

# The Old DMS class

## Faster assignments with a vintage look

Old DMS is a L<sup>A</sup>T<sub>E</sub>X class which simplifies the workflow for quick assignments while providing a vintage look.

It is based on the `article` class, so it keeps all the features while giving shortcuts for commands that are repeatedly used in an assignment-type work.

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## Why is this a thing?

L<sup>A</sup>T<sub>E</sub>X is awesome for typesetting large ambitious projects, but it can be too heavy and constraining to use for more modest work. I wanted to be able to get this L<sup>A</sup>T<sub>E</sub>X quality and versatility on small documents, or when I'm in a rush. As a student, the documents I happen to work on the most, are assignments.

Old DMs is therefore designed to make the workflow for assignments much faster. This documentation gives a glimpse of what this class does and how the documents look. I tried to make it as exhaustive as I could, but I might still be quite imperfect.

## 1 Installation

Overleaf users, move directly to 2.2.

### 1.1 Requirements

For these who run a L<sup>A</sup>T<sub>E</sub>X distribution on their system, `old-dms.cls` can be downloaded at <https://github.com/sylvain-kern/old-dms>.

It requires these custom fonts installed on your system:

- Old Standard TT;
- GFS Baskerville;
- GFS Solomos;
- T<sub>E</sub>X Gyre Pagella.

It also requires Python and the `pygments` package, which can be installed using the following line.

---

```
pip install pygments
```

---

For Windows users, make sure Python is on the PATH.

## 1.2 Linux with T<sub>E</sub>X Live

To avoid putting the `old-dms.cls` file in each L<sup>A</sup>T<sub>E</sub>X project, it is possible to properly install this class on your T<sub>E</sub>XLive distribution. If you already have a local T<sub>E</sub>XMF directory, put the `old-dms.cls` in it. If not, use the following commands<sup>[1]</sup> to create one:

---

```
mkdir -p $HOME/.texmf/tex/latex/old-dms

sudo /usr/local/texlive/2012/bin/x86_64-linux/tlmgr conf texmf
↪ TEXMFHOME $HOME/.texmf

mv old-dms.cls $HOME/.texmf/tex/latex/old-dms

mktexlsr $HOME/.texmf
```

---

The class should be properly installed on your distribution.

## 1.3 Windows with MiK<sub>T</sub><sub>E</sub>X

To avoid putting the `old-dms.cls` file in each L<sup>A</sup>T<sub>E</sub>X project, it is possible to properly install this class on your MiK<sub>T</sub><sub>E</sub>X distribution using the following steps<sup>[2]</sup>.

- Create a local T<sub>E</sub>XMF directory, for example:

---

```
C:\Users\<you>\localtexmf\
```

---

- Then, create a `tex\latex` directory inside `localtexmf`, and again, create a directory named `old-dms` and put your `old-dms.cls` file in it. *In fine* it should look like this:

---

```
C:\Users\<you>\localtexmf\tex\latex\old-dms\old-dms.cls
```

---

- Open MiK<sub>T</sub><sub>E</sub>X console, go to Settings, Directories tab, click on the add button, and add your T<sub>E</sub>XMF path:

---

```
C:\Users\<you>\localtexmf\
```

---

- Then, go to the tasks tab, and run Refresh file name database.

The class should be now installed on your computer, and `.tex` files should compile with it, without the `.cls` having to be in the same folder.

## 2 Usage

### 2.1 Document preamble

The class introduction is done as follows:

---

```
\documentclass[<options>]{old-dms}
```

---

Old Dms is inherited from the `article` class, so `old-dms` takes the same options. For more information see <https://www.ctan.org/pkg/article>.

Then, rock the good old `\begin{document}`. The features provided by this class are explained further in the documentation.

### 2.2 For Overleaf users

If you are on Overleaf, you just have to paste the `old-dms.cls` file into your project, start your `.tex` file with

---

```
\documentclass[<options>]{old-dms}
```

---

and it should work properly.

### 2.3 Compilation

Old Dms use Unicode type fonts, so it compiles with XeLaTeX. PdfLaTeX will not work.

This uses the `minted` package, which is based on `pygments`, which needs to be installed. It must therefore be compiled with the `--shell-escape` flag. On an IDE like *TeXmaker*, it can be changed in

Options > Configure TeXmaker

by adding the following line in the XeLaTeX field:

---

```
xelatex -synctex=1 -interaction=nonstopmode --shell-escape %.tex
```

---

For command-line compilation, just add `--shell-escape` to the command.

### 3 Document look

This documentation is made with Old DMs class. Reading it should give a glimpse on its classy – to my standards – vintage look. The main font used is *Old Standard TT*, which has a bit more retro look than the default L<sup>A</sup>T<sub>E</sub>X font.

The section titles are centered, but not the subsection and subsubsection ones.

The paragraphs are not indented, but separated with a little vertical space like this. Too many indentations can be distracting by constantly breaking the alignment. Paragraphs like this help to maintain a clean look, especially when there are many short chunks of text instead of a rich prose.

Text in paragraphs is justified like in raw L<sup>A</sup>T<sub>E</sub>X, and this alignment is optimised to protrude a little bit, when the character before the line break is small, to keep a more balanced overall look, as seen in figure 1.

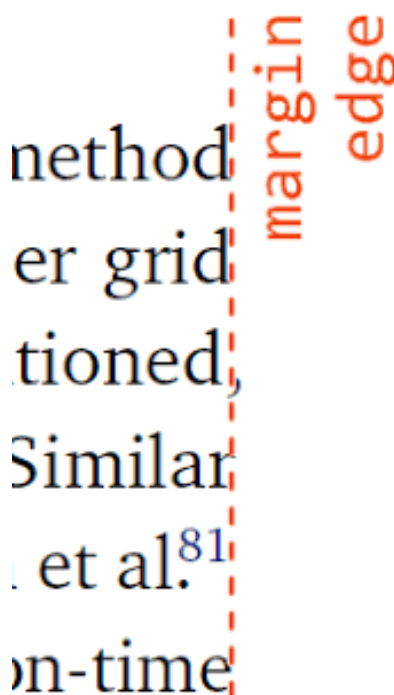


Figure 1 – Improved justification example

The figures are by default centered, and `.7\textwidth` wide.

Tables are as you want them to be. However, the packages `tabularx` and `booktabs` are included to provide tools for faster and cleaner tables.

As an example, here is a more or less complex table, which should illustrate the look and possibilities: see table 1.

Table 1 – Energy states of a proton

Ground state				
$n$	$l$	$m_l$	$m_s$	Energy $E_1$ (eV)
1	0	0	+1/2	−13.6
1	0	0	−1/2	−13.6
First excited state				
$n$	$l$	$m_l$	$m_s$	Energy $E_2$ (eV)
2	0	0	+1/2	−3.4
2	0	0	−1/2	−3.4
2	1	1	+1/2	−3.4
2	1	1	−1/2	−3.4
2	1	0	+1/2	−3.4
2	1	0	−1/2	−3.4
2	1	−1	+1/2	−3.4
2	2	−1	−1/2	−3.4

Math environments are a bit pimped. Here are some examples:

$$e^x = \sum_{n=0}^{+\infty} \frac{x^n}{n!} \; ;$$

$$\frac{\hat{\vec{p}}^2}{2m} |\Psi(t)\rangle + V\left(\hat{\vec{r}}, t\right) |\Psi(t)\rangle = i\hbar \frac{\partial}{\partial t} |\Psi(t)\rangle \; ;$$

$$x_{\pm} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \; ;$$

$$\int_{-\infty}^{+\infty} e^{-ax^2} \mathrm{d}x = \sqrt{\frac{\pi}{a}}.$$

Old DMs changes the bibliography references. They are now in superscript instead of the full size. It mimics the Wikipedia<sup>[3]</sup> style and is less distracting.

For code snippets, it is possible to include inline code like this `def f(x):`, or full blocks of code:

---

```
#include <stdio.h>

int main() {
    printf("Hello, World!");
    return 0;
}
```

---

It is also possible to have line numbering – see 4.4.

## 4 Macros provided

### 4.1 Question numbering

A custom numbering system is provided for questions, which is independent to section changes. To insert a question number, just use

`\q.`

It displays a question number which increments each time `\q` is used. It looks like this:

**1/** This is the answer to the first question.

**2/** Now moving to the second question.

**3/** ...

**4/** ... adding some more `\q` s ...

**5/** ...

When you have to return to plain text, just put a `\t`. It tells  $\text{\LaTeX}$  you're not in a question anymore and adds some space below the last question.

The question number is a custom counter which is simply named `question`. So it can be reset by using

`\setcounter{question}{1}`.

**1/** The questions will now restart from one.

The question counter can be set at any given value.

There is also a subquestion system which can be used with `\sq`. It looks like this:

**1/** The question.

**2/** Another question.

(a) First subquestion.

(b) Second subquestion.

**3/** (a) ...

(b) ... Some more subquestions ...

(c) ...

Which is obtained using the following code:

---

```
\setcounter{question}{1}

\q The question.

\q Another question.

\sq First subquestion.

\sq Second subquestion.

\q \sq \dots

\sq \dots{ } Some more subquestions \dots

\sq \dots

\t
```

---

Subquestions are letters but this can be customized inside the class.



## 4.2 Figures

Old DMS provides a macro for figures. To insert a figure, just use

```
\fig{<path>}{<caption>}{<label>}{<width>}.
```

<path> is just the path of the image you want to put in.

<caption> is what will appear in the caption.

<label> is the figure label.

<width> is the width of the figure according to `\textwidth`. 1 will make the figure the full text width, 0.5 will make it half as wide as the text. Put nothing in the braces and it will make the figure 0.7 times the width of the text.

For example, this code

---

```
\fig{figures/bliss.jpg}{Bliss}{fig:bliss}{.6}
```

---

will provide the following figure (figure 2).



Figure 2 – Bliss

The macro has the `[ht!]` parameters in it, so  $\text{\LaTeX}$  will do its best to place the figure where you want it to be.

### Multiple figures

Multiple figures are useful but quite long to make. It can be slightly simplified by using the following code.

---

```

\begin{figure}[ht!]
  \centering
  \subfig{figures/1s.png}{1s configuration}{fig:1s}{.3}
  \subfig{figures/2p.png}{2p configuration}{fig:2p}{.3}\\
  \subfig{figures/3d.png}{3d configuration}{fig:3d}{.3}
  \subfig{figures/4f.png}{4f configuration}{fig:4f}{.3}
  \caption{Atomic orbital shapes}
  \label{fig:orbitals}
\end{figure}

```

---

This will give the figure 3.

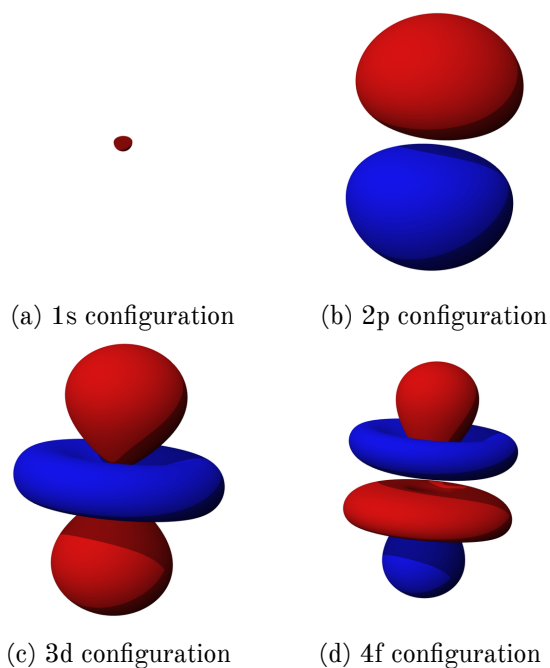


Figure 3 – Atomic orbital shapes

`\subfig` works just like `\fig` and takes the same parameters.

Subfigures can be referenced too: figure 3c.

I somehow struggled to create a simpler `multifig` environment that would automatically create the big figure with the caption and label. For more information, feel free to see section 7.

### 4.3 Math and physics

Old DMs gives features to write math and physics faster.

For the usual number sets, the following commands

`\N`, `\Z`, `\Q`, `\R`, `\C` will display these:

$$\mathbb{N}, \mathbb{Z}, \mathbb{Q}, \mathbb{R}, \mathbb{C}.$$

For the powers of ten, this command `\ee{}` allows to do it easily:

`h = 6.63\ee{-34} \;\text{J\cdot s}` gives

$$h = 6.63 \cdot 10^{-34} \text{ J} \cdot \text{s}.$$

For the units, this class includes the SIunits package, which documentation is at <https://ctan.org/pkg/siunits>.

As an example, this

`\unit{1}{\joule} = \unit{1}{\kilo\gram\square\meter\rpsquared\second}` gives

$$1 \text{ J} = 1 \text{ kg} \cdot \text{m}^2 \cdot \text{s}^{-2}.$$

In order to give many physics shortcuts, Old DMs includes the physics package. Some examples of what is possible to do with it:

`\int \frac{x}{1+x^2} dx` gives

$$\int \frac{x dx}{1+x^2} ;$$

`\frac{du}{dt}` gives

$$\frac{du}{dt} ;$$

`\frac{d^5 f}{dx^5}` gives

$$\frac{d^5 f}{dx^5} ;$$

`\frac{d}{dt} \frac{\partial L}{\partial \dot{q}_i} - \frac{\partial L}{\partial q_i} = 0` gives

$$\frac{d}{dt} \frac{\partial L}{\partial \dot{q}_i} - \frac{\partial L}{\partial q_i} = 0 ;$$

`\bra{\Phi} \ket{\Psi}` gives

$$\langle \Phi | \Psi \rangle .$$

**Note:** the differential operator  $d$  is here in roman instead of italics. It is a convention that can be changed in the `physics` package inclusion.

There is much more packed in `physics`, so feel free to check the documentation at <https://ctan.org/pkg/physics>.

## 4.4 Code

Inline snippets and code blocks are possible, both with automatic color highlighting.

To insert a piece of code in an inline code, use

```
\inlinecode{<language>}{<your code>}.
```

For example, this `\inlinecode{python}{def f(x):}`

will give this `def f(x):`.

If your code uses braces like  $\text{\LaTeX}$ , it is possible to use another separator, like `_..._`. For example, this

```
\inlinecode{c}_for(int i=1; i <= j; i++){printf("%d,i)}_
```

will give

```
for(int i=1; i <= j; i++){printf("%d,i)}.
```

For blocks of several lines of codes, the environment `codebox` is provided:

---

```
\begin{codebox}{python}
import numpy as np
import matplotlib.pyplot as plt

def f(x):
    return -np.exp(-x)
\end{codebox}
```

---

will give

---

```
1  import numpy as np
2  import matplotlib.pyplot as plt
3
4  def f(x):
5      return -np.exp(-x)
```

---

The environment `codeboxnonos` will give the same result without line numbering.

These macros are based on the minted package. It is very complete, so feel free to check the documentation here: <https://www.ctan.org/pkg/minted>.

To add captions to code boxes, use `\captionof{listing}{<your caption>}`.

For example, this

---

```
\captionof{listing}{"Hello World!" in C.}
\begin{codebox}{c}
#include <stdio.h>

int main() {
    printf("Hello, World!");
    return 0;
}
\end{codebox}
```

---

gives

Listing 1 – "Hello World!" in C.

---

```
1  #include <stdio.h>
2
3  int main() {
4      printf("Hello, World!");
5      return 0;
6  }
```

---

## 4.5 Lists, tables and other

This class provides shortcuts for the environments `itemize` and `enumerate`, which are respectively `ul` and `ol`.

For example

---

```
\begin{ul}
  \item item 1;
  \item item 2;
  \item item 3.
\end{ul}
```

---

gives

- item 1;
- item 2;

- item 3.

`\begin{ol}...\end{ol}` can be used for numbered lists.

For tables, individual cases are so specific that macros are not that useful. However, this class includes `tabularx` for adaptive columns and `booktabs` for cleaner tables.

The example given in table 1 is obtained with

---

```

\begin{table}[ht!]
  \centering
  \caption{Energy states of a proton}
  \label{tab:energy}
  \begin{tabularx}{.6\textwidth}{llllXl}
    \toprule
    \midrule
    \multicolumn{6}{l}{Ground state} \\
    $n$ & $l$ & $m_l$ & $m_s$ & & Energy $E_1$ (eV) \\
    \midrule
    1 & 0 & 0 & +1/2 & & - 13.6 \\
    1 & 0 & 0 & -1/2 & & - 13.6 \\
    & & & & & \\
    \multicolumn{6}{l}{First excited state} \\
    $n$ & $l$ & $m_l$ & $m_s$ & & Energy $E_2$ (eV) \\
    \midrule
    2 & 0 & 0 & +1/2 & & -3.4 \\
    2 & 0 & 0 & -1/2 & & -3.4 \\
    2 & 1 & 1 & +1/2 & & -3.4 \\
    2 & 1 & 1 & -1/2 & & -3.4 \\
    2 & 1 & 0 & +1/2 & & -3.4 \\
    2 & 1 & 0 & -1/2 & & -3.4 \\
    2 & 1 & -1 & +1/2 & & -3.4 \\
    2 & 1 & -1 & -1/2 & & -3.4 \\
    \midrule
    \bottomrule
  \end{tabularx}
\end{table}

```

---

`tabularx` takes a width parameter. The column type `x` is left-aligned with adaptive width to let the table take the width given. `y` is for centered adaptive columns.

The documentations of `booktabs` and `tabularx` can be found at <https://www.ctan.org/pkg/booktabs> and <https://www.ctan.org/pkg/tabularx>.

## 5 Package inclusions

Here is a list of all packages included in the class.

Encoding	inputenc fontenc
Geometry and color	xcolor graphicx setspace fancyhdr mdframed
Typography	microtype
Figures and tables improvement	tabularx booktabs caption
Fonts and symbols	amsfonts mathrsfs amsmath mathspec
Nerdy stuff	empheq physics SIunits
Bibliography	natbib
Miscellaneous	hyperref
Code	minted

## 6 Adaptation and customization

### 6.1 Language

It is possible to change the language of the document using the `polyglossia` package. It changes the table of contents, list of figures, list of tables headers, and the figures and tables captions.

However it does nothing for the listing captions and list of listings. To change these to French, for example, use

---

```
\renewcommand{\listingscaption}{Code source} % caption change
\renewcommand{\listoflistingscaption}{Liste des codes sources} %
↪ lol header change
```

---

## 6.2 Page layout

The geometry, margins, and page size are like vanilla L<sup>A</sup>T<sub>E</sub>X. It can be changed using the geometry package to suit everyone's taste.

Old DMs uses fancyhdr to change the headers and footers setup. It displays nothing on the header, and the folio on the right footer.

The class can take a twoside argument, just like article, which changes the layout to put asymmetrical margins, and the folios on the outside part of the footer.

For more header and footer customization, check <https://www.ctan.org/pkg/fancyhdr>.

## 7 Issues

### 7.1 Possible compilation errors

If compilation fails, make sure your L<sup>A</sup>T<sub>E</sub>X distribution is up to date, and that compilation is made with X<sub>Y</sub>L<sup>A</sup>T<sub>E</sub>X.

If minted spits obscure errors, try to delete the \_minted-main folder and re-compile.

### 7.2 Problems within the class

#### Multi figure environment

I struggled to create a big environment for multi-figures. Subfigures are currently wrapped in one figure environment. The problem is, it is hard to create a custom environment with parameters which are called on the `\end{environment}`.

#### Environments for tables

Tables are all unique, I did not achieve to create something to normalize their form or simplify their usage in L<sup>A</sup>T<sub>E</sub>X.



### Compilation time with $\text{\TeX}$ *maker*

`minted` does take a lot of resources, if you have many code boxes. The compilation time, especially with  $\text{\TeX}$ maker, can be a bit long.

## 8 Sauce

Here is Old Dms's source code. It is also available at <https://github.com/sylvain-kern/old-dms>.

Listing 2 – `old-dms.cls`

---

## References

- [1] Install custom .cls using TeX Live in local directory – TeX – LaTeX Stack Exchange. <https://tex.stackexchange.com/questions/96976/install-custom-cls-using-tex-live-in-local-directory>
- [2] Installing a class – TeX - LaTeX Stack Exchange. <https://tex.stackexchange.com/questions/10498/installing-a-class>
- [3] wikipedia.org, LaTeX – Wikipedia. <https://en.wikipedia.org/wiki/LaTeX>.

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