

practicalreports Documentation

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Author: Justin Cawood

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1 Practical Reports Package

This package provides macros for displaying scientific notation, simple title pages, tables, figures, headers footers.

2 Importing the Package

Import the package by typing `\usepackage{practicalreports}` at the top of the tex file.

3 Required Packages

All of the below packages are required for the macros within this package. They should be installed when you install this package

- **array**
- **mathtools**
- **longtable**
- **scrextend**
- **float**
- **fancyhdr**
- **lastpage**
- **pdfpages**
- **pdffor**

4 Exponent Macro

This macro is much quicker and easier than the rest of the scientific notation macros in this package.

4.1 How to use it

To use this macro simply type "**value** `\E{Power}` **units**". eg. `2.997 \E{8} m$s^ {-1}` This will output $2.997 \times 10^8 \text{ ms}^{-1}$. The **value** and **units** are not required, so the macro can be also used like this, `\E{8}`, this will output $\times 10^8$.

4.2 Useful tricks

If you are already in math mode use `\e` instead

If the power/exponent being use in the scientific notation is only 1 number or character, there is no need for the curly brackets `{}`. It is much quicker to simply type `\E8` than to type `\E{8}`. They both output the same result $\times 10^8$. However this wont work for powers with more than one number or character eq. `\E88` will output $\times 10^88$. Instead this will have to be written as `\E{88}`, this will output $\times 10^{88}$.

5 Setting the page to fancy

Before any headers or footers can be used the pages need to be set to fancy. This can be done by typing `\setpagefancy` just below the import statements but not inside the `\begin{document}` `\end{document}`. Once the page is set to fancy the page numbering will go away, this can be added back in with the macros from this package. Before the page is set to fancy is shown in Figure 1 and after the page is set to fancy is shown in Figure 2

Normal Page

This is a normal page

Figure 1: Normal page

Setting the page to fancy

This is a fancy page

Figure 2: Output of the macro `\setpagefancy`

5.1 Headers

To add a header use the macro `\header{left header}{center header}{right header}`. An example is shown in below and in Figure 3.

`\header{left header}{center header}{right header}` this will display

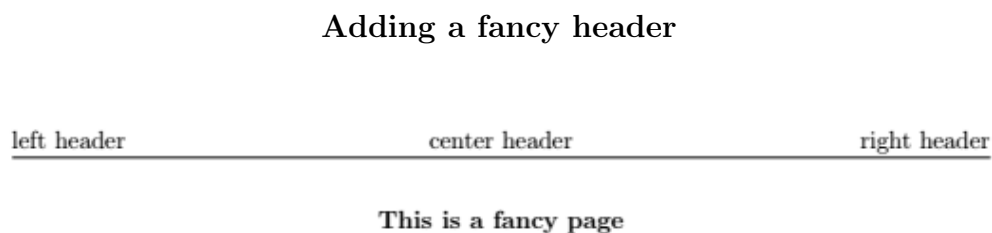


Figure 3: Output of the macro `\header{left header}{center header}{right header}`

5.2 Footers

To add a footer use the macro `\footer{left footer}{center footer}{right footer}`. An example is shown below and in Figure 4.

`\footer{left footer}{center footer}{right footer}` this will display

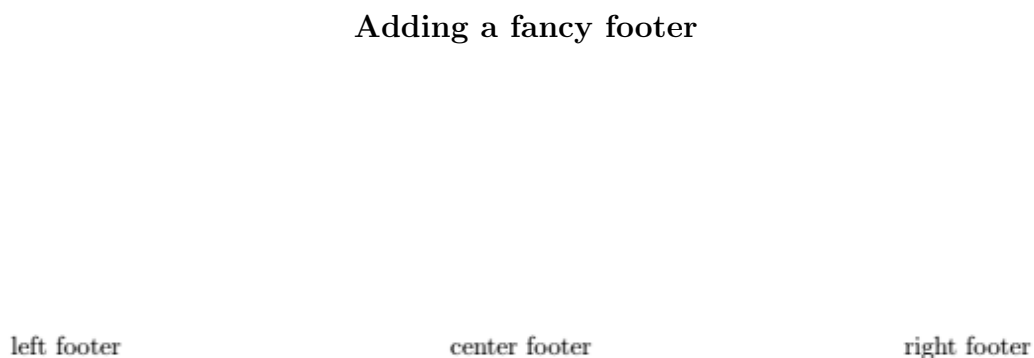


Figure 4: Output of the macro `\footer{left footer}{center footer}{right footer}`

6 Title Page

To create a title page, at the beginning of the document after the `\begin{document}` type `\newtitlepage{Title}{Author}{Date}`. An example is shown below and the result is shown

in Figure 5

New title page

Name
Author
Date

Figure 5: Result of `\newtitlepage{Title}{Author}{Date}`

7 Figures

These macros can include figures and reference them in a tex file.

7.1 Including a Figure

To include a figure type `\newfigure{Caption}{Description}{file_name.jpg}{reference}`.

$\text{\LaTeX}$ accepts the file types pdf, jpg and png for figures. Figure 6 is an example of using this macro.

Example Figure

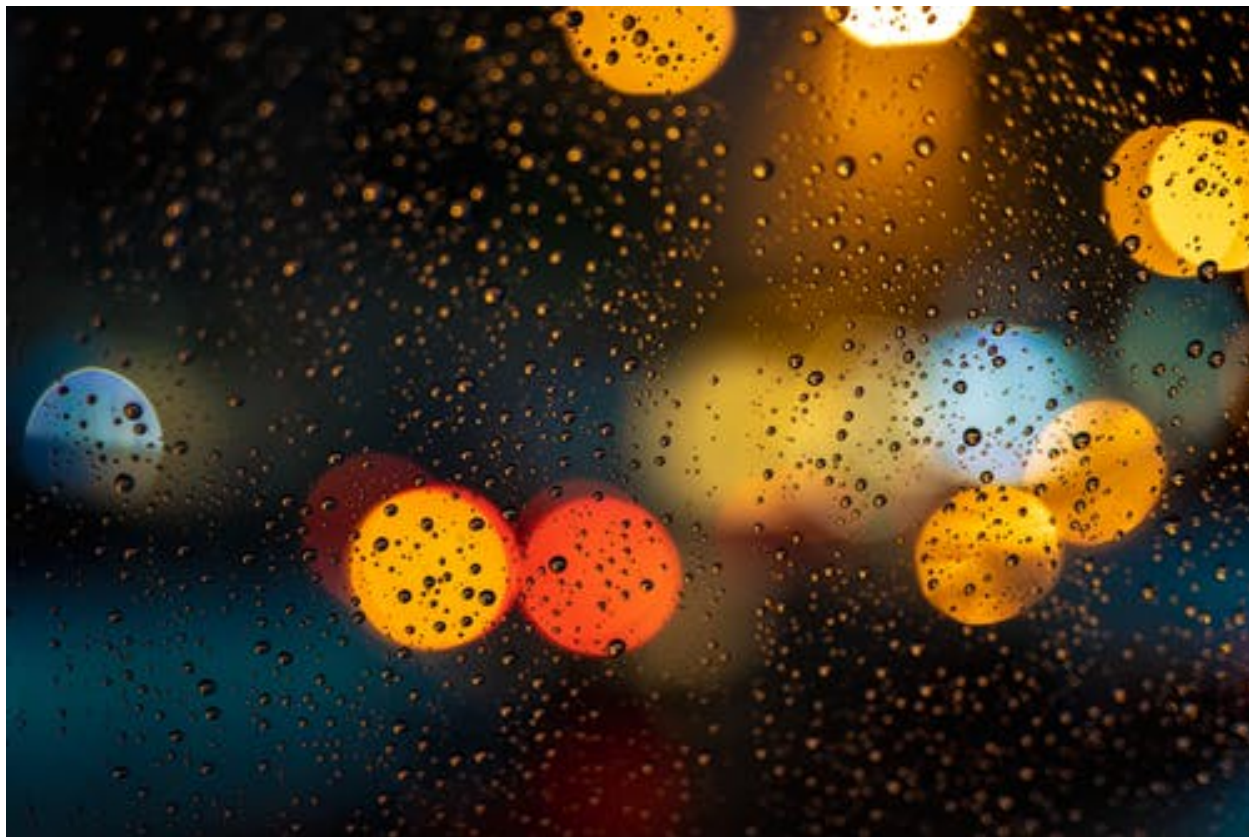


Figure 6: Result of using `\newfigure{Caption}{Description}{file name}{reference}`

Scaling Figures

This macro allows you to shrink figures that are too large or expand figures that are too small. The macro is in the form

`\newsfigure{Caption}{Description}{file_ name.jpg}{reference}{scale factor}`

7.1.1 Shrink Example

Figure 7, shows an example of decreasing the size of a figure.

Example Figure

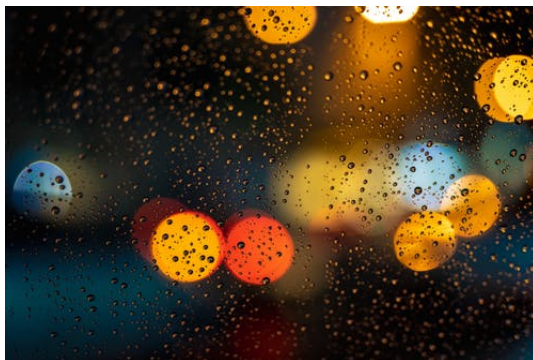


Figure 7: Result of using `\newsfigure{Caption}{Description}{file name}{reference}{0.4}`

7.1.2 Expand Example

Figure 8, shows an example of increasing the size of a figure.

Example Figure

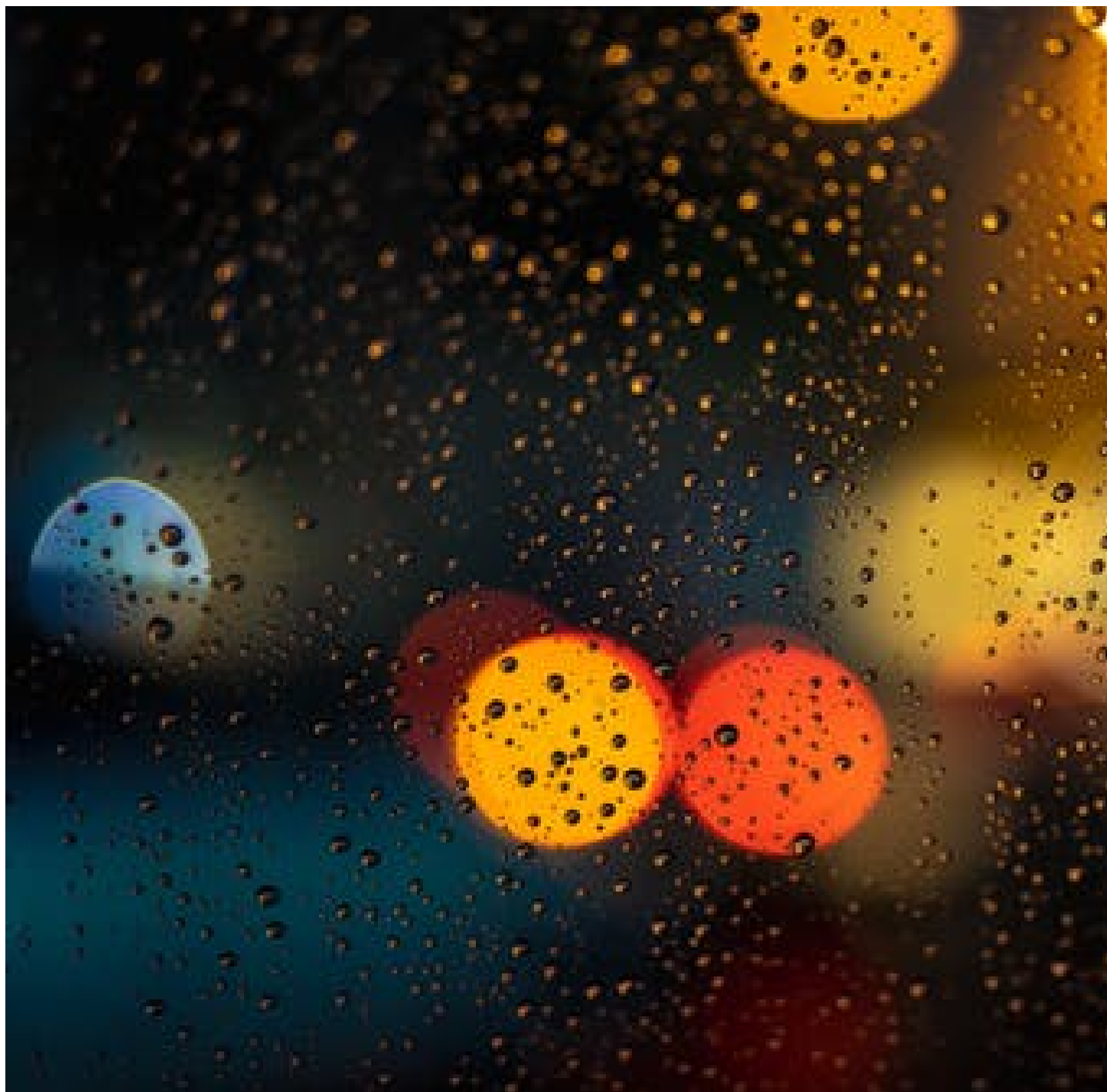


Figure 8: Result of using `\newsfigure{Caption}{Description}{file name}{reference}{1.6}`

7.2 Referencing a Figure

This macro allows figures to be referenced by simply typing `\refigure{reference}`. If a figure is ever added or removed, this macro will take care of the numbering so the figures are always referenced correctly. An example is shown below.

`\refigure{example-figure}` this will output "Figure 6". This is the from the section of how to include a figure. Sometimes instead of displaying "Figure 6", instead it might display Figure ??. This can be fixed by building the tex file a second time. If this does not work then the reference inside the `{}` is wrong.

8 Tables

These macros can create normal tables, long tables and reference tables. The difference be normal tables and long tables is, once a normal table becomes large than the size of an entire page the extra content will be cut off so the table fits the page. However a long table when is becomes larger than an entire page the extra content will be pushed to the next page.

8.1 Creating a Table

To create a normal table use the macro

```
\newtable{Caption} {Column Data Positioning} {Column Headings} {Table Data}
{Reference}
```

It is often more readable to type the macro in the form below.

```
\newtable{Caption}
{Column Data Positioning}
{Column Headings}
{Table Data}
{Reference}
```

An example of a normal table is show below and the output is Table 1

```
\newtable{Normal Table Example}
{lcr}
{Left Positioned Column & Center Positioned Column & Right Positioned Column}
{1 & 2 & 3 \ \
1 & 2 & 3 \ \
1 & 2 & 3 \ \
1 & 2 & 3 \ \
1 & 2 & 3}
{Normal-Table}
```

Table 1: Normal Table Example

Left Positioned Column	Center Positioned Column	Right Positioned Column
1	2	3
1	2	3
1	2	3
1	2	3
1	2	3

The "Column Data Positioning" field is required. It accepts any of the three positioning values "l = left c = center r = right", each column need to have a positioning value eg. if there are two columns the possible positions are " ll, lc, lr, cl, cc, cr, rl, rc, or rr". The positioning field is required however the other fields aren't. But to display something in the table the each field will need something.

8.2 Creating a Long Table

The long table macro is very similar to the normal table macro To create a long table use the macro

```
\newlongtable{Caption} {Column Data Positioning} {Column Headings} {Table Data}
{Reference}
```

It is often more readable to type the macro in the form below.

```
\newlongtable{Caption}
{Column Data Positioning}
{Column Headings}
{Table Data}
{Reference}
```

An example of a long table is show below and the output is Table 2

```
\newlongtable{Long Table Example}
{lcr}
{Left Positioned Column & Center Positioned Column & Right Positioned Column}
{1 & 2 & 3 \ \
1 & 2 & 3 \ \
1 & 2 & 3 \ \
1 & 2 & 3 \ \
1 & 2 & 3 \ \
1 & 2 & 3 \ \
1 & 2 & 3 \ \
1 & 2 & 3 \ \
1 & 2 & 3 \ \
1 & 2 & 3 \ \}
```

[illegible]

Table 2: Long Table Example

[illegible]

Table 2: *Continued*[illegible]

Clearly this table was too long to fit on the previous page so the long table macro pushes the excess to the next page. A normal table would have cut off the excess and wouldn't have displayed it.

The column positioning for a long table is the same as for a normal table.

8.3 Referencing a Table

To reference a table the macro `\reftable{reference}` can be used. If a table is ever added or removed, this macro will take care of the numbering so the tables are always referenced correctly. Below is an example of referencing tables.

`\reftable{Normal-Table}` is the example normal table used in this manual. This will output "Table 1 is the example normal table used in this manual."

Another example is shown below

`\reftable{Long-Table}` is the example long table used in this manual. This will output "Table 2 is the example normal table used in this manual."

9 Boxing Content

To place a box around content simply use the macro `\boxanswer{Content To be boxed}` this will output

ContentTobeboxed

The words are joined together and displayed differently because this macro is already in math mode. So to display normal text use the `\text{}` macro. So the previous example can be written as

`\boxanswer{\text{Content To be boxed}}` This will display

Content To be boxed

Most of the time this will be used to box an answer to a maths question. An example of this is shown below.

`\boxanswer{ $y = mx + c$
 $E = mc^2$
 $E = hf$ }`

This will output

$$y = mx + c$$
$$E = mc^2$$
$$E = hf$$

10 Other Macros

10.1 Shift

The shift macro allows you to shift content left or right. `\shift{shift amount in cm}{content to be shifted}`.

Tables can be shifted.

10.2 Good Footer

The `\goodfoot` macro will do the footer for you in the form "Page x of n". The page must be set to fancy first though using the `\setpagefancy` macro.

10.3 Join Multiple Reports

To combine multiple pdf files together into one single pdf file use the macro `\joinpdfs{}`. You don't need the file extension just list all the pdf files that you wish to join as follows.

`\joinpdfs{pdf_1, pdf_2, pdf_3, pdf_4, .....}`.

This macro should be used in a new tex file because the pdf files will be joined as one file with the name of the tex file this macro is used in.

The pdf files being joined must be in the same directory as the tex file this macro is used in.

11 Appendices

11.1 Appendix A - List of Figures

List of Figures

1	Normal page	3
2	Output of the macro <code>\setpagefancy</code>	3
3	Output of the macro <code>\header{left header}{center header}{right header}</code> . .	4
4	Output of the macro <code>\footer{left footer}{center footer}{right footer}</code>	4
5	Result of <code>\newtitlepage{Title}{Author}{Date}</code>	5
6	Result of using <code>\newfigure{Caption}{Description}{file name}{reference}</code> . .	6
7	Result of using <code>\newsfigure{Caption}{Description}{file name}{reference}{0.4}</code>	7
8	Result of using <code>\newsfigure{Caption}{Description}{file name}{reference}{1.6}</code>	8

11.2 Appendix B - List of Tables

List of Tables

1	Normal Table Example	10
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2	Long Table Example	11
2	<i>Continued</i>	12