

MINDFLOW

write your ideas in a clear way

JINWEN XU

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1 INTRODUCTION

The `mindflow` package provides you a way to write your ideas and annotations clearly. For example, with the options `linenumber` and `rightmarker`, you will get something like this:

| | | |
|---|---|---|
| 1 | What to write next: | * |
| 2 | • usage: the initialization, options and configuration; | * |
| 3 | • an example maybe; | * |
| 4 | • some word on the line numbering feature; | * |
| 5 | • some internal macros and the complete code. | * |

This example only shows the default effect. You can customize it further according to the instructions in the next section.

2 THE USAGE

2.1 HOW TO LOAD IT ?

Simply load the package with

```
\usepackage{mindflow}
```

By default, there are no decorations like line numbers or markers. To enable them, you can use the following options (they can be specified directly, like `off`, or as a boolean optional, like `off=false`):

| | |
|------------------------------|---|
| <code>linenumber</code> | Enable line numbering feature, same as <code>leftlinenumber</code> |
| <code>mathlines</code> | Enable line numbers for displayed equations |
| <code>leftlinenumber</code> | Enable left line numbers |
| <code>rightlinenumber</code> | Enable right line numbers |
| <code>leftmarker</code> | Enable left marker, by default it is an asterisk “*” |
| <code>rightmarker</code> | Enable right marker, by default it is an asterisk “*” |
| <code>incolumn</code> | The separation line would fit in the column (<i>automatically applied in two-column documents</i>) |
| <code>off, on</code> | Turn the <code>mindflow</code> environments <i>off</i> or <i>on</i> |

There is also an option `nonbreakable`, which enables the `tcolorbox` version, permitting a background color, but is not breakable and does not support line numbering quite well.

2.2 HOW TO USE IT ?

`{mindflow}` You can then use the `mindflow` environment as

```
\begin{mindflow}  
  <text>  
\end{mindflow}
```

2.3 FURTHER CONFIGURATIONS

`\mindflowset` You can use `\mindflowset{<configuration>}` to further configure the `mindflow` environment. The available keys are listed at the top of the next page.

Corresponding to: `mindflow 2022/01/31`

| | | | |
|--------------------------|------------------------------|-------------------------|-------------------------------|
| <code>left</code> | The left marker | <code>right</code> | The right marker |
| <code>textcolor</code> | Color of the text | <code>textfont</code> | Font of the text |
| <code>numcolor</code> | Color of line numbers | <code>numfont</code> | Font of line numbers |
| <code>markercolor</code> | Color of the markers | <code>markerfont</code> | Font of the marker |
| <code>linecolor</code> | Color of the separation line | <code>lineheight</code> | Height of the separation line |

Additionally, most of the options mentioned in the previous section (except for `nonbreakable` and `mathlines`) can be set with `\mindflowset`. *

3 AN EXAMPLE

With the following settings:

```
\mindflowset{
  leftlinenumber, rightlinenumber, leftmarker, rightmarker,
  linecolor = green!50!black,
  textcolor = blue!50!cyan,
  numcolor = red!50!orange,
  markercolor = orange,
  textfont = \footnotesize\sffamily\itshape,
  numfont = \small\footnotesize\ttfamily,
  markerfont = \footnotesize\sffamily,
  left = \hspace{1em}\(\succ\),
  right = \(\prec\)\hspace{1em},
  lineheight = 1pt
}
```

One will get something like this (a little bit exaggerated, to be honest):

6 > *Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read* < 6
7 > *this text, you will get no information. Really? Is there no information? Is there a difference between this text and some* < 7
8 > *nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how* < 8
9 > *the letters are written and an impression of the look.* < 9

4 ABOUT THE LINE NUMBERS

1 You can also add line numbers to the other part of your document in the usual way. For
2 example, line numbers have been turned on for this paragraph with `\linenumbers`.

10 Line numbers within the `mindflow` environments are independent from those of the main text. *

3 *(I recommend that you put an empty line before and after the `mindflow` environments, i.e. make the*
4 *`mindflow` environment a paragraph of its own. This way, your paragraph structure won't get changed*
5 *when you use the `off` option.)*

The line numbering feature is provided by package `lineno`. For more details, please refer to its documentation. Notice that displayed equations are not numbered by default. To enable the line numbers for them, you can use the option `mathlines`. The result would be like:

11
$$\sum_{i_1 < \dots < i_n} \prod_{1 \leq j \leq n} i_j^{-2} = \frac{\pi^{2n}}{(2n+1)!}$$
 *

12
$$\Rightarrow \frac{e^\pi - e^{-\pi}}{2\pi} = 1 + \sum_{n \geq 1} \sum_{i_1 < \dots < i_n} \prod_{1 \leq j \leq n} i_j^{-2}$$
 *

*If the package option `nonbreakable` is enabled, then there is also a key `backgroundcolor`, similar to `textcolor`, for configuring the background color of the `mindflow` environments.

5 SOME T_EXNICAL DETAILS

5.1 INTERNAL MACROS FOR TEXT ELEMENTS

`\mindflowTextFont`
`\mindflowNumFont`
`\mindflowMarkerFont`

The font for text, line numbers and markers within the `mindflow` environments can be specified by redefining `\mindflowTextFont`, `\mindflowNumFont` and `\mindflowMarkerFont`. By default, they are defined as:

```
\newcommand{\mindflowTextFont}{\footnotesize}
\newcommand{\mindflowNumFont}{\scriptsize\ttfamily}
\newcommand{\mindflowMarkerFont}{\scriptsize\ttfamily}
```

`\mindflowLeft`
`\mindflowRight`

The left and right markers is defined by `\mindflowLeft` and `\mindflowRight`. Both have the default value “*”.

`\mindflowLineHeight`

The height of the separation lines is a length macro named `\mindflowLineHeight`, with default value 0.4pt. You can change this with `\setlength`.

5.2 INTERNAL NAMES OF THE COLORS

`mindflowLine`
`mindflowText`
`mindflowNum`
`mindflowMarker`

And finally, the colors for the separation lines, text, line numbers and markers within the `mindflow` environments are called `mindflowLine`, `mindflowText`, `mindflowNum` and `mindflowMarker`, respectively. By default, they have the same color as the context, with opacity 40% for the separation lines and text, 20% for the markers, and 8% for line numbers.

`*mindflowBackground`

If the package option `nonbreakable` is enabled, then there is also the background color `mindflowBackground`, which by default is white.

6 THE SAME EXAMPLE REVISITED

With option `leftlinenumber`, `rightlinenumber`, `leftmarker`, `rightmarker` and the following settings:

```
\colorlet{mindflowLine}{green!50!black}
\colorlet{mindflowText}{blue!50!cyan}
\colorlet{mindflowNum}{red!50!orange}
\colorlet{mindflowMarker}{orange}
\renewcommand{\mindflowTextFont}{\footnotesize\sffamily\itshape}
\renewcommand{\mindflowNumFont}{\small\footnotesize\ttfamily}
\renewcommand{\mindflowMarkerFont}{\footnotesize\sffamily}
\renewcommand{\mindflowLeft}{\hspace{1em}\(\succ\)}
\renewcommand{\mindflowRight}{\(\prec\)\hspace{1em}}
\setlength{\mindflowLineHeight}{1pt}
```

One will get the same result as in the previous example.

7 KNOWN ISSUES

- There is no absolute guarantee that the separation lines will not fall alone at the top or bottom of the page, though great effort has been made to reduce the occurrence of such situation.
- The `nonbreakable` version does not support line numbering quite well, especially for displayed equations. This is due to the usage of `internallinenumbers`.

8 IMPLEMENTATION

Below is the complete source code of this package.

```

1 \RequirePackage{kvoptions}
2 \SetupKeyvalOptions{%
3     family = @mindflow,
4     prefix = @mindflow@
5 }
6 \DeclareBoolOption[true]{on}           % Turn on mindflow
7 \DeclareBoolOption[false]{off}        % Turn off mindflow
8 \DeclareBoolOption[false]{leftmarker} % Left marker
9 \DeclareBoolOption[false]{rightmarker} % Right marker
10 \DeclareBoolOption[false]{linenumber} % Left line numbers
11 \DeclareBoolOption[false]{leftlinenumber} % Left line numbers
12 \DeclareBoolOption[false]{rightlinenumber} % Right line numbers
13 \DeclareBoolOption[false]{incolumn}    % Separation line fits in column
14 \DeclareBoolOption[false]{nonbreakable} % Use the tcolorbox version
15 \DeclareBoolOption[false]{mathlines}   % Add line numbers to equations
16
17 \ProcessKeyvalOptions*\relax
18
19 \if@mindflow@on
20     \@mindflow@offfalse
21 \fi
22 \if@mindflow@linenumber
23     \@mindflow@leftlinenumbertrue
24 \fi
25 \if@mindflow@mathlines
26     \PassOptionsToPackage{mathlines}{lineno}
27 \fi
28
29 %%=====
30 %% Initialization
31 %%=====
32 \RequirePackage{linenoamsmath}
33 \RequirePackage{xcolor}
34
35 \colorlet{mfSavedColor}{.}
36 \colorlet{mindflowLine}{mfSavedColor!40}
37 \colorlet{mindflowText}{mfSavedColor!40}
38 \colorlet{mindflowMarker}{mfSavedColor!20}
39 \colorlet{mindflowNum}{mfSavedColor!8}
40
41 \newcommand{\mindflowTextFont}{\footnotesize}
42 \newcommand{\mindflowNumFont}{\scriptsize\ttfamily}
43 \newcommand{\mindflowMarkerFont}{\scriptsize\ttfamily}
44 \newcommand{\mindflowLeft}{*}
45 \newcommand{\mindflowRight}{*}
46 \newlength{\mindflowLineHeight}
47 \setlength{\mindflowLineHeight}{0.4pt}
48
49 %%=====
50 %% The mindflow environment
51 %%=====
52 \PassOptionsToPackage{all}{nowidow}
53 \RequirePackage{nowidow}

```

```

54 \RequirePackage{verbatim}
55
56 \newif\ifLNturnsON
57 \def\LocallyStopLineNumbers{\LNturnsONfalse%
58   \iflineNumbers\LNturnsONtrue\fi\nolinenumbers}
59 \def\ResumeLineNumbers{\ifLNturnsON\linenumbers\fi}
60
61 \newif\ifICTurnsON
62 \def\AutoIncolumn{\ICTurnsONfalse%
63   \if@mindflow@incolumn\ICTurnsONtrue\fi%
64   \if@twocolumn\@mindflow@incolumntrue\fi%
65 }
66 \def\ResumeIncolumn{\ifICTurnsON\@mindflow@incolumntrue\fi}
67
68 \newcounter{recordLN}
69 \newcounter{mfLN}
70 \setcounter{mfLN}{1}
71
72 \newcommand*{\mfSepLine}{%
73   \par%\nobreak%
74   \LocallyStopLineNumbers%
75   \vspace*{-.5\baselineskip}%
76   \noindent%
77   \if@mindflow@incolumn%
78     \makebox[\linewidth]{\color{mindflowLine}\rule{\linewidth}{\mindflowLineHeight}}%
79   \else%
80     \hspace*{-\paperwidth}%
81     \makebox[\linewidth]{\color{mindflowLine}\rule{4\paperwidth}{\mindflowLineHeight}}%
82   \fi%
83   \par%\nobreak%
84   \ResumeLineNumbers%
85 }
86
87 \newcommand{\mindflow@makeLineNumber}{%
88   \hss%
89   \if@mindflow@leftlinenumber%
90     \normalfont\mindflowNumFont\color{mindflowNum}\LineNumber\hspace{1em}%
91   \fi%
92   \color{mindflowMarker}%
93   \if@mindflow@leftmarker%
94     \normalfont\mindflowMarkerFont\mindflowLeft\hspace{1em}%
95   \fi%
96   \rlap{\hskip\textwidth%
97     \if@mindflow@rightmarker%
98       \hspace{1em}\mindflowRight%
99     \fi%
100    \if@mindflow@rightlinenumber%
101      \hspace{1em}%
102      \normalfont\mindflowNumFont\color{mindflowNum}\LineNumber%
103    \fi%
104  }%
105 }%
106
107 \let\mindflowOFF=\comment

```

```

108 \let\endmindflowOFF=\endcomment
109
110 \def\mindflowON{%
111   \postdisplaypenalty=10000
112   \parskip=0pt
113   \medskip%
114   \setcounter{recordLN}{\value{linenumber}}%
115   \setcounter{linenumber}{\value{mflN}}%
116   \AutoIncolumn%
117   \mfSepLine%
118   \normalfont\mindflowTextFont\color{mindflowText}%
119   \linenumbers%
120   \let\makeLineNumber\mindflow@makeLineNumber%
121   \nopagebreak%
122 }
123 \def\endmindflowON{%
124   \nowidow[3]%
125   \mfSepLine%
126   \setcounter{mflN}{\value{linenumber}}%
127   \setcounter{linenumber}{\value{recordLN}}%
128   \ResumeIncolumn%
129   \medskip%
130 }
131
132 \colorlet{mindflowBackground}{white}
133
134 \if@mindflow@nonbreakable
135 \PassOptionsToPackage{many}{tcolorbox}
136 \RequirePackage{tcolorbox}
137 \newlength{\mindflow@parindent}
138 \newlength{\mindflow@parskip}
139 \newtcolorbox{mindflow@nonbreakable}[1]{
140   enhanced jigsaw,
141   colback=mindflowBackground,colframe=mindflowLine,
142   leftrule=0pt, rightrule=0pt, sharp corners,
143   toprule=\mindflowLineHeight, bottomrule=\mindflowLineHeight,
144   boxsep=0pt, top=.3\baselineskip, bottom=.3\baselineskip,
145   fontupper=\mindflowTextFont,extras={colupper={mindflowText}},
146   before upper={
147     \setlength{\parindent}{\mindflow@parindent}%
148     \setlength{\parskip}{\mindflow@parskip}%
149   },#1
150 }
151 \def\mindflowON{%
152   \LocallyStopLineNumbers%
153   \setcounter{recordLN}{\value{linenumber}}%
154   \setcounter{linenumber}{\value{mflN}}%
155   \AutoIncolumn%
156   \setlength{\mindflow@parindent}{\parindent}%
157   \setlength{\mindflow@parskip}{\parskip}%
158   \if@mindflow@incolumn%
159     \begin{mindflow@nonbreakable}{left=0pt,right=0pt}
160   \else%
161     \begin{mindflow@nonbreakable}{%
162       grow to left by=\linewidth,left=\linewidth,
163       grow to right by=\linewidth,right=\linewidth}

```

```

164 \fi
165 \begin{internallinenumber}%
166 \let\makeLineNumber\mindflow@makeLineNumber%
167 }
168 \def\endmindflowON{%
169 \nowidow[3]%
170 \end{internallinenumber}%
171 \end{mindflow@nonbreakable}\par%
172 \ResumeLineNumbers%
173 \setcounter{mfLN}{\value{linenumber}}%
174 \setcounter{linenumber}{\value{recordLN}}%
175 \ResumeIncolumn%
176 }
177 \fi
178
179 \if@mindflow@off
180 \let\mindflow=\mindflowOFF
181 \let\endmindflow=\endmindflowOFF
182 \else
183 \let\mindflow=\mindflowON
184 \let\endmindflow=\endmindflowON
185 \fi
186
187 %%=====
188 %% \mindflowset
189 %%=====
190 \define@key{mindflow}{on}[true]{%
191 \csname @mindflow@on#1\endcsname%
192 \if@mindflow@off%
193 \let\mindflow=\mindflowOFF%
194 \let\endmindflow=\endmindflowOFF%
195 \else%
196 \let\mindflow=\mindflowON%
197 \let\endmindflow=\endmindflowON%
198 \fi%
199 }
200 \define@key{mindflow}{off}[true]{%
201 \csname @mindflow@off#1\endcsname%
202 \if@mindflow@off%
203 \let\mindflow=\mindflowOFF%
204 \let\endmindflow=\endmindflowOFF%
205 \else%
206 \let\mindflow=\mindflowON%
207 \let\endmindflow=\endmindflowON%
208 \fi%
209 }
210 \define@key{mindflow}{leftmarker}[true]{\csname @mindflow@leftmarker#1\
211 \endcsname}
211 \define@key{mindflow}{rightmarker}[true]{\csname @mindflow@rightmarker#1\
212 \endcsname}
212 \define@key{mindflow}{linenumber}[true]{\csname @mindflow@leftlinenumber#1\
213 \endcsname}
213 \define@key{mindflow}{leftlinenumber}[true]{\csname
214 @mindflow@leftlinenumber#1\endcsname}
214 \define@key{mindflow}{rightlinenumber}[true]{\csname
215 @mindflow@rightlinenumber#1\endcsname}

```

```

215 \define@key{mindflow}{incolumn}[true]{\csname @mindflow@incolumn#1\
      endcsname}
216 \define@key{mindflow}{linecolor}{\colorlet{mindflowLine}{#1}}
217 \define@key{mindflow}{textcolor}{\colorlet{mindflowText}{#1}}
218 \define@key{mindflow}{numcolor}{\colorlet{mindflowNum}{#1}}
219 \define@key{mindflow}{markercolor}{\colorlet{mindflowMarker}{#1}}
220 \define@key{mindflow}{backgroundcolor}{
221   \if@mindflow@nonbreakable
222     \colorlet{mindflowBackground}{#1}
223   \else
224     \PackageWarning{mindflow}{The key ‘‘backgroundcolor’’ is only available
      when the package option\MessageBreak ‘‘nonbreakable’’ is enabled.}
225   \fi
226 }
227 \define@key{mindflow}{textfont}{\renewcommand{\mindflowTextFont}{#1}}
228 \define@key{mindflow}{numfont}{\renewcommand{\mindflowNumFont}{#1}}
229 \define@key{mindflow}{markerfont}{\renewcommand{\mindflowMarkerFont}{#1}}
230 \define@key{mindflow}{left}{\renewcommand{\mindflowLeft}{#1}}
231 \define@key{mindflow}{right}{\renewcommand{\mindflowRight}{#1}}
232 \define@key{mindflow}{lineheight}{\setlength{\mindflowLineHeight}{#1}}
233
234 \newcommand{\mindflowset}[1]{%
235   \setkeys{mindflow}{#1}%
236 }

```