mindflow, write your ideas in a clear way

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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:

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

2. Usage

2.1 Initialization

Simply load the package with

```
\usepackage{mindflow}
```

There are a few options available, which are listed in the next subsection.

2.2 Options

By default, the environment has no line numbers or markers. You can use the following options (they can be specified directly, like off, or as a boolean optional, like off=false):

linenumber	Same as leftlinenumber
leftlinenumber	Enable left line numbers
rightlinenumber	Enable right line numbers
leftmarker	Enable left marker, by default it is a "*"
rightmarker	Enable right marker, by default it is a "*"
incolumn or twocolumn	The separation line would fit in the column (*automatically applied in two-column documents*)
off, on	Turn the mindflow environments *off* or *on*

{mindflow}   Then you can use the mindflow environment as

```
\begin{mindflow}
    ⟨text⟩
\end{mindflow}
```

2.3 The configuration

\mindflowset   You can use \mindflowset{⟨*configuration*⟩} to configure the mindflow environment. The following keys are provided:

left	The left marker
right	The right marker
textcolor	Color of the text
numcolor	Color of line numbers
markercolor	Color of the markers
linecolor	Color of the separation line

1

`textfont`	Font of the text
`numfont`	Font of line numbers
`markerfont`	Font of the marker
`lineheight`	Height of the separation line

Additionally, all the options mentioned in the previous section 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 have something like this:

7	≻	*Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Etiam lobortis facilisis sem. Nullam nec mi et neque pharetra*	≺	7
8	≻	*sollicitudin. Praesent imperdiet mi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a*	≺	8
9	≻	*dignissim nibh lectus placerat pede. Vivamus nunc nunc, molestie ut, ultricies vel, semper in, velit. Ut porttitor. Praesent*	≺	9
10	≻	*in sapien. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Duis fringilla tristique neque. Sed interdum libero ut*	≺	10
11	≻	*metus. Pellentesque placerat. Nam rutrum augue a leo. Morbi sed elit sit amet ante lobortis sollicitudin. Praesent blandit*	≺	11
12	≻	*blandit mauris. Praesent lectus tellus, aliquet aliquam, luctus a, egestas a, turpis. Mauris lacinia lorem sit amet ipsum.*	≺	12
13	≻	*Nunc quis urna dictum turpis accumsan semper.*	≺	13

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`.

14 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 feature of line numbering is provided by the package lineno. You can read its documentation to learn more about it. Notice that, by default, displayed equations are not numbered. You can add the following line before `\usepackage{mindflow}`:

```
\PassOptionsToPackage{mathlines}{lineno}
```

to enable the line numbers for displayed equations.

15 $$(a + b)^2 = a^2 + 2ab + b^2$$ *

16 $$(a + b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$$ *

— Readers who are not interested in technical details can skip the rest —

5. Some TEXnical details

\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.

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 the line numbers.

6. The same example

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. 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
```

```latex
13 \DeclareBoolOption[false]{twocolumn}        % Two column
14 \DeclareBoolOption[false]{incolumn}         % Separation line fits in column
15
16 \ProcessKeyvalOptions*\relax
17
18 \if@mindflow@on
19   \@mindflow@offfalse
20 \fi
21 \if@mindflow@twocolumn
22   \@mindflow@incolumntrue
23 \fi
24 \if@mindflow@linenumber
25   \@mindflow@leftlinenumbertrue
26 \fi
27
28 %%==============================
29 %% Initialization
30 %%==============================
31 \RequirePackage{lineno}
32 \RequirePackage{xcolor}
33
34 \colorlet{mfSavedColor}{.}
35 \colorlet{mindflowLine}{mfSavedColor!40}
36 \colorlet{mindflowText}{mfSavedColor!40}
37 \colorlet{mindflowMarker}{mfSavedColor!20}
38 \colorlet{mindflowNum}{mfSavedColor!8}
39
40 \newcommand{\mindflowTextFont}{\footnotesize}
41 \newcommand{\mindflowNumFont}{\scriptsize\ttfamily}
42 \newcommand{\mindflowMarkerFont}{\scriptsize\ttfamily}
43 \newcommand{\mindflowLeft}{*}
44 \newcommand{\mindflowRight}{*}
45 \newlength{\mindflowLineHeight}
46 \setlength{\mindflowLineHeight}{0.4pt}
47
48 %%==============================
49 %% The mindflow environment
50 %%==============================
51 \PassOptionsToPackage{all}{nowidow}
52 \RequirePackage{nowidow}
53 \RequirePackage{verbatim}
54
55 \newif\ifLNturnsON
56 \def\LocallyStopLineNumbers{\LNturnsONfalse%
57     \ifLineNumbers\LNturnsONtrue\fi\nolinenumbers}
58 \def\ResumeLineNumbers{\ifLNturnsON\linenumbers\fi}
59
60 \newcounter{recordLN}
61 \newcounter{mfLN}
62 \setcounter{mfLN}{1}
63
64 \newcommand*{\mfSepLine}{%
65   \par%\nobreak%
66   \LocallyStopLineNumbers%
67   \vspace*{-.5\baselineskip}%
68   \if@mindflow@incolumn%
```

```latex
69        \makebox[\linewidth]{\color{mindflowLine}\rule{\linewidth}{\
          mindflowLineHeight}}%
70      \else%
71        \hspace*{-\paperwidth}%
72        \makebox[\linewidth]{\color{mindflowLine}\rule{4\paperwidth}{\
          mindflowLineHeight}}%
73      \fi%
74      \par%\nobreak%
75      \ResumeLineNumbers%
76    }

77
78    \newcommand{\mindflow@makeLineNumber}{%
79      \hss%
80      \if@mindflow@leftlinenumber%
81        \normalfont\mindflowNumFont\color{mindflowNum}\LineNumber\hspace{1em}%
82      \fi%
83      \color{mindflowMarker}%
84      \if@mindflow@leftmarker%
85        \normalfont\mindflowMarkerFont\mindflowLeft\hspace{1em}%
86      \fi%
87      \rlap{\hskip\textwidth%
88        \if@mindflow@rightmarker%
89          \hspace{1em}\mindflowRight%
90        \fi%
91        \if@mindflow@rightlinenumber%
92          \hspace{1em}%
93          \normalfont\mindflowNumFont\color{mindflowNum}\LineNumber%
94        \fi%
95      }%
96    }%

97
98    \let\mindflowOFF=\comment
99    \let\endmindflowOFF=\endcomment

100
101   \def\mindflowON{%
102     \postdisplaypenalty=10000
103     \parskip=0pt
104     \medskip%
105     \setcounter{recordLN}{\value{linenumber}}%
106     \setcounter{linenumber}{\value{mfLN}}%
107     \mfSepLine%
108     \normalfont\mindflowTextFont\color{mindflowText}%
109     \linenumbers%
110     \let\makeLineNumber\mindflow@makeLineNumber%
111     \nopagebreak%
112   }
113   \def\endmindflowON{%
114     \nowidow[3]%
115     \mfSepLine%
116     \setcounter{mfLN}{\value{linenumber}}%
117     \setcounter{linenumber}{\value{recordLN}}%
118     \medskip%
119   }

120
121   \if@mindflow@off
122     \let\mindflow=\mindflowOFF
```

```latex
123     \let\endmindflow=\endmindflowOFF
124 \else
125     \let\mindflow=\mindflowON
126     \let\endmindflow=\endmindflowON
127 \fi
128
129 %%=============================
130 %% \mindflowset
131 %%=============================
132 \define@key{mindflow}{on}[true]{%
133     \csname @mindflow@on#1\endcsname%
134     \if@mindflow@off%
135         \let\mindflow=\mindflowOFF%
136         \let\endmindflow=\endmindflowOFF%
137     \else%
138         \let\mindflow=\mindflowON%
139         \let\endmindflow=\endmindflowON%
140     \fi%
141 }
142 \define@key{mindflow}{off}[true]{%
143     \csname @mindflow@off#1\endcsname%
144     \if@mindflow@off%
145         \let\mindflow=\mindflowOFF%
146         \let\endmindflow=\endmindflowOFF%
147     \else%
148         \let\mindflow=\mindflowON%
149         \let\endmindflow=\endmindflowON%
150     \fi%
151 }
152 \define@key{mindflow}{leftmarker}[true]{\csname @mindflow@leftmarker#1\
        endcsname}
153 \define@key{mindflow}{rightmarker}[true]{\csname @mindflow@rightmarker#1\
        endcsname}
154 \define@key{mindflow}{linenumber}[true]{\csname @mindflow@linenumber#1\
        endcsname}
155 \define@key{mindflow}{leftlinenumber}[true]{\csname
        @mindflow@leftlinenumber#1\endcsname}
156 \define@key{mindflow}{rightlinenumber}[true]{\csname
        @mindflow@rightlinenumber#1\endcsname}
157 \define@key{mindflow}{twocolumn}[true]{\csname @mindflow@twocolumn#1\
        endcsname}
158 \define@key{mindflow}{incolumn}[true]{\csname @mindflow@incolumn#1\
        endcsname}
159 \define@key{mindflow}{linecolor}{\colorlet{mindflowLine}{#1}}
160 \define@key{mindflow}{textcolor}{\colorlet{mindflowText}{#1}}
161 \define@key{mindflow}{numcolor}{\colorlet{mindflowNum}{#1}}
162 \define@key{mindflow}{markercolor}{\colorlet{mindflowMarker}{#1}}
163 \define@key{mindflow}{textfont}{\renewcommand{\mindflowTextFont}{#1}}
164 \define@key{mindflow}{numfont}{\renewcommand{\mindflowNumFont}{#1}}
165 \define@key{mindflow}{markerfont}{\renewcommand{\mindflowMarkerFont}{#1}}
166 \define@key{mindflow}{left}{\renewcommand{\mindflowLeft}{#1}}
167 \define@key{mindflow}{right}{\renewcommand{\mindflowRight}{#1}}
168 \define@key{mindflow}{lineheight}{\setlength{\mindflowLineHeight}{#1}}
169 \newcommand{\mindflowset}[1]{%
170     \setkeys{mindflow}{#1}%
171     \if@mindflow@twocolumn%
```

```
172       \@mindflow@incolumntrue%
173     \fi%
174     \if@mindflow@linenumber%
175       \@mindflow@leftlinenumbertrue%
176     \fi%
177 }
178
179 %%===============================
180 %% lineno patch
181 %%===============================
182 \ifdefined\linenomathpatch\else
183     \RequirePackage{amsmath}
184     \RequirePackage{etoolbox}
185     \newcommand*\linenomathpatch[1]{%
186       \cspreto{#1}{\linenomath}%
187       \cspreto{#1*}{\linenomath}%
188       \csappto{end#1}{\endlinenomath}%
189       \csappto{end#1*}{\endlinenomath}%
190     }
191     \newcommand*\linenomathpatchAMS[1]{%
192       \cspreto{#1}{\linenomathAMS}%
193       \cspreto{#1*}{\linenomathAMS}%
194       \csappto{end#1}{\endlinenomath}%
195       \csappto{end#1*}{\endlinenomath}%
196     }
197     \expandafter\ifx\linenomath\linenomathWithnumbers
198       \let\linenomathAMS\linenomathWithnumbers
199       \patchcmd\linenomathAMS{\advance\postdisplaypenalty\linenopenalty
        }{}{}{}
200     \else
201       \let\linenomathAMS\linenomathNonumbers
202     \fi
203     \linenomathpatch{equation}
204     \linenomathpatchAMS{gather}
205     \linenomathpatchAMS{multline}
206     \linenomathpatchAMS{align}
207     \linenomathpatchAMS{alignat}
208     \linenomathpatchAMS{flalign}
209 \fi
```