

# Troff template (batteries included)

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## ABSTRACT

This document is a brief demonstration of what **troff** can do. The simplest commands are presented along with some personal macros. **Take what you need.** The source code of this document contains many useful comments.

Code available at: <https://git.baguette.netlib.re/karchnu/groff-template>

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### Before we start

*Why a PDF instead of a website?* Documentation is about providing information in a comprehensive manner. There are different ways, roughly summarised in the following as *website* and *book* (maybe as a PDF document and not a physical book, but you get the idea).

Doc.	Perks
Web	Quick and easy to create and share, very small contributions are shared, easily updated
Book	All related informations in a single place, collectible, very little updates

From the constraint of having to deliver a final document that cannot be updated, comes one of the biggest perks of books. Authors are forced to write to the best of their abilities.

Doc.	Flaws
Web	All different, perishable, non easily collectible for backups, scattered information (articles), often not pedagogical or with little effort put in explanations, hard to follow updates
Book	Way harder to write

Books can be written using a lot of different tools, including *LaTeX* or WYSIWYG editors such as *Libreoffice*. None are simpler or withstood the test of time better than troff. Troff still works almost as its debuts in 1970, and as of today, it produces high quality documents with little effort or complexity.

## 1. Sections and paragraphs

Some indented paragraph. As you can see, contrary to the first one you encountered in the previous section.

### 1.1. Sub-section

Some unindented paragraph.

Basics of sections and paragraphs in troff (ms macros):

```
.NH
Section
.PP
Some indented paragraph.
.NH 2
Sub-section
.LP
Some unindented paragraph.
```

## 2. Some highlights: the basics

*Combining several ways* to highlight some text.

```
.I "Combining" \ " italics
.U "several" \ " underlined
.B "ways" \ " bold
to
.BX highlight \ " box
.ft CW \ " changing font: constant width
some text.
.ft \ " reverting to previous font
```

Avoiding underlining the final point.

```
.UL "final point" . \ " point is a second parameter
```

(Again, in italics but surrounded)

```
.I "Again, in italics but surrounded" ) (
\ " order: text-in-italics after before
```

### 3. Brief overview of custom macros (in macros.ms)

The file `macros.ms` includes many small contributions to easily make nice PDF outputs. For example, the following code and its result:

```
.EXPLANATION1
Very important sentence.
.EXPLANATION2
```

| **Very important sentence.**

---

There is also an helper to make citations.

```
.CITATION1
Seriously, these macros are awesome guys.
.CITATION2
.NAMECITATION "Albert Einstein"
```

| *Seriously, these macros are awesome guys.*

— Albert Einstein

---

```
.FRAC 5.5 20
```

Produces:  $5.5/20$

---

Meta informations are in smaller text size and in constant width, with this code:

```
.METAINFO1
Some text.
.METAINFO2
```

Example:

This is how I put meta informations in my documents: the text is smaller and in constant width.

---

These horizontal lines are produced by

```
.HORIZONTALLINE
```

---

Listing stuff

- with
- bullet
- points

```
.BULLET with
.BULLET bullet
.BULLET points
.ENDBULLET
```

---

Numbered lists

- 1 Orange

- 2 Apple

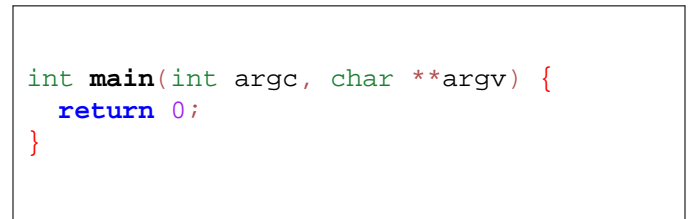
- 3 Pear

```
.ENUM Orange
.ENUM Apple
.ENUM Pear
.ENDENUM
```

### 4. Source code syntax highlighting

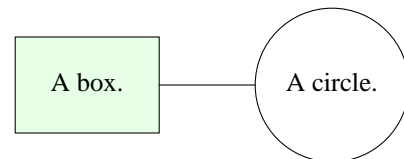
Source code for a number of languages can be colored with the following code<sup>1</sup>:

```
.SOURCE C
int main(int argc, char **argv) {
    return 0;
}
.SOURCE
```



### 5. Some figures with pic.

This is a paragraph before the picture.



This is written in the code this way:

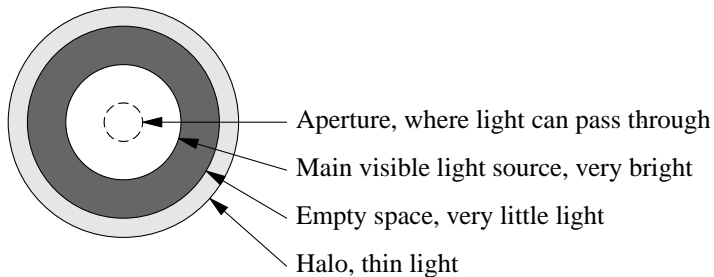
```
.PS
.defcolor lightgreen rgb 0.9 1.0 0.9
box "A box." shaded "lightgreen"
line
circle "A circle." rad 0.4
.PE
```

### Read the source code for the next figures.

Both figures have very few lines of code. The source code can be read without prior knowledge of `pic`, it's almost plain English!

---

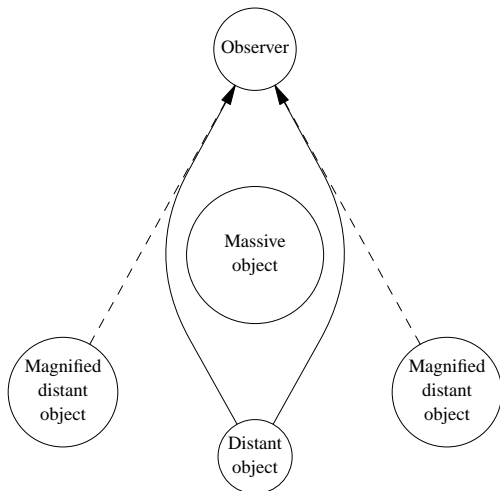
1. Under the hood, this involves the `source-highlight` software and the script `ghighlight` in the `./bin/` directory (see the Makefile for more information).



### Circular diffraction

Seriously, just check the source code. It's filled with dead simple lines, such as:

```
circle rad rad_large_circle fill fill_large_circle
```



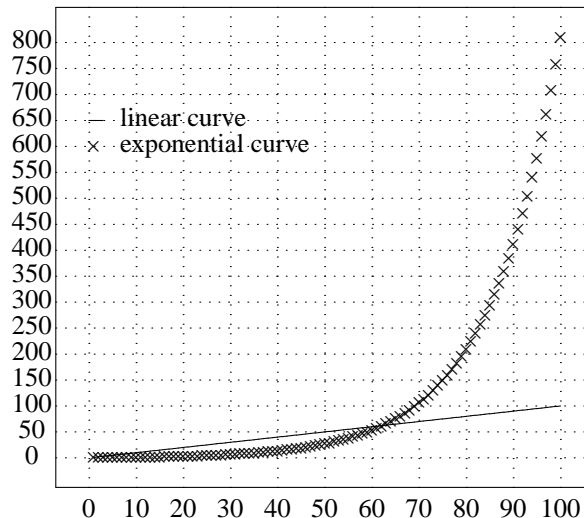
### Gravitational lensing

Both figures came from my summary of the book **A Universe From Nothing<sup>2</sup>** from *Lawrence Krauss*.

#### 6. Some graphs with grap.

2. Available at: <https://t.karchnu.fr/doc/universe-from-nothing.pdf>

Exponential curves: growth over time (7%)



Exponentials: always fun and games when talking about economy. A complete nightmare when talking about mineral extraction costs.

```
.G1
GROWTHFACTOR=0.07
grid bot dotted from 0 to 100 by 10
grid left dotted from 0 to 800 by 10
frame ht 2.5 wid 2.8
define expo { $1+$1*GROWTHFACTOR }
value = 1
draw LINEAR solid
for i from 1 to 100 by 1 do {
  next LINEAR at i, i
  times at i, value
  value = expo(value)
}
line from 0,650 to 3,650
" linear curve" ljust at 1,650
" exponential curve" ljust at 1,600
times at 1,600
label top "Exponential curves: growth over time
(7%)" up -.2
.G2
```

#### 7. Some equations with eqn

Let's see a few equations.

$$E = mc^2$$

```
.EQ
E = mc sup 2
.EN
```

Inline equations, via the "\$" sign:

```
.EQ
delim $$
.EN
Inlining equations also is possible: $a sup b = c$
```

Inlining equations also is possible:  $a^b = c$   
And this can be set off, with "delim off".

### 8. UTF-8

UTF-8 is wonderful. This wasn't implemented in troff, since it comes from 1972, and neither in the later implementation **groff**. But, you can write UTF-8 characters anyway, thanks to the troff preprocessor **preconv**.

Examples (all written in UTF-8 in the troff file):

```
©@àÀÇçéÉÛÛâÂÔî;œÆæÆ
```

### 9. Tables with tbl

Column1	Column2
cell	cell content
cell	Hello this is a way longer content, way more than what the cell can hold in a single line.

```
.TS
allbox tab(:);
c | c
c | lew(2.5i).
Column1 : Column2
cell : cell content
cell :T{
Hello this is a way longer content, way more than
what the cell can hold in a single line.
T}
.TE
```

### 10. Tables with hdtbl

<i>first cell</i>	1*2	hello
2*1	2*2	
3*1	Last cell	

Table 1: This is a fine table. This is a fine table. This is a fine table. This is a fine table. This is a fine table. This is a fine table.

<i>first cell, long message</i>	second	3
---------------------------------	--------	---

### 11. Some references

Let's reference a few documents, such as A Universe from Nothing (Krauss, 2012) and a book about the excellent Haskell language (Lipovača, 2011).

Let's reference a few documents, such as A Universe

```
from Nothing
.[
universe
.]
and a book about the excellent Haskell language.
.[
haskell
.]
```

### 12. Images

Only PDF can be included, so images need to be converted beforehand.

```
.PDFPIC -R "./are-you.pdf" 3.5
```



"Are ya ready kids?"



"Are you all prepared, children?"



"Are you, a group of young people both male and female who are too young to be considered adults, prepared for the following unspecified actions?"

Note: for now, on my system, I need a hack. The included PDF has no length, despite having installed the poppler-utils package. So, I added vertical spaces by hand (with *sp* and *sv* requests). The length is an empirical constant. I'll try to search for a better way, someday.

### 13. Final words

It is customary in old tools such as troff to read the source code and hack your way. Once you're familiar with the basics, if you need something that isn't in the official troff documentation, don't hesitate to read provided macros (mines, but also ms macros as well, for instance). You'll quickly learn a lot.

Keep in mind that **roff** is an old tool, and some behaviors are actually dated and hard to follow, but this is documented!

| [...] it is better not to use this feature to avoid confusion.  
— Groff documentation, about (some) escape sequences.

| Don't use this command! [...]  
— Groff documentation, about the "f" drawing request.

| *Despite of being silly, [...]*

— Groff documentation, about the tickness ("t") drawing request.

## References

Lawrence Krauss, *a Universe from Nothing*, Simon & Schuster (2012).

Miran Lipovača, *Learn You a Haskell for Great Good! No* Starch Press (2011).