

Creating Your Own Troff Macros

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1. What is troff

Troff vs Nroff.

- `troff(1)` - format documents for typesetting
- `nroff(1)` - format documents for terminal
- Implementations.
 - `groff`.
 - `neatroff`.
 - `plan9 troff`.
 - `heirloom doctools`.

Example of troff document.

```
.TL
Title of the document
.SH
First section.
.PP
This is a paragraph!
The following figure is a quotation.
.FS
.PP
I'd just like to interject for a moment.
What you're referring to as Linux,
is in fact, GNU/Linux,
or as I've recently taken to calling it,
GNU plus Linux.
.FE
```

Do not use low-level troff commands.

- **Requests:** low-level commands by troff.
- **Macros:** high-level commands by packages.
- Requests deal with fine formatting (indentation, spacing, point size, etc).
- Macros deal with text elements (title, paragraphs, figures, etc).

How to use troff?

- pre-processors
- troff
- post-processors

```
<file.roff pre | troff | post >file.ps
```

2. Troff requests

Writing a paragraph in plain troff.

```
.br      \" break line
.ft R    \" set font to roman
.ps 12    \" set point size to 12pt
.vs 14pt  \" set vertical space to 14pt
.sp 12pt  \" space down 12pt
.ne 3     \" get rid of orphans
.in 0     \" set paragraph indentation
.ti 5n    \" set first line indentation
I am a paragraph!
```

Number registers.

```
.br  
.ft R  
.ps \n(PS  
.vs \n(VS  
.sp \n(PDu  
.ne 1+\n(.Vu  
.in 0  
.ti \n(PIu  
I am a paragraph!
```

```
.\ " I am a comment!  
.\ " \nA  
.\ " \n(AB  
.\ " \n[ABCD]
```

Units of measure.

- c - Centimeters.
- i - Inches.
- m - Ems (font-dependent).
- n - Ens (font-dependent).
- p - Points.
- u - Device units.
- v - Vertical space.

```
.\" PI - Paragraph Indentation  
.nr PI 5n
```

How can we improve our paragraphs?

```
.br
.ft R
.ps \n(PS
.vs \n(VS
.sp \n(PDu
.ne 1+\n(.Vu
.in 0
.ti \n(PIu
I am a paragraph!
.br
.ft R
...\ " repeat all those requests
I am another paragraph!
```

A macro for paragraphs.

```
.PP
```

```
I am a paragraph!
```

```
.PP
```

```
I am another paragraph!
```

3. Macros

Defining a macro. There's an error here (people who use m4(1) or any macro processor can identify).

```
.de PP
.br
.ft R
.ps \n(PS
.vs \n(VS
.sp \n(PDu
.ne 1+\n(.Vu
.in 0
.ti \n(PIu
..
```

Changing a number register the macro uses.

```
.de PP
.br
.ft R
.ps \n(PS
.vs \n(VS
.sp \n(PDu
.ne 1+\n(.Vu
.in 0
.ti \n(PIu
..
.PP
Paragraph indented 5 ens (default).
.nr PI 3i
.PP
Paragraph indented 3 inches?
```


Escaping number registers.

```
.de PP
.br
.ft R
.ps \\n(PS
.vs \\n(VS
.sp \\n(PDu
.ne 1+\\n(.Vu
.in 0
.ti \\n(PIu
..
.PP
Paragraph indented 5 ens (default).
.nr PI 3i
.PP
Paragraph indented 3 inches!
```

Macros with arguments.

```
.de PP
.br
.ft R
.ps \\n(PS
.vs \\n(VS
.sp \\n(PDu
.ne 1+\\n(.Vu
.in 0
.ie \\$1 .ti \\$1u
.el .ti \\n(PIu
..
.PP
Paragraph indented 5 ens (default).
.PP 3i
Paragraph indented 3 inches!
```

4. Macro packages

Macro packages.

- Each macro package has a different set of macros.
- And a different set of number registers.

Macro	In -ms	In -mm
Paragraph	. PP/ . LP/ . IP	. P
Heading	. SH/ . NH	. HU/ . H
Title	. TL	. TL
Abstract	. AB, . AE	. AS, . AE
Author	. AU, . AI	. AU
Bold text	. B	. B/ . BI/ . IB
Italic text	. I	. I/ . IB/ . BI
Text size	. LG/ . SM	. S/ . SM
Lists	(does not have)	. BL/ . ML/ . DL/...

Why write our own macro package?

- Fine control of the output.
- Expand an existing macro.
- Understand how troff works.

5. Contents of a macro package

What does a macro package have?

- Macros for text elements (paragraphs, headings, title, etc).
- Page traps for margins.
- Diversions for figures.
- Initialization.

Macro for paragraphs.

```
.de PP  
.br  
.ft R  
.ps \\n(PS  
.vs \\n(VS  
.sp \\n(PDu  
.ne 1+\\n(.Vu  
.in 0  
.ti \\n(PIu  
..
```

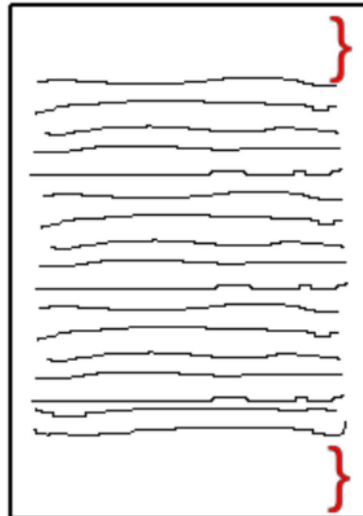

Macro for section headings.

```
.de SH
.br
.ft B
.ps \\n(PS+2
.vs \\n(VS+2
.sp 1
.ne 5
.in 0
.nr SH +1
\\n(SH.
..
```

Macro for title.

```
.de TL  
.br  
.ce  
.ft B  
.ps \\n(PS+4  
.vs \\n(VS+4  
.sp 4  
.in 0  
..
```

Page traps for top and bottom margins.



Page traps for top and bottom margins.

```
.de TM  \" top margin
'sp 1i  \" space 1 inch from the top
..
.de BM  \" bottom margin
'bp     \" break page
..
.wh 0    TM
.wh -1i  BM
```

Page trap for headers and footers.

```
.de FO  \" footer
.ft R
.ps \\n(PS-2
.tl  \" \" % \" \"
.ps \\n(PS
..
.wh -0.5i FO
```

Figures (table, image, code snippet, etc).

- A figure should not be broken between pages.
- If a figure is longer than the remaining of the page, write the figure in the next page.
- But how to get the length of a figure BEFORE writing it?
- Diversion!

Figures.

```
.de FS  \" figure start
.br
.sp  \\n( PDu
.di FI
..
.de FE  \" figure end
.br
.di
.ne  \\n(dnu
.FI
..
```

Code listing.

```
.de CS  \" code start
.br
.nf
.sp  \\n( PDu
.di CI
.ft CW

..
.de CE  \" code end
.br
.di
.ne  \\n(dnu
.CI
.fi
..
```


Font changing macros.

```
.de I \" italic font
.ft I
\\$1
.ft

..
.de B \" bold font
.ft B
\\$1
.ft

..
```

Initialization.

```
.nr PD 1v
.nr PS 12
.nr VS 14
.nr PI 5n
.fi      \" enable fill mode
.ll 16c   \" A4 line lenght for text
.lt 16c   \" A4 line lenght for .tl
.pl 29.7c \" A4 page length
```

6. Conclusion

Macros vs requests.

- Use the `-ms` macro package first.
- Expand the `-ms` macro to your needs.
- Write your own macro package.

Example of document.

```
.PP
Welcome to this document.
Good reading
.SH
First section.
.PP
Here's a quotation.
.FS
.PP
I'd just like to interject for a moment.
What you're referring to as Linux,
is in fact, GNU/Linux,
or as I've recently taken to calling it,
GNU plus Linux.
.FE
```

The end.

- Questions?