

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.

center, allbox;

c c c

1 1 1

1 1 1

1 1 1

1 1 1

1 1 1

1 1 1

1 1 1

1 1 1

1 1 1.

T{

Macro

T}T{

In -ms

T}T{

In -mm
T}

\bar{T} {
Paragraph
T}T{
.PP/.LP/.IP

T}T{
.P

T}

T{
Heading

T}T{
.SH/.NH

T}T{
.HU/.H

```
T}  
T{  
Title  
T}T{  
.TL  
T}T{  
.TL  
T}  
T{  
Abstract  
T}T{  
.AB, .AE  
T}T{  
.AS, .AE  
T}  
T{
```

Author

T}T{

.AU, .AI

T}T{

.AU

T}

T{

Bold text

T}T{

.B

T}T{

.B/.BI/.IB

T}

T{

Italic text

T}T{

. I
T}T{
. I/. IB/. BI
T}
T{
Text size
T}T{
. LG/. SM
T}T{
. S/. SM
T}
T{
Lists
T}T{
(does not have)
T}T{


```
.BL/ .ML/ .DL/...  
T}
```

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.

```
.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 length for text
.lt 16c  \" A4 line length 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?