cmh:~$ copy myfile.bak3 to myfile.bak2
cmh:~$ copy myfile.bak4 to myfile.bak3
```

The default value of `cycleThroughBackUps` is `0`.

`logFilePreferences`: ⟨*fields*⟩

`latexindent.pl` writes information to `indent.log`, some of which can be customized by changing `logFilePreferences`; see Listing 17. If you load your own user settings (see Section 4 on page 15) then `latexindent.pl` will detail them in `indent.log`; you can choose not to have the details logged by switching `showEveryYamlRead` to `0`. Once all of your settings have been loaded, you can see the amalgamated settings in the log file by switching `showAmalgamatedSettings` to `1`, if you wish.

LISTING 17: `logFilePreferences`

```
88  logFilePreferences:
89      showEveryYamlRead: 1
90      showAmalgamatedSettings: 0
91      showDecorationStartCodeBlockTrace: 0
92      showDecorationFinishCodeBlockTrace: 0
93      endLogFileWith: '--------------'
94      showGitHubInfoFooter: 1
95      Dumper:
96        Terse: 1
97        Indent: 1
98        Useqq: 1
99        Deparse: 1
100       Quotekeys: 0
101       Sortkeys: 1
102       Pair: " => "
```

N: 2018-01-13

When either of the `trace` modes (see page 10) are active, you will receive detailed information in `indent.log`. You can specify character strings to appear before and after the notification of a found code block using, respectively, `showDecorationStartCodeBlockTrace` and `showDecorationFinishCodeBlockTra`
A demonstration is given in appendix C on page 140.

The log file will end with the characters given in `endLogFileWith`, and will report the `GitHub` address of `latexindent.pl` to the log file if `showGitHubInfoFooter` is set to `1`.

U: 2021-03-14 Note: `latexindent.pl` no longer uses the `log4perl` module to handle the creation of the logfile.

U: 2021-06-19 Some of the options for Perl's `Dumper` module can be specified in Listing 17; see [7] and [6] for more information. These options will mostly be helpful for those calling `latexindent.pl` with the `-tt` option described in Section 3.1.

5.2 Verbatim code blocks

`verbatimEnvironments`: ⟨*fields*⟩

A field that contains a list of environments that you would like left completely alone – no indentation will be performed on environments that you have specified in this field, see Listing 18.

LISTING 18: `verbatimEnvironments`

```
106 verbatimEnvironments:
107     verbatim: 1
108     lstlisting: 1
109     minted: 1
```

LISTING 19: `verbatimCommands`

```
112 verbatimCommands:
113     verb: 1
114     lstinline: 1
```

Note that if you put an environment in `verbatimEnvironments` and in other fields such as `lookForAlignDelims` or `noAdditionalIndent` then `latexindent.pl` will *always* prioritize `verbatimEnvironments`.

N: 2021-10-30 You can, optionally, specify the `verbatim` field using the `name` field which takes a regular expression as its argument; thank you to [31] for contributing this feature.

For demonstration, then assuming that your file contains the environments `latexcode`, `latexcode*`, `pythoncode` and `pythoncode*`, then the listings given in Listings 20 and 21 are equivalent.

LISTING 20: `nameAsRegex1.yaml`

```
verbatimEnvironments:
    latexcode: 1
    latexcode*: 1
    pythoncode: 1
    pythoncode*: 1
```

LISTING 21: `nameAsRegex2.yaml`

```
verbatimEnvironments:
    nameAsRegex:
      name: '\w+code\*?'
      lookForThis: 1
```

With reference to Listing 21:

- the `name` field as specified here means *any word followed by the word code, optionally followed by **;
- we have used `nameAsRegex` to identify this field, but you can use any description you like;
- the `lookForThis` field is optional, and can take the values 0 (off) or 1 (on); by default, it is assumed to be 1 (on).

`verbatimCommands`: ⟨*fields*⟩

A field that contains a list of commands that are verbatim commands, for example `\lstinline`; any commands populated in this field are protected from line breaking routines (only relevant if the `-m` is active, see Section 6 on page 65).

With reference to Listing 19, by default `latexindent.pl` looks for `\verb` immediately followed by another character, and then it takes the body as anything up to the next occurrence of the character; this means that, for example, `\verb!x+3!` is treated as a `verbatimCommands`.

N: 2021-10-30 You can, optionally, specify the `verbatimCommands` field using the `name` field which takes a regular expression as its argument; thank you to [31] for contributing this feature.

For demonstration, then assuming that your file contains the commands `verbinline`, `myinline` then the listings given in Listings 22 and 23 are equivalent.

LISTING 22: nameAsRegex3.yaml

```
verbatimCommands:
    verbinline: 1
    myinline: 1
```

LISTING 23: nameAsRegex4.yaml

```
verbatimCommands:
    nameAsRegex:
      name: '\w+inline'
      lookForThis: 1
```

With reference to Listing 23:

- the `name` field as specified here means *any word followed by the word inline*;
- we have used `nameAsRegex` to identify this field, but you can use any description you like;
- the `lookForThis` field is optional, and can take the values 0 (off) or 1 (on); by default, it is assumed to be 1 (on).

`noIndentBlock`: ⟨*fields*⟩

If you have a block of code that you don't want `latexindent.pl` to touch (even if it is *not* a verbatim-like environment) then you can wrap it in an environment from `noIndentBlock`; you can use any name you like for this, provided you populate it as demonstrate in Listing 24.

LISTING 24: noIndentBlock

```
119 noIndentBlock:
120     noindent: 1
121     cmhtest: 1
```

Of course, you don't want to have to specify these as null environments in your code, so you use them with a comment symbol, %, followed by as many spaces (possibly none) as you like; see Listing 25 for example.

LISTING 25: noIndentBlock.tex

```
% \begin{noindent}
some before text
        this code
                won't
     be touched
                    by
             latexindent.pl!
some after text
% \end{noindent}
```

Important note: it is assumed that the `noindent` block statements specified in this way appear on their own line.

N: 2021-06-19

The `noIndentBlock` fields can also be specified in terms of `begin` and `end` fields. We use the code in Listing 26 to demonstrate this feature.

LISTING 26: noIndentBlock1.tex

```
some before text
        this code
                won't
     be touched
                    by
             latexindent.pl!
some after text
```

The settings given in Listings 27 and 28 are equivalent:

LISTING 27: noindent1.yaml

```
noIndentBlock:
    demo:
        begin: 'some\hbefore'
        body: '.*?'
        end: 'some\hafter\htext'
        lookForThis: 1
```

LISTING 28: noindent2.yaml

```
noIndentBlock:
    demo:
        begin: 'some\hbefore'
        end: 'some\hafter\htext'
```

LISTING 29: noindent3.yaml

```
noIndentBlock:
    demo:
        begin: 'some\hbefore'
        body: '.*?'
        end: 'some\hafter\htext'
        lookForThis: 0
```

Upon running the commands

```
cmh:~$ latexindent.pl -l noindent1.yaml noindent1
cmh:~$ latexindent.pl -l noindent2.yaml noindent1
```

then we receive the output given in Listing 30.

LISTING 30: noIndentBlock1.tex using Listing 27 or Listing 28

```
some before text
        this code
                won't
     be touched
                    by
             latexindent.pl!
some after text
```

The begin, body and end fields for noIndentBlock are all *regular expressions*. If the body field is not specified, then it takes a default value of .*? which is written explicitly in Listing 27. In this context, we interpret .*? in words as *the fewest number of characters (possibly none) until the 'end' field is reached*.

The lookForThis field is optional, and can take the values 0 (off) or 1 (on); by default, it is assumed to be 1 (on).

Using Listing 29 demonstrates setting lookForThis to 0 (off); running the command

```
cmh:~$ latexindent.pl -l noindent3.yaml noindent1
```

gives the output in Listing 31.

LISTING 31: noIndentBlock1.tex using Listing 29

```
some before text
this code
won't
be touched
by
latexindent.pl!
some after text
```

We will demonstrate this feature later in the documentation in Listing 533.

N: 2021-10-30

You can, optionally, specify the noIndentBlock field using the name field which takes a regular expression as its argument; thank you to [31] for contributing this feature.

For demonstration, then assuming that your file contains the environments testnoindent, testnoindent* then the listings given in Listings 32 and 33 are equivalent.

LISTING 32: nameAsRegex5.yaml

```
noIndentBlock:
    mytest:
      begin: '\\begin\{testnoindent\*?\}'
      end: '\\end\{testnoindent\*?\}'
```

LISTING 33: nameAsRegex6.yaml

```
noIndentBlock:
    nameAsRegex:
      name: '\w+noindent\*?'
      lookForThis: 1
```

With reference to Listing 33:

- the `name` field as specified here means *any word followed by the word noindent, optionally followed by **;
- we have used `nameAsRegex` to identify this field, but you can use any description you like;
- the `lookForThis` field is optional, and can take the values 0 (off) or 1 (on); by default, it is assumed to be 1 (on).

5.3 filecontents and preamble

`fileContentsEnvironments`: ⟨*field*⟩

Before `latexindent.pl` determines the difference between preamble (if any) and the main document, it first searches for any of the environments specified in `fileContentsEnvironments`, see Listing 34. The behaviour of `latexindent.pl` on these environments is determined by their location (preamble or not), and the value `indentPreamble`, discussed next.

LISTING 34: fileContentsEnvironments

```
125 fileContentsEnvironments:
126     filecontents: 1
127     filecontents*: 1
```

`indentPreamble`: **0|1**

The preamble of a document can sometimes contain some trickier code for `latexindent.pl` to operate upon. By default, `latexindent.pl` won't try to operate on the preamble (as `indentPreamble` is set to 0, by default), but if you'd like `latexindent.pl` to try then change `indentPreamble` to 1.

`lookForPreamble`: ⟨*fields*⟩

Not all files contain preamble; for example, `sty`, `cls` and `bib` files typically do *not*. Referencing Listing 35, if you set, for example, `.tex` to 0, then regardless of the setting of the value of `indentPreamble`, preamble will not be assumed when operating upon `.tex` files.

LISTING 35: lookForPreamble

```
133 lookForPreamble:
134     .tex: 1
135     .sty: 0
136     .cls: 0
137     .bib: 0
```

`preambleCommandsBeforeEnvironments`: **0|1**

Assuming that `latexindent.pl` is asked to operate upon the preamble of a document, when this switch is set to 0 then environment code blocks will be sought first, and then command code blocks. When this switch is set to 1, commands will be sought first. The example that first motivated this switch contained the code given in Listing 36.

LISTING 36: Motivating preambleCommandsBeforeEnvironments

```
...
preheadhook={\begin{mdframed}[style=myframedstyle]},
postfoothook=\end{mdframed},
...
```

5.4 Indentation and horizontal space

defaultIndent: ⟨*horizontal space*⟩

This is the default indentation used in the absence of other details for the code block with which we are working. The default value is `\t` which means a tab; we will explore customisation beyond `defaultIndent` in Section 5.8 on page 43.

If you're interested in experimenting with `latexindent.pl` then you can *remove* all indentation by setting `defaultIndent: ""`.

removeTrailingWhitespace: ⟨*fields*⟩

Trailing white space can be removed both *before* and *after* processing the document, as detailed in Listing 37; each of the fields can take the values 0 or 1. See Listings 424 to 426 on pages 99–100 for before and after results. Thanks to [28] for providing this feature.

LISTING 37: removeTrailingWhitespace

```
150 removeTrailingWhitespace:
151     beforeProcessing: 0
152     afterProcessing: 1
```

LISTING 38: removeTrailingWhitespace (alt)

```
removeTrailingWhitespace: 1
```

N: 2017-06-28

You can specify `removeTrailingWhitespace` simply as 0 or 1, if you wish; in this case, `latexindent.pl` will set both `beforeProcessing` and `afterProcessing` to the value you specify; see Listing 38.

5.5 Aligning at delimiters

lookForAlignDelims: ⟨*fields*⟩

This contains a list of code blocks that are operated upon in a special way by `latexindent.pl` (see Listing 39). In fact, the fields in `lookForAlignDelims` can actually take two different forms: the *basic* version is shown in Listing 39 and the *advanced* version in Listing 42; we will discuss each in turn.

LISTING 39: lookForAlignDelims (basic)

```
lookForAlignDelims:
   tabular: 1
   tabularx: 1
   longtable: 1
   array: 1
   matrix: 1
   ...
```

Specifying code blocks in this field instructs `latexindent.pl` to try and align each column by its alignment delimiters. It does have some limitations (discussed further in Section 10), but in many cases it will produce results such as those in Listings 40 and 41.

If you find that `latexindent.pl` does not perform satisfactorily on such environments then you can set the relevant key to 0, for example `tabular: 0`; alternatively, if you just want to ignore *specific* instances of the environment, you could wrap them in something from `noIndentBlock` (see Listing 24 on page 22).

LISTING 40: tabular1.tex

```
\begin{tabular}{cccc}
1& 2 &3       &4\\
5& &6       &\\
\end{tabular}
```

LISTING 41: tabular1.tex default output

```
\begin{tabular}{cccc}
   1 & 2 & 3 & 4 \\
   5 &   & 6 &   \\
\end{tabular}
```

If, for example, you wish to remove the alignment of the \\ within a delimiter-aligned block, then the advanced form of `lookForAlignDelims` shown in Listing 42 is for you.

LISTING 42: lookForAlignDelims (advanced)

```
155 lookForAlignDelims:
156    tabular:
157       delims: 1
158       alignDoubleBackSlash: 1
159       spacesBeforeDoubleBackSlash: 1
160       multiColumnGrouping: 0
161       alignRowsWithoutMaxDelims: 1
162       spacesBeforeAmpersand: 1
163       spacesAfterAmpersand: 1
164       justification: left
165       alignFinalDoubleBackSlash: 0
166       dontMeasure: 0
167       delimiterRegEx: '(?<!\\)(&)'
168       delimiterJustification: left
169    tabularx:
170       delims: 1
171    longtable: 1
```

Note that you can use a mixture of the basic and advanced form: in Listing 42 `tabular` and `tabularx` are advanced and `longtable` is basic. When using the advanced form, each field should receive at least 1 sub-field, and *can* (but does not have to) receive any of the following fields:

- `delims`: binary switch (0 or 1) equivalent to simply specifying, for example, `tabular: 1` in the basic version shown in Listing 39. If `delims` is set to 0 then the align at ampersand routine will not be called for this code block (default: 1);
- `alignDoubleBackSlash`: binary switch (0 or 1) to determine if \\ should be aligned (default: 1);

U: 2018-01-13

- `spacesBeforeDoubleBackSlash`: optionally, specifies the number (integer ≥ 0) of spaces to be inserted before \\ (default: 1);

N: 2017-06-19

- `multiColumnGrouping`: binary switch (0 or 1) that details if `latexindent.pl` should group columns above and below a `\multicolumn` command (default: 0);

N: 2017-06-19

- `alignRowsWithoutMaxDelims`: binary switch (0 or 1) that details if rows that do not contain the maximum number of delimeters should be formatted so as to have the ampersands aligned (default: 1);

N: 2018-01-13

- `spacesBeforeAmpersand`: optionally specifies the number (integer ≥ 0) of spaces to be placed *before* ampersands (default: 1);

N: 2018-01-13

- `spacesAfterAmpersand`: optionally specifies the number (integer ≥ 0) of spaces to be placed *After* ampersands (default: 1);

N: 2018-01-13

- `justification`: optionally specifies the justification of each cell as either *left* or *right* (default: left);

N: 2020-03-21
- alignFinalDoubleBackSlash optionally specifies if the *final* double back slash should be used for alignment (default: 0);

N: 2020-03-21
- dontMeasure optionally specifies if user-specified cells, rows or the largest entries should *not* be measured (default: 0);

N: 2020-03-21
- delimiterRegEx optionally specifies the pattern matching to be used for the alignment delimeter (default: `'(?<!\\)(&)'`);

N: 2020-03-21
- delimiterJustification optionally specifies the justification for the alignment delimeters (default: left); note that this feature is only useful if you have delimiters of different lengths in the same column, discussed in Section 5.5.4.

We will explore most of these features using the file `tabular2.tex` in Listing 43 (which contains a `\multicolumn` command), and the YAML files in Listings 44 to 50; we will explore `alignFinalDoubleBackSlash` in Listing 71; the `dontMeasure` feature will be described in Section 5.5.3, and `delimiterRegEx` in Section 5.5.4.

LISTING 43: tabular2.tex

```
\begin{tabular}{cccc}
A&    B & C       &D\\
AAA&    BBB & CCC       &DDD\\
  \multicolumn{2}{c}{first heading} & \multicolumn{2}{c}{second heading}\\
one&    two & three       &four\\
five& &six      &\\
seven & \\
\end{tabular}
```

LISTING 44: tabular2.yaml

```
lookForAlignDelims:
   tabular:
      multiColumnGrouping: 1
```

LISTING 45: tabular3.yaml

```
lookForAlignDelims:
   tabular:
      alignRowsWithoutMaxDelims: 0
```

LISTING 46: tabular4.yaml

```
lookForAlignDelims:
   tabular:
      spacesBeforeAmpersand: 4
```

LISTING 47: tabular5.yaml

```
lookForAlignDelims:
   tabular:
      spacesAfterAmpersand: 4
```

LISTING 48: tabular6.yaml

```
lookForAlignDelims:
   tabular:
      alignDoubleBackSlash: 0
```

LISTING 49: tabular7.yaml

```
lookForAlignDelims:
   tabular:
      spacesBeforeDoubleBackSlash: 0
```

LISTING 50: tabular8.yaml

```
lookForAlignDelims:
   tabular:
      justification: "right"
```

On running the commands

```
cmh:~$ latexindent.pl tabular2.tex
cmh:~$ latexindent.pl tabular2.tex -l tabular2.yaml
cmh:~$ latexindent.pl tabular2.tex -l tabular3.yaml
cmh:~$ latexindent.pl tabular2.tex -l tabular2.yaml,tabular4.yaml
cmh:~$ latexindent.pl tabular2.tex -l tabular2.yaml,tabular5.yaml
cmh:~$ latexindent.pl tabular2.tex -l tabular2.yaml,tabular6.yaml
cmh:~$ latexindent.pl tabular2.tex -l tabular2.yaml,tabular7.yaml
cmh:~$ latexindent.pl tabular2.tex -l tabular2.yaml,tabular8.yaml
```

we obtain the respective outputs given in Listings 51 to 58.

LISTING 51: tabular2.tex default output

```
\begin{tabular}{cccc}
   A                                & B                                & C     & D    \\
   AAA                              & BBB                              & CCC   & DDD  \\
   \multicolumn{2}{c}{first heading} & \multicolumn{2}{c}{second heading}              \\
   one                              & two                              & three & four \\
   five                             &                                  & six   &      \\
   seven                            &                                  &       \\
\end{tabular}
```

LISTING 52: tabular2.tex using Listing 44

```
\begin{tabular}{cccc}
   A     & B                        & C     & D                        \\
   AAA   & BBB                      & CCC   & DDD                      \\
   \multicolumn{2}{c}{first heading} & \multicolumn{2}{c}{second heading} \\
   one   & two                      & three & four                     \\
   five  &                          & six   &                          \\
   seven &                          &       &                          \\
\end{tabular}
```

LISTING 53: tabular2.tex using Listing 45

```
\begin{tabular}{cccc}
   A    & B   & C     & D                                               \\
   AAA  & BBB & CCC   & DDD                                             \\
   \multicolumn{2}{c}{first heading} & \multicolumn{2}{c}{second heading} \\
   one  & two & three & four                                            \\
   five &     & six   &                                                 \\
   seven &                                                              \\
\end{tabular}
```

LISTING 54: tabular2.tex using Listings 44 and 46

```
\begin{tabular}{cccc}
   A        & B                        & C        & D                        \\
   AAA      & BBB                      & CCC      & DDD                      \\
   \multicolumn{2}{c}{first heading}   & \multicolumn{2}{c}{second heading} \\
   one      & two                      & three    & four                     \\
   five     &                          & six      &                          \\
   seven    &                          &          &                          \\
\end{tabular}
```

LISTING 55: tabular2.tex using Listings 44 and 47

```
\begin{tabular}{cccc}
   A     &    B                     &    C     &    D                     \\
   AAA   &    BBB                   &    CCC   &    DDD                   \\
   \multicolumn{2}{c}{first heading} &    \multicolumn{2}{c}{second heading} \\
   one   &    two                   &    three &    four                  \\
   five  &                          &    six   &                          \\
   seven &                          &          &                          \\
\end{tabular}
```

LISTING 56: `tabular2.tex` using Listings 44 and 48

```
\begin{tabular}{cccc}
   A     & B                          & C     & D \\
   AAA   & BBB                        & CCC   & DDD \\
   \multicolumn{2}{c}{first heading} & \multicolumn{2}{c}{second heading} \\
   one   & two                        & three & four \\
   five  &                            & six   & \\
   seven & \\
\end{tabular}
```

LISTING 57: `tabular2.tex` using Listings 44 and 49

```
\begin{tabular}{cccc}
   A     & B                          & C     & D                          \\
   AAA   & BBB                        & CCC   & DDD                        \\
   \multicolumn{2}{c}{first heading} & \multicolumn{2}{c}{second heading}\\
   one   & two                        & three & four                       \\
   five  &                            & six   &                            \\
   seven &                                                                 \\
\end{tabular}
```

LISTING 58: `tabular2.tex` using Listings 44 and 50

```
\begin{tabular}{cccc}
                              A &   B &                            C &    D \\
                            AAA & BBB &                          CCC &  DDD \\
   \multicolumn{2}{c}{first heading} & \multicolumn{2}{c}{second heading} \\
                            one & two &                        three & four \\
                           five &     &                          six &      \\
                          seven &                                        \\
\end{tabular}
```

Notice in particular:

- in both Listings 51 and 52 all rows have been aligned at the ampersand, even those that do not contain the maximum number of ampersands (3 ampersands, in this case);
- in Listing 51 the columns have been aligned at the ampersand;
- in Listing 52 the `\multicolumn` command has grouped the 2 columns beneath *and* above it, because `multiColumnGrouping` is set to 1 in Listing 44;
- in Listing 53 rows 3 and 6 have *not* been aligned at the ampersand, because `alignRowsWithoutMaxDelims` has been to set to 0 in Listing 45; however, the `\\` *have* still been aligned;
- in Listing 54 the columns beneath and above the `\multicolumn` commands have been grouped (because `multiColumnGrouping` is set to 1), and there are at least 4 spaces *before* each aligned ampersand because `spacesBeforeAmpersand` is set to 4;
- in Listing 55 the columns beneath and above the `\multicolumn` commands have been grouped (because `multiColumnGrouping` is set to 1), and there are at least 4 spaces *after* each aligned ampersand because `spacesAfterAmpersand` is set to 4;
- in Listing 56 the `\\` have *not* been aligned, because `alignDoubleBackSlash` is set to `0`, otherwise the output is the same as Listing 52;
- in Listing 57 the `\\` *have* been aligned, and because `spacesBeforeDoubleBackSlash` is set to `0`, there are no spaces ahead of them; the output is otherwise the same as Listing 52;
- in Listing 58 the cells have been *right*-justified; note that cells above and below the `\multicol` statements have still been group correctly, because of the settings in Listing 44.

5.5.1 lookForAlignDelims: spacesBeforeAmpersand

U: 2021-06-19

The `spacesBeforeAmpersand` can be specified in a few different ways. The *basic* form is demonstrated in Listing 46, but we can customise the behaviour further by specifying if we would like this

value to change if it encounters a *leading blank column*; that is, when the first column contains only zero-width entries. We refer to this as the *advanced* form.

We demonstrate this feature in relation to Listing 59; upon running the following command

```
cmh:~$ latexindent.pl aligned1.tex -o=+-default
```

then we receive the default output given in Listing 60.

LISTING 59: aligned1.tex

```
\begin{aligned}
& a & b, \\
& c & d.
\end{aligned}
```

LISTING 60: aligned1-default.tex

```
\begin{aligned}
    & a & b, \\
    & c & d.
\end{aligned}
```

The settings in Listings 61 to 64 are all equivlanent; we have used the not-yet discussed `noAdditionalIndent` field (see Section 5.8 on page 43) which will assist in the demonstration in what follows.

LISTING 61: sba1.yaml

```
noAdditionalIndent:
  aligned: 1
lookForAlignDelims:
   aligned: 1
```

LISTING 62: sba2.yaml

```
noAdditionalIndent:
  aligned: 1
lookForAlignDelims:
   aligned:
      spacesBeforeAmpersand: 1
```

LISTING 63: sba3.yaml

```
noAdditionalIndent:
  aligned: 1
lookForAlignDelims:
   aligned:
      spacesBeforeAmpersand:
        default: 1
```

LISTING 64: sba4.yaml

```
noAdditionalIndent:
  aligned: 1
lookForAlignDelims:
   aligned:
      spacesBeforeAmpersand:
        leadingBlankColumn: 1
```

Upon running the following commands

```
cmh:~$ latexindent.pl aligned1.tex -l sba1.yaml
cmh:~$ latexindent.pl aligned1.tex -l sba2.yaml
cmh:~$ latexindent.pl aligned1.tex -l sba3.yaml
cmh:~$ latexindent.pl aligned1.tex -l sba4.yaml
```

then we receive the (same) output given in Listing 65; we note that there is *one space* before each ampersand.

LISTING 65: aligned1-mod1.tex

```
\begin{aligned}
 & a & b, \\
 & c & d.
\end{aligned}
```

We note in particular:

- Listing 61 demonstrates the *basic* form for `lookForAlignDelims`; in this case, the default values are specified as in Listing 42 on page 26;
- Listing 62 demonstrates the *advanced* form for `lookForAlignDelims` and specified `spacesBeforeAmpersand`. The default value is `1`;
- Listing 63 demonstrates the new *advanced* way to specify `spacesBeforeAmpersand`, and for us to set the `default` value that sets the number of spaces before ampersands which are *not* in leading blank columns. The default value is `1`.

We note that `leadingBlankColumn` has not been specified in Listing 63, and it will inherit the value from `default`;

- Listing 64 demonstrates spaces to be used before amperands for *leading blank columns*. We note that *default* has not been specified, and it will be set to `1` by default.

We can customise the space before the ampersand in the *leading blank column* of Listing 65 by using either of Listings 66 and 67, which are equivalent.

LISTING 66: `sba5.yaml`

```
noAdditionalIndent:
  aligned: 1
lookForAlignDelims:
   aligned:
      spacesBeforeAmpersand:
        leadingBlankColumn: 0
```

LISTING 67: `sba6.yaml`

```
noAdditionalIndent:
  aligned: 1
lookForAlignDelims:
   aligned:
      spacesBeforeAmpersand:
        leadingBlankColumn: 0
        default: 1
```

Upon running

```
cmh:~$ latexindent.pl aligned1.tex -l sba5.yaml
cmh:~$ latexindent.pl aligned1.tex -l sba6.yaml
```

then we receive the (same) output given in Listing 68. We note that the space before the ampersand in the *leading blank column* has been set to `0` by Listing 67.

We can demonstrated this feature further using the settings in Listing 70 which give the output in Listing 69.

LISTING 68: `aligned1-mod5.tex`

```
\begin{aligned}
& a & b, \\
& c & d.
\end{aligned}
```

LISTING 69: `aligned1.tex` using Listing 70

```
\begin{aligned}
   & a& b, \\
   & c& d.
\end{aligned}
```

LISTING 70: `sba7.yaml`

```
noAdditionalIndent:
  aligned: 1
lookForAlignDelims:
   aligned:
      spacesBeforeAmpersand:
        leadingBlankColumn: 3
        default: 0
```

5.5.2 lookForAlignDelims: alignFinalDoubleBackSlash

N: 2020-03-21

We explore the `alignFinalDoubleBackSlash` feature by using the file in Listing 71. Upon running the following commands

```
cmh:~$ latexindent.pl tabular4.tex -o=+-default
cmh:~$ latexindent.pl tabular4.tex -o=+-FDBS
    -y="lookForAlignDelims:tabular:alignFinalDoubleBackSlash:1"
```

then we receive the respective outputs given in Listing 72 and Listing 73.

LISTING 71: `tabular4.tex`

```
\begin{tabular}{lc}
    Name & \shortstack{Hi \\ Lo} \\
    Foo  & Bar           \\
\end{tabular}
```

LISTING 72: `tabular4-default.tex`

```
\begin{tabular}{lc}
   Name & \shortstack{Hi \\ Lo} \\
   Foo  & Bar           \\
\end{tabular}
```

LISTING 73: `tabular4-FDBS.tex`

```
\begin{tabular}{lc}
   Name & \shortstack{Hi \\ Lo} \\
   Foo  & Bar                   \\
\end{tabular}
```

We note that in:

- Listing 72, by default, the *first* set of double back slashes in the first row of the `tabular` environment have been used for alignment;
- Listing 73, the *final* set of double back slashes in the first row have been used, because we specified `alignFinalDoubleBackSlash` as 1.

As of Version 3.0, the alignment routine works on mandatory and optional arguments within commands, and also within 'special' code blocks (see `specialBeginEnd` on page 37); for example, assuming that you have a command called `\matrix` and that it is populated within `lookForAlignDelims` (which it is, by default), and that you run the command

```
cmh:~$ latexindent.pl matrix1.tex
```

then the before-and-after results shown in Listings 74 and 75 are achievable by default.

LISTING 74: `matrix1.tex`

```
\matrix [
   1&2   &3\\
4&5&6]{
7&8   &9\\
10&11&12
}
```

LISTING 75: `matrix1.tex` default output

```
\matrix [
   1 & 2 & 3 \\
   4 & 5 & 6]{
   7  & 8  & 9  \\
   10 & 11 & 12
}
```

If you have blocks of code that you wish to align at the & character that are *not* wrapped in, for example, `\begin{tabular}` ... `\end{tabular}`, then you can use the mark up illustrated in Listing 76; the default output is shown in Listing 77. Note that the `%*` must be next to each other, but that there can be any number of spaces (possibly none) between the `*` and `\begin{tabular}`; note also that you may use any environment name that you have specified in `lookForAlignDelims`.

LISTING 76: `align-block.tex`

```
%* \begin{tabular}
   1 & 2 & 3 & 4 \\
   5 &   & 6 &   \\
  %* \end{tabular}
```

LISTING 77: `align-block.tex` default output

```
%* \begin{tabular}
   1 & 2 & 3 & 4 \\
   5 &   & 6 &   \\
%* \end{tabular}
```

With reference to Table 2 on page 44 and the, yet undiscussed, fields of `noAdditionalIndent` and `indentRules` (see Section 5.8 on page 43), these comment-marked blocks are considered `environments`.

5.5.3 lookForAlignDelims: the dontMeasure feature

N: 2020-03-21

The `lookForAlignDelims` field can, optionally, receive the `dontMeasure` option which can be specified in a few different ways. We will explore this feature in relation to the code given in Listing 78; the default output is shown in Listing 79.

LISTING 78: `tabular-DM.tex`

```
\begin{tabular}{cccc}
  aaaaaa&bbbbb&ccc&dd\\
  11&2&33&4\\
  5&66&7&8
\end{tabular}
```

LISTING 79: `tabular-DM.tex` default output

```
\begin{tabular}{cccc}
   aaaaaa & bbbbb & ccc & dd \\
   11     & 2     & 33  & 4  \\
   5      & 66    & 7   & 8
\end{tabular}
```

The `dontMeasure` field can be specified as `largest`, and in which case, the largest element will not be measured; with reference to the YAML file given in Listing 81, we can run the command

```
cmh:~$ latexindent.pl tabular-DM.tex -l=dontMeasure1.yaml
```

and receive the output given in Listing 80.

LISTING 80: `tabular-DM.tex` using Listing 81

```
\begin{tabular}{cccc}
   aaaaaa & bbbbb & ccc & dd \\
   11 & 2  & 33 & 4          \\
   5  & 66 & 7  & 8
\end{tabular}
```

LISTING 81: `dontMeasure1.yaml`

```
lookForAlignDelims:
   tabular:
      dontMeasure: largest
```

We note that the *largest* column entries have not contributed to the measuring routine.

The `dontMeasure` field can also be specified in the form demonstrated in Listing 83. On running the following commands,

```
cmh:~$ latexindent.pl tabular-DM.tex -l=dontMeasure2.yaml
```

we receive the output in Listing 82.

LISTING 82: `tabular-DM.tex` using Listing 83 or Listing 85

```
\begin{tabular}{cccc}
   aaaaaa & bbbbb & ccc & dd \\
   11 & 2  & 33 & 4          \\
   5  & 66 & 7  & 8
\end{tabular}
```

LISTING 83: `dontMeasure2.yaml`

```
lookForAlignDelims:
   tabular:
      dontMeasure:
        - aaaaaa
        - bbbbb
        - ccc
        - dd
```

We note that in Listing 83 we have specified entries not to be measured, one entry per line.

The `dontMeasure` field can also be specified in the forms demonstrated in Listing 85 and Listing 86. Upon running the commands

```
cmh:~$ latexindent.pl tabular-DM.tex -l=dontMeasure3.yaml
cmh:~$ latexindent.pl tabular-DM.tex -l=dontMeasure4.yaml
```

we receive the output given in Listing 84

LISTING 84: `tabular-DM.tex` using Listing 85 or Listing 85

```
\begin{tabular}{cccc}
   aaaaaa & bbbbb & ccc & dd \\
   11 & 2  & 33 & 4          \\
   5  & 66 & 7  & 8
\end{tabular}
```

LISTING 85: `dontMeasure3.yaml`

```
lookForAlignDelims:
   tabular:
      dontMeasure:
        -
          this: aaaaaa
          applyTo: cell
        -
          this: bbbbb
        - ccc
        - dd
```

LISTING 86: `dontMeasure4.yaml`

```
lookForAlignDelims:
   tabular:
      dontMeasure:
        -
          regex: [a-z]
          applyTo: cell
```

We note that in:

- Listing 85 we have specified entries not to be measured, each one has a *string* in the `this` field, together with an optional specification of `applyTo` as `cell`;
- Listing 86 we have specified entries not to be measured as a *regular expression* using the `regex` field, together with an optional specification of `applyTo` as `cell` field, together with an optional specification of `applyTo` as `cell`.

In both cases, the default value of `applyTo` is `cell`, and does not need to be specified.

We may also specify the `applyTo` field as `row`, a demonstration of which is given in Listing 88; upon running

```
cmh:~$ latexindent.pl tabular-DM.tex -l=dontMeasure5.yaml
```

we receive the output in Listing 87.

LISTING 87: tabular-DM.tex using Listing 88

```
\begin{tabular}{cccc}
   aaaaaa & bbbbb & ccc & dd \\
   11 & 2  & 33 & 4          \\
   5  & 66 & 7  & 8
\end{tabular}
```

LISTING 88: dontMeasure5.yaml

```
lookForAlignDelims:
   tabular:
      dontMeasure:
        -
          this: aaaaaa&bbbbb&ccc&dd\\
          applyTo: row
```

Finally, the `applyTo` field can be specified as `row`, together with a `regex` expression. For example, for the settings given in Listing 90, upon running

```
cmh:~$ latexindent.pl tabular-DM.tex -l=dontMeasure6.yaml
```

we receive the output in Listing 89.

LISTING 89: tabular-DM.tex using Listing 90

```
\begin{tabular}{cccc}
   aaaaaa & bbbbb & ccc & dd \\
   11 & 2  & 33 & 4          \\
   5  & 66 & 7  & 8
\end{tabular}
```

LISTING 90: dontMeasure6.yaml

```
lookForAlignDelims:
   tabular:
      dontMeasure:
        -
          regex: [a-z]
          applyTo: row
```

5.5.4 lookForAlignDelims: the delimiterRegEx and delimiterJustification feature

N: 2020-03-21

The delimiter alignment will, by default, align code blocks at the ampersand character. The behaviour is controlled by the `delimiterRegEx` field within `lookForAlignDelims`; the default value is `'(?<!\\)(&)'`, which can be read as: *an ampersand, as long as it is not immediately preceeded by a backslash*.

Warning!

Important: note the 'capturing' parenthesis in the `(&)` which are necessary; if you intend to customise this field, then be sure to include them appropriately.

We demonstrate how to customise this with respect to the code given in Listing 91; the default output from `latexindent.pl` is given in Listing 92.

LISTING 91: tabbing.tex

```
\begin{tabbing}
    aa \=   bb \= cc \= dd \= ee \\
    \>2\> 1 \> 7 \> 3 \\
    \>3 \> 2\>8\> 3 \\
    \>4 \>2 \\
\end{tabbing}
```

LISTING 92: tabbing.tex default output

```
\begin{tabbing}
   aa \=   bb \= cc \= dd \= ee \\
   \>2\> 1 \> 7 \> 3 \\
   \>3 \> 2\>8\> 3 \\
   \>4 \>2 \\
\end{tabbing}
```

Let's say that we wish to align the code at either the `\=` or `\>`. We employ the settings given in Listing 94 and run the command

```
cmh:~$ latexindent.pl tabbing.tex -l=delimiterRegEx1.yaml
```

to receive the output given in Listing 93.

LISTING 93: tabbing.tex using Listing 94

```
\begin{tabbing}
   aa \= bb \= cc \= dd \= ee \\
      \> 2  \> 1  \> 7  \> 3  \\
      \> 3  \> 2  \> 8  \> 3  \\
      \> 4  \> 2              \\
\end{tabbing}
```

LISTING 94: delimiterRegEx1.yaml

```
lookForAlignDelims:
   tabbing:
    delimiterRegEx: '(\\(?:=|>))'
```

We note that:

- in Listing 93 the code has been aligned, as intended, at both the \= and \>;
- in Listing 94 we have heeded the warning and captured the expression using grouping parenthesis, specified a backslash using \\ and said that it must be followed by either = or >.

We can explore delimiterRegEx a little further using the settings in Listing 96 and run the command

```
cmh:~$ latexindent.pl tabbing.tex -l=delimiterRegEx2.yaml
```

to receive the output given in Listing 95.

LISTING 95: tabbing.tex using Listing 96

```
\begin{tabbing}
   aa \=   bb \= cc \= dd \= ee \\
    \> 2 \> 1 \> 7 \> 3         \\
    \> 3 \> 2 \> 8 \> 3         \\
    \> 4 \> 2                   \\
\end{tabbing}
```

LISTING 96: delimiterRegEx2.yaml

```
lookForAlignDelims:
   tabbing:
    delimiterRegEx: '(\\>)'
```

We note that only the \> have been aligned.

Of course, the other lookForAlignDelims options can be used alongside the delimiterRegEx; regardless of the type of delimiter being used (ampersand or anything else), the fields from Listing 42 on page 26 remain the same; for example, using the settings in Listing 98, and running

```
cmh:~$ latexindent.pl tabbing.tex -l=delimiterRegEx3.yaml
```

to receive the output given in Listing 97.

LISTING 97: tabbing.tex using Listing 98

```
\begin{tabbing}
   aa\=bb\=cc\=dd\=ee \\
     \>2 \>1 \>7 \>3  \\
     \>3 \>2 \>8 \>3  \\
     \>4 \>2          \\
\end{tabbing}
```

LISTING 98: delimiterRegEx3.yaml

```
lookForAlignDelims:
   tabbing:
    delimiterRegEx: '(\\(?:=|>))'
    spacesBeforeAmpersand: 0
    spacesAfterAmpersand: 0
```

It is possible that delimiters specified within delimiterRegEx can be of different lengths. Consider the file in Listing 99, and associated YAML in Listing 101. Note that the Listing 101 specifies the option for the delimiter to be either # or \>, *which are different lengths*. Upon running the command

```
cmh:~$ latexindent.pl tabbing1.tex -l=delimiterRegEx4.yaml -o=+-mod4
```

we receive the output in Listing 100.

LISTING 99: tabbing1.tex

```
\begin{tabbing}
    1#22\>333\\
    xxx#aaa#yyyyy\\
    .##&\\
\end{tabbing}
```

LISTING 100: tabbing1-mod4.tex

```
\begin{tabbing}
   1   # 22  \> 333   \\
   xxx # aaa #  yyyyy \\
   .   #     #  &     \\
\end{tabbing}
```

LISTING 101: delimiterRegEx4.yaml

```
lookForAlignDelims:
   tabbing:
    delimiterRegEx: '(#|\\>)'
```

You can set the *delimiter* justification as either `left` (default) or `right`, which will only have effect when delimiters in the same column have different lengths. Using the settings in Listing 103 and running the command

```
cmh:~$ latexindent.pl tabbing1.tex -l=delimiterRegEx5.yaml -o=+-mod5
```

gives the output in Listing 102.

LISTING 102: tabbing1-mod5.tex

```
\begin{tabbing}
   1   # 22  \> 333   \\
   xxx # aaa  # yyyyy \\
   .   #      # &     \\
\end{tabbing}
```

LISTING 103: delimiterRegEx5.yaml

```
lookForAlignDelims:
   tabbing:
    delimiterRegEx: '(#|\\>)'
    delimiterJustification: right
```

Note that in Listing 102 the second set of delimiters have been *right aligned* – it is quite subtle!

5.6 Indent after items, specials and headings

`indentAfterItems`: ⟨*fields*⟩

The environment names specified in `indentAfterItems` tell `latexindent.pl` to look for `\item` commands; if these switches are set to 1 then indentation will be performed so as indent the code after each `item`. A demonstration is given in Listings 105 and 106

LISTING 104: indentAfterItems

```
indentAfterItems:
    itemize: 1
    enumerate: 1
    description: 1
    list: 1
```

LISTING 105: items1.tex

```
\begin{itemize}
\item some text here
some more text here
some more text here
\item another item
some more text here
\end{itemize}
```

LISTING 106: items1.tex default output

```
\begin{itemize}
   \item some text here
         some more text here
         some more text here
   \item another item
         some more text here
\end{itemize}
```

`itemNames`: ⟨*fields*⟩

If you have your own `item` commands (perhaps you prefer to use `myitem`, for example) then you can put populate them in `itemNames`. For example, users of the `exam` document class might like to add `parts` to `indentAfterItems` and `part` to `itemNames` to their user settings (see Section 4 on page 15 for details of how to configure user settings, and Listing 13 on page 16 in particular .)

LISTING 107: itemNames

```
itemNames:
    item: 1
    myitem: 1
```

specialBeginEnd: ⟨*fields*⟩

U: 2017-08-21

The fields specified in `specialBeginEnd` are, in their default state, focused on math mode begin and end statements, but there is no requirement for this to be the case; Listing 108 shows the default settings of `specialBeginEnd`.

LISTING 108: `specialBeginEnd`

```
specialBeginEnd:
    displayMath:
        begin: '\\\['
        end: '\\\]'
        lookForThis: 1
    inlineMath:
        begin: '(?<!\$)(?<!\\)\$(?!\$)'
        end: '(?<!\\)\$(?!\$)'
        lookForThis: 1
    displayMathTeX:
        begin: '\$\$'
        end: '\$\$'
        lookForThis: 1
    specialBeforeCommand: 0
```

The field `displayMath` represents `\[...\]`, `inlineMath` represents `$...$` and `displayMathTex` represents `$$...$$`. You can, of course, rename these in your own YAML files (see Section 4.2 on page 16); indeed, you might like to set up your own special begin and end statements.

A demonstration of the before-and-after results are shown in Listings 109 and 110.

LISTING 109: `special1.tex` before

```
The function $f$ has formula
\[
f(x)=x^2.
\]
If you like splitting dollars,
$
g(x)=f(2x)
$
```

LISTING 110: `special1.tex` default output

```
The function $f$ has formula
\[
   f(x)=x^2.
\]
If you like splitting dollars,
$
   g(x)=f(2x)
$
```

For each field, `lookForThis` is set to `1` by default, which means that `latexindent.pl` will look for this pattern; you can tell `latexindent.pl` not to look for the pattern, by setting `lookForThis` to `0`.

N: 2017-08-21

There are examples in which it is advantageous to search for `specialBeginEnd` fields *before* searching for commands, and the `specialBeforeCommand` switch controls this behaviour. For example, consider the file shown in Listing 111.

LISTING 111: `specialLR.tex`

```
\begin{equation}
\left[
\sqrt{
a+b
}
\right]
\end{equation}
```

Now consider the YAML files shown in Listings 112 and 113

LISTING 112: specialsLeftRight.yaml

```
specialBeginEnd:
    leftRightSquare:
        begin: '\\left\['
        end: '\\right\]'
        lookForThis: 1
```

LISTING 113: specialBeforeCommand.yaml

```
specialBeginEnd:
    specialBeforeCommand: 1
```

Upon running the following commands

```
cmh:~$ latexindent.pl specialLR.tex -l=specialsLeftRight.yaml
cmh:~$ latexindent.pl specialLR.tex -l=specialsLeftRight.yaml,specialBeforeCommand.yaml
```

we receive the respective outputs in Listings 114 and 115.

LISTING 114: specialLR.tex using Listing 112

```
\begin{equation}
   \left[
      \sqrt{
         a+b
      }
      \right]
\end{equation}
```

LISTING 115: specialLR.tex using Listings 112 and 113

```
\begin{equation}
   \left[
      \sqrt{
         a+b
      }
   \right]
\end{equation}
```

Notice that in:

- Listing 114 the `\left` has been treated as a *command*, with one optional argument;
- Listing 115 the `specialBeginEnd` pattern in Listing 112 has been obeyed because Listing 113 specifies that the `specialBeginEnd` should be sought *before* commands.

N: 2018-04-27

You can,optionally, specify the `middle` field for anything that you specify in `specialBeginEnd`. For example, let's consider the `.tex` file in Listing 116.

LISTING 116: special2.tex

```
\If
something 0
\ElsIf
something 1
\ElsIf
something 2
\ElsIf
something 3
\Else
something 4
\EndIf
```

Upon saving the YAML settings in Listings 117 and 119 and running the commands

```
cmh:~$ latexindent.pl special2.tex -l=middle
cmh:~$ latexindent.pl special2.tex -l=middle1
```

then we obtain the output given in Listings 118 and 120.

LISTING 117: middle.yaml

```
specialBeginEnd:
    If:
        begin: '\\If'
        middle: '\\ElsIf'
        end: '\\EndIf'
        lookForThis: 1
```

LISTING 118: special2.tex using Listing 117

```
\If
   something 0
\ElsIf
   something 1
\ElsIf
   something 2
\ElsIf
   something 3
   \Else
   something 4
\EndIf
```

LISTING 119: middle1.yaml

```
specialBeginEnd:
    If:
        begin: '\\If'
        middle:
          - '\\ElsIf'
          - '\\Else'
        end: '\\EndIf'
        lookForThis: 1
```

LISTING 120: special2.tex using Listing 119

```
\If
   something 0
\ElsIf
   something 1
\ElsIf
   something 2
\ElsIf
   something 3
\Else
   something 4
\EndIf
```

We note that:

- in Listing 118 the bodies of each of the `Elsif` statements have been indented appropriately;
- the `Else` statement has *not* been indented appropriately in Listing 118 – read on!
- we have specified multiple settings for the `middle` field using the syntax demonstrated in Listing 119 so that the body of the `Else` statement has been indented appropriately in Listing 120.

N: 2018-08-13

You may specify fields in `specialBeginEnd` to be treated as verbatim code blocks by changing `lookForThis` to be `verbatim`.

For example, beginning with the code in Listing 122 and the YAML in Listing 121, and running

```
cmh:~$ latexindent.pl special3.tex -l=special-verb1
```

then the output in Listing 122 is unchanged.

LISTING 121: special-verb1.yaml

```
specialBeginEnd:
    displayMath:
        lookForThis: verbatim
```

LISTING 122: special3.tex and output using Listing 121

```
\[
  special code
blocks
    can be
  treated
    as verbatim\]
```

We can combine the `specialBeginEnd` with the `lookForAlignDelims` feature. We begin with the code in Listing 123.

LISTING 123: special-align.tex

```
\begin{tikzpicture}
  \path (A) edge node {0,1,L}(B)
  edge node {1,1,R} (C)
  (B) edge [loop above]node {1,1,L}(B)
  edge node {0,1,L}(C)
  (C) edge node {0,1,L}(D)
  edge [bend left]node {1,0,R}(E)
  (D) edge[loop below] node {1,1,R}(D)
  edge node {0,1,R}(A)
  (E) edge[bend left] node {1,0,R} (A);
\end{tikzpicture}
```

Let's assume that our goal is to align the code at the edge and node text; we employ the code given in Listing 124 and run the command

```
cmh:~$ latexindent.pl special-align.tex -l edge-node1.yaml -o=+-mod1
```

to receive the output in Listing 125.

LISTING 124: edge-node1.yaml

```
specialBeginEnd:
    path:
        begin: '\\path'
        end: ';'
        lookForThis: 1
    specialBeforeCommand: 1

lookForAlignDelims:
   path:
      delimiterRegEx: '(edge|node)'
```

LISTING 125: special-align.tex using Listing 124

```
\begin{tikzpicture}
   \path (A) edge               node {0,1,L}(B)
             edge               node {1,1,R} (C)
         (B) edge [loop above]  node {1,1,L}(B)
             edge               node {0,1,L}(C)
         (C) edge               node {0,1,L}(D)
             edge [bend left]   node {1,0,R}(E)
         (D) edge [loop below]  node {1,1,R}(D)
             edge               node {0,1,R}(A)
         (E) edge [bend left]   node {1,0,R} (A);
\end{tikzpicture}
```

The output in Listing 125 is not quite ideal. We can tweak the settings within Listing 124 in order to improve the output; in particular, we employ the code in Listing 126 and run the command

```
cmh:~$ latexindent.pl special-align.tex -l edge-node2.yaml -o=+-mod2
```

to receive the output in Listing 127.

LISTING 126: edge-node2.yaml

```
specialBeginEnd:
    path:
        begin: '\\path'
        end: ';'
    specialBeforeCommand: 1

lookForAlignDelims:
   path:
      delimiterRegEx:
    '(edge|node\h*\{[0-9,A-Z]+\})'
```

LISTING 127: special-align.tex using Listing 126

```
\begin{tikzpicture}
   \path (A) edge               node {0,1,L} (B)
             edge               node {1,1,R} (C)
         (B) edge [loop above]  node {1,1,L} (B)
             edge               node {0,1,L} (C)
         (C) edge               node {0,1,L} (D)
             edge [bend left]   node {1,0,R} (E)
         (D) edge [loop below]  node {1,1,R} (D)
             edge               node {0,1,R} (A)
         (E) edge [bend left]   node {1,0,R} (A);
\end{tikzpicture}
```

U: 2021-06-19

The lookForThis field can be considered optional; by default, it is assumed to be 1, which is demonstrated in Listing 126.

indentAfterHeadings: ⟨*fields*⟩

This field enables the user to specify indentation rules that take effect after heading commands such

as \part, \chapter, \section, \subsection*, or indeed any user-specified command written in this field.[5]

LISTING 128: indentAfterHeadings

```
267 indentAfterHeadings:
268     part:
269        indentAfterThisHeading: 0
270        level: 1
271     chapter:
272        indentAfterThisHeading: 0
273        level: 2
274     section:
275        indentAfterThisHeading: 0
276        level: 3
```

The default settings do *not* place indentation after a heading, but you can easily switch them on by changing indentAfterThisHeading from 0 to 1. The level field tells latexindent.pl the hierarchy of the heading structure in your document. You might, for example, like to have both section and subsection set with level: 3 because you do not want the indentation to go too deep.

You can add any of your own custom heading commands to this field, specifying the level as appropriate. You can also specify your own indentation in indentRules (see Section 5.8 on page 43); you will find the default indentRules contains chapter: " " which tells latexindent.pl simply to use a space character after chapter headings (once indent is set to 1 for chapter).

For example, assuming that you have the code in Listing 129 saved into headings1.yaml, and that you have the text from Listing 130 saved into headings1.tex.

LISTING 129: headings1.yaml

```
indentAfterHeadings:
    subsection:
       indentAfterThisHeading: 1
       level: 1
    paragraph:
       indentAfterThisHeading: 1
       level: 2
```

LISTING 130: headings1.tex

```
\subsection{subsection title}
subsection text
subsection text
\paragraph{paragraph title}
paragraph text
paragraph text
\paragraph{paragraph title}
paragraph text
paragraph text
```

If you run the command

```
cmh:~$ latexindent.pl headings1.tex -l=headings1.yaml
```

then you should receive the output given in Listing 131.

LISTING 131: headings1.tex using Listing 129

```
\subsection{subsection title}
   subsection text
   subsection text
   \paragraph{paragraph title}
      paragraph text
      paragraph text
   \paragraph{paragraph title}
      paragraph text
      paragraph text
```

LISTING 132: headings1.tex second modification

```
\subsection{subsection title}
   subsection text
   subsection text
\paragraph{paragraph title}
   paragraph text
   paragraph text
\paragraph{paragraph title}
   paragraph text
   paragraph text
```

[5] There is a slight difference in interface for this field when comparing Version 2.2 to Version 3.0; see appendix F on page 143 for details.

Now say that you modify the YAML from Listing 129 so that the paragraph level is 1; after running

```
cmh:~$ latexindent.pl headings1.tex -l=headings1.yaml
```

you should receive the code given in Listing 132; notice that the paragraph and subsection are at the same indentation level.

maximumIndentation: ⟨*horizontal space*⟩

N: 2017-08-21

You can control the maximum indentation given to your file by specifying the maximumIndentation field as horizontal space (but *not* including tabs). This feature uses the Text::Tabs module [25], and is *off* by default.

For example, consider the example shown in Listing 133 together with the default output shown in Listing 134.

LISTING 133: mult-nested.tex

```
\begin{one}
one
\begin{two}
    two
\begin{three}
     three
\begin{four}
       four
\end{four}
\end{three}
\end{two}
\end{one}
```

LISTING 134: mult-nested.tex default output

```
\begin{one}
___one
___\begin{two}
______two
______\begin{three}
_________three
_________\begin{four}
____________four
_________\end{four}
______\end{three}
___\end{two}
\end{one}
```

Now say that, for example, you have the max-indentation1.yaml from Listing 135 and that you run the following command:

```
cmh:~$ latexindent.pl mult-nested.tex -l=max-indentation1
```

You should receive the output shown in Listing 136.

LISTING 135: max-indentation1.yaml

```
maximumIndentation: " "
```

LISTING 136: mult-nested.tex using Listing 135

```
\begin{one}
␣one
␣\begin{two}
␣two
␣\begin{three}
␣three
␣\begin{four}
␣four
␣\end{four}
␣\end{three}
␣\end{two}
\end{one}
```

Comparing the output in Listings 134 and 136 we notice that the (default) tabs of indentation have been replaced by a single space.

In general, when using the maximumIndentation feature, any leading tabs will be replaced by equivalent spaces except, of course, those found in verbatimEnvironments (see Listing 18 on page 21) or noIndentBlock (see Listing 24 on page 22).

5.7 The code blocks known latexindent.pl

As of Version 3.0, `latexindent.pl` processes documents using code blocks; each of these are shown in Table 2.

N: 2019-07-13

We will refer to these code blocks in what follows. Note that the fine tuning of the definition of the code blocks detailed in Table 2 is discussed in Section 9 on page 125.

5.8 noAdditionalIndent and indentRules

`latexindent.pl` operates on files by looking for code blocks, as detailed in Section 5.7; for each type of code block in Table 2 on the following page (which we will call a ⟨*thing*⟩ in what follows) it searches YAML fields for information in the following order:

1. `noAdditionalIndent` for the *name* of the current ⟨*thing*⟩;
2. `indentRules` for the *name* of the current ⟨*thing*⟩;
3. `noAdditionalIndentGlobal` for the *type* of the current ⟨*thing*⟩;
4. `indentRulesGlobal` for the *type* of the current ⟨*thing*⟩.

Using the above list, the first piece of information to be found will be used; failing that, the value of `defaultIndent` is used. If information is found in multiple fields, the first one according to the list above will be used; for example, if information is present in both `indentRules` and in `noAdditionalIndentGlobal`, then the information from `indentRules` takes priority.

We now present details for the different type of code blocks known to `latexindent.pl`, as detailed in Table 2 on the next page; for reference, there follows a list of the code blocks covered.

5.8.1 Environments and their arguments

There are a few different YAML switches governing the indentation of environments; let's start with the code shown in Listing 137.

LISTING 137: `myenv.tex`

```
\begin{outer}
\begin{myenv}
  body of environment
body of environment
     body of environment
\end{myenv}
\end{outer}
```

TABLE 2: Code blocks known to `latexindent.pl`

Code block	characters allowed in name	example

environments	`a-zA-Z@\*0-9_\\`	`\begin{myenv}`
		`body of myenv`
		`\end{myenv}`

optionalArguments	*inherits* name from parent (e.g environment name)	`[`
		`opt arg text`
		`]`

mandatoryArguments	*inherits* name from parent (e.g environment name)	`{`
		`mand arg text`
		`}`

commands	`+a-zA-Z@\*0-9_\:`	`\mycommand`⟨*arguments*⟩
keyEqualsValuesBracesBrackets	`a-zA-Z@\*0-9_\/.\h\{\}:\#-`	`my key/.style=`⟨*arguments*⟩
namedGroupingBracesBrackets	`0-9\.a-zA-Z@\*><`	`in`⟨*arguments*⟩
UnNamedGroupingBracesBrackets	*No name!*	`{` or `[` or `,` or `\&` or `)` or `(` or `$` followed by ⟨*arguments*⟩

ifElseFi	`@a-zA-Z` but must begin with either `\if` of `\@if`	`\ifnum...`
		`...`
		`\else`
		`...`
		`\fi`

items	User specified, see Listings 104 and 107 on page 36	`\begin{enumerate}`
		`  \item ...`
		`\end{enumerate}`

specialBeginEnd	User specified, see Listing 108 on page 37	`\[`
		`  ...`
		`\]`

afterHeading	User specified, see Listing 128 on page 41	`\chapter{title}`
		`  ...`
		`\section{title}`

filecontents	User specified, see Listing 34 on page 24	`\begin{filecontents}`
		`...`
		`\end{filecontents}`

`noAdditionalIndent`: ⟨*fields*⟩

If we do not wish `myenv` to receive any additional indentation, we have a few choices available to us, as demonstrated in Listings 138 and 139.

LISTING 138: myenv-noAdd1.yaml

```
noAdditionalIndent:
    myenv: 1
```

LISTING 139: myenv-noAdd2.yaml

```
noAdditionalIndent:
    myenv:
        body: 1
```

On applying either of the following commands,

```
cmh:~$ latexindent.pl myenv.tex -l myenv-noAdd1.yaml
cmh:~$ latexindent.pl myenv.tex -l myenv-noAdd2.yaml
```

we obtain the output given in Listing 140; note in particular that the environment `myenv` has not received any *additional* indentation, but that the `outer` environment *has* still received indentation.

LISTING 140: `myenv.tex` output (using either Listing 138 or Listing 139)

```
\begin{outer}
   \begin{myenv}
   body of environment
   body of environment
   body of environment
   \end{myenv}
\end{outer}
```

Upon changing the YAML files to those shown in Listings 141 and 142, and running either

```
cmh:~$ latexindent.pl myenv.tex -l myenv-noAdd3.yaml
cmh:~$ latexindent.pl myenv.tex -l myenv-noAdd4.yaml
```

we obtain the output given in Listing 143.

LISTING 141: myenv-noAdd3.yaml

```
noAdditionalIndent:
    myenv: 0
```

LISTING 142: myenv-noAdd4.yaml

```
noAdditionalIndent:
    myenv:
        body: 0
```

LISTING 143: `myenv.tex` output (using either Listing 141 or Listing 142)

```
\begin{outer}
   \begin{myenv}
      body of environment
      body of environment
      body of environment
   \end{myenv}
\end{outer}
```

Let's now allow `myenv` to have some optional and mandatory arguments, as in Listing 144.

LISTING 144: myenv-args.tex

```
\begin{outer}
\begin{myenv}[%
  optional argument text
        optional argument text]%
  { mandatory argument text
 mandatory argument text}
  body of environment
body of environment
     body of environment
\end{myenv}
\end{outer}
```

Upon running

```
cmh:~$ latexindent.pl -l=myenv-noAdd1.yaml myenv-args.tex
```

we obtain the output shown in Listing 145; note that the optional argument, mandatory argument and body *all* have received no additional indent. This is because, when `noAdditionalIndent` is specified in 'scalar' form (as in Listing 138), then *all* parts of the environment (body, optional and mandatory arguments) are assumed to want no additional indent.

LISTING 145: myenv-args.tex using Listing 138

```
\begin{outer}
   \begin{myenv}[%
   optional argument text
   optional argument text]%
   { mandatory argument text
   mandatory argument text}
   body of environment
   body of environment
   body of environment
   \end{myenv}
\end{outer}
```

We may customise `noAdditionalIndent` for optional and mandatory arguments of the `myenv` environment, as shown in, for example, Listings 146 and 147.

LISTING 146: myenv-noAdd5.yaml

```
noAdditionalIndent:
    myenv:
        body: 0
        optionalArguments: 1
        mandatoryArguments: 0
```

LISTING 147: myenv-noAdd6.yaml

```
noAdditionalIndent:
    myenv:
        body: 0
        optionalArguments: 0
        mandatoryArguments: 1
```

Upon running

```
cmh:~$ latexindent.pl myenv.tex -l myenv-noAdd5.yaml
cmh:~$ latexindent.pl myenv.tex -l myenv-noAdd6.yaml
```

we obtain the respective outputs given in Listings 148 and 149. Note that in Listing 148 the text for the *optional* argument has not received any additional indentation, and that in Listing 149 the *mandatory* argument has not received any additional indentation; in both cases, the *body* has not received any additional indentation.

LISTING 148: myenv-args.tex using Listing 146

```
\begin{outer}
   \begin{myenv}[%
      optional argument text
      optional argument text]%
      { mandatory argument text
         mandatory argument text}
      body of environment
      body of environment
      body of environment
   \end{myenv}
\end{outer}
```

LISTING 149: myenv-args.tex using Listing 147

```
\begin{outer}
   \begin{myenv}[%
         optional argument text
         optional argument text]%
      { mandatory argument text
      mandatory argument text}
      body of environment
      body of environment
      body of environment
   \end{myenv}
\end{outer}
```

indentRules: ⟨*fields*⟩

We may also specify indentation rules for environment code blocks using the indentRules field; see, for example, Listings 150 and 151.

LISTING 150: myenv-rules1.yaml

```
indentRules:
    myenv: "   "
```

LISTING 151: myenv-rules2.yaml

```
indentRules:
    myenv:
        body: "   "
```

On applying either of the following commands,

```
cmh:~$ latexindent.pl myenv.tex -l myenv-rules1.yaml
cmh:~$ latexindent.pl myenv.tex -l myenv-rules2.yaml
```

we obtain the output given in Listing 152; note in particular that the environment myenv has received one tab (from the outer environment) plus three spaces from Listing 150 or 151.

LISTING 152: myenv.tex output (using either Listing 150 or Listing 151)

```
\begin{outer}
___\begin{myenv}
___␣␣␣body␣of␣environment
___␣␣␣body␣of␣environment
___␣␣␣body␣of␣environment
___\end{myenv}
\end{outer}
```

If you specify a field in indentRules using anything other than horizontal space, it will be ignored.

Returning to the example in Listing 144 that contains optional and mandatory arguments. Upon using Listing 150 as in

```
cmh:~$ latexindent.pl myenv-args.tex -l=myenv-rules1.yaml
```

we obtain the output in Listing 153; note that the body, optional argument and mandatory argument of myenv have *all* received the same customised indentation.

LISTING 153: myenv-args.tex using Listing 150

```
\begin{outer}
    \begin{myenv}[%
        optional argument text
        optional argument text]%
        { mandatory argument text
        mandatory argument text}
        body of environment
        body of environment
        body of environment
    \end{myenv}
\end{outer}
```

You can specify different indentation rules for the different features using, for example, Listings 154 and 155

LISTING 154: myenv-rules3.yaml

```
indentRules:
    myenv:
        body: "    "
        optionalArguments: " "
```

LISTING 155: myenv-rules4.yaml

```
indentRules:
    myenv:
        body: "    "
        mandatoryArguments: "\t\t"
```

After running

```
cmh:~$ latexindent.pl myenv-args.tex -l myenv-rules3.yaml
cmh:~$ latexindent.pl myenv-args.tex -l myenv-rules4.yaml
```

then we obtain the respective outputs given in Listings 156 and 157.

LISTING 156: myenv-args.tex using Listing 154

```
\begin{outer}
    \begin{myenv}[%
        optional argument text
        optional argument text]%
        { mandatory argument text
            mandatory argument text}
        body of environment
        body of environment
        body of environment
    \end{myenv}
\end{outer}
```

LISTING 157: myenv-args.tex using Listing 155

```
\begin{outer}
    \begin{myenv}[%
        optional argument text
        optional argument text]%
        { mandatory argument text
            mandatory argument text}
        body of environment
        body of environment
        body of environment
    \end{myenv}
\end{outer}
```

Note that in Listing 156, the optional argument has only received a single space of indentation, while the mandatory argument has received the default (tab) indentation; the environment body has received three spaces of indentation.

In Listing 157, the optional argument has received the default (tab) indentation, the mandatory argument has received two tabs of indentation, and the body has received three spaces of indentation.

`noAdditionalIndentGlobal`: ⟨*fields*⟩

Assuming that your environment name is not found within neither `noAdditionalIndent` nor `indentRules`, the next place that `latexindent.pl` will look is `noAdditionalIndentGlobal`, and in particular *for the environments* key (see Listing 158).

LISTING 158: noAdditionalIndentGlobal

```
noAdditionalIndentGlobal:
    environments: 0
```

Let's say that you change the value of `environments` to `1` in Listing 158, and that you run

```
cmh:~$ latexindent.pl myenv-args.tex -l env-noAdditionalGlobal.yaml
cmh:~$ latexindent.pl myenv-args.tex -l myenv-rules1.yaml,env-noAdditionalGlobal.yaml
```

The respective output from these two commands are in Listings 159 and 160; in Listing 159 notice that *both* environments receive no additional indentation but that the arguments of `myenv` still *do* receive indentation. In Listing 160 notice that the *outer* environment does not receive additional indentation, but because of the settings from `myenv-rules1.yaml` (in Listing 150 on page 47), the `myenv` environment still *does* receive indentation.

LISTING 159: `myenv-args.tex` using Listing 158

```
\begin{outer}
\begin{myenv}[%
   optional argument text
   optional argument text]%
{ mandatory argument text
   mandatory argument text}
body of environment
body of environment
body of environment
\end{myenv}
\end{outer}
```

LISTING 160: `myenv-args.tex` using Listings 150 and 158

```
\begin{outer}
\begin{myenv}[%
      optional argument text
      optional argument text]%
   { mandatory argument text
      mandatory argument text}
   body of environment
   body of environment
   body of environment
\end{myenv}
\end{outer}
```

In fact, `noAdditionalIndentGlobal` also contains keys that control the indentation of optional and mandatory arguments; on referencing Listings 161 and 162

LISTING 161: `opt-args-no-add-glob.yaml`

```
noAdditionalIndentGlobal:
    optionalArguments: 1
```

LISTING 162: `mand-args-no-add-glob.yaml`

```
noAdditionalIndentGlobal:
    mandatoryArguments: 1
```

we may run the commands

```
cmh:~$ latexindent.pl myenv-args.tex -local opt-args-no-add-glob.yaml
cmh:~$ latexindent.pl myenv-args.tex -local mand-args-no-add-glob.yaml
```

which produces the respective outputs given in Listings 163 and 164. Notice that in Listing 163 the *optional* argument has not received any additional indentation, and in Listing 164 the *mandatory* argument has not received any additional indentation.

LISTING 163: `myenv-args.tex` using Listing 161

```
\begin{outer}
   \begin{myenv}[%
      optional argument text
      optional argument text]%
      { mandatory argument text
         mandatory argument text}
      body of environment
      body of environment
      body of environment
   \end{myenv}
\end{outer}
```

LISTING 164: `myenv-args.tex` using Listing 162

```
\begin{outer}
   \begin{myenv}[%
         optional argument text
         optional argument text]%
      { mandatory argument text
      mandatory argument text}
      body of environment
      body of environment
      body of environment
   \end{myenv}
\end{outer}
```

`indentRulesGlobal`: ⟨*fields*⟩

The final check that `latexindent.pl` will make is to look for `indentRulesGlobal` as detailed in Listing 165.

LISTING 165: `indentRulesGlobal`

```
indentRulesGlobal:
    environments: 0
```

If you change the `environments` field to anything involving horizontal space, say `" "`, and then run the following commands

```
cmh:~$ latexindent.pl myenv-args.tex -l env-indentRules.yaml
cmh:~$ latexindent.pl myenv-args.tex -l myenv-rules1.yaml,env-indentRules.yaml
```

then the respective output is shown in Listings 166 and 167. Note that in Listing 166, both the environment blocks have received a single-space indentation, whereas in Listing 167 the `outer` environment has received single-space indentation (specified by `indentRulesGlobal`), but `myenv` has received `"  "`, as specified by the particular `indentRules` for `myenv` Listing 150 on page 47.

LISTING 166: `myenv-args.tex` using Listing 165

```
\begin{outer}
 \begin{myenv}[%
      optional argument text
      optional argument text]%
   {mandatory argument text
      mandatory argument text}
   body of environment
   body of environment
   body of environment
 \end{myenv}
\end{outer}
```

LISTING 167: `myenv-args.tex` using Listings 150 and 165

```
\begin{outer}
 \begin{myenv}[%
        optional argument text
        optional argument text]%
    {mandatory argument text
        mandatory argument text}
    body of environment
    body of environment
    body of environment
 \end{myenv}
\end{outer}
```

You can specify `indentRulesGlobal` for both optional and mandatory arguments, as detailed in Listings 168 and 169

LISTING 168: `opt-args-indent-rules-glob.yaml`

```
indentRulesGlobal:
    optionalArguments: "\t\t"
```

LISTING 169: `mand-args-indent-rules-glob.yaml`

```
indentRulesGlobal:
    mandatoryArguments: "\t\t"
```

Upon running the following commands

```
cmh:~$ latexindent.pl myenv-args.tex -local opt-args-indent-rules-glob.yaml
cmh:~$ latexindent.pl myenv-args.tex -local mand-args-indent-rules-glob.yaml
```

we obtain the respective outputs in Listings 170 and 171. Note that the *optional* argument in Listing 170 has received two tabs worth of indentation, while the *mandatory* argument has done so in Listing 171.

LISTING 170: myenv-args.tex using Listing 168

```
\begin{outer}
    \begin{myenv}[%
        optional argument text
        optional argument text]%
    { mandatory argument text
        mandatory argument text}
    body of environment
    body of environment
    body of environment
    \end{myenv}
\end{outer}
```

LISTING 171: myenv-args.tex using Listing 169

```
\begin{outer}
    \begin{myenv}[%
        optional argument text
        optional argument text]%
    { mandatory argument text
        mandatory argument text}
    body of environment
    body of environment
    body of environment
    \end{myenv}
\end{outer}
```

5.8.2 Environments with items

With reference to Listings 104 and 107 on page 36, some commands may contain `item` commands; for the purposes of this discussion, we will use the code from Listing 105 on page 36.

Assuming that you've populated `itemNames` with the name of your `item`, you can put the item name into `noAdditionalIndent` as in Listing 172, although a more efficient approach may be to change the relevant field in `itemNames` to `0`. Similarly, you can customise the indentation that your `item` receives using `indentRules`, as in Listing 173

LISTING 172: item-noAdd1.yaml

```
noAdditionalIndent:
    item: 1
# itemNames:
#   item: 0
```

LISTING 173: item-rules1.yaml

```
indentRules:
    item: " "
```

Upon running the following commands

```
cmh:~$ latexindent.pl items1.tex -local item-noAdd1.yaml
cmh:~$ latexindent.pl items1.tex -local item-rules1.yaml
```

the respective outputs are given in Listings 174 and 175; note that in Listing 174 that the text after each `item` has not received any additional indentation, and in Listing 175, the text after each `item` has received a single space of indentation, specified by Listing 173.

LISTING 174: items1.tex using Listing 172

```
\begin{itemize}
  \item some text here
  some more text here
  some more text here
  \item another item
  some more text here
\end{itemize}
```

LISTING 175: items1.tex using Listing 173

```
\begin{itemize}
    \item␣some␣text␣here
    ␣some␣more␣text␣here
    ␣some␣more␣text␣here
    \item␣another␣item
    ␣some␣more␣text␣here
\end{itemize}
```

Alternatively, you might like to populate `noAdditionalIndentGlobal` or `indentRulesGlobal` using the `items` key, as demonstrated in Listings 176 and 177. Note that there is a need to 're-set/remove' the `item` field from `indentRules` in both cases (see the hierarchy description given on page 43) as the `item` command is a member of `indentRules` by default.

LISTING 176: items-noAdditionalGlobal.yaml

```
indentRules:
    item: 0
noAdditionalIndentGlobal:
    items: 1
```

LISTING 177: items-indentRulesGlobal.yaml

```
indentRules:
    item: 0
indentRulesGlobal:
    items: " "
```

Upon running the following commands,

```
cmh:~$ latexindent.pl items1.tex -local items-noAdditionalGlobal.yaml
cmh:~$ latexindent.pl items1.tex -local items-indentRulesGlobal.yaml
```

the respective outputs from Listings 174 and 175 are obtained; note, however, that *all* such `item` commands without their own individual `noAdditionalIndent` or `indentRules` settings would behave as in these listings.

5.8.3 Commands with arguments

Let's begin with the simple example in Listing 178; when `latexindent.pl` operates on this file, the default output is shown in Listing 179. [6]

LISTING 178: `mycommand.tex`

```
\mycommand
{
mand arg text
mand arg text}
[
opt arg text
opt arg text
]
```

LISTING 179: `mycommand.tex` default output

```
\mycommand
{
   mand arg text
   mand arg text}
[
   opt arg text
   opt arg text
]
```

As in the environment-based case (see Listings 138 and 139 on page 45) we may specify `noAdditionalIndent` either in 'scalar' form, or in 'field' form, as shown in Listings 180 and 181

LISTING 180: `mycommand-noAdd1.yaml`

```
noAdditionalIndent:
    mycommand: 1
```

LISTING 181: `mycommand-noAdd2.yaml`

```
noAdditionalIndent:
    mycommand:
        body: 1
```

After running the following commands,

```
cmh:~$ latexindent.pl mycommand.tex -l mycommand-noAdd1.yaml
cmh:~$ latexindent.pl mycommand.tex -l mycommand-noAdd2.yaml
```

we receive the respective output given in Listings 182 and 183

LISTING 182: `mycommand.tex` using Listing 180

```
\mycommand
{
mand arg text
mand arg text}
[
opt arg text
opt arg text
]
```

LISTING 183: `mycommand.tex` using Listing 181

```
\mycommand
{
   mand arg text
   mand arg text}
[
   opt arg text
   opt arg text
]
```

Note that in Listing 182 that the 'body', optional argument *and* mandatory argument have *all* received no additional indentation, while in Listing 183, only the 'body' has not received any additional indentation. We define the 'body' of a command as any lines following the command name that include its optional or mandatory arguments.

We may further customise `noAdditionalIndent` for `mycommand` as we did in Listings 146 and 147 on page 46; explicit examples are given in Listings 184 and 185.

[6] The command code blocks have quite a few subtleties, described in Section 5.9 on page 60.

LISTING 184: mycommand-noAdd3.yaml

```
noAdditionalIndent:
    mycommand:
        body: 0
        optionalArguments: 1
        mandatoryArguments: 0
```

LISTING 185: mycommand-noAdd4.yaml

```
noAdditionalIndent:
    mycommand:
        body: 0
        optionalArguments: 0
        mandatoryArguments: 1
```

After running the following commands,

```
cmh:~$ latexindent.pl mycommand.tex -l mycommand-noAdd3.yaml
cmh:~$ latexindent.pl mycommand.tex -l mycommand-noAdd4.yaml
```

we receive the respective output given in Listings 186 and 187.

LISTING 186: mycommand.tex using Listing 184

```
\mycommand
{
   mand arg text
   mand arg text}
[
opt arg text
opt arg text
]
```

LISTING 187: mycommand.tex using Listing 185

```
\mycommand
{
mand arg text
mand arg text}
[
   opt arg text
   opt arg text
]
```

Attentive readers will note that the body of mycommand in both Listings 186 and 187 has received no additional indent, even though body is explicitly set to 0 in both Listings 184 and 185. This is because, by default, noAdditionalIndentGlobal for commands is set to 1 by default; this can be easily fixed as in Listings 188 and 189.

LISTING 188: mycommand-noAdd5.yaml

```
noAdditionalIndent:
    mycommand:
        body: 0
        optionalArguments: 1
        mandatoryArguments: 0
noAdditionalIndentGlobal:
    commands: 0
```

LISTING 189: mycommand-noAdd6.yaml

```
noAdditionalIndent:
    mycommand:
        body: 0
        optionalArguments: 0
        mandatoryArguments: 1
noAdditionalIndentGlobal:
    commands: 0
```

After running the following commands,

```
cmh:~$ latexindent.pl mycommand.tex -l mycommand-noAdd5.yaml
cmh:~$ latexindent.pl mycommand.tex -l mycommand-noAdd6.yaml
```

we receive the respective output given in Listings 190 and 191.

LISTING 190: mycommand.tex using Listing 188

```
\mycommand
   {
      mand arg text
      mand arg text}
   [
   opt arg text
   opt arg text
   ]
```

LISTING 191: mycommand.tex using Listing 189

```
\mycommand
   {
   mand arg text
   mand arg text}
   [
      opt arg text
      opt arg text
   ]
```

Both `indentRules` and `indentRulesGlobal` can be adjusted as they were for *environment* code blocks, as in Listings 154 and 155 on page 48 and Listings 165, 168 and 169 on page 50.

5.8.4 ifelsefi code blocks

Let's use the simple example shown in Listing 192; when `latexindent.pl` operates on this file, the output as in Listing 193; note that the body of each of the `\if` statements have been indented, and that the `\else` statement has been accounted for correctly.

LISTING 192: `ifelsefi1.tex`

```
\ifodd\radius
\ifnum\radius<14
\pgfmathparse{100-(\radius)*4};
\else
\pgfmathparse{200-(\radius)*3};
\fi\fi
```

LISTING 193: `ifelsefi1.tex` default output

```
\ifodd\radius
   \ifnum\radius<14
      \pgfmathparse{100-(\radius)*4};
   \else
      \pgfmathparse{200-(\radius)*3};
   \fi\fi
```

It is recommended to specify `noAdditionalIndent` and `indentRules` in the 'scalar' form only for these type of code blocks, although the 'field' form would work, assuming that `body` was specified. Examples are shown in Listings 194 and 195.

LISTING 194: `ifnum-noAdd.yaml`

```
noAdditionalIndent:
    ifnum: 1
```

LISTING 195: `ifnum-indent-rules.yaml`

```
indentRules:
    ifnum: "  "
```

After running the following commands,

```
cmh:~$ latexindent.pl ifelsefi1.tex -local ifnum-noAdd.yaml
cmh:~$ latexindent.pl ifelsefi1.tex -l ifnum-indent-rules.yaml
```

we receive the respective output given in Listings 196 and 197; note that in Listing 196, the `ifnum` code block has *not* received any additional indentation, while in Listing 197, the `ifnum` code block has received one tab and two spaces of indentation.

LISTING 196: `ifelsefi1.tex` using Listing 194

```
\ifodd\radius
   \ifnum\radius<14
   \pgfmathparse{100-(\radius)*4};
   \else
   \pgfmathparse{200-(\radius)*3};
   \fi\fi
```

LISTING 197: `ifelsefi1.tex` using Listing 195

```
\ifodd\radius
␣␣␣\ifnum\radius<14
␣␣␣␣␣␣\pgfmathparse{100-(\radius)*4};
␣␣␣\else
␣␣␣␣␣␣\pgfmathparse{200-(\radius)*3};
␣␣␣\fi\fi
```

We may specify `noAdditionalIndentGlobal` and `indentRulesGlobal` as in Listings 198 and 199.

LISTING 198: `ifelsefi-noAdd-glob.yaml`

```
noAdditionalIndentGlobal:
    ifElseFi: 1
```

LISTING 199: `ifelsefi-indent-rules-global.yaml`

```
indentRulesGlobal:
    ifElseFi: " "
```

Upon running the following commands

```
cmh:~$ latexindent.pl ifelsefi1.tex -local ifelsefi-noAdd-glob.yaml
cmh:~$ latexindent.pl ifelsefi1.tex -l ifelsefi-indent-rules-global.yaml
```

we receive the outputs in Listings 200 and 201; notice that in Listing 200 neither of the `ifelsefi` code blocks have received indentation, while in Listing 201 both code blocks have received a single space of indentation.

LISTING 200: ifelsefi1.tex using Listing 198

```
\ifodd\radius
\ifnum\radius<14
\pgfmathparse{100-(\radius)*4};
\else
\pgfmathparse{200-(\radius)*3};
\fi\fi
```

LISTING 201: ifelsefi1.tex using Listing 199

```
\ifodd\radius
␣\ifnum\radius<14
␣␣\pgfmathparse{100-(\radius)*4};
␣\else
␣␣\pgfmathparse{200-(\radius)*3};
␣\fi\fi
```

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We can further explore the treatment of `ifElseFi` code blocks in Listing 202, and the associated default output given in Listing 203; note, in particular, that the bodies of each of the 'or statements' have been indented.

LISTING 202: ifelsefi2.tex

```
\ifcase#1
zero%
\or
one%
\or
two%
\or
three%
\else
default
\fi
```

LISTING 203: ifelsefi2.tex default output

```
\ifcase#1
   zero%
\or
   one%
\or
   two%
\or
   three%
\else
   default
\fi
```

5.8.5 specialBeginEnd code blocks

Let's use the example from Listing 109 on page 37 which has default output shown in Listing 110 on page 37.

It is recommended to specify `noAdditionalIndent` and `indentRules` in the 'scalar' form for these type of code blocks, although the 'field' form would work, assuming that `body` was specified. Examples are shown in Listings 204 and 205.

LISTING 204: displayMath-noAdd.yaml

```
noAdditionalIndent:
    displayMath: 1
```

LISTING 205: displayMath-indent-rules.yaml

```
indentRules:
    displayMath: "\t\t\t"
```

After running the following commands,

```
cmh:~$ latexindent.pl special1.tex -local displayMath-noAdd.yaml
cmh:~$ latexindent.pl special1.tex -l displayMath-indent-rules.yaml
```

we receive the respective output given in Listings 206 and 207; note that in Listing 206, the `displayMath` code block has *not* received any additional indentation, while in Listing 207, the `displayMath` code block has received three tabs worth of indentation.

LISTING 206: special1.tex using Listing 204

```
The function $f$ has formula
\[
f(x)=x^2.
\]
If you like splitting dollars,
$
   g(x)=f(2x)
$
```

LISTING 207: special1.tex using Listing 205

```
The function $f$ has formula
\[
\t\t\tf(x)=x^2.
\]
If you like splitting dollars,
$
\t\tg(x)=f(2x)
$
```

We may specify `noAdditionalIndentGlobal` and `indentRulesGlobal` as in Listings 208 and 209.

LISTING 208: special-noAdd-glob.yaml

```
noAdditionalIndentGlobal:
    specialBeginEnd: 1
```

LISTING 209: special-indent-rules-global.yaml

```
indentRulesGlobal:
    specialBeginEnd: " "
```

Upon running the following commands

```
cmh:~$ latexindent.pl special1.tex -local special-noAdd-glob.yaml
cmh:~$ latexindent.pl special1.tex -l special-indent-rules-global.yaml
```

we receive the outputs in Listings 210 and 211; notice that in Listing 210 neither of the `special` code blocks have received indentation, while in Listing 211 both code blocks have received a single space of indentation.

LISTING 210: special1.tex using Listing 208

```
The function $f$ has formula
\[
f(x)=x^2.
\]
If you like splitting dollars,
$
g(x)=f(2x)
$
```

LISTING 211: special1.tex using Listing 209

```
The␣function␣$f$␣has␣formula
\[
␣f(x)=x^2.
\]
If␣you␣like␣splitting␣dollars,
$
␣g(x)=f(2x)
$
```

5.8.6 afterHeading code blocks

Let's use the example Listing 212 for demonstration throughout this Section. As discussed on page 41, by default `latexindent.pl` will not add indentation after headings.

LISTING 212: headings2.tex

```
\paragraph{paragraph
title}
paragraph text
paragraph text
```

On using the YAML file in Listing 214 by running the command

```
cmh:~$ latexindent.pl headings2.tex -l headings3.yaml
```

we obtain the output in Listing 213. Note that the argument of `paragraph` has received (default) indentation, and that the body after the heading statement has received (default) indentation.

LISTING 213: headings2.tex using Listing 214

```
\paragraph{paragraph
      title}
   paragraph text
   paragraph text
```

LISTING 214: headings3.yaml

```
indentAfterHeadings:
    paragraph:
       indentAfterThisHeading: 1
       level: 1
```

If we specify `noAdditionalIndent` as in Listing 216 and run the command

```
cmh:~$ latexindent.pl headings2.tex -l headings4.yaml
```

then we receive the output in Listing 215. Note that the arguments *and* the body after the heading of `paragraph` has received no additional indentation, because we have specified `noAdditionalIndent`

in scalar form.

LISTING 215: headings2.tex using Listing 216

```
\paragraph{paragraph
title}
paragraph text
paragraph text
```

LISTING 216: headings4.yaml

```
indentAfterHeadings:
    paragraph:
       indentAfterThisHeading: 1
       level: 1
noAdditionalIndent:
    paragraph: 1
```

Similarly, if we specify `indentRules` as in Listing 218 and run analogous commands to those above, we receive the output in Listing 217; note that the *body*, *mandatory argument* and content *after the heading* of `paragraph` have *all* received three tabs worth of indentation.

LISTING 217: headings2.tex using Listing 218

```
\paragraph{paragraph
_____title}
___paragraph text
___paragraph text
```

LISTING 218: headings5.yaml

```
indentAfterHeadings:
    paragraph:
       indentAfterThisHeading: 1
       level: 1
indentRules:
    paragraph: "\t\t\t"
```

We may, instead, specify `noAdditionalIndent` in 'field' form, as in Listing 220 which gives the output in Listing 219.

LISTING 219: headings2.tex using Listing 220

```
\paragraph{paragraph
   title}
paragraph text
paragraph text
```

LISTING 220: headings6.yaml

```
indentAfterHeadings:
    paragraph:
       indentAfterThisHeading: 1
       level: 1
noAdditionalIndent:
    paragraph:
        body: 0
        mandatoryArguments: 0
        afterHeading: 1
```

Analogously, we may specify `indentRules` as in Listing 222 which gives the output in Listing 221; note that mandatory argument text has only received a single space of indentation, while the body after the heading has received three tabs worth of indentation.

LISTING 221: headings2.tex using Listing 222

```
\paragraph{paragraph
___ title}
___paragraph text
___paragraph text
```

LISTING 222: headings7.yaml

```
indentAfterHeadings:
    paragraph:
       indentAfterThisHeading: 1
       level: 1
indentRules:
    paragraph:
        mandatoryArguments: " "
        afterHeading: "\t\t\t"
```

Finally, let's consider `noAdditionalIndentGlobal` and `indentRulesGlobal` shown in Listings 224 and 226 respectively, with respective output in Listings 223 and 225. Note that in Listing 224 the *mandatory argument* of `paragraph` has received a (default) tab's worth of indentation, while the body after the heading has received *no additional indentation*. Similarly, in Listing 225, the *argument* has received both a (default) tab plus two spaces of indentation (from the global rule specified in Listing 226), and the remaining body after `paragraph` has received just two spaces of indentation.

LISTING 223: headings2.tex using Listing 224

```
\paragraph{paragraph
   title}
paragraph text
paragraph text
```

LISTING 224: headings8.yaml

```
indentAfterHeadings:
    paragraph:
       indentAfterThisHeading: 1
       level: 1
noAdditionalIndentGlobal:
    afterHeading: 1
```

LISTING 225: headings2.tex using Listing 226

```
\paragraph{paragraph
␣␣␣␣␣␣title}
␣␣paragraph␣text
␣␣paragraph␣text
```

LISTING 226: headings9.yaml

```
indentAfterHeadings:
    paragraph:
       indentAfterThisHeading: 1
       level: 1
indentRulesGlobal:
    afterHeading: "  "
```

5.8.7 The remaining code blocks

Referencing the different types of code blocks in Table 2 on page 44, we have a few code blocks yet to cover; these are very similar to the `commands` code block type covered comprehensively in Section 5.8.3 on page 52, but a small discussion defining these remaining code blocks is necessary.

5.8.7.1 keyEqualsValuesBracesBrackets

`latexindent.pl` defines this type of code block by the following criteria:

- it must immediately follow either `{` OR `[` OR `,` with comments and blank lines allowed.
- then it has a name made up of the characters detailed in Table 2 on page 44;
- then an = symbol;
- then at least one set of curly braces or square brackets (comments and line breaks allowed throughout).

N: 2019-07-13

See the `keyEqualsValuesBracesBrackets: follow` and `keyEqualsValuesBracesBrackets: name` fields of the fine tuning section in Listing 517 on page 125

An example is shown in Listing 227, with the default output given in Listing 228.

LISTING 227: pgfkeys1.tex

```
\pgfkeys{/tikz/.cd,
start coordinate/.initial={0,
\vertfactor},
}
```

LISTING 228: pgfkeys1.tex default output

```
\pgfkeys{/tikz/.cd,
␣␣␣start coordinate/.initial={0,
␣␣␣␣␣␣␣␣␣\vertfactor},
}
```

In Listing 228, note that the maximum indentation is three tabs, and these come from:

- the `\pgfkeys` command's mandatory argument;
- the `start coordinate/.initial` key's mandatory argument;
- the `start coordinate/.initial` key's body, which is defined as any lines following the name of the key that include its arguments. This is the part controlled by the *body* field for `noAdditionalIndent` and friends from page 43.

5.8.7.2 namedGroupingBracesBrackets

This type of code block is mostly motivated by tikz-based code; we define this code block as follows:

- it must immediately follow either *horizontal space* OR *one or more line breaks* OR `{` OR `[` OR `$` OR `)` OR `(`
- the name may contain the characters detailed in Table 2 on page 44;

- then at least one set of curly braces or square brackets (comments and line breaks allowed throughout).

N: 2019-07-13

See the `NamedGroupingBracesBrackets: follow` and `NamedGroupingBracesBrackets: name` fields of the fine tuning section in Listing 517 on page 125

A simple example is given in Listing 229, with default output in Listing 230.

LISTING 229: `child1.tex`

```
\coordinate
child[grow=down]{
edge from parent [antiparticle]
node [above=3pt] {$C$}
}
```

LISTING 230: `child1.tex` default output

```
\coordinate
child[grow=down]{
    edge from parent [antiparticle]
    node [above=3pt] {$C$}
}
```

In particular, `latexindent.pl` considers `child`, `parent` and `node` all to be `namedGroupingBracesBrackets`[7]. Referencing Listing 230, note that the maximum indentation is two tabs, and these come from:

- the `child`'s mandatory argument;
- the `child`'s body, which is defined as any lines following the name of the `namedGroupingBracesBrackets` that include its arguments. This is the part controlled by the *body* field for `noAdditionalIndent` and friends from page 43.

5.8.7.3 UnNamedGroupingBracesBrackets

occur in a variety of situations; specifically, we define this type of code block as satisfying the following criteria:

- it must immediately follow either `{` OR `[` OR `,` OR `&` OR `)` OR `(` OR `$`;
- then at least one set of curly braces or square brackets (comments and line breaks allowed throughout).

N: 2019-07-13

See the `UnNamedGroupingBracesBrackets: follow` field of the fine tuning section in Listing 517 on page 125

An example is shown in Listing 231 with default output give in Listing 232.

LISTING 231: `psforeach1.tex`

```
\psforeach{\row}{%
{
{3,2.8,2.7,3,3.1}},%
{2.8,1,1.2,2,3},%
}
```

LISTING 232: `psforeach1.tex` default output

```
\psforeach{\row}{%
    {
        {3,2.8,2.7,3,3.1}},%
    {2.8,1,1.2,2,3},%
}
```

Referencing Listing 232, there are *three* sets of unnamed braces. Note also that the maximum value of indentation is three tabs, and these come from:

- the `\psforeach` command's mandatory argument;
- the *first* un-named braces mandatory argument;
- the *first* un-named braces *body*, which we define as any lines following the first opening `{` or `[` that defined the code block. This is the part controlled by the *body* field for `noAdditionalIndent` and friends from page 43.

Users wishing to customise the mandatory and/or optional arguments on a *per-name* basis for the `UnNamedGroupingBracesBrackets` should use `always-un-named`.

5.8.7.4 filecontents

code blocks behave just as `environments`, except that neither arguments nor items are sought.

[7] You may like to verify this by using the `-tt` option and checking `indent.log`!

5.8.8 Summary

Having considered all of the different types of code blocks, the functions of the fields given in Listings 233 and 234 should now make sense.

LISTING 233: noAdditionalIndentGlobal

```
noAdditionalIndentGlobal:
    environments: 0
    commands: 1
    optionalArguments: 0
    mandatoryArguments: 0
    ifElseFi: 0
    items: 0
    keyEqualsValuesBracesBrackets: 0
    namedGroupingBracesBrackets: 0
    UnNamedGroupingBracesBrackets: 0
    specialBeginEnd: 0
    afterHeading: 0
    filecontents: 0
```

LISTING 234: indentRulesGlobal

```
indentRulesGlobal:
    environments: 0
    commands: 0
    optionalArguments: 0
    mandatoryArguments: 0
    ifElseFi: 0
    items: 0
    keyEqualsValuesBracesBrackets: 0
    namedGroupingBracesBrackets: 0
    UnNamedGroupingBracesBrackets: 0
    specialBeginEnd: 0
    afterHeading: 0
    filecontents: 0
```

5.9 Commands and the strings between their arguments

The command code blocks will always look for optional (square bracketed) and mandatory (curly braced) arguments which can contain comments, line breaks and 'beamer' commands <.*?> between them. There are switches that can allow them to contain other strings, which we discuss next.

commandCodeBlocks: ⟨*fields*⟩

U: 2018-04-27

The commandCodeBlocks field contains a few switches detailed in Listing 235.

LISTING 235: commandCodeBlocks

```
commandCodeBlocks:
    roundParenthesesAllowed: 1
    stringsAllowedBetweenArguments:
      -
        amalgamate: 1
      - 'node'
      - 'at'
      - 'to'
      - 'decoration'
      - '\+\+'
      - '\-\-'
      - '\#\#\d'
    commandNameSpecial:
      -
        amalgamate: 1
      - '@ifnextchar\['
```

roundParenthesesAllowed: **0|1**

The need for this field was mostly motivated by commands found in code used to generate images in PSTricks and tikz; for example, let's consider the code given in Listing 236.

LISTING 236: pstricks1.tex

```
\defFunction[algebraic]{torus}(u,v)
{(2+cos(u))*cos(v+\Pi)}
{(2+cos(u))*sin(v+\Pi)}
{sin(u)}
```

LISTING 237: pstricks1 default output

```
\defFunction[algebraic]{torus}(u,v)
{(2+cos(u))*cos(v+\Pi)}
{(2+cos(u))*sin(v+\Pi)}
{sin(u)}
```

Notice that the `\defFunction` command has an optional argument, followed by a mandatory argument, followed by a round-parenthesis argument, (u, v).

By default, because `roundParenthesesAllowed` is set to 1 in Listing 235, then `latexindent.pl` will allow round parenthesis between optional and mandatory arguments. In the case of the code in Listing 236, `latexindent.pl` finds *all* the arguments of `defFunction`, both before and after `(u,v)`.

The default output from running `latexindent.pl` on Listing 236 actually leaves it unchanged (see Listing 237); note in particular, this is because of `noAdditionalIndentGlobal` as discussed on page 53.

Upon using the YAML settings in Listing 239, and running the command

```
cmh:~$ latexindent.pl pstricks1.tex -l noRoundParentheses.yaml
```

we obtain the output given in Listing 238.

LISTING 238: pstricks1.tex using Listing 239

```
\defFunction[algebraic]{torus}(u,v)
{(2+cos(u))*cos(v+\Pi)}
   {(2+cos(u))*sin(v+\Pi)}
   {sin(u)}
```

LISTING 239: noRoundParentheses.yaml

```
commandCodeBlocks:
    roundParenthesesAllowed: 0
```

Notice the difference between Listing 237 and Listing 238; in particular, in Listing 238, because round parentheses are *not* allowed, `latexindent.pl` finds that the `\defFunction` command finishes at the first opening round parenthesis. As such, the remaining braced, mandatory, arguments are found to be `UnNamedGroupingBracesBrackets` (see Table 2 on page 44) which, by default, assume indentation for their body, and hence the tabbed indentation in Listing 238.

Let's explore this using the YAML given in Listing 241 and run the command

```
cmh:~$ latexindent.pl pstricks1.tex -l defFunction.yaml
```

then the output is as in Listing 240.

LISTING 240: pstricks1.tex using Listing 241

```
\defFunction[algebraic]{torus}(u,v)
␣{(2+cos(u))*cos(v+\Pi)}
␣{(2+cos(u))*sin(v+\Pi)}
␣{sin(u)}
```

LISTING 241: defFunction.yaml

```
indentRules:
    defFunction:
        body: " "
```

Notice in Listing 240 that the *body* of the `defFunction` command i.e, the subsequent lines containing arguments after the command name, have received the single space of indentation specified by Listing 241.

`stringsAllowedBetweenArguments`: ⟨*fields*⟩

`tikz` users may well specify code such as that given in Listing 242; processing this code using `latexindent.pl` gives the default output in Listing 243.

LISTING 242: tikz-node1.tex

```
\draw[thin]
(c) to[in=110,out=-90]
++(0,-0.5cm)
node[below,align=left,scale=0.5]
```

LISTING 243: tikz-node1 default output

```
\draw[thin]
(c) to[in=110,out=-90]
++(0,-0.5cm)
node[below,align=left,scale=0.5]
```

With reference to Listing 235 on the previous page, we see that the strings

to, node, ++

are all allowed to appear between arguments; importantly, you are encouraged to add further names to this field as necessary. This means that when `latexindent.pl` processes Listing 242, it consumes:

- the optional argument `[thin]`
- the round-bracketed argument `(c)` because `roundParenthesesAllowed` is 1 by default
- the string `to` (specified in `stringsAllowedBetweenArguments`)
- the optional argument `[in=110,out=-90]`
- the string `++` (specified in `stringsAllowedBetweenArguments`)
- the round-bracketed argument `(0,-0.5cm)` because `roundParenthesesAllowed` is 1 by default
- the string `node` (specified in `stringsAllowedBetweenArguments`)
- the optional argument `[below,align=left,scale=0.5]`

We can explore this further, for example using Listing 245 and running the command

```
cmh:~$ latexindent.pl tikz-node1.tex -l draw.yaml
```

we receive the output given in Listing 244.

LISTING 244: `tikz-node1.tex` using Listing 245

```
\draw[thin]
␣␣(c)␣to[in=110,out=-90]
␣␣++(0,-0.5cm)
␣␣node[below,align=left,scale=0.5]
```

LISTING 245: `draw.yaml`

```
indentRules:
    draw:
        body: "  "
```

Notice that each line after the `\draw` command (its 'body') in Listing 244 has been given the appropriate two-spaces worth of indentation specified in Listing 245.

Let's compare this with the output from using the YAML settings in Listing 247, and running the command

```
cmh:~$ latexindent.pl tikz-node1.tex -l no-strings.yaml
```

given in Listing 246.

LISTING 246: `tikz-node1.tex` using Listing 247

```
\draw[thin]
(c) to[in=110,out=-90]
++(0,-0.5cm)
node[below,align=left,scale=0.5]
```

LISTING 247: `no-strings.yaml`

```
commandCodeBlocks:

    stringsAllowedBetweenArguments:
    0
```

In this case, `latexindent.pl` sees that:

- the `\draw` command finishes after the `(c)`, as `stringsAllowedBetweenArguments` has been set to 0 so there are no strings allowed between arguments;
- it finds a `namedGroupingBracesBrackets` called `to` (see Table 2 on page 44) *with* argument `[in=110,out=-90]`
- it finds another `namedGroupingBracesBrackets` but this time called `node` with argument `[below,align=left,scale=0.5]`

U: 2018-04-27

Referencing Listing 235 on page 60,, we see that the first field in the `stringsAllowedBetweenArguments` is `amalgamate` and is set to `1` by default. This is for users who wish to specify their settings in multiple YAML files. For example, by using the settings in either Listing 248 orListing 249 is equivalent to using the settings in Listing 250.

LISTING 248: `amalgamate-demo.yaml`

```
commandCodeBlocks:

    stringsAllowedBetweenArguments:
      - 'more'
      - 'strings'
      - 'here'
```

LISTING 249: `amalgamate-demo1.yaml`

```
commandCodeBlocks:

    stringsAllowedBetweenArguments:
      -
        amalgamate: 1
      - 'more'
      - 'strings'
      - 'here'
```

LISTING 250: `amalgamate-demo2.yaml`

```
commandCodeBlocks:

    stringsAllowedBetweenArguments:
      -
        amalgamate: 1
      - 'node'
      - 'at'
      - 'to'
      - 'decoration'
      - '\+\+'
      - '\-\-'
      - 'more'
      - 'strings'
      - 'here'
```

We specify `amalgamate` to be set to `0` and in which case any settings loaded prior to those specified, including the default, will be overwritten. For example, using the settings in Listing 251 means that only the strings specified in that field will be used.

LISTING 251: `amalgamate-demo3.yaml`

```
commandCodeBlocks:
    stringsAllowedBetweenArguments:
      -
        amalgamate: 0
      - 'further'
      - 'settings'
```

It is important to note that the `amalgamate` field, if used, must be in the first field, and specified using the syntax given in Listings 249 to 251.

We may explore this feature further with the code in Listing 252, whose default output is given in Listing 253.

LISTING 252: `for-each.tex`

```
\foreach \x/\y in {0/1,1/2}{
body of foreach
}
```

LISTING 253: `for-each` default output

```
\foreach \x/\y in {0/1,1/2}{
      body of foreach
   }
```

Let's compare this with the output from using the YAML settings in Listing 255, and running the command

```
cmh:~$ latexindent.pl for-each.tex -l foreach.yaml
```

given in Listing 254.

LISTING 254: `for-each.tex` using Listing 255

```
\foreach \x/\y in {0/1,1/2}{
   body of foreach
}
```

LISTING 255: `foreach.yaml`

```
commandCodeBlocks:
    stringsAllowedBetweenArguments:
      -
        amalgamate: 0
      - '\\x\/\\y'
      - 'in'
```

You might like to compare the output given in Listing 253 and Listing 254. Note,in particular, in

Listing 253 that the `foreach` command has not included any of the subsequent strings, and that the braces have been treated as a `namedGroupingBracesBrackets`. In Listing 254 the `foreach` command has been allowed to have `\x/\y` and `in` between arguments because of the settings given in Listing 255.

`commandNameSpecial`: ⟨*fields*⟩

U: 2018-04-27

There are some special command names that do not fit within the names recognised by `latexindent.pl`, the first one of which is `\@ifnextchar[`. From the perspective of `latexindent.pl`, the whole of the text `\@ifnextchar[` is a command, because it is immediately followed by sets of mandatory arguments. However, without the `commandNameSpecial` field, `latexindent.pl` would not be able to label it as such, because the `[` is, necessarily, not matched by a closing `]`.

For example, consider the sample file in Listing 256, which has default output in Listing 257.

LISTING 256: `ifnextchar.tex`

```
\parbox{
\@ifnextchar[{arg 1}{arg 2}
}
```

LISTING 257: `ifnextchar.tex` default output

```
\parbox{
   \@ifnextchar[{arg 1}{arg 2}
}
```

Notice that in Listing 257 the `parbox` command has been able to indent its body, because `latexindent.pl` has successfully found the command `\@ifnextchar` first; the pattern-matching of `latexindent.pl` starts from *the inner most <thing> and works outwards*, discussed in more detail on page 108.

For demonstration, we can compare this output with that given in Listing 258 in which the settings from Listing 259 have dictated that no special command names, including the `\@ifnextchar[` command, should not be searched for specially; as such, the `parbox` command has been *unable* to indent its body successfully, because the `\@ifnextchar[` command has not been found.

LISTING 258: `ifnextchar.tex` using Listing 259

```
\parbox{
\@ifnextchar[{arg 1}{arg 2}
}
```

LISTING 259: `no-ifnextchar.yaml`

```
commandCodeBlocks:
    commandNameSpecial: 0
```

The `amalgamate` field can be used for `commandNameSpecial`, just as for `stringsAllowedBetweenArguments`. The same condition holds as stated previously, which we state again here:

Warning!

It is important to note that the `amalgamate` field, if used, in either `commandNameSpecial` or `stringsAllowedBetweenArguments` must be in the first field, and specified using the syntax given in Listings 249 to 251.

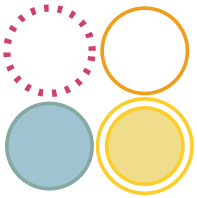
SECTION 6

The -m (modifylinebreaks) switch

All features described in this section will only be relevant if the `-m` switch is used.

`modifylinebreaks`: ⟨*fields*⟩

As of Version 3.0, `latexindent.pl` has the `-m` switch, which permits `latexindent.pl` to modify line breaks, according to the specifications in the `modifyLineBreaks` field. *The settings in this field will only be considered if the -m switch has been used.* A snippet of the default settings of this field is shown in Listing 260.



LISTING 260: `modifyLineBreaks` `-m`

```
modifyLineBreaks:
    preserveBlankLines: 1
    condenseMultipleBlankLinesInto: 1
```

Having read the previous paragraph, it should sound reasonable that, if you call `latexindent.pl` using the `-m` switch, then you give it permission to modify line breaks in your file, but let's be clear:

Warning!

If you call `latexindent.pl` with the `-m` switch, then you are giving it permission to modify line breaks. By default, the only thing that will happen is that multiple blank lines will be condensed into one blank line; many other settings are possible, discussed next.

`preserveBlankLines`: **0|1**

This field is directly related to *poly-switches*, discussed in Section 6.6. By default, it is set to `1`, which means that blank lines will be *protected* from removal; however, regardless of this setting, multiple blank lines can be condensed if `condenseMultipleBlankLinesInto` is greater than `0`, discussed next.

`condenseMultipleBlankLinesInto`: ⟨*positive integer*⟩

Assuming that this switch takes an integer value greater than `0`, `latexindent.pl` will condense multiple blank lines into the number of blank lines illustrated by this switch. As an example, Listing 261 shows a sample file with blank lines; upon running

```
cmh:~$ latexindent.pl myfile.tex -m -o=+-mod1
```

the output is shown in Listing 262; note that the multiple blank lines have been condensed into one blank line, and note also that we have used the `-m` switch!

LISTING 261: `mlb1.tex`

```
before blank line



after blank line


after blank line
```

LISTING 262: `mlb1-mod1.tex`

```
before blank line

after blank line
after blank line
```

6.1 Text Wrapping

There are *many* different configuration options for the text wrapping routine of `latexindent.pl`, perhaps *too* many. The following sections are comprehensive, but quite long; in an attempt to to be

brief, you might begin with the settings given in Section 6.1.1.

6.1.1 Text wrap quick start

Of all the available text wrapping options, I consider Listing 263 to be among the most helpful starting points.

LISTING 263: textwrap-qs.yaml -m

```
modifyLineBreaks:
    textWrapOptions:
        columns: 80                     # number of columns
        perCodeBlockBasis: 1            # per-code-block wrap
        beforeFindingChildCodeBlocks: 1 # wrap *before* finding child code blocks
        mainDocument: 1                # apply to main document
        afterHeading: 1                  #   after headings
        items: 1                         #   within items
    removeParagraphLineBreaks:          # remove line breaks within paragraphs
        mainDocument: 1
        afterHeading: 1
        items: 1
        beforeTextWrap: 1               # before wrapping text
```

You can read about `perCodeBlockBasis` in Section 6.1.3 and `removeParagraphLineBreaks` in Section 6.2.

If the settings in Listing 263 do not give your desired output, take a look at the demonstration in Section 6.3.1, in particular Listing 330.

6.1.2 textWrapOptions: modifying line breaks by text wrapping

N: 2017-05-27

When the `-m` switch is active `latexindent.pl` has the ability to wrap text using the options specified in the `textWrapOptions` field, see Listing 264.

LISTING 264: textWrapOptions -m

```
513     textWrapOptions:
514         columns: 0
```

The value of `columns` specifies the column at which the text should be wrapped.

By default, the value of `columns` is `0`, so `latexindent.pl` will *not* wrap text; if you change it to a value of 2 or more, then text will be wrapped after the character in the specified column.

By default, the text wrapping routine will operate *before* the code blocks have been searched for; text wrapping on a *per-code-block* basis is discussed in Section 6.1.3.

We consider the file give in Listing 265 for demonstration.

LISTING 265: textwrap1.tex

```
Here is a line of text that will be wrapped by latexindent.pl. Each line is quite long.

Here is a line of text that will be wrapped by latexindent.pl. Each line is quite long.
```

Using the file `textwrap1.yaml` in Listing 267, and running the command

```
cmh:~$ latexindent.pl -m textwrap1.tex -o textwrap1-mod1.tex -l textwrap1.yaml
```

we obtain the output in Listing 266.

LISTING 266: textwrap1-mod1.tex

```
Here is a line of
text that will be
wrapped by
latexindent.pl.
Each line is quite
long.

Here is a line of
text that will be
wrapped by
latexindent.pl.
Each line is quite
long.
```

LISTING 267: textwrap1.yaml -m

```
modifyLineBreaks:
    textWrapOptions:
        columns: 20
```

The text wrapping routine is performed *after* verbatim environments have been stored, so verbatim environments and verbatim commands are exempt from the routine. For example, using the file in Listing 268,

LISTING 268: textwrap2.tex

```
Here is a line of text that will be wrapped by latexindent.pl. Each line is quite long.

\begin{verbatim}
    a long line in a verbatim environment, which will not be broken by latexindent.pl
\end{verbatim}

Here is a verb command: \verb!this will not be text wrapped!
```

and running the following command and continuing to use textwrap1.yaml from Listing 267,

```
cmh:~$ latexindent.pl -m textwrap2.tex -o textwrap2-mod1.tex -l textwrap1.yaml
```

then the output is as in Listing 269.

LISTING 269: textwrap2-mod1.tex

```
Here is a line of
text that will be
wrapped by
latexindent.pl.
Each line is quite
long.

\begin{verbatim}
    a long line in a verbatim environment, which will not be broken by latexindent.pl
\end{verbatim}

Here is a verb
command:
\verb!this will not be text wrapped!
```

Furthermore, the text wrapping routine is performed after the trailing comments have been stored, and they are also exempt from text wrapping. For example, using the file in Listing 270

LISTING 270: textwrap3.tex

```
Here is a line of text that will be wrapped by latexindent.pl. Each line is quite long.

Here is a line % text wrapping does not apply to comments by latexindent.pl
```

and running the following command and continuing to use textwrap1.yaml from Listing 267,

```
cmh:~$ latexindent.pl -m textwrap3.tex -o textwrap3-mod1.tex -l textwrap1.yaml
```

then the output is as in Listing 271.

LISTING 271: textwrap3-mod1.tex

```
Here is a line of
text that will be
wrapped by
latexindent.pl.
Each line is quite
long.

Here is a line
% text wrapping does not apply to comments by latexindent.pl
```

U: 2021-07-23

The default value of huge is overflow, which means that words will *not* be broken by the text wrapping routine, implemented by the Text::Wrap [26]. There are options to change the huge option for the Text::Wrap module to either wrap or die. Before modifying the value of huge, please bear in mind the following warning:

Warning!

Changing the value of huge to anything other than overflow will slow down latexindent.pl significantly when the -m switch is active.

Furthermore, changing huge means that you may have some words *or commands*(!) split across lines in your .tex file, which may affect your output. I do not recommend changing this field.

For example, using the settings in Listings 273 and 275 and running the commands

```
cmh:~$ latexindent.pl -m textwrap4.tex -o=+-mod2A -l textwrap2A.yaml
cmh:~$ latexindent.pl -m textwrap4.tex -o=+-mod2B -l textwrap2B.yaml
```

gives the respective output in Listings 272 and 274.

LISTING 272: textwrap4-mod2A.tex

```
He
re
is
a
li
ne
of
te
xt
.
```

LISTING 273: textwrap2A.yaml -m

```
modifyLineBreaks:
  textWrapOptions:
    columns: 3
    huge: wrap
```

LISTING 274: textwrap4-mod2B.tex

```
Here
is
a
line
of
text.
```

LISTING 275: textwrap2B.yaml -m

```
modifyLineBreaks:
  textWrapOptions:
    columns: 3
```

N: 2020-11-06

You can also specify the tabstop field as an integer value, which is passed to the text wrap module; see [26] for details. Starting with the code in Listing 276 with settings in Listing 277, and running the command

```
cmh:~$ latexindent.pl -m textwrap-ts.tex -o=+-mod1 -l tabstop.yaml
```

gives the code given in Listing 278.

LISTING 276: textwrap-ts.tex

```
x       y
```

LISTING 277: tabstop.yaml -m

```
modifyLineBreaks:
    textWrapOptions:
        columns: 80
        tabstop: 9
```

LISTING 278: textwrap-ts-mod1.tex

```
x       y
```

You can specify `separator`, `break` and `unexpand` options in your settings in analogous ways to those demonstrated in Listings 275 and 277, and they will be passed to the `Text::Wrap` module. I have not found a useful reason to do this; see [26] for more details.

6.1.3 Text wrapping on a per-code-block basis

U: 2018-08-13

By default, if the value of `columns` is greater than 0 and the `-m` switch is active, then the text wrapping routine will operate before the code blocks have been searched for. This behaviour is customisable; in particular, you can instead instruct `latexindent.pl` to apply `textWrap` on a per-code-block basis. Thanks to [32] for their help in testing and shaping this feature.

The full details of `textWrapOptions` are shown in Listing 279. In particular, note the field `perCodeBlockBasis: 0`.

LISTING 279: textWrapOptions -m

```
513     textWrapOptions:
514         columns: 0
515         huge: overflow    # forbid mid-word line breaks
516         separator: ""
517         perCodeBlockBasis: 0
518         beforeFindingChildCodeBlocks: 0
519         all: 0
520         alignAtAmpersandTakesPriority: 1
521         environments:
522             quotation: 0
523         ifElseFi: 0
524         optionalArguments: 0
525         mandatoryArguments: 0
526         items: 0
527         specialBeginEnd: 0
528         afterHeading: 0
529         preamble: 0
530         filecontents: 0
531         mainDocument: 0
```

The code blocks detailed in Listing 279 are with direct reference to those detailed in Table 2 on page 44.

The only special case is the `mainDocument` field; this is designed for 'chapter'-type files that may contain paragraphs that are not within any other code-blocks. The same notation is used between this feature and the `removeParagraphLineBreaks` described in Listing 298 on page 76; in fact, the two features can even be combined (this is detailed in Section 6.3 on page 81).

U: 2021-09-16

Note: `mainDocument` replaces `masterDocument` which was used in previous verions of `latexindent.pl`. The field `masterDocument` is still supported, but it is anticipated to be removed in a future version, so I recommend using `mainDocument` instead.

Let's explore these switches with reference to the code given in Listing 280; the text outside of the environment is considered part of the `mainDocument`.

LISTING 280: textwrap5.tex

```
Before the environment; here is a line of text that can be wrapped by latexindent.pl.

\begin{myenv}
Within the environment; here is a line of text that can be wrapped by latexindent.pl.
\end{myenv}

After the environment; here is a line of text that can be wrapped by latexindent.pl.
```

With reference to this code block, the settings given in Listings 281 to 283 each give the same output.

LISTING 281: textwrap3.yaml -m

```
modifyLineBreaks:
    textWrapOptions:
        columns: 30
        perCodeBlockBasis: 1
        all: 1
```

LISTING 282: textwrap4.yaml -m

```
modifyLineBreaks:
    textWrapOptions:
        columns: 30
        perCodeBlockBasis: 1
        environments: 1
        mainDocument: 1
```

LISTING 283: textwrap5.yaml -m

```
modifyLineBreaks:
    textWrapOptions:
        columns: 30
        perCodeBlockBasis: 1
        environments:
          myenv: 1
        mainDocument: 1
```

Let's explore the similarities and differences in the equivalent (with respect to Listing 280) syntax specified in Listings 281 to 283:

- in each of Listings 281 to 283 notice that `columns: 30`;
- in each of Listings 281 to 283 notice that `perCodeBlockBasis: 1`;
- in Listing 281 we have specified `all: 1` so that the text wrapping will operate upon *all* code blocks;
- in Listing 282 we have *not* specified `all`, and instead, have specified that text wrapping should be applied to each of `environments` and `mainDocument`;
- in Listing 283 we have specified text wrapping for `mainDocument` and on a *per-name* basis for `environments` code blocks.

Upon running the following commands

```
cmh:~$ latexindent.pl -s textwrap5.tex -l=textwrap3.yaml -m
cmh:~$ latexindent.pl -s textwrap5.tex -l=textwrap4.yaml -m
cmh:~$ latexindent.pl -s textwrap5.tex -l=textwrap5.yaml -m
```

we obtain the output shown in Listing 284.

LISTING 284: textwrap5-mod3.tex

```
Before the environment; here
is a line of text that can be
wrapped by latexindent.pl.

\begin{myenv}
   Within the environment; here
   is a line of text that can be
   wrapped by latexindent.pl.
\end{myenv}

After the environment; here
is a line of text that can be
wrapped by latexindent.pl.
```

We can explore the idea of per-name text wrapping given in Listing 283 by using Listing 285.

LISTING 285: textwrap6.tex

```
Before the environment; here is a line of text that can be wrapped by latexindent.pl.

\begin{myenv}
Within the environment; here is a line of text that can be wrapped by latexindent.pl.
\end{myenv}

\begin{another}
Within the environment; here is a line of text that can be wrapped by latexindent.pl.
\end{another}

After the environment; here is a line of text that can be wrapped by latexindent.pl.
```

In particular, upon running

```
cmh:~$ latexindent.pl -s textwrap6.tex -l=textwrap5.yaml -m
```

we obtain the output given in Listing 286.

LISTING 286: textwrap6.tex using Listing 283

```
Before the environment; here
is a line of text that can be
wrapped by latexindent.pl.

\begin{myenv}
   Within the environment; here
   is a line of text that can be
   wrapped by latexindent.pl.
\end{myenv}

\begin{another}
   Within the environment; here is a line of text that can be wrapped by latexindent.pl.
\end{another}

After the environment; here
is a line of text that can be
wrapped by latexindent.pl.
```

Notice that, because environments has been specified only for myenv (in Listing 283) that the environment named another has *not* had text wrapping applied to it.

The all field can be specified with exceptions which can either be done on a per-code-block or per-name basis; we explore this in relation to Listing 285 in the settings given in Listings 287 to 289.

LISTING 287: textwrap6.yaml -m

```
modifyLineBreaks:
    textWrapOptions:
        columns: 30
        perCodeBlockBasis: 1
        all:
          except:
            - environments
```

LISTING 288: textwrap7.yaml -m

```
modifyLineBreaks:
    textWrapOptions:
        columns: 30
        perCodeBlockBasis: 1
        all:
          except:
            - myenv
```

LISTING 289: textwrap8.yaml -m

```
modifyLineBreaks:
    textWrapOptions:
        columns: 30
        perCodeBlockBasis: 1
        all:
          except:
            - mainDocument
```

Upon running the commands

```
cmh:~$ latexindent.pl -s textwrap6.tex -l=textwrap6.yaml -m
cmh:~$ latexindent.pl -s textwrap6.tex -l=textwrap7.yaml -m
cmh:~$ latexindent.pl -s textwrap6.tex -l=textwrap8.yaml -m
```

we receive the respective output given in Listings 290 to 292.

LISTING 290: `textwrap6.tex` using Listing 287

```
Before the environment; here
is a line of text that can be
wrapped by latexindent.pl.

\begin{myenv}
   Within the environment; here is a line of text that can be wrapped by latexindent.pl.
\end{myenv}

\begin{another}
   Within the environment; here is a line of text that can be wrapped by latexindent.pl.
\end{another}

After the environment; here
is a line of text that can be
wrapped by latexindent.pl.
```

LISTING 291: `textwrap6.tex` using Listing 288

```
Before the environment; here
is a line of text that can be
wrapped by latexindent.pl.

\begin{myenv}
   Within the environment; here is a line of text that can be wrapped by latexindent.pl.
\end{myenv}

\begin{another}
   Within the environment; here
   is a line of text that can be
   wrapped by latexindent.pl.
\end{another}

After the environment; here
is a line of text that can be
wrapped by latexindent.pl.
```

LISTING 292: `textwrap6.tex` using Listing 289

```
Before the environment; here is a line of text that can be wrapped by latexindent.pl.

\begin{myenv}
   Within the environment; here
   is a line of text that can be
   wrapped by latexindent.pl.
\end{myenv}

\begin{another}
   Within the environment; here
   is a line of text that can be
   wrapped by latexindent.pl.
\end{another}

After the environment; here is a line of text that can be wrapped by latexindent.pl.
```

Notice that:

- in Listing 290 the text wrapping routine has not been applied to any `environments` because it has been switched off (per-code-block) in Listing 287;
- in Listing 291 the text wrapping routine has not been applied to `myenv` because it has been switched off (per-name) in Listing 288;
- in Listing 292 the text wrapping routine has not been applied to `mainDocument` because of the

settings in Listing 289.

The columns field has a variety of different ways that it can be specified; we've seen two basic ways already: the default (set to 0) and a positive integer (see Listing 285 on page 72, for example). We explore further options in Listings 293 to 295.

LISTING 293: textwrap9.yaml -m

```
modifyLineBreaks:
    textWrapOptions:
        columns:
            default: 30
            environments: 50
        perCodeBlockBasis: 1
        all: 1
```

LISTING 294: textwrap10.yaml -m

```
modifyLineBreaks:
    textWrapOptions:
        columns:
            default: 30
            environments:
                default: 50
        perCodeBlockBasis: 1
        all: 1
```

LISTING 295: textwrap11.yaml -m

```
modifyLineBreaks:
    textWrapOptions:
        columns:
            default: 30
            environments:
                myenv: 50
                another: 15
        perCodeBlockBasis: 1
        all: 1
```

Listing 293 and Listing 294 are equivalent. Upon running the commands

```
cmh:~$ latexindent.pl -s textwrap6.tex -l=textwrap9.yaml -m
cmh:~$ latexindent.pl -s textwrap6.tex -l=textwrap11.yaml -m
```

we receive the respective output given in Listings 296 and 297.

LISTING 296: textwrap6.tex using Listing 293

```
Before the environment; here
is a line of text that can be
wrapped by latexindent.pl.

\begin{myenv}
   Within the environment; here is a line of text
   that can be wrapped by latexindent.pl.
\end{myenv}

\begin{another}
   Within the environment; here is a line of text
   that can be wrapped by latexindent.pl.
\end{another}

After the environment; here
is a line of text that can be
wrapped by latexindent.pl.
```

LISTING 297: `textwrap6.tex` using Listing 295

```
Before the environment; here
is a line of text that can be
wrapped by latexindent.pl.

\begin{myenv}
   Within the environment; here is a line of text
   that can be wrapped by latexindent.pl.
\end{myenv}

\begin{another}
   Within the
   environment;
   here is a line
   of text that
   can be wrapped
   by
   latexindent.pl.
\end{another}

After the environment; here
is a line of text that can be
wrapped by latexindent.pl.
```

Notice that:

- in Listing 296 the text for the `mainDocument` has been wrapped using `30` columns, while `environments` has been wrapped using `50` columns;
- in Listing 297 the text for `myenv` has been wrapped using `50` columns, the text for `another` has been wrapped using `15` columns, and `mainDocument` has been wrapped using `30` columns.

If you don't specify a `default` value on per-code-block basis, then the `default` value from `columns` will be inherited; if you don't specify a default value for `columns` then `80` will be used.

`alignAtAmpersandTakesPriority` is set to `1` by default; assuming that text wrapping is occurring on a per-code-block basis, and the current environment/code block is specified within Listing 39 on page 25 then text wrapping will be disabled for this code block.

If you wish to specify `afterHeading` commands (see Listing 128 on page 41) on a per-name basis, then you need to append the name with `:heading`, for example, you might use `section:heading`.

6.2 removeParagraphLineBreaks: modifying line breaks for paragraphs

N: 2017-05-27

When the `-m` switch is active `latexindent.pl` has the ability to remove line breaks from within paragraphs; the behaviour is controlled by the `removeParagraphLineBreaks` field, detailed in Listing 298. Thank you to [19] for shaping and assisting with the testing of this feature.

`removeParagraphLineBreaks`: ⟨*fields*⟩

This feature is considered complimentary to the `oneSentencePerLine` feature described in Section 6.5 on page 85.

LISTING 298: removeParagraphLineBreaks -m

```
532     removeParagraphLineBreaks:
533         all: 0
534         beforeTextWrap: 0
535         alignAtAmpersandTakesPriority: 1
536         environments:
537             quotation: 0
538         ifElseFi: 0
539         optionalArguments: 0
540         mandatoryArguments: 0
541         items: 0
542         specialBeginEnd: 0
543         afterHeading: 0
544         preamble: 0
545         filecontents: 0
546         mainDocument: 0
```

This routine can be turned on *globally* for *every* code block type known to `latexindent.pl` (see Table 2 on page 44) by using the `all` switch; by default, this switch is *off*. Assuming that the `all` switch is off, then the routine can be controlled on a per-code-block-type basis, and within that, on a per-name basis. We will consider examples of each of these in turn, but before we do, let's specify what `latexindent.pl` considers as a paragraph:

- it must begin on its own line with either an alphabetic or numeric character, and not with any of the code-block types detailed in Table 2 on page 44;
- it can include line breaks, but finishes when it meets either a blank line, a `\par` command, or any of the user-specified settings in the `paragraphsStopAt` field, detailed in Listing 315 on page 80.

Let's start with the `.tex` file in Listing 299, together with the YAML settings in Listing 300.

LISTING 299: shortlines.tex

```
\begin{myenv}
The␣lines
in␣this
environment
are␣very
short
and␣contain
many␣linebreaks.

Another
paragraph.
\end{myenv}
```

LISTING 300: remove-para1.yaml -m

```
modifyLineBreaks:
    removeParagraphLineBreaks:
        all: 1
```

Upon running the command

```
cmh:~$ latexindent.pl -m shortlines.tex -o shortlines1.tex -l remove-para1.yaml
```

then we obtain the output given in Listing 301.

LISTING 301: shortlines1.tex

```
\begin{myenv}
␣␣␣␣The␣lines␣in␣this␣␣environment␣are␣very␣␣short␣and␣contain␣many␣linebreaks.

␣␣␣␣Another␣␣paragraph.
\end{myenv}
```

Keen readers may notice that some trailing white space must be present in the file in Listing 299 which has crept in to the output in Listing 301. This can be fixed using the YAML file in Listing 424 on page 99 and running, for example,

```
cmh:~$ latexindent.pl -m shortlines.tex -o shortlines1-tws.tex -l
    remove-para1.yaml,removeTWS-before.yaml
```

in which case the output is as in Listing 302; notice that the double spaces present in Listing 301 have been addressed.

LISTING 302: shortlines1-tws.tex

```
\begin{myenv}
␣␣␣The␣lines␣in␣this␣environment␣are␣very␣short␣and␣contain␣many␣linebreaks.

␣␣␣Another␣paragraph.
\end{myenv}
```

Keeping with the settings in Listing 300, we note that the `all` switch applies to *all* code block types. So, for example, let's consider the files in Listings 303 and 304

LISTING 303: shortlines-mand.tex

```
\mycommand{
The lines
in this
command
are very
short
and contain
many linebreaks.

Another
paragraph.
}
```

LISTING 304: shortlines-opt.tex

```
\mycommand[
The lines
in this
command
are very
short
and contain
many linebreaks.

Another
paragraph.
]
```

Upon running the commands

```
cmh:~$ latexindent.pl -m shortlines-mand.tex -o shortlines-mand1.tex -l remove-para1.yaml
cmh:~$ latexindent.pl -m shortlines-opt.tex -o shortlines-opt1.tex -l remove-para1.yaml
```

then we obtain the respective output given in Listings 305 and 306.

LISTING 305: shortlines-mand1.tex

```
\mycommand{
   The lines in this  command are very  short and contain many linebreaks.

   Another  paragraph.
}
```

LISTING 306: shortlines-opt1.tex

```
\mycommand[
   The lines in this  command are very  short and contain many linebreaks.

   Another  paragraph.
]
```

Assuming that we turn *off* the `all` switch (by setting it to `0`), then we can control the behaviour of `removeParagraphLineBreaks` either on a per-code-block-type basis, or on a per-name basis.

For example, let's use the code in Listing 307, and consider the settings in Listings 308 and 309; note that in Listing 308 we specify that *every* environment should receive treatment from the routine, while in Listing 309 we specify that *only* the `one` environment should receive the treatment.

LISTING 307: shortlines-envs.tex

```
\begin{one}
The lines
in this
environment
are very
short
and contain
many linebreaks.

Another
paragraph.
\end{one}

\begin{two}
The lines
in this
environment
are very
short
and contain
many linebreaks.

Another
paragraph.
\end{two}
```

LISTING 308: remove-para2.yaml -m

```
modifyLineBreaks:
    removeParagraphLineBreaks:
        environments: 1
```

LISTING 309: remove-para3.yaml -m

```
modifyLineBreaks:
    removeParagraphLineBreaks:
        environments:
            one: 1
```

Upon running the commands

```
cmh:~$ latexindent.pl -m shortlines-envs.tex -o shortlines-envs2.tex -l remove-para2.yaml
cmh:~$ latexindent.pl -m shortlines-envs.tex -o shortlines-envs3.tex -l remove-para3.yaml
```

then we obtain the respective output given in Listings 310 and 311.

LISTING 310: shortlines-envs2.tex

```
\begin{one}
   The lines in this  environment are very  short and contain many linebreaks.

   Another  paragraph.
\end{one}

\begin{two}
   The lines in this  environment are very  short and contain many linebreaks.

   Another  paragraph.
\end{two}
```

LISTING 311: shortlines-envs3.tex

```
\begin{one}
   The lines in this  environment are very  short and contain many linebreaks.

   Another  paragraph.
\end{one}

\begin{two}
   The lines
   in this
   environment
   are very
   short
   and contain
   many linebreaks.

   Another
   paragraph.
\end{two}
```

The remaining code-block types can be customised in analogous ways, although note that `commands`, `keyEqualsValuesBracesBrackets`, `namedGroupingBracesBrackets`, `UnNamedGroupingBracesBrackets` are controlled by the `optionalArguments` and the `mandatoryArguments`.

The only special case is the `mainDocument` field; this is designed for 'chapter'-type files that may contain paragraphs that are not within any other code-blocks. For example, consider the file in Listing 312, with the YAML settings in Listing 313.

U: 2021-09-16

Note: `mainDocument` replaces `masterDocument` which was used in previous verions of `latexindent.pl`. The field `masterDocument` is still supported, but it is anticipated to be removed in a future version, so I recommend using `mainDocument` instead.

LISTING 312: shortlines-md.tex

```
The lines
in this
document
are very
short
and contain
many linebreaks.

Another
paragraph.

\begin{myenv}
The lines
in this
document
are very
short
and contain
many linebreaks.
\end{myenv}
```

LISTING 313: remove-para4.yaml -m

```
modifyLineBreaks:
    removeParagraphLineBreaks:
        mainDocument: 1
```

Upon running the following command

```
cmh:~$ latexindent.pl -m shortlines-md.tex -o shortlines-md4.tex -l remove-para4.yaml
```

then we obtain the output in Listing 314.

LISTING 314: shortlines-md4.tex

```
The lines in this  document are very  short and contain many linebreaks.

Another  paragraph.

\begin{myenv}
   The lines
   in this
   document
   are very
   short
   and contain
   many linebreaks.
\end{myenv}
```

U: 2018-08-13

Note that the `all` field can take the same exceptions detailed in Listings 287 to 289.

`paragraphsStopAt`: ⟨*fields*⟩

N: 2017-05-27

The paragraph line break routine considers blank lines and the `\par` command to be the end of a paragraph; you can fine tune the behaviour of the routine further by using the `paragraphsStopAt` fields, shown in Listing 315.

LISTING 315: paragraphsStopAt -m

```
547         paragraphsStopAt:
548             environments: 1
549             verbatim: 1
550             commands: 0
551             ifElseFi: 0
552             items: 0
553             specialBeginEnd: 0
554             heading: 0
555             filecontents: 0
556             comments: 0
```

The fields specified in `paragraphsStopAt` tell `latexindent.pl` to stop the current paragraph when it reaches a line that *begins* with any of the code-block types specified as `1` in Listing 315. By default, you'll see that the paragraph line break routine will stop when it reaches an environment or verbatim code block at the beginning of a line. It is *not* possible to specify these fields on a per-name basis.

Let's use the `.tex` file in Listing 316; we will, in turn, consider the settings in Listings 317 and 318.

LISTING 316: sl-stop.tex

```
These lines
are very
short
\emph{and} contain
many linebreaks.
\begin{myenv}
Body of myenv
\end{myenv}

Another
paragraph.
% a comment
% a comment
```

LISTING 317: stop-command.yaml -m

```
modifyLineBreaks:
    removeParagraphLineBreaks:
        paragraphsStopAt:
            commands: 1
```

LISTING 318: stop-comment.yaml -m

```
modifyLineBreaks:
    removeParagraphLineBreaks:
        paragraphsStopAt:
            comments: 1
```

Upon using the settings from Listing 313 on the previous page and running the commands

```
cmh:~$ latexindent.pl -m sl-stop.tex -o sl-stop4.tex -l remove-para4.yaml
cmh:~$ latexindent.pl -m sl-stop.tex -o sl-stop4-command.tex -l=remove-para4.yaml,stop-command.yaml
cmh:~$ latexindent.pl -m sl-stop.tex -o sl-stop4-comment.tex -l=remove-para4.yaml,stop-comment.yaml
```

we obtain the respective outputs in Listings 319 to 321; notice in particular that:

- in Listing 319 the paragraph line break routine has included commands and comments;
- in Listing 320 the paragraph line break routine has *stopped* at the `emph` command, because in Listing 317 we have specified `commands` to be `1`, and `emph` is at the beginning of a line;
- in Listing 321 the paragraph line break routine has *stopped* at the comments, because in Listing 318 we have specified `comments` to be `1`, and the comment is at the beginning of a line.

In all outputs in Listings 319 to 321 we notice that the paragraph line break routine has stopped at `\begin{myenv}` because, by default, `environments` is set to `1` in Listing 315 on the preceding page.

LISTING 319: sl-stop4.tex

```
These lines are very  short  \emph{and} contain many linebreaks.
\begin{myenv}
   Body of myenv
\end{myenv}

Another  paragraph.  % a comment% a comment
```

LISTING 320: sl-stop4-command.tex

```
These lines are very  short
\emph{and} contain
many linebreaks.
\begin{myenv}
   Body of myenv
\end{myenv}

Another  paragraph.  % a comment% a comment
```

LISTING 321: sl-stop4-comment.tex

```
These lines are very  short  \emph{and} contain many linebreaks.
\begin{myenv}
   Body of myenv
\end{myenv}

Another  paragraph.
% a comment
% a comment
```

6.3 Combining removeParagraphLineBreaks and textWrapOptions

N: 2018-08-13

The text wrapping routine (Section 6.1 on page 66) and remove paragraph line breaks routine (Section 6.2 on page 75) can be combined.

We motivate this feature with the code given in Listing 322.

LISTING 322: textwrap7.tex

```
This paragraph
has line breaks throughout its paragraph;
we would like to combine
the textwrapping
and paragraph removal routine.
```

Applying the text wrap routine from Section 6.1 on page 66 with, for example, Listing 281 on page 71 gives the output in Listing 323.

LISTING 323: textwrap7.tex using Listing 281

```
This paragraph
has line breaks throughout
its paragraph;
we would like to combine
the textwrapping
and paragraph removal
routine.
```

The text wrapping routine has behaved as expected, but it may be desired to remove paragraph line breaks *before* performing the text wrapping routine. The desired behaviour can be achieved by employing the `beforeTextWrap` switch.

Explicitly, using the settings in Listing 325 and running the command

```
cmh:~$ latexindent.pl -m textwrap7.tex -l=textwrap12.yaml -o=+-mod12
```

we obtain the output in Listing 324.

LISTING 324: textwrap7-mod12.tex

```
This paragraph has line
breaks throughout its
paragraph; we would like to
combine the textwrapping and
paragraph removal routine.
```

LISTING 325: textwrap12.yaml -m

```
modifyLineBreaks:
    textWrapOptions:
        columns: 30
        perCodeBlockBasis: 1
        all: 1
    removeParagraphLineBreaks:
        all: 1
        beforeTextWrap: 1
```

In Listing 324 the paragraph line breaks have first been removed from Listing 322, and then the text wrapping routine has been applied. It is envisaged that variants of Listing 325 will be among the most useful settings for these two features.

6.3.1 text wrapping beforeFindingChildCodeBlocks

N: 2021-07-31

I think it likely that most users will wish to employ the `beforeFindingChildCodeBlocks` option for the text wrap routine.

To motivate its use, we begin with the file in Listing 326.

LISTING 326: textwrap-bfccb.tex

```
one
    two three four \test{test
  five six seven
eight nine} ten eleven
twelve thirteen
    fourteen fifteen sixteen seventeen
```

Using the settings in Listing 325 and running

```
cmh:~$ latexindent.pl -m textwrap-bfccb.tex -l=textwrap12.yaml -o=+-mod12
```

gives the output in Listing 327

LISTING 327: textwrap-bfccb-mod12.tex

```
one  two three four
\test{test five six seven eight
   nine} ten
eleven twelve thirteen
fourteen fifteen sixteen
seventeen
----|----|----|----|----|----|----|----|
   5    10   15   20   25   30   35   40
```

Note that we have added a 'ruler' to Listing 327 to assist with measuring.

The output in Listing 327 is not ideal, but it is *expected*. The reasoning is as follows:

- `latexindent.pl` first of all searches for code blocks (see Table 2 on page 44);
- it replaces each code block with a unique identifying string;
- with the settings of Listing 325 in place, it performs the paragraph line break removal, and then the text wrapping routine first of all on the `text` command, and then on the surrounding text;
- the surrounding text does not know that `text` is a command.

We can instruct `latexindent.pl` to perform text wrapping *before searching for child code blocks* by using the `beforeFindingChildCodeBlocks` field.

We save the *quick-start* settings from Listing 263 into Listing 328 and change the value of `columns` for demonstration. Upon running the command

```
cmh:~$ latexindent.pl -m textwrap-bfccb.tex -l=textwrap13.yaml -o=+-mod13
```

we receive the output in Listing 329.

LISTING 328: textwrap13.yaml (tweaked quick start) -m

```
modifyLineBreaks:
    textWrapOptions:
        columns: 40                     #<--- Changed from quick start
        perCodeBlockBasis: 1
        beforeFindingChildCodeBlocks: 1
        mainDocument: 1
        afterHeading: 1
        items: 1
    removeParagraphLineBreaks:
        mainDocument: 1
        afterHeading: 1
        items: 1
        beforeTextWrap: 1
```

LISTING 329: textwrap-bfccb-mod13.tex

```
one  two three four \test{test five six
   seven eight nine} ten eleven twelve
thirteen fourteen fifteen sixteen
seventeen
----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
   5    10   15   20   25   30   35   40   45   50   55   60   65   70   75   80
```

This output is different from Listing 327, but is still not ideal, as the `test` command has indented its mandatory argument. We can employ `noAdditionalIndent` from Section 5.8 on page 43 in Listing 331 and run the command

```
cmh:~$ latexindent.pl -m textwrap-bfccb.tex -l=textwrap14.yaml -o=+-mod14
```

to receive the output in Listing 330.

LISTING 330: textwrap-bfccb-mod14.tex

```
one  two three four \test{test five six
seven eight nine} ten eleven twelve
thirteen fourteen fifteen sixteen
seventeen
----|----|----|----|----|----|----|----|
    5    10   15   20   25   30   35   40
```

LISTING 331: textwrap14.yaml -m

```
modifyLineBreaks:
    textWrapOptions:
        columns: 40
        perCodeBlockBasis: 1
        beforeFindingChildCodeBlocks: 1
        mainDocument: 1
        afterHeading: 1
        items: 1
    removeParagraphLineBreaks:
        mainDocument: 1
        afterHeading: 1
        items: 1
        beforeTextWrap: 1

noAdditionalIndent:     #<--- NEW BIT
  test: 1               #<--- NEW BIT
```

For reference, let's say that we had started from Listing 325, which instructs `latexindent.pl` to apply the text-wrapping and paragraph-line-break-removal routines to *all* code blocks. In order to achieve the output in Listing 330, then we would need to employ an exception, which we demonstrate in Listing 332.

LISTING 332: textwrap15.yaml -m

```
modifyLineBreaks:
    textWrapOptions:
        columns: 40
        perCodeBlockBasis: 1
        beforeFindingChildCodeBlocks: 1
        all: 1
    removeParagraphLineBreaks:
        all:
          except:
            - test
        beforeTextWrap: 1

noAdditionalIndent:
  test: 1
```

6.4 Summary of text wrapping

N: 2021-07-31

I consider the most useful starting point for text wrapping to be given in Section 6.1.1 and Section 6.3.1.

Starting from Listing 263, it is likely that you will have to experiment with making adjustments (such as that given in Listing 331) depending on your preference.

It is important to note the following:

- verbatim code blocks of all types will *not* be affected by the text wrapping routine. See the demonstration in Listing 269 on page 68, together with environments: Listing 18 on page 21, commands: Listing 19 on page 21, `noIndentBlock`: Listing 24, `specialBeginEnd`: Listing 122 on page 39;
- comments will *not* be affected by the text wrapping routine (see Listing 271 on page 69);

U: 2018-08-13

- it is possible to wrap text on a per-code-block and a per-name basis;

- indentation is performed *after* the text wrapping routine; as such, indented code will likely exceed any maximum value set in the `columns` field.

6.5 oneSentencePerLine: modifying line breaks for sentences

N: 2018-01-13

You can instruct `latexindent.pl` to format your file so that it puts one sentence per line. Thank you to [17] for helping to shape and test this feature. The behaviour of this part of the script is controlled by the switches detailed in Listing 333, all of which we discuss next.

LISTING 333: oneSentencePerLine

-m

```
489     oneSentencePerLine:
490         manipulateSentences: 0
491         removeSentenceLineBreaks: 1
492         textWrapSentences: 0
493         sentenceIndent: ""
494         sentencesFollow:
495             par: 1
496             blankLine: 1
497             fullStop: 1
498             exclamationMark: 1
499             questionMark: 1
500             rightBrace: 1
501             commentOnPreviousLine: 1
502             other: 0
503         sentencesBeginWith:
504             A-Z: 1
505             a-z: 0
506             other: 0
507         sentencesEndWith:
508             basicFullStop: 0
509             betterFullStop: 1
510             exclamationMark: 1
511             questionMark: 1
512             other: 0
```

`manipulateSentences`: **0|1**

This is a binary switch that details if `latexindent.pl` should perform the sentence manipulation routine; it is *off* (set to 0) by default, and you will need to turn it on (by setting it to 1) if you want the script to modify line breaks surrounding and within sentences.

`removeSentenceLineBreaks`: **0|1**

When operating upon sentences `latexindent.pl` will, by default, remove internal line breaks as `removeSentenceLineBreaks` is set to 1. Setting this switch to 0 instructs `latexindent.pl` not to do so.

For example, consider `multiple-sentences.tex` shown in Listing 334.

LISTING 334: multiple-sentences.tex

```
This is the first
sentence. This is the; second, sentence. This is the
third sentence.

This is the fourth
sentence! This is the fifth sentence? This is the
sixth sentence.
```

If we use the YAML files in Listings 336 and 338, and run the commands

```
cmh:~$ latexindent.pl multiple-sentences -m -l=manipulate-sentences.yaml
cmh:~$ latexindent.pl multiple-sentences -m -l=keep-sen-line-breaks.yaml
```

then we obtain the respective output given in Listings 335 and 337.

LISTING 335: multiple-sentences.tex using Listing 336

```
This is the first sentence.
This is the; second, sentence.
This is the third sentence.

This is the fourth sentence!
This is the fifth sentence?
This is the sixth sentence.
```

LISTING 336: manipulate-sentences.yaml -m

```
modifyLineBreaks:
    oneSentencePerLine:
        manipulateSentences: 1
```

LISTING 337: multiple-sentences.tex using Listing 338

```
This is the first
sentence.
This is the; second, sentence.
This is the
third sentence.

This is the fourth
sentence!
This is the fifth sentence?
This is the
sixth sentence.
```

LISTING 338: keep-sen-line-breaks.yaml -m

```
modifyLineBreaks:
    oneSentencePerLine:
        manipulateSentences: 1
        removeSentenceLineBreaks: 0
```

Notice, in particular, that the 'internal' sentence line breaks in Listing 334 have been removed in Listing 335, but have not been removed in Listing 337.

The remainder of the settings displayed in Listing 333 on the preceding page instruct `latexindent.pl` on how to define a sentence. From the perspective of `latexindent.pl` a sentence must:

- *follow* a certain character or set of characters (see Listing 339); by default, this is either `\par`, a blank line, a full stop/period (.), exclamation mark (!), question mark (?) right brace (}) or a comment on the previous line;
- *begin* with a character type (see Listing 340); by default, this is only capital letters;
- *end* with a character (see Listing 341); by default, these are full stop/period (.), exclamation mark (!) and question mark (?).

In each case, you can specify the `other` field to include any pattern that you would like; you can specify anything in this field using the language of regular expressions.

LISTING 339: sentencesFollow -m

```
494         sentencesFollow:
495             par: 1
496             blankLine: 1
497             fullStop: 1
498             exclamationMark: 1
499             questionMark: 1
500             rightBrace: 1
501
        commentOnPreviousLine: 1
502             other: 0
```

LISTING 340: sentencesBeginWith -m

```
503         sentencesBeginWith:
504             A-Z: 1
505             a-z: 0
506             other: 0
```

LISTING 341: sentencesEndWith -m

```
507         sentencesEndWith:
508             basicFullStop: 0
509             betterFullStop: 1
510             exclamationMark: 1
511             questionMark: 1
512             other: 0
```

6.5.1 sentencesFollow

Let's explore a few of the switches in `sentencesFollow`; let's start with Listing 334 on page 85, and use the YAML settings given in Listing 343. Using the command

```
cmh:~$ latexindent.pl multiple-sentences -m -l=sentences-follow1.yaml
```

we obtain the output given in Listing 342.

LISTING 342: `multiple-sentences.tex` using Listing 343

```
This is the first sentence.
This is the; second, sentence.
This is the third sentence.

This is the fourth
sentence!
This is the fifth sentence?
This is the sixth sentence.
```

LISTING 343: `sentences-follow1.yaml` -m

```
modifyLineBreaks:
    oneSentencePerLine:
        manipulateSentences: 1
        sentencesFollow:
            blankLine: 0
```

Notice that, because `blankLine` is set to `0`, `latexindent.pl` will not seek sentences following a blank line, and so the fourth sentence has not been accounted for.

We can explore the `other` field in Listing 339 with the `.tex` file detailed in Listing 344.

LISTING 344: `multiple-sentences1.tex`

```
(Some sentences stand alone in brackets.) This is the first
sentence. This is the; second, sentence. This is the
third sentence.
```

Upon running the following commands

```
cmh:~$ latexindent.pl multiple-sentences1 -m -l=manipulate-sentences.yaml
cmh:~$ latexindent.pl multiple-sentences1 -m -l=manipulate-sentences.yaml,sentences-follow2.yaml
```

then we obtain the respective output given in Listings 345 and 346.

LISTING 345: `multiple-sentences1.tex` using Listing 336 on the preceding page

```
(Some sentences stand alone in brackets.) This is the first
sentence.
This is the; second, sentence.
This is the third sentence.
```

LISTING 346: `multiple-sentences1.tex` using Listing 347

```
(Some sentences stand alone in brackets.)
This is the first sentence.
This is the; second, sentence.
This is the third sentence.
```

LISTING 347: `sentences-follow2.yaml` -m

```
modifyLineBreaks:
    oneSentencePerLine:
        manipulateSentences: 1
        sentencesFollow:
            other: "\)"
```

Notice that in Listing 345 the first sentence after the) has not been accounted for, but that following the inclusion of Listing 347, the output given in Listing 346 demonstrates that the sentence *has* been accounted for correctly.

6.5.2 sentencesBeginWith

By default, `latexindent.pl` will only assume that sentences begin with the upper case letters `A-Z`; you can instruct the script to define sentences to begin with lower case letters (see Listing 340), and we can use the `other` field to define sentences to begin with other characters.

LISTING 348: multiple-sentences2.tex

```
This is the first
sentence.

$a$ can
represent a
number. 7 is
at the beginning of this sentence.
```

Upon running the following commands

```
cmh:~$ latexindent.pl multiple-sentences2 -m -l=manipulate-sentences.yaml
cmh:~$ latexindent.pl multiple-sentences2 -m -l=manipulate-sentences.yaml,sentences-begin1.yaml
```

then we obtain the respective output given in Listings 349 and 350.

LISTING 349: multiple-sentences2.tex using Listing 336 on page 86

```
This is the first sentence.

$a$ can
represent a
number. 7 is
at the beginning of this sentence.
```

LISTING 350: multiple-sentences2.tex using Listing 351

```
This is the first sentence.

$a$ can represent a number.
7 is at the beginning of this sentence.
```

LISTING 351: sentences-begin1.yaml -m

```
modifyLineBreaks:
    oneSentencePerLine:
        manipulateSentences: 1
        sentencesBeginWith:
            other: "\$|[0-9]"
```

Notice that in Listing 349, the first sentence has been accounted for but that the subsequent sentences have not. In Listing 350, all of the sentences have been accounted for, because the `other` field in Listing 351 has defined sentences to begin with either `$` or any numeric digit, `0` to `9`.

6.5.3 sentencesEndWith

Let's return to Listing 334 on page 85; we have already seen the default way in which `latexindent.pl` will operate on the sentences in this file in Listing 335 on page 86. We can populate the `other` field with any character that we wish; for example, using the YAML specified in Listing 353 and the command

```
cmh:~$ latexindent.pl multiple-sentences -m -l=sentences-end1.yaml
cmh:~$ latexindent.pl multiple-sentences -m -l=sentences-end2.yaml
```

then we obtain the output in Listing 352.

LISTING 352: multiple-sentences.tex using Listing 353

```
This is the first sentence.
This is the;
second, sentence.
This is the third sentence.

This is the fourth sentence!
This is the fifth sentence?
This is the sixth sentence.
```

LISTING 353: sentences-end1.yaml -m

```
modifyLineBreaks:
    oneSentencePerLine:
        manipulateSentences: 1
        sentencesEndWith:
          other: "\:|\;|\,"
```

LISTING 354: multiple-sentences.tex using Listing 355

```
This is the first sentence.
This is the;
second,
sentence.
This is the third sentence.

This is the fourth sentence!
This is the fifth sentence?
This is the sixth sentence.
```

LISTING 355: sentences-end2.yaml -m

```
modifyLineBreaks:
    oneSentencePerLine:
        manipulateSentences: 1
        sentencesEndWith:
          other: "\:|\;|\,"
        sentencesBeginWith:
          a-z: 1
```

There is a subtle difference between the output in Listings 352 and 354; in particular, in Listing 352 the word `sentence` has not been defined as a sentence, because we have not instructed `latexindent.pl` to begin sentences with lower case letters. We have changed this by using the settings in Listing 355, and the associated output in Listing 354 reflects this.

Referencing Listing 341 on page 86, you'll notice that there is a field called `basicFullStop`, which is set to 0, and that the `betterFullStop` is set to 1 by default.

Let's consider the file shown in Listing 356.

LISTING 356: url.tex

```
This sentence, \url{tex.stackexchange.com/} finishes here. Second sentence.
```

Upon running the following commands

```
cmh:~$ latexindent.pl url -m -l=manipulate-sentences.yaml
```

we obtain the output given in Listing 357.

LISTING 357: url.tex using Listing 336 on page 86

```
This sentence, \url{tex.stackexchange.com/} finishes here.
Second sentence.
```

Notice that the full stop within the url has been interpreted correctly. This is because, within the `betterFullStop`, full stops at the end of sentences have the following properties:

- they are ignored within `e.g.` and `i.e.`;
- they can not be immediately followed by a lower case or upper case letter;
- they can not be immediately followed by a hyphen, comma, or number.

N: 2019-07-13

If you find that the `betterFullStop` does not work for your purposes, then you can switch it off by setting it to 0, and you can experiment with the `other` field. You can also seek to customise the `betterFullStop` routine by using the *fine tuning*, detailed in Listing 517 on page 125.

The `basicFullStop` routine should probably be avoided in most situations, as it does not accommodate the specifications above. For example, using the following command

```
cmh:~$ latexindent.pl url -m -l=alt-full-stop1.yaml
```

and the YAML in Listing 359 gives the output in Listing 358.

LISTING 358: url.tex using Listing 359

```
This sentence, \url{tex.
   stackexchange.com/} finishes here.Second sentence.
```

LISTING 359: alt-full-stop1.yaml -m

```
modifyLineBreaks:
    oneSentencePerLine:
        manipulateSentences: 1
        sentencesEndWith:
            basicFullStop: 1
            betterFullStop: 0
```

Notice that the full stop within the URL has not been accommodated correctly because of the non-default settings in Listing 359.

6.5.4 Features of the oneSentencePerLine routine

The sentence manipulation routine takes place *after* verbatim environments, preamble and trailing comments have been accounted for; this means that any characters within these types of code blocks will not be part of the sentence manipulation routine.

For example, if we begin with the .tex file in Listing 360, and run the command

```
cmh:~$ latexindent.pl multiple-sentences3 -m -l=manipulate-sentences.yaml
```

then we obtain the output in Listing 361.

LISTING 360: multiple-sentences3.tex

```
The first sentence continues after the verbatim
\begin{verbatim}
  there are sentences within this. These
  will not be operated
  upon by latexindent.pl.
\end{verbatim}
and finishes here. Second sentence % a commented full stop.
contains trailing comments,
which are ignored.
```

LISTING 361: multiple-sentences3.tex using Listing 336 on page 86

```
The first sentence continues after the verbatim \begin{verbatim}
  there are sentences within this. These
  will not be operated
  upon by latexindent.pl.
\end{verbatim} and finishes here.
Second sentence contains trailing comments, which are ignored.
% a commented full stop.
```

Furthermore, if sentences run across environments then, by default, the line breaks internal to the sentence will be removed. For example, if we use the .tex file in Listing 362 and run the commands

```
cmh:~$ latexindent.pl multiple-sentences4 -m -l=manipulate-sentences.yaml
cmh:~$ latexindent.pl multiple-sentences4 -m -l=keep-sen-line-breaks.yaml
```

then we obtain the output in Listings 363 and 364.

LISTING 362: multiple-sentences4.tex

```
This sentence
\begin{itemize}
  \item continues
\end{itemize}
across itemize
and finishes here.
```

LISTING 363: multiple-sentences4.tex using Listing 336 on page 86

```
This sentence \begin{itemize} \item continues \end{itemize} across itemize and finishes here.
```

LISTING 364: multiple-sentences4.tex using Listing 338 on page 86

```
This sentence
\begin{itemize}
   \item continues
\end{itemize}
across itemize
and finishes here.
```

Once you've read Section 6.6, you will know that you can accommodate the removal of internal sentence line breaks by using the YAML in Listing 366 and the command

```
cmh:~$ latexindent.pl multiple-sentences4 -m -l=item-rules2.yaml
```

the output of which is shown in Listing 365.

LISTING 365: multiple-sentences4.tex using Listing 366

```
This sentence
\begin{itemize}
   \item continues
\end{itemize}
across itemize and finishes here.
```

LISTING 366: item-rules2.yaml -m

```
modifyLineBreaks:
    oneSentencePerLine:
        manipulateSentences: 1
    items:
        ItemStartsOnOwnLine: 1
    environments:
        BeginStartsOnOwnLine: 1
        BodyStartsOnOwnLine: 1
        EndStartsOnOwnLine: 1
        EndFinishesWithLineBreak: 1
```

6.5.5 Text wrapping and indenting sentences

N: 2018-08-13

The oneSentencePerLine can be instructed to perform text wrapping and indentation upon sentences.

Let's use the code in Listing 367.

LISTING 367: multiple-sentences5.tex

```
A distincao entre conteudo \emph{real} e conteudo \emph{intencional} esta
relacionada, ainda, a distincao entre o conceito husserliano de
\emph{experiencia} e o uso popular desse termo. No sentido comum,
o \term{experimentado} e um complexo de eventos exteriores,
e o \term{experimentar} consiste em percepcoes (alem de julgamentos e outros
atos) nas quais tais eventos aparecem como objetos, e objetos frequentemente
to the end.
```

Referencing Listing 369, and running the following command

```
cmh:~$ latexindent.pl multiple-sentences5 -m -l=sentence-wrap1.yaml
```

we receive the output given in Listing 368.

LISTING 368: multiple-sentences5.tex using Listing 369

```
A distincao entre conteudo \emph{real} e conteudo
  \emph{intencional} esta relacionada, ainda, a
  distincao entre o conceito husserliano de
  \emph{experiencia} e o uso popular desse termo.
No sentido comum, o \term{experimentado} e um
  complexo de eventos exteriores, e o
  \term{experimentar} consiste em percepcoes (alem
  de julgamentos e outros atos) nas quais tais
  eventos aparecem como objetos, e objetos
  frequentemente to the end.
```

LISTING 369: sentence-wrap1.yaml -m

```
modifyLineBreaks:
    oneSentencePerLine:
        manipulateSentences: 1
        removeSentenceLineBreaks: 1
        textWrapSentences: 1
        sentenceIndent: "  "
    textWrapOptions:
        columns: 50
```

If you wish to specify the `columns` field on a per-code-block basis for sentences, then you would use `sentence`; explicitly, starting with Listing 293 on page 74, for example, you would replace/append `environments` with, for example, `sentence: 50`.

If you specify `textWrapSentences` as 1, but do *not* specify a value for `columns` then the text wrapping will *not* operate on sentences, and you will see a warning in `indent.log`.

The indentation of sentences requires that sentences are stored as code blocks. This means that you may need to tweak Listing 341 on page 86. Let's explore this in relation to Listing 370.

LISTING 370: multiple-sentences6.tex

```
Consider the following:
\begin{itemize}
        \item firstly.
        \item secondly.
\end{itemize}
```

By default, `latexindent.pl` will find the full-stop within the first `item`, which means that, upon running the following commands

```
cmh:~$ latexindent.pl multiple-sentences6 -m -l=sentence-wrap1.yaml
cmh:~$ latexindent.pl multiple-sentences6 -m -l=sentence-wrap1.yaml
    -y="modifyLineBreaks:oneSentencePerLine:sentenceIndent:''"
```

we receive the respective output in Listing 371 and Listing 372.

LISTING 371: multiple-sentences6-mod1.tex using Listing 369

```
Consider the following: \begin{itemize} \item
  firstly.
\item secondly.
\end{itemize}
```

LISTING 372: multiple-sentences6-mod2.tex using Listing 369 and no sentence indentation

```
Consider the following: \begin{itemize} \item
        firstly.
   \item secondly.
\end{itemize}
```

We note that Listing 371 the `itemize` code block has *not* been indented appropriately. This is because the oneSentencePerLine has been instructed to store sentences (because Listing 369); each sentence is then searched for code blocks.

We can tweak the settings in Listing 341 on page 86 to ensure that full stops are not followed by `item` commands, and that the end of sentences contains `\end{itemize}` as in Listing 373 (if you intend to use this, ensure that you remove the line breaks from the `other` field).

LISTING 373: itemize.yaml -m

```
modifyLineBreaks:
    oneSentencePerLine:
        manipulateSentences: 1
        sentencesEndWith:
            betterFullStop: 0
            other: '(?:\.\)(?!\h*[a-z]))|(?:(?<!(?:(?:e\.g)
                    |(?:i\.e)|(?:etc))))\.(?:\h*\R*(?:\\end\{itemize\})?)
                    (?!(?:[a-z]|[A-Z]|\-|\,|[0-9]|(?:(?:\R|\h)*\\item)))'
```

Upon running

```
cmh:~$ latexindent.pl multiple-sentences6 -m -l=sentence-wrap1.yaml,itemize.yaml
```

we receive the output in Listing 374.

LISTING 374: multiple-sentences6-mod3.tex using Listing 369 and Listing 373

```
Consider the following: \begin{itemize} \item
          firstly. \item secondly.
  \end{itemize}
```

Notice that the sentence has received indentation, and that the `itemize` code block has been found and indented correctly.

6.6 Poly-switches

U: 2017-08-21

Every other field in the `modifyLineBreaks` field uses poly-switches, and can take one of the following integer values:

−1 *remove mode*: line breaks before or after the *<part of thing>* can be removed (assuming that `preserveBlankLines` is set to 0);

0 *off mode*: line breaks will not be modified for the *<part of thing>* under consideration;

1 *add mode*: a line break will be added before or after the *<part of thing>* under consideration, assuming that there is not already a line break before or after the *<part of thing>*;

2 *comment then add mode*: a comment symbol will be added, followed by a line break before or after the *<part of thing>* under consideration, assuming that there is not already a comment and line break before or after the *<part of thing>*;

N: 2017-08-21

3 *add then blank line mode*: a line break will be added before or after the *<part of thing>* under consideration, assuming that there is not already a line break before or after the *<part of thing>*, followed by a blank line;

N: 2019-07-13

4 *add blank line mode*; a blank line will be added before or after the *<part of thing>* under consideration, even if the *<part of thing>* is already on its own line.

In the above, *<part of thing>* refers to either the *begin statement*, *body* or *end statement* of the code blocks detailed in Table 2 on page 44. All poly-switches are *off* by default; `latexindent.pl` searches first of all for per-name settings, and then followed by global per-thing settings.

6.6.1 Poly-switches for environments

We start by viewing a snippet of `defaultSettings.yaml` in Listing 375; note that it contains *global* settings (immediately after the `environments` field) and that *per-name* settings are also allowed – in the case of Listing 375, settings for `equation*` have been specified for demonstration. Note that all poly-switches are *off* (set to 0) by default.

LISTING 375: environments -m

```
557     environments:
558         BeginStartsOnOwnLine: 0
559         BodyStartsOnOwnLine: 0
560         EndStartsOnOwnLine: 0
561         EndFinishesWithLineBreak: 0
562         equation*:
563             BeginStartsOnOwnLine: 0
564             BodyStartsOnOwnLine: 0
565             EndStartsOnOwnLine: 0
566             EndFinishesWithLineBreak: 0
```

Let's begin with the simple example given in Listing 376; note that we have annotated key parts of the file using ♠, ♡, ♢ and ♣, these will be related to fields specified in Listing 375.

LISTING 376: env-mlb1.tex

```
before words♠ \begin{myenv}♡body of myenv♢\end{myenv}♣ after words
```

6.6.1.1 Adding line breaks: BeginStartsOnOwnLine and BodyStartsOnOwnLine

Let's explore BeginStartsOnOwnLine and BodyStartsOnOwnLine in Listings 377 and 378, and in particular, let's allow each of them in turn to take a value of 1.

LISTING 377: env-mlb1.yaml -m

```
modifyLineBreaks:
    environments:
        BeginStartsOnOwnLine: 1
```

LISTING 378: env-mlb2.yaml -m

```
modifyLineBreaks:
    environments:
        BodyStartsOnOwnLine: 1
```

After running the following commands,

```
cmh:~$ latexindent.pl -m env-mlb.tex -l env-mlb1.yaml
cmh:~$ latexindent.pl -m env-mlb.tex -l env-mlb2.yaml
```

the output is as in Listings 379 and 380 respectively.

LISTING 379: env-mlb.tex using Listing 377

```
before words
\begin{myenv}body of myenv\end{myenv} after words
```

LISTING 380: env-mlb.tex using Listing 378

```
before words \begin{myenv}
   body of myenv\end{myenv} after words
```

There are a couple of points to note:

- in Listing 379 a line break has been added at the point denoted by ♠ in Listing 376; no other line breaks have been changed;
- in Listing 380 a line break has been added at the point denoted by ♡ in Listing 376; furthermore, note that the *body* of myenv has received the appropriate (default) indentation.

Let's now change each of the 1 values in Listings 377 and 378 so that they are 2 and save them into env-mlb3.yaml and env-mlb4.yaml respectively (see Listings 381 and 382).

LISTING 381: env-mlb3.yaml -m

```
modifyLineBreaks:
    environments:
        BeginStartsOnOwnLine: 2
```

LISTING 382: env-mlb4.yaml -m

```
modifyLineBreaks:
    environments:
        BodyStartsOnOwnLine: 2
```

Upon running commands analogous to the above, we obtain Listings 383 and 384.

LISTING 383: env-mlb.tex using Listing 381

```
before words%
\begin{myenv}body of myenv\end{myenv} after words
```

LISTING 384: env-mlb.tex using Listing 382

```
before words \begin{myenv}%
   body of myenv\end{myenv} after words
```

Note that line breaks have been added as in Listings 379 and 380, but this time a comment symbol has been added before adding the line break; in both cases, trailing horizontal space has been stripped before doing so.

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Let's now change each of the 1 values in Listings 377 and 378 so that they are 3 and save them into `env-mlb5.yaml` and `env-mlb6.yaml` respectively (see Listings 385 and 386).

LISTING 385: `env-mlb5.yaml` -m

```
modifyLineBreaks:
    environments:
        BeginStartsOnOwnLine: 3
```

LISTING 386: `env-mlb6.yaml` -m

```
modifyLineBreaks:
    environments:
        BodyStartsOnOwnLine: 3
```

Upon running commands analogous to the above, we obtain Listings 387 and 388.

LISTING 387: `env-mlb.tex` using Listing 385

```
before words

\begin{myenv}body of myenv\end{myenv} after words
```

LISTING 388: `env-mlb.tex` using Listing 386

```
before words \begin{myenv}

    body of myenv\end{myenv} after words
```

Note that line breaks have been added as in Listings 379 and 380, but this time a *blank line* has been added after adding the line break.

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Let's now change each of the 1 values in Listings 385 and 386 so that they are 4 and save them into `env-beg4.yaml` and `env-body4.yaml` respectively (see Listings 389 and 390).

LISTING 389: `env-beg4.yaml` -m

```
modifyLineBreaks:
    environments:
        BeginStartsOnOwnLine: 4
```

LISTING 390: `env-body4.yaml` -m

```
modifyLineBreaks:
    environments:
        BodyStartsOnOwnLine: 4
```

We will demonstrate this poly-switch value using the code in Listing 391.

LISTING 391: `env-mlb1.tex`

```
before words
\begin{myenv}
body of myenv
\end{myenv}
after words
```

Upon running the commands

```
cmh:~$ latexindent.pl -m env-mlb1.tex -l env-beg4.yaml
cmh:~$ latexindent.pl -m env-mlb.1tex -l env-body4.yaml
```

then we receive the respective outputs in Listings 392 and 393.

LISTING 392: `env-mlb1.tex` using Listing 389

```
before words

\begin{myenv}
   body of myenv
\end{myenv}
after words
```

LISTING 393: `env-mlb1.tex` using Listing 390

```
before words
\begin{myenv}

   body of myenv
\end{myenv}
after words
```

We note in particular that, by design, for this value of the poly-switches:

1. in Listing 392 a blank line has been inserted before the `\begin` statement, even though the `\begin` statement was already on its own line;

2. in Listing 393 a blank line has been inserted before the beginning of the *body*, even though it already began on its own line.

6.6.1.2 Adding line breaks using EndStartsOnOwnLine and EndFinishesWithLineBreak

Let's explore `EndStartsOnOwnLine` and `EndFinishesWithLineBreak` in Listings 394 and 395, and in particular, let's allow each of them in turn to take a value of 1.

LISTING 394: `env-mlb7.yaml` -m

```
modifyLineBreaks:
    environments:
        EndStartsOnOwnLine: 1
```

LISTING 395: `env-mlb8.yaml` -m

```
modifyLineBreaks:
    environments:
        EndFinishesWithLineBreak: 1
```

After running the following commands,

```
cmh:~$ latexindent.pl -m env-mlb.tex -l env-mlb7.yaml
cmh:~$ latexindent.pl -m env-mlb.tex -l env-mlb8.yaml
```

the output is as in Listings 396 and 397.

LISTING 396: `env-mlb.tex` using Listing 394

```
before words \begin{myenv}body of myenv
\end{myenv} after words
```

LISTING 397: `env-mlb.tex` using Listing 395

```
before words \begin{myenv}body of myenv\end{myenv}
after words
```

There are a couple of points to note:

- in Listing 396 a line break has been added at the point denoted by ♢ in Listing 376 on page 94; no other line breaks have been changed and the `\end{myenv}` statement has *not* received indentation (as intended);
- in Listing 397 a line break has been added at the point denoted by ♣ in Listing 376 on page 94.

Let's now change each of the 1 values in Listings 394 and 395 so that they are 2 and save them into `env-mlb9.yaml` and `env-mlb10.yaml` respectively (see Listings 398 and 399).

LISTING 398: `env-mlb9.yaml` -m

```
modifyLineBreaks:
    environments:
        EndStartsOnOwnLine: 2
```

LISTING 399: `env-mlb10.yaml` -m

```
modifyLineBreaks:
    environments:
        EndFinishesWithLineBreak: 2
```

Upon running commands analogous to the above, we obtain Listings 400 and 401.

LISTING 400: `env-mlb.tex` using Listing 398

```
before words \begin{myenv}body of myenv%
\end{myenv} after words
```

LISTING 401: `env-mlb.tex` using Listing 399

```
before words \begin{myenv}body of myenv\end{myenv}%
after words
```

Note that line breaks have been added as in Listings 396 and 397, but this time a comment symbol has been added before adding the line break; in both cases, trailing horizontal space has been stripped before doing so.

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Let's now change each of the 1 values in Listings 394 and 395 so that they are 3 and save them into `env-mlb11.yaml` and `env-mlb12.yaml` respectively (see Listings 402 and 403).

LISTING 402: `env-mlb11.yaml` -m

```
modifyLineBreaks:
    environments:
        EndStartsOnOwnLine: 3
```

LISTING 403: `env-mlb12.yaml` -m

```
modifyLineBreaks:
    environments:
        EndFinishesWithLineBreak: 3
```

Upon running commands analogous to the above, we obtain Listings 404 and 405.

LISTING 404: env-mlb.tex using Listing 402

```
before words \begin{myenv}body of myenv

\end{myenv} after words
```

LISTING 405: env-mlb.tex using Listing 403

```
before words \begin{myenv}body of myenv\end{myenv}

after words
```

Note that line breaks have been added as in Listings 396 and 397, and that a *blank line* has been added after the line break.

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Let's now change each of the 1 values in Listings 402 and 403 so that they are 4 and save them into `env-end4.yaml` and `env-end-f4.yaml` respectively (see Listings 406 and 407).

LISTING 406: env-end4.yaml -m

```
modifyLineBreaks:
    environments:
        EndStartsOnOwnLine: 4
```

LISTING 407: env-end-f4.yaml -m

```
modifyLineBreaks:
    environments:
        EndFinishesWithLineBreak: 4
```

We will demonstrate this poly-switch value using the code from Listing 391 on page 95.

Upon running the commands

```
cmh:~$ latexindent.pl -m env-mlb1.tex -l env-end4.yaml
cmh:~$ latexindent.pl -m env-mlb.1tex -l env-end-f4.yaml
```

then we receive the respective outputs in Listings 408 and 409.

LISTING 408: env-mlb1.tex using Listing 406

```
before words
\begin{myenv}
   body of myenv

\end{myenv}
after words
```

LISTING 409: env-mlb1.tex using Listing 407

```
before words
\begin{myenv}
   body of myenv
\end{myenv}

after words
```

We note in particular that, by design, for this value of the poly-switches:

1. in Listing 408 a blank line has been inserted before the `\end` statement, even though the `\end` statement was already on its own line;
2. in Listing 409 a blank line has been inserted after the `\end` statement, even though it already began on its own line.

6.6.1.3 poly-switches 1, 2, and 3 only add line breaks when necessary

If you ask `latexindent.pl` to add a line break (possibly with a comment) using a poly-switch value of 1 (or 2 or 3), it will only do so if necessary. For example, if you process the file in Listing 410 using poly-switch values of 1, 2, or 3, it will be left unchanged.

LISTING 410: env-mlb2.tex

```
before words
\begin{myenv}
  body of myenv
\end{myenv}
after words
```

LISTING 411: env-mlb3.tex

```
before words
\begin{myenv}  %
  body of myenv%
\end{myenv}%
after words
```

Setting the poly-switches to a value of 4 instructs `latexindent.pl` to add a line break even if the *<part of thing>* is already on its own line; see Listings 392 and 393 and Listings 408 and 409.

In contrast, the output from processing the file in Listing 411 will vary depending on the poly-switches used; in Listing 412 you'll see that the comment symbol after the `\begin{myenv}` has been moved to the next line, as `BodyStartsOnOwnLine` is set to 1. In Listing 413 you'll see that the comment has been accounted for correctly because `BodyStartsOnOwnLine` has been set to 2, and

the comment symbol has *not* been moved to its own line. You're encouraged to experiment with Listing 411 and by setting the other poly-switches considered so far to 2 in turn.

LISTING 412: env-mlb3.tex using Listing 378 on page 94

```
before words
\begin{myenv}
   %
   body of myenv%
\end{myenv}%
after words
```

LISTING 413: env-mlb3.tex using Listing 382 on page 94

```
before words
\begin{myenv}  %
   body of myenv%
\end{myenv}%
after words
```

The details of the discussion in this section have concerned *global* poly-switches in the `environments` field; each switch can also be specified on a *per-name* basis, which would take priority over the global values; with reference to Listing 375 on page 94, an example is shown for the `equation*` environment.

6.6.1.4 Removing line breaks (poly-switches set to −1)

Setting poly-switches to −1 tells `latexindent.pl` to remove line breaks of the *<part of the thing>*, if necessary. We will consider the example code given in Listing 414, noting in particular the positions of the line break highlighters, ♠, ♡, ♢ and ♣, together with the associated YAML files in Listings 415 to 418.

LISTING 414: env-mlb4.tex

```
before words♠
\begin{myenv}♡
body of myenv♢
\end{myenv}♣
after words
```

LISTING 415: env-mlb13.yaml -m

```
modifyLineBreaks:
    environments:
        BeginStartsOnOwnLine: -1
```

LISTING 416: env-mlb14.yaml -m

```
modifyLineBreaks:
    environments:
        BodyStartsOnOwnLine: -1
```

LISTING 417: env-mlb15.yaml -m

```
modifyLineBreaks:
    environments:
        EndStartsOnOwnLine: -1
```

LISTING 418: env-mlb16.yaml -m

```
modifyLineBreaks:
    environments:
        EndFinishesWithLineBreak: -1
```

After running the commands

```
cmh:~$ latexindent.pl -m env-mlb4.tex -l env-mlb13.yaml
cmh:~$ latexindent.pl -m env-mlb4.tex -l env-mlb14.yaml
cmh:~$ latexindent.pl -m env-mlb4.tex -l env-mlb15.yaml
cmh:~$ latexindent.pl -m env-mlb4.tex -l env-mlb16.yaml
```

we obtain the respective output in Listings 419 to 422.

LISTING 419: env-mlb4.tex using Listing 415

```
before words\begin{myenv}
   body of myenv
\end{myenv}
after words
```

LISTING 420: env-mlb4.tex using Listing 416

```
before words
\begin{myenv}body of myenv
\end{myenv}
after words
```

LISTING 421: env-mlb4.tex using Listing 417

```
before words
\begin{myenv}
   body of myenv\end{myenv}
after words
```

LISTING 422: env-mlb4.tex using Listing 418

```
before words
\begin{myenv}
   body of myenv
\end{myenv}after words
```

Notice that in:

- Listing 419 the line break denoted by ♠ in Listing 414 has been removed;
- Listing 420 the line break denoted by ♡ in Listing 414 has been removed;
- Listing 421 the line break denoted by ♢ in Listing 414 has been removed;
- Listing 422 the line break denoted by ♣ in Listing 414 has been removed.

We examined each of these cases separately for clarity of explanation, but you can combine all of the YAML settings in Listings 415 to 418 into one file; alternatively, you could tell `latexindent.pl` to load them all by using the following command, for example

```
cmh:~$ latexindent.pl -m env-mlb4.tex -l env-mlb13.yaml,env-mlb14.yaml,env-mlb15.yaml,env-mlb16.yaml
```

which gives the output in Listing 376 on page 94.

6.6.1.5 About trailing horizontal space

Recall that on page 25 we discussed the YAML field `removeTrailingWhitespace`, and that it has two (binary) switches to determine if horizontal space should be removed `beforeProcessing` and `afterProcessing`. The `beforeProcessing` is particularly relevant when considering the `-m` switch; let's consider the file shown in Listing 423, which highlights trailing spaces.

LISTING 423: env-mlb5.tex

```
before␣words␣␣␣♠
\begin{myenv}␣␣␣␣␣␣␣␣␣␣␣♡
body␣of␣myenv␣␣␣␣␣␣♢
\end{myenv}␣␣␣␣␣♣
after␣words
```

LISTING 424: removeTWS-before.yaml

```
removeTrailingWhitespace:
    beforeProcessing: 1
```

The output from the following commands

```
cmh:~$ latexindent.pl -m env-mlb5.tex -l env-mlb13.yaml,env-mlb14.yaml,env-mlb15.yaml,env-mlb16.yaml
cmh:~$ latexindent.pl -m env-mlb5.tex -l
    env-mlb13.yaml,env-mlb14.yaml,env-mlb15.yaml,env-mlb16.yaml,removeTWS-before.yaml
```

is shown, respectively, in Listings 425 and 426; note that the trailing horizontal white space has been preserved (by default) in Listing 425, while in Listing 426, it has been removed using the switch specified in Listing 424.

LISTING 425: env-mlb5.tex using Listings 419 to 422

```
before␣words␣␣␣\begin{myenv}␣␣␣␣␣␣␣␣␣␣␣body␣of␣myenv␣␣␣␣␣␣\end{myenv}␣␣␣␣␣after␣words
```

LISTING 426: env-mlb5.tex using Listings 419 to 422 *and* Listing 424

```
before␣words\begin{myenv}body␣of␣myenv\end{myenv}after␣words
```

6.6.1.6 poly-switch line break removal and blank lines

Now let's consider the file in Listing 427, which contains blank lines.

LISTING 427: env-mlb6.tex

```
before words♠


\begin{myenv}♡


body of myenv♢


\end{myenv}♣

after words
```

LISTING 428: UnpreserveBlankLines.yaml -m

```
modifyLineBreaks:
    preserveBlankLines: 0
```

Upon running the following commands

```
cmh:~$ latexindent.pl -m env-mlb6.tex -l env-mlb13.yaml,env-mlb14.yaml,env-mlb15.yaml,env-mlb16.yaml
cmh:~$ latexindent.pl -m env-mlb6.tex -l
    env-mlb13.yaml,env-mlb14.yaml,env-mlb15.yaml,env-mlb16.yaml,UnpreserveBlankLines.yaml
```

we receive the respective outputs in Listings 429 and 430. In Listing 429 we see that the multiple blank lines have each been condensed into one blank line, but that blank lines have *not* been removed by the poly-switches – this is because, by default, `preserveBlankLines` is set to 1. By contrast, in Listing 430, we have allowed the poly-switches to remove blank lines because, in Listing 428, we have set `preserveBlankLines` to 0.

LISTING 429: env-mlb6.tex using Listings 419 to 422

```
before words

\begin{myenv}

   body of myenv

\end{myenv}

after words
```

LISTING 430: env-mlb6.tex using Listings 419 to 422 *and* Listing 428

```
before words\begin{myenv}body of myenv\end{myenv}after words
```

We can explore this further using the blank-line poly-switch value of 3; let's use the file given in Listing 431.

LISTING 431: env-mlb7.tex

```
\begin{one} one text \end{one} \begin{two} two text \end{two}
```

Upon running the following commands

```
cmh:~$ latexindent.pl -m env-mlb7.tex -l env-mlb12.yaml,env-mlb13.yaml
cmh:~$ latexindent.pl -m env-mlb7.tex -l
    env-mlb13.yaml,env-mlb14.yaml,UnpreserveBlankLines.yaml
```

we receive the outputs given in Listings 432 and 433.

LISTING 432: env-mlb7-preserve.tex

```
\begin{one} one text \end{one}

\begin{two} two text \end{two}
```

LISTING 433: env-mlb7-no-preserve.tex

```
\begin{one} one text \end{one} \begin{two} two text \end{two}
```

Notice that in:

- Listing 432 that `\end{one}` has added a blank line, because of the value of `EndFinishesWithLineBreak` in Listing 403 on page 96, and even though the line break ahead of `\begin{two}` should have been removed (because of `BeginStartsOnOwnLine` in Listing 415 on page 98), the blank line has been preserved by default;
- Listing 433, by contrast, has had the additional line-break removed, because of the settings in Listing 428.

6.6.2 Poly-switches for double back slash

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With reference to `lookForAlignDelims` (see Listing 39 on page 25) you can specify poly-switches to dictate the line-break behaviour of double back slashes in environments (Listing 41 on page 26), commands (Listing 75 on page 32), or special code blocks (Listing 110 on page 37). Note that for these poly-switches to take effect, the name of the code block must necessarily be specified within `lookForAlignDelims` (Listing 39 on page 25); we will demonstrate this in what follows.

Consider the code given in Listing 434.

LISTING 434: tabular3.tex

```
\begin{tabular}{cc}
 1 & 2 ★\\□ 3 & 4 ★\\□
\end{tabular}
```

Referencing Listing 434:

- DBS stands for *double back slash*;
- line breaks ahead of the double back slash are annotated by ★, and are controlled by `DBSStartsOnOwnLine`;
- line breaks after the double back slash are annotated by □, and are controlled by `DBSFinishesWithLineBreak`.

Let's explore each of these in turn.

6.6.2.1 Double back slash starts on own line

We explore `DBSStartsOnOwnLine` (★ in Listing 434); starting with the code in Listing 434, together with the YAML files given in Listing 436 and Listing 438 and running the following commands

```
cmh:~$ latexindent.pl -m tabular3.tex -l DBS1.yaml
cmh:~$ latexindent.pl -m tabular3.tex -l DBS2.yaml
```

then we receive the respective output given in Listing 435 and Listing 437.

LISTING 435: tabular3.tex using Listing 436

```
\begin{tabular}{cc}
   1 & 2
   \\ 3 & 4
   \\
\end{tabular}
```

LISTING 436: DBS1.yaml -m

```
modifyLineBreaks:
    environments:
        DBSStartsOnOwnLine: 1
```

LISTING 437: tabular3.tex using Listing 438

```
\begin{tabular}{cc}
   1 & 2 %
   \\ 3 & 4%
   \\
\end{tabular}
```

LISTING 438: DBS2.yaml -m

```
modifyLineBreaks:
    environments:
        tabular:
            DBSStartsOnOwnLine: 2
```

We note that

- Listing 436 specifies `DBSStartsOnOwnLine` for *every* environment (that is within `lookForAlignDelims`, Listing 42 on page 26); the double back slashes from Listing 434 have been moved to their own line in Listing 435;
- Listing 438 specifies `DBSStartsOnOwnLine` on a *per-name* basis for `tabular` (that is within `lookForAlignDelims`, Listing 42 on page 26); the double back slashes from Listing 434 have been moved to their own line in Listing 437, having added comment symbols before moving them.

6.6.2.2 Double back slash finishes with line break

Let's now explore `DBSFinishesWithLineBreak` (□ in Listing 434); starting with the code in Listing 434, together with the YAML files given in Listing 440 and Listing 442 and running the following commands

```
cmh:~$ latexindent.pl -m tabular3.tex -l DBS3.yaml
cmh:~$ latexindent.pl -m tabular3.tex -l DBS4.yaml
```

then we receive the respective output given in Listing 439 and Listing 441.

LISTING 439: tabular3.tex using Listing 440

```
\begin{tabular}{cc}
   1 & 2 \\
   3 & 4 \\
\end{tabular}
```

LISTING 440: DBS3.yaml -m

```
modifyLineBreaks:
    environments:
        DBSFinishesWithLineBreak: 1
```

LISTING 441: tabular3.tex using Listing 442

```
\begin{tabular}{cc}
   1 & 2 \\%
   3 & 4 \\
\end{tabular}
```

LISTING 442: DBS4.yaml -m

```
modifyLineBreaks:
    environments:
        tabular:
            DBSFinishesWithLineBreak: 2
```

We note that

- Listing 440 specifies `DBSFinishesWithLineBreak` for *every* environment (that is within `lookForAlignDelims`, Listing 42 on page 26); the code following the double back slashes from Listing 434 has been moved to their own line in Listing 439;
- Listing 442 specifies `DBSFinishesWithLineBreak` on a *per-name* basis for `tabular` (that is within `lookForAlignDelims`, Listing 42 on page 26); the first double back slashes from Listing 434 have moved code following them to their own line in Listing 441, having added comment symbols before moving them; the final double back slashes have *not* added a line break as they are at the end of the body within the code block.

6.6.2.3 Double back slash poly-switches for specialBeginEnd

Let's explore the double back slash poly-switches for code blocks within `specialBeginEnd` code blocks (Listing 108 on page 37); we begin with the code within Listing 443.

LISTING 443: special4.tex

```
\< a& =b  \\ & =c\\ & =d\\ & =e \>
```

Upon using the YAML settings in Listing 445, and running the command

```
cmh:~$ latexindent.pl -m special4.tex -l DBS5.yaml
```

then we receive the output given in Listing 444.

LISTING 444: special4.tex using Listing 445

```
\<
   a & =b \\
     & =c \\
     & =d \\
     & =e %
\>
```

LISTING 445: DBS5.yaml -m

```
specialBeginEnd:
    cmhMath:
        lookForThis: 1
        begin: '\\<'
        end: '\\>'
lookForAlignDelims:
    cmhMath: 1
modifyLineBreaks:
    specialBeginEnd:
        cmhMath:
            DBSFinishesWithLineBreak: 1
            SpecialBodyStartsOnOwnLine: 1
            SpecialEndStartsOnOwnLine: 2
```

There are a few things to note:

- in Listing 445 we have specified `cmhMath` within `lookForAlignDelims`; without this, the double back slash poly-switches would be ignored for this code block;
- the `DBSFinishesWithLineBreak` poly-switch has controlled the line breaks following the double back slashes;
- the `SpecialEndStartsOnOwnLine` poly-switch has controlled the addition of a comment symbol, followed by a line break, as it is set to a value of 2.

6.6.2.4 Double back slash poly-switches for optional and mandatory arguments

For clarity, we provide a demonstration of controlling the double back slash poly-switches for optional and mandatory arguments. We begin with the code in Listing 446.

LISTING 446: mycommand2.tex

```
\mycommand [
   1&2   &3\\ 4&5&6]{
7&8   &9\\ 10&11&12
}
```

Upon using the YAML settings in Listings 448 and 450, and running the command

```
cmh:~$ latexindent.pl -m mycommand2.tex -l DBS6.yaml
cmh:~$ latexindent.pl -m mycommand2.tex -l DBS7.yaml
```

then we receive the output given in Listings 447 and 449.

LISTING 447: mycommand2.tex using Listing 448

```
\mycommand [
   1 & 2 & 3 %
   \\%
   4 & 5 & 6]{
   7 & 8 & 9 \\ 10&11&12
}
```

LISTING 448: DBS6.yaml -m

```
lookForAlignDelims:
    mycommand: 1
modifyLineBreaks:
    optionalArguments:
        DBSStartsOnOwnLine: 2
        DBSFinishesWithLineBreak: 2
```

LISTING 449: mycommand2.tex using Listing 450

```
\mycommand [
   1&2   &3\\ 4&5&6]{
   7  & 8  & 9  %
   \\%
   10 & 11 & 12
}
```

LISTING 450: DBS7.yaml -m

```
lookForAlignDelims:
    mycommand: 1
modifyLineBreaks:
    mandatoryArguments:
        DBSStartsOnOwnLine: 2
        DBSFinishesWithLineBreak: 2
```

6.6.2.5 Double back slash optional square brackets

The pattern matching for the double back slash will also, optionally, allow trailing square brackets that contain a measurement of vertical spacing, for example `\\[3pt]`.

For example, beginning with the code in Listing 451

LISTING 451: pmatrix3.tex

```
\begin{pmatrix}
1 & 2 \\[2pt] 3 & 4 \\ [ 3 ex] 5&6\\[    4  pt   ] 7 & 8
\end{pmatrix}
```

and running the following command, using Listing 440,

```
cmh:~$ latexindent.pl -m pmatrix3.tex -l DBS3.yaml
```

then we receive the output given in Listing 452.

LISTING 452: pmatrix3.tex using Listing 440

```
\begin{pmatrix}
   1 & 2 \\[2pt]
   3 & 4 \\ [ 3 ex]
   5 & 6 \\[    4  pt   ]
   7 & 8
\end{pmatrix}
```

You can customise the pattern for the double back slash by exploring the *fine tuning* field detailed in Listing 517 on page 125.

6.6.3 Poly-switches for other code blocks

Rather than repeat the examples shown for the environment code blocks (in Section 6.6.1 on page 93), we choose to detail the poly-switches for all other code blocks in Table 3; note that each and every one of these poly-switches is *off by default*, i.e, set to 0.

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Note also that, by design, line breaks involving, `filecontents` and 'comment-marked' code blocks (Listing 76 on page 32) can *not* be modified using `latexindent.pl`. However, there are two poly-switches available for `verbatim` code blocks: environments (Listing 18 on page 21), commands (Listing 19 on page 21) and `specialBeginEnd` (Listing 121 on page 39).

TABLE 3: Poly-switch mappings for all code-block types

Code block	Sample		Poly-switch mapping
environment	`before words`♠ `\begin{myenv}`♡ `body of myenv`♢ `\end{myenv}`♣ `after words`	♠ ♡ ♢ ♣	BeginStartsOnOwnLine BodyStartsOnOwnLine EndStartsOnOwnLine EndFinishesWithLineBreak
ifelsefi	`before words`♠ `\if...`♡ `body of if/or statement`▲ `\or`▼ `body of if/or statement`★ `\else`□ `body of else statement`♢ `\fi`♣ `after words`	♠ ♡ ▲ ▼ ★ □ ♢ ♣	IfStartsOnOwnLine BodyStartsOnOwnLine OrStartsOnOwnLine OrFinishesWithLineBreak ElseStartsOnOwnLine ElseFinishesWithLineBreak FiStartsOnOwnLine FiFinishesWithLineBreak

optionalArguments	`...`♠
	`[`♡
	`value before comma`★`,`
	□
	`end of body of opt arg`♢
	`]`♣
	`...`
		♠
		♡
		★
		□
		♢
		♣
			LSqBStartsOnOwnLine[8]
			OptArgBodyStartsOnOwnLine
			CommaStartsOnOwnLine
			CommaFinishesWithLineBreak
			RSqBStartsOnOwnLine
			RSqBFinishesWithLineBreak

mandatoryArguments	`...`♠
	`{`♡
	`value before comma`★`,`
	□
	`end of body of mand arg`♢
	`}`♣
	`...`
		♠
		♡
		★
		□
		♢
		♣
			LCuBStartsOnOwnLine[9]
			MandArgBodyStartsOnOwnLine
			CommaStartsOnOwnLine
			CommaFinishesWithLineBreak
			RCuBStartsOnOwnLine
			RCuBFinishesWithLineBreak

commands	`before words`♠ `\mycommand`♡ ⟨*arguments*⟩	♠ ♡	CommandStartsOnOwnLine CommandNameFinishesWithLineBr
namedGroupingBracesBrackets	before words♠ myname♡ ⟨*braces/brackets*⟩	♠ ♡	NameStartsOnOwnLine NameFinishesWithLineBreak
keyEqualsValuesBracesBrackets	before words♠ key•=♡ ⟨*braces/brackets*⟩	♠ • ♡	KeyStartsOnOwnLine EqualsStartsOnOwnLine EqualsFinishesWithLineBreak
items	before words♠ `\item`♡ `...`	♠ ♡	ItemStartsOnOwnLine ItemFinishesWithLineBreak
specialBeginEnd	before words♠ `\[`♡ `body of special/middle`★ `\middle`□ body of special/middle ♢ `\]`♣ after words	♠ ♡ ★ □ ♢ ♣	SpecialBeginStartsOnOwnLine SpecialBodyStartsOnOwnLine SpecialMiddleStartsOnOwnLine SpecialMiddleFinishesWithLineBrea SpecialEndStartsOnOwnLine SpecialEndFinishesWithLineBreak
verbatim	before words♠`\begin{verbatim}`	♠	VerbatimBeginStartsOnOwnLine

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[8] LSqB stands for Left Square Bracket
[9] LCuB stands for Left Curly Brace

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body of verbatim \end{verbatim}♣ ♣ VerbatimEndFinishesWithLineBreak
after words

6.6.4 Partnering BodyStartsOnOwnLine with argument-based poly-switches

Some poly-switches need to be partnered together; in particular, when line breaks involving the *first* argument of a code block need to be accounted for using both `BodyStartsOnOwnLine` (or its equivalent, see Table 3 on the preceding page) and `LCuBStartsOnOwnLine` for mandatory arguments, and `LSqBStartsOnOwnLine` for optional arguments.

Let's begin with the code in Listing 453 and the YAML settings in Listing 455; with reference to Table 3 on the previous page, the key `CommandNameFinishesWithLineBreak` is an alias for `BodyStartsOnOwnLine`.

LISTING 453: mycommand1.tex

```
\mycommand
{
mand arg text
mand arg text}
{
mand arg text
mand arg text}
```

Upon running the command

```
cmh:~$ latexindent.pl -m -l=mycom-mlb1.yaml mycommand1.tex
```

we obtain Listing 454; note that the *second* mandatory argument beginning brace { has had its leading line break removed, but that the *first* brace has not.

LISTING 454: mycommand1.tex using Listing 455

```
\mycommand
{
   mand arg text
   mand arg text}{
   mand arg text
   mand arg text}
```

LISTING 455: mycom-mlb1.yaml -m

```
modifyLineBreaks:
    commands:
        CommandNameFinishesWithLineBreak: 0
    mandatoryArguments:
        LCuBStartsOnOwnLine: -1
```

Now let's change the YAML file so that it is as in Listing 457; upon running the analogous command to that given above, we obtain Listing 456; both beginning braces { have had their leading line breaks removed.

LISTING 456: mycommand1.tex using Listing 457

```
\mycommand{
   mand arg text
   mand arg text}{
   mand arg text
   mand arg text}
```

LISTING 457: mycom-mlb2.yaml -m

```
modifyLineBreaks:
    commands:
        CommandNameFinishesWithLineBreak: -1
    mandatoryArguments:
        LCuBStartsOnOwnLine: -1
```

Now let's change the YAML file so that it is as in Listing 459; upon running the analogous command to that given above, we obtain Listing 458.

LISTING 458: mycommand1.tex using Listing 459

```
\mycommand
{
   mand arg text
   mand arg text}
{
   mand arg text
   mand arg text}
```

LISTING 459: mycom-mlb3.yaml -m

```
modifyLineBreaks:
    commands:
        CommandNameFinishesWithLineBreak: -1
    mandatoryArguments:
        LCuBStartsOnOwnLine: 1
```

6.6.5 Conflicting poly-switches: sequential code blocks

It is very easy to have conflicting poly-switches; if we use the example from Listing 453 on the preceding page, and consider the YAML settings given in Listing 461. The output from running

```
cmh:~$ latexindent.pl -m -l=mycom-mlb4.yaml mycommand1.tex
```

is given in Listing 461.

LISTING 460: mycommand1.tex using Listing 461

```
\mycommand
{
   mand arg text
   mand arg text}{
   mand arg text
   mand arg text}
```

LISTING 461: mycom-mlb4.yaml -m

```
modifyLineBreaks:
    mandatoryArguments:
        LCuBStartsOnOwnLine: -1
        RCuBFinishesWithLineBreak: 1
```

Studying Listing 461, we see that the two poly-switches are at opposition with one another:

- on the one hand, `LCuBStartsOnOwnLine` should *not* start on its own line (as poly-switch is set to −1);
- on the other hand, `RCuBFinishesWithLineBreak` *should* finish with a line break.

So, which should win the conflict? As demonstrated in Listing 460, it is clear that `LCuBStartsOnOwnLine` won this conflict, and the reason is that *the second argument was processed after the first* – in general, the most recently-processed code block and associated poly-switch takes priority.

We can explore this further by considering the YAML settings in Listing 463; upon running the command

```
cmh:~$ latexindent.pl -m -l=mycom-mlb5.yaml mycommand1.tex
```

we obtain the output given in Listing 462.

LISTING 462: mycommand1.tex using Listing 463

```
\mycommand
{
   mand arg text
   mand arg text}
{
   mand arg text
   mand arg text}
```

LISTING 463: mycom-mlb5.yaml -m

```
modifyLineBreaks:
    mandatoryArguments:
        LCuBStartsOnOwnLine: 1
        RCuBFinishesWithLineBreak:
    -1
```

As previously, the most-recently-processed code block takes priority – as before, the second (i.e, *last*) argument. Exploring this further, we consider the YAML settings in Listing 465, which give associated output in Listing 464.

LISTING 464: mycommand1.tex using Listing 465

```
\mycommand
{
   mand arg text
   mand arg text}%
{
   mand arg text
   mand arg text}
```

LISTING 465: mycom-mlb6.yaml -m

```
modifyLineBreaks:
    mandatoryArguments:
        LCuBStartsOnOwnLine: 2
        RCuBFinishesWithLineBreak:
    -1
```

Note that a % *has* been added to the trailing first }; this is because:

- while processing the *first* argument, the trailing line break has been removed (RCuBFinishesWithLineBreak set to −1);
- while processing the *second* argument, latexindent.pl finds that it does *not* begin on its own line, and so because LCuBStartsOnOwnLine is set to 2, it adds a comment, followed by a line break.

6.6.6 Conflicting poly-switches: nested code blocks

Now let's consider an example when nested code blocks have conflicting poly-switches; we'll use the code in Listing 466, noting that it contains nested environments.

LISTING 466: nested-env.tex

```
\begin{one}
one text
\begin{two}
two text
\end{two}
\end{one}
```

Let's use the YAML settings given in Listing 468, which upon running the command

```
cmh:~$ latexindent.pl -m -l=nested-env-mlb1.yaml nested-env.tex
```

gives the output in Listing 467.

LISTING 467: nested-env.tex using Listing 468

```
\begin{one}
   one text
   \begin{two}
      two text\end{two}\end{one}
```

LISTING 468: nested-env-mlb1.yaml -m

```
modifyLineBreaks:
    environments:
        EndStartsOnOwnLine: -1
        EndFinishesWithLineBreak: 1
```

In Listing 467, let's first of all note that both environments have received the appropriate (default) indentation; secondly, note that the poly-switch EndStartsOnOwnLine appears to have won the conflict, as \end{one} has had its leading line break removed.

To understand it, let's talk about the three basic phases of latexindent.pl:

1. Phase 1: packing, in which code blocks are replaced with unique ids, working from *the inside to the outside*, and then sequentially – for example, in Listing 466, the two environment is found *before* the one environment; if the -m switch is active, then during this phase:
   - line breaks at the beginning of the body can be added (if BodyStartsOnOwnLine is 1 or 2) or removed (if BodyStartsOnOwnLine is −1);
   - line breaks at the end of the body can be added (if EndStartsOnOwnLine is 1 or 2) or removed (if EndStartsOnOwnLine is −1);

- line breaks after the end statement can be added (if `EndFinishesWithLineBreak` is 1 or 2).

2. Phase 2: indentation, in which white space is added to the begin, body, and end statements;
3. Phase 3: unpacking, in which unique ids are replaced by their *indented* code blocks; if the -m switch is active, then during this phase,
   - line breaks before `begin` statements can be added or removed (depending upon `BeginStartsOnOwnLine`);
   - line breaks after *end* statements can be removed but *NOT* added (see `EndFinishesWithLineBreak`).

With reference to Listing 467, this means that during Phase 1:

- the `two` environment is found first, and the line break ahead of the `\end{two}` statement is removed because `EndStartsOnOwnLine` is set to −1. Importantly, because, *at this stage*, `\end{two}` *does* finish with a line break, `EndFinishesWithLineBreak` causes no action.
- next, the `one` environment is found; the line break ahead of `\end{one}` is removed because `EndStartsOnOwnLine` is set to −1.

The indentation is done in Phase 2; in Phase 3 *there is no option to add a line break after the `end` statements*. We can justify this by remembering that during Phase 3, the `one` environment will be found and processed first, followed by the `two` environment. If the `two` environment were to add a line break after the `\end{two}` statement, then `latexindent.pl` would have no way of knowing how much indentation to add to the subsequent text (in this case, `\end{one}`).

We can explore this further using the poly-switches in Listing 470; upon running the command

```
cmh:~$ latexindent.pl -m -l=nested-env-mlb2.yaml nested-env.tex
```

we obtain the output given in Listing 469.

LISTING 469: `nested-env.tex` using Listing 470

```
\begin{one}
   one text
   \begin{two}
      two text
   \end{two}\end{one}
```

LISTING 470: `nested-env-mlb2.yaml` `-m`

```
modifyLineBreaks:
    environments:
        EndStartsOnOwnLine: 1
        EndFinishesWithLineBreak: -1
```

During Phase 1:

- the `two` environment is found first, and the line break ahead of the `\end{two}` statement is not changed because `EndStartsOnOwnLine` is set to 1. Importantly, because, *at this stage*, `\end{two}` *does* finish with a line break, `EndFinishesWithLineBreak` causes no action.
- next, the `one` environment is found; the line break ahead of `\end{one}` is already present, and no action is needed.

The indentation is done in Phase 2, and then in Phase 3, the `one` environment is found and processed first, followed by the `two` environment. *At this stage*, the `two` environment finds `EndFinishesWithLineBreak` is −1, so it removes the trailing line break; remember, at this point, `latexindent.pl` has completely finished with the `one` environment.

SECTION 7

The -r, -rv and -rr switches

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You can instruct `latexindent.pl` to perform replacements/substitutions on your file by using any of the `-r`, `-rv` or `-rr` switches:

- the `-r` switch will perform indentation and replacements, not respecting verbatim code blocks;
- the `-rv` switch will perform indentation and replacements, and *will* respect verbatim code blocks;
- the `-rr` switch will *not* perform indentation, and will perform replacements not respecting verbatim code blocks.

We will demonstrate each of the `-r`, `-rv` and `-rr` switches, but a summary is given in Table 4.

TABLE 4: The replacement mode switches

switch	indentation?	respect verbatim?
`-r`	✔	✖
`-rv`	✔	✔
`-rr`	✖	✖

The default value of the `replacements` field is shown in Listing 471; as with all of the other fields, you are encouraged to customise and change this as you see fit. The options in this field will *only* be considered if the `-r`, `-rv` or `-rr` switches are active; when discussing YAML settings related to the replacement-mode switches, we will use the style given in Listing 471.

LISTING 471: `replacements` -r

```
618 replacements:
619   -
620     amalgamate: 1
621   -
622     this: 'latexindent.pl'
623     that: 'pl.latexindent'
624     lookForThis: 0
625     when: before
```

The first entry within the `replacements` field is `amalgamate`, and is *optional*; by default it is set to 1, so that replacements will be amalgamated from each settings file that you specify. As you'll see in the demonstrations that follow, there is no need to specify this field.

You'll notice that, by default, there is only *one* entry in the `replacements` field, but it can take as many entries as you would like; each one needs to begin with a `-` on its own line.

7.1 Introduction to replacements

Let's explore the action of the default settings, and then we'll demonstrate the feature with further examples. With reference to Listing 471, the default action will replace every instance of the text `latexindent.pl` with `pl.latexindent`.

Beginning with the code in Listing 472 and running the command

```
cmh:~$ latexindent.pl -r replace1.tex
```

gives the output given in Listing 473.

LISTING 472: replace1.tex

```
Before text, latexindent.pl,
after text.
```

LISTING 473: replace1.tex default

```
Before text, latexindent.pl,
after text.
```

If we don't wish to perform this replacement, then we can tweak the default settings of Listing 471 on the previous page by changing `lookForThis` to 0; we perform this action in Listing 475, and run the command

```
cmh:~$ latexindent.pl -r replace1.tex -l=replace1.yaml
```

which gives the output in Listing 474.

LISTING 474: replace1.tex using Listing 475

```
Before text, latexindent.pl,
after text.
```

LISTING 475: replace1.yaml -r

```
replacements:
  -
    amalgamate: 0
  -
    this: latexindent.pl
    that: pl.latexindent
    lookForThis: 0
```

Note that in Listing 475 we have specified `amalgamate` as 0 so that the default replacements are overwritten.

We haven't yet discussed the `when` field; don't worry, we'll get to it as part of the discussion in what follows.

7.2 The two types of replacements

There are two types of replacements:

1. *string*-based replacements, which replace the string in *this* with the string in *that*. If you specify `this` and you do not specify `that`, then the `that` field will be assumed to be empty.
2. *regex*-based replacements, which use the `substitution` field.

We will demonstrate both in the examples that follow.

`latexindent.pl` chooses which type of replacement to make based on which fields have been specified; if the `this` field is specified, then it will make *string*-based replacements, regardless of if `substitution` is present or not.

7.3 Examples of replacements

Example 1 We begin with code given in Listing 476

LISTING 476: colsep.tex

```
\begin{env}
1 2 3\arraycolsep=3pt
4 5 6\arraycolsep=5pt
\end{env}
```

Let's assume that our goal is to remove both of the `arraycolsep` statements; we can achieve this in a few different ways.

Using the YAML in Listing 478, and running the command

```
cmh:~$ latexindent.pl -r colsep.tex -l=colsep.yaml
```

then we achieve the output in Listing 477.

LISTING 477: colsep.tex using Listing 476

```
\begin{env}
   1 2 3
   4 5 6
\end{env}
```

LISTING 478: colsep.yaml -r

```
replacements:
  -
    this: \arraycolsep=3pt
  -
    this: \arraycolsep=5pt
```

Note that in Listing 478, we have specified *two* separate fields, each with their own '*this*' field; furthermore, for both of the separate fields, we have not specified 'that', so the that field is assumed to be blank by latexindent.pl;

We can make the YAML in Listing 478 more concise by exploring the substitution field. Using the settings in Listing 480 and running the command

```
cmh:~$ latexindent.pl -r colsep.tex -l=colsep1.yaml
```

then we achieve the output in Listing 479.

LISTING 479: colsep.tex using Listing 480

```
\begin{env}
   1 2 3
   4 5 6
\end{env}
```

LISTING 480: colsep1.yaml -r

```
replacements:
  -
    substitution: s/\\arraycolsep=\d+pt//sg
```

The code given in Listing 480 is an example of a *regular expression*, which we may abbreviate to *regex* in what follows. This manual is not intended to be a tutorial on regular expressions; you might like to read, for example, [10] for a detailed covering of the topic. With reference to Listing 480, we do note the following:

- the general form of the substitution field is s/regex/replacement/modifiers. You can place any regular expression you like within this;
- we have 'escaped' the backslash by using \\
- we have used \d+ to represent *at least* one digit
- the s *modifier* (in the sg at the end of the line) instructs latexindent.pl to treat your file as one single line;
- the g *modifier* (in the sg at the end of the line) instructs latexindent.pl to make the substitution *globally* throughout your file; you might try removing the g modifier from Listing 480 and observing the difference in output.

You might like to see https://perldoc.perl.org/perlre.html#Modifiers for details of modifiers; in general, I recommend starting with the sg modifiers for this feature.

Example 2 We'll keep working with the file in Listing 476 on the preceding page for this example.

Using the YAML in Listing 482, and running the command

```
cmh:~$ latexindent.pl -r colsep.tex -l=multi-line.yaml
```

then we achieve the output in Listing 481.

LISTING 481: colsep.tex using Listing 482

```
multi-line!
```

LISTING 482: multi-line.yaml -r

```
replacements:
  -
    this: |-
     \begin{env}
     1 2 3\arraycolsep=3pt
     4 5 6\arraycolsep=5pt
     \end{env}
    that: 'multi-line!'
```

With reference to Listing 482, we have specified a *multi-line* version of `this` by employing the *literal* YAML style `|-`. See, for example, https://stackoverflow.com/questions/3790454/in-yaml-how-do-i-break-a-string-over-multiple-lines for further options, all of which can be used in your YAML file.

This is a natural point to explore the `when` field, specified in Listing 471 on page 110. This field can take two values: *before* and *after*, which respectively instruct `latexindent.pl` to perform the replacements *before* indentation or *after* it. The default value is `before`.

Using the YAML in Listing 484, and running the command

```
cmh:~$ latexindent.pl -r colsep.tex -l=multi-line1.yaml
```

then we achieve the output in Listing 483.

LISTING 483: colsep.tex using Listing 484

```
\begin{env}
   1 2 3\arraycolsep=3pt
   4 5 6\arraycolsep=5pt
\end{env}
```

LISTING 484: multi-line1.yaml -r

```
replacements:
  -
    this: |-
     \begin{env}
     1 2 3\arraycolsep=3pt
     4 5 6\arraycolsep=5pt
     \end{env}
    that: 'multi-line!'
    when: after
```

We note that, because we have specified `when: after`, that `latexindent.pl` has not found the string specified in Listing 484 within the file in Listing 476 on page 111. As it has looked for the string within Listing 484 *after* the indentation has been performed. After indentation, the string as written in Listing 484 is no longer part of the file, and has therefore not been replaced.

As a final note on this example, if you use the `-rr` switch, as follows,

```
cmh:~$ latexindent.pl -rr colsep.tex -l=multi-line1.yaml
```

then the `when` field is ignored, no indentation is done, and the output is as in Listing 481.

Example 3 An important part of the substitution routine is in *capture groups*.

Assuming that we start with the code in Listing 485, let's assume that our goal is to replace each occurrence of `$$...$$` with `\begin{equation*}...\end{equation*}`. This example is partly motivated by tex stackexchange question 242150.

LISTING 485: displaymath.tex

```
before text $$a^2+b^2=4$$ and $$c^2$$

$$
d^2+e^2 = f^2
$$
and also $$ g^2
$$ and some inline math: $h^2$
```

We use the settings in Listing 487 and run the command

```
cmh:~$ latexindent.pl -r displaymath.tex -l=displaymath1.yaml
```

to receive the output given in Listing 486.

LISTING 486: displaymath.tex using Listing 487

```
before text \begin{equation*}a^2+b^2=4\end{equation*}
    and \begin{equation*}c^2\end{equation*}

\begin{equation*}
   d^2+e^2 = f^2
\end{equation*}
and also \begin{equation*} g^2
\end{equation*} and some inline math: $h^2$
```

LISTING 487: displaymath1.yaml -r

```
replacements:
  -
    substitution: |-
     s/\$\$
       (.*?)
       \$\$/\\begin{equation*}$1\\end{equation*}/sgx
```

A few notes about Listing 487:

1. we have used the x modifier, which allows us to have white space within the regex;
2. we have used a capture group, `(.*?)` which captures the content between the `$$...$$` into the special variable, `$1`;
3. we have used the content of the capture group, `$1`, in the replacement text.

See https://perldoc.perl.org/perlre.html#Capture-groups for a discussion of capture groups.

The features of the replacement switches can, of course, be combined with others from the toolkit of `latexindent.pl`. For example, we can combine the poly-switches of Section 6.6 on page 93, which we do in Listing 489; upon running the command

```
cmh:~$ latexindent.pl -r -m displaymath.tex -l=displaymath1.yaml,equation.yaml
```

then we receive the output in Listing 488.

LISTING 488: displaymath.tex using Listings 487 and 489

```
before text%
\begin{equation*}%
   a^2+b^2=4%
\end{equation*}%
and%
\begin{equation*}%
   c^2%
\end{equation*}

\begin{equation*}
   d^2+e^2 = f^2
\end{equation*}
and also%
\begin{equation*}%
   g^2
\end{equation*}%
and some inline math: $h^2$
```

LISTING 489: equation.yaml -m

```
modifyLineBreaks:
    environments:
        equation*:
            BeginStartsOnOwnLine: 2
            BodyStartsOnOwnLine: 2
            EndStartsOnOwnLine: 2
            EndFinishesWithLineBreak: 2
```

Example 4 This example is motivated by tex stackexchange question 490086. We begin with the code in Listing 490.

LISTING 490: phrase.tex

```
phrase 1       phrase 2 phrase 3          phrase 100

phrase 1       phrase 2 phrase 3          phrase 100

phrase 1       phrase 2 phrase 3          phrase 100

phrase 1       phrase 2 phrase 3          phrase 100
```

Our goal is to make the spacing uniform between the phrases. To achieve this, we employ the settings in Listing 492, and run the command

```
cmh:~$ latexindent.pl -r phrase.tex -l=hspace.yaml
```

which gives the output in Listing 491.

LISTING 491: phrase.tex using Listing 492

```
phrase 1 phrase 2 phrase 3 phrase 100

phrase 1 phrase 2 phrase 3 phrase 100

phrase 1 phrase 2 phrase 3 phrase 100

phrase 1 phrase 2 phrase 3 phrase 100
```

LISTING 492: hspace.yaml -r

```
replacements:
  -
    substitution: s/\h+/ /sg
```

The \h+ setting in Listing 492 say to replace *at least one horizontal space* with a single space.

Example 5 We begin with the code in Listing 493.

LISTING 493: references.tex

```
equation \eqref{eq:aa} and Figure  \ref{fig:bb}
and table~\ref{tab:cc}
```

Our goal is to change each reference so that both the text and the reference are contained within one hyperlink. We achieve this by employing Listing 495 and running the command

```
cmh:~$ latexindent.pl -r references.tex -l=reference.yaml
```

which gives the output in Listing 494.

LISTING 494: references.tex using Listing 495

```
\hyperref{equation \ref*{eq:aa}} and \hyperref{Figure \ref*{fig:bb}}
and \hyperref{table \ref*{tab:cc}}
```

LISTING 495: reference.yaml -r

```
replacements:
  -
    substitution: |-
      s/(
        equation
        |
        table
        |
        figure
        |
        section
      )
      (\h|~)*
      \\(?:eq)?
      ref\{(.*?)\}/\\hyperref{$1 \\ref\*{$3}}/sgxi
```

Referencing Listing 495, the | means *or*, we have used *capture groups*, together with an example of an *optional* pattern, `(?:eq)?`.

Example 6 Let's explore the three replacement mode switches (see Table 4 on page 110) in the context of an example that contains a verbatim code block, Listing 496; we will use the settings in Listing 497.

LISTING 496: verb1.tex

```
\begin{myenv}
body of verbatim
\end{myenv}
some verbatim
\begin{verbatim}
    body
        of
      verbatim
 text
\end{verbatim}
text
```

LISTING 497: verbatim1.yaml -r

```
replacements:
  -
    this: 'body'
    that: 'head'
```

Upon running the following commands,

```
cmh:~$ latexindent.pl -r verb1.tex -l=verbatim1.yaml -o=+mod1
cmh:~$ latexindent.pl -rv verb1.tex -l=verbatim1.yaml -o=+-rv-mod1
cmh:~$ latexindent.pl -rr verb1.tex -l=verbatim1.yaml -o=+-rr-mod1
```

we receive the respective output in Listings 498 to 500

LISTING 498: verb1-mod1.tex

```
\begin{myenv}
   head of verbatim
\end{myenv}
some verbatim
\begin{verbatim}
    head
        of
      verbatim
 text
\end{verbatim}
text
```

LISTING 499: verb1-rv-mod1.tex

```
\begin{myenv}
   head of verbatim
\end{myenv}
some verbatim
\begin{verbatim}
    body
        of
      verbatim
 text
\end{verbatim}
text
```

LISTING 500: verb1-rr-mod1.tex

```
\begin{myenv}
head of verbatim
\end{myenv}
some verbatim
\begin{verbatim}
    head
        of
      verbatim
 text
\end{verbatim}
text
```

We note that:

1. in Listing 498 indentation has been performed, and that the replacements specified in Listing 497 have been performed, even within the verbatim code block;
2. in Listing 499 indentation has been performed, but that the replacements have *not* been performed within the verbatim environment, because the `rv` switch is active;
3. in Listing 500 indentation has *not* been performed, but that replacements have been performed, not respecting the verbatim code block.

See the summary within Table 4 on page 110.

Example 7 Let's explore the `amalgamate` field from Listing 471 on page 110 in the context of the file specified in Listing 501.

LISTING 501: amalg1.tex

```
one two three
```

Let's consider the YAML files given in Listings 502 to 504.

LISTING 502: amalg1-yaml.yaml -r

```
replacements:
  -
    this: one
    that: 1
```

LISTING 503: amalg2-yaml.yaml -r

```
replacements:
  -
    this: two
    that: 2
```

LISTING 504: amalg3-yaml.yaml -r

```
replacements:
  -
    amalgamate: 0
  -
    this: three
    that: 3
```

Upon running the following commands,

```
cmh:~$ latexindent.pl -r amalg1.tex -l=amalg1-yaml
cmh:~$ latexindent.pl -r amalg1.tex -l=amalg1-yaml,amalg2-yaml
cmh:~$ latexindent.pl -r amalg1.tex -l=amalg1-yaml,amalg2-yaml,amalg3-yaml
```

we receive the respective output in Listings 505 to 507.

LISTING 505: `amalg1.tex` using Listing 502	LISTING 506: `amalg1.tex` using Listings 502 and 503	LISTING 507: `amalg1.tex` using Listings 502 to 504
`1 two three`	`1 2 three`	`one two 3`

We note that:

1. in Listing 505 the replacements from Listing 502 have been used;
2. in Listing 506 the replacements from Listings 502 and 503 have *both* been used, because the default value of `amalgamate` is 1;
3. in Listing 507 *only* the replacements from Listing 504 have been used, because the value of `amalgamate` has been set to 0.

SECTION 8

The –lines switch

N: 2021-09-16

`latexindent.pl` can operate on a *selection* of lines of the file using the `-lines` or `-n` switch.

The basic syntax is `-lines MIN-MAX`, so for example

```
cmh:~$ latexindent.pl --lines 3-7 myfile.tex
cmh:~$ latexindent.pl -n 3-7 myfile.tex
```

will only operate upon lines 3 to 7 in `myfile.tex`. All of the other lines will *not* be operated upon by `latexindent.pl`.

The options for the `lines` switch are:

- line range, as in `-lines 3-7`
- single line, as in `-lines 5`
- multiple line ranges separated by commas, as in `-lines 3-5,8-10`
- negated line ranges, as in `-lines !3-5` which translates to `-lines 1-2,6-N`, where N is the number of lines in your file.

We demonstrate this feature, and the available variations in what follows. We will use the file in Listing 508.

LISTING 508: `myfile.tex`

```
1  Before the environments
2  \begin{one}
3     first block, first line
4     first block, second line
5     first block, third line
6     \begin{two}
7        second block, first line
8        second block, second line
9        second block, third line
10       second block, fourth line
11    \end{two}
12 \end{one}
```

Example 8 We demonstrate the basic usage using the command

```
cmh:~$ latexindent.pl --lines 3-7 myfile.tex -o=+-mod1
```

which instructs `latexindent.pl` to only operate on lines 3 to 7; the output is given in Listing 509.

LISTING 509: myfile-mod1.tex

```
Before the environments
\begin{one}
first block, first line
first block, second line
first block, third line
\begin{two}
second block, first line
      second block, second line
      second block, third line
      second block, fourth line
   \end{two}
\end{one}
```

The following two calls to `latexindent.pl` are equivalent

```
cmh:~$ latexindent.pl --lines 3-7 myfile.tex -o=+-mod1
cmh:~$ latexindent.pl --lines 7-3 myfile.tex -o=+-mod1
```

as `latexindent.pl` performs a check to put the lowest number first.

Example 9 You can call the `lines` switch with only *one number* and in which case only that line will be operated upon. For example

```
cmh:~$ latexindent.pl --lines 5 myfile.tex -o=+-mod2
```

instructs `latexindent.pl` to only operate on line 5; the output is given in Listing 510.

LISTING 510: myfile-mod2.tex

```
Before the environments
\begin{one}
   first block, first line
   first block, second line
first block, third line
   \begin{two}
      second block, first line
      second block, second line
      second block, third line
      second block, fourth line
   \end{two}
\end{one}
```

The following two calls are equivalent:

```
cmh:~$ latexindent.pl --lines 5 myfile.tex
cmh:~$ latexindent.pl --lines 5-5 myfile.tex
```

Example 10 If you specify a value outside of the line range of the file then `latexindent.pl` will ignore the `lines` argument, detail as such in the log file, and proceed to operate on the entire file.

For example, in the following call

```
cmh:~$ latexindent.pl --lines 11-13 myfile.tex
```

`latexindent.pl` will ignore the `lines` argument, and *operate on the entire file* because Listing 508 only has 12 lines.

Similarly, in the call

```
cmh:~$ latexindent.pl --lines -1-3 myfile.tex
```

`latexindent.pl` will ignore the `lines` argument, and *operate on the entire file* because we assume that negatively numbered lines in a file do not exist.

Example 11 You can specify *multiple line ranges* as in the following

```
cmh:~$ latexindent.pl --lines 3-5,8-10 myfile.tex -o=+-mod3
```

which instructs `latexindent.pl` to operate upon lines 3 to 5 and lines 8 to 10; the output is given in Listing 511.

LISTING 511: `myfile-mod3.tex`

```
1  Before the environments
2  \begin{one}
3  first block, first line
4  first block, second line
5  first block, third line
6     \begin{two}
7        second block, first line
8  second block, second line
9  second block, third line
10 second block, fourth line
11    \end{two}
12 \end{one}
```

The following calls to `latexindent.pl` are all equivalent

```
cmh:~$ latexindent.pl --lines 3-5,8-10 myfile.tex
cmh:~$ latexindent.pl --lines 8-10,3-5 myfile.tex
cmh:~$ latexindent.pl --lines 10-8,3-5 myfile.tex
cmh:~$ latexindent.pl --lines 10-8,5-3 myfile.tex
```

as `latexindent.pl` performs a check to put the lowest line ranges first, and within each line range, it puts the lowest number first.

Example 12 There's no limit to the number of line ranges that you can specify, they just need to be separated by commas. For example

```
cmh:~$ latexindent.pl --lines 1-2,4-5,9-10,12 myfile.tex -o=+-mod4
```

has four line ranges: lines 1 to 2, lines 4 to 5, lines 9 to 10 and line 12. The output is given in Listing 512.

LISTING 512: myfile-mod4.tex

```
Before the environments
\begin{one}
   first block, first line
   first block, second line
   first block, third line
   \begin{two}
      second block, first line
      second block, second line
   second block, third line
   second block, fourth line
   \end{two}
\end{one}
```

As previously, the ordering does not matter, and the following calls to `latexindent.pl` are all equivalent

```
cmh:~$ latexindent.pl --lines 1-2,4-5,9-10,12 myfile.tex
cmh:~$ latexindent.pl --lines 2-1,4-5,9-10,12 myfile.tex
cmh:~$ latexindent.pl --lines 4-5,1-2,9-10,12 myfile.tex
cmh:~$ latexindent.pl --lines 12,4-5,1-2,9-10 myfile.tex
```

as `latexindent.pl` performs a check to put the lowest line ranges first, and within each line range, it puts the lowest number first.

Example 13 You can specify *negated line ranges* by using `!` as in

```
cmh:~$ latexindent.pl --lines !5-7 myfile.tex -o=+-mod5
```

which instructs `latexindent.pl` to operate upon all of the lines *except* lines 5 to 7.

In other words, `latexindent.pl` *will* operate on lines 1 to 4, and 8 to 12, so the following two calls are equivalent:

```
cmh:~$ latexindent.pl --lines !5-7 myfile.tex
cmh:~$ latexindent.pl --lines 1-4,8-12 myfile.tex
```

The output is given in Listing 513.

LISTING 513: myfile-mod5.tex

```
Before the environments
\begin{one}
   first block, first line
   first block, second line
   first block, third line
   \begin{two}
      second block, first line
   second block, second line
   second block, third line
   second block, fourth line
   \end{two}
\end{one}
```

Example 14 You can specify *multiple negated line ranges* such as

```
cmh:~$ latexindent.pl --lines !5-7,!9-10 myfile.tex -o=+-mod6
```

which is equivalent to:

```
cmh:~$ latexindent.pl --lines 1-4,8,11-12 myfile.tex -o=+-mod6
```

The output is given in Listing 514.

LISTING 514: myfile-mod6.tex

```
Before the environments
\begin{one}
   first block, first line
   first block, second line
   first block, third line
   \begin{two}
      second block, first line
   second block, second line
      second block, third line
      second block, fourth line
   \end{two}
\end{one}
```

Example 15 If you specify a line range with anything other than an integer, then `latexindent.pl` will ignore the `lines` argument, and *operate on the entire file*.

Sample calls that result in the `lines` argument being ignored include the following:

```
cmh:~$ latexindent.pl --lines 1-x myfile.tex
cmh:~$ latexindent.pl --lines !y-3 myfile.tex
```

Example 16 We can, of course, use the `lines` switch in combination with other switches.

For example, let's use with the file in Listing 515.

LISTING 515: myfile1.tex

```
Before the environments
\begin{one}
   first block, first line
   first block, second line
   first block, third line
   \begin{two} body \end{two}
\end{one}
```

We can demonstrate interaction with the `-m` switch (see Section 6 on page 65); in particular, if we use Listing 410 on page 97, Listing 394 on page 96 and Listing 395 on page 96 and run

```
cmh:~$ latexindent.pl --lines 6 myfile1.tex -o=+-mod1 -m -l env-mlb2,env-mlb7,env-mlb8 -o=+-mod1
```

then we receive the output in Listing 516.

LISTING 516: myfile1-mod1.tex

```
Before the environments
\begin{one}
   first block, first line
   first block, second line
   first block, third line
\begin{two}
   body
\end{two}
\end{one}
```

SECTION 9

Fine tuning

N: 2019-07-13

`latexindent.pl` operates by looking for the code blocks detailed in Table 2 on page 44. The fine tuning of the details of such code blocks is controlled by the `fineTuning` field, detailed in Listing 517.

This field is for those that would like to peek under the bonnet/hood and make some fine tuning to `latexindent.pl`'s operating.

Warning!

Making changes to the fine tuning may have significant consequences for your indentation scheme, proceed with caution!

LISTING 517: `fineTuning`

```
fineTuning:
    environments:
      name: '[a-zA-Z@\*0-9_\\]+'
    ifElseFi:
      name: '(?!@?if[a-zA-Z@]*?\{)@?if[a-zA-Z@]*?'
    commands:
      name: '[+a-zA-Z@\*0-9_\:]+?'
    keyEqualsValuesBracesBrackets:
      name: '[a-zA-Z@\*0-9_\/.:\#-]+[a-zA-Z@\*0-9_\/.\h\{\}:\#-]*?'
      follow: '(?:(?<!\\)\{)|,|(?:(?<!\\)\[)'
    namedGroupingBracesBrackets:
      name: '[0-9\.a-zA-Z@\*><]+?'
      follow: '\h|\R|\{|\[|\$|\)|\('
    UnNamedGroupingBracesBrackets:
      follow: '\{|\[|,|&|\)|\(|\$'
    arguments:
      before: '(?:#\d\h*;?,?\/?)+|\<.*?\>'
      between: '_|\^|\*'
    trailingComments:
      notPreceededBy: '(?<!\\)'
    modifyLineBreaks:
      betterFullStop:
    '(?:\.\)(?!\h*[a-z]))|(?:(?<!(?:(?:e\.g)|(?:i\.e)|(?:etc))))\.(?!(?:[a-z]|[A-Z]|\-|~|\,|[0-9]))'
      doubleBackSlash: '\\\\(?:\h*\[\h*\d+\h*[a-zA-Z]+\h*\])?'
      comma: ','
```

The fields given in Listing 517 are all *regular expressions*. This manual is not intended to be a tutorial on regular expressions; you might like to read, for example, [10] for a detailed covering of the topic.

We make the following comments with reference to Listing 517:

1. the `environments:name` field details that the *name* of an environment can contain:
   (a) `a-z` lower case letters
   (b) `A-Z` upper case letters
   (c) `@` the `@` 'letter'
   (d) `\*` stars
   (e) `0-9` numbers

(f) _ underscores

(g) \ backslashes

The + at the end means *at least one* of the above characters.

2. the `ifElseFi:name` field:
   (a) `@?` means that it *can possibly* begin with `@`
   (b) followed by `if`
   (c) followed by 0 or more characters from `a-z`, `A-Z` and `@`
   (d) the `?` the end means *non-greedy*, which means 'stop the match as soon as possible'
3. the `keyEqualsValuesBracesBrackets` contains some interesting syntax:
   (a) `|` means 'or'
   (b) `(?:(?<!\\)\{)` the `(?:...)` uses a *non-capturing* group – you don't necessarily need to worry about what this means, but just know that for the `fineTuning` feature you should only ever use *non*-capturing groups, and *not* capturing groups, which are simply `(...)`
   (c) `(?<!\\)\{)` means a `{` but it can *not* be immediately preceded by a `\`
4. in the `arguments:before` field
   (a) `\d\h*` means a digit (i.e. a number), followed by 0 or more horizontal spaces
   (b) `;?,?` means *possibly* a semi-colon, and possibly a comma
   (c) `\<.*?\>` is designed for 'beamer'-type commands; the `.*?` means anything in between `<...>`
5. the `modifyLineBreaks` field refers to fine tuning settings detailed in Section 6 on page 65. In particular:
   (a) `betterFullStop` is in relation to the one sentence per line routine, detailed in Section 6.5 on page 85
   (b) `doubleBackSlash` is in relation to the `DBSStartsOnOwnLine` and `DBSFinishesWithLineBreak` polyswitches surrounding double back slashes, see Section 6.6.2 on page 101
   (c) `comma` is in relation to the `CommaStartsOnOwnLine` and `CommaFinishesWithLineBreak` polyswitches surrounding commas in optional and mandatory arguments; see Table 3 on page 105

It is not obvious from Listing 517, but each of the `follow`, `before` and `between` fields allow trailing comments, line breaks, and horizontal spaces between each character.

Warning!

For the `fineTuning` feature you should only ever use *non*-capturing groups, such as `(?:...)` and *not* capturing groups, which are `(...)`

Example 17 As a demonstration, consider the file given in Listing 518, together with its default output using the command

```
cmh:~$ latexindent.pl finetuning1.tex
```

is given in Listing 519.

LISTING 518: finetuning1.tex

```
\mycommand{
    \rule{G -> +H[-G]CL}
    \rule{H -> -G[+H]CL}
    \rule{g -> +h[-g]cL}
    \rule{h -> -g[+h]cL}
}
```

LISTING 519: finetuning1.tex default

```
\mycommand{
\rule{G -> +H[-G]CL}
\rule{H -> -G[+H]CL}
\rule{g -> +h[-g]cL}
\rule{h -> -g[+h]cL}
}
```

It's clear from Listing 519 that the indentation scheme has not worked as expected. We can *fine tune* the indentation scheme by employing the settings given in Listing 521 and running the command

```
cmh:~$ latexindent.pl finetuning1.tex -l=fine-tuning1.yaml
```

and the associated (desired) output is given in Listing 520.

LISTING 520: finetuning1.tex using Listing 521

```
\mycommand{
   \rule{G -> +H[-G]CL}
   \rule{H -> -G[+H]CL}
   \rule{g -> +h[-g]cL}
   \rule{h -> -g[+h]cL}
}
```

LISTING 521: finetuning1.yaml

```
fineTuning:
    arguments:
      between:
    '_|\^|\*|\->|\-|\+|h|H|g|G'
```

Example 18 Let's have another demonstration; consider the file given in Listing 522, together with its default output using the command

```
cmh:~$ latexindent.pl finetuning2.tex
```

is given in Listing 523.

LISTING 522: finetuning2.tex

```
@misc{ wikilatex,
author = "{Wikipedia contributors}",
title = "LaTeX --- {Wikipedia}{,}",
note = "[Online; accessed 3-March-2020]"
}
```

LISTING 523: finetuning2.tex default

```
@misc{ wikilatex,
author = "{Wikipedia contributors}",
title = "LaTeX --- {Wikipedia}{,}",
note = "[Online; accessed 3-March-2020]"
}
```

It's clear from Listing 523 that the indentation scheme has not worked as expected. We can *fine tune* the indentation scheme by employing the settings given in Listing 525 and running the command

```
cmh:~$ latexindent.pl finetuning2.tex -l=fine-tuning2.yaml
```

and the associated (desired) output is given in Listing 524.

LISTING 524: finetuning2.tex using Listing 525

```
@misc{ wikilatex,
   author = "{Wikipedia contributors}",
   title = "LaTeX --- {Wikipedia}{,}",
   note = "[Online; accessed 3-March-2020]"
}
```

LISTING 525: finetuning2.yaml

```
fineTuning:
    NamedGroupingBracesBrackets:
      follow: '\h|\R|\{|\[|\$|\)|\(|"'
    UnNamedGroupingBracesBrackets:
      follow: '\{|\[|,|&|\)|\(|\$|"'
    arguments:
      between: '_|\^|\*|---'
```

In particular, note that the settings in Listing 525 specify that `NamedGroupingBracesBrackets` and `UnNamedGroupingBracesBrackets` can follow " and that we allow --- between arguments.

Example 19 You can tweak the `fineTuning` using the `-y` switch, but to be sure to use quotes appropriately. For example, starting with the code in Listing 526 and running the following command

```
cmh:~$ latexindent.pl -m
    -y='modifyLineBreaks:oneSentencePerLine:manipulateSentences:␣1,␣
    modifyLineBreaks:oneSentencePerLine:sentencesBeginWith:a-z:␣1,␣
    fineTuning:modifyLineBreaks:betterFullStop:␣
    "(?:\.|;|:(?![a-z]))|(?:(?<!(?:(?:e\.g)|(?:i\.e)|(?:etc))))\.(?!(?:[a-z]|[A-Z]|\-|
    issue-243.tex -o=+-mod1
```

gives the output shown in Listing 527.

LISTING 526: finetuning3.tex

```
We go; you see: this sentence \cite{tex:stackexchange} finishes here.
```

LISTING 527: finetuning3.tex using -y switch

```
We go;
you see:
this sentence \cite{tex:stackexchange} finishes here.
```

Example 20 We can tweak the `fineTuning` for how trailing comments are classified. For motivation, let's consider the code given in Listing 528

LISTING 528: finetuning4.tex

```
some before text
 \href{Handbook%20for%30Spoken%40document.pdf}{my document}
some after text
```

We will compare the settings given in Listings 529 and 530.

LISTING 529: href1.yaml -m

```
modifyLineBreaks:
    textWrapOptions:
        columns: 80
        all: 1
        perCodeBlockBasis: 1
    removeParagraphLineBreaks:
        all: 1
```

LISTING 530: href2.yaml -m

```
modifyLineBreaks:
    textWrapOptions:
        columns: 80
        all: 1
        perCodeBlockBasis: 1
    removeParagraphLineBreaks:
        all: 1

fineTuning:
    trailingComments:
      notPreceededBy:
    '(?:(?<!Handbook)(?<!for)(?<!Spoken))'
```

Upon running the following commands

```
cmh:~$ latexindent.pl -m finetuning4.tex -o=+-mod1 -l=href1
cmh:~$ latexindent.pl -m finetuning4.tex -o=+-mod2 -l=href2
```

we receive the respective output in Listings 531 and 532.

LISTING 531: finetuning4.tex using Listing 529

```
some before text \href{Handbook some after text%20for%30Spoken%40document.pdf}{my document}
```

LISTING 532: finetuning4.tex using Listing 530

```
some before text \href{Handbook%20for%30Spoken%40document.pdf}{my document} some after text
```

We note that in:

- Listing 531 the trailing comments are assumed to be everything following the first comment symbol, which has meant that everything following it has been moved to the end of the line; this is undesirable, clearly!
- Listing 532 has fine-tuned the trailing comment matching, and says that % cannot be immediately preceeded by the words 'Handbook', 'for' or 'Spoken', which means that none of the % symbols have been treated as trailing comments, and the output is desirable.

Another approach to this situation, which does not use `fineTuning`, is to use `noIndentBlock` which we discussed in Listing 24 on page 22; using the settings in Listing 533 and running the command

```
cmh:~$ latexindent.pl -m finetuning4.tex -o=+-mod3 -l=href3
```

then we receive the same output given in Listing 532; see also `paragraphsStopAt` in Listing 315 on page 80.

LISTING 533: href3.yaml -m

```
modifyLineBreaks:
    textWrapOptions:
        columns: 80
        all: 1
        perCodeBlockBasis: 1
    removeParagraphLineBreaks:
        all: 1
        paragraphsStopAt:
            verbatim: 0

noIndentBlock:
    href:
        begin: '\\href\{[^}]*?\}\{'
        body: '[^}]*?'
        end: '\}'
```

With reference to the `body` field in Listing 533, we note that the `body` field can be interpreted as: the fewest number of zero or more characters that are not right braces. This is an example of character class.

Example 21 We can use the `fineTuning` field to assist in the formatting of bibliography files.

Starting with the file in Listing 534 and running the command

```
cmh:~$ latexindent.pl bib1.tex -o=+-mod1
```

gives the output in Listing 535.

LISTING 534: bib1.bib

```
@online{paulo,
title="arararule,indent.yaml",
author="PauloCereda",
date={2013-05-23},
urldate={2021-03-19},
keywords={contributor},}
```

LISTING 535: bib1-mod1.bib

```
@online{paulo,
   title="arararule,indent.yaml",
   author="PauloCereda",
   date={2013-05-23},
   urldate={2021-03-19},
   keywords={contributor},}
```

Let's assume that we would like to format the output so as to align the = symbols. Using the settings in Listing 537 and running the command

```
cmh:~$ latexindent.pl bib1.bib -l bibsettings1.yaml -o=+-mod2
```

gives the output in Listing 536.

LISTING 536: bib1.bib using Listing 537

```
@online{paulo,
   title    = "arararule,indent.yaml",
   author   = "PauloCereda",
   date     = {2013-05-23},
   urldate  = {2021-03-19},
   keywords = {contributor},}
```

LISTING 537: bibsettings1.yaml

```
lookForAlignDelims:
   online:
      delimiterRegEx: '(=)'

fineTuning:
    keyEqualsValuesBracesBrackets:
      follow:
     '(?:(?<!\\)\{)|(?:(?<!\\)\[)'
     UnNamedGroupingBracesBrackets:
      follow: '\{|\[|,|&|\)|\(|\$|='
```

Some notes about Listing 537:

- we have populated the `lookForAlignDelims` field with the `online` command, and have used the `delimiterRegEx`, discussed in Section 5.5.4 on page 34;
- we have tweaked the `keyEqualsValuesBracesBrackets` code block so that it will *not* be found following a comma; this means that, in contrast to the default behaviour, the lines such as `date={2013-05-23}`, will *not* be treated as key-equals-value braces;
- the adjustment to `keyEqualsValuesBracesBrackets` necessitates the associated change to the `UnNamedGroupingBracesBrackets` field so that they will be searched for following = symbols.

Example 22 We can build upon Listing 537 for slightly more complicated bibliography files.

Starting with the file in Listing 538 and running the command

```
cmh:~$ latexindent.pl bib2.bib -l bibsettings1.yaml -o=+-mod1
```

gives the output in Listing 539.

LISTING 538: bib2.bib

```
@online{cmh:videodemo,
title="Videodemonstrationofpl.latexindentonyoutube",
url="https://www.youtube.com/watch?v=wo38aaH2F4E&spfreload=10",
urldate={2017-02-21},
}
```

LISTING 539: bib2-mod1.bib

```
@online{cmh:videodemo,
   title   = "Videodemonstrationofpl.latexindentonyoutube",
   url     = "https://www.youtube.com/watch?v               = wo38aaH2F4E&spfreload = 10",
   urldate = {2017-02-21},
}
```

The output in Listing 539 is not ideal, as the = symbol within the url field has been incorrectly used as an alignment delimiter.

We address this by tweaking the `delimiterRegEx` field in Listing 540.

LISTING 540: bibsettings2.yaml

```
lookForAlignDelims:
   online:
      delimiterRegEx: '(?<!v)(?<!spfreload)(=)'
```

Upon running the command

```
cmh:~$ latexindent.pl bib2.bib -l bibsettings1.yaml,bibsettings2.yaml -o=+-mod2
```

we receive the *desired* output in Listing 541.

LISTING 541: bib2-mod2.bib

```
@online{cmh:videodemo,
   title   = "Videodemonstrationofpl.latexindentonyoutube",
   url     = "https://www.youtube.com/watch?v=wo38aaH2F4E&spfreload=10",
   urldate = {2017-02-21},
}
```

With reference to Listing 540 we note that the `delimiterRegEx` has been adjusted so that = symbols are used as the delimiter, but only when they are *not preceeded* by either v or `spfreload`.

SECTION 10

Conclusions and known limitations

There are a number of known limitations of the script, and almost certainly quite a few that are *unknown*!

For example, with reference to the multicolumn alignment routine in Listing 52 on page 28, when working with code blocks in which multicolumn commands overlap, the algorithm can fail.

Another limitation is to do with efficiency, particularly when the `-m` switch is active, as this adds many checks and processes. The current implementation relies upon finding and storing *every* code block (see the discussion on page 108); I hope that, in a future version, only *nested* code blocks will need to be stored in the 'packing' phase, and that this will improve the efficiency of the script.

U: 2019-07-13

You can run `latexindent` on any file; if you don't specify an extension, then the extensions that you specify in `fileExtensionPreference` (see Listing 16 on page 19) will be consulted. If you find a case in which the script struggles, please feel free to report it at [11], and in the meantime, consider using a `noIndentBlock` (see page 22).

I hope that this script is useful to some; if you find an example where the script does not behave as you think it should, the best way to contact me is to report an issue on [11]; otherwise, feel free to find me on the `http://tex.stackexchange.com/users/6621/cmhughes`.

Section 11

References

11.1 External links

[1] *A Perl script for indenting tex files*. URL: http://tex.blogoverflow.com/2012/08/a-perl-script-for-indenting-tex-files/ (visited on 01/23/2017).

[5] *CPAN: Comprehensive Perl Archive Network*. URL: http://www.cpan.org/ (visited on 01/23/2017).

[6] *Data Dumper demonstration*. URL: https://stackoverflow.com/questions/7466825/how-do-you-sort-the-output-of-datadumper (visited on 06/18/2021).

[7] *Data::Dumper module*. URL: https://perldoc.perl.org/Data::Dumper (visited on 06/18/2021).

[10] Jeffrey E. F. Friedl. *Mastering Regular Expressions*. ISBN: 0596002890.

[11] *Home of latexindent.pl*. URL: https://github.com/cmhughes/latexindent.pl (visited on 01/23/2017).

[16] *Log4perl Perl module*. URL: http://search.cpan.org/~mschilli/Log-Log4perl-1.49/lib/Log/Log4perl.pm (visited on 09/24/2017).

[20] *Perlbrew*. URL: http://perlbrew.pl/ (visited on 01/23/2017).

[21] *perldoc Encode::Supported*. URL: https://perldoc.perl.org/Encode::Supported (visited on 05/06/2021).

[24] *Strawberry Perl*. URL: http://strawberryperl.com/ (visited on 01/23/2017).

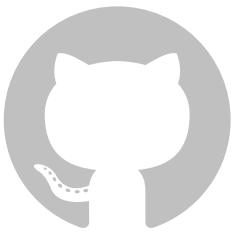
[25] *Text::Tabs Perl module*. URL: http://search.cpan.org/~muir/Text-Tabs+Wrap-2013.0523/lib.old/Text/Tabs.pm (visited on 07/06/2017).

[26] *Text::Wrap Perl module*. URL: http://perldoc.perl.org/Text/Wrap.html (visited on 05/01/2017).

[27] *Video demonstration of latexindent.pl on youtube*. URL: https://www.youtube.com/watch?v=wo38aaH2F4E&spfreload=10 (visited on 02/21/2017).

[29] *Windows line breaks on Linux prevent removal of white space from end of line*. URL: https://github.com/cmhughes/latexindent.pl/issues/256 (visited on 06/18/2021).

11.2 Contributors



[2] Sam Abey. *Print usage tip to STDERR only if STDIN is TTY*. Sept. 17, 2019. URL: https://github.com/cmhughes/latexindent.pl/pull/174 (visited on 03/19/2021).

[3] Paulo Cereda. *arara rule, indent.yaml*. May 23, 2013. URL: https://github.com/islandoftex/arara/blob/master/rules/arara-rule-indent.yaml (visited on 03/19/2021).

[4] Cheng Xu (xu cheng). *always output log/help text to STDERR*. July 13, 2018. URL: https://github.com/cmhughes/latexindent.pl/pull/121 (visited on 08/05/2018).

[8] Jacobo Diaz. *Changed shebang to make the script more portable*. July 23, 2014. URL: https://github.com/cmhughes/latexindent.pl/pull/17 (visited on 01/23/2017).

[9] Jacobo Diaz. *Hiddenconfig*. July 21, 2014. URL: https://github.com/cmhughes/latexindent.pl/pull/18 (visited on 01/23/2017).

[12] Randolf J. *Alpine-linux instructions*. Aug. 10, 2020. URL: https://github.com/cmhughes/latexindent.pl/pull/214 (visited on 08/10/2020).

[13] jeanlego. *Search localSettings in CWD as well*. Sept. 15, 2020. URL: https://github.com/cmhughes/latexindent.pl/pull/221 (visited on 03/19/2021).

[14] Jason Juang. *add in PATH installation*. Nov. 24, 2015. URL: https://github.com/cmhughes/latexindent.pl/pull/38 (visited on 01/23/2017).

[15] Harish Kumar. *Early version testing*. Nov. 10, 2013. URL: https://github.com/harishkumarholla (visited on 06/30/2017).

[17] mlep. *One sentence per line*. Aug. 16, 2017. URL: https://github.com/cmhughes/latexindent.pl/issues/81 (visited on 01/08/2018).

[18] newptcai. *Update appendices.tex*. Feb. 16, 2021. URL: https://github.com/cmhughes/latexindent.pl/pull/221 (visited on 03/19/2021).

[19] John Owens. *Paragraph line break routine removal*. May 27, 2017. URL: https://github.com/cmhughes/latexindent.pl/issues/33 (visited on 05/27/2017).

[22] qiancy98. *Locale encoding of file system*. May 6, 2021. URL: https://github.com/cmhughes/latexindent.pl/pull/273 (visited on 05/06/2021).

[23] Alexander Regueiro. *Update help screen*. Mar. 18, 2021. URL: https://github.com/cmhughes/latexindent.pl/pull/261 (visited on 03/19/2021).

[28] Michel Voßkuhle. *Remove trailing white space*. Nov. 10, 2013. URL: https://github.com/cmhughes/latexindent.pl/pull/12 (visited on 01/23/2017).

[30] XuehaiPan. *-y switch upgrade*. Nov. 12, 2021. URL: https://github.com/cmhughes/latexindent.pl/pull/297 (visited on 11/12/2021).

[31] XuehaiPan. *Verbatim block upgrade*. Oct. 3, 2021. URL: https://github.com/cmhughes/latexindent.pl/pull/290 (visited on 10/03/2021).

[32] Tom Zöhner (zoehneto). *Improving text wrap*. Feb. 4, 2018. URL: https://github.com/cmhughes/latexindent.pl/issues/103 (visited on 08/04/2018).

SECTION A

Required Perl modules

If you intend to use `latexindent.pl` and *not* one of the supplied standalone executable files, then you will need a few standard Perl modules – if you can run the minimum code in Listing 542 (`perl helloworld.pl`) then you will be able to run `latexindent.pl`, otherwise you may need to install the missing modules – see appendices A.1 and A.2.

LISTING 542: `helloworld.pl`

```
#!/usr/bin/perl

use strict;
use warnings;
use utf8;
use PerlIO::encoding;
use Unicode::GCString;
use open ':std', ':encoding(UTF-8)';
use Text::Wrap;
use Text::Tabs;
use FindBin;
use YAML::Tiny;
use File::Copy;
use File::Basename;
use File::HomeDir;
use Encode;
use Getopt::Long;
use Data::Dumper;
use List::Util qw(max);

print "hello world";
exit;
```

A.1 Module installer script

N: 2018-01-13

`latexindent.pl` ships with a helper script that will install any missing `perl` modules on your system; if you run

```
cmh:~$ perl latexindent-module-installer.pl
```

or

```
C:\Users\cmh>perl latexindent-module-installer.pl
```

then, once you have answered `Y`, the appropriate modules will be installed onto your distribution.

A.2 Manually installing modules

Manually installing the modules given in Listing 542 will vary depending on your operating system and `Perl` distribution.

A.2.1 Linux

A.2.1.1 perlbrew

Linux users may be interested in exploring Perlbrew [20]; an example installation would be:

```
cmh:~$ sudo apt-get install perlbrew
cmh:~$ perlbrew init
cmh:~$ perlbrew install perl-5.28.1
cmh:~$ perlbrew switch perl-5.28.1
cmh:~$ sudo apt-get install curl
cmh:~$ curl -L http://cpanmin.us | perl - App::cpanminus
cmh:~$ cpanm YAML::Tiny
cmh:~$ cpanm File::HomeDir
cmh:~$ cpanm Unicode::GCString
```

A.2.1.2 Ubuntu/Debian

For other distributions, the Ubuntu/Debian approach may work as follows

```
cmh:~$ sudo apt install perl
cmh:~$ sudo cpan -i App::cpanminus
cmh:~$ sudo cpanm YAML::Tiny
cmh:~$ sudo cpanm File::HomeDir
cmh:~$ sudo cpanm Unicode::GCString
```

or else by running, for example,

```
cmh:~$ sudo perl -MCPAN -e'install␣"File::HomeDir"'
```

A.2.1.3 Ubuntu: using the texlive from apt-get

Ubuntu users that install texlive using `apt-get` as in the following

```
cmh:~$ sudo apt install texlive
cmh:~$ sudo apt install texlive-latex-recommended
```

may need the following additional command to work with `latexindent.pl`

```
cmh:~$ sudo apt install texlive-extra-utils
```

A.2.1.4 Alpine

If you are using Alpine, some `Perl` modules are not build-compatible with Alpine, but replacements are available through `apk`. For example, you might use the commands given in Listing 543; thanks to [12] for providing these details.

LISTING 543: alpine-install.sh

```
# Installing perl
apk --no-cache add miniperl perl-utils

# Installing incompatible latexindent perl dependencies via apk
apk --no-cache add \
    perl-log-dispatch \
    perl-namespace-autoclean \
    perl-specio \
    perl-unicode-linebreak

# Installing remaining latexindent perl dependencies via cpan
apk --no-cache add curl wget make
ls /usr/share/texmf-dist/scripts/latexindent
cd /usr/local/bin && \
    curl -L https://cpanmin.us/ -o cpanm && \
    chmod +x cpanm
cpanm -n App::cpanminus
cpanm -n File::HomeDir
cpanm -n Params::ValidationCompiler
cpanm -n YAML::Tiny
cpanm -n Unicode::GCString
```

Users of NixOS might like to see https://github.com/cmhughes/latexindent.pl/issues/222 for tips.

A.2.2 Mac

Users of the Macintosh operating system might like to explore the following commands, for example:

```
cmh:~$ brew install perl
cmh:~$ brew install cpanm
cmh:~$
cmh:~$ cpanm YAML::Tiny
cmh:~$ cpanm File::HomeDir
cmh:~$ cpanm Unicode::GCString
```

A.2.3 Windows

Strawberry Perl users on Windows might use `CPAN client`. All of the modules are readily available on CPAN [5].

`indent.log` will contain details of the location of the Perl modules on your system. `latexindent.exe` is a standalone executable for Windows (and therefore does not require a Perl distribution) and caches copies of the Perl modules onto your system; if you wish to see where they are cached, use the `trace` option, e.g

```
C:\Users\cmh>latexindent.exe -t myfile.tex
```

SECTION B

Updating the path variable

`latexindent.pl` has a few scripts (available at [11]) that can update the `path` variables. Thank you to [14] for this feature. If you're on a Linux or Mac machine, then you'll want `CMakeLists.txt` from [11].

B.1 Add to path for Linux

To add `latexindent.pl` to the path for Linux, follow these steps:

1. download `latexindent.pl` and its associated modules, `defaultSettings.yaml`, to your chosen directory from [11] ;
2. within your directory, create a directory called `path-helper-files` and download `CMakeLists.txt` and `cmake_uninstall.cmake.in` from [11]/path-helper-files to this directory;
3. run

   ```
   cmh:~$ ls /usr/local/bin
   ```

   to see what is *currently* in there;
4. run the following commands

   ```
   cmh:~$ sudo apt-get install cmake
   cmh:~$ sudo apt-get update && sudo apt-get install build-essential
   cmh:~$ mkdir build && cd build
   cmh:~$ cmake ../path-helper-files
   cmh:~$ sudo make install
   ```
5. run

   ```
   cmh:~$ ls /usr/local/bin
   ```

   again to check that `latexindent.pl`, its modules and `defaultSettings.yaml` have been added.

To *remove* the files, run

```
cmh:~$ sudo make uninstall
```

B.2 Add to path for Windows

To add `latexindent.exe` to the path for Windows, follow these steps:

1. download `latexindent.exe`, `defaultSettings.yaml`, `add-to-path.bat` from [11] to your chosen directory;
2. open a command prompt and run the following command to see what is *currently* in your `%path%` variable;

```
C:\Users\cmh>echo %path%
```

3. right click on `add-to-path.bat` and *Run as administrator*;
4. log out, and log back in;
5. open a command prompt and run

   ```
   C:\Users\cmh>echo %path%
   ```

   to check that the appropriate directory has been added to your `%path%`.

To *remove* the directory from your `%path%`, run `remove-from-path.bat` as administrator.

SECTION C

logFilePreferences

Listing 17 on page 20 describes the options for customising the information given to the log file, and we provide a few demonstrations here. Let's say that we start with the code given in Listing 544, and the settings specified in Listing 545.

LISTING 544: simple.tex

```
\begin{myenv}
  body of myenv
\end{myenv}
```

LISTING 545: logfile-prefs1.yaml

```
logFilePreferences:
    showDecorationStartCodeBlockTrace: "+++++"
    showDecorationFinishCodeBlockTrace: "-----"
```

If we run the following command (noting that -t is active)

```
cmh:~$ latexindent.pl -t -l=logfile-prefs1.yaml simple.tex
```

then on inspection of indent.log we will find the snippet given in Listing 546.

LISTING 546: indent.log

```
       +++++
TRACE: environment found: myenv
       No ancestors found for myenv
       Storing settings for myenvenvironments
       indentRulesGlobal specified (0) for environments, ...
       Using defaultIndent for myenv
       Putting linebreak after replacementText for myenv
       looking for COMMANDS and key = {value}
TRACE: Searching for commands with optional and/or mandatory arguments AND key =
    {value}
       looking for SPECIAL begin/end
TRACE: Searching myenv for special begin/end (see specialBeginEnd)
TRACE: Searching myenv for optional and mandatory arguments
       ... no arguments found
       -----
```

Notice that the information given about myenv is 'framed' using +++++ and ----- respectively.

SECTION D

Encoding indentconfig.yaml

In relation to Section 4 on page 15, Windows users that encounter encoding issues with `indentconfig.yaml`, may wish to run the following command in either `cmd.exe` or `powershell.exe`:

```
C:\Users\cmh>chcp
```

They may receive the following result

```
C:\Users\cmh>Active code page: 936
```

and can then use the settings given in Listing 547 within their `indentconfig.yaml`, where 936 is the result of the `chcp` command.

LISTING 547: `encoding` demonstration for `indentconfig.yaml`

```
encoding: cp936
```

Section E

dos2unix linebreak adjustment

`dos2unixlinebreaks`: ⟨*integer*⟩

N: 2021-06-19

If you use `latexindent.pl` on a dos-based Windows file on Linux then you may find that trailing horizontal space is not removed as you hope.

In such a case, you may wish to try setting `dos2unixlinebreaks` to 1 and employing, for example, the following command.

```
cmh:~$ latexindent.pl -y="dos2unixlinebreaks:1" myfile.tex
```

See [29] for further dertails.

SECTION F

Differences from Version 2.2 to 3.0

There are a few (small) changes to the interface when comparing Version 2.2 to Version 3.0. Explicitly, in previous versions you might have run, for example,

```
cmh:~$ latexindent.pl -o myfile.tex outputfile.tex
```

whereas in Version 3.0 you would run any of the following, for example,

```
cmh:~$ latexindent.pl -o=outputfile.tex myfile.tex
cmh:~$ latexindent.pl -o outputfile.tex myfile.tex
cmh:~$ latexindent.pl myfile.tex -o outputfile.tex
cmh:~$ latexindent.pl myfile.tex -o=outputfile.tex
cmh:~$ latexindent.pl myfile.tex -outputfile=outputfile.tex
cmh:~$ latexindent.pl myfile.tex -outputfile outputfile.tex
```

noting that the *output* file is given *next to* the `-o` switch.

The fields given in Listing 548 are *obsolete* from Version 3.0 onwards.

LISTING 548: Obsolete YAML fields from Version 3.0

```
alwaysLookforSplitBrackets
alwaysLookforSplitBrackets
checkunmatched
checkunmatchedELSE
checkunmatchedbracket
constructIfElseFi
```

There is a slight difference when specifying indentation after headings; specifically, we now write `indentAfterThisHeading` instead of `indent`. See Listings 549 and 550

LISTING 549: `indentAfterThisHeading` in Version 2.2

```
indentAfterHeadings:
    part:
       indent: 0
       level: 1
```

LISTING 550: `indentAfterThisHeading` in Version 3.0

```
indentAfterHeadings:
    part:
       indentAfterThisHeading: 0
       level: 1
```

To specify `noAdditionalIndent` for display-math environments in Version 2.2, you would write YAML as in Listing 551; as of Version 3.0, you would write YAML as in Listing 552 or, if you're using `-m` switch, Listing 553.

LISTING 551: noAdditionalIndent in Version 2.2

```
noAdditionalIndent:
    \[: 0
    \]: 0
```

LISTING 552: noAdditionalIndent for displayMath in Version 3.0

```
specialBeginEnd:
    displayMath:
        begin: '\\\['
        end: '\\\]'
        lookForThis: 0
```

LISTING 553: noAdditionalIndent for displayMath in Version 3.0

```
noAdditionalIndent:
    displayMath: 1
```

End

Listings

Index