

# 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.

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## **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.

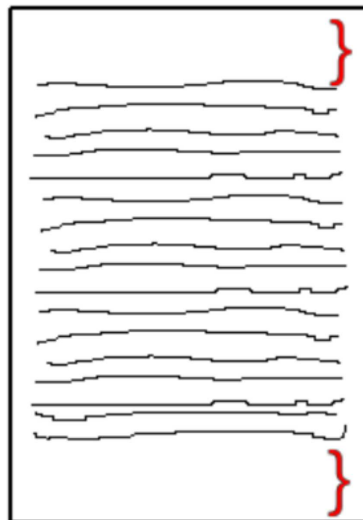
```
.de SH
.br
.ft B
.ps \\n(PS+2
.vs \\n(VS+2
.sp 1
.ne 5
.in 0
.nr SH +1
\\n(SH.
..
```



## 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

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First section.

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Here's a quotation.

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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.

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**The end.**

- Questions?