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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LISTING 501: noAdditionalIndent for displayMath in Version 3.0


SECTION 1

Introduction

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

The YAML-based interface of \texttt{latexindent.pl} was inspired by the wonderful \texttt{arara} tool; any simi-
larities 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 \texttt{latexindent.pl}, but the release of \texttt{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 125 for their valued contributions, and
thank you to those who report bugs and request features at \cite{9}.

1.2 License
\texttt{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 \texttt{latexindent.pl} has the option
to overwrite your .\texttt{tex} files. It will always make at least one backup (you can choose how many
it makes, see page 24) 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 \texttt{latexindent.pl} on them. I think
it is important at this stage to restate an important part of the license here:

\begin{quote}
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.
\end{quote}

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 \cite{9} with a complete minimum working example as I would like to improve
the code as much as possible.

\begin{quote}
Before you try the script on anything important (like your thesis), test it out on the
sample files in the test-case directory \cite{9}.
\end{quote}

\begin{quote}
\textit{If you have used any version 2.* of \texttt{latexindent.pl}, there are a few changes to the interface; see
appendix D on page 133 and the comments throughout this document for details.}
\end{quote}

1.3 About this documentation
As you read through this documentation, you will see many listings; in this version of the document-
tation, there are a total of 501. This may seem a lot, but I deem it necessary in presenting the various
different options of \texttt{latexindent.pl} and the associated output that they are capable of producing.

The different listings are presented using different styles:

\begin{quote}
\textbf{Listing 1: \texttt{demo-tex.tex}}
\end{quote}

\begin{quote}
\texttt{demonstration .\texttt{tex} file}
\end{quote}

This type of listing is a .\texttt{tex} file.
1.4 Quick start

If you’d like to get started with \texttt{latexindent.pl} then simply type

\begin{verbatim}
cmh:~\$ latexindent.pl myfile.tex
\end{verbatim}

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.

This type of listing is a .\texttt{yaml} file, when you see line numbers given (as here) it means that the snippet is taken directly from \texttt{defaultSettings.yaml}, discussed in detail in Section 5 on page 24.

This type of listing is a .\texttt{yaml} file, but it will only be relevant when the \texttt{-m} switch is active; see Section 6 on page 68 for more details.

This type of listing is a .\texttt{yaml} file, but it will only be relevant when the \texttt{-r} switch is active; see Section 7 on page 111 for more details.

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 (V3.9.3) are on the following pages:

\begin{itemize}
  \item [-l switch: localSettings and friends (U)]{16}
  \item log file creation updated (N) \hspace{1cm} 17
  \item [-l switch: localSettings and friends (U)]{21}
  \item no longer using log4perl (U) \hspace{1cm} 25
\end{itemize}

\begin{verbatim}
listing 2: fileExtensionPreference

fileExtensionPreference:
  .tex: 1
  .sty: 2
  .cls: 3
  .bib: 4
\end{verbatim}

\begin{verbatim}
listing 3: modifyLineBreaks

modifyLineBreaks:
  preserveBlankLines: 1
  condenseMultipleBlankLinesInto: 1
\end{verbatim}

\begin{verbatim}
listing 4: replacements

replacements:
  - amalgamate: 1
  - this: '\latexindent.pl'
  that: '\pl.latexindent'
  lookForThis: 1
  when: before
\end{verbatim}

\begin{verbatim}
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
/Library/Network/Perl/5.12/darwin-thread-multi-2level
/Library/Network/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
BEGIN\_failed--\textbackslash compilation\_aborted\_at\_helloworld.pl\_line\_10.
\end{verbatim}
1.5 A word about regular expressions

As you read this documentation, you may encounter the term *regular expressions*. I've tried to write this documentation in such a way so as to allow you to engage with them or not, as you prefer. This documentation is not designed to be a guide to regular expressions, and if you'd like to read about them, I recommend [8].

```
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 127.
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 [23].

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).

<table>
<thead>
<tr>
<th>Listing 6: filecontents1.tex</th>
</tr>
</thead>
<tbody>
<tr>
<td>\begin{filecontents}{mybib.bib}</td>
</tr>
<tr>
<td>@online{strawberryperl, title=&quot;Strawberry Perl&quot;, url=&quot;<a href="http://strawberryperl.com/%22%7D">http://strawberryperl.com/&quot;}</a></td>
</tr>
<tr>
<td>@online{cmhblog, title=&quot;A Perl script ... url=&quot;...&quot;}</td>
</tr>
<tr>
<td>\end{filecontents}</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Listing 7: filecontents1.tex default output</th>
</tr>
</thead>
<tbody>
<tr>
<td>\begin{filecontents}{mybib.bib}</td>
</tr>
<tr>
<td>@online{strawberryperl, title=&quot;Strawberry Perl&quot;, url=&quot;<a href="http://strawberryperl.com/%22%7D">http://strawberryperl.com/&quot;}</a></td>
</tr>
<tr>
<td>@online{cmhblog, title=&quot;A Perl script ... url=&quot;...&quot;}</td>
</tr>
<tr>
<td>\end{filecontents}</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Listing 8: tikzset.tex</th>
</tr>
</thead>
<tbody>
<tr>
<td>\tikzset{ shrink inner sep/.code={ \pgfkeysgetvalue... \pgfkeysgetvalue... } }</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Listing 9: tikzset.tex default output</th>
</tr>
</thead>
<tbody>
<tr>
<td>\tikzset{ shrink inner sep/.code={ \pgfkeysgetvalue... \pgfkeysgetvalue... } }</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Listing 10: pstricks.tex</th>
</tr>
</thead>
<tbody>
<tr>
<td>\def\Picture#1{</td>
</tr>
<tr>
<td>\def\stripH[#1]{</td>
</tr>
<tr>
<td>\begin{pspicture}[showgrid]</td>
</tr>
<tr>
<td>\psforeach{\row}{</td>
</tr>
<tr>
<td>{{3,2.8,2.7,3,3.1}},%</td>
</tr>
<tr>
<td>(2.8,1,1.2,2,3),%</td>
</tr>
<tr>
<td>...%</td>
</tr>
<tr>
<td>}%</td>
</tr>
<tr>
<td>\expandafter...</td>
</tr>
<tr>
<td>}</td>
</tr>
<tr>
<td>\end{pspicture}}</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Listing 11: pstricks.tex default output</th>
</tr>
</thead>
<tbody>
<tr>
<td>\def\Picture#1{</td>
</tr>
<tr>
<td>\def\stripH[#1]{</td>
</tr>
<tr>
<td>\begin{pspicture}[showgrid]</td>
</tr>
<tr>
<td>\psforeach{\row}{</td>
</tr>
<tr>
<td>{{3,2.8,2.7,3,3.1}},%</td>
</tr>
<tr>
<td>(2.8,1,1.2,2,3),%</td>
</tr>
<tr>
<td>...%</td>
</tr>
<tr>
<td>}%</td>
</tr>
<tr>
<td>\expandafter...</td>
</tr>
<tr>
<td>}</td>
</tr>
<tr>
<td>\end{pspicture}}</td>
</tr>
</tbody>
</table>
SECTION 3

How to use the script

latexindent.pl ships as part of the TeXLive distribution for Linux and Mac users; latexindent.exe ships as part of the TeXLive and MiKTeX distributions for Windows users. These files are also available from github [9] should you wish to use them without a TeX distribution; in this case, you may like to read appendix B on page 130 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 24.

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 127 for details; in particular, note that a module installer helper script is shipped with latexindent.pl.

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.

-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
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.

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

Note that using -o as above is equivalent to using

\[\text{cmh:}\sim\$ \text{latexindent.pl}\ -o=output.tex\ \text{myfile.tex}\]

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:

\[\text{cmh:}\sim\$ \text{latexindent.pl}\ \text{myfile.tex} -o=output\]

\[\text{cmh:}\sim\$ \text{latexindent.pl}\ \text{myfile.tex} -o=output.tex\]

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:

\[\text{cmh:}\sim\$ \text{latexindent.pl}\ \text{myfile.tex} -o=new\]

\[\text{cmh:}\sim\$ \text{latexindent.pl}\ \text{myfile.tex} -o=myfilenew.tex\]

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,

\[\text{cmh:}\sim\$ \text{latexindent.pl}\ \text{myfile.tex} -o=output++\]

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

\[\text{cmh:}\sim\$ \text{latexindent.pl}\ \text{myfile.tex} -o=++\]

\(^1\)Users 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 \texttt{-o} switch can be combined; for example, calling

\begin{verbatim}
cmh:~$ latexindent.pl myfile.tex \texttt{-o=+out++}
\end{verbatim}

\texttt{latexindent.pl} tells \texttt{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 \textit{after} the ++ symbols, for example

\begin{verbatim}
cmh:~$ latexindent.pl myfile.tex \texttt{-o=+out++.tex}
\end{verbatim}

See appendix D on page 133 for details of how the interface has changed from Version 2.2 to Version 3.0 for this flag.

\begin{verbatim}
-s, \texttt{-silent}
\end{verbatim}

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

\begin{verbatim}
-t, \texttt{-trace}
\end{verbatim}

Tracing mode: verbose output will be given to \texttt{indent.log}. This is useful if \texttt{latexindent.pl} has made a mistake and you're trying to find out where and why. You might also be interested in learning about \texttt{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.

\begin{verbatim}
-tt, \texttt{-ttrace}
\end{verbatim}

More detailed tracing mode: this option gives more details to \texttt{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).

\begin{verbatim}
-l, \texttt{-local[=myyaml.yaml,other.yaml,...]}
\end{verbatim}

\texttt{latexindent.pl} will always load defaultSettings.yaml (rhymes with camel) and if it is called with the \texttt{-l} switch and it finds localSettings.yaml in the same directory as myfile.tex, then, if not found, it looks for localSettings.yaml (and friends, see Section 4.2 on page 21) in the current...
working directory, then these settings will be added to the indentation scheme. Information will be
given in indent.log on the success or failure of loading localSettings.yaml.

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

```bash
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,

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

```bash
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

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

Note that the following is not allowed:

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

and

```bash
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.

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

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

-y, --yaml=yaml settings

```bash
cmh:~$ latexindent.pl myfile.tex -y="defaultIndent:u'\t'"
cmh:~$ latexindent.pl myfile.tex -y="defaultIndent:u'\t',maximumIndentation:u'\t'"
cmh:~$ latexindent.pl myfile.tex -y="indentRules:one:u'\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
```
You can specify YAML settings from the command line using the \texttt{-y} or \texttt{--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 \texttt{;} to separate fields, which is demonstrated in Section 4.3 on page 22.

Any settings specified via this switch will be loaded after any specified using the \texttt{-l} switch. This is discussed further in Section 4.4 on page 22.

\textbf{-d, \texttt{--onlydefault}}

\begin{verbatim}
$ latexindent.pl \texttt{-d} myfile.tex
\end{verbatim}

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

\textbf{-c, \texttt{--cruft=<directory>}}

\begin{verbatim}
$ latexindent.pl \texttt{-c=/path/to/directory/} myfile.tex
\end{verbatim}

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

\textbf{-g, \texttt{--logfile=<name of log file>}}

\begin{verbatim}
$ latexindent.pl \texttt{-g=other.log} myfile.tex
$ latexindent.pl \texttt{--logfile other.log} myfile.tex
$ latexindent.pl \texttt{-g other.log} myfile.tex
$ latexindent.pl \texttt{-g /dev/null} myfile.tex
\end{verbatim}

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

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

\begin{verbatim}
$ latexindent.pl \texttt{-g /dev/null} myfile.tex
\end{verbatim}

\textbf{-sl, \texttt{--screenlog}}

\begin{verbatim}
$ latexindent.pl \texttt{-sl} myfile.tex
$ latexindent.pl \texttt{--screenlog} myfile.tex
\end{verbatim}

Using this option tells \texttt{latexindent.pl} to output the log file to the screen, as well as to your chosen log file.

\textbf{-m, \texttt{--modifylinebreaks}}

\begin{verbatim}
$ latexindent.pl \texttt{-m} myfile.tex
$ latexindent.pl \texttt{--modifylinebreaks} myfile.tex
\end{verbatim}
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 68.

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 24 for full details.

STDIN

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

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

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

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

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

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

Once you have finished typing your input, you can press

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

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

-r, -replacement

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

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 111.

-rv, -replacementrespectverb

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

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 111.

-rr, -onlyreplacement
3.2 From arara

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 111.

3.2 From arara

Using `latexindent.pl` from the command line is fine for some folks, but others may find it easier to use from `arara`; you can find the `arara` rule for `latexindent.pl` and its associated documentation at [3].
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 [7] 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. Listing 12 shows a sample indentconfig.yaml file.

<table>
<thead>
<tr>
<th>Listing 12: indentconfig.yaml (sample)</th>
</tr>
</thead>
<tbody>
<tr>
<td># Paths to user settings for latexindent.pl</td>
</tr>
<tr>
<td>#</td>
</tr>
<tr>
<td># Note that the settings will be read in the order you</td>
</tr>
<tr>
<td># specify here- each successive settings file will overwrite</td>
</tr>
<tr>
<td># the variables that you specify</td>
</tr>
</tbody>
</table>

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.
# LocalSettings.yaml and friends

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

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

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

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

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

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

```
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.

---

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

```
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 78) and the listings within Listing 283 on page 80, the following settings give the option to have sentences end with a semicolon

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

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.
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.
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: (fields)

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

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

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

```
    listing 15: fileExtensionPreference
    41 fileExtensionPreference:
    42 .tex: 1
    43 .sty: 2
    44 .cls: 3
    45 .bib: 4
```

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 order.

### backupExtension: (extension name)

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

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

### onlyOneBackUp: (integer)

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

---

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.

```bash
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 20) 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.

```
85 logFilePreferences:
86   showEveryYamlRead: 1
87   showAmalgamatedSettings: 0
88   showDecorationStartCodeBlockTrace: 0
89   showDecorationFinishCodeBlockTrace: 0
90   endLogFileWith: '-------------'
91   showGitHubInfoFooter: 1
```

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 132.

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.

Note: `latexindent.pl` no longer uses the `log4perl` module to handle the creation of the log file.

**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.
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 `\lstinline`; any commands populated in this field are protected from line breaking routines (only relevant if the `\-m` is active, see Section 6 on page 68).

### 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.

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.

### 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 394 to 396 on pages 100–101 for before and after results. Thanks to [24] for providing this feature.

---

**LISTING 17: verbatimEnvironments**

<table>
<thead>
<tr>
<th>line</th>
<th>content</th>
</tr>
</thead>
<tbody>
<tr>
<td>95</td>
<td>verbatimEnvironments:</td>
</tr>
<tr>
<td>96</td>
<td>verbatim: 1</td>
</tr>
<tr>
<td>97</td>
<td>lstlisting: 1</td>
</tr>
<tr>
<td>98</td>
<td>minted: 1</td>
</tr>
</tbody>
</table>

**LISTING 18: verbatimCommands**

<table>
<thead>
<tr>
<th>line</th>
<th>content</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>verbatimCommands:</td>
</tr>
<tr>
<td>102</td>
<td>verb: 1</td>
</tr>
<tr>
<td>103</td>
<td>lstininline: 1</td>
</tr>
</tbody>
</table>

**LISTING 19: noIndentBlock**

<table>
<thead>
<tr>
<th>line</th>
<th>content</th>
</tr>
</thead>
<tbody>
<tr>
<td>108</td>
<td>noIndentBlock:</td>
</tr>
<tr>
<td>109</td>
<td>noindent: 1</td>
</tr>
<tr>
<td>110</td>
<td>cmhtest: 1</td>
</tr>
</tbody>
</table>

**LISTING 20: noIndentBlock demonstration**

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

Important note: it is assumed that the noindent block statements appear on their own line.

**LISTING 21: removeTrailingWhitespace**

<table>
<thead>
<tr>
<th>line</th>
<th>content</th>
</tr>
</thead>
<tbody>
<tr>
<td>113</td>
<td>removeTrailingWhitespace:</td>
</tr>
<tr>
<td>114</td>
<td>beforeProcessing: 0</td>
</tr>
<tr>
<td>115</td>
<td>afterProcessing: 1</td>
</tr>
</tbody>
</table>

**LISTING 22: removeTrailingWhitespace (alt)**

<table>
<thead>
<tr>
<th>line</th>
<th>content</th>
</tr>
</thead>
<tbody>
<tr>
<td>116</td>
<td>removeTrailingWhitespace: 1</td>
</tr>
</tbody>
</table>

You can specify `removeTrailingWhitespace` simply as 0 or 1, if you wish; in this case, `latexindent.pl` will set both before `beforeProcessing` and after `afterProcessing` to the value you specify; see Listing 22.
Before \texttt{latexindent.pl} determines the difference between preamble (if any) and the main document, it first searches for any of the environments specified in \texttt{fileContentsEnvironments}, see Listing 23. The behaviour of \texttt{latexindent.pl} on these environments is determined by their location (preamble or not), and the value \texttt{indentPreamble}, discussed next.

**Listing 23: fileContentsEnvironments**

119 fileContentsEnvironments:
120 filecontents: 1
121 filecontents*: 1

**indentPreamble: \texttt{0|1}**

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

**lookForPreamble: \texttt{fields}**

Not all files contain preamble; for example, \texttt{sty}, \texttt{cls} and \texttt{bib} files typically do not. Referencing Listing 24, if you set, for example, .\texttt{tex} to 0, then regardless of the setting of the value of \texttt{indentPreamble}, preamble will not be assumed when operating upon .\texttt{tex} files.

**Listing 24: lookForPreamble**

127 lookForPreamble:
128 \texttt{.tex}: 1
129 \texttt{.sty}: 0
130 \texttt{.cls}: 0
131 \texttt{.bib}: 0

**preambleCommandsBeforeEnvironments: \texttt{0|1}**

Assuming that \texttt{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**

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

**defaultIndent: \texttt{horizontal space}**

This is the default indentation (\texttt{\textbackslash 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 \texttt{indentRules} in Section 5.4 on page 44 for more details.

If you’re interested in experimenting with \texttt{latexindent.pl} then you can remove all indentation by setting \texttt{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 26).

**Listing 27: tabular1.tex**

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

**Listing 28: tabular1.tex default output**

```
\begin{tabular}{cccc}
1 & 2 & 3 & 4
\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: lookForAlignDelims (advanced)**

```
lookForAlignDelims:
  tabular:
    delims: 1
  delims: 1
  alignDoubleBackSlash: 1
  spacesBeforeDoubleBackSlash: 1
  multiColumnGrouping: 0
  alignRowsWithoutMaxDelims: 1
  spacesBeforeAmpersand: 1
  spacesAfterAmpersand: 1
  justification: left
  alignFinalDoubleBackSlash: 0
  dontMeasure: 0
  delimiterRegEx: '([^!](?<!\))&'
  delimiterJustification: left
  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, \texttt{tabular: 1} in the basic version shown in Listing 26. If delims is set to 0 then the align at ampersands 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 \(\geq 0\)) of spaces to be inserted before ```\``` (default: 1).  

• **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 delimeters should be formatted so as to have the ampersands aligned (default: 1);

• **spacesBeforeAmpersand**: optionally specifies the number (integer \(\geq 0\)) of spaces to be placed before ampersands (default: 1);

• **spacesAfterAmpersand**: optionally specifies the number (integer \(\geq 0\)) of spaces to be placed after ampersands (default: 1);

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

• **alignFinalDoubleBackSlash** optionally specifies if the final double back slash should be used for alignment (default: 0);

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

• **delimiterRegEx** optionally specifies the pattern matching to be used for the alignment delimeter (default: `\(?<!\)` `(\&)`);

• **delimiterJustification** optionally specifies the justification for the alignment delimeters (default: left); note that this feature is only useful if you have delimiters of different lengths in the same column, discussed in Section 5.2.

We will explore most of these features using the file `tabular2.tex` in Listing 30 (which contains a \texttt{\multicolumn} command), and the YAML files in Listings 31 to 37; we will explore `alignFinalDoubleBackSlash` in Listing 46; the `dontMeasure` feature will be described in Section 5.1, and `delimiterRegEx` in Section 5.2.

**Listing 30: `tabular2.tex`**

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

**Listing 31: `tabular2.yaml`**

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

**Listing 32: `tabular3.yaml`**

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

\(^{5}\)Previously this only activated if `alignDoubleBackSlash` was set to 0.
On running the commands

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

we obtain the respective outputs given in Listings 38 to 45.

---

### Listing 33: tabular4.yaml

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

### Listing 34: tabular5.yaml

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

### Listing 35: tabular6.yaml

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

### Listing 36: tabular7.yaml

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

### Listing 37: tabular8.yaml

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

---

### Listing 38: tabular2.tex default output

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

### Listing 39: tabular2.tex using Listing 31

```latex
\begin{tabular}{cccc}
| A  | & B  | & C  | & D  | \multicolumn{2}{c}{first heading} | \multicolumn{2}{c}{second heading} | \\
| AAA | & BBB | & CCC | & DDD | 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 \\
\end{tabular}

\begin{tabular}{cccc}
  \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 \\
\end{tabular}

\begin{tabular}{cccc}
  \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 \\
\end{tabular}

\begin{tabular}{cccc}
  \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 \\
\end{tabular}

\begin{tabular}{cccc}
  \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 \\
\end{tabular}

\begin{tabular}{cccc}
  \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}
  \hline
  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 \& \& \& \\
  \hline
\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 grouped correctly, because of the settings in Listing 31.

We explore the `alignFinalDoubleBackSlash` feature by using the file in Listing 46. Upon running the following commands

```
$ latexindent \texttt{-o=-default} \texttt{tabular4.tex}

$ latexindent \texttt{-o=-FDBS} \texttt{-y="lookForAlignDelims:tabular:alignFinalDoubleBackSlash:1"}
```

then we receive the respective outputs given in Listing 47 and Listing 48.

<table>
<thead>
<tr>
<th>LISTING 46: <code>tabular4.tex</code></th>
<th>LISTING 47: <code>tabular4-default.tex</code></th>
<th>LISTING 48: <code>tabular4-FDBS.tex</code></th>
</tr>
</thead>
</table>
| \begin{tabular}{lc} \hline
  Name & \shortstack{Hi \& Lo} \\
  Foo & Bar \\
  \hline
\end{tabular} \hline
| \begin{tabular}{lc} \hline
  Name & \shortstack{Hi \& Lo} \\
  Foo & Bar \\
  \hline
\end{tabular} \hline
| \begin{tabular}{lc} \hline
  Name & \shortstack{Hi \& Lo} \\
  Foo & Bar \\
  \hline
\end{tabular} \hline

We note that in:

- Listing 47, by default, the first set of double back slashes in the first row of the `tabular` environment have been used for alignment;
- Listing 48, the final set of double back slashes in the first row have been used, because we specified `alignFinalDoubleBackSlash` as 1.
As of Version 3.0, the alignment routine works on mandatory and optional arguments within commands, and also within 'special' code blocks (see specialBeginEnd on page 37); for example, assuming that you have a command called \texttt{\textbackslash matrix} and that it is populated within lookForAlignDelims (which it is, by default), and that you run the command

\begin{verbatim}
cmh:\$ latexindent.pl matrix1.tex
\end{verbatim}

then the before-and-after results shown in Listings 49 and 50 are achievable by default.

\begin{verbatim}
\textbf{Listing 49:} matrix1.tex
\begin{verbatim}
\texttt{\textbackslash matrix} [ \\
 1 & 2 & \& \textbackslash 3 \\
 4 & 5 & \& \textbackslash 6 ]{ \\
 7 & 8 & \& \textbackslash 9 }{ \\
 10 & 11 & \& 12 }
\end{verbatim}
\end{verbatim}
\begin{verbatim}
\textbf{Listing 50:} matrix1.tex default output
\begin{verbatim}
\texttt{\textbackslash matrix} [ \\
 1 & 2 & 3 \\
 4 & 5 & 6 ]{ \\
 7 & 8 & 9 }{ \\
 10 & 11 & 12 }
\end{verbatim}
\end{verbatim}
\end{verbatim}

If you have blocks of code that you wish to align at the \& character that are not wrapped in, for example, \texttt{\textbackslash begin\{tabular\}...\textbackslash end\{tabular\}}, then you can use the mark up illustrated in Listing 51; the default output is shown in Listing 52. Note that the \%* must be next to each other, but that there can be any number of spaces (possibly none) between the * and \texttt{\textbackslash begin\{tabular\)}; note also that you may use any environment name that you have specified in lookForAlignDelims.

\begin{verbatim}
\textbf{Listing 51:} align-block.tex
\begin{verbatim}
\%* \texttt{\textbackslash begin\{tabular\}}
  1 & 2 & 3 & 4 \\
  5 & \& 6 & \\
\%* \texttt{\textbackslash end\{tabular\}}
\end{verbatim}
\end{verbatim}
\begin{verbatim}
\textbf{Listing 52:} align-block.tex default output
\begin{verbatim}
\%* \texttt{\textbackslash begin\{tabular\}}
  1 & 2 & 3 & 4 \\
  5 & \& 6 & \\
\%* \texttt{\textbackslash end\{tabular\}}
\end{verbatim}
\end{verbatim}

With reference to Table 1 on page 45 and the, yet undiscussed, fields of noAdditionalIndent and indentRules (see Section 5.4 on page 44), these comment-marked blocks are considered environments.

5.1 lookForAlignDelims: the dontMeasure feature

The lookForAlignDelims field can, optionally, receive the dontMeasure option which can be specified in a few different ways. We will explore this feature in relation to the code given in Listing 53; the default output is shown in Listing 54.

\begin{verbatim}
\textbf{Listing 53:} tabular-DM.tex
\begin{verbatim}
\texttt{\textbackslash begin\{tabular\}}{cccc}
  aaaa & bbbb & ccc & dd \\
  11 & 2 & 33 & 4 \\
 5 & 66 & 7 & 8
\texttt{\textbackslash end\{tabular\}}
\end{verbatim}
\end{verbatim}
\begin{verbatim}
\textbf{Listing 54:} tabular-DM.tex default output
\begin{verbatim}
\texttt{\textbackslash begin\{tabular\}}{cccc}
  aaaa & bbbb & ccc & dd \\
  11 & 2 & 33 & 4 \\
 5 & 66 & 7 & 8
\texttt{\textbackslash end\{tabular\}}
\end{verbatim}
\end{verbatim}

The dontMeasure field can be specified as \texttt{largest}, and in which case, the largest element will not be measured; with reference to the YAML file given in Listing 56, we can run the command

\begin{verbatim}
\texttt{cmh:\$ latexindent.pl tabular-DM.tex -l=dontMeasure1.yaml}
\end{verbatim}

and receive the output given in Listing 55.
We note that the *largest* column entries have not contributed to the measuring routine.

The `dontMeasure` field can also be specified in the form demonstrated in Listing 58. On running the following commands,

```bash
cmh:~$ latexindent.pl tabular-DM.tex -l=dontMeasure2.yaml
cmh:~$ latexindent.pl tabular-DM.tex -l=dontMeasure3.yaml
cmh:~$ latexindent.pl tabular-DM.tex -l=dontMeasure4.yaml
```

we receive the output given in Listing 59.

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

We note that in Listing 58 we have specified entries not to be measured, one entry per line.

The `dontMeasure` field can also be specified in the forms demonstrated in Listing 60 and Listing 61. Upon running the commands

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

we receive the output given in Listing 59.

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

We note that in:

- Listing 60 we have specified entries not to be measured, each one has a *string* in the `this` field, together with an optional specification of `applyTo` as `cell`;

- Listing 61 we have specified entries not to be measured as a *regular expression* using the `regex` field, together with an optional specification of `applyTo` as `cell` field, together with an optional specification of `applyTo` as `cell`.

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

We may also specify the `applyTo` field as `row`, a demonstration of which is given in Listing 63; upon
5.2 lookForAlignDelims: the delimiterRegEx and delimiterJustification feature

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

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

We demonstrate how to customise this with respect to the code given in Listing 66; the default output from latexindent.pl is given in Listing 67.

Let’s say that we wish to align the code at either the \= or \>. We employ the settings given in Listing 69 and run the command

We receive the output given in Listing 62.

Finally, the applyTo field can be specified as row, together with a regex expression. For example, for the settings given in Listing 65, upon running

we receive the output in Listing 64.

5.2 lookForAlignDelims: the delimiterRegEx and delimiterJustification feature

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

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

We demonstrate how to customise this with respect to the code given in Listing 66; the default output from latexindent.pl is given in Listing 67.

Let’s say that we wish to align the code at either the \= or \>. We employ the settings given in Listing 69 and run the command

We receive the output given in Listing 62.

Let’s say that we wish to align the code at either the \= or \>. We employ the settings given in Listing 69 and run the command

We receive the output given in Listing 64.

5.2 lookForAlignDelims: the delimiterRegEx and delimiterJustification feature

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

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

We demonstrate how to customise this with respect to the code given in Listing 66; the default output from latexindent.pl is given in Listing 67.

Let’s say that we wish to align the code at either the \= or \>. We employ the settings given in Listing 69 and run the command

We receive the output given in Listing 62.

Let’s say that we wish to align the code at either the \= or \>. We employ the settings given in Listing 69 and run the command

We receive the output given in Listing 64.

5.2 lookForAlignDelims: the delimiterRegEx and delimiterJustification feature

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

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

We demonstrate how to customise this with respect to the code given in Listing 66; the default output from latexindent.pl is given in Listing 67.

Let’s say that we wish to align the code at either the \= or \>. We employ the settings given in Listing 69 and run the command

We receive the output given in Listing 62.

Let’s say that we wish to align the code at either the \= or \>. We employ the settings given in Listing 69 and run the command

We receive the output given in Listing 64.
5.2 lookForAlignDelims: the delimiterRegEx and delimiterJustification feature

\begin{tabbing}
\texttt{listings}
\end{tabbing}

We note that:

\begin{itemize}
\item in Listing 68 the code has been aligned, as intended, at both the \texttt{=} and \texttt{\>};
\item in Listing 69 we have heeded the warning and captured the expression using grouping parenthesis, specified a backslash using \texttt{\}} and said that it must be followed by either \texttt{=} or \texttt{\>}.
\end{itemize}

We can explore delimiterRegEx a little further using the settings in Listing 71 and run the command

\texttt{cmh:~$ latexindent.pl tabbing.tex -l=delimiterRegEx2.yaml}

to receive the output given in Listing 70.

\begin{tabbing}
\texttt{listings}
\end{tabbing}

We note that only the \texttt{\>} have been aligned.

Of course, the other lookForAlignDelims options can be used alongside the delimiterRegEx; regardless of the type of delimiter being used (ampersand or anything else), the fields from Listing 29 on page 28 remain the same; for example, using the settings in Listing 73, and running

\texttt{cmh:~$ latexindent.pl tabbing1.tex -l=delimiterRegEx3.yaml -o=+-mod4}

we receive the output in Listing 75.
You can set the delimiter justification as either left (default) or right, which will only have effect when delimiters in the same column have different lengths. Using the settings in Listing 78 and running the command

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

you get the output in Listing 77.

Note that in Listing 77 the second set of delimiters have been right aligned – it is quite subtle!

### 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 80 and 81.

### 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 20 for details of how to configure user settings, and Listing 13 on page 21 in particular.)

### specialBeginEnd: (fields)
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 83 shows the default settings of `specialBeginEnd`.

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

The field `displayMath` represents `\[\...]`, `inlineMath` represents `$...$` and `displayMathTeX` represents `$$...$$`. You can, of course, rename these in your own YAML files (see Section 4.2 on page 21); 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 84 and 85.

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

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.

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 86.

```yaml
specialBeginEnd:
  specialBeforeCommand: 1
```

Now consider the YAML files shown in Listings 87 and 88.
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 89 and 90.

<table>
<thead>
<tr>
<th>Listing 89: specialLR.tex using Listing 87</th>
<th>Listing 90: specialLR.tex using Listings 87 and 88</th>
</tr>
</thead>
<tbody>
<tr>
<td>\begin{equation}</td>
<td>\begin{equation}</td>
</tr>
<tr>
<td>\left[</td>
<td>\left[</td>
</tr>
<tr>
<td>\sqrt{</td>
<td>\sqrt{</td>
</tr>
<tr>
<td>a+b</td>
<td>a+b</td>
</tr>
<tr>
<td>}</td>
<td>}</td>
</tr>
<tr>
<td>\right]</td>
<td>\right]</td>
</tr>
<tr>
<td>\end{equation}</td>
<td>\end{equation}</td>
</tr>
</tbody>
</table>

Notice that in:

- Listing 89 the `\left` has been treated as a *command*, with one optional argument;
- Listing 90 the `specialBeginEnd` pattern in Listing 87 has been obeyed because Listing 88 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 91.

<table>
<thead>
<tr>
<th>Listing 91: special2.tex</th>
</tr>
</thead>
<tbody>
<tr>
<td>\If</td>
</tr>
<tr>
<td>something 0</td>
</tr>
<tr>
<td>\ElsIf</td>
</tr>
<tr>
<td>something 1</td>
</tr>
<tr>
<td>\ElsIf</td>
</tr>
<tr>
<td>something 2</td>
</tr>
<tr>
<td>\ElsIf</td>
</tr>
<tr>
<td>something 3</td>
</tr>
<tr>
<td>\Else</td>
</tr>
<tr>
<td>something 4</td>
</tr>
<tr>
<td>\EndIf</td>
</tr>
</tbody>
</table>

Upon saving the YAML settings in Listings 92 and 94 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 93 and 95.
We note that:

- in Listing 93 the bodies of each of the Elsif statements have been indented appropriately;
- the Else statement has not been indented appropriately in Listing 93 – read on!
- we have specified multiple settings for the middle field using the syntax demonstrated in Listing 94 so that the body of the Else statement has been indented appropriately in Listing 95.

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 97 and the YAML in Listing 96, and running

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

then the output in Listing 97 is unchanged.

We can combine the specialBeginEnd with the lookForAlignDelims feature. We begin with the code in Listing 98.
5.2 lookForAlignDelims: the \texttt{delimiterRegEx} and \texttt{delimiterJustification} feature

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

Let's assume that our goal is to align the code at the edge and node text; we employ the code given in Listing 99 and run the command
\begin{Verbatim}
\texttt{cmh:~\$ latexindent.pl special-align.tex -l edge-node1.yaml -o=+-mod1}
\end{Verbatim}
to receive the output in Listing 100.

\begin{Verbatim}
\begin{Verbatim}
\textbf{Listing 99:} edge-node1.yaml
specialBeginEnd:
  path:
    begin: '\\path'
    end: '\\'
    lookForThis: 1
    specialBeforeCommand: 1
lookForAlignDelims:
  path:
    delimiterRegEx: '(edge|node)'
\end{Verbatim}
\end{Verbatim}

\begin{Verbatim}
\textbf{Listing 100:} special-align.tex using Listing 99
\begin{Verbatim}
\begin{tikzpicture}
  \path (A) edge node \{0,1,L\} (B)
  edge node \{1,1,R\} (C)
  (B) edge \[loop above\] node \{1,1,L\} (B)
  edge node \{0,1,L\} (C)
  (C) edge node \{0,1,L\} (D)
  edge \[bend left\] node \{1,0,R\} (E)
  (D) edge \[loop below\] node \{1,1,R\} (D)
  edge node \{0,1,R\} (A)
  (E) edge \[bend left\] node \{1,0,R\} (A);
\end{tikzpicture}
\end{Verbatim}
\end{Verbatim}

The output in Listing 100 is not quite ideal. We can tweak the settings within Listing 99 in order to improve the output; in particular, we employ the code in Listing 101 and run the command
\begin{Verbatim}
\texttt{cmh:~\$ latexindent.pl special-align.tex -l edge-node2.yaml -o=+-mod2}
\end{Verbatim}
to receive the output in Listing 102.

\begin{Verbatim}
\begin{Verbatim}
\textbf{Listing 101:} edge-node2.yaml
specialBeginEnd:
  path:
    begin: '\\path'
    end: '\\'
    lookForThis: 1
    specialBeforeCommand: 1
lookForAlignDelims:
  path:
    delimiterRegEx: '\{0-9,A-Z\}\s*\{0-9,A-Z\}\+\}'}
This field enables the user to specify indentation rules that take effect after heading commands such as `\part`, `\chapter`, `\section`, `\subsection`, or indeed any user-specified command written in this field.\(^6\)

<table>
<thead>
<tr>
<th>Listing 103: indentAfterHeadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>256 indentAfterHeadings:</td>
</tr>
<tr>
<td>257     part:</td>
</tr>
<tr>
<td>258         indentAfterThisHeading: 0</td>
</tr>
<tr>
<td>259         level: 1</td>
</tr>
<tr>
<td>260     chapter:</td>
</tr>
<tr>
<td>261         indentAfterThisHeading: 0</td>
</tr>
<tr>
<td>262         level: 2</td>
</tr>
<tr>
<td>263     section:</td>
</tr>
<tr>
<td>264         indentAfterThisHeading: 0</td>
</tr>
<tr>
<td>265         level: 3</td>
</tr>
</tbody>
</table>

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

You can add any of your own custom heading commands to this field, specifying the `level` as appropriate. You can also specify your own indentation in `indentRules` (see Section 5.4 on page 44); 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 104 saved into `headings1.yaml`, and that you have the text from Listing 105 saved into `headings1.tex`.

<table>
<thead>
<tr>
<th>Listing 104: headings1.yaml</th>
<th>Listing 105: headings1.tex</th>
</tr>
</thead>
<tbody>
<tr>
<td>indentAfterHeadings:</td>
<td>\subsection{subsection title}</td>
</tr>
<tr>
<td>subsection:</td>
<td>subsection text</td>
</tr>
<tr>
<td>indentAfterThisHeading: 1</td>
<td>\paragraph{paragraph title}</td>
</tr>
<tr>
<td>level: 1</td>
<td>paragraph text</td>
</tr>
<tr>
<td>paragraph:</td>
<td>\paragraph{paragraph title}</td>
</tr>
<tr>
<td>indentAfterThisHeading: 1</td>
<td>paragraph text</td>
</tr>
<tr>
<td>level: 2</td>
<td>paragraph text</td>
</tr>
</tbody>
</table>

If you run the command

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

then you should receive the output given in Listing 106.

\(^6\)There is a slight difference in interface for this field when comparing Version 2.2 to Version 3.0; see appendix D on page 133 for details.
5.2 lookForAlignDelims: the delimiterRegEx and delimiterJustification feature

<table>
<thead>
<tr>
<th>Listing 106: headings1.tex using Listing 104</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>\subsection{subsection title}</code></td>
</tr>
<tr>
<td>#subsection text</td>
</tr>
<tr>
<td>#subsection text</td>
</tr>
<tr>
<td><code>\paragraph{paragraph title}</code></td>
</tr>
<tr>
<td><code>\paragraph{paragraph text}</code></td>
</tr>
<tr>
<td><code>\paragraph{paragraph title}</code></td>
</tr>
<tr>
<td><code>\paragraph{paragraph text}</code></td>
</tr>
</tbody>
</table>

Now say that you modify the YAML from Listing 104 so that the paragraph level is 1; after running

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

you should receive the code given in Listing 107; notice that the paragraph and subsection are at the same indentation level.

<table>
<thead>
<tr>
<th>Listing 107: headings1.tex second modification</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>\subsection{subsection title}</code></td>
</tr>
<tr>
<td>#subsection text</td>
</tr>
<tr>
<td>#subsection text</td>
</tr>
<tr>
<td><code>\paragraph{paragraph title}</code></td>
</tr>
<tr>
<td><code>\paragraph{paragraph text}</code></td>
</tr>
<tr>
<td><code>\paragraph{paragraph title}</code></td>
</tr>
<tr>
<td><code>\paragraph{paragraph text}</code></td>
</tr>
</tbody>
</table>

maximumIndentation: (horizontal space)

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 [21], and is off by default.

For example, consider the example shown in Listing 108 together with the default output shown in Listing 109.

<table>
<thead>
<tr>
<th>Listing 108: mult-nested.tex</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>\begin{one}</code></td>
</tr>
<tr>
<td><code>one</code></td>
</tr>
<tr>
<td><code>\begin{two}</code></td>
</tr>
<tr>
<td><code>two</code></td>
</tr>
<tr>
<td><code>\begin{three}</code></td>
</tr>
<tr>
<td><code>three</code></td>
</tr>
<tr>
<td><code>\begin{four}</code></td>
</tr>
<tr>
<td><code>four</code></td>
</tr>
<tr>
<td><code>\end{four}</code></td>
</tr>
<tr>
<td><code>\end{three}</code></td>
</tr>
<tr>
<td><code>\end{two}</code></td>
</tr>
<tr>
<td><code>\end{one}</code></td>
</tr>
</tbody>
</table>

Now say that, for example, you have the max-indentation1.yaml from Listing 110 and that you run the following command:

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

You should receive the output shown in Listing 111.
Comparing the output in Listings 109 and 111 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 26) or noIndentBlock (see Listing 19 on page 26).

5.3 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.

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 120.

5.4 noAdditionalIndent and indentRules

latexindent.pl operates on files by looking for code blocks, as detailed in Section 5.3; for each type of code block in Table 1 on the next 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 following page; for reference, there follows a list of the code blocks covered.

5.4.1 Environments and their arguments ........................................ 46
5.4.2 Environments with items ..................................................... 52
5.4.3 Commands with arguments .................................................. 53
5.4.4 ifelsefi code blocks .......................................................... 55
5.4.5 specialBeginEnd code blocks ................................................. 57
5.4.6 afterHeading code blocks ..................................................... 58
5.4.7 The remaining code blocks ................................................... 60

keyEqualsValuesBracesBrackets .................................................. 60
Table 1: Code blocks known to `latexindent.pl`

<table>
<thead>
<tr>
<th>Code block</th>
<th>characters allowed in name</th>
<th>example</th>
</tr>
</thead>
<tbody>
<tr>
<td>environments</td>
<td>a-zA-Z@*0-9__</td>
<td>*body of myenv\end{myenv}</td>
</tr>
<tr>
<td>optionalArguments</td>
<td>inherits name from parent (e.g. environment name)</td>
<td>[opt arg text]</td>
</tr>
<tr>
<td>mandatoryArguments</td>
<td>inherits name from parent (e.g. environment name)</td>
<td>{mand arg text}</td>
</tr>
<tr>
<td>commands</td>
<td>+a-zA-Z@*0-9__</td>
<td>\mycommand{arguments}</td>
</tr>
<tr>
<td>keyEqualsValuesBracesBrackets</td>
<td>a-zA-Z@*0-9_/._/h{}/#-</td>
<td>my key/.style={arguments}</td>
</tr>
<tr>
<td>namedGroupingBracesBrackets</td>
<td>0-9_.a-zA-Z@**&lt;</td>
<td>in{arguments}</td>
</tr>
<tr>
<td>UnNamedGroupingBracesBrackets</td>
<td>No name!</td>
<td>{ or [ or , or &amp; or ) or ( or $ followed by {arguments}</td>
</tr>
<tr>
<td>ifElseFi</td>
<td>@a-zA-Z but must begin with either \if of @if</td>
<td>\ifnum...\else...\fi</td>
</tr>
<tr>
<td>items</td>
<td>User specified, see Listings 79 and 82 on page 37</td>
<td>\begin{enumerate}...\end{enumerate}</td>
</tr>
<tr>
<td>specialBeginEnd</td>
<td>User specified, see Listing 83 on page 38</td>
<td>[\ldots]</td>
</tr>
<tr>
<td>afterHeading</td>
<td>User specified, see Listing 103 on page 42</td>
<td>\chapter{title}...\section{title}</td>
</tr>
<tr>
<td>filecontents</td>
<td>User specified, see Listing 23 on page 27</td>
<td>\begin{filecontents}...\end{filecontents}</td>
</tr>
</tbody>
</table>
5.4.1 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 112.

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

**Listing 112: myenv.tex**

If we do not wish `myenv` to receive any additional indentation, we have a few choices available to us, as demonstrated in Listings 113 and 114.

```
noAdditionalIndent: {fields}
```

**Listing 113:** myenv-noAdd1.yaml

```
noAdditionalIndent:
myenv: 1
```

**Listing 114:** 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 115; note in particular that the environment `myenv` has not received any additional indentation, but that the outer environment has still received indentation.

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

**Listing 115:** myenv.tex output (using either Listing 113 or Listing 114)

Upon changing the YAML files to those shown in Listings 116 and 117, 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 118.
Let's now allow `myenv` to have some optional and mandatory arguments, as in Listing 119.

Upon running

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

we obtain the output shown in Listing 120; 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 113), then all parts of the environment (body, optional and mandatory arguments) are assumed to want no additional indent.

We may customise `noAdditionalIndent` for optional and mandatory arguments of the `myenv` environment, as shown in, for example, Listings 121 and 122.
Upon running

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

we obtain the respective outputs given in Listings 123 and 124. Note that in Listing 123 the text for the optional argument has not received any additional indentation, and that in Listing 124 the mandatory argument has not received any additional indentation; in both cases, the body has not received any additional indentation.

```
\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}
```

```
\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 also specify indentation rules for environment code blocks using the `indentRules` field; see, for example, Listings 125 and 126.

```
\begin{outer}
  \begin{myenv}
    indentRules:
    myenv: " "
  \end{myenv}
\end{outer}
```

```
\begin{outer}
  \begin{myenv}
    indentRules:
    myenv: " 
    body: " "
  \end{myenv}
\end{outer}
```

On applying either of the following commands,

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

we obtain the output given in Listing 127; note in particular that the environment `myenv` has received one tab (from the `outer` environment) plus three spaces from Listing 125 or 126.
If you specify a field in `indentRules` using anything other than horizontal space, it will be ignored.

Returning to the example in Listing 119 that contains optional and mandatory arguments. Upon using Listing 125 as in

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

we obtain the output in Listing 128; note that the body, optional argument and mandatory argument of `myenv` have all received the same customised indentation.

You can specify different indentation rules for the different features using, for example, Listings 129 and 130.

After running

```bash
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 131 and 132.
5.4 noAdditionalIndent and indentRules

Note that in Listing 131, 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 132, 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.

Assuming that your environment name is not found within neither noAdditionalIndent nor indentRules, the next place that latexindent.pl will look is noAdditionalIndentGlobal, and in particular for the `environments` key (see Listing 133). Let's say that you change the value of `environments` to 1 in Listing 133, 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 134 and 135; in Listing 134 notice that both environments receive no additional indentation but that the arguments of `myenv` still do receive indentation. In Listing 135 notice that the `outer` environment does not receive additional indentation, but because of the settings from `myenv-rules1.yaml` (in Listing 125 on page 48), the `myenv` environment still does receive indentation.

In fact, noAdditionalIndentGlobal also contains keys that control the indentation of optional and mandatory arguments; on referencing Listings 136 and 137
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 138 and 139. Notice that in Listing 138 the optional argument has not received any additional indentation, and in Listing 139 the mandatory argument has not received any additional indentation.

LISTING 138: myenv-args.tex using Listing 136

\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 140; if you change the environments field to anything involving horizontal space, say " ", and then run the following commands

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

then the respective output is shown in Listings 141 and 142. Note that in Listing 141, both the environment blocks have received a single-space indentation, whereas in Listing 142 the outer environment has received single-space indentation (specified by indentRulesGlobal), but myenv has received " ", as specified by the particular indentRules for myenv Listing 125 on page 48.
5.4 noAdditionalIndent and indentRules

You can specify indentRulesGlobal for both optional and mandatory arguments, as detailed in Listings 143 and 144.

Upon running the following commands

```latex
\begin{outer}
\begin{myenv}
\optional argument text
\{ mandatory argument text
\body of environment
\end{myenv}
\end{outer}
```

we obtain the respective outputs in Listings 145 and 146. Note that the optional argument in Listing 145 has received two tabs worth of indentation, while the mandatory argument has done so in Listing 146.

5.4.2 Environments with items

With reference to Listings 79 and 82 on page 37, some commands may contain item commands; for the purposes of this discussion, we will use the code from Listing 80 on page 37.

Assuming that you’ve populated itemNames with the name of your item, you can put the item name into noAdditionalIndent as in Listing 147, 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 148.
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 149 and 150; note that in Listing 149 that the text after each item has not received any additional indentation, and in Listing 150, the text after each item has received a single space of indentation, specified by Listing 148.

```
\begin{itemize}
  \item some 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 151 and 152. Note that there is a need to ‘reset/remove’ the `item` field from `indentRules` in both cases (see the hierarchy description given on page 44) as the `item` command is a member of `indentRules` by default.

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

Upon running the following commands,

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

the respective outputs from Listings 149 and 150 are obtained; note, however, that all such `item` commands without their own individual `noAdditionalIndent` or `indentRules` settings would behave as in these listings.

5.4.3 Commands with arguments

Let’s begin with the simple example in Listing 153; when `latexindent.pl` operates on this file, the default output is shown in Listing 154.

```
\begin{itemize}
  \item mand arg text
  mand arg text
\end{itemize}
```

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

7The command code blocks have quite a few subtleties, described in Section 5.5 on page 62.
As in the environment-based case (see Listings 113 and 114 on page 46) we may specify `noAdditionalIndent` either in 'scalar' form, or in 'field' form, as shown in Listings 155 and 156.

Listing 155: `mycommand-noAdd1.yaml`

```
noAdditionalIndent:
  mycommand: 1
```

Listing 156: `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 157 and 158.

Listing 157: `mycommand.tex` using Listing 155

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

Listing 158: `mycommand.tex` using Listing 156

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

Note that in Listing 157 that the 'body', optional argument and mandatory argument have all received no additional indentation, while in Listing 158, only the 'body' has not received any additional indentation. We define the 'body' of a command as any lines following the command name that include its optional or mandatory arguments.

We may further customise `noAdditionalIndent` for `mycommand` as we did in Listings 121 and 122 on page 48; explicit examples are given in Listings 159 and 160.

Listing 159: `mycommand-noAdd3.yaml`

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

Listing 160: `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 161 and 162.
Attentive readers will note that the body of `mycommand` in both Listings 161 and 162 has received no additional indent, even though body is explicitly set to 0 in both Listings 159 and 160. This is because, by default, `noAdditionalIndentGlobal` for commands is set to 1 by default; this can be easily fixed as in Listings 163 and 164.

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 165 and 166.

Both `indentRules` and `indentRulesGlobal` can be adjusted as they were for `environment` code blocks, as in Listings 129 and 130 on page 49 and Listings 140, 143 and 144 on pages 51–52.

### 5.4.4 `ifelsefi` code blocks

Let’s use the simple example shown in Listing 167; when `latexindent.pl` operates on this file, the output as in Listing 168; note that the body of each of the `\if` statements have been indented, and that the `\else` statement has been accounted for correctly.
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 169 and 170.

After running the following commands,

```bash
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 171 and 172; note that in Listing 171, the `ifnum` code block has not received any additional indentation, while in Listing 172, the `ifnum` code block has received one tab and two spaces of indentation.

We may specify `noAdditionalIndentGlobal` and `indentRulesGlobal` as in Listings 173 and 174.

Upon running the following commands

```bash
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 175 and 176; notice that in Listing 175 neither of the `ifelsefi` code blocks have received indentation, while in Listing 176 both code blocks have received a single space of indentation.
We can further explore the treatment of `ifElseFi` code blocks in Listing 177, and the associated default output given in Listing 178; note, in particular, that the bodies of each of the ‘or statements’ have been indented.

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

5.4.5 specialBeginEnd code blocks

Let’s use the example from Listing 84 on page 38 which has default output shown in Listing 85 on page 38.

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 179 and 180.

```yaml
displayMath-noAdd.yaml
noAdditionalIndent: displayMath: 1
```

```yaml
displayMath-indent-rules.yaml
indentRules: displayMath: "\t\t\t"
```

After running the following commands,

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

we receive the respective output given in Listings 181 and 182; note that in Listing 181, the `displayMath` code block has not received any additional indentation, while in Listing 182, the `displayMath` code block has received three tabs worth of indentation.
The function $f$ has formula
\[
 f(x)=x^2.
\]
If you like splitting dollars, $g(x)=f(2x)$

We may specify noAdditionalIndentGlobal and indentRulesGlobal as in Listings 183 and 184.

Upon running the following commands

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

we receive the outputs in Listings 185 and 186; notice that in Listing 185 neither of the special code blocks have received indentation, while in Listing 186 both code blocks have received a single space of indentation.

5.4.6 afterHeading code blocks

Let’s use the example Listing 187 for demonstration throughout this Section. As discussed on page 42, by default latexindent.pl will not add indentation after headings.

On using the YAML file in Listing 189 by running the command

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

we obtain the output in Listing 188. Note that the argument of paragraph has received (default) indentation, and that the body after the heading statement has received (default) indentation.
If we specify `noAdditionalIndent` as in Listing 191 and run the command

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

then we receive the output in Listing 190. 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.

Similarly, if we specify `indentRules` as in Listing 193 and run analogous commands to those above, we receive the output in Listing 192; note that the body, mandatory argument and content after the heading of paragraph have all received three tabs worth of indentation.

We may, instead, specify `noAdditionalIndent` in ‘field’ form, as in Listing 195 which gives the output in Listing 194.

Analogously, we may specify `indentRules` as in Listing 197 which gives the output in Listing 196; 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.
Finally, let’s consider `noAdditionalIndentGlobal` and `indentRulesGlobal` shown in Listings 199 and 201 respectively, with respective output in Listings 198 and 200. Note that in Listing 199 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 200, the `argument` has received both a (default) tab plus two spaces of indentation (from the global rule specified in Listing 201), and the remaining body after paragraph has received just two spaces of indentation.

5.4.7 The remaining code blocks

Referencing the different types of code blocks in Table 1 on page 45, we have a few code blocks yet to cover; these are very similar to the `commands` code block type covered comprehensively in Section 5.4.3 on page 53, but a small discussion defining these remaining code blocks is necessary.

**keyEqualsValuesBracesBrackets** \[\text{latexindent.pl}\] 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 45;
- 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 478 on page 120

An example is shown in Listing 202, with the default output given in Listing 203.
In Listing 203, note that the maximum indentation is three tabs, and these come from:

- the \texttt{pgfkeys} command's mandatory argument;
- the \texttt{start coordinate/.initial} key's mandatory argument;
- the \texttt{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 \texttt{body} field for \texttt{noAdditionalIndent} and friends from page 44.

**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 \texttt{horizontal space} OR \texttt{one or more line breaks} OR \texttt{OR} \texttt{[} OR \texttt{]} OR \texttt{)} OR \texttt{(};
- the name may contain the characters detailed in Table 1 on page 45;
- then at least one set of curly braces or square brackets (comments and line breaks allowed throughout).

See the \texttt{NamedGroupingBracesBrackets: follow} and \texttt{NamedGroupingBracesBrackets: name} fields of the fine tuning section in Listing 478 on page 120.

A simple example is given in Listing 204, with default output in Listing 205.

<table>
<thead>
<tr>
<th>LISTING 204: child1.tex</th>
<th>LISTING 205: child1.tex default output</th>
</tr>
</thead>
<tbody>
<tr>
<td>\texttt{\coordinate}</td>
<td>\texttt{\coordinate}</td>
</tr>
<tr>
<td>child[grow=down]{}</td>
<td>child[grow=down]{}</td>
</tr>
<tr>
<td>edge from parent [antiparticle]</td>
<td>edge from parent [antiparticle]</td>
</tr>
<tr>
<td>node [above=3pt] \texttt{($C$)}</td>
<td>node [above=3pt] \texttt{($C$)}</td>
</tr>
<tr>
<td>}</td>
<td>}</td>
</tr>
</tbody>
</table>

In particular, \texttt{latexindent.pl} considers \texttt{child}, \texttt{parent} and \texttt{node} all to be \texttt{namedGroupingBracesBrackets}.

Referencing Listing 205, note that the maximum indentation is two tabs, and these come from:

- the \texttt{child}'s mandatory argument;

- the \texttt{child}'s body, which is defined as any lines following the name of the \texttt{namedGroupingBracesBrackets} that include its arguments. This is the part controlled by the \texttt{body} field for \texttt{noAdditionalIndent} and friends from page 44.

**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 \texttt{[}, \texttt{\}, \texttt{,}, \texttt{&}, \texttt{)} OR \texttt{\texttt{\textbackslash}texttt{\textbackslash}texttt{;}};
- then at least one set of curly braces or square brackets (comments and line breaks allowed throughout).

See the \texttt{UnNamedGroupingBracesBrackets: follow} field of the fine tuning section in Listing 478 on page 120.

An example is shown in Listing 206 with default output give in Listing 207.

<table>
<thead>
<tr>
<th>LISTING 206: psforeach1.tex</th>
<th>LISTING 207: psforeach1.tex default output</th>
</tr>
</thead>
<tbody>
<tr>
<td>\texttt{\psforeach{\row}{}</td>
<td>\texttt{\psforeach{\row}{}</td>
</tr>
<tr>
<td>{3,2.8,2.7,3,3.1},%</td>
<td>{3,2.8,2.7,3,3.1},%</td>
</tr>
<tr>
<td>{2.8,1,1.2,2,3},%</td>
<td>{2.8,1,1.2,2,3},%</td>
</tr>
<tr>
<td>}}</td>
<td>}}}</td>
</tr>
</tbody>
</table>

\footnote{You may like to verify this by using the \texttt{-tt} option and checking \texttt{indent.log}!}
Referencing Listing 207, 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 curly brace that defined the code block. This is the part controlled by the body field for `noAdditionalIndent` and friends from page 44.

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.

### 5.4.8 Summary

Having considered all of the different types of code blocks, the functions of the fields given in Listings 208 and 209 should now make sense.

<table>
<thead>
<tr>
<th>Listing 208: <code>noAdditionalIndentGlobal</code></th>
<th>Listing 209: <code>indentRulesGlobal</code></th>
</tr>
</thead>
<tbody>
<tr>
<td><code>noAdditionalIndentGlobal:</code></td>
<td><code>indentRulesGlobal:</code></td>
</tr>
<tr>
<td>environments: 0</td>
<td>environments: 0</td>
</tr>
<tr>
<td>commands: 1</td>
<td>commands: 0</td>
</tr>
<tr>
<td>optionalArguments: 0</td>
<td>optionalArguments: 0</td>
</tr>
<tr>
<td>mandatoryArguments: 0</td>
<td>mandatoryArguments: 0</td>
</tr>
<tr>
<td>ifElseFi: 0</td>
<td>ifElseFi: 0</td>
</tr>
<tr>
<td>items: 0</td>
<td>items: 0</td>
</tr>
<tr>
<td>keyEqualsValuesBracesBrackets: 0</td>
<td>keyEqualsValuesBracesBrackets: 0</td>
</tr>
<tr>
<td>namedGroupingBracesBrackets: 0</td>
<td>namedGroupingBracesBrackets: 0</td>
</tr>
<tr>
<td>UnNamedGroupingBracesBrackets: 0</td>
<td>UnNamedGroupingBracesBrackets: 0</td>
</tr>
<tr>
<td>specialBeginEnd: 0</td>
<td>specialBeginEnd: 0</td>
</tr>
<tr>
<td>afterHeading: 0</td>
<td>afterHeading: 0</td>
</tr>
<tr>
<td>filecontents: 0</td>
<td>filecontents: 0</td>
</tr>
</tbody>
</table>

### 5.5 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}`

The `commandCodeBlocks` field contains a few switches detailed in Listing 210.
### 5.5 Commands and the strings between their arguments

#### Listing 210: commandCodeBlocks

<table>
<thead>
<tr>
<th>Line</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>345</td>
<td>commandCodeBlocks:</td>
</tr>
<tr>
<td>346</td>
<td>roundParenthesesAllowed: 1</td>
</tr>
<tr>
<td>347</td>
<td>stringsAllowedBetweenArguments:</td>
</tr>
<tr>
<td>348</td>
<td>- amalgamate: 1</td>
</tr>
<tr>
<td>349</td>
<td>- 'node'</td>
</tr>
<tr>
<td>350</td>
<td>- 'at'</td>
</tr>
<tr>
<td>351</td>
<td>- 'to'</td>
</tr>
<tr>
<td>352</td>
<td>- 'decoration'</td>
</tr>
<tr>
<td>353</td>
<td>- '++'</td>
</tr>
<tr>
<td>354</td>
<td>- '--'</td>
</tr>
<tr>
<td>355</td>
<td>- '#\d'</td>
</tr>
<tr>
<td>356</td>
<td>commandNameSpecial:</td>
</tr>
<tr>
<td>357</td>
<td>- amalgamate: 1</td>
</tr>
<tr>
<td>358</td>
<td>- '@ifnextchar['</td>
</tr>
</tbody>
</table>

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 211.

#### Listing 211: pstricks1.tex

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

#### Listing 212: pstricks1 default output

```latex
\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 210, then `latexindent.pl` will allow round parenthesis between optional and mandatory arguments. In the case of the code in Listing 211, `latexindent.pl` finds all the arguments of `\defFunction`, both before and after \((u,v)\).

The default output from running `latexindent.pl` on Listing 211 actually leaves it unchanged (see Listing 212); note in particular, this is because of `noAdditionalIndentGlobal` as discussed on page 55.

Upon using the YAML settings in Listing 214, and running the command

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

we obtain the output given in Listing 213.

#### Listing 213: pstricks1.tex using Listing 214

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

Notice the difference between Listing 212 and Listing 213; in particular, in Listing 213, 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 45) which, by default, assume indentation for their body, and hence the tabbed indentation in Listing 213.

Let’s explore this using the YAML given in Listing 216 and run the command
5.5 Commands and the strings between their arguments

\begin{verbatim}
cmh:~$ latexindent.pl pstricks1.tex -l defFunction.yaml
\end{verbatim}

then the output is as in Listing 215.

\begin{verbatim}
\defFunction{algebraic}{torus}(u,v)
\{((2+\cos(u))*\cos(v+\pi))\}
\{((2+\cos(u))*\sin(v+\pi))\}
\{\sin(u)\}
\end{verbatim}

LISTING 215: pstricks1.tex using Listing 216

Notice in Listing 215 that the body of the \texttt{defFunction} command i.e, the subsequent lines containing arguments after the command name, have received the single space of indentation specified by Listing 216.

\begin{verbatim}
stringsAllowedBetweenArguments: (fields)
\end{verbatim}

tikz users may well specify code such as that given in Listing 217; processing this code using latexindent.pl gives the default output in Listing 218.

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

LISTING 217: tikz-node1.tex

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

LISTING 218: tikz-node1 default output

With reference to Listing 210 on the previous page, we see that the strings to, node, ++

are all allowed to appear between arguments; importantly, you are encouraged to add further names to this field as necessary. This means that when latexindent.pl processes Listing 217, it consumes:

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

We can explore this further, for example using Listing 220 and running the command

\begin{verbatim}
cmh:~$ latexindent.pl tikz-node1.tex -l draw.yaml
\end{verbatim}

we receive the output given in Listing 219.
5.5 Commands and the strings between their arguments

Listing 219: tikz-node1.tex using Listing 220

\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 219 has been given the appropriate two-spaces worth of indentation specified in Listing 220.

Let’s compare this with the output from using the YAML settings in Listing 222, and running the command

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

given in Listing 221.

Listing 221: tikz-node1.tex using Listing 222

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

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 45) with argument [in=110, out=-90]
- it finds another namedGroupingBracesBrackets but this time called node with argument [below, align=left, scale=0.5]

Referencing Listing 210 on page 63, 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 223 or Listing 224 is equivalent to using the settings in Listing 225.

Listing 223: amalgamate-demo.yaml

commandCodeBlocks:

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

Listing 224: amalgamate-demo1.yaml

commandCodeBlocks:

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

Listing 225: 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 226 means that only the strings specified in that field will be used.
### Listing 226: 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 224 to 226.

We may explore this feature further with the code in Listing 227, whose default output is given in Listing 228.

Listing 227: `for-each.tex`

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

Listing 228: `for-each default output`

```latex
\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 230, and running the command

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

given in Listing 229.

Listing 229: `for-each using Listing 230`

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

Listing 230: `foreach.yaml`

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

You might like to compare the output given in Listing 228 and Listing 229. Note, in particular, in Listing 228 that the `foreach` command has not included any of the subsequent strings, and that the braces have been treated as a `namedGroupingBracesBrackets`. In Listing 229 the `foreach` command has been allowed to have `\x/\y` and in between arguments because of the settings given in Listing 230.

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 231, which has default output in Listing 232.

Listing 231: `ifnextchar.tex`

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

Listing 232: `ifnextchar.tex default output`

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

Notice that in Listing 232 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 109.
For demonstration, we can compare this output with that given in Listing 233 in which the settings from Listing 234 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.

\begin{Verbatim}
\parbox{
\@ifnextchar[^{arg 1}{arg 2}
}\end{Verbatim}

LISTING 233: ifnextchar.tex using \texttt{Listing 234}

\begin{Verbatim}
commandCodeBlocks:
  commandNameSpecial: 0
\end{Verbatim}

LISTING 234: no-ifnextchar.yaml

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 224 to 226.
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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As of Version 3.0, \texttt{latexindent.pl} has the -m switch, which permits \texttt{latexindent.pl} to modify line breaks, according to the specifications in the \texttt{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 235.

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

\begin{quote}
If you call \texttt{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.
\end{quote}

\texttt{preserveBlankLines: 0|1}

This field is directly related to \texttt{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 \texttt{condenseMultipleBlankLinesInto} is greater than 0, discussed next.

\texttt{condenseMultipleBlankLinesInto: (positive integer)}

Assuming that this switch takes an integer value greater than 0, \texttt{latexindent.pl} will condense multiple blank lines into the number of blank lines illustrated by this switch. As an example, Listing 236 shows a sample file with blank lines; upon running

\begin{verbatim}
cmh:~$ latexindent.pl myfile.tex -m
\end{verbatim}

the output is shown in Listing 237; note that the multiple blank lines have been condensed into one blank line, and note also that we have used the -m switch!

\begin{verbatim}
LISTING 236: mlb1.tex
before blank line
after blank line
after blank line
after blank line

LISTING 237: mlb1.tex out output
before blank line
after blank line
after blank line
after blank line
\end{verbatim}

6.1 \texttt{textWrapOptions: modifying line breaks by text wrapping}

When the -m switch is active \texttt{latexindent.pl} has the ability to wrap text using the options specified in the \texttt{textWrapOptions} field, see Listing 238. The value of \texttt{columns} specifies the column at which the text should be wrapped. By default, the value of \texttt{columns} is 0, so \texttt{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.

\begin{verbatim}
LISTING 238: textWrapOptions
499 textWrapOptions:
500 columns: 0
\end{verbatim}
For example, consider the file given in Listing 239.

**Listing 239: textwrap1.tex**

```latex
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 241, and running the command

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

we obtain the output in Listing 240.

**Listing 240: textwrap1-mod1.tex**

```latex
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.
```

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 242,

**Listing 242: textwrap2.tex**

```latex
\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 241,

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

then the output is as in Listing 243.
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 244

and running the following command and continuing to use textwrap1.yaml from Listing 241,

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

then the output is as in Listing 245.

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 [22]). 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 246

and using textwrap2.yaml from Listing 248 with the following command

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

then we obtain the output in Listing 247.
There are options to specify the huge option for the `Text::Wrap` module [22]. This can be helpful if you would like to forbid the `Text::Wrap` routine from breaking words. For example, using the settings in Listings 250 and 252 and running the commands

```
cmh:$ latexindent.pl -m textwrap4.tex -o=+-mod2A -l textwrap2A.yaml
cmh:$ latexindent.pl -m textwrap4.tex -o=+-mod2B -l textwrap2B.yaml
```

gives the respective output in Listings 249 and 251.

You can also specify the `tabstop` field as an integer value, which is passed to the text wrap module; see [22] for details. Starting with the code in Listing 253 with settings in Listing 254, and running the command

```
cmh:$ latexindent.pl -m textwrap-ts.tex -o=+-mod1 -l tabstop.yaml
```

gives the code given in Listing 255.

You can specify `break` and `unexpand` options in your settings in analogous ways to those demonstrated in Listings 252 and 254, and they will be passed to the `Text::Wrap` module. I have not found a useful reason to do this; see [22] for more details.

### 6.1.1 text wrapping on a per-code-block basis

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

The full details of `textWrapOptions` are shown in Listing 256. In particular, note the field `perCodeBlockBasis: 0`.

```
LISTING 256: textWrapOptions

499  textWrapOptions:
500       columns: 0
501        separator: ""
502        perCodeBlockBasis: 0
503        all: 0
504        alignAtAmpersandTakesPriority: 1
505        environments:
506            quotation: 0
507            ifElseFi: 0
508            optionalArguments: 0
509            mandatoryArguments: 0
510            items: 0
511            specialBeginEnd: 0
512            afterHeading: 0
513            preamble: 0
514            filecontents: 0
515            masterDocument: 0
```

The code blocks detailed in Listing 256 are with direct reference to those detailed in Table 1 on page 45. 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 317 on page 87; in fact, the two features can even be combined (this is detailed in Section 6.4 on page 93).

Let’s explore these switches with reference to the code given in Listing 257; the text outside of the environment is considered part of the `masterDocument`.

```
LISTING 257: 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 258 to 260 each give the same output.

```
LISTING 258: textwrap3.yaml
modifyLineBreaks:
  textWrapOptions:
    columns: 30
    perCodeBlockBasis: 1
    all: 1

LISTING 259: textwrap4.yaml
modifyLineBreaks:
  textWrapOptions:
    columns: 30
    perCodeBlockBasis: 1
    environments: 1
    masterDocument: 1

LISTING 260: textwrap5.yaml
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 257) syntax specified in Listings 258 to 260:

- in each of Listings 258 to 260 notice that `columns: 30`;
- in each of Listings 258 to 260 notice that `perCodeBlockBasis: 1`;
- in Listing 258 we have specified `all: 1` so that the text wrapping will operate upon all code
blocks;

- in Listing 259 we have not specified all, and instead, have specified that text wrapping should be applied to each of environments and masterDocument;

- in Listing 260 we have specified text wrapping for masterDocument and on a per-name basis for environments code blocks.

Upon running the following commands

```bash
$ latexindent.pl -s textwrap5.tex -l=textwrap3.yaml -m
$ latexindent.pl -s textwrap5.tex -l=textwrap4.yaml -m
$ latexindent.pl -s textwrap5.tex -l=textwrap5.yaml -m
```

we obtain the output shown in Listing 261.

**LISTING 261: textwrap5-mod3.tex**

Before the environment; here is a line of text that can be wrapped by latexindent.pl.

```latex
\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 260 by using Listing 262.

**LISTING 262: textwrap6.tex**

Before the environment; here is a line of text that can be wrapped by latexindent.pl.

```latex
\begin{myenv}
  Within the environment; here is a line of text that can be wrapped by latexindent.pl.
\end{myenv}
```

```latex
\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

```bash
$ latexindent.pl -s textwrap6.tex -l=textwrap5.yaml -m
```

we obtain the output given in Listing 263.
6.1 textWrapOptions: modifying line breaks by text wrapping

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 260) 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 262 in the settings given in Listings 264 to 266.

Upon running the commands

```bash
$ latexindent.pl -s textwrap6.tex -l=textwrap6.yaml -m
$ latexindent.pl -s textwrap6.tex -l=textwrap7.yaml -m
$ latexindent.pl -s textwrap6.tex -l=textwrap8.yaml -m
```

we receive the respective output given in Listings 267 to 269.
6.1 textWrapOptions: modifying line breaks by text wrapping

<table>
<thead>
<tr>
<th>Listing 267: textwrap6.tex using Listing 264</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before the environment; here is a line of text that can be wrapped by latexindent.pl.</td>
</tr>
<tr>
<td>\begin{myenv}</td>
</tr>
<tr>
<td>\quad Within the environment; here is a line of text that can be wrapped by latexindent.pl.</td>
</tr>
<tr>
<td>\end{myenv}</td>
</tr>
<tr>
<td>\begin{another}</td>
</tr>
<tr>
<td>\quad Within the environment; here is a line of text that can be wrapped by latexindent.pl.</td>
</tr>
<tr>
<td>\end{another}</td>
</tr>
<tr>
<td>After the environment; here is a line of text that can be wrapped by latexindent.pl.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Listing 268: textwrap6.tex using Listing 265</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before the environment; here is a line of text that can be wrapped by latexindent.pl.</td>
</tr>
<tr>
<td>\begin{myenv}</td>
</tr>
<tr>
<td>\quad Within the environment; here is a line of text that can be wrapped by latexindent.pl.</td>
</tr>
<tr>
<td>\end{myenv}</td>
</tr>
<tr>
<td>\begin{another}</td>
</tr>
<tr>
<td>\quad Within the environment; here is a line of text that can be wrapped by latexindent.pl.</td>
</tr>
<tr>
<td>\end{another}</td>
</tr>
<tr>
<td>After the environment; here is a line of text that can be wrapped by latexindent.pl.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Listing 269: textwrap6.tex using Listing 266</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before the environment; here is a line of text that can be wrapped by latexindent.pl.</td>
</tr>
<tr>
<td>\begin{myenv}</td>
</tr>
<tr>
<td>\quad Within the environment; here is a line of text that can be wrapped by latexindent.pl.</td>
</tr>
<tr>
<td>\end{myenv}</td>
</tr>
<tr>
<td>\begin{another}</td>
</tr>
<tr>
<td>\quad Within the environment; here is a line of text that can be wrapped by latexindent.pl.</td>
</tr>
<tr>
<td>\end{another}</td>
</tr>
<tr>
<td>After the environment; here is a line of text that can be wrapped by latexindent.pl.</td>
</tr>
</tbody>
</table>

Notice that:

- in Listing 267 the text wrapping routine has not been applied to any environments because it has been switched off (per-code-block) in Listing 264;
6.1 textWrapOptions: modifying line breaks by text wrapping

- in Listing 268 the text wrapping routine has not been applied to myenv because it has been switched off (per-name) in Listing 265;
- in Listing 269 the text wrapping routine has not been applied to masterDocument because of the settings in Listing 266.

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 262 on page 74, for example). We explore further options in Listings 270 to 272.

Listing 270 and Listing 271 are equivalent. Upon running the commands

```bash
cmh:~$ latexindent.pl -s textwrap6.tex -l=textwrap9.yaml -m
```

we receive the respective output given in Listings 273 and 274.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>modifyLineBreaks:</td>
<td>modifyLineBreaks:</td>
<td>modifyLineBreaks:</td>
</tr>
<tr>
<td>textWrapOptions:</td>
<td>textWrapOptions:</td>
<td>textWrapOptions:</td>
</tr>
<tr>
<td>columns:</td>
<td>columns:</td>
<td>columns:</td>
</tr>
<tr>
<td>default: 30</td>
<td>default: 30</td>
<td>default: 30</td>
</tr>
<tr>
<td>environments: 50</td>
<td>environments:</td>
<td>environments:</td>
</tr>
<tr>
<td>perCodeBlockBasis: 1</td>
<td>perCodeBlockBasis: 1</td>
<td>perCodeBlockBasis: 1</td>
</tr>
<tr>
<td>all: 1</td>
<td>all: 1</td>
<td>all: 1</td>
</tr>
</tbody>
</table>

Before the environment; here is a line of text that can be wrapped by latexindent.pl.

```latex
\begin{myenv}
  Within the environment; here is a line of text that can be wrapped by latexindent.pl.
\end{myenv}
```

```latex
\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.
6.2 oneSentencePerLine: modifying line breaks for sentences

You can instruct \texttt{latexindent.pl} to format your file so that it puts one sentence per line. Thank you to [15] for helping to shape and test this feature. The behaviour of this part of the script is controlled by the switches detailed in Listing 275, all of which we discuss next.
6.2 oneSentencePerLine: modifying line breaks for sentences

This is a binary switch that details if \texttt{latexindent.pl} should perform the sentence manipulation routine; it is \texttt{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.

When operating upon sentences \texttt{latexindent.pl} will, by default, remove internal line breaks as \texttt{removeSentenceLineBreaks} is set to 1. Setting this switch to 0 instructs \texttt{latexindent.pl} not to do so.

For example, consider \texttt{multiple-sentences.tex} shown in Listing 276.

\begin{verbatim}
\begin{verbatim}
\textbf{manipulateSentences: 0|1}
\end{verbatim}
\end{verbatim}

\begin{verbatim}
\textbf{removeSentenceLineBreaks: 0|1}
\end{verbatim}

\begin{verbatim}
\begin{verbatim}
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.
\end{verbatim}
\end{verbatim}

If we use the YAML files in Listings 278 and 280, and run the commands

\begin{verbatim}
\texttt{cmh:~\$ latexindent.pl multiple-sentences -m -i=manipulate-sentences.yaml}
\texttt{cmh:~\$ latexindent.pl multiple-sentences -m -i=keep-sen-line-breaks.yaml}
\end{verbatim}

then we obtain the respective output given in Listings 277 and 279.
6.2 oneSentencePerLine: modifying line breaks for sentences

LISTING 277: multiple-sentences.tex
using Listing 278

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 279: multiple-sentences.tex
using Listing 280

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.

Notice, in particular, that the ‘internal’ sentence line breaks in Listing 276 have been removed in Listing 277, but have not been removed in Listing 279.

The remainder of the settings displayed in Listing 275 on the preceding page instruct latexindent.pl on how to define a sentence. From the perspective of latexindent.pl a sentence must:

- follow a certain character or set of characters (see Listing 281); 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 282); by default, this is only capital letters;
- end with a character (see Listing 283); 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 281: sentencesFollow

sentencesFollow:
par: 1
blankLine: 1
fullStop: 1
exclamationMark: 1
questionMark: 1
rightBrace: 1
commentOnPreviousLine: 1
other: 0

LISTING 282: sentencesBeginWith

sentencesBeginWith:
A-Z: 1
a-z: 0
other: 0

LISTING 283: sentencesEndWith

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 276 on the previous page, and use the YAML settings given in Listing 285. Using the command

```bash
cmh:~$ latexindent.pl multiple-sentences -m -l=sentences-follow1.yaml
```
we obtain the output given in Listing 284.

**Listing 284:** `multiple-sentences.tex` using Listing 285

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.

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 281 with the `.tex` file detailed in Listing 286.

**Listing 286:** `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
```

then we obtain the respective output given in Listings 287 and 288.

**Listing 287:** `multiple-sentences1.tex` using Listing 278 on the preceding page

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

**Listing 288:** `multiple-sentences1.tex` using Listing 289

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

Notice that in Listing 287 the first sentence after the ) has not been accounted for, but that following the inclusion of Listing 289, the output given in Listing 288 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 282), and we can use the other field to define sentences to begin with other characters.
6.2 oneSentencePerLine: modifying line breaks for sentences

<table>
<thead>
<tr>
<th>LISTING 290: multiple-sentences2.tex</th>
</tr>
</thead>
<tbody>
<tr>
<td>This is the first sentence.</td>
</tr>
<tr>
<td>$a$ can represent a number. 7 is at the beginning of this sentence.</td>
</tr>
</tbody>
</table>

Upon running the following commands

```
cmh:~$ latexindent.pl multiple-sentences2 -m -l=manipulate-sentences.yaml
```

then we obtain the respective output given in Listings 291 and 292.

<table>
<thead>
<tr>
<th>LISTING 291: multiple-sentences2.tex using Listing 278 on page 80</th>
</tr>
</thead>
<tbody>
<tr>
<td>This is the first sentence.</td>
</tr>
<tr>
<td>$a$ can represent a number. 7 is at the beginning of this sentence.</td>
</tr>
</tbody>
</table>

Notice that in Listing 291, the first sentence has been accounted for but that the subsequent sentences have not. In Listing 292, all of the sentences have been accounted for, because the other field in Listing 293 has defined sentences to begin with either \$ or any numeric digit, 0 to 9.

### 6.2.3 sentencesEndWith

Let’s return to Listing 276 on page 79; we have already seen the default way in which latexindent.pl will operate on the sentences in this file in Listing 277 on page 80. We can populate the other field with any character that we wish; for example, using the YAML specified in Listing 295 and the command

```
cmh:~$ latexindent.pl multiple-sentences -m -l=sentences-end1.yaml
```

then we obtain the output in Listing 294.

<table>
<thead>
<tr>
<th>LISTING 294: multiple-sentences.tex using Listing 295</th>
</tr>
</thead>
<tbody>
<tr>
<td>This is the first sentence.</td>
</tr>
<tr>
<td>This is the second sentence.</td>
</tr>
<tr>
<td>This is the third sentence.</td>
</tr>
<tr>
<td>This is the fourth sentence!</td>
</tr>
<tr>
<td>This is the fifth sentence?</td>
</tr>
<tr>
<td>This is the sixth sentence.</td>
</tr>
</tbody>
</table>

```yaml
 Listing 295: sentences-end1.yaml
 modifyLineBreaks:
  oneSentencePerLine:
    manipulateSentences: 1
    sentencesEndWith:
      other: "\$|\[0-9]"
```
There is a subtle difference between the output in Listings 294 and 296; in particular, in Listing 294 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 297, and the associated output in Listing 296 reflects this.

Referencing Listing 283 on page 80, 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 298.

Upon running the following commands

```bash
$ latexindent.pl url -m -l=manipulate-sentences.yaml
```

we obtain the output given in Listing 299.

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 478 on page 120.

The basicFullStop routine should probably be avoided in most situations, as it does not accommodate the specifications above. For example, using the following command

```bash
$ latexindent.pl url -m -l=alt-full-stop1.yaml
```

and the YAML in Listing 301 gives the output in Listing 300.
6.2 oneSentencePerLine: modifying line breaks for sentences

Notice that the full stop within the URL has not been accommodated correctly because of the non-default settings in Listing 301.

### 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 302, and run the command

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

then we obtain the output in Listing 303.

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 304 and run the commands

```bash
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 305 and 306.
6.2 oneSentencePerLine: modifying line breaks for sentences

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 308 and the command

```
$ latexindent -m -l=item-rules2.yaml
```

the output of which is shown in Listing 307.

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

6.2.5 text wrapping and indenting sentences

The oneSentencePerLine can be instructed to perform text wrapping and indentation upon sentences.

Let's use the code in Listing 309.

Referencing Listing 311, and running the following command

```
$ latexindent -m -l=sentence-wrap1.yaml
```
we receive the output given in Listing 310.

<table>
<thead>
<tr>
<th>Listing 310: multiple-sentences5.tex using Listing 311</th>
</tr>
</thead>
<tbody>
<tr>
<td>A distinção entre conteúdo \textit{real} e conteúdo \textit{intencional} está relacionada, ainda, à distinção entre o conceito husserliano de \textit{experiência} e o uso popular desse termo. No sentido comum, o \textbf{experimentado} é um complexo de eventos exteriores, e o \textbf{experimentar} consiste em percepções (além de julgamentos e outros atos) nas quais tais eventos aparecem como objetos, e objetos frequentemente relacionados ao ego empírico.</td>
</tr>
</tbody>
</table>

If you wish to specify the \texttt{columns} field on a per-code-block basis for sentences, then you would use \texttt{sentence}; explicitly, starting with Listing 270 on page 77, for example, you would replace/append environments with, for example, \texttt{sentence: 50}.

If you specify \texttt{textWrapSentences} as 1, but do not specify a value for \texttt{columns} then the text wrapping will not operate on sentences, and you will see a warning in \texttt{indent.log}.

The indentation of sentences requires that sentences are stored as code blocks. This means that you may need to tweak Listing 283 on page 80. Let’s explore this in relation to Listing 312.

<table>
<thead>
<tr>
<th>Listing 312: multiple-sentences6.tex</th>
</tr>
</thead>
</table>
| Consider the following: \begin{itemize}
  \item firstly.
  \item secondly.
\end{itemize} |

By default, latexindent.pl will find the full-stop within the first \texttt{item}, which means that, upon running the following commands

```
cmh:~$ latexindent.pl multiple-sentences6 -m -l=sentence-wrap1.yaml
```

we receive the respective output in Listing 313 and Listing 314.

<table>
<thead>
<tr>
<th>Listing 313: multiple-sentences6-mod1.tex using Listing 311</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consider the following: \begin{itemize} \texttt{item} firstly. \texttt{item} secondly. \end{itemize}</td>
</tr>
</tbody>
</table>

We note that Listing 313 the \texttt{itemize} code block has not been indented appropriately. This is because the oneSentencePerLine has been instructed to store sentences (because Listing 311); each sentence is then searched for code blocks.

We can tweak the settings in Listing 283 on page 80 to ensure that full stops are not followed by \texttt{item} commands, and that the end of sentences contains \texttt{end{itemize}} as in Listing 315 (if you intend to
6.3 removeParagraphLineBreaks: modifying line breaks for paragraphs

use this, ensure that you remove the line breaks from the other field).

Upon running

```
cmh:~$ latexindent.pl multiple-sentences6 -m -l=sentence-wrap1.yaml,itemize.yaml
```

we receive the output in Listing 316.

```
\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

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 317. Thank you to [17] for shaping and assisting with the testing of this feature.

This feature is considered complimentary to the oneSentencePerLine feature described in Section 6.2 on page 78.

This routine can be turned on globally for every code block type known to latexindent.pl (see Table 1 on page 45) 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 45;

• 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 334 on page 92.

Let’s start with the `.tex` file in Listing 318, together with the YAML settings in Listing 319.

**Listing 318:** shortlines.tex

```latex
\begin{myenv}
The lines in this environment are very short and contain many line breaks.
\end{myenv}
```

Another paragraph.

**Listing 319:** remove-para1.yaml

```yaml
modifyLineBreaks:
  removeParagraphLineBreaks:
    all: 1
```

Upon running the command

```bash
cmh:~$ latexindent.pl -m shortlines.tex -o shortlines1.tex -l remove-para1.yaml
```

then we obtain the output given in Listing 320.

**Listing 320:** shortlines1.tex

```latex
\begin{myenv}
The lines in this environment are very short and contain many line breaks.
\end{myenv}
```

Keen readers may notice that some trailing white space must be present in the file in Listing 318 which has crept in to the output in Listing 320. This can be fixed using the YAML file in Listing 394 on page 100 and running, for example,

```bash
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 321; notice that the double spaces present in Listing 320 have been addressed.

**Listing 321:** shortlines1-tws.tex

```latex
\begin{myenv}
The lines in this environment are very short and contain many line breaks.
\end{myenv}
```

Keeping with the settings in Listing 319, we note that the `all` switch applies to *all* code block types. So, for example, let’s consider the files in Listings 322 and 323
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 324 and 325.

```
LISTING 324: shortlines-mand1.tex
\mycommand{
   The lines in this command are very short and contain many linebreaks.

   Another paragraph.
}
```

```
LISTING 325: 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 basis, or on a per-name basis.

For example, let’s use the code in Listing 326, and consider the settings in Listings 327 and 328; note that in Listing 327 we specify that `every` environment should receive treatment from the routine, while in Listing 328 we specify that `only` the one environment should receive the treatment.
6.3 removeParagraphLineBreaks: modifying line breaks for paragraphs

LISTING 326: 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

then we obtain the respective output given in Listings 329 and 330.

LISTING 327: remove-para2.yaml
modifyLineBreaks:
  removeParagraphLineBreaks:
    environments: 1

LISTING 328: remove-para3.yaml
modifyLineBreaks:
  removeParagraphLineBreaks:
    environments:
      one: 1

LISTING 329: 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}
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 331, with the YAML settings in Listing 332.

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 333.
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}

Note that the **all** field can take the same exceptions detailed in Listing \ref{lst:textwrap8-yaml}.

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 \ref{lst:paragraphsStopAt}.

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 \ref{lst:paragraphsStopAt}. 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 \ref{lst:stop.tex}; we will, in turn, consider the settings in Listings \ref{lst:stop-command.yml} and \ref{lst:stop-comment.yml}.

Upon using the settings from Listing \ref{lst:stop-template} on the preceding page and running the commands
we obtain the respective outputs in Listings 338 to 340; notice in particular that:

- in Listing 338 the paragraph line break routine has included commands and comments;

- in Listing 339 the paragraph line break routine has stopped at the `emph` command, because in Listing 336 we have specified commands to be 1, and `emph` is at the beginning of a line;

- in Listing 340 the paragraph line break routine has stopped at the comments, because in Listing 337 we have specified comments to be 1, and the comment is at the beginning of a line.

In all outputs in Listings 338 to 340 we notice that the paragraph line break routine has stopped at `\begin{myenv}` because, by default, environments is set to 1 in Listing 334 on the previous page.

6.4 Combining removeParagraphLineBreaks and textWrapOptions

The text wrapping routine (Section 6.1 on page 69) and remove paragraph line breaks routine (Section 6.3 on page 87) can be combined.

We motivate this feature with the code given in Listing 341.
Applying the text wrap routine from Section 6.1 on page 69 with, for example, Listing 258 on page 73 gives the output in Listing 342.

**LISTING 342: textwrap7.tex using Listing 258**

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 344 and running the command

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

we obtain the output in Listing 343.

**LISTING 343: textwrap7-mod12.tex**

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

In Listing 343 the paragraph line breaks have first been removed from Listing 341, and then the text wrapping routine has been applied. It is envisaged that variants of Listing 344 will be among the most useful settings for these two features.

### 6.5 Poly-switches

Every other field in the modifyLineBreaks field uses poly-switches, and can take one of the following integer values:

- `-1 remove mode`: line breaks before or after the `<part of thing>` can be removed (assuming that preserveBlankLines is set to 0);

- `0 off mode`: line breaks will not be modified for the `<part of thing>` under consideration;

- `1 add mode`: a line break will be added before or after the `<part of thing>` under consideration, assuming that there is not already a line break before or after the `<part of thing>`;

- `2 comment then add mode`: a comment symbol will be added, followed by a line break before or after the `<part of thing>` under consideration, assuming that there is not already a comment and line break before or after the `<part of thing>`;

- `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.

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 45. 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 345; note that it contains global settings (immediately after the environments field) and that per-name settings are also allowed – in the case of Listing 345, settings for equation* have been specified for demonstration. Note that all poly-switches are off (set to 0) by default.

```yaml
listings/345
environments:
  BeginStartsOnOwnLine: 0
  BodyStartsOnOwnLine: 0
  EndStartsOnOwnLine: 0
  EndFinishesWithLineBreak: 0
  equation*:
    BeginStartsOnOwnLine: 0
    BodyStartsOnOwnLine: 0
    EndStartsOnOwnLine: 0
    EndFinishesWithLineBreak: 0
```

Let’s begin with the simple example given in Listing 346; note that we have annotated key parts of the file using ♠, ♥, ♦ and ♣, these will be related to fields specified in Listing 345.

```latex
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 347 and 348, and in particular, let’s allow each of them in turn to take a value of 1.

```yaml
listings/347
modifyLineBreaks:
  environments:
    BeginStartsOnOwnLine: 1
listings/348
modifyLineBreaks:
  environments:
    BodyStartsOnOwnLine: 1
```

After running the following commands,

```bash
cmh:~$ latexindent -m env-mlb1.pi -l env-mlb1.yaml
cmh:~$ latexindent -m env-mlb2.pi -l env-mlb2.yaml
```

the output is as in Listings 349 and 350 respectively.

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

There are a couple of points to note:

- in Listing 349 a line break has been added at the point denoted by ♠ in Listing 346; no other line breaks have been changed;
- in Listing 350 a line break has been added at the point denoted by ♥ in Listing 346; furthermore, note that the body of myenv has received the appropriate (default) indentation.

Let’s now change each of the 1 values in Listings 347 and 348 so that they are 2 and save them into env-mlb3.yaml and env-mlb4.yaml respectively (see Listings 351 and 352).

```yaml
listings/351
modifyLineBreaks:
  environments:
    BeginStartsOnOwnLine: 2
listings/352
modifyLineBreaks:
  environments:
    BodyStartsOnOwnLine: 2
```
6.6 modifyLineBreaks for environments

Upon running commands analogous to the above, we obtain Listings 353 and 354.

<table>
<thead>
<tr>
<th>Listing 353: env-mlb.tex using Listing 351</th>
<th>Listing 354: env-mlb.tex using Listing 352</th>
</tr>
</thead>
</table>
| before words
\begin{myenv}body of myenv\end{myenv} after words | before words \begin{myenv}body of myenv\end{myenv} after words |

Note that line breaks have been added as in Listings 349 and 350, 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 347 and 348 so that they are 3 and save them into env-mlb5.yaml and env-mlb6.yaml respectively (see Listings 355 and 356).

<table>
<thead>
<tr>
<th>Listing 355: env-mlb5.yaml</th>
<th>Listing 356: env-mlb6.yaml</th>
</tr>
</thead>
<tbody>
<tr>
<td>modifyLineBreaks:</td>
<td>modifyLineBreaks:</td>
</tr>
<tr>
<td>environments:</td>
<td>environments:</td>
</tr>
<tr>
<td>BeginStartsOnOwnLine: 3</td>
<td>BodyStartsOnOwnLine: 3</td>
</tr>
</tbody>
</table>

Upon running commands analogous to the above, we obtain Listings 357 and 358.

|-------------------------------------------------|-------------------------------------------------|
| before words
\begin{myenv}body of myenv\end{myenv} after words | before words \begin{myenv}body of myenv\end{myenv} after words |

Note that line breaks have been added as in Listings 349 and 350, but this time a blank line has been added after adding the line break.

Let's now change each of the 1 values in Listings 355 and 356 so that they are 4 and save them into env-beg4.yaml and env-body4.yaml respectively (see Listings 359 and 360).

<table>
<thead>
<tr>
<th>Listing 359: env-beg4.yaml</th>
<th>Listing 360: env-body4.yaml</th>
</tr>
</thead>
<tbody>
<tr>
<td>modifyLineBreaks:</td>
<td>modifyLineBreaks:</td>
</tr>
<tr>
<td>environments:</td>
<td>environments:</td>
</tr>
<tr>
<td>BeginStartsOnOwnLine: 4</td>
<td>BodyStartsOnOwnLine: 4</td>
</tr>
</tbody>
</table>

We will demonstrate this poly-switch value using the code in Listing 361.

<table>
<thead>
<tr>
<th>Listing 361: env-mlb1.tex</th>
</tr>
</thead>
<tbody>
<tr>
<td>before words</td>
</tr>
<tr>
<td>\begin{myenv}body of myenv\end{myenv} after words</td>
</tr>
</tbody>
</table>

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 362 and 363.

|-------------------------------------------------|-------------------------------------------------|
| before words
\begin{myenv}body of myenv\end{myenv} after words | 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 362 a blank line has been inserted before the \begin statement, even though the \begin statement was already on its own line;
2. in Listing 363 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 364 and 365, and in particular, let’s allow each of them in turn to take a value of 1.

After running the following commands,

cmh:∼$ latexindent -m env-mlb.tex -l env-mlb7.yaml

cmh:∼$ latexindent -m env-mlb.tex -l env-mlb8.yaml

the output is as in Listings 366 and 367.

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>before words \begin{myenv}body of myenv</td>
<td>before words \begin{myenv}body of myenv\end{myenv}</td>
</tr>
<tr>
<td>\end{myenv} after words</td>
<td>\end{myenv} after words</td>
</tr>
</tbody>
</table>

There are a couple of points to note:

- in Listing 366 a line break has been added at the point denoted by ♦ in Listing 346 on page 95; no other line breaks have been changed and the \end{myenv} statement has not received indentation (as intended);
- in Listing 367 a line break has been added at the point denoted by ♣ in Listing 346 on page 95.

Let’s now change each of the 1 values in Listings 364 and 365 so that they are 2 and save them into env-mlb9.yaml and env-mlb10.yaml respectively (see Listings 368 and 369).

Upon running commands analogous to the above, we obtain Listings 370 and 371.

<table>
<thead>
<tr>
<th>Listing 370: env-mlb.tex using Listing 368</th>
<th>Listing 371: env-mlb.tex using Listing 369</th>
</tr>
</thead>
<tbody>
<tr>
<td>before words \begin{myenv}body of myenv</td>
<td>before words \begin{myenv}body of myenv\end{myenv}</td>
</tr>
<tr>
<td>\end{myenv} after words</td>
<td>\end{myenv} after words</td>
</tr>
</tbody>
</table>

Note that line breaks have been added as in Listings 366 and 367, 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 364 and 365 so that they are 3 and save them into env-mlb11.yaml and env-mlb12.yaml respectively (see Listings 372 and 373).
Upon running commands analogous to the above, we obtain Listings 374 and 375.

Let's now change each of the 1 values in Listings 372 and 373 so that they are 4 and save them into env-end4.yaml and env-end-f4.yaml respectively (see Listings 376 and 377).

We will demonstrate this poly-switch value using the code from Listing 361 on page 96.

Upon running the commands

then we receive the respective outputs in Listings 378 and 379.

We note in particular that, by design, for this value of the poly-switches:

1. in Listing 378 a blank line has been inserted before the \end statement, even though the \end statement was already on its own line;
2. in Listing 379 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 380 using poly-switch values of 1, 2, or 3, it will be left unchanged.

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 362 and 363 and Listings 378 and 379.

In contrast, the output from processing the file in Listing 381 will vary depending on the poly-switches used; in Listing 382 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 383 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 381 and by setting the other poly-switches considered so far to 2 in turn.

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>before words</td>
<td>before words</td>
</tr>
<tr>
<td>\begin{myenv}</td>
<td>\begin{myenv} %</td>
</tr>
<tr>
<td>%</td>
<td>body of myenv%</td>
</tr>
<tr>
<td>body of myenv%</td>
<td>\end{myenv}%</td>
</tr>
<tr>
<td>\end{myenv}%</td>
<td>after words</td>
</tr>
</tbody>
</table>

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 345 on page 95, an example is shown for the equation* environment.

6.6.4 Removing line breaks (poly-switches set to \texttt{-1})

Setting poly-switches to \texttt{-1} tells \texttt{latexindent.pl} to remove line breaks of the \texttt{<part of the thing>}, if necessary. We will consider the example code given in Listing 384, noting in particular the positions of the line break highlighters, ♠, ♥, ♦ and ♣, together with the associated YAML files in Listings 385 to 388.

<table>
<thead>
<tr>
<th>Listing 384: env-mlb4.tex</th>
</tr>
</thead>
<tbody>
<tr>
<td>before words♠</td>
</tr>
<tr>
<td>\begin{myenv}♥</td>
</tr>
<tr>
<td>body of myenv♦</td>
</tr>
<tr>
<td>\end{myenv}♣</td>
</tr>
<tr>
<td>after words</td>
</tr>
</tbody>
</table>

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 389 to 392.
Notice that in:

- Listing 389 the line break denoted by ♠ in Listing 384 has been removed;
- Listing 390 the line break denoted by ♥ in Listing 384 has been removed;
- Listing 391 the line break denoted by ♦ in Listing 384 has been removed;
- Listing 392 the line break denoted by ♣ in Listing 384 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 385 to 388 into one file; alternatively, you could tell latexindent.pl to load them all by using the following command, for example

```
```

which gives the output in Listing 346 on page 95.

### 6.6.5 About trailing horizontal space

Recall that on page 26 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 393, which highlights trailing spaces.

```
LISTING 393: env-mlb5.tex
before_words♠
\begin{myenv}♥
body_of_myenv♣
\end{myenv}♦
after_words
```

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,removeTWS-before.yaml
```

is shown, respectively, in Listings 395 and 396; note that the trailing horizontal white space has been preserved (by default) in Listing 395, while in Listing 396, it has been removed using the switch specified in Listing 394.

```
LISTING 395: env-mlb5.tex using Listings 389 to 392
before_words♠\begin{myenv}♥\end{myenv}♦after_words
```

```
LISTING 394: removeTWS-before.yaml
removeTrailingWhitespace:
beforeProcessing: 1
```
6.6 modifyLineBreaks for environments

LISTING 396: env-mlb5.tex using Listings 389 to 392 and Listing 394

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 397, which contains blank lines.

LISTING 397: env-mlb6.tex

before_words♠\begin{myenv}♥body of myenv♦\end{myenv}♣after_words

Upon running the following commands


we receive the respective outputs in Listings 399 and 400. In Listing 399 we see that the multiple blank lines have each been condensed into one blank line, but that blank lines have \textit{not} been removed by the poly-switches – this is because, by default, \texttt{preserveBlankLines} is set to 1. By contrast, in Listing 400, we have allowed the poly-switches to remove blank lines because, in Listing 398, we have set \texttt{preserveBlankLines} to 0.

LISTING 399: env-mlb6.tex using Listings 389 to 392

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 401.

LISTING 401: env-mlb7.tex

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

Upon running the following commands

\texttt{cmh:~}\$ latexindent.pl -m env-mlb7.tex -l env-mlb12.yaml,env-mlb13.yaml
\texttt{cmh:~}\$ latexindent.pl -m env-mlb7.tex -l env-mlb13.yaml,env-mlb14.yaml,UnpreserveBlankLines.yaml

we receive the outputs given in Listings 402 and 403.
### 6.7 Poly-switches for double back slash

With reference to `lookForAlignDelims` (see Listing 26 on page 28) you can specify poly-switches to dictate the line-break behaviour of double back slashes in environments (Listing 28 on page 28), commands (Listing 50 on page 33), or special code blocks (Listing 85 on page 38). 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 28); we will demonstrate this in what follows.

Consider the code given in Listing 404.

**Listing 404: tabular3.tex**

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

Referencing Listing 404:

- DBS stands for double back slash;
- line breaks ahead of the double back slash are annotated by `★`, and are controlled by `DBSSStartsOnOwnLine`;
- 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 `DBSSStartsOnOwnLine` (★ in Listing 404); starting with the code in Listing 404, together with the YAML files given in Listing 406 and Listing 408 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 405 and Listing 407.
6.7 Poly-switches for double back slash

We note that

- Listing 406 specifies DBS\text{StartsOnOwnLine} for every environment (that is within \texttt{lookForAlignDelims}, Listing 29 on page 28); the double back slashes from Listing 404 have been moved to their own line in Listing 405;
- Listing 408 specifies DBS\text{StartsOnOwnLine} on a per-name basis for \texttt{tabular} (that is within \texttt{lookForAlignDelims}, Listing 29 on page 28); the double back slashes from Listing 404 have been moved to their own line in Listing 407, having added comment symbols before moving them.

6.7.2 Double back slash finishes with line break

Let’s now explore DBS\text{FinishesWithLineBreak} (☐ in Listing 404); starting with the code in Listing 404, together with the YAML files given in Listing 410 and Listing 412 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 409 and Listing 411.

We note that

- Listing 410 specifies DBS\text{FinishesWithLineBreak} for every environment (that is within \texttt{lookForAlignDelims}, Listing 29 on page 28); the code following the double back slashes from Listing 404 has been moved to their own line in Listing 409;
- Listing 412 specifies DBS\text{FinishesWithLineBreak} on a per-name basis for \texttt{tabular} (that is within \texttt{lookForAlignDelims}, Listing 29 on page 28); the first double back slashes from Listing 404 have moved code following them to their own line in Listing 411, 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 \texttt{specialBeginEnd} code blocks (Listing 83 on page 38); we begin with the code within Listing 413.
6.7 Poly-switches for double back slash

There are a few things to note:

- in Listing 415 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 416.

Upon using the YAML settings in Listings 418 and 420, 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 417 and 419.
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 95), 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 51 on page 33) can not be modified using latexindent.pl. However, there are two poly-switches available for verbatim code blocks: environments (Listing 17 on page 26), commands (Listing 18 on page 26) and specialBeginEnd (Listing 96 on page 40).
# Poly-switches for other code blocks

<table>
<thead>
<tr>
<th>Code block</th>
<th>Sample</th>
<th>Poly-switch mapping</th>
</tr>
</thead>
<tbody>
<tr>
<td>environment</td>
<td>before words♣</td>
<td>♣ BeginStartsOnOwnLine</td>
</tr>
<tr>
<td></td>
<td>\begin{myenv}♥</td>
<td>♥ BodyStartsOnOwnLine</td>
</tr>
<tr>
<td></td>
<td>body of myenv♦</td>
<td>♦ EndStartsOnOwnLine</td>
</tr>
<tr>
<td></td>
<td>\end{myenv}♣</td>
<td>♣ EndFinishesWithLineBreak</td>
</tr>
<tr>
<td>ifelsefi</td>
<td>before words♣</td>
<td>♣ IfStartsOnOwnLine</td>
</tr>
<tr>
<td></td>
<td>\if...♥</td>
<td>♥ BodyStartsOnOwnLine</td>
</tr>
<tr>
<td></td>
<td>body of if/or statement♣</td>
<td>★ OrStartsOnOwnLine</td>
</tr>
<tr>
<td></td>
<td>\or♥</td>
<td>♥ OrFinishesWithLineBreak</td>
</tr>
<tr>
<td></td>
<td>body of if/or statement★</td>
<td>♠ ElseStartsOnOwnLine</td>
</tr>
<tr>
<td></td>
<td>\else□</td>
<td>□ ElseFinishesWithLineBreak</td>
</tr>
<tr>
<td></td>
<td>body of else statement♦</td>
<td>◆ FiStartsOnOwnLine</td>
</tr>
<tr>
<td></td>
<td>\fi♣</td>
<td>♣ FiFinishesWithLineBreak</td>
</tr>
<tr>
<td>optionalArguments</td>
<td>...♣</td>
<td>♣ LSqBStartsOnOwnLine^9</td>
</tr>
<tr>
<td></td>
<td>[♥ value before comma★,</td>
<td>♥ OptArgBodyStartsOnOwnLine</td>
</tr>
<tr>
<td></td>
<td>□ end of body of opt arg♦</td>
<td>★ CommaStartsOnOwnLine</td>
</tr>
<tr>
<td></td>
<td>]♣</td>
<td>□ CommaFinishesWithLineBreak</td>
</tr>
<tr>
<td></td>
<td>...</td>
<td>◆ RSqBStartsOnOwnLine</td>
</tr>
<tr>
<td></td>
<td>...</td>
<td>♣ RSqBFinishesWithLineBreak</td>
</tr>
<tr>
<td>mandatoryArguments</td>
<td>...♣</td>
<td>♣ LCuBStartsOnOwnLine^10</td>
</tr>
<tr>
<td></td>
<td>{♥ value before comma★,</td>
<td>♥ MandArgBodyStartsOnOwnLine</td>
</tr>
<tr>
<td></td>
<td>□ end of body of mand arg♦</td>
<td>★ CommaStartsOnOwnLine</td>
</tr>
<tr>
<td></td>
<td>}♣</td>
<td>□ CommaFinishesWithLineBreak</td>
</tr>
<tr>
<td></td>
<td>...</td>
<td>◆ RCuBStartsOnOwnLine</td>
</tr>
<tr>
<td></td>
<td>...</td>
<td>♣ RCuBFinishesWithLineBreak</td>
</tr>
<tr>
<td>commands</td>
<td>before words♣</td>
<td>♣ CommandStartsOnOwnLine</td>
</tr>
<tr>
<td></td>
<td>\mycommand♥</td>
<td>♥ CommandNameFinishesWithLineBreak</td>
</tr>
<tr>
<td></td>
<td>(arguments)</td>
<td></td>
</tr>
<tr>
<td>namedGroupingBraces Brackets</td>
<td>before words♣</td>
<td>♣ NameStartsOnOwnLine</td>
</tr>
<tr>
<td></td>
<td>myname♥</td>
<td>♥ NameFinishesWithLineBreak</td>
</tr>
<tr>
<td></td>
<td>(braces/brackets)</td>
<td></td>
</tr>
<tr>
<td>keyEqualsValuesBracesBrackets</td>
<td>before words♣</td>
<td>♣ KeyStartsOnOwnLine</td>
</tr>
<tr>
<td></td>
<td>key★ =♥</td>
<td>♥ EqualsStartsOnOwnLine</td>
</tr>
<tr>
<td></td>
<td>(braces/brackets)</td>
<td>♦ EqualsFinishesWithLineBreak</td>
</tr>
<tr>
<td>items</td>
<td>before words♣</td>
<td>♣ ItemStartsOnOwnLine</td>
</tr>
<tr>
<td></td>
<td>\item♥</td>
<td>♥ ItemFinishesWithLineBreak</td>
</tr>
<tr>
<td></td>
<td>...</td>
<td></td>
</tr>
<tr>
<td>specialBeginEnd</td>
<td>before words♣</td>
<td>♣ SpecialBeginStartsOnOwnLine</td>
</tr>
<tr>
<td></td>
<td>{♥</td>
<td>♥ SpecialBodyStartsOnOwnLine</td>
</tr>
<tr>
<td></td>
<td>body of special/middle★</td>
<td>★ SpecialMiddleStartsOnOwnLine</td>
</tr>
<tr>
<td></td>
<td>\middle★</td>
<td>♥ SpecialMiddleFinishesWithLineBreak</td>
</tr>
<tr>
<td></td>
<td>body of special/middle ◆</td>
<td>◆ SpecialEndStartsOnOwnLine</td>
</tr>
<tr>
<td></td>
<td>}♣</td>
<td>♣ SpecialEndFinishesWithLineBreak</td>
</tr>
<tr>
<td></td>
<td>after words</td>
<td></td>
</tr>
<tr>
<td>verbatim</td>
<td>before words♣ \begin{verbatim}</td>
<td>♣ VerbatimBeginStartsOnOwnLine</td>
</tr>
</tbody>
</table>

^9LSqB stands for Left Square Bracket

^10LCuB stands for Left Curly Brace
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 previous page) and LCuBStartsOnOwnLine for mandatory arguments, and LSqBStartsOnOwnLine for optional arguments.

Let's begin with the code in Listing 423 and the YAML settings in Listing 425; with reference to Table 2 on the preceding page, the key CommandNameFinishesWithLineBreak is an alias for BodyStartsOnOwnLine.

\begin{verbatim}
\mycommand
{ mand arg text
 mand arg text}
{ mand arg text
 mand arg text}
\end{verbatim}

Upon running the command
\begin{verbatim}
\texttt{cmh:~\$ latexindent.pl -m -l=mycom-mlb1.yaml mycommand1.tex}
\end{verbatim}
we obtain Listing 424; note that the second mandatory argument beginning brace \{ has had its leading line break removed, but that the first brace has not.

\begin{verbatim}
\mycommand
{ mand arg text
 mand arg text}{
 mand arg text
 mand arg text}
\end{verbatim}

Now let's change the YAML file so that it is as in Listing 427; upon running the analogous command to that given above, we obtain Listing 426; both beginning braces \{ have had their leading line breaks removed.

\begin{verbatim}
\mycommand
 { mand arg text
 mand arg text}{
 mand arg text
 mand arg text}
\end{verbatim}

Now let's change the YAML file so that it is as in Listing 429; upon running the analogous command to that given above, we obtain Listing 428.
6.10 Conflicting poly-switches: sequential code blocks

It is very easy to have conflicting poly-switches; if we use the example from Listing 423 on the previous page, and consider the YAML settings given in Listing 431. The output from running

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

is given in Listing 431.

Studying Listing 431, 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 430, 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 433; upon running the command

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

we obtain the output given in Listing 432.

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 435, which give associated output in Listing 434.
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 436, noting that it contains nested environments.

Listing 436: nested-env.tex

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

Let's use the YAML settings given in Listing 438, which upon running the command

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

gives the output in Listing 437.

Listing 437: nested-env.tex using Listing 438

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

In Listing 437, 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 436, 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 437, 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 440; upon running the command

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

we obtain the output given in Listing 439.

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

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

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>
<thead>
<tr>
<th>switch</th>
<th>indentation?</th>
<th>respect verbatim?</th>
</tr>
</thead>
<tbody>
<tr>
<td>-r</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>-rv</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>-rr</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

The default value of the replacements field is shown in Listing 441; 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 441.

```
replacements:
  - amalgamate: 1
  - this: 'latexindent.pl'
  that: 'pl.latexindent'
lookForThis: 1
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 441, the default action will replace every instance of the text latexindent.pl with pl.latexindent.

Beginning with the code in Listing 442 and running the command

```
cmh:~$ latexindent.pl -r replace1.tex
```
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 446

```latex
\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 \texttt{arraycolsep} statements; we can achieve this in a few different ways.

Using the YAML in Listing 448, and running the command

```
cmh:~$ latexindent.pl -r colsep.tex -l=colsep.yaml
```
then we achieve the output in Listing 447.

<table>
<thead>
<tr>
<th>Listing 447: colsep.tex using Listing 446</th>
</tr>
</thead>
<tbody>
<tr>
<td>\begin{env}</td>
</tr>
<tr>
<td>1 2 3</td>
</tr>
<tr>
<td>4 5 6</td>
</tr>
<tr>
<td>\end{env}</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Listing 448: colsep.yaml</th>
</tr>
</thead>
<tbody>
<tr>
<td>replacements:</td>
</tr>
<tr>
<td>-</td>
</tr>
<tr>
<td>this: \arraycolsep=3pt</td>
</tr>
<tr>
<td>-</td>
</tr>
<tr>
<td>this: \arraycolsep=5pt</td>
</tr>
</tbody>
</table>

Note that in Listing 448, 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 448 more concise by exploring the substitution field. Using the settings in Listing 450 and running the command

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

then we achieve the output in Listing 449.

<table>
<thead>
<tr>
<th>Listing 449: colsep.tex using Listing 450</th>
</tr>
</thead>
<tbody>
<tr>
<td>\begin{env}</td>
</tr>
<tr>
<td>1 2 3</td>
</tr>
<tr>
<td>4 5 6</td>
</tr>
<tr>
<td>\end{env}</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Listing 450: colsep1.yaml</th>
</tr>
</thead>
<tbody>
<tr>
<td>replacements:</td>
</tr>
<tr>
<td>-</td>
</tr>
<tr>
<td>substitution: s/\arraycolsep=\d+pt//sg</td>
</tr>
</tbody>
</table>

The code given in Listing 450 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, [8] for a detailed covering of the topic. With reference to Listing 450, 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 450 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 446 on the previous page for this example.

Using the YAML in Listing 452, and running the command

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

then we achieve the output in Listing 451.
With reference to Listing 452, 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 441 on page 111. 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 454, and running the command

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

then we achieve the output in Listing 453.

We note that, because we have specified when: after, that `latexindent.pl` has not found the string specified in Listing 454 within the file in Listing 446 on page 112. As it has looked for the string within Listing 454 after the indentation has been performed. After indentation, the string as written in Listing 454 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 451.

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

Assuming that we start with the code in Listing 455, let’s assume that our goal is to replace each occurrence of $$...$$ with \`\begin{equation*}\ldots\end{equation*}\`. This example is partly motivated by tex stackexchange question 242150.
7.3 Examples of replacements

<table>
<thead>
<tr>
<th>Listing 455: displaymath.tex</th>
</tr>
</thead>
<tbody>
<tr>
<td>before text $$a^2+b^2=4$$ and $$c^2$$</td>
</tr>
<tr>
<td>$$d^2+e^2 = f^2$$</td>
</tr>
<tr>
<td>and also $$g^2$$</td>
</tr>
<tr>
<td>$$h^2$$ and some inline math: $h^2$</td>
</tr>
</tbody>
</table>

We use the settings in Listing 457 and run the command

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

to receive the output given in Listing 456.

<table>
<thead>
<tr>
<th>Listing 456: displaymath.tex using Listing 457</th>
</tr>
</thead>
<tbody>
<tr>
<td>before text \begin{equation*}a^2+b^2=4\end{equation*}</td>
</tr>
<tr>
<td>\begin{equation*}d^2+e^2 = f^2\end{equation*}</td>
</tr>
<tr>
<td>and also \begin{equation*}g^2\end{equation*} and some inline math: $h^2$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Listing 457: displaymath1.yaml</th>
</tr>
</thead>
<tbody>
<tr>
<td>replacements:</td>
</tr>
<tr>
<td>- substitution: l-</td>
</tr>
<tr>
<td>s/$/\begin{equation*}$1\end{equation*}$/sgx</td>
</tr>
</tbody>
</table>

A few notes about Listing 457:
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 94, which we do in Listing 459; upon running the command

```
cmh:~$ latexindent.pl -r -m displaymath.tex -l=displaymath1.yaml,equation.yaml
```
then we receive the output in Listing 458.
7.3 Examples of replacements

Example 4

This example is motivated by tex stackexchange question 490086. We begin with the code in Listing 460.

```
\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: \(h^2\)
```

Our goal is to make the spacing uniform between the phrases. To achieve this, we employ the settings in Listing 462, and run the command

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

which gives the output in Listing 461.

```
\begin{equation*}
\h+ \\
\end{equation*}
```

The \h+ setting in Listing 462 say to replace at least one horizontal space with a single space.
Example 5

We begin with the code in Listing 463.

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

Example 6

Let’s explore the three replacement mode switches (see Table 3 on page 111) in the context of an example that contains a verbatim code block, Listing 466; we will use the settings in Listing 467.

```
\begin{verbatim}
body of verbatim
\end{verbatim}
```
7.3 Examples of replacements

We receive the respective output in Listings 468 to 470

<table>
<thead>
<tr>
<th>Listing 468: verb1-mod1.tex</th>
<th>Listing 469: verb1-rv-mod1.tex</th>
<th>Listing 470: verb1-rr-mod1.tex</th>
</tr>
</thead>
<tbody>
<tr>
<td>\begin{myenv}</td>
<td>\begin{myenv}</td>
<td>\begin{myenv}</td>
</tr>
<tr>
<td>head of verbatim</td>
<td>head of verbatim</td>
<td>head of verbatim</td>
</tr>
<tr>
<td>\end{myenv}</td>
<td>\end{myenv}</td>
<td>\end{myenv}</td>
</tr>
<tr>
<td>some verbatim</td>
<td>some verbatim</td>
<td>some verbatim</td>
</tr>
<tr>
<td>\begin{verbatim}</td>
<td>\begin{verbatim}</td>
<td>\begin{verbatim}</td>
</tr>
<tr>
<td>head of verbatim text</td>
<td>head of verbatim text</td>
<td>head of verbatim text</td>
</tr>
<tr>
<td>\end{verbatim}</td>
<td>\end{verbatim}</td>
<td>\end{verbatim}</td>
</tr>
<tr>
<td>text</td>
<td>text</td>
<td>text</td>
</tr>
</tbody>
</table>

We note that:

1. in Listing 468 indentation has been performed, and that the replacements specified in Listing 467 have been performed, even within the verbatim code block;

2. in Listing 469 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 470 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 111.

Example 7  
Let’s explore the `amalgamate` field from Listing 441 on page 111 in the context of the file specified in Listing 471.

<table>
<thead>
<tr>
<th>Listing 471: amalg1.tex</th>
</tr>
</thead>
<tbody>
<tr>
<td>one two three</td>
</tr>
</tbody>
</table>

Let’s consider the YAML files given in Listings 472 to 474.

<table>
<thead>
<tr>
<th>Listing 472: amalg1-yaml.yaml</th>
<th>Listing 473: amalg2-yaml.yaml</th>
<th>Listing 474: amalg3-yaml.yaml</th>
</tr>
</thead>
<tbody>
<tr>
<td>replacements:</td>
<td>replacements:</td>
<td>replacements:</td>
</tr>
<tr>
<td>- this: one</td>
<td>- this: two</td>
<td>-</td>
</tr>
<tr>
<td>that: 1</td>
<td>that: 2</td>
<td>amalgamate: 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>this: three</td>
</tr>
<tr>
<td></td>
<td></td>
<td>that: 3</td>
</tr>
</tbody>
</table>

Upon running the following commands,

```
cmh:~$ latexindent.pl -r amalg1.tex -l=amalg1-yaml
```

we receive the respective output in Listings 475 to 477.
### Listing 475: amalg1.tex using Listing 472

1 two three

### Listing 476: amalg1.tex using Listings 472 and 473

1 2 three

### Listing 477: amalg1.tex using Listings 472 to 474

one two 3

We note that:

1. in Listing 475 the replacements from Listing 472 have been used;
2. in Listing 476 the replacements from Listings 472 and 473 have both been used, because the default value of `amalgamate` is 1;
3. in Listing 477 only the replacements from Listing 474 have been used, because the value of `amalgamate` has been set to 0.
SECTION 8

Fine tuning

latexindent.pl operates by looking for the code blocks detailed in Table 1 on page 45. The fine tuning of the details of such code blocks is controlled by the fineTuning field, detailed in Listing 478. 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!

The fields given in Listing 478 are all regular expressions. This manual is not intended to be a tutorial on regular expressions; you might like to read, for example, [8] for a detailed covering of the topic. We make the following comments with reference to Listing 478:

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
121

(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\* 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 68. In particular:
   (a) betterFullStop is in relation to the one sentence per line routine, detailed in Section 6.2 on page 78
   (b) doubleBackSlash is in relation to the DBSStartsOnOwnLine and DBSFinishesWithLineBreak polyswitches surrounding double back slashes, see Section 6.7 on page 102
   (c) comma is in relation to the CommaStartsOnOwnLine and CommaFinishesWithLineBreak polyswitches surrounding commas in optional and mandatory arguments; see Table 2 on page 106

It is not obvious from Listing 478, but each of the follow, before and between fields allow trailing comments, line breaks, and horizontal spaces between each character.

Example 8
As a demonstration, consider the file given in Listing 479, together with its default output using the command

```bash
  cmh::~/ latexindent.pl finetuning1.tex
```

is given in Listing 480.

<table>
<thead>
<tr>
<th>Listing 479: finetuning1.tex</th>
<th>Listing 480: finetuning1.tex default</th>
</tr>
</thead>
<tbody>
<tr>
<td>\mycommand{ \rule{G -&gt; +H[-G]CL} \rule{H -&gt; -G[+H]CL} \rule{g -&gt; +h[-g]cL} \rule{h -&gt; -g[+h]cL} }</td>
<td>\mycommand{ \rule{G -&gt; +H[-G]CL} \rule{H -&gt; -G[+H]CL} \rule{g -&gt; +h[-g]cL} \rule{h -&gt; -g[+h]cL} }</td>
</tr>
</tbody>
</table>

It's clear from Listing 480 that the indentation scheme has not worked as expected. We can fine tune the indentation scheme by employing the settings given in Listing 482 and running the
Example 9  Let's have another demonstration; consider the file given in Listing 483, together with its default output using the command

```
cmh:~$ latexindent.pl finetuning2.tex
```

is given in Listing 484.

It's clear from Listing 484 that the indentation scheme has not worked as expected. We can *fine tune* the indentation scheme by employing the settings given in Listing 486 and running the command

```
cmh:~$ latexindent.pl finetuning2.tex -l=fine-tuning2.yaml
```

and the associated (desired) output is given in Listing 485.

In particular, note that the settings in Listing 486 specify that NamedGroupingBracesBrackets and UnNamedGroupingBracesBrackets can follow " and that we allow --- between arguments.

Example 10  You can tweak the fineTuning using the -y switch, but to be sure to use quotes appropriately. For example, starting with the code in Listing 487 and running the following command

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

and the associated (desired) output is given in Listing 481.

```latex
\mycommand{
  \rule{G -> +H[-G]CL}
  \rule{H -> -G[H]CL}
  \rule{g -> +h[-g]cL}
  \rule{h -> -g[h]cL}
}
```
cmh:~$ latexindent.pl -m -y="modifyLineBreaks:oneSentencePerLine:manipulateSentences:1,1 modifyLineBreaks:oneSentencePerLine:sentencesBeginWith:a-z:1,1 fineTuning:modifyLineBreaks:betterFullStop:1  "(?:\.|;|:\(\?![a-z]\))|(?:(?:e|g)|(?:i\.|e)|(?:etc)))\..(?:[a-z][A-Z]) issue-243.tex -o=-mod1

gives the output shown in Listing 488.

```
\text{LISTING 487: finetuning3.tex}

We go; you see: this sentence \cite{tex:stackexchange} finishes here.
```

```
\text{LISTING 488: finetuning3.tex using -y switch}

We go;
you see:
this sentence \cite{tex:stackexchange} finishes here.
```
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 in page 28; for example, consider the file given in Listing 489.

\begin{Verbatim}
\texttt{\textbackslash matrix (A)\{ }
\texttt{\c01 & c02 & c03 & c0q \}\}
\end{Verbatim}

\begin{Verbatim}
\texttt{c_{11} & c12 & \ldots & c1q \} }
\end{Verbatim}

These default output is given in Listing 490, and it is clear that the alignment routine has not worked as hoped, but it is expected.

\begin{Verbatim}
\texttt{\textbackslash matrix (A)\{ }
\texttt{\c01 & c02 & c03 & c0q \}\}
\end{Verbatim}

\begin{Verbatim}
\texttt{c_{11} & c12 & \ldots & c1q \} }
\end{Verbatim}

The reason for the problem is that when \texttt{latexindent.pl} stores its code blocks (see Table 1 on page 45) it uses replacement tokens. The alignment routine is using the \textit{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 30); 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 \texttt{-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 109); it is hoped that, in a future version, only \textit{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 \texttt{latexindent} on any file; if you don’t specify an extension, then the extensions that you specify in \texttt{fileExtensionPreference} (see Listing 15 on page 24) will be consulted. If you find a case in which the script struggles, please feel free to report it at [9], and in the meantime, consider using a \texttt{noIndentBlock} (see page 26).

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 [9]; otherwise, feel free to find me on the http://tex.stackexchange.com/users/6621/cmhughes.
### References

#### 10.1 External links

5. **Log4perl Perl module.** URL: http://search.cpan.org/~mschilli/Log-Log4perl-1.49/lib/Log/Log4perl.pm (visited on 09/24/2017).
10. **Video demonstration of latexindent.pl on youtube.** URL: https://www.youtube.com/watch?v=wo38ahaH2F4E&spfreload=10 (visited on 02/21/2017).

#### 10.2 Contributors

1. **Sam Abey.** Print usage tip to STDERR only if STDIN is TTY. Sept. 17, 2019. URL: https://github.com/cmhughes/latexindent.pl/pull/174 (visited on 03/19/2021).
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 491 (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 491: `helloworld.pl`

```perl
#!/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);

print "hello_world";
exit;
```

#### A.1 Module installer script

`latexindent.pl` ships with a helper script that will install any missing `perl` modules on your system; if you run

```bash
$ perl latexindent-module-installer.pl
```

or

```bash
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 491 will vary depending on your operating system and Perl distribution.

##### A.2.1 Linux

Linux users may be interested in exploring Perlbrew [18]; an example installation would be:
A.2 Manually installed modules

For other distributions, the Ubuntu/Debian approach may work as follows:

```
$ sudo apt-get install perlbrew
$ perlbrew init
$ perlbrew install perl-5.28.1
$ perlbrew switch perl-5.28.1
$ sudo apt-get install curl
$ curl -L http://cpanmin.us perl cpanm::Tiny
$ cpanm File::HomeDir
$ cpanm Unicode::GCString
```

or else by running, for example:

```
$ sudo perl -MCorny $'File::HomeDir'
```

If you are using Alpine, some Perl modules are not build-compatible with Alpine, but replacements are available through *apk*. For example, you might use the commands given in Listing 492; thanks to [10] for providing these details.

```
# Installing perl
apk --no-cache add miniperl perl-utils

# Installing incompatible latexindent perl dependencies via apk
apk --no-cache add perl-log-dispatch perl-name-space-autoclean perl-specio perl-unicode-linebreak

# Installing remaining latexindent perl dependencies via cpan
ls /usr/share/texmf-dist/scripts/latexindent
cd /usr/local/bin &&
curl -L https://cpanmin.us/ -o cpanm &&
chmod +x cpanm
cpanm -n App::cpanminus
cpanm -n File::HomeDir
cpanm -n Params::ValidationCompiler
cpanm -n YAML::Tiny
cpanm -n Unicode::GCString
```

Users of NixOS might like to see [https://github.com/cmhughes/latexindent.pl/issues/222](https://github.com/cmhughes/latexindent.pl/issues/222) for tips.

A.2.2 Mac

Users of the Macintosh operating system might like to explore the following commands, for example:
A.2 Manually installed modules

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A.2.3 Windows

Strawberry Perl users on Windows might use CPAN client. All of the modules are readily available on CPAN [5].

indent.log will contain details of the location of the Perl modules on your system. latexindent.exe is a standalone executable for Windows (and therefore does not require a Perl distribution) and caches copies of the Perl modules onto your system; if you wish to see where they are cached, use the trace option, e.g

C:\Users\cmh> latexindent.exe -t myfile.tex
SECTION B

Updating the path variable

\texttt{latexindent.pl} has a few scripts (available at [9]) that can update the path variables. Thank you to [12] for this feature. If you're on a Linux or Mac machine, then you'll want \texttt{CMakeLists.txt} from [9].

B.1 Add to path for Linux

To add \texttt{latexindent.pl} to the path for Linux, follow these steps:

1. download \texttt{latexindent.pl} and its associated modules, \texttt{defaultSettings.yaml}, to your chosen directory from [9];
2. within your directory, create a directory called \texttt{path-helper-files} and download \texttt{CMakeLists.txt} and \texttt{cmake_uninstall.cmake.in} from [9]/path-helper-files to this directory;
3. run

\begin{verbatim}
cmh:~$ ls /usr/local/bin
\end{verbatim}

to see what is currently in there;
4. run the following commands

\begin{verbatim}
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
\end{verbatim}
5. run

\begin{verbatim}
cmh:~$ ls /usr/local/bin
\end{verbatim}

again to check that \texttt{latexindent.pl}, its modules and \texttt{defaultSettings.yaml} have been added.

To remove the files, run

\begin{verbatim}
cmh:~$ sudo make uninstall
\end{verbatim}

B.2 Add to path for Windows

To add \texttt{latexindent.exe} to the path for Windows, follow these steps:

1. download \texttt{latexindent.exe}, \texttt{defaultSettings.yaml}, \texttt{add-to-path.bat} from [9] to your chosen directory;
2. open a command prompt and run the following command to see what is currently in your \texttt{%path%} variable;
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 25 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 493, and the settings specified in Listing 494.

**LISTING 493: simple.tex**
```
\begin{myenv}
  body of myenv
\end{myenv}
```

**LISTING 494: logfile-prefs1.yaml**
```
logFilePreferences:
  showDecorationStartCodeBlockTrace: "+++++
  showDecorationFinishCodeBlockTrace: "-----"
```

If we run the following command (noting that -t is active)

```
$ latexindent.pl -t -l=logfile-prefs1.yaml simple.tex
```

then on inspection of indent.log we will find the snippet given in Listing 495.

**LISTING 495: indent.log**
```
+++++
TRACE: environment found: myenv
No ancestors found for myenv
Storing settings for myenv
  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,

```bash
$ latexindent.pl -o myfile.tex outputfile.tex
```

whereas in Version 3.0 you would run any of the following, for example,

```bash
$ latexindent.pl -o=outputfile.tex myfile.tex
$ latexindent.pl -o outputfile.tex myfile.tex
$ latexindent.pl myfile.tex -o outputfile.tex
$ latexindent.pl myfile.tex -outputfile=outputfile.tex
$ latexindent.pl myfile.tex -outputfile outputfile.tex
```

noting that the `output` file is given next to the `-o` switch.

The fields given in Listing 496 are obsolete from Version 3.0 onwards.

<table>
<thead>
<tr>
<th>Listing 496: Obsolete YAML fields from Version 3.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>alwaysLookforSplitBrackets</td>
</tr>
<tr>
<td>alwaysLookforSplitBrackets</td>
</tr>
<tr>
<td>checkunmatched</td>
</tr>
<tr>
<td>checkunmatchedELSE</td>
</tr>
<tr>
<td>checkunmatchedbracket</td>
</tr>
<tr>
<td>constructIfElseFi</td>
</tr>
</tbody>
</table>

There is a slight difference when specifying indentation after headings; specifically, we now write `indentAfterThisHeading` instead of `indent`. See Listings 497 and 498.

<table>
<thead>
<tr>
<th>Listing 497: indentAfterThisHeading in Version 2.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>indentAfterHeadings:</td>
</tr>
<tr>
<td>part:</td>
</tr>
<tr>
<td>indent: 0</td>
</tr>
<tr>
<td>level: 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Listing 498: indentAfterThisHeading in Version 3.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>indentAfterHeadings:</td>
</tr>
<tr>
<td>part:</td>
</tr>
<tr>
<td>indentAfterThisHeading: 0</td>
</tr>
<tr>
<td>level: 1</td>
</tr>
</tbody>
</table>

To specify noAdditionalIndent for display-math environments in Version 2.2, you would write YAML as in Listing 499; as of Version 3.0, you would write YAML as in Listing 500 or, if you're using `-m` switch, Listing 501.
LISTING 499: noAdditionalIndent in Version 2.2

noAdditionalIndent:
\[: 0
\]: 0

LISTING 500: noAdditionalIndent for displayMath in Version 3.0

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

LISTING 501: noAdditionalIndent for displayMath in Version 3.0

noAdditionalIndent:
displayMath: 1

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— • —
main @ a65f1fb • 2021-05-07 • V3.9.3