

latexindent.pl

Version 3.7



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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 10.



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*and contributors! See Section 10.2 on page 115. For all communication, please visit [8].



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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 T_EX stack exchange [1] I received some positive feedback and follow-up feature requests. A big thank you to Harish Kumar [10] 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 10.2 on page 115 for their valued contributions, and thank you to those who report bugs and request features at [8].

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 23) 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 9). 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 [8] with a complete minimum working example as I would like to improve the code as much as possible.



Before you try the script on anything important (like your thesis), test it out on the sample files in the `test-case` directory [8].

If you have used any version 2. of `latexindent.pl`, there are a few changes to the interface; see appendix D on page 121 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 453. 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

```

41 fileExtensionPreference:
42   .tex: 1
43   .sty: 2
44   .cls: 3
45   .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 23.

LISTING 3: modifyLineBreaks

```

441 modifyLineBreaks:
442   preserveBlankLines: 1
443   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 60 for more details.

LISTING 4: replacements

```

571 replacements:
572   -
573     amalgamate: 1
574   -
575     this: 'latexindent.pl'
576     that: 'pl.latexindent'
577     lookForThis: 1
578     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 102 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 (V3.7) are on the following pages:

replacement mode switch (N)	18
replacement mode switch, respecting verbatim (N)	18
replacement (only) mode switch (N)	18
fine tuning of code blocks (N)	38
fine tuning: keyEqualsValuesBracesBrackets (N)	52
fine tuning: namedGroupingBracesBrackets (N)	53
fine tuning: namedGroupingBracesBrackets (N)	53
fine tuning the betterFullStop (N)	75
blank line poly-switch (N)	85
demonstration of new blank line poly-switch (N)	87
demonstration of new blank line poly-switch (N)	89
poly-switch for double back slash (N)	93
new comma-related poly-switches (N)	97
new comma-related poly-switches (N)	97
replacement mode switches (N)	102
details of fine tuning of code blocks (N)	111
ability to call latexindent on any file (U)	114

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 116.

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 [18]

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 8: tikzset.tex

```
\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 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 9: tikzset.tex default output

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

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 T_EXLive distribution for Linux and Mac users; `latexindent.exe` ships as part of the T_EXLive and MiK_TE_X distributions for Windows users. These files are also available from github [8] should you wish to use them without a T_EX distribution; in this case, you may like to read appendix B on page 118 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 23.

`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 116 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 exists¹. 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, ...` 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=++
```

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



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++
```

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 D on page 121 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 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: 2017-08-21

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

```
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: 1"
cmh:~$ latexindent.pl myfile.tex -y="defaultIndent: 1, maximumIndentation: 1"
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 20.

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 21.

`-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.

`-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.

`-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 60

`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 15 on page 23 for full details.



STDIN

```
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`

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 [3] 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 102.

-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 102.

-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 102.

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 [2].

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 [6] 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.

²If 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\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.



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 `whateveryoulike.yaml` file.

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

4.2 localSettings.yaml

The `-l` switch tells `latexindent.pl` to look for `localSettings.yaml` 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 (assuming it exists) load `localSettings.yaml` from the same directory as `myfile.tex`.

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,

```
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 14, and you'll find plenty of further examples throughout this manual.

LISTING 14: 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

You may use the `-y` switch to load your settings; for example, if you wished to specify the settings from Listing 14 using the `-y` switch, then you could use the following command:

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



```
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 6.2 on page 70) and the listings within Listing 242 on page 72, 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;
4. any settings specified in the `-y` switch.

A visual representation of this is given in Figure 1.

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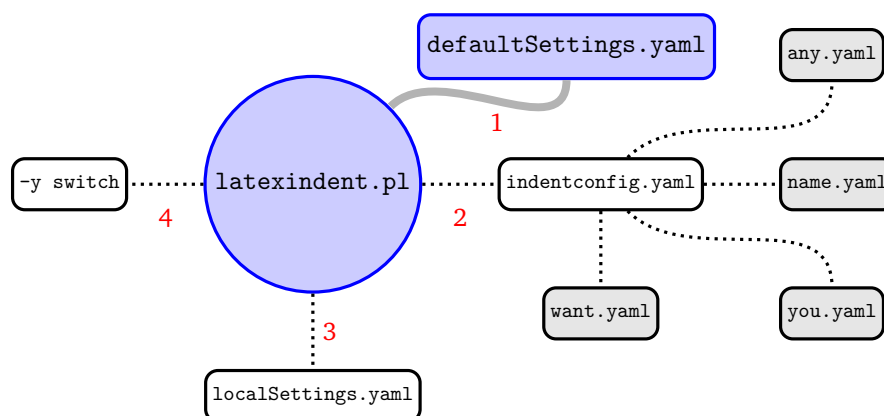


FIGURE 1: Schematic of the load order described in Section 4.4; solid lines represent mandatory files, dotted lines represent optional files. `indentconfig.yaml` can contain as many files as you like. The files will be loaded in order; if you specify settings for the same field in more than one file,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

`fileExtensionPreference:` \langle *fields* \rangle

`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.

Calling `latexindent.pl myfile` with the (default) settings specified in Listing 15 means that the script will first look for `myfile.tex`, then `myfile.sty`, `myfile.cls`, and finally `myfile.bib` in order⁴.

LISTING 15:
`fileExtensionPreference`

```
41 fileExtensionPreference:
42   .tex: 1
43   .sty: 2
44   .cls: 3
45   .bib: 4
```

`backupExtension:` \langle *extension name* \rangle

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.

`onlyOneBackUp:` \langle *integer* \rangle

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.

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



`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 16. If you load your own user settings (see Section 4 on page 19) 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 16: `logFilePreferences`

```
85 logFilePreferences:
86   showEveryYamlRead: 1
87   showAmalgamatedSettings: 0
88   showDecorationStartCodeBlockTrace: 0
89   showDecorationFinishCodeBlockTrace: 0
90   endLogFileWith: '-----'
91   showGitHubInfoFooter: 1
92   PatternLayout:
93     default: "%A%n"
94     trace: "%A%n"
95     ttrace: "%A%n"
```

N: 2018-01-13

When either of the trace modes (see page 15) 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 `showDecorationFinishCodeBlockTrace`. A demonstration is given in appendix C on page 120.

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.

N: 2018-01-13

`latexindent.pl` uses the `log4perl` module [11] to handle the creation of the logfile. You can specify the layout of the information given in the logfile using any of the Log Layouts detailed at [11].

`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 17.

LISTING 17: verbatimEnvironments

99 verbatimEnvironments:
100 verbatim: 1
101 lstlisting: 1
102 minted: 1

LISTING 18: verbatimCommands

105 verbatimCommands:
106 verb: 1
107 lstinlne: 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`.

verbatimCommands: {fields}

A field that contains a list of commands that are verbatim commands, for example `\lstinlne`; any commands populated in this field are protected from line breaking routines (only relevant if the `-m` is active, see Section 6 on page 60).

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 19.

LISTING 19:
noIndentBlock

112 noIndentBlock:
113 noindent: 1
114 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 20 for example.

LISTING 20: noIndentBlock demonstration

% \begin{noindent}
 this code
 won't
 be touched
 by
 latexindent.pl!
%\end{noindent}

removeTrailingWhitespace: {fields}

Trailing white space can be removed both *before* and *after* processing the document, as detailed in Listing 21; each of the fields can take the values 0 or 1. See Listings 353 to 355 on pages 91–92 for before and after results. Thanks to [19] for providing this feature.

LISTING 21:
removeTrailingWhitespace

117 removeTrailingWhitespace:
118 beforeProcessing: 0
119 afterProcessing: 1

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 22.

LISTING 22:
removeTrailingWhitespace (alt)

removeTrailingWhitespace: 1

fileContentsEnvironments: {field}

N: 2017-06-28



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 23. The behaviour of `latexindent.pl` on these environments is determined by their location (preamble or not), and the value `indentPreamble`, discussed next.

LISTING 23:
fileContentsEnvironments

```
fileContentsEnvironments:
  filecontents: 1
  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 24, 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 24:
lookForPreamble

```
lookForPreamble:
  .tex: 1
  .sty: 0
  .cls: 0
  .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 25.

LISTING 25: Motivating `preambleCommandsBeforeEnvironments`

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

`defaultIndent: {horizontal space}`

This is the default indentation (`\t` means a tab, and is the default value) used in the absence of other details for the command or environment we are working with; see `indentRules` in Section 5.2 on page 38 for more details.

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

`lookForAlignDelims: {fields}`

This contains a list of environments and/or commands that are operated upon in a special way by `latexindent.pl` (see Listing 26). In fact, the fields in `lookForAlignDelims` can actually take two different forms: the *basic* version is shown in Listing 26 and the *advanced* version in Listing 29; we will discuss each in turn.

LISTING 26:
lookForAlignDelims
(basic)

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




The environments specified in this field will be operated on in a special way by `latexindent.pl`. In particular, it will try and align each column by its alignment tabs. It does have some limitations (discussed further in Section 9), but in many cases it will produce results such as those in Listings 27 and 28.

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 19 on page 25).

LISTING 27: `tabular1.tex`

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

LISTING 28: `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 29 is for you.

LISTING 29: `tabular.yaml`

```
lookForAlignDelims:
  tabular:
    delims: 1
    alignDoubleBackSlash: 0
    spacesBeforeDoubleBackSlash: 0
    multiColumnGrouping: 0
    alignRowsWithoutMaxDelims: 1
    spacesBeforeAmpersand: 1
    spacesAfterAmpersand: 1
  tabularx:
    delims: 1
  longtable: 1
```

Note that you can use a mixture of the basic and advanced form: in Listing 29 `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 26. 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);
- `spacesBeforeDoubleBackSlash`: optionally, specifies the number (integer ≥ 0) of spaces to be inserted before `\\` (default: 1).⁵
- `multiColumnGrouping`: binary switch (0 or 1) that details if `latexindent.pl` should group columns above and below a `\multicolumn` command (default: 0);
- `alignRowsWithoutMaxDelims`: binary switch (0 or 1) that details if rows that do not contain the maximum number of delimiters should be formatted so as to have the ampersands aligned (default: 1);
- `spacesBeforeAmpersand`: optionally specifies the number (integer ≥ 0) of spaces to be placed before ampersands (default: 1);
- `spacesAfterAmpersand`: optionally specifies the number (integer ≥ 0) of spaces to be placed after ampersands (default: 1);

⁵Previously this only activated if `alignDoubleBackSlash` was set to 0.

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N: 2017-06-19

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N: 2018-01-13

N: 2018-01-13



N: 2018-01-13

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

We will explore each of these features using the file `tabular2.tex` in Listing 30 (which contains a `\multicolumn` command), and the YAML files in Listings 31 to 37.

LISTING 30: `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 31: `tabular2.yaml`

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

LISTING 32: `tabular3.yaml`

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

LISTING 33: `tabular4.yaml`

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

LISTING 34: `tabular5.yaml`

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

LISTING 35: `tabular6.yaml`

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

LISTING 36: `tabular7.yaml`

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

LISTING 37: `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 38 to 45.



LISTING 38: tabular2.tex default output

```

\begin{tabular}{cccc}
A & & & & \\
AAA & & & & \\
\multicolumn{2}{c}{first heading} & \multicolumn{2}{c}{second heading} & \\
one & & & & \\
five & & & & \\
seven & & & & \\
\end{tabular}

```

LISTING 39: tabular2.tex using Listing 31

```

\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 40: tabular2.tex using Listing 32

```

\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 41: tabular2.tex using Listings 31 and 33

```

\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 42: tabular2.tex using Listings 31 and 34

```

\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 43: tabular2.tex using Listings 31 and 35

```

\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.tex using Listings 31 and 36

```

\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 45: tabular2.tex using Listings 31 and 37

```

\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 38 and 39 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 38 the columns have been aligned at the ampersand;
- in Listing 39 the `\multicolumn` command has grouped the 2 columns beneath *and* above it, because `multiColumnGrouping` is set to 1 in Listing 31;
- in Listing 40 rows 3 and 6 have *not* been aligned at the ampersand, because `alignRowsWithoutMaxDelims` has been set to 0 in Listing 32; however, the `\\` have still been aligned;
- in Listing 41 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 42 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 43 the `\\` have *not* been aligned, because `alignDoubleBackSlash` is set to 0, otherwise the output is the same as Listing 39;
- in Listing 44 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 39.
- in Listing 45 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 31.

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 32); for example, assum-



ing 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 46 and 47 are achievable by default.

LISTING 46: matrix1.tex

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

LISTING 47: 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 48; the default output is shown in Listing 49. 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 48: align-block.tex

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

LISTING 49: align-block.tex default output

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

With reference to Table 1 on page 37 and the, yet undiscussed, fields of `noAdditionalIndent` and `indentRules` (see Section 5.2 on page 38), these comment-marked blocks are considered environments.

`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 51 and 52

LISTING 50: indentAfterItems

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

LISTING 51: 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 52: 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 19 for details of how to configure user settings, and Listing 13 on page 20 in particular.)

LISTING 53: 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 54 shows the default settings of `specialBeginEnd`.

LISTING 54: `specialBeginEnd`

```

203 specialBeginEnd:
204   displayMath:
205     begin: '\\\['
206     end: '\\\]'
207     lookForThis: 1
208   inlineMath:
209     begin: '(?<!\$)(?<!\$)\$(?!\$)'
210     end: '(?<!\$)\$(?!\$)'
211     lookForThis: 1
212   displayMathTeX:
213     begin: '\$\\\$'
214     end: '\$\\\$'
215     lookForThis: 1
216   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 20); 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 55 and 56.

LISTING 55: `special1.tex` before

```

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

```

LISTING 56: `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 57.

LISTING 57: `specialLR.tex`

```

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

```

Now consider the YAML files shown in Listings 58 and 59



LISTING 58: specialsLeftRight.yaml

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

LISTING 59: 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 60 and 61.

LISTING 60: specialLR.tex using Listing 58

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

LISTING 61: specialLR.tex using Listings 58 and 59

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

Notice that in:

- Listing 60 the `\left` has been treated as a *command*, with one optional argument;
- Listing 61 the `specialBeginEnd` pattern in Listing 58 has been obeyed because Listing 59 specifies that the `specialBeginEnd` should be sought *before* commands.

You can, optionally, specify the middle field for anything that you specify in `specialBeginEnd`. For example, let's consider the `.tex` file in Listing 62.

LISTING 62: special2.tex

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

Upon saving the YAML settings in Listings 63 and 65 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 64 and 66.

LISTING 63: middle.yaml

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

LISTING 64: special2.tex using Listing 63

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

LISTING 65: middle1.yaml

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

LISTING 66: special2.tex using Listing 65

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

We note that:

- in Listing 64 the bodies of each of the Elsif statements have been indented appropriately;
- the Else statement has *not* been indented appropriately in Listing 64 – read on!
- we have specified multiple settings for the middle field using the syntax demonstrated in Listing 65 so that the body of the Else statement has been indented appropriately in Listing 66.

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 68 and the YAML in Listing 67, and running

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

then the output in Listing 68 is unchanged.

LISTING 67: special-verb1.yaml

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

LISTING 68: special3.tex and output using Listing 67

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

indentAfterHeadings: *(fields)*

This field enables the user to specify indentation rules that take effect after heading commands such as \part, \chapter,

LISTING 69: indentAfterHeadings

```
indentAfterHeadings:
  part:
    indentAfterThisHeading: 0
    level: 1
```



`\section`, `\subsection*`, or indeed any user-specified command written in this field.⁶

The default settings do *not* place indentation after a heading, but you can easily switch them on by changing

```
indentAfterThisHeading: 0 to
indentAfterThisHeading: 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 5.2 on page 38); you will find the default `indentRules` contains `chapter: " "` which tells `latexindent.pl` simply to use a space character after headings (once `indent` is set to 1 for chapter).

For example, assuming that you have the code in Listing 70 saved into `headings1.yaml`, and that you have the text from Listing 71 saved into `headings1.tex`.

LISTING 70: `headings1.yaml`

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

LISTING 71: `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 72.

LISTING 72: `headings1.tex` using Listing 70

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

LISTING 73: `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
```

Now say that you modify the YAML from Listing 70 so that the paragraph level is 1; after running

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

⁶There is a slight difference in interface for this field when comparing Version 2.2 to Version 3.0; see appendix D on page 121 for details.



you should receive the code given in Listing 73; 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 [16], and is *off* by default.

For example, consider the example shown in Listing 74 together with the default output shown in Listing 75.

LISTING 74: `mult-nested.tex`

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

LISTING 75: `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 76 and that you run the following command:

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

You should receive the output shown in Listing 77.

LISTING 76: `max-indentation1.yaml`

```
maximumIndentation: " "
```

LISTING 77: `mult-nested.tex` using Listing 76

```
\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 75 and 77 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 17 on page 25) or `noIndentBlock` (see Listing 19 on page 25).

5.1 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 1.

TABLE 1: Code blocks known to `latexindent.pl`

Code block	characters allowed in name	example
environments	<code>a-zA-Z@*0-9_\\</code>	<code>\begin{myenv}</code> body of myenv <code>\end{myenv}</code>
optionalArguments	<i>inherits</i> name from parent (e.g environment name)	<code>[</code> opt arg text <code>]</code>
mandatoryArguments	<i>inherits</i> name from parent (e.g environment name)	<code>{</code> mand arg text <code>}</code>
commands	<code>+a-zA-Z@*0-9_:</code>	<code>\mycommand(arguments)</code>
keyEqualsValuesBracesBrackets	<code>a-zA-Z@*0-9_/. \h\{\}:\#-</code>	<code>my key/.style=(arguments)</code>
namedGroupingBracesBrackets	<code>0-9\ . a-zA-Z@* > <</code>	<code>in(arguments)</code>
UnNamedGroupingBracesBrackets	<i>No name!</i>	<code>{</code> or <code>[</code> or <code>,</code> or <code>&</code> or <code>)</code> or <code>(</code> or <code>\$</code> followed by <code>(arguments)</code>
ifElseFi	<code>@a-zA-Z</code> but must begin with either <code>\if</code> of <code>\@if</code>	<code>\ifnum...</code> <code>...</code> <code>\else</code> <code>...</code> <code>\fi</code>
items	User specified, see Listings 50 and 53 on page 31	<code>\begin{enumerate}</code> <code>\item ...</code> <code>\end{enumerate}</code>
specialBeginEnd	User specified, see Listing 54 on page 32	<code>\[</code> <code>...</code> <code>\]</code>
afterHeading	User specified, see Listing 69 on page 34	<code>\chapter{title}</code> <code>...</code> <code>\section{title}</code>
filecontents	User specified, see Listing 23 on page 26 [git] ■ master @ a530224 ■ 2019-07-13 ■ V3.7	<code>\begin{filecontents}</code> <code>...</code> <code>\end{filecontents}</code>



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 1 is discussed in Section 8 on page 111.

5.2 noAdditionalIndent and indentRules

latexindent.pl operates on files by looking for code blocks, as detailed in Section 5.1 on page 36; for each type of code block in Table 1 on the previous 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 1 on the preceding page; for reference, there follows a list of the code blocks covered.

5.2.1	Environments and their arguments	38
5.2.2	Environments with items	45
5.2.3	Commands with arguments	46
5.2.4	ifelsefi code blocks	48
5.2.5	specialBeginEnd code blocks	49
5.2.6	afterHeading code blocks	50
5.2.7	The remaining code blocks	52
	keyEqualsValuesBracesBrackets	52
	namedGroupingBracesBrackets	53
	UnNamedGroupingBracesBrackets	53
	filecontents	54
5.2.8	Summary	54

5.2.1 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 78.

LISTING 78: myenv.tex

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

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 79 and 80.



LISTING 79: myenv-noAdd1.yaml
noAdditionalIndent: myenv: 1

LISTING 80: 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 81; note in particular that the environment `myenv` has not received any *additional* indentation, but that the outer environment *has* still received indentation.

LISTING 81: myenv.tex output (using either Listing 79 or Listing 80)
<pre>\begin{outer} \begin{myenv} body of environment body of environment body of environment \end{myenv} \end{outer}</pre>

Upon changing the YAML files to those shown in Listings 82 and 83, 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 84.

LISTING 82: myenv-noAdd3.yaml
noAdditionalIndent: myenv: 0

LISTING 83: myenv-noAdd4.yaml
noAdditionalIndent: myenv: body: 0

LISTING 84: myenv.tex output (using either Listing 82 or Listing 83)
<pre>\begin{outer} \begin{myenv} body of environment body of environment body of environment \end{myenv} \end{outer}</pre>

Let's now allow `myenv` to have some optional and mandatory arguments, as in Listing 85.



LISTING 85: 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 86; 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 79), then *all* parts of the environment (body, optional and mandatory arguments) are assumed to want no additional indent.

LISTING 86: myenv-args.tex using Listing 79

```

\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 87 and 88.

LISTING 87: myenv-noAdd5.yaml

```

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

```

LISTING 88: 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 89 and 90. Note that in Listing 89 the text for the *optional* argument has not received any additional indentation, and that in Listing 90 the *mandatory* argument has not received any additional indentation; in both cases, the *body* has not received any additional indentation.



LISTING 89: myenv-args.tex using Listing 87

```

\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 90: myenv-args.tex using Listing 88

```

\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 91 and 92.

LISTING 91: myenv-rules1.yaml

```

indentRules:
  myenv: "  "

```

LISTING 92: 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 93; note in particular that the environment `myenv` has received one tab (from the outer environment) plus three spaces from Listing 91 or 92.

LISTING 93: myenv.tex output (using either Listing 91 or Listing 92)

```

\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 85 that contains optional and mandatory arguments. Upon using Listing 91 as in

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

we obtain the output in Listing 94; note that the body, optional argument and mandatory argument of `myenv` have *all* received the same customised indentation.



LISTING 94: myenv-args.tex using Listing 91

```

\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 95 and 96

LISTING 95: myenv-rules3.yaml

```

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

```

LISTING 96: 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 97 and 98.

LISTING 97: myenv-args.tex using Listing 95

```

\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 98: myenv-args.tex using Listing 96

```

\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 97, 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 98, 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 List-

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LISTING 99:

```
noAdditionalIndentGlobal
```

```
noAdditionalIndentGlobal:
  environments: 0

```



ing 99). Let's say that you change the value of environments to 1 in Listing 99, 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 100 and 101; in Listing 100 notice that *both* environments receive no additional indentation but that the arguments of `myenv` still *do* receive indentation. In Listing 101 notice that the *outer* environment does not receive additional indentation, but because of the settings from `myenv-rules1.yaml` (in Listing 91 on page 41), the `myenv` environment still *does* receive indentation.

LISTING 100: `myenv-args.tex` using Listing 99

```
\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 101: `myenv-args.tex` using Listings 91 and 99

```
\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 102 and 103

LISTING 102:

`opt-args-no-add-glob.yaml`

```
noAdditionalIndentGlobal:
  optionalArguments: 1
```

LISTING 103:

`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 104 and 105. Notice that in Listing 104 the *optional* argument has not received any additional indentation, and in Listing 105 the *mandatory* argument has not received any additional indentation.

LISTING 104: `myenv-args.tex` using Listing 102

```
\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 105: `myenv-args.tex` using Listing 103

```
\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 106; if you change the `environments` field to anything involving horizontal space, say " ", and then run the following commands

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LISTING 106:

```
indentRulesGlobal
```

```
indentRulesGlobal:
  environments: 0
```

```
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 107 and 108. Note that in Listing 107, both the environment blocks have received a single-space indentation, whereas in Listing 108 the outer environment has received single-space indentation (specified by `indentRulesGlobal`), but `myenv` has received " ", as specified by the particular `indentRules` for `myenv` Listing 91 on page 41.

LISTING 107: `myenv-args.tex` using Listing 106

```
\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 108: `myenv-args.tex` using Listings 91 and 106

```
\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 109 and 110

LISTING 109:

```
opt-args-indent-rules-glob.yaml
```

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

LISTING 110:

```
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 111 and 112. Note that the *optional* argument in Listing 111 has received two tabs worth of indentation, while the *mandatory* argument has done so in Listing 112.



LISTING 111: myenv-args.tex using Listing 109

```

\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 112: myenv-args.tex using Listing 110

```

\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}

```

5.2.2 Environments with items

With reference to Listings 50 and 53 on page 31, some commands may contain item commands; for the purposes of this discussion, we will use the code from Listing 51 on page 31.

Assuming that you've populated itemNames with the name of your item, you can put the item name into noAdditionalIndent as in Listing 113, 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 114

LISTING 113: item-noAdd1.yaml

```

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

```

LISTING 114: 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 115 and 116; note that in Listing 115 that the text after each item has not received any additional indentation, and in Listing 116, the text after each item has received a single space of indentation, specified by Listing 114.

LISTING 115: items1.tex using Listing 113

```

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

```

LISTING 116: items1.tex using Listing 114

```

\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 117 and 118. Note that there is a need to 'reset/remove' the item field from indentRules in both cases (see the hierarchy description given on page 38) as the item command is a member of indentRules by default.

LISTING 117: items-noAdditionalGlobal.yaml

```

indentRules:
  item: 0
noAdditionalIndentGlobal:
  items: 1

```

LISTING 118: 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 115 and 116 are obtained; note, however, that *all* such item commands without their own individual `noAdditionalIndent` or `indentRules` settings would behave as in these listings.

5.2.3 Commands with arguments

Let's begin with the simple example in Listing 119; when `latexindent.pl` operates on this file, the default output is shown in Listing 120.⁷

LISTING 119: `mycommand.tex`

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

LISTING 120: `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 79 and 80 on page 39) we may specify `noAdditionalIndent` either in 'scalar' form, or in 'field' form, as shown in Listings 121 and 122

LISTING 121:

`mycommand-noAdd1.yaml`

```
noAdditionalIndent:
  mycommand: 1
```

LISTING 122:

`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 123 and 124

LISTING 123: `mycommand.tex` using Listing 121

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

LISTING 124: `mycommand.tex` using Listing 122

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

Note that in Listing 123 that the 'body', optional argument *and* mandatory argument have *all* received no additional indentation, while in Listing 124, 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.

⁷The command code blocks have quite a few subtleties, described in Section 5.3 on page 54.



We may further customise `noAdditionalIndent` for `mycommand` as we did in Listings 87 and 88 on page 40; explicit examples are given in Listings 125 and 126.

LISTING 125:
mycommand-noAdd3.yaml

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

LISTING 126:
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 127 and 128.

LISTING 127: mycommand.tex using Listing 125

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

LISTING 128: mycommand.tex using Listing 126

```
\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 127 and 128 has received no additional indent, even though `body` is explicitly set to 0 in both Listings 125 and 126. This is because, by default, `noAdditionalIndentGlobal` for commands is set to 1 by default; this can be easily fixed as in Listings 129 and 130.

LISTING 129:
mycommand-noAdd5.yaml

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

LISTING 130:
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 131 and 132.



LISTING 131: mycommand.tex using Listing 129

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

LISTING 132: mycommand.tex using Listing 130

```
\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 95 and 96 on page 42 and Listings 106, 109 and 110 on page 44.

5.2.4 ifelsefi code blocks

Let's use the simple example shown in Listing 133; when `latexindent.pl` operates on this file, the output as in Listing 134; note that the body of each of the `\if` statements have been indented, and that the `\else` statement has been accounted for correctly.

LISTING 133: ifelsefi1.tex

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

LISTING 134: 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 135 and 136.

LISTING 135:
ifnum-noAdd.yaml

```
noAdditionalIndent:
  ifnum: 1
```

LISTING 136:
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 137 and 138; note that in Listing 137, the `ifnum` code block has *not* received any additional indentation, while in Listing 138, the `ifnum` code block has received one tab and two spaces of indentation.

LISTING 137: ifelsefi1.tex using Listing 135

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

LISTING 138: ifelsefi1.tex using Listing 136

```
\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 139 and 140.



LISTING 139:
ifelsefi-noAdd-glob.yaml

```
noAdditionalIndentGlobal:
  ifElseFi: 1
```

LISTING 140:
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 141 and 142; notice that in Listing 141 neither of the `ifelsefi` code blocks have received indentation, while in Listing 142 both code blocks have received a single space of indentation.

LISTING 141: ifelsefi1.tex using
Listing 139

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

LISTING 142: ifelsefi1.tex using
Listing 140

```
\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 143, and the associated default output given in Listing 144; note, in particular, that the bodies of each of the ‘or statements’ have been indented.

LISTING 143: ifelsefi2.tex

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

LISTING 144: ifelsefi2.tex default
output

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

5.2.5 specialBeginEnd code blocks

Let’s use the example from Listing 55 on page 32 which has default output shown in Listing 56 on page 32.

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 145 and 146.

LISTING 145:
displayMath-noAdd.yaml

```
noAdditionalIndent:
  displayMath: 1
```

LISTING 146:
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 147 and 148; note that in Listing 147, the `displayMath` code block has *not* received any additional indentation, while in Listing 148, the `displayMath` code block has received three tabs worth of indentation.

LISTING 147: `special1.tex` using Listing 145

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

LISTING 148: `special1.tex` using Listing 146

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

We may specify `noAdditionalIndentGlobal` and `indentRulesGlobal` as in Listings 149 and 150.

LISTING 149:
`special-noAdd-glob.yaml`

```
noAdditionalIndentGlobal:
  specialBeginEnd: 1
```

LISTING 150:
`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 151 and 152; notice that in Listing 151 neither of the `special` code blocks have received indentation, while in Listing 152 both code blocks have received a single space of indentation.

LISTING 151: `special1.tex` using Listing 149

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

LISTING 152: `special1.tex` using Listing 150

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

5.2.6 afterHeading code blocks

Let's use the example Listing 153 for demonstration throughout this Section. As discussed on page 35, by default `latexindent.pl` will not add indentation after headings.

LISTING 153: `headings2.tex`

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

On using the YAML file in Listing 155 by running the command



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

we obtain the output in Listing 154. Note that the argument of `paragraph` has received (default) indentation, and that the body after the heading statement has received (default) indentation.

LISTING 154: headings2.tex using Listing 155

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

LISTING 155: headings3.yaml

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

If we specify `noAdditionalIndent` as in Listing 157 and run the command

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

then we receive the output in Listing 156. 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 156: headings2.tex using
Listing 157

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

LISTING 157: headings4.yaml

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

Similarly, if we specify `indentRules` as in Listing 159 and run analogous commands to those above, we receive the output in Listing 158; note that the *body*, *mandatory argument* and *content after the heading* of paragraph have *all* received three tabs worth of indentation.

LISTING 158: headings2.tex using Listing 159

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

LISTING 159: headings5.yaml

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

We may, instead, specify `noAdditionalIndent` in ‘field’ form, as in Listing 161 which gives the output in Listing 160.

LISTING 160: headings2.tex using
Listing 161

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

LISTING 161: headings6.yaml

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

Analogously, we may specify `indentRules` as in Listing 163 which gives the output in Listing 162; 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 162: headings2.tex using Listing 163

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

LISTING 163: 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 165 and 167 respectively, with respective output in Listings 164 and 166. Note that in Listing 165 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 166, the *argument* has received both a (default) tab plus two spaces of indentation (from the global rule specified in Listing 167), and the remaining body after `paragraph` has received just two spaces of indentation.

LISTING 164: headings2.tex using Listing 165

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

LISTING 165: headings8.yaml

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

LISTING 166: headings2.tex using Listing 167

```
\paragraph{paragraph
% \u\t\t\t title}
\u\t\t\t paragraph \u\t\t\t text
\u\t\t\t paragraph \u\t\t\t text
```

LISTING 167: headings9.yaml

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

5.2.7 The remaining code blocks

Referencing the different types of code blocks in Table 1 on page 37, we have a few code blocks yet to cover; these are very similar to the `commands` code block type covered comprehensively in Section 5.2.3 on page 46, but a small discussion defining these remaining code blocks is necessary.

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 1 on page 37;
- then an `=` symbol;
- then at least one set of curly braces or square brackets (comments and line breaks allowed throughout).

See the `keyEqualsValuesBracesBrackets:` `follow` and `keyEqualsValuesBracesBrackets:` `name` fields of the fine tuning section in Listing 437 on page 111

An example is shown in Listing 168, with the default output given in Listing 169.

LISTING 168: pgfkeys1.tex

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

LISTING 169: pgfkeys1.tex default output

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

N: 2019-07-13



In Listing 169, 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 38.

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 1 on page 37;
- then at least one set of curly braces or square brackets (comments and line breaks allowed throughout).

See the `NamedGroupingBracesBrackets: follow` and `NamedGroupingBracesBrackets: name` fields of the fine tuning section in Listing 437 on page 111

A simple example is given in Listing 170, with default output in Listing 171.

LISTING 170: child1.tex

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

LISTING 171: 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`⁸. Referencing Listing 171, 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 38.

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).

See the `UnNamedGroupingBracesBrackets: follow` field of the fine tuning section in Listing 437 on page 111

An example is shown in Listing 172 with default output give in Listing 173.

LISTING 172: psforeach1.tex

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

LISTING 173: psforeach1.tex default output

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

⁸ You may like to verify this by using the `-tt` option and checking `indent.log`!



Referencing Listing 173, 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 38.

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

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

5.2.8 Summary

Having considered all of the different types of code blocks, the functions of the fields given in Listings 174 and 175 should now make sense.

LISTING 174: `noAdditionalIndentGlobal`

```

284 noAdditionalIndentGlobal:
285   environments: 0
286   commands: 1
287   optionalArguments: 0
288   mandatoryArguments: 0
289   ifElseFi: 0
290   items: 0
291   keyEqualsValuesBracesBrackets: 0
292   namedGroupingBracesBrackets: 0
293   UnNamedGroupingBracesBrackets: 0
294   specialBeginEnd: 0
295   afterHeading: 0
296   filecontents: 0

```

LISTING 175: `indentRulesGlobal`

```

300 indentRulesGlobal:
301   environments: 0
302   commands: 0
303   optionalArguments: 0
304   mandatoryArguments: 0
305   ifElseFi: 0
306   items: 0
307   keyEqualsValuesBracesBrackets: 0
308   namedGroupingBracesBrackets: 0
309   UnNamedGroupingBracesBrackets: 0
310   specialBeginEnd: 0
311   afterHeading: 0
312   filecontents: 0

```

5.3 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 176.



LISTING 176: commandCodeBlocks

```

315 commandCodeBlocks:
316   roundParenthesesAllowed: 1
317   stringsAllowedBetweenArguments:
318     -
319     amalgamate: 1
320     - 'node'
321     - 'at'
322     - 'to'
323     - 'decoration'
324     - '\+\+'
325     - '\-\-'
326   commandNameSpecial:
327     -
328     amalgamate: 1
329     - '@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 177.

LISTING 177: pstricks1.tex

```

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

LISTING 178: 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 176, then `latexindent.pl` will allow round parenthesis between optional and mandatory arguments. In the case of the code in Listing 177, `latexindent.pl` finds *all* the arguments of `\defFunction`, both before and after (u, v) .

The default output from running `latexindent.pl` on Listing 177 actually leaves it unchanged (see Listing 178); note in particular, this is because of `noAdditionalIndentGlobal` as discussed on page 47.

Upon using the YAML settings in Listing 180, and running the command

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

we obtain the output given in Listing 179.

LISTING 179: pstricks1.tex using Listing 180

```

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

LISTING 180:
noRoundParentheses.yaml

```

commandCodeBlocks:
  roundParenthesesAllowed: 0
```

Notice the difference between Listing 178 and Listing 179; in particular, in Listing 179, 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 1 on page 37) which, by default, assume indentation for their body, and hence the tabbed indentation in Listing 179.

Let's explore this using the YAML given in Listing 182 and run the command



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

then the output is as in Listing 181.

LISTING 181: pstricks1.tex using Listing 182

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

LISTING 182: defFunction.yaml

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

Notice in Listing 181 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 182.

`stringsAllowedBetweenArguments: {fields}`

tikz users may well specify code such as that given in Listing 183; processing this code using `latexindent.pl` gives the default output in Listing 184.

LISTING 183: tikz-node1.tex

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

LISTING 184: 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 176 on the preceding 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 183, 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 186 and running the command

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

we receive the output given in Listing 185.



LISTING 185: tikz-node1.tex using Listing 186

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

Notice that each line after the `\draw` command (its ‘body’) in Listing 185 has been given the appropriate two-spaces worth of indentation specified in Listing 186.

Let’s compare this with the output from using the YAML settings in Listing 188, and running the command

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

given in Listing 187.

LISTING 187: tikz-node1.tex using Listing 188

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

LISTING 188: 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 1 on page 37) 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 176 on page 55., 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 189 or Listing 190 is equivalent to using the settings in Listing 191.

LISTING 189: amalgamate-demo.yaml

```
commandCodeBlocks:

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

LISTING 190: amalgamate-demo1.yaml

```
commandCodeBlocks:

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

LISTING 191: 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 192 means that only the strings specified in that field will be used.



LISTING 192: 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 190 to 192.

We may explore this feature further with the code in Listing 193, whose default output is given in Listing 194.

LISTING 193: for-each.tex

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

LISTING 194: 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 196, and running the command

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

given in Listing 195.

LISTING 195: for-each.tex using Listing 196

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

LISTING 196: foreach.yaml

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

You might like to compare the output given in Listing 194 and Listing 195. Note, in particular, in Listing 194 that the `foreach` command has not included any of the subsequent strings, and that the braces have been treated as a `namedGroupingBracesBrackets`. In Listing 195 the `foreach` command has been allowed to have `\x/\y` and `in` between arguments because of the settings given in Listing 196.

```
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 197, which has default output in Listing 198.

LISTING 197: ifnextchar.tex

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

LISTING 198: ifnextchar.tex default output

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

Notice that in Listing 198 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 100.



For demonstration, we can compare this output with that given in Listing 199 in which the settings from Listing 200 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 199: `ifnextchar.tex` using
Listing 200

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

LISTING 200: `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:



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 190 to 192.

SECTION 6

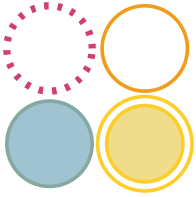


The -m (modifylinebreaks) switch

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

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`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 201.

LISTING 201: `modifyLineBreaks`

```
441 modifyLineBreaks:
442     preserveBlankLines: 1
443     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:



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 below. 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 202 shows a sample file with blank lines; upon running

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

the output is shown in Listing 203; note that the multiple blank lines have been condensed into one blank line, and note also that we have used the `-m` switch!

LISTING 202: `mlb1.tex`

before blank line

after blank line

after blank line

LISTING 203: `mlb1.tex` out output

before blank line

after blank line

after blank line

6.1 `textWrapOptions`: modifying line breaks by text wrapping

When the `-m` switch is active `latexindent.pl` has the ability to wrap text using the options specified in the `textWrapOptions` field, see Listing 204. 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.

LISTING 204: `textWrapOptions`

```
468 textWrapOptions:
469     columns: 0
```

N: 2017-05-27



For example, consider the file give in Listing 205.

LISTING 205: 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 207, and running the command

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

we obtain the output in Listing 206.

LISTING 206: 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 207: 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 208,

LISTING 208: 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 207,

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

then the output is as in Listing 209.



LISTING 209: 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 210

LISTING 210: 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 207,

```
cmh:~$ latexindent.pl -m textwrap3.tex -o textwrap3-mod1.tex -l textwrap1.yaml
```

then the output is as in Listing 211.

LISTING 211: 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

The text wrapping routine of latexindent.pl is performed by the `Text::Wrap` module, which provides a `separator` feature to separate lines with characters other than a new line (see [17]). By default, the separator is empty which means that a new line token will be used, but you can change it as you see fit.

For example starting with the file in Listing 212

LISTING 212: textwrap4.tex

Here is a line of text.

and using textwrap2.yaml from Listing 214 with the following command

```
cmh:~$ latexindent.pl -m textwrap4.tex -o textwrap4-mod2.tex -l textwrap2.yaml
```

then we obtain the output in Listing 213.



LISTING 213: textwrap4-mod2.tex

```
Here||is a||line||of||text||.
```

LISTING 214: textwrap2.yaml

-m

```
modifyLineBreaks:
  textWrapOptions:
    columns: 5
    separator: "||"
```

6.1.1 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 [20] for their help in testing and shaping this feature.

The full details of `textWrapOptions` are shown in Listing 215. In particular, note the field `perCodeBlockBasis`: 0.

LISTING 215: textWrapOptions

-m

```
468   textWrapOptions:
469     columns: 0
470     separator: ""
471     perCodeBlockBasis: 0
472     all: 0
473     alignAtAmpersandTakesPriority: 1
474     environments:
475       quotation: 0
476       ifElseFi: 0
477     optionalArguments: 0
478     mandatoryArguments: 0
479     items: 0
480     specialBeginEnd: 0
481     afterHeading: 0
482     preamble: 0
483     filecontents: 0
484     masterDocument: 0
```

The code blocks detailed in Listing 215 are with direct reference to those detailed in Table 1 on page 37. The only special case is the `masterDocument` 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 276 on page 79; in fact, the two features can even be combined (this is detailed in Section 6.4 on page 84).

Let’s explore these switches with reference to the code given in Listing 216; the text outside of the environment is considered part of the `masterDocument`.

LISTING 216: 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 217 to 219 each give the same output.



LISTING 217: textwrap3.yaml

-m

```
modifyLineBreaks:
  textWrapOptions:
    columns: 30
    perCodeBlockBasis: 1
    all: 1
```

LISTING 218: textwrap4.yaml

-m

```
modifyLineBreaks:
  textWrapOptions:
    columns: 30
    perCodeBlockBasis: 1
    environments: 1
    masterDocument: 1
```

LISTING 219: textwrap5.yaml

-m

```
modifyLineBreaks:
  textWrapOptions:
    columns: 30
    perCodeBlockBasis: 1
    environments:
      myenv: 1
    masterDocument: 1
```

Let's explore the similarities and differences in the equivalent (with respect to Listing 216) syntax specified in Listings 217 to 219:

- in each of Listings 217 to 219 notice that `columns: 30`;
- in each of Listings 217 to 219 notice that `perCodeBlockBasis: 1`;
- in Listing 217 we have specified `all: 1` so that the text wrapping will operate upon *all* code blocks;
- in Listing 218 we have *not* specified `all`, and instead, have specified that text wrapping should be applied to each of `environments` and `masterDocument`;
- in Listing 219 we have specified text wrapping for `masterDocument` 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 220.

LISTING 220: 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 219 by using Listing 221.



LISTING 221: 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 222.

LISTING 222: textwrap6.tex using Listing 219

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 219) 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 221 in the settings given in Listings 223 to 225.

LISTING 223: textwrap6.yaml

-m

```
modifyLineBreaks:
  textWrapOptions:
    columns: 30
    perCodeBlockBasis: 1
  all:
    except:
      - environments
```

LISTING 224: textwrap7.yaml

-m

```
modifyLineBreaks:
  textWrapOptions:
    columns: 30
    perCodeBlockBasis: 1
  all:
    except:
      - myenv
```

LISTING 225: textwrap8.yaml

-m

```
modifyLineBreaks:
  textWrapOptions:
    columns: 30
    perCodeBlockBasis: 1
  all:
    except:
      - masterDocument
```

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 226 to 228.

LISTING 226: textwrap6.tex using Listing 223

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 227: textwrap6.tex using Listing 224

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 228: textwrap6.tex using Listing 225

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 226 the text wrapping routine has not been applied to any environments because it has been switched off (per-code-block) in Listing 223;
- in Listing 227 the text wrapping routine has not been applied to myenv because it has been switched off (per-name) in Listing 224;
- in Listing 228 the text wrapping routine has not been applied to masterDocument because of the settings in Listing 225.

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 221 on page 66, for example). We explore further options in Listings 229 to 231.

LISTING 229: textwrap9.yaml

-m

```
modifyLineBreaks:
  textWrapOptions:
    columns:
      default: 30
      environments: 50
    perCodeBlockBasis: 1
    all: 1
```

LISTING 230: textwrap10.yaml

-m

```
modifyLineBreaks:
  textWrapOptions:
    columns:
      default: 30
      environments:
        default: 50
    perCodeBlockBasis: 1
    all: 1
```

LISTING 231: textwrap11.yaml

-m

```
modifyLineBreaks:
  textWrapOptions:
    columns:
      default: 30
      environments:
        myenv: 50
        another: 15
    perCodeBlockBasis: 1
    all: 1
```

Listing 229 and Listing 230 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 232 and 233.



LISTING 232: textwrap6.tex using Listing 229

```
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 233: textwrap6.tex using Listing 231

```
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 232 the text for the masterDocument has been wrapped using 30 columns, while environments has been wrapped using 50 columns;
- in Listing 233 the text for myenv has been wrapped using 50 columns, the text for another has been wrapped using 15 columns, and masterDocument 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 26 on page 26 then text wrapping will be disabled for this code block.

If you wish to specify afterHeading commands (see Listing 69 on page 34) on a per-name basis,



then you need to append the name with `:heading`, for example, you might use `section:heading`.

6.1.2 Summary of text wrapping

It is important to note the following:

- Verbatim environments (Listing 17 on page 25) and verbatim commands (Listing 18 on page 25) will *not* be affected by the text wrapping routine (see Listing 209 on page 63);
- comments will *not* be affected by the text wrapping routine (see Listing 211 on page 63);
- it is possible to wrap text on a per-code-block and a per-name basis;
- the text wrapping routine sets `preserveBlankLines` as 1;
- indentation is performed *after* the text wrapping routine; as such, indented code will likely exceed any maximum value set in the `columns` field.

U: 2018-08-13

6.2 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 [12] for helping to shape and test this feature. The behaviour of this part of the script is controlled by the switches detailed in Listing 234, all of which we discuss next.

LISTING 234: `oneSentencePerLine`

```

444 oneSentencePerLine:
445     manipulateSentences: 0
446     removeSentenceLineBreaks: 1
447     textWrapSentences: 0
448     sentenceIndent: ""
449     sentencesFollow:
450         par: 1
451         blankLine: 1
452         fullStop: 1
453         exclamationMark: 1
454         questionMark: 1
455         rightBrace: 1
456         commentOnPreviousLine: 1
457         other: 0
458     sentencesBeginWith:
459         A-Z: 1
460         a-z: 0
461         other: 0
462     sentencesEndWith:
463         basicFullStop: 0
464         betterFullStop: 1
465         exclamationMark: 1
466         questionMark: 1
467         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 235.



LISTING 235: 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 237 and 239, 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 236 and 238.

LISTING 236: multiple-sentences.tex
using Listing 237

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 237:
manipulate-sentences.yaml

-m

```
modifyLineBreaks:
  oneSentencePerLine:
    manipulateSentences: 1
```

LISTING 238: multiple-sentences.tex
using Listing 239

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 239:
keep-sen-line-breaks.yaml

-m

```
modifyLineBreaks:
  oneSentencePerLine:
    manipulateSentences: 1
    removeSentenceLineBreaks: 0
```

Notice, in particular, that the ‘internal’ sentence line breaks in Listing 235 have been removed in Listing 236, but have not been removed in Listing 238.

The remainder of the settings displayed in Listing 234 on the previous 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 240); 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 241); by default, this is only capital letters;
- *end* with a character (see Listing 242); 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 240: sentencesFollow

-m

```

449 sentencesFollow:
450     par: 1
451     blankLine: 1
452     fullStop: 1
453     exclamationMark: 1
454     questionMark: 1
455     rightBrace: 1
456
commentOnPreviousLine: 1
other: 0

```

LISTING 241: sentencesBeginWith

-m

```

462 sentencesBeginWith:
463     A-Z: 1
464     a-z: 0
465     other: 0
466
467

```

LISTING 242: sentencesEndWith

-m

```

sentencesEndWith:
    basicFullStop: 0
    betterFullStop: 1
    exclamationMark: 1
    questionMark: 1
    other: 0

```

6.2.1 sentencesFollow

Let's explore a few of the switches in `sentencesFollow`; let's start with Listing 235 on the preceding page, and use the YAML settings given in Listing 244. Using the command

```
cmh:~$ latexindent.pl multiple-sentences -m -l=sentences-follow1.yaml
```

we obtain the output given in Listing 243.

LISTING 243: multiple-sentences.tex using Listing 244

```

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 244: 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 240 with the `.tex` file detailed in Listing 245.

LISTING 245: 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 246 and 247.

LISTING 246: multiple-sentences1.tex using Listing 237 on the previous page

```

(Some sentences stand alone in brackets.) This is the first
sentence.
This is the; second, sentence.
This is the third sentence.

```




LISTING 247: multiple-sentences1.tex using Listing 248

```
(Some sentences stand alone in brackets.)
This is the first sentence.
This is the; second, sentence.
This is the third sentence.
```

LISTING 248: sentences-follow2.yaml

```
modifyLineBreaks:
  oneSentencePerLine:
    manipulateSentences: 1
    sentencesFollow:
      other: "\\)"
```

Notice that in Listing 246 the first sentence after the `)` has not been accounted for, but that following the inclusion of Listing 248, the output given in Listing 247 demonstrates that the sentence *has* been accounted for correctly.

6.2.2 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 241), and we can use the other field to define sentences to begin with other characters.

LISTING 249: 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 250 and 251.

LISTING 250: multiple-sentences2.tex using Listing 237 on page 71

```
This is the first sentence.

$a$ can
represent a
number. 7 is
at the beginning of this sentence.
```

LISTING 251: multiple-sentences2.tex using Listing 252

```
This is the first sentence.

$a$ can represent a number.
7 is at the beginning of this sentence.
```

LISTING 252: sentences-begin1.yaml

```
modifyLineBreaks:
  oneSentencePerLine:
    manipulateSentences: 1
    sentencesBeginWith:
      other: "\\$|[0-9]"
```

Notice that in Listing 250, the first sentence has been accounted for but that the subsequent sentences have not. In Listing 251, all of the sentences have been accounted for, because the other field in Listing 252 has defined sentences to begin with either `$` or any numeric digit, 0 to 9.

6.2.3 sentencesEndWith

Let's return to Listing 235 on page 71; we have already seen the default way in which `latexindent.pl` will operate on the sentences in this file in Listing 236 on page 71. We can populate the other field



with any character that we wish; for example, using the YAML specified in Listing 254 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 253.

LISTING 253: multiple-sentences.tex using Listing 254

```
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 254: sentences-end1.yaml

-m

```
modifyLineBreaks:
  oneSentencePerLine:
    manipulateSentences: 1
    sentencesEndWith:
      other: "\:|\;|\,\"
```

LISTING 255: multiple-sentences.tex using Listing 256

```
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 256: sentences-end2.yaml

-m

```
modifyLineBreaks:
  oneSentencePerLine:
    manipulateSentences: 1
    sentencesEndWith:
      other: "\:|\;|\,\"
    sentencesBeginWith:
      a-z: 1
```

There is a subtle difference between the output in Listings 253 and 255; in particular, in Listing 253 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 256, and the associated output in Listing 255 reflects this.

Referencing Listing 242 on page 72, 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 257.

LISTING 257: 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 258.

LISTING 258: url.tex using Listing 237 on page 71

```
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.

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 437 on page 111.

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 260 gives the output in Listing 259.

LISTING 259: `url.tex` using Listing 260

```
This sentence, \url{tex.
  stackexchange.com/} finishes here.Second sentence.
```

LISTING 260: `alt-full-stop1.yaml`

```
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 260.

6.2.4 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 261, and run the command

```
cmh:~$ latexindent.pl multiple-sentences3 -m -l=manipulate-sentences.yaml
```

then we obtain the output in Listing 262.

LISTING 261: `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 262: `multiple-sentences3.tex` using Listing 237 on page 71

```
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 263 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 264 and 265.

LISTING 263: multiple-sentences4.tex

```
This sentence
\begin{itemize}
  \item continues
\end{itemize}
across itemize
and finishes here.
```

LISTING 264: multiple-sentences4.tex using Listing 237 on page 71

```
This sentence \begin{itemize} \item continues \end{itemize} across itemize and finishes here.
```

LISTING 265: multiple-sentences4.tex using Listing 239 on page 71

```
This sentence
\begin{itemize}
  \item continues
\end{itemize}
across itemize
and finishes here.
```

Once you've read Section 6.5, you will know that you can accommodate the removal of internal sentence line breaks by using the YAML in Listing 267 and the command

```
cmh:~$ latexindent.pl multiple-sentences4 -m -l=item-rules2.yaml
```

the output of which is shown in Listing 266.

LISTING 266: multiple-sentences4.tex using Listing 267

```
This sentence
\begin{itemize}
  \item continues
\end{itemize}
across itemize and finishes here.
```

LISTING 267: item-rules2.yaml

```
modifyLineBreaks:
  oneSentencePerLine:
    manipulateSentences: 1
  items:
    ItemStartsOnOwnLine: 1
  environments:
    BeginStartsOnOwnLine: 1
    BodyStartsOnOwnLine: 1
    EndStartsOnOwnLine: 1
    EndFinishesWithLineBreak: 1
```

6.2.5 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 268.



LISTING 268: multiple-sentences5.tex

A distinção entre conteúdo `\emph{real}` e conteúdo `\emph{intencional}` está relacionada, ainda, à distinção entre o conceito husserliano de `\emph{experiência}` e o uso popular desse termo. No sentido comum, o `\term{experimentado}` é um complexo de eventos exteriores, e o `\term{experimentar}` consiste em percepções (além de julgamentos e outros atos) nas quais tais eventos aparecem como objetos, e objetos frequentemente relacionados ao ego empírico.

Referencing Listing 270, and running the following command

```
cmh:~$ latexindent.pl multiple-sentences5 -m -l=sentence-wrap1.yaml
```

we receive the output given in Listing 269.

LISTING 269: multiple-sentences5.tex using Listing 270

A distinção entre conteúdo `\emph{real}` e conteúdo `\emph{intencional}` está relacionada, ainda, à distinção entre o conceito husserliano de `\emph{experiência}` e o uso popular desse termo. No sentido comum, o `\term{experimentado}` é um complexo de eventos exteriores, e o `\term{experimentar}` consiste em percepções (além de julgamentos e outros atos) nas quais tais eventos aparecem como objetos, e objetos frequentemente relacionados ao ego empírico.

LISTING 270: sentence-wrap1.yaml

```
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 229 on page 68, for example, you would replace/append environments with, for example, `sentence: 50`.

The indentation of sentences requires that sentences are stored as code blocks. This means that you may need to tweak Listing 242 on page 72. Let's explore this in relation to Listing 271.

LISTING 271: 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 272 and Listing 273.

LISTING 272: multiple-sentences6-mod1.tex using Listing 270

```
Consider the following: \begin{itemize} \item
  firstly.
\item secondly.
\end{itemize}
```



LISTING 273: multiple-sentences6-mod2.tex using Listing 270 and no sentence indentation

```
Consider the following: \begin{itemize} \item
                        firstly.
                        \item secondly.
\end{itemize}
```

We note that Listing 272 the `itemize` code block has *not* been indented appropriately. This is because the `oneSentencePerLine` has been instructed to store sentences (because Listing 270); each sentence is then searched for code blocks.

We can tweak the settings in Listing 242 on page 72 to ensure that full stops are not followed by `item` commands, and that the end of sentences contains `\end{itemize}` as in Listing 274 (if you intend to use this, ensure that you remove the line breaks from the other field).

LISTING 274: `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 275.

LISTING 275: multiple-sentences6-mod3.tex using Listing 270 and Listing 274

```
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.

6.3 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 276. Thank you to [13] for shaping and assisting with the testing of this feature.

```
removeParagraphLineBreaks: {fields}
```

This feature is considered complimentary to the `oneSentencePerLine` feature described in Section 6.2 on page 70.



LISTING 276: removeParagraphLineBreaks

```

485   removeParagraphLineBreaks:
486     all: 0
487     beforeTextWrap: 0
488     alignAtAmpersandTakesPriority: 1
489     environments:
490       quotation: 0
491       ifElseFi: 0
492     optionalArguments: 0
493     mandatoryArguments: 0
494     items: 0
495     specialBeginEnd: 0
496     afterHeading: 0
497     preamble: 0
498     filecontents: 0
499     masterDocument: 0

```

This routine can be turned on *globally* for *every* code block type known to `latexindent.pl` (see Table 1 on page 37) 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 1 on page 37;
- 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 293 on page 83.

Let's start with the `.tex` file in Listing 277, together with the YAML settings in Listing 278.

LISTING 277: shortlines.tex

```

\begin{myenv}
The_lines
in_this
environment
are_very
short
and_contain
many_linebreaks.

```

```

Another
paragraph.
\end{myenv}

```

LISTING 278: remove-para1.yaml

```

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 279.

LISTING 279: 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 277



which has crept in to the output in Listing 279. This can be fixed using the YAML file in Listing 353 on page 91 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 280; notice that the double spaces present in Listing 279 have been addressed.

LISTING 280: 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 278, we note that the `all` switch applies to *all* code block types. So, for example, let's consider the files in Listings 281 and 282

LISTING 281: shortlines-mand.tex

```
\mycommand{
The lines
in this
command
are very
short
and contain
many linebreaks.

Another
paragraph.
}
```

LISTING 282: 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 283 and 284.

LISTING 283: shortlines-mand1.tex

```
\mycommand{
  The lines in this command are very short and contain many linebreaks.

  Another paragraph.
}
```

LISTING 284: 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 285, and consider the settings in Listings 286 and 287;



note that in Listing 286 we specify that *every* environment should receive treatment from the routine, while in Listing 287 we specify that *only* the one environment should receive the treatment.

LISTING 285: 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}
```

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
```

LISTING 286: remove-para2.yaml

-m

```
modifyLineBreaks:
  removeParagraphLineBreaks:
    environments: 1
```

LISTING 287: remove-para3.yaml

-m

```
modifyLineBreaks:
  removeParagraphLineBreaks:
    environments:
      one: 1
```

then we obtain the respective output given in Listings 288 and 289.

LISTING 288: 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 289: 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 `masterDocument` 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 290, with the YAML settings in Listing 291.

LISTING 290: 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 291: remove-para4.yaml

```

modifyLineBreaks:
  removeParagraphLineBreaks:
    masterDocument: 1

```

-m

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 292.



LISTING 292: 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 Listing 223 `lst:textwrap8-yaml`.

`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 293.

LISTING 293: paragraphsStopAt

```
500 paragraphsStopAt:
501   environments: 1
502   verbatim: 1
503   commands: 0
504   ifElseFi: 0
505   items: 0
506   specialBeginEnd: 0
507   heading: 0
508   filecontents: 0
509   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 293. 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 294; we will, in turn, consider the settings in Listings 295 and 296.

LISTING 294: 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 295: stop-command.yaml

```
modifyLineBreaks:
  removeParagraphLineBreaks:
    paragraphsStopAt:
      commands: 1
```

LISTING 296: stop-comment.yaml

```
modifyLineBreaks:
  removeParagraphLineBreaks:
    paragraphsStopAt:
      comments: 1
```

Upon using the settings from Listing 291 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 297 to 299; notice in particular that:

- in Listing 297 the paragraph line break routine has included commands and comments;
- in Listing 298 the paragraph line break routine has *stopped* at the `\emph` command, because in Listing 295 we have specified commands to be 1, and `\emph` is at the beginning of a line;
- in Listing 299 the paragraph line break routine has *stopped* at the comments, because in Listing 296 we have specified comments to be 1, and the comment is at the beginning of a line.

In all outputs in Listings 297 to 299 we notice that the paragraph line break routine has stopped at `\begin{myenv}` because, by default, environments is set to 1 in Listing 293 on the preceding page.

LISTING 297: 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 298: 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 299: 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
```

6.4 Combining `removeParagraphLineBreaks` and `textWrapOptions`

N: 2018-08-13

The text wrapping routine (Section 6.1 on page 61) and remove paragraph line breaks routine (Section 6.3 on page 78) can be combined.

We motivate this feature with the code given in Listing 300.

LISTING 300: 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 61 with, for example, Listing 217 on page 65 gives the output in Listing 301.

LISTING 301: textwrap7.tex using Listing 217

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 303 and running the command

```
cmh:~$ latexindent.pl -m textwrap7.tex -l=textwrap12.yaml -o=+-mod12
```

we obtain the output in Listing 302.

LISTING 302: textwrap7-mod12.tex

This paragraph has line
breaks throughout its
paragraph; we would like to
combine the textwrapping and
paragraph removal routine.

LISTING 303: textwrap12.yaml

```
modifyLineBreaks:
  textWrapOptions:
    columns: 30
    perCodeBlockBasis: 1
    all: 1
  removeParagraphLineBreaks:
    all: 1
  beforeTextWrap: 1
```

In Listing 302 the paragraph line breaks have first been removed from Listing 300, and then the text wrapping routine has been applied. It is envisaged that variants of Listing 303 will be among the most useful settings for these two features.

6.5 Poly-switches

U: 2017-08-21

Every other field in the `modifyLineBreaks` field uses poly-switches, and can take one of *five* 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>*;
- 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;
- 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.

N: 2017-08-21

N: 2019-07-13

In the above, *<part of thing>* refers to either the *begin statement*, *body* or *end statement* of the code blocks detailed in Table 1 on page 37. 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 modifyLineBreaks for environments

We start by viewing a snippet of `defaultSettings.yaml` in Listing 304; note that it contains *global* settings (immediately after the `environments` field) and that *per-name* settings are also allowed – in the case of Listing 304, settings for `equation*` have been specified for demonstration. Note that all poly-switches are *off* (set to 0) by default.

LISTING 304: environments -m

```

510 environments:
511     BeginStartsOnOwnLine: 0
512     BodyStartsOnOwnLine: 0
513     EndStartsOnOwnLine: 0
514     EndFinishesWithLineBreak: 0
515     equation*:
516         BeginStartsOnOwnLine: 0
517         BodyStartsOnOwnLine: 0
518         EndStartsOnOwnLine: 0
519         EndFinishesWithLineBreak: 0

```

Let's begin with the simple example given in Listing 305; note that we have annotated key parts of the file using ♠, ♥, ♦ and ♣, these will be related to fields specified in Listing 304.

LISTING 305: env-mlb1.tex

before words ♠ `\begin{myenv}` ♥ body of myenv ♦ `\end{myenv}` ♣ after words

6.6.1 Adding line breaks: `BeginStartsOnOwnLine` and `BodyStartsOnOwnLine`

Let's explore `BeginStartsOnOwnLine` and `BodyStartsOnOwnLine` in Listings 306 and 307, and in particular, let's allow each of them in turn to take a value of 1.

LISTING 306: env-mlb1.yaml -m

```

modifyLineBreaks:
  environments:
    BeginStartsOnOwnLine: 1

```

LISTING 307: 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 308 and 309 respectively.

LISTING 308: env-mlb.tex using Listing 306

before words
`\begin{myenv}`body of myenv`\end{myenv}` after words

LISTING 309: env-mlb.tex using Listing 307

before words `\begin{myenv}`
 body of myenv`\end{myenv}` after words

There are a couple of points to note:

- in Listing 308 a line break has been added at the point denoted by ♠ in Listing 305; no other line breaks have been changed;
- in Listing 309 a line break has been added at the point denoted by ♥ in Listing 305; furthermore, note that the *body* of `myenv` has received the appropriate (default) indentation.

Let's now change each of the 1 values in Listings 306 and 307 so that they are 2 and save them into `env-mlb3.yaml` and `env-mlb4.yaml` respectively (see Listings 310 and 311).

LISTING 310: env-mlb3.yaml -m

```

modifyLineBreaks:
  environments:
    BeginStartsOnOwnLine: 2

```

LISTING 311: env-mlb4.yaml -m

```

modifyLineBreaks:
  environments:
    BodyStartsOnOwnLine: 2

```



Upon running commands analogous to the above, we obtain Listings 312 and 313.

LISTING 312: env-mlb.tex using Listing 310

```
before words%
\begin{myenv}body of myenv\end{myenv} after words
```

LISTING 313: env-mlb.tex using Listing 311

```
before words \begin{myenv}%
body of myenv\end{myenv} after words
```

Note that line breaks have been added as in Listings 308 and 309, 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.

N: 2017-08-21

Let's now change each of the 1 values in Listings 306 and 307 so that they are 3 and save them into env-mlb5.yaml and env-mlb6.yaml respectively (see Listings 314 and 315).

LISTING 314: env-mlb5.yaml

```
modifyLineBreaks:
  environments:
    BeginStartsOnOwnLine: 3
```

LISTING 315: env-mlb6.yaml

```
modifyLineBreaks:
  environments:
    BodyStartsOnOwnLine: 3
```

Upon running commands analogous to the above, we obtain Listings 316 and 317.

LISTING 316: env-mlb.tex using Listing 314

```
before words
\begin{myenv}body of myenv\end{myenv} after words
```

LISTING 317: env-mlb.tex using Listing 315

```
before words \begin{myenv}
body of myenv\end{myenv} after words
```

Note that line breaks have been added as in Listings 308 and 309, but this time a *blank line* has been added after adding the line break.

N: 2019-07-13

Let's now change each of the 1 values in Listings 314 and 315 so that they are 4 and save them into env-beg4.yaml and env-body4.yaml respectively (see Listings 318 and 319).

LISTING 318: env-beg4.yaml

```
modifyLineBreaks:
  environments:
    BeginStartsOnOwnLine: 4
```

LISTING 319: env-body4.yaml

```
modifyLineBreaks:
  environments:
    BodyStartsOnOwnLine: 4
```

We will demonstrate this poly-switch value using the code in Listing 320.

LISTING 320: 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-mlb1.tex -l env-body4.yaml
```

then we receive the respective outputs in Listings 321 and 322.

LISTING 321: env-mlb1.tex using Listing 318

```
before words
\begin{myenv}
body of myenv
\end{myenv}
after words
```

LISTING 322: env-mlb1.tex using Listing 319

```
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 321 a blank line has been inserted before the `\begin` statement, even though the `\begin` statement was already on its own line;
2. in Listing 322 a blank line has been inserted before the beginning of the *body*, even though it already began on its own line.

6.6.2 Adding line breaks using `EndStartsOnOwnLine` and `EndFinishesWithLineBreak`

Let's explore `EndStartsOnOwnLine` and `EndFinishesWithLineBreak` in Listings 323 and 324, and in particular, let's allow each of them in turn to take a value of 1.

LISTING 323: env-mlb7.yaml -m

```
modifyLineBreaks:
  environments:
    EndStartsOnOwnLine: 1
```

LISTING 324: 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 325 and 326.

LISTING 325: env-mlb.tex using Listing 323

```
before words \begin{myenv}body of myenv
\end{myenv} after words
```

LISTING 326: env-mlb.tex using Listing 324

```
before words \begin{myenv}body of myenv\end{myenv}
after words
```

There are a couple of points to note:

- in Listing 325 a line break has been added at the point denoted by \diamond in Listing 305 on page 86; no other line breaks have been changed and the `\end{myenv}` statement has *not* received indentation (as intended);
- in Listing 326 a line break has been added at the point denoted by \clubsuit in Listing 305 on page 86.

Let's now change each of the 1 values in Listings 323 and 324 so that they are 2 and save them into env-mlb9.yaml and env-mlb10.yaml respectively (see Listings 327 and 328).

LISTING 327: env-mlb9.yaml -m

```
modifyLineBreaks:
  environments:
    EndStartsOnOwnLine: 2
```

LISTING 328: env-mlb10.yaml -m

```
modifyLineBreaks:
  environments:
    EndFinishesWithLineBreak: 2
```

Upon running commands analogous to the above, we obtain Listings 329 and 330.

LISTING 329: env-mlb.tex using Listing 327

```
before words \begin{myenv}body of myenv%
\end{myenv} after words
```

LISTING 330: env-mlb.tex using Listing 328

```
before words \begin{myenv}body of myenv\end{myenv}%
after words
```

Note that line breaks have been added as in Listings 325 and 326, 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.

Let's now change each of the 1 values in Listings 323 and 324 so that they are 3 and save them into env-mlb11.yaml and env-mlb12.yaml respectively (see Listings 331 and 332).

LISTING 331: env-mlb11.yaml -m

```
modifyLineBreaks:
  environments:
    EndStartsOnOwnLine: 3
```

LISTING 332: env-mlb12.yaml -m

```
modifyLineBreaks:
  environments:
    EndFinishesWithLineBreak: 3
```




Upon running commands analogous to the above, we obtain Listings 333 and 334.

LISTING 333: `env-mlb.tex` using Listing 331

before words `\begin{myenv}`body of myenv
`\end{myenv}` after words

LISTING 334: `env-mlb.tex` using Listing 332

before words `\begin{myenv}`body of myenv`\end{myenv}`
after words

Note that line breaks have been added as in Listings 325 and 326, and that a *blank line* has been added after the line break.

Let's now change each of the 1 values in Listings 331 and 332 so that they are 4 and save them into `env-end4.yaml` and `env-end-f4.yaml` respectively (see Listings 335 and 336).

LISTING 335: `env-end4.yaml`

```
modifyLineBreaks:
  environments:
    EndStartsOnOwnLine: 4
```

LISTING 336: `env-end-f4.yaml`

```
modifyLineBreaks:
  environments:
    EndFinishesWithLineBreak: 4
```

We will demonstrate this poly-switch value using the code from Listing 320 on page 87.

Upon running the commands

```
cmh:~$ latexindent.pl -m env-mlb1.tex -l env-end4.yaml
cmh:~$ latexindent.pl -m env-mlb1.tex -l env-end-f4.yaml
```

then we receive the respective outputs in Listings 337 and 338.

LISTING 337: `env-mlb1.tex` using Listing 335

before words
`\begin{myenv}`
body of myenv
`\end{myenv}`
after words

LISTING 338: `env-mlb1.tex` using Listing 336

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 337 a blank line has been inserted before the `\end` statement, even though the `\end` statement was already on its own line;
2. in Listing 338 a blank line has been inserted after the `\end` statement, even though it already began on its own line.

6.6.3 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 339 using poly-switch values of 1, 2, or 3, it will be left unchanged.

LISTING 339: `env-mlb2.tex`

before words
`\begin{myenv}`
body of myenv
`\end{myenv}`
after words

LISTING 340: `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 321 and 322 and Listings 337 and 338.

In contrast, the output from processing the file in Listing 340 will vary depending on the poly-switches used; in Listing 341 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 342 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 340 and by setting the other poly-switches considered so far to 2 in turn.

LISTING 341: `env-mlb3.tex` using
Listing 307 on page 86

```
before words
\begin{myenv}
  %
  body of myenv%
\end{myenv}%
after words
```

LISTING 342: `env-mlb3.tex` using
Listing 311 on page 86

```
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 304 on page 86, an example is shown for the `equation*` environment.

6.6.4 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 343, noting in particular the positions of the line break highlighters, ♠, ♥, ♦ and ♣, together with the associated YAML files in Listings 344 to 347.

LISTING 343: `env-mlb4.tex`

```
before words ♠
\begin{myenv} ♥
body of myenv ♦
\end{myenv} ♣
after words
```

LISTING 344: `env-mlb13.yaml`

```
modifyLineBreaks:
  environments:
    BeginStartsOnOwnLine: -1
```

LISTING 345: `env-mlb14.yaml`

```
modifyLineBreaks:
  environments:
    BodyStartsOnOwnLine: -1
```

LISTING 346: `env-mlb15.yaml`

```
modifyLineBreaks:
  environments:
    EndStartsOnOwnLine: -1
```

LISTING 347: `env-mlb16.yaml`

```
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 348 to 351.



LISTING 348: env-mlb4.tex using Listing 344

```
before words\begin{myenv}
      body of myenv
\end{myenv}
after words
```

LISTING 350: env-mlb4.tex using Listing 346

```
before words
\begin{myenv}
      body of myenv\end{myenv}
after words
```

LISTING 349: env-mlb4.tex using Listing 345

```
before words
\begin{myenv}body of myenv
\end{myenv}
after words
```

LISTING 351: env-mlb4.tex using Listing 347

```
before words
\begin{myenv}
      body of myenv
\end{myenv}after words
```

Notice that in:

- Listing 348 the line break denoted by ♠ in Listing 343 has been removed;
- Listing 349 the line break denoted by ♥ in Listing 343 has been removed;
- Listing 350 the line break denoted by ♦ in Listing 343 has been removed;
- Listing 351 the line break denoted by ♣ in Listing 343 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 344 to 347 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 305 on page 86.

6.6.5 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 352, which highlights trailing spaces.

LISTING 352: env-mlb5.tex

```
before_words   ♠
\begin{myenv}  ♥
body_of_myenv  ♦
\end{myenv}    ♣
after_words
```

LISTING 353: 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 354 and 355; note that the trailing horizontal white space has been preserved (by default) in Listing 354, while in Listing 355, it has been removed using the switch specified in Listing 353.

LISTING 354: env-mlb5.tex using Listings 348 to 351

```
before_words   \begin{myenv}body_of_myenv\end{myenv}after_words
```



LISTING 355: env-mlb5.tex using Listings 348 to 351 and Listing 353

```
before words\begin{myenv}body of myenv\end{myenv}after words
```

6.6.6 poly-switch line break removal and blank lines

Now let's consider the file in Listing 356, which contains blank lines.

LISTING 356: env-mlb6.tex

```
before words♠

\begin{myenv}♥

body of myenv◇

\end{myenv}♣

after words
```

LISTING 357:

```
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 358 and 359. In Listing 358 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 359, we have allowed the poly-switches to remove blank lines because, in Listing 357, we have set `preserveBlankLines` to 0.

LISTING 358: env-mlb6.tex using Listings 348 to 351

```
before words

\begin{myenv}

body of myenv

\end{myenv}

after words
```

LISTING 359: env-mlb6.tex using Listings 348 to 351 and Listing 357

```
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 360.

LISTING 360: 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 361 and 362.



LISTING 361: env-mlb7-preserve.tex

```
\begin{one} one text \end{one}

\begin{two} two text \end{two}
```

LISTING 362: env-mlb7-no-preserve.tex

```
\begin{one} one text \end{one} \begin{two} two text \end{two}
```

Notice that in:

- Listing 361 that `\end{one}` has added a blank line, because of the value of `EndFinishesWithLineBreak` in Listing 332 on page 88, and even though the line break ahead of `\begin{two}` should have been removed (because of `BeginStartsOnOwnLine` in Listing 344 on page 90), the blank line has been preserved by default;
- Listing 362, by contrast, has had the additional line-break removed, because of the settings in Listing 357.

6.7 Poly-switches for double back slash

N: 2019-07-13

With reference to `lookForAlignDelims` (see Listing 26 on page 26) you can specify poly-switches to dictate the line-break behaviour of double back slashes in environments (Listing 28 on page 27), commands (Listing 47 on page 31), or special code blocks (Listing 56 on page 32). Note that for these poly-switches to take effect, the name of the code block must necessarily be specified within `lookForAlignDelims` (Listing 26 on page 26); we will demonstrate this in what follows.

Consider the code given in Listing 363.

LISTING 363: tabular3.tex

```
\begin{tabular}{cc}
  1 & 2 ★\\□ 3 & 4 ★\\□
\end{tabular}
```

Referencing Listing 363:

- 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.

6.7.1 Double back slash starts on own line

We explore `DBSStartsOnOwnLine` (★ in Listing 363); starting with the code in Listing 363, together with the YAML files given in Listing 365 and Listing 367 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 364 and Listing 366.

LISTING 364: tabular3.tex using Listing 365

```
\begin{tabular}{cc}
  1 & 2
  \\ 3 & 4
  \\
\end{tabular}
```

LISTING 365: DBS1.yaml

```
-m
modifyLineBreaks:
  environments:
    DBSStartsOnOwnLine: 1
```



LISTING 366: tabular3.tex using
Listing 367

```
\begin{tabular}{cc}
  1 & 2 %
  \\ 3 & 4%
  \\
\end{tabular}
```

LISTING 367: DBS2.yaml

```
modifyLineBreaks:
  environments:
    tabular:
      DBSStartsOnOwnLine: 2
```

We note that

- Listing 365 specifies `DBSStartsOnOwnLine` for *every* environment (that is within `lookForAlignDelims`, Section 5 on page 26); the double back slashes from Listing 363 have been moved to their own line in Listing 364;
- Listing 367 specifies `DBSStartsOnOwnLine` on a *per-name* basis for `tabular` (that is within `lookForAlignDelims`, Section 5 on page 26); the double back slashes from Listing 363 have been moved to their own line in Listing 366, having added comment symbols before moving them.

6.7.2 Double back slash finishes with line break

Let's now explore `DBSFinishesWithLineBreak` (□ in Listing 363); starting with the code in Listing 363, together with the YAML files given in Listing 369 and Listing 371 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 368 and Listing 370.

LISTING 368: tabular3.tex using
Listing 369

```
\begin{tabular}{cc}
  1 & 2 \\
  3 & 4 \\
\end{tabular}
```

LISTING 369: DBS3.yaml

```
modifyLineBreaks:
  environments:
    DBSFinishesWithLineBreak: 1
```

LISTING 370: tabular3.tex using
Listing 371

```
\begin{tabular}{cc}
  1 & 2 \\%
  3 & 4 \\
\end{tabular}
```

LISTING 371: DBS4.yaml

```
modifyLineBreaks:
  environments:
    tabular:
      DBSFinishesWithLineBreak: 2
```

We note that

- Listing 369 specifies `DBSFinishesWithLineBreak` for *every* environment (that is within `lookForAlignDelims`, Section 5 on page 26); the code following the double back slashes from Listing 363 has been moved to their own line in Listing 368;
- Listing 371 specifies `DBSFinishesWithLineBreak` on a *per-name* basis for `tabular` (that is within `lookForAlignDelims`, Section 5 on page 26); the first double back slashes from Listing 363 have moved code following them to their own line in Listing 370, 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.

6.7.3 Double back slash poly switches for `specialBeginEnd`

Let's explore the double back slash poly-switches for code blocks within `specialBeginEnd` code blocks (Listing 54 on page 32); we begin with the code within Listing 372.



LISTING 372: special4.tex

```
\< a& =b \\ & =c\\ & =d\\ & =e \>
```

Upon using the YAML settings in Listing 374, and running the command

```
cmh:~$ latexindent.pl -m special4.tex -l DBS5.yaml
```

then we receive the output given in Listing 373.

LISTING 373: special4.tex
using Listing 374

```
\<
  a & =b \\
    & =c \\
    & =d \\
    & =e %
\>
```

LISTING 374: 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 374 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.

6.7.4 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 375.

LISTING 375: mycommand2.tex

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

Upon using the YAML settings in Listings 377 and 379, 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 376 and 378.

LISTING 376: mycommand2.tex
using Listing 377

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

LISTING 377: DBS6.yaml

```
lookForAlignDelims:
  mycommand: 1
modifyLineBreaks:
  optionalArguments:
    DBSStartsOnOwnLine: 2
    DBSFinishesWithLineBreak: 2
```

LISTING 378: mycommand2.tex
using Listing 379

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

LISTING 379: DBS7.yaml

```
lookForAlignDelims:
  mycommand: 1
modifyLineBreaks:
  mandatoryArguments:
    DBSStartsOnOwnLine: 2
    DBSFinishesWithLineBreak: 2
```

6.7.5 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 380

LISTING 380: 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 369,

```
cmh:~$ latexindent.pl -m pmatrix3.tex -l DBS3.yaml
```

then we receive the output given in Listing 381.

LISTING 381: pmatrix3.tex using Listing 369

```
\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 437 on page 111.

6.8 Poly-switches for other code blocks

Rather than repeat the examples shown for the environment code blocks (in Section 6.6 on page 86), we choose to detail the poly-switches for all other code blocks in Table 2; note that each and every one of these poly-switches is *off by default*, i.e., set to 0.

Note also that, by design, line breaks involving, `filecontents` and ‘comment-marked’ code blocks (Listing 48 on page 31) can *not* be modified using `latexindent.pl`. However, there are two poly-switches available for verbatim code blocks: environments (Listing 17 on page 25), commands (Listing 18 on page 25) and `specialBeginEnd` (Listing 67 on page 34).



TABLE 2: 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 ⁹ ♡ OptArgBodyStartsOnOwnLine ★ CommaStartsOnOwnLine □ CommaFinishesWithLineBreak ◇ RSqBStartsOnOwnLine ♣ RSqBFinishesWithLineBreak
mandatoryArguments	...♠ {♡ value before comma★, □ end of body of mand arg◇ }♣ ...	♠ LCuBStartsOnOwnLine ¹⁰ ♡ MandArgBodyStartsOnOwnLine ★ CommaStartsOnOwnLine □ CommaFinishesWithLineBreak ◇ RCuBStartsOnOwnLine ♣ RCuBFinishesWithLineBreak
commands	before words♠ \mycommand♡ {arguments}	♠ CommandStartsOnOwnLine ♡ CommandNameFinishesWithLineBreak
namedGroupingBraces Brackets	before words♠ myname♡ {braces/brackets}	♠ NameStartsOnOwnLine ♡ NameFinishesWithLineBreak
keyEqualsValuesBraces Brackets	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 □ SpecialMiddleFinishesWithLineBreak ◇ SpecialEndStartsOnOwnLine ♣ SpecialEndFinishesWithLineBreak
verbatim	before words♠\begin{verbatim}	♠ VerbatimBeginStartsOnOwnLine

⁹LSqB stands for Left Square Bracket¹⁰LCuB stands for Left Curly Brace



N: 2019-05-05

body of verbatim \end{verbatim}♣ ♣ VerbatimEndFinishesWithLineBreak
after words

6.9 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 2 on the preceding page) and LCuBStartsOnOwnLine for mandatory arguments, and LSqBStartsOnOwnLine for optional arguments.

Let's begin with the code in Listing 382 and the YAML settings in Listing 384; with reference to Table 2 on the previous page, the key CommandNameFinishesWithLineBreak is an alias for BodyStartsOnOwnLine.

LISTING 382: 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 383; note that the *second* mandatory argument beginning brace { has had its leading line break removed, but that the *first* brace has not.

LISTING 383: mycommand1.tex using Listing 384

```
\mycommand
{
    mand arg text
    mand arg text}{
    mand arg text
    mand arg text}
```

LISTING 384: mycom-mlb1.yaml

```
modifyLineBreaks:
  commands:
    CommandNameFinishesWithLineBreak: 0
  mandatoryArguments:
    LCuBStartsOnOwnLine: -1
```

Now let's change the YAML file so that it is as in Listing 386; upon running the analogous command to that given above, we obtain Listing 385; both beginning braces { have had their leading line breaks removed.

LISTING 385: mycommand1.tex using Listing 386

```
\mycommand{
    mand arg text
    mand arg text}{
    mand arg text
    mand arg text}
```

LISTING 386: mycom-mlb2.yaml

```
modifyLineBreaks:
  commands:
    CommandNameFinishesWithLineBreak: -1
  mandatoryArguments:
    LCuBStartsOnOwnLine: -1
```

Now let's change the YAML file so that it is as in Listing 388; upon running the analogous command to that given above, we obtain Listing 387.



LISTING 387: mycommand1.tex using Listing 388

```
\mycommand
{
    mand arg text
    mand arg text}
{
    mand arg text
    mand arg text}
```

LISTING 388: mycom-mlb3.yaml

-m

```
modifyLineBreaks:
  commands:
    CommandNameFinishesWithLineBreak: -1
  mandatoryArguments:
    LCuBStartsOnOwnLine: 1
```

6.10 Conflicting poly-switches: sequential code blocks

It is very easy to have conflicting poly-switches; if we use the example from Listing 382 on the preceding page, and consider the YAML settings given in Listing 390. The output from running

```
cmh:~$ latexindent.pl -m -l=mycom-mlb4.yaml mycommand1.tex
```

is given in Listing 390.

LISTING 389: mycommand1.tex using Listing 390

```
\mycommand
{
    mand arg text
    mand arg text}{
    mand arg text
    mand arg text}
```

LISTING 390: mycom-mlb4.yaml

-m

```
modifyLineBreaks:
  mandatoryArguments:
    LCuBStartsOnOwnLine: -1
    RCuBFinishesWithLineBreak: 1
```

Studying Listing 390, 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 389, 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 392; upon running the command

```
cmh:~$ latexindent.pl -m -l=mycom-mlb5.yaml mycommand1.tex
```

we obtain the output given in Listing 391.

LISTING 391: mycommand1.tex using Listing 392

```
\mycommand
{
    mand arg text
    mand arg text}
{
    mand arg text
    mand arg text}
```

LISTING 392: 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 394, which give associated output in Listing 393.



LISTING 393: mycommand1.tex using Listing 394

```
\mycommand
{
    mand arg text
    mand arg text}%
{
    mand arg text
    mand arg text}
```

LISTING 394: 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.

6.11 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 395, noting that it contains nested environments.

LISTING 395: nested-env.tex

```
\begin{one}
one text
\begin{two}
two text
\end{two}
\end{one}
```

Let's use the YAML settings given in Listing 397, which upon running the command

```
cmh:~$ latexindent.pl -m -l=nested-env-mlb1.yaml nested-env.tex
```

gives the output in Listing 396.

LISTING 396: nested-env.tex using Listing 397

```
\begin{one}
  one text
  \begin{two}
    two text\end{two}\end{one}
```

LISTING 397: nested-env-mlb1.yaml

-m

```
modifyLineBreaks:
  environments:
    EndStartsOnOwnLine: -1
    EndFinishesWithLineBreak: 1
```

In Listing 396, 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 395, 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 396, 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 399; upon running the command

```
cmh:~$ latexindent.pl -m -l=nested-env-mlb2.yaml nested-env.tex
```

we obtain the output given in Listing 398.

LISTING 398: `nested-env.tex` using Listing 399

```
\begin{one}
  one text
  \begin{two}
    two text
  \end{two}\end{one}
```

LISTING 399: `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 3.

TABLE 3: The replacement mode switches

switch	indentation?	respect verbatim?
<code>-r</code>	✓	✗
<code>-rv</code>	✓	✓
<code>-rr</code>	✗	✗

The default value of the `replacements` field is shown in Listing 400; 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 400.

LISTING 400: replacements

```
571 replacements:
572 -
573   amalgamate: 1
574 -
575   this: 'latexindent.pl'
576   that: 'pl.latexindent'
577   lookForThis: 1
578   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 400, the default action will replace every instance of the text `latexindent.pl` with `pl.latexindent`.

Beginning with the code in Listing 401 and running the command

```
cmh:~$ latexindent.pl -r replace1.tex
```



gives the output given in Listing 402.

LISTING 401: replace1.tex

Before text, latexindent.pl,
after text.

LISTING 402: replace1.tex default

Before text, pl.latexindent,
after text.

If we don't wish to perform this replacement, then we can tweak the default settings of Listing 400 on the previous page by changing `lookForThis` to 0; we perform this action in Listing 404, and run the command

```
cmh:~$ latexindent.pl -r replace1.tex -l=replace1.yaml
```

which gives the output in Listing 403.

LISTING 403: replace1.tex using
Listing 404

Before text, latexindent.pl,
after text.

LISTING 404: replace1.yaml

```
replacements:
-
  amalgamate: 0
-
  this: latexindent.pl
  that: pl.latexindent
  lookForThis: 0
```

Note that in Listing 404 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 405

LISTING 405: 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 407, and running the command

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



then we achieve the output in Listing 406.

LISTING 406: colsep.tex using Listing 405

```
\begin{env}
  1 2 3
  4 5 6
\end{env}
```

LISTING 407: colsep.yaml

```
replacements:
-
  this: \arraycolsep=3pt
-
  this: \arraycolsep=5pt
```

Note that in Listing 407, 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 407 more concise by exploring the substitution field. Using the settings in Listing 409 and running the command

```
cmh:~$ latexindent.pl -r colsep.tex -l=colsep1.yaml
```

then we achieve the output in Listing 408.

LISTING 408: colsep.tex using Listing 409

```
\begin{env}
  1 2 3
  4 5 6
\end{env}
```

LISTING 409: colsep1.yaml

```
replacements:
-
  substitution: s/\\arraycolsep=\\d+pt//sg
```

The code given in Listing 409 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, [7] for a detailed covering of the topic. With reference to Listing 409, 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 409 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 405 on the preceding page for this example.

Using the YAML in Listing 411, and running the command

```
cmh:~$ latexindent.pl -r colsep.tex -l=multi-line.yaml
```

then we achieve the output in Listing 410.



LISTING 410: colsep.tex using
Listing 411

```
multi-line!
```

LISTING 411: 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 411, 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 400 on page 102. 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 413, and running the command

```
cmh:~$ latexindent.pl -r colsep.tex -l=multi-line1.yaml
```

then we achieve the output in Listing 412.

LISTING 412: colsep.tex using
Listing 413

```
\begin{env}
  1 2 3\arraycolsep=3pt
  4 5 6\arraycolsep=5pt
\end{env}
```

LISTING 413: 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 413 within the file in Listing 405 on page 103. As it has looked for the string within Listing 413 *after* the indentation has been performed. After indentation, the string as written in Listing 413 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 410.

Example 3 An important part of the substitution routine is in *capture groups*.

Assuming that we start with the code in Listing 414, 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 414: displaymath.tex

```
before text  $a^2+b^2=4$  and  $c^2$ 


$$d^2+e^2 = f^2$$


and also  $g^2$ 


$$h^2$$

```

We use the settings in Listing 416 and run the command

```
cmh:~$ latexindent.pl -r displaymath.tex -l=displaymath1.yaml
```

to receive the output given in Listing 415.

LISTING 415: displaymath.tex using Listing 416

```
before text \begin{equation*}a^2+b^2=4\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 416: displaymath1.yaml

```
replacements:
-
  substitution: |-
    s/\$\$
    (.*?)
    \$\$/\begin{equation*}$1\end{equation*}/sgx
```

A few notes about Listing 416:

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 6.5 on page 85, which we do in Listing 418; upon running the command

```
cmh:~$ latexindent.pl -r -m displaymath.tex -l=displaymath1.yaml,equation.yaml
```

then we receive the output in Listing 417.



LISTING 417:
displaymath.tex using
Listings 416 and 418

```
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 418: equation.yaml

```
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 419.

LISTING 419: 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 421, and run the command

```
cmh:~$ latexindent.pl -r phrase.tex -l=hspace.yaml
```

which gives the output in Listing 420.

LISTING 420: phrase.tex using
Listing 421

```
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 421: hspace.yaml

```
replacements:
  -
    substitution: s/\h+/ /sg
```

The `\h+` setting in Listing 421 say to replace *at least one horizontal space* with a single space.



Example 5 We begin with the code in Listing 422.

LISTING 422: 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 424 and running the command

```
cmh:~$ latexindent.pl -r references.tex -l=reference.yaml
```

which gives the output in Listing 423.

LISTING 423: references.tex using Listing 424

```
\hyperref{equation \ref*{eq:aa}} and \hyperref{Figure \ref*{fig:bb}}
and \hyperref{table \ref*{tab:cc}}
```

LISTING 424: reference.yaml

```
replacements:
-
  substitution: |-
    s/(
      equation
    |
      table
    |
      figure
    |
      section
    )
    (\h|~)*
    \\(?:eq)?
    ref\{(.*)\}/\hyperref{$1 \ref*{$3}}/sgxi
```

Referencing Listing 424, 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 3 on page 102) in the context of an example that contains a verbatim code block, Listing 425; we will use the settings in Listing 426.

LISTING 425: verb1.tex

```
\begin{myenv}
body of verbatim
\end{myenv}
some verbatim
\begin{verbatim}
body
  of
  verbatim
text
\end{verbatim}
text
```

LISTING 426: verbatim1.yaml

```
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 427 to 429

LISTING 427: verb1-mod1.tex

```
\begin{myenv}
  head of verbatim
\end{myenv}
some verbatim
\begin{verbatim}
  head
    of
  verbatim
text
\end{verbatim}
text
```

LISTING 428: verb1-rv-mod1.tex

```
\begin{myenv}
  head of verbatim
\end{myenv}
some verbatim
\begin{verbatim}
  body
    of
  verbatim
text
\end{verbatim}
text
```

LISTING 429: 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 427 indentation has been performed, and that the replacements specified in Listing 426 have been performed, even within the verbatim code block;
2. in Listing 428 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 429 indentation has *not* been performed, but that replacements have been performed, not respecting the verbatim code block.

See the summary within Table 3 on page 102.

Example 7 Let's explore the amalgamate field from Listing 400 on page 102 in the context of the file specified in Listing 430.

LISTING 430: amalg1.tex

```
one two three
```

Let's consider the YAML files given in Listings 431 to 433.

LISTING 431: amalg1-yaml.yaml

```
replacements:
-
  this: one
  that: 1
```

LISTING 432: amalg2-yaml.yaml

```
replacements:
-
  this: two
  that: 2
```

LISTING 433: amalg3-yaml.yaml

```
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 434 to 436.



LISTING 434: `amalg1.tex` using
Listing 431

1 two three

LISTING 435: `amalg1.tex` using
Listings 431 and 432

1 2 three

LISTING 436: `amalg1.tex` using
Listings 431 to 433

one two 3

We note that:

1. in Listing 434 the replacements from Listing 431 have been used;
2. in Listing 435 the replacements from Listings 431 and 432 have *both* been used, because the default value of `amalgamate` is 1;
3. in Listing 436 *only* the replacements from Listing 433 have been used, because the value of `amalgamate` has been set to 0.

SECTION 8



Fine tuning

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`latexindent.pl` operates by looking for the code blocks detailed in Table 1 on page 37. The fine tuning of the details of such code blocks is controlled by the `fineTuning` field, detailed in Listing 437.

This field is for those that would like to peek under the bonnet/hood and make some fine tuning to `latexindent.pl`'s operating.



Making changes to the fine tuning may have significant consequences for your indentation scheme, proceed with caution!

LISTING 437: `fineTuning`

```
582 fineTuning:
583   environments:
584     name: '[a-zA-Z@*0-9_\\]+'
585   ifElseFi:
586     name: '@?if[a-zA-Z@]*?'
587   commands:
588     name: '[+a-zA-Z@*0-9_\\.]+?'
589   keyEqualsValuesBracesBrackets:
590     name: '[a-zA-Z@*0-9_\\.\\h\\{\\}:\\#-]+?'
591     follow: '(?:(<|\\|)\\{\\}|(?:(<|\\|)\\{\\})\\[\\])'
592   NamedGroupingBracesBrackets:
593     name: '[0-9\\.a-zA-Z@*><]+?'
594     follow: '\\h\\R\\{\\[\\[\\$|\\)\\|\\('
595   UnNamedGroupingBracesBrackets:
596     follow: '\\{\\|\\[\\|,|&\\|\\)\\|\\(\\|\\$'
597   arguments:
598     before: '(?:#\\d\\h*;?/?)+|\\<.*?\\>'
599     between: '_|\\^|\\*'
600   modifyLineBreaks:
601     betterFullStop:
602       '(:\\.\\) (!\\h*[a-z]))|(:(<|?:(:e\\.g)|(:i\\.e)|(:etc))))\\. (?!(:[a-z]| [A-Z]|\\-|\\~|\\|,|[0-9]))'
603     doubleBackSlash: '\\\\(?:\\h*\\[\\h*\\d+\\h*[a-zA-Z]+\\h*\\])?'
604     comma: ','
```

The fields given in Listing 437 are all *regular expressions*. This manual is not intended to be a tutorial on regular expressions; you might like to read, for example, [7] for a detailed covering of the topic.

We make the following comments with reference to Listing 437:

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 60. In particular:

- (a) `betterFullStop` is in relation to the one sentence per line routine, detailed in Section 6.2 on page 70
- (b) `doubleBackSlash` is in relation to the `DBSStartsOnOwnLine` and `DBSFinishesWithLineBreak` polswitches surrounding double back slashes, see Section 6.7 on page 93
- (c) `comma` is in relation to the `CommaStartsOnOwnLine` and `CommaFinishesWithLineBreak` polswitches surrounding commas in optional and mandatory arguments; see Table 2 on page 97

It is not obvious from Listing 437, but each of the `follow`, `before` and `between` fields allow trailing comments, line breaks, and horizontal spaces between each character.

As a demonstration, consider the file given in Listing 438, together with its default output using the command

```
cmh:~$ latexindent.pl finetuning1.tex
```

is given in Listing 439.

LISTING 438: finetuning1.tex	LISTING 439: finetuning1.tex default
<pre> \mycommand{ \rule{G -> +H[-G] CL} \rule{H -> -G[+H] CL} \rule{g -> +h[-g] cL} \rule{h -> -g[+h] cL} } </pre>	<pre> \mycommand{ \rule{G -> +H[-G] CL} \rule{H -> -G[+H] CL} \rule{g -> +h[-g] cL} \rule{h -> -g[+h] cL} } </pre>

It’s clear from Listing 439 that the indentation scheme has not worked as expected. We can *fine tune* the indentation scheme by employing the settings given in Listing 441 and running the command



```
cmh:~$ latexindent.pl finetuning1.tex -l=fine-tuning1.yaml
```

and the associated (desired) output is given in Listing 440.

LISTING 440: finetuning1.tex using
Listing 441

```
\mycommand{
  \rule{G -> +H[-G]CL}
  \rule{H -> -G[+H]CL}
  \rule{g -> +h[-g]cL}
  \rule{h -> -g[+h]cL}
}
```

LISTING 441: finetuning1.yaml

```
fineTuning:
  arguments:
    between:
      '_|\^|\*|\~>|\~|\+|h|H|g|G'
```

SECTION 9



Conclusions and known limitations

There are a number of known limitations of the script, and almost certainly quite a few that are *unknown*!

The main limitation is to do with the alignment routine discussed on page 26; for example, consider the file given in Listing 442.

LISTING 442: matrix2.tex

```
\matrix (A){
c01 & c02 & c03 & c0q \\
c_{11} & c12 & \ldots & c1q \\
};
```

The default output is given in Listing 443, and it is clear that the alignment routine has not worked as hoped, but it is *expected*.

LISTING 443: matrix2.tex default output

```
\matrix (A){
c01                                & c02 & c03      & c0q \\
c_{11} & c12 & \ldots & c1q \\
};
```

The reason for the problem is that when `latexindent.pl` stores its code blocks (see Table 1 on page 37) it uses replacement tokens. The alignment routine is using the *length of the replacement token* in its measuring – I hope to be able to address this in the future.

There are other limitations to do with the multicolumn alignment routine (see Listing 39 on page 29); in particular, 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 100); it is hoped 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.

You can run `latexindent` on any file; if you don’t specify an extension, then the extensions that you specify in `fileExtensionPreference` (see Listing 15 on page 23) will be consulted. If you find a case in which the script struggles, please feel free to report it at [8], and in the meantime, consider using a `noIndentBlock` (see page 25).

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 [8]; otherwise, feel free to find me on the <http://tex.stackexchange.com/users/6621/cmhughes>.

U: 2019-07-13

SECTION 10

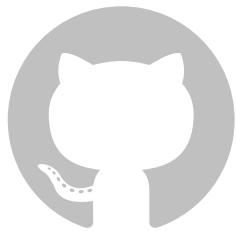


References

10.1 External links

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- [4] *CPAN: Comprehensive Perl Archive Network*. URL: <http://www.cpan.org/> (visited on 01/23/2017).
- [7] Jeffrey E. F. Friedl. *Mastering Regular Expressions*. ISBN: 0596002890.
- [8] *Home of latexindent.pl*. URL: <https://github.com/cmhughes/latexindent.pl> (visited on 01/23/2017).
- [11] *Log4perl Perl module*. URL: <http://search.cpan.org/~mschilli/Log-Log4perl-1.49/lib/Log/Log4perl.pm> (visited on 09/24/2017).
- [14] *Perlbrew*. URL: <http://perlbrew.pl/> (visited on 01/23/2017).
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- [16] *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).
- [17] *Text::Wrap Perl module*. URL: <http://perldoc.perl.org/Text/Wrap.html> (visited on 05/01/2017).
- [18] *Video demonstration of latexindent.pl on youtube*. URL: <https://www.youtube.com/watch?v=wo38aaH2F4E&spfreload=10> (visited on 02/21/2017).

10.2 Contributors



- [2] Paulo Cereda. *arara rule, indent.yaml*. May 23, 2013. URL: <https://github.com/cereda/arara/blob/master/rules/indent.yaml> (visited on 01/23/2017).
- [3] 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).
- [5] 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).
- [6] Jacobo Diaz. *Hiddenconfig*. July 21, 2014. URL: <https://github.com/cmhughes/latexindent.pl/pull/18> (visited on 01/23/2017).
- [9] Jason Juang. *add in PATH installation*. Nov. 24, 2015. URL: <https://github.com/cmhughes/latexindent.pl/pull/38> (visited on 01/23/2017).
- [10] Harish Kumar. *Early version testing*. Nov. 10, 2013. URL: <https://github.com/harishkumarholla> (visited on 06/30/2017).
- [12] mlep. *One sentence per line*. Aug. 16, 2017. URL: <https://github.com/cmhughes/latexindent.pl/issues/81> (visited on 01/08/2018).
- [13] John Owens. *Paragraph line break routine removal*. May 27, 2017. URL: <https://github.com/cmhughes/latexindent.pl/issues/33> (visited on 05/27/2017).
- [19] Michel Voßkuhle. *Remove trailing white space*. Nov. 10, 2013. URL: <https://github.com/cmhughes/latexindent.pl/pull/12> (visited on 01/23/2017).
- [20] 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 444 (`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 444: `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 Getopt::Long;
use Data::Dumper;
use List::Util qw(max);
use Log::Log4perl qw(get_logger :levels);

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 installed modules

Manually installing the modules given in Listing 444 will vary depending on your operating system and Perl distribution. For example, Ubuntu users might visit the software center, or else run



```
cmh:~$ sudo perl -MCPAN -e 'install File::HomeDir'
```

Linux users may be interested in exploring Perlbrew [14]; possible installation and setup options follow for Ubuntu (other distributions will need slightly different commands).

```
cmh:~$ sudo apt-get install perlbrew
cmh:~$ perlbrew install perl-5.22.1
cmh:~$ perlbrew switch perl-5.22.1
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
cmh:~$ cpanm Log::Log4perl
cmh:~$ cpanm Log::Dispatch
```

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
cmh:~$ cpanm Log::Log4perl
cmh:~$ cpanm Log::Dispatch
```

Strawberry Perl users on Windows might use CPAN client. All of the modules are readily available on CPAN [4].

`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 [8]) that can update the path variables. Thank you to [9] for this feature. If you're on a Linux or Mac machine, then you'll want `CMakeLists.txt` from [8].

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 [8] ;
2. within your directory, create a directory called `path-helper-files` and download `CMakeLists.txt` and `cmake_uninstall.cmake.in` from [8]/`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 [8] 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 16 on page 24 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 445, and the settings specified in Listing 446.

LISTING 445: simple.tex

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

LISTING 446: 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 447.

LISTING 447: 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



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 448 are *obsolete* from Version 3.0 onwards.

LISTING 448: 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 449 and 450

LISTING 449:

indentAfterThisHeading in Version
2.2

```
indentAfterHeadings:
  part:
    indent: 0
    level: 1
```

LISTING 450:

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 451; as of Version 3.0, you would write YAML as in Listing 452 or, if you're using `-m` switch, Listing 453.



LISTING 451: noAdditionalIndent in Version 2.2

```
noAdditionalIndent:  
  \[: 0  
  \]: 0
```

LISTING 452: noAdditionalIndent for displayMath in Version 3.0

```
specialBeginEnd:  
  displayMath:  
    begin: '\\\['  
    end: '\\\]'  
    lookForThis: 0
```

LISTING 453: noAdditionalIndent for displayMath in Version 3.0

```
noAdditionalIndent:  
  displayMath: 1
```

End