A VISUAL REFERENCE · troff / groff

troff / groff, one change at a time

From plain text to readable documentation, Unix man pages and longer technical manuals. Complete source. A small change. Its actual result.

The Org file is the canonical source. Read the HTML guide beside your work, or download its PDF and source for offline reading.

> **Last changes: 2026-10-31.** First edition: from plain text to complete documentation, man and mdoc references, longer ms manuals and native PDF/ terminal output.

52
worked examples

12
topic families

1
canonical Org source

All documents at a glance

Choose a document to open its complete roff source (previews show the first page), explanation and downloads.

Start with text and the command line

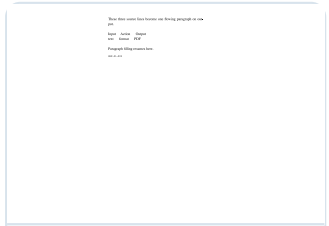
4 documents

troff formats a plain text file. groff is the command-line driver that connects preprocessors, the formatter and an output device. These first examples use raw requests before introducing document macros.



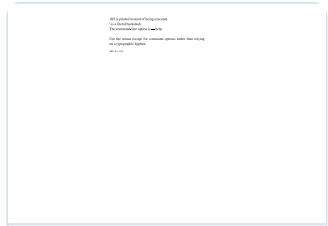
GRF-01-001

Your first typeset page



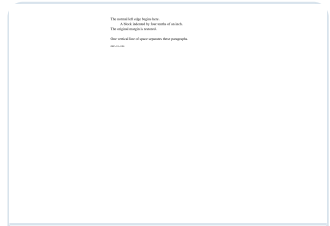
GRF-01-002

Filled and literal lines



GRF-01-003

Spaces, comments and literal control characters



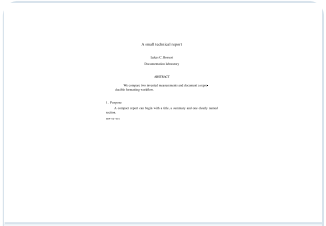
GRF-01-004

Units and relative changes

Build a document with ms

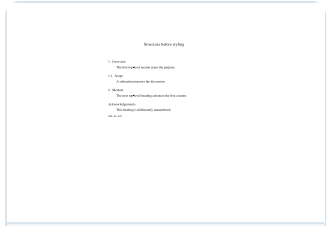
4 documents

The ms package supplies document-level structure: title, author, abstract, headings and paragraphs. Use its macros for structure instead of manually positioning every line.



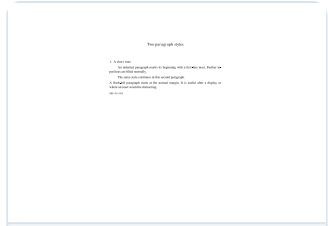
GRF-02-001

Title, author and abstract



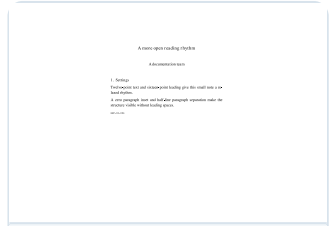
GRF-02-002

Numbered sections and subsections



GRF-02-003

Indented and flush-left paragraphs



GRF-02-004

Document-wide settings

Typography and readable source

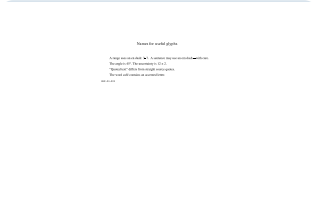
4 documents

Choose text styles intentionally and restore previous settings. Keep source sentences readable; input line breaks need not dictate output line breaks.



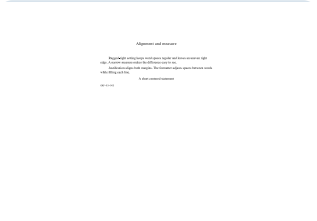
GRF-03-001

Emphasis and font families



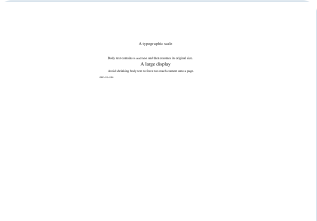
GRF-03-002

Special characters and accents



GRF-03-003

Alignment choices



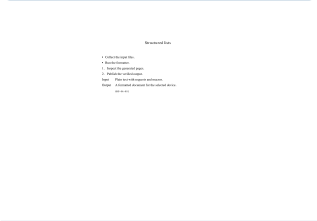
GRF-03-004

Size changes with restoration

Lists, code, quotations and notes

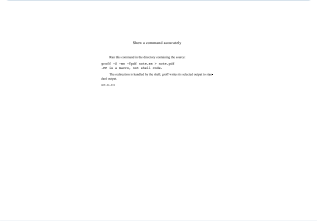
4 documents

Documentation needs more than paragraphs. Use stable structures for terms, commands, explanations and side material.



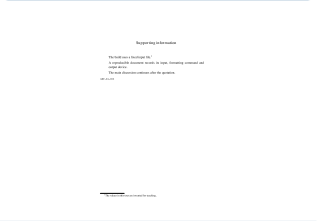
GRF-04-001

Bullets, numbers and terms



GRF-04-002

A code block with preserved spacing



GRF-04-003

Quotations and footnotes



GRF-04-004

Keep a small explanation together

Page layout, columns and running text

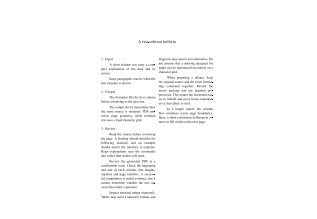
4 documents

Page furniture belongs in document settings. Use explicit breaks only when they express a deliberate document boundary.



GRF-05-001

Headers and page numbers



GRF-05-002

Two columns for a compact report



GRF-05-003

Landscape geometry in raw troff



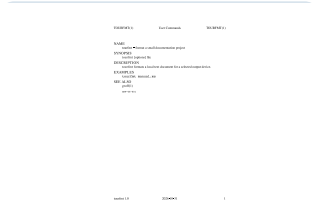
GRF-05-004

Page breaks and space reservations

Write a Unix man page

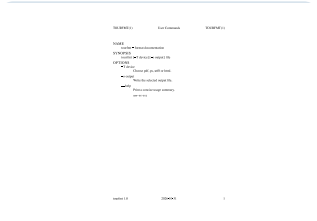
6 documents

The man package describes commands using conventional sections. latexmk is a real-world example: its distributed latexmk.1 source uses these macros. The examples here document an original fictional tool named tourfmt.



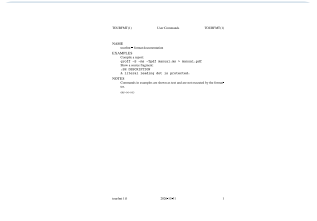
GRF-06-001

A complete minimal man page



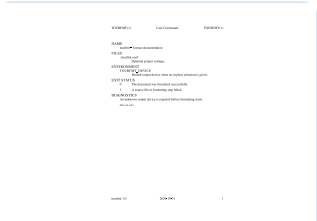
GRF-06-002

Command synopsis and options



GRF-06-003

Examples, literal code and escaping



GRF-06-004

Files, environment and exit status



GRF-06-005

Links and manual cross-references



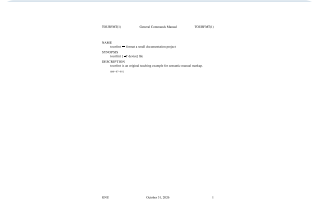
GRF-06-006

A small command reference ready to ship

Semantic manuals with mdoc

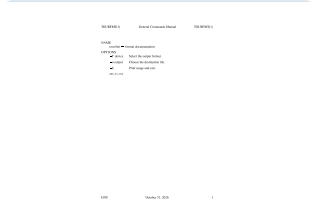
4 documents

The mdoc package is another manual-page language. Its semantic macros identify names, flags, arguments, paths and references; it is a separate package from man.



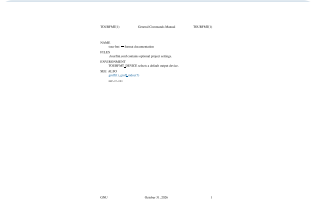
GRF-07-001

The mdoc document skeleton



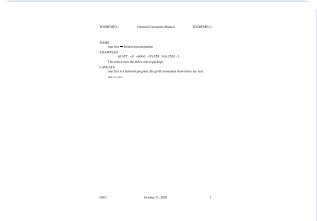
GRF-07-002

Options as a tagged semantic list



GRF-07-003

Paths, variables and references



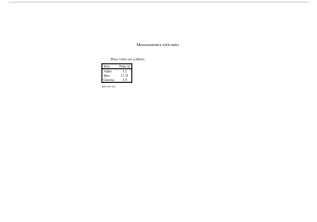
GRF-07-004

Literal examples and a caution

Tables with tbl

4 documents

The tbl preprocessor interprets TS/TE blocks before troff sees them. Keep table semantics explicit: headings, units, numeric alignment and short explanatory notes.



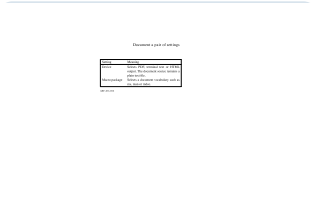
GRF-08-001

A small numeric table



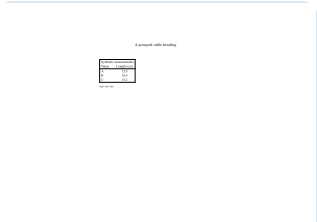
GRF-08-002

Heading rules and column alignment



GRF-08-003

A paragraph inside a table cell



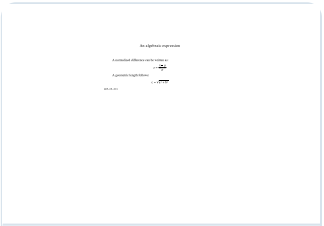
GRF-08-004

A table with a spanned heading

Mathematics with eqn

4 documents

The eqn preprocessor reads mathematics inside EQ/EN blocks. The examples use named operators and structures instead of manually positioning every character.



GRF-09-001

Fractions and square roots



GRF-09-002

Sums, limits and integrals



GRF-09-003

Matrices and scalable delimiters



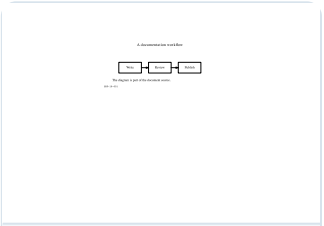
GRF-09-004

Inline equations in explanatory prose

Diagrams with pic

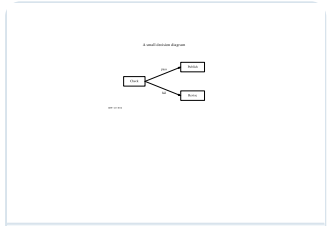
4 documents

The pic preprocessor describes shapes, relative placement and connections. Its native drawing commands fit into the same document as prose, tables and mathematics.



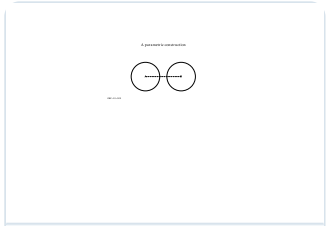
GRF-10-001

A left-to-right workflow



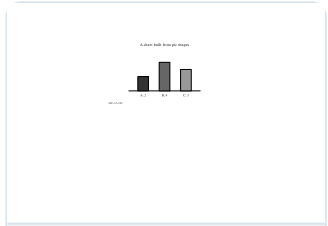
GRF-10-002

Branches and named anchors



GRF-10-003

Geometry from variables



GRF-10-004

A small chart from rectangles

Define reusable formatting

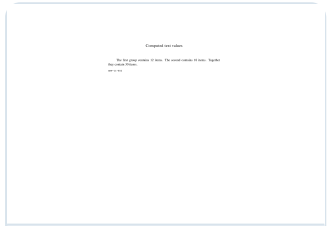
4 documents

Strings, registers and macros reduce repeated source. Keep custom names distinct from macro-package internals, and escape parameters when a macro definition must delay evaluation.



GRF-11-001

Strings for repeated names



GRF-11-002

Number registers and arithmetic



GRF-11-003

A macro with an argument



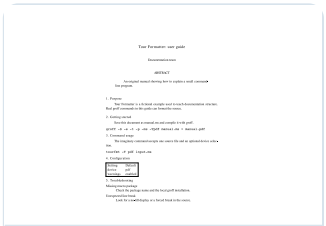
GRF-11-004

Conditional text for a chosen edition

Write and ship a longer manual

6 documents

These complete projects combine the earlier structures. They explain how to document purpose, installation, command usage, configuration, troubleshooting and maintenance in a readable manual.



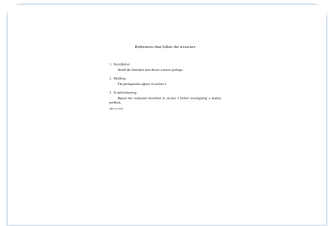
GRF-12-001

A user guide from title to troubleshooting



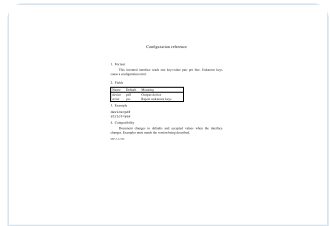
GRF-12-002

A manual with a generated contents page



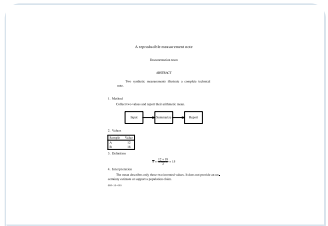
GRF-12-003

Stable references to numbered sections



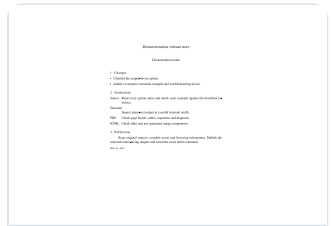
GRF-12-004

A compact API reference



GRF-12-005

A technical note with prose, table, math and diagram



GRF-12-006

A release note and documentation checklist

READING THE TOUR

Three ways to see a change

Document source

Read complete original roff input and the macro package used to format it.

Native pages

Inspect the first page and download the complete native PDF or terminal text.

Write a manual

Combine headings, examples, tables, equations and diagrams in a reproducible document.

Read from the beginning or jump to a stable example ID. Each example includes its complete input and captured result. Copy link preserves the address of the guide you are reading, including its current domain and path.

From a source file to a document

troff is a text formatter. GNU groff is a command-line driver and typesetting system around it. Write a plain text file in any editor, choose a macro package and output device, then run groff in a terminal. A standalone graphical editor is not required. Macro packages define a document vocabulary: `ms` for reports and longer prose, `man` for conventional Unix command references, and `mdoc` for semantic manual-page markup. Use one primary package for a document.

Install GNU groff with its PDF device and the standard `eqn`, `tbl` and `pic` preprocessors. A system-provided troff or mandoc may implement a different feature set; `groff --version` identifies the driver used here. The tour records the installed GNU groff version in provenance and in each native compiler log. Poppler supplies SVG conversion for this website; it is not needed to typeset a PDF with groff's own PDF device.

Download the first complete ms report, open a terminal beside it, and run:

```
groff -S -ms -Tpdf -P-pa5 GRF-02-001.roff > report.pdf
groff -S -ms -Tutf8 -P-c -P-b -P-u GRF-02-001.roff > report.txt
```

The shell's `>` saves standard output. Without it, PDF bytes would go to the terminal. Diagnostics go to standard error. `-S` selects safer mode; the examples need no shell execution or external commands from inside the document. Open `report.pdf` in a PDF viewer. The `utf8` device produces terminal text; the `grotty` options `-P-c -P-b -P-u` remove terminal styling sequences and overstrikes from the downloadable text. A normal `man` viewer can style terminal output itself.

Read the source beside its actual output

Each numbered example contains a complete independent document. The main code view shows its document body; expand the standalone source for page settings and the visible identifier added by the tour. Its `MACRO_PACKAGE` property records `none`, `ms`, `man` or `mdoc`; its `PAPER` property selects A5 portrait or landscape. The publishing command always runs `eqn`, `tbl` and `pic` with `-e -t -p`, so tables, equations and diagrams work without hidden prerequisites. Preprocessors read their own marked regions before troff formats the result.

A request or macro begins with a dot at the start of a source line. Ordinary lines become filled paragraphs unless no-fill mode or a display changes that behavior. A leading dot in a code sample must be protected with `\&`. Keep one sentence or logical clause per source line; it makes revisions easier to review without forcing the printed paragraph to follow those line breaks.

The gallery and SVG/PNG downloads show **the first page**. The native PDF contains **all pages** and embeds its complete roff source. Each example also provides the actual `utf8` output. Diagram examples select an original text alternative with a nroff-mode conditional (`.ie n`), which also applies to groff HTML output. Terminal devices cannot reproduce all vector geometry. The matrix example likewise supplies a readable terminal form instead of relying on device-dependent stacked matrix metrics. The PDF branches retain the complete pic drawing and eqn matrix. Native logs state the command, page count and diagnostic status. A successful silent formatter is reported as such rather than leaving an empty panel. The complete source kit is also attached to the tour PDF.

Write documentation, not only typography

A usable manual begins with its reader's task: what the tool does, how to get a first result, which arguments it accepts, and how to recognize or resolve a failure. The later chapters build command references, a user guide, an operations manual with contents, an API/configuration reference, and a technical note. `tourfmt` in these documents is an invented command for teaching; no such program is installed by this tour. The commands beginning with `groff` are real.

You were right about latexmk: its distributed `latexmk.1` is a roff `man` source, beginning with `.TH` and section macros such as `.SH`. Its PDF documentation is presented as a manual page. The official latexmk package page links its source, PDF and text documentation. Use that source as a real-world reference; the examples here are original and do not reproduce its manual.

For your own command, write `tool.1` with NAME, SYNOPSIS, DESCRIPTION, OPTIONS, EXAMPLES, FILES, ENVIRONMENT, EXIT STATUS and SEE ALSO as appropriate. Document real behavior, defaults and failures; keep examples consistent with the version. For a longer tutorial or handbook, start with an `ms` title and reading order, then add headings, code displays, tables, figures, references and a contents page.

Publish PDF, terminal text and HTML

For an ms manual that contains equations, tables and drawings:

```
groff -S -e -t -p -ms -Tpdf manual.ms > manual.pdf
groff -S -e -t -p -ms -Tutf8 manual.ms | less
mkdir -p html
cd html
groff -S -man -Thtml ../tool.1 > index.html
```

The HTML command above uses a man source saved as `tool.1`. The HTML device may create companion images for tables, equations and pictures. Run it in a dedicated output directory and publish that complete directory. Depending on the installation, HTML image generation needs Ghostscript and Netpbm utilities. This tour's own searchable HTML guide is made by the shared publisher; the document previews come from actual groff PDF output.

For a downloaded man example, select `-man` instead of `-ms`. For mdoc, use `-mdoc`. To inspect a local man source, use `man ./tool.1` on systems whose man viewer accepts local paths; man-db also offers `man -l ./tool.1`. The section suffix is meaningful: section 1 documents user commands, while section 5 commonly documents file formats. A project can ship its source man page beside the program and install it under an appropriate `share/man/man1` prefix.

Review every output you publish: terminal wrapping, PDF page breaks and table widths, and HTML links/image companions. A clean compiler exit cannot decide whether the prose is clear or the page design is useful.

Primary references

The GNU groff project links the official GNU troff manual and documentation for its macro packages and preprocessors. Installed references are available with `man groff`, `man groff_ms`, `man groff_man`, `man groff_mdoc`, `man tbl`, `man eqn` and `man pic`. The latexmk package provides an extensive real-world man-page source, with PDF and text forms of the same documentation.

Start with text and the command line

troff formats a plain text file. groff is the command-line driver that connects preprocessors, the formatter and an output device. These first examples use raw requests before introducing document macros.

GRF-01-001

Your first typeset page

A request begins with a dot at the start of a line. Set a modest line length and write ordinary text; line filling joins the input lines into a paragraph.

Complete roff document

```
.ps 12
.vs 16
.ll 4i
.ft B
Hello from groff
.ft R
.sp .5
This document began as a plain text file.
The formatter joins these source lines into a paragraph.
.br
A forced break starts this sentence on a new output line.
```

Actual output



GRF-01-001 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`.ps / .vs`	Set type size and vertical spacing in points.
`.ll`	Set the line length.
`.br`	Finish the current output line.

GRF-01-002

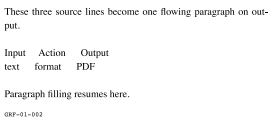
Filled and literal lines

Fill mode constructs paragraphs. No-fill mode preserves source line breaks, which is useful for short examples with deliberate alignment.

Complete roff document

```
.ps 11
.vs 15
.ll 4i
These three source lines
become one flowing
paragraph on output.
.sp
.nf
Input     Action      Output
text      format      PDF
.fi
.sp
Paragraph filling resumes here.
```

Actual output


These three source lines become one flowing paragraph on output.

Input Action Output
text format PDF

Paragraph filling resumes here.

GRF-01-002

GRF-01-002 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`.nf`	Disable filling for literal lines.
`.fi`	Resume filling.

GRF-01-003

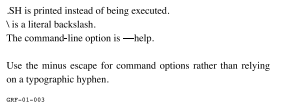
Spaces, comments and literal control characters

A backslash-double-quote introduces a comment. A zero-width escape protects a leading dot, while a backslash escape prints the backslash itself.

Complete roff document

```
.ps 11
.vs 15
.ll 4i
.\" This source comment is not printed.
.nf
\&.SH is printed instead of being executed.
\e is a literal backslash.
The command-line option is \-\-help.
.fi
.sp
Use the minus escape for command options rather than relying on a typographic hyphen.
```

Actual output


.SH is printed instead of being executed.
\ is a literal backslash.
The command-line option is —help.

Use the minus escape for command options rather than relying
on a typographic hyphen.

GRF-01-003

GRF-01-003 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`.\"`	Introduce a source comment.
`\&`	Protect a leading control character.
`\e / \-`	Print a backslash or a command-line minus sign.

GRF-01-004

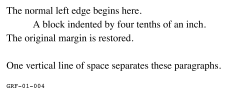
Units and relative changes

Dimensions need a unit. Relative indentation moves a block inward, and restoring it makes the following paragraph align with the first.

Complete roff document

```
.ps 11
.vs 15
.ll 4i
The normal left edge begins here.
.br
.in +.4i
A block indented by four tenths of an inch.
.br
.in -.4i
The original margin is restored.
.sp 1v
One vertical line of space separates these paragraphs.
```

Actual output



GRF-01-004 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`i / p / v`	Use inches, points or vertical line units.
`.in + / -`	Adjust indentation relative to its current value.

Build a document with ms

The ms package supplies document-level structure: title, author, abstract, headings and paragraphs. Use its macros for structure instead of manually positioning every line.

GRF-02-001

Title, author and abstract

The title block is followed by a short abstract. This is a complete small report, independent of the other examples.

Complete roff document

```
.TL
A small technical report
.AU
Lukas C. Bossert
.AI
Documentation laboratory
.AB
We compare two invented measurements and document a reproducible formatting workflow.
.AE
.NH 1
Purpose
.PP
A compact report can begin with a title, a summary and one clearly named section.
```

Actual output



A small technical report

Lukas C. Bossert
Documentation laboratory

ABSTRACT

We compare two invented measurements and document a repro-
ducible formatting workflow.

1. Purpose

A compact report can begin with a title, a summary and one clearly named section.

GRF-02-001

GRF-02-001 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`.TL / .AU / .AI`	Declare title, author and affiliation.
`.AB / .AE`	Begin and end the abstract.
`.PP`	Start an indented paragraph.

GRF-02-002

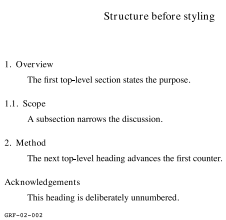
Numbered sections and subsections

The heading level determines the section number. An unnumbered heading is suitable for acknowledgements or an appendix label.

Complete roff document

```
.TL
Structure before styling
.NH 1
Overview
.PP
The first top-level section states the purpose.
.NH 2
Scope
.PP
A subsection narrows the discussion.
.NH 1
Method
.PP
The next top-level heading advances the first counter.
.SH
Acknowledgements
.PP
This heading is deliberately unnumbered.
```

Actual output


Structure before styling

1. Overview
The first top-level section states the purpose.

1.1. Scope
A subsection narrows the discussion.

2. Method
The next top-level heading advances the first counter.

Acknowledgements
This heading is deliberately unnumbered.

GRF-02-002

GRF-02-002 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`.NH 1 / .NH 2`	Create numbered headings at the given depth.
`.SH`	Create an unnumbered heading.

GRF-02-003

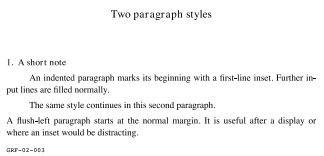
Indented and flush-left paragraphs

Paragraph macros encode two common styles. Their spacing and indentation come from document settings rather than repeated spaces in the source.

Complete roff document

```
.TL
Two paragraph styles
.NH 1
A short note
.PP
An indented paragraph marks its beginning with a first-line inset. Further input lines
are filled normally.
.PP
The same style continues in this second paragraph.
.LP
A flush-left paragraph starts at the normal margin. It is useful after a display or
where an inset would be distracting.
```

Actual output



Two paragraph styles

1. A short note

An indented paragraph marks its beginning with a first-line inset. Further input lines are filled normally.

The same style continues in this second paragraph.

A flush-left paragraph starts at the normal margin. It is useful after a display or where an inset would be distracting.

GRF-02-003

GRF-02-003 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
.PP	Start a paragraph with the configured first-line indentation.
.LP	Start a flush-left paragraph.

GRF-02-004

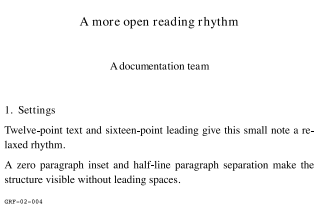
Document-wide settings

Set the ms registers before the title. One group of settings controls the document instead of changing each paragraph individually.

Complete roff document

```
.nr PS 12
.nr VS 16
.nr PI 0
.nr PD .5v
.TL
A more open reading rhythm
.AU
A documentation team
.NH 1
Settings
.PP
Twelve-point text and sixteen-point leading give this small note a relaxed rhythm.
.PP
A zero paragraph inset and half-line paragraph separation make the structure visible
without leading spaces.
```

Actual output


A more open reading rhythm

A documentation team

1. Settings

Twelve-point text and sixteen-point leading give this small note a relaxed rhythm.

A zero paragraph inset and half-line paragraph separation make the structure visible without leading spaces.

GRF-02-004

GRF-02-004 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`PS / VS`	Set document type size and line spacing.
`PI / PD`	Set first-line indentation and paragraph separation.

Typography and readable source

Choose text styles intentionally and restore previous settings. Keep source sentences readable; input line breaks need not dictate output line breaks.

GRF-03-001

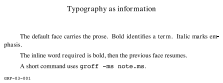
Emphasis and font families

Font macros apply to their arguments. Inline escapes can change a single word, then restore the previous face.

Complete roff document

```
.TL
Typography as information
.PP
The default face carries the prose.
.B "Bold identifies a term."
.I "Italic marks emphasis."
.PP
The inline word \f[B]required\f[] is bold, then the previous face resumes.
.PP
A short command uses \f[CR]groff -ms note.ms\f[].
```

Actual output



GRF-03-001 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`.B / .I`	Apply bold or italic to an argument.
`\f[CR] / \f[]`	Select Courier Roman, then restore the previous font.

GRF-03-002

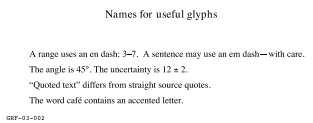
Special characters and accents

Named glyph escapes keep punctuation and symbols explicit. Availability depends on the selected device and font.

Complete roff document

```
.TL
Names for useful glyphs
.PP
A range uses an en dash: 3\(en7.
A sentence may use an em dash\(emwith care.
.PP
The angle is 45\(de. The uncertainty is 12 \(+- 2.
.PP
\(lqQuoted text\(rq differs from straight source quotes.
.PP
The word caf\['e] contains an accented letter.
```

Actual output


Names for useful glyphs

A range uses an en dash: 3–7. A sentence may use an em dash— with care.
The angle is 45°. The uncertainty is 12 ± 2.
“Quoted text” differs from straight source quotes.
The word café contains an accented letter.

GRF-03-002

GRF-03-002 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`\(en / \(em`	Print en and em dashes.
`\(de / \(+-`	Print degree and plus/minus signs.
`\['e]`	Select a named accented glyph.

GRF-03-003

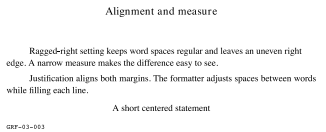
Alignment choices

Temporarily use ragged-right text, then restore justification. A centered display is a distinct structural object.

Complete roff document

```
.TL
Alignment and measure
.na
.PP
Ragged-right setting keeps word spaces regular and leaves an uneven right edge. A
narrow measure makes the difference easy to see.
.ad b
.PP
Justification aligns both margins. The formatter adjusts spaces between words while
filling each line.
.DS C
A short centered statement
.DE
```

Actual output


Alignment and measure

Ragged-right setting keeps word spaces regular and leaves an uneven right edge. A narrow measure makes the difference easy to see.

Justification aligns both margins. The formatter adjusts spaces between words while filling each line.

A short centered statement

GRF-03-003

GRF-03-003 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`.na`	Disable adjustment.
`.ad b`	Adjust text to both margins.
`.DS C / .DE`	Create a centered display.

GRF-03-004

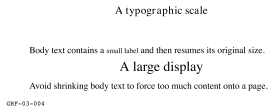
Size changes with restoration

Inline size escapes can make a compact label smaller without changing the surrounding paragraph. A displayed heading can instead use a temporary local size.

Complete roff document

```
.TL
A typographic scale
.PP
Body text contains a \s[-2]small label\s[+2] and then resumes its original size.
.DS C
\s[+5]A large display\s[-5]
.DE
.PP
Avoid shrinking body text to force too much content onto a page.
```

Actual output



GRF-03-004 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`\s[-2] / \s[+2]`	Change size relative to the current point size, then reverse the change.
`display`	Keep a deliberate visual treatment separate from ordinary prose.

Lists, code, quotations and notes

Documentation needs more than paragraphs. Use stable structures for terms, commands, explanations and side material.

GRF-04-001

Bullets, numbers and terms

The IP macro makes a hanging paragraph. Its first argument is a label and its second reserves the label width.

Complete roff document

```
.TL
Structured lists
.IP \(bu 2
Collect the input files.
.IP \(bu 2
Run the formatter.
.IP "1." 3
Inspect the generated pages.
.IP "2." 3
Publish the verified output.
.IP "Input" 8
Plain text with requests and macros.
.IP "Output" 8
A formatted document for the selected device.
```

Actual output


Structured lists

- Collect the input files.
- Run the formatter.

1. Inspect the generated pages.
2. Publish the verified output.

Input Plain text with requests and macros.

Output A formatted document for the selected device.

GRF-04-001 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`.IP`	Start a paragraph with a hanging label.
`label width`	Reserve room for bullets, numbers or definition terms.

GRF-04-002

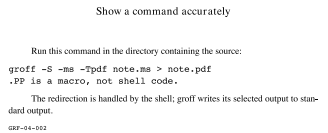
A code block with preserved spacing

A left-aligned no-fill display preserves lines. Courier distinguishes code, and the source protects a leading dot.

Complete roff document

```
.TL
Show a command accurately
.PP
Run this command in the directory containing the source:
.DS L
.ft CR
groff -S -ms -Tpdf note.ms > note.pdf
\&.PP is a macro, not shell code.
.ft
.DE
.PP
The redirection is handled by the shell; groff writes its selected output to standard
output.
```

Actual output



Show a command accurately

Run this command in the directory containing the source:

```
groff -S -ms -Tpdf note.ms > note.pdf
.PP is a macro, not shell code.
```

The redirection is handled by the shell; groff writes its selected output to standard output.

GRF-04-002

GRF-04-002 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`.DS L / .DE`	Keep a left-aligned display together.
`.ft CR / .ft`	Select a fixed-width font, then restore the preceding font.
`\&.PP`	Print a leading dot literally.

GRF-04-003

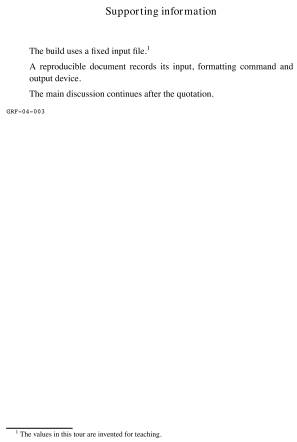
Quotations and footnotes

The quotation is original teaching prose. A footnote adds supporting detail without interrupting the main paragraph.

Complete roff document

```
.TL
Supporting information
.PP
The build uses a fixed input file.\**
.FS
The values in this tour are invented for teaching.
.FE
.QP
A reproducible document records its input, formatting command and output device.
.PP
The main discussion continues after the quotation.
```

Actual output


Supporting information

The build uses a fixed input file.[1]

A reproducible document records its input, formatting command and output device.

The main discussion continues after the quotation.

GRF-04-003

[1] The values in this tour are invented for teaching.

GRF-04-003 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`.QP`	Create an indented quotation paragraph.
`\** / .FS / .FE`	Place an automatic footnote mark and its text.

GRF-04-004

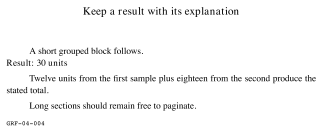
Keep a small explanation together

A keep discourages page breaks inside related material. Reserve it for short blocks; a keep larger than a page cannot solve a layout problem.

Complete roff document

```
.TL
Keep a result with its explanation
.PP
A short grouped block follows.
.KS
.B "Result: 30 units"
.PP
Twelve units from the first sample plus eighteen from the second produce the stated
total.
.KE
.PP
Long sections should remain free to paginate.
```

Actual output



GRF-04-004 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`.KS / .KE`	Keep a short block together when possible.
`finite block`	Avoid unbreakable material taller than a page.

Page layout, columns and running text

Page furniture belongs in document settings. Use explicit breaks only when they express a deliberate document boundary.

GRF-05-001

Headers and page numbers

Running strings place a short document name at the left and the example ID at the right. A centered footer prints the current page number.

Complete roff document

```
.ds LH Field notes
.ds RH GRF-05-001
.ds CF Page \\n[%]
.TL
Running text
.PP
The running header and footer belong to the page rather than the paragraph.
.bp
.NH 1
A deliberate second page
.PP
The page number changes while the document label stays the same.
```

Actual output



GRF-05-001 · Rendered by troff / groff

First-page preview · 2 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`LH / RH / CF`	Set left/right headers and the centered footer.
`.bp`	Start a new page.

GRF-05-002

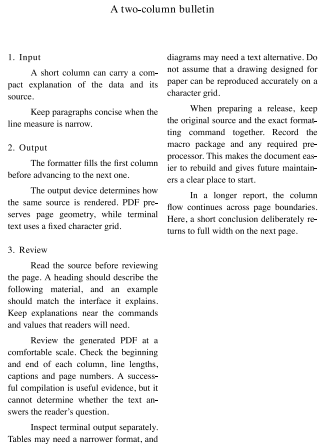
Two columns for a compact report

The 2C macro changes the text flow to two columns. Returning to one column forces a new page for the full-width conclusion.

Complete roff document

```
.TL
A two-column bulletin
.2C
.NH 1
Input
.PP
A short column can carry a compact explanation of the data and its source.
.PP
Keep paragraphs concise when the line measure is narrow.
.NH 1
Output
.PP
The formatter fills the first column before advancing to the next one.
.PP
The output device determines how the same source is rendered. PDF preserves page geometry, while terminal text uses a fixed character grid.
.NH 1
Review
.PP
Read the source before reviewing the page. A heading should describe the following material, and an example should match the interface it explains. Keep explanations near the commands and values that
readers will need.
.PP
Review the generated PDF at a comfortable scale. Check the beginning and end of each column, line lengths, captions and page numbers. A successful compilation is useful evidence, but it cannot determine
whether the text answers the reader's question.
.PP
Inspect terminal output separately. Tables may need a narrower format, and diagrams may need a text alternative. Do not assume that a drawing designed for paper can be reproduced accurately on a
character grid.
.PP
When preparing a release, keep the original source and the exact formatting command together. Record the macro package and any required preprocessor. This makes the document easier to rebuild and gives
future maintainers a clear place to start.
.PP
In a longer report, the column flow continues across page boundaries. Here, a short conclusion deliberately returns to full width on the next page.
.1C
.NH 1
Conclusion
.PP
The full-width discussion resumes after leaving the column layout.
```

Actual output



A two-column bulletin

1. Input

A short column can carry a compact explanation of the data and its source.

Keep paragraphs concise when the line measure is narrow.

2. Output

The formatter fills the first column before advancing to the next one.

The output device determines how the same source is rendered. PDF preserves page geometry, while terminal text uses a fixed character grid.

3. Review

Read the source before reviewing the page. A heading should describe the following material, and an example should match the interface it explains. Keep explanations near the commands and values that readers will need.

Review the generated PDF at a comfortable scale. Check the beginning and end of each column, line lengths, captions and page numbers. A successful compilation is useful evidence, but it cannot determine whether the text answers the reader's question.

Inspect terminal output separately. Tables may need a narrower format, and diagrams may need a text alternative. Do not assume that a drawing designed for paper can be reproduced accurately on a character grid.

When preparing a release, keep the original source and the exact formatting command together. Record the macro package and any required preprocessor. This makes the document easier to rebuild and gives future maintainers a clear place to start.

In a longer report, the column flow continues across page boundaries. Here, a short conclusion deliberately returns to full width on the next page.

GRF-05-002 · Rendered by troff / groff

First-page preview · 2 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`.2C / .1C`	Enter two-column layout and return to one column.
`flow order`	Columns fill in reading order. Returning to one column forces a new page.

GRF-05-003

Landscape geometry in raw troff

The document requests a wide page and shorter measure in the vertical direction. The PDF device and PostScript conversion honor the declared paper geometry.

Complete roff document

```
.ps 12
.vs 16
.ll 6i
.ft B
A landscape briefing
.ft R
.sp
A wider measure leaves room for short aligned comparisons.
.sp
.nf
Stage          Input             Result
Prepare        plain text        reviewed source
Format         reviewed source   finished page
.fi
```

Actual output



GRF-05-003 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`landscape device`	Select A5 landscape through the declared PAPER option.
`.ll`	Keep the line length within the physical page.

GRF-05-004

Page breaks and space reservations

The ne request asks for a minimum amount of remaining vertical space. It is useful before a heading and short block.

Complete roff document

```
.TL
Predictable page boundaries
.PP
This first page introduces a small installation guide.
.bp
.NH 1
Installation
.ne 5v
.PP
Reserve room before this short three-line command explanation.
.DS L
.ft CR
groff -S -ms -Tpdf manual.ms > manual.pdf
.ft
.DE
```

Actual output



GRF-05-004 · Rendered by troff / groff

First-page preview · 2 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
.bp	Begin a deliberate new page.
.ne 5v	Require five vertical lines of available space.

Write a Unix man page

The man package describes commands using conventional sections. latexmk is a real-world example: its distributed latexmk.1 source uses these macros. The examples here document an original fictional tool named tourfmt.

GRF-06-001

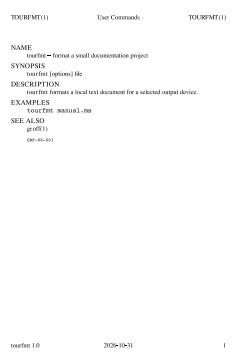
A complete minimal man page

The NAME line states what the command does; SYNOPSIS shows how to invoke it. One input can serve a terminal viewer and print output.

Complete roff document

```
.TH TOURFMT 1 "2026-10-31" "tourfmt 1.0" "User Commands"
.SH NAME
tourfmt \- format a small documentation project
.SH SYNOPSIS
.B tourfmt
.RI [ options ] " file"
.SH DESCRIPTION
.B tourfmt
formats a local text document for a selected output device.
.SH EXAMPLES
.EX
tourfmt manual.ms
.EE
.SH SEE ALSO
.BR groff (1)
```

Actual output



TOURFMT(1) User Commands TOURFMT(1)

NAME
tourfmt - format a small documentation project
SYNOPSIS
tourfmt [options] file
DESCRIPTION
tourfmt formats a local text document for a selected output device.
EXAMPLES
tourfmt manual.ms
SEE ALSO
groff(1)

tourfmt 1.0 2026-10-31 1

GRF-06-001 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`.TH`	Declare command name, section, date, version and manual title.
`.SH`	Start a conventional man-page section.
`.BR / .RI`	Alternate font styles without losing punctuation.

GRF-06-002

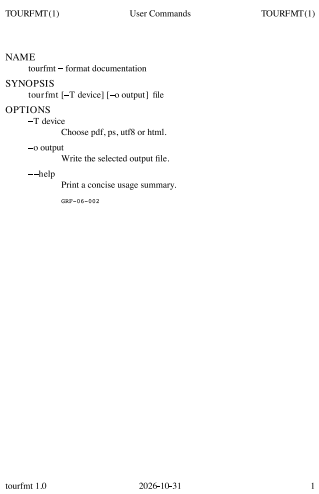
Command synopsis and options

SY and YS format a command synopsis. TP gives each option a hanging explanation; optional arguments remain visually distinct.

Complete roff document

```
.TH TOURFMT 1 "2026-10-31" "tourfmt 1.0" "User Commands"
.SH NAME
tourfmt \- format documentation
.SH SYNOPSIS
.SY tourfmt
.OP \-T device
.OP \-o output
.I file
.YS
.SH OPTIONS
.TP
.BI \-T " device"
Choose pdf, ps, utf8 or html.
.TP
.BI \-o " output"
Write the selected output file.
.TP
.B \-\-help
Print a concise usage summary.
```

Actual output


TOURFMT(1) User Commands TOURFMT(1)

NAME
tourfmt − format documentation
SYNOPSIS
tourfmt [−T device] [−o output] file
OPTIONS
−T device
Choose pdf, ps, utf8 or html.
−o output
Write the selected output file.
−−help
Print a concise usage summary.
GRF-06-002
tourfmt 1.0 2026-10-31 1

GRF-06-002 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`.SY / .YS`	Bound a command synopsis.
`.OP`	Represent an optional option and argument.
`.TP`	Start a tagged paragraph for an option.

GRF-06-003

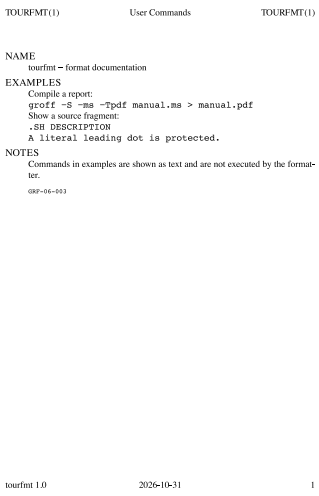
Examples, literal code and escaping

EX and EE preserve command lines. Shell options use minus escapes; leading dots are protected so sample source is printed.

Complete roff document

```
.TH TOURFMT 1 "2026-10-31" "tourfmt 1.0" "User Commands"
.SH NAME
tourfmt \- format documentation
.SH EXAMPLES
Compile a report:
.EX
groff \-S \-ms \-Tpdf manual.ms > manual.pdf
.EE
Show a source fragment:
.EX
\&.SH DESCRIPTION
A literal leading dot is protected.
.EE
.SH NOTES
Commands in examples are shown as text and are not executed by the formatter.
```

Actual output


TOURFMT(1) User Commands TOURFMT(1)

NAME
tourfmt – format documentation
EXAMPLES
Compile a report:
groff -S -ms -Tpdf manual.ms > manual.pdf
Show a source fragment:
.SH DESCRIPTION
A literal leading dot is protected.
NOTES
Commands in examples are shown as text and are not executed by the formatter.
GRF-06-003
tourfmt 1.0 2026-10-31 1

GRF-06-003 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
.EX / .EE	Create a literal example block.
\-	Print command-line minus signs.
\&	Protect a leading control character.

GRF-06-004

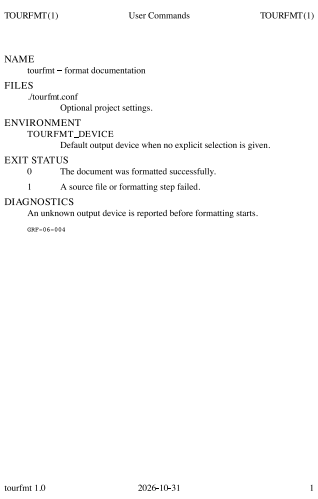
Files, environment and exit status

A useful reference documents configuration locations, variables and failure modes. The statuses here are a specification for the fictional example command.

Complete roff document

```
.TH TOURFMT 1 "2026-10-31" "tourfmt 1.0" "User Commands"
.SH NAME
tourfmt \- format documentation
.SH FILES
.TP
.I ./tourfmt.conf
Optional project settings.
.SH ENVIRONMENT
.TP
.B TOURFMT_DEVICE
Default output device when no explicit selection is given.
.SH EXIT STATUS
.TP
.B 0
The document was formatted successfully.
.TP
.B 1
A source file or formatting step failed.
.SH DIAGNOSTICS
An unknown output device is reported before formatting starts.
```

Actual output


TOURFMT(1) User Commands TOURFMT(1)

NAME
tourfmt – format documentation
FILES
./tourfmt.conf
Optional project settings.
ENVIRONMENT
TOURFMT_DEVICE
Default output device when no explicit selection is given.
EXIT STATUS
0 The document was formatted successfully.
1 A source file or formatting step failed.
DIAGNOSTICS
An unknown output device is reported before formatting starts.
GRF-06-004

tourfmt 1.0 2026-10-31 1

GRF-06-004 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`.I / .B`	Distinguish file paths and variable names.
`EXIT STATUS`	Document outcomes that scripts can rely on.

GRF-06-005

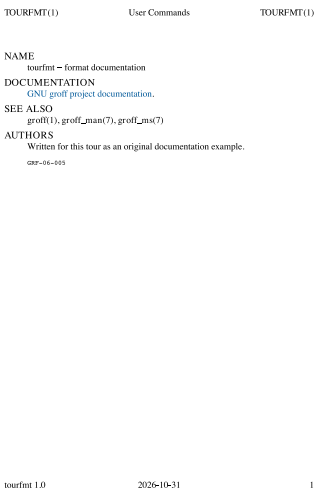
Links and manual cross-references

UR and UE mark a web link. A conventional SEE ALSO reference names a manual entry and its section.

Complete roff document

```
.TH TOURFMT 1 "2026-10-31" "tourfmt 1.0" "User Commands"
.SH NAME
tourfmt \- format documentation
.SH DOCUMENTATION
.UR https://www.gnu.org/software/groff/
GNU groff project documentation
.UE .
.SH SEE ALSO
.BR groff (1),
.BR groff_man (7),
.BR groff_ms (7)
.SH AUTHORS
Written for this tour as an original documentation example.
```

Actual output


TOURFMT(1) User Commands TOURFMT(1)

NAME
tourfmt – format documentation
DOCUMENTATION
GNU groff project documentation.
SEE ALSO
groff(1), groff_man(7), groff_ms(7)
AUTHORS
Written for this tour as an original documentation example.
GRF-06-005
tourfmt 1.0 2026-10-31 1

GRF-06-005 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`.UR / .UE`	Start and end a web link.
`manual section`	Identify the correct section when citing another manual entry.

GRF-06-006

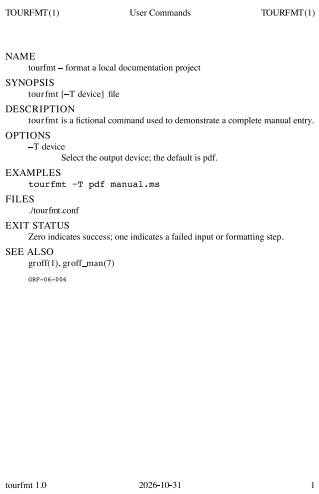
A small command reference ready to ship

This complete reference combines purpose, synopsis, options, examples, files, statuses and links. Save it as tourfmt.1 and install it in an appropriate man1 directory.

Complete roff document

```
.TH TOURFMT 1 "2026-10-31" "tourfmt 1.0" "User Commands"
.SH NAME
tourfmt \- format a local documentation project
.SH SYNOPSIS
.SY tourfmt
.OP \-T device
.I file
.YS
.SH DESCRIPTION
.B tourfmt
is a fictional command used to demonstrate a complete manual entry.
.SH OPTIONS
.TP
.BI \-T " device"
Select the output device; the default is pdf.
.SH EXAMPLES
.EX
tourfmt \-T pdf manual.ms
.EE
.SH FILES
.I ./tourfmt.conf
.SH EXIT STATUS
Zero indicates success; one indicates a failed input or formatting step.
.SH SEE ALSO
.BR groff (1),
.BR groff_man (7)
```

Actual output



TOURFMT(1) User Commands TOURFMT(1)

NAME
tourfmt – format a local documentation project

SYNOPSIS
tourfmt [–T device] file

DESCRIPTION
tourfmt is a fictional command used to demonstrate a complete manual entry.

OPTIONS
–T device
Select the output device; the default is pdf.

EXAMPLES
tourfmt –T pdf manual.ms

FILES
./tourfmt.conf

EXIT STATUS
Zero indicates success; one indicates a failed input or formatting step.

SEE ALSO
groff(1), groff_man(7)

GRF-06-006

tourfmt 1.0 2026-10-31 1

GRF-06-006 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`conventional sections`	Make common questions easy to find.
`tourfmt.1`	The filename suffix records manual section one.

Semantic manuals with mdoc

The mdoc package is another manual-page language. Its semantic macros identify names, flags, arguments, paths and references; it is a separate package from man.

GRF-07-001

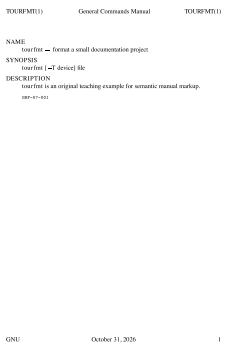
The mdoc document skeleton

Document metadata is followed by conventional sections. Nm and Nd identify the name and short description.

Complete roff document

```
.Dd October 31, 2026
.Dt TOURFMT 1
.Os
.Sh NAME
.Nm tourfmt
.Nd format a small documentation project
.Sh SYNOPSIS
.Nm
.Op Fl T Ar device
.Ar file
.Sh DESCRIPTION
.Nm
is an original teaching example for semantic manual markup.
```

Actual output


TOURFMT(1) General Commands Manual TOURFMT(1)

NAME
tourfmt — format a small documentation project
SYNOPSIS
tourfmt [-T device] file
DESCRIPTION
tourfmt is an original teaching example for semantic manual markup.
GRF-07-001

GNU October 31, 2026 1

GRF-07-001 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`.Dd / .Dt / .Os`	Declare date, manual title and system context.
`.Nm / .Nd`	Mark a command name and its short description.
`.Fl / .Ar`	Identify an option flag and an argument.

GRF-07-002

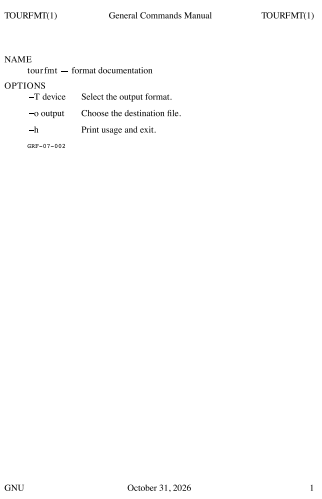
Options as a tagged semantic list

Bl begins a list and It begins an item. Each flag and its argument keep their semantic roles.

Complete roff document

```
.Dd October 31, 2026
.Dt TOURFMT 1
.Os
.Sh NAME
.Nm tourfmt
.Nd format documentation
.Sh OPTIONS
.Bl -tag -width "-T device"
.It Fl T Ar device
Select the output format.
.It Fl o Ar output
Choose the destination file.
.It Fl h
Print usage and exit.
.El
```

Actual output


TOURFMT(1) General Commands Manual TOURFMT(1)

NAME
tourfmt — format documentation
OPTIONS
-T device Select the output format.
-o output Choose the destination file.
-h Print usage and exit.
GRF-07-002

GNU October 31, 2026 1

GRF-07-002 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`.Bl -tag / .El`	Bound a tagged list.
`.It`	Start a list item with semantic arguments.

GRF-07-003

Paths, variables and references

Semantic names let the macro package choose a consistent treatment. Cross-references specify both a manual name and section.

Complete roff document

```
.Dd October 31, 2026
.Dt TOURFMT 1
.Os
.Sh NAME
.Nm tourfmt
.Nd format documentation
.Sh FILES
.Pa ./tourfmt.conf
contains optional project settings.
.Sh ENVIRONMENT
.Ev TOURFMT_DEVICE
selects a default output device.
.Sh SEE ALSO
.Xr groff 1 ,
.Xr groff_mdoc 7
```

Actual output


TOURFMT(1) General Commands Manual TOURFMT(1)

NAME
tourfmt — format documentation
FILES
./tourfmt.conf contains optional project settings.
ENVIRONMENT
TOURFMT_DEVICE selects a default output device.
SEE ALSO
groff(1), groff_mdoc(7)
GRF-07-003

GNU October 31, 2026 1

GRF-07-003 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
.Pa	Identify a path.
.Ev	Identify an environment variable.
.Xr	Identify a manual cross-reference.

GRF-07-004

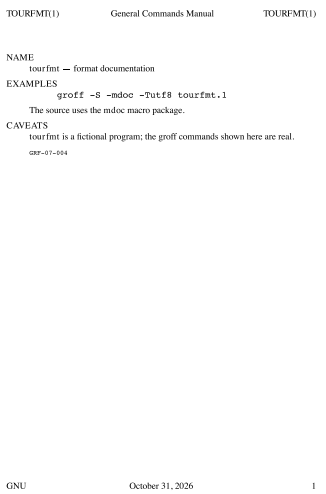
Literal examples and a caution

Bd creates a literal display. A paragraph explains the fictional tool so the reader can distinguish a documented interface from an installed command.

Complete roff document

```
.Dd October 31, 2026
.Dt TOURFMT 1
.Os
.Sh NAME
.Nm tourfmt
.Nd format documentation
.Sh EXAMPLES
.Bd -literal -offset indent
groff -S -mdoc -Tutf8 tourfmt.1
.Ed
.Pp
The source uses the
.Nm mdoc
macro package.
.Sh CAVEATS
.Nm tourfmt
is a fictional program; the groff commands shown here are real.
```

Actual output


TOURFMT(1) General Commands Manual TOURFMT(1)

NAME
tourfmt — format documentation
EXAMPLES
groff -S -mdoc -Tutf8 tourfmt.1
The source uses the mdoc macro package.
CAVEATS
tourfmt is a fictional program; the groff commands shown here are real.
GRF-07-004

GNU October 31, 2026 1

GRF-07-004 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`.Bd -literal / .Ed`	Preserve a literal display.
`.Pp`	Start a semantic paragraph.

Tables with tbl

The tbl preprocessor interprets TS/TE blocks before troff sees them. Keep table semantics explicit: headings, units, numeric alignment and short explanatory notes.

GRF-08-001

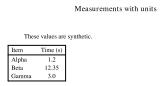
A small numeric table

A semicolon delimiter keeps the source easy to inspect. The numeric column aligns values around their decimal positions.

Complete roff document

```
.TL
Measurements with units
.PP
These values are synthetic.
.TS
box tab(;);
l n.
Item;Time (s)
_
Alpha;1.2
Beta;12.35
Gamma;3.0
.TE
```

Actual output



GRF-08-001 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`.TS / .TE`	Bound a table processed by tbl.
`tab(;)`	Choose a visible source delimiter.
`n`	Align numeric values by their decimal position.

GRF-08-002

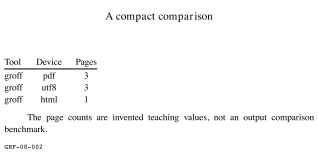
Heading rules and column alignment

The format line declares left, centered and numeric columns. A rule separates the heading from the data.

Complete roff document

```
.TL
A compact comparison
.LP
.TS
tab(;);
l c n.
Tool;Device;Pages
_
groff;pdf;3
groff;utf8;3
groff;html;1
.TE
.PP
The page counts are invented teaching values, not an output comparison benchmark.
```

Actual output


A compact comparison

Tool	Device	Pages
groff	pdf	3
groff	utf8	3
groff	html	1

The page counts are invented teaching values, not an output comparison benchmark.

GRF-08-002

GRF-08-002 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`l / c / n`	Select left, centered and numeric column alignment.
`_`	Separate heading and body with a horizontal rule.

GRF-08-003

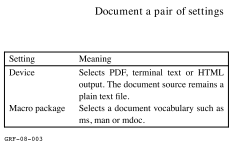
A paragraph inside a table cell

T braces delimit a text block. Give that column a width so the cell wraps predictably.

Complete roff document

```
.TL
Document a pair of settings
.LP
.TS
box tab(;);
l lw(2.2i).
Setting;Meaning
_
T{
Device
T};T{
Selects PDF, terminal text or HTML output. The document source remains a plain text
file.
T}
T{
Macro package
T};T{
Selects a document vocabulary such as ms, man or mdoc.
T}
.TE
```

Actual output


Document a pair of settings

Setting	Meaning
Device	Selects PDF, terminal text or HTML output. The document source remains a plain text file.
Macro package	Selects a document vocabulary such as ms, man or mdoc.

GRF-08-003

GRF-08-003 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`T{ / T}`	Bound a multi-line text cell.
`w(2.2i)`	Give the prose column a fixed wrapping width.

GRF-08-004

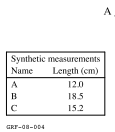
A table with a spanned heading

The s format code spans the preceding cell across the next column. Put units in the subheadings rather than hiding them in the surrounding prose.

Complete roff document

```
.TL
A grouped table heading
.LP
.TS
box tab(;);
c s
l n.
Synthetic measurements;
Name;Length (cm)
_
A;12.0
B;18.5
C;15.2
.TE
```

Actual output



GRF-08-004 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`s`	Span the preceding column in that row.
`row formats`	Change the format for the heading and body.

Mathematics with eqn

The eqn preprocessor reads mathematics inside EQ/EN blocks. The examples use named operators and structures instead of manually positioning every character.

GRF-09-001

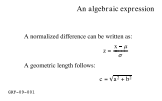
Fractions and square roots

Braces group numerator and denominator expressions. The equation is typeset separately from the prose.

Complete roff document

```
.TL
An algebraic expression
.PP
A normalized difference can be written as:
.EQ
z = { x - mu } over sigma
.EN
.PP
A geometric length follows:
.EQ
c = sqrt { a sup 2 + b sup 2 }
.EN
```

Actual output



GRF-09-001 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`over`	Build a fraction.
`sqrt`	Build a square root.
`sup`	Set a superscript.

GRF-09-002

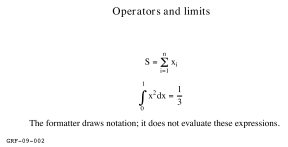
Sums, limits and integrals

Operators can carry limits. These are mathematical identities used to demonstrate notation, not computations performed by groff.

Complete roff document

```
.TL
Operators and limits
.LP
.EQ
S = sum from {i=1} to n x sub i
.EN
.EQ
int from 0 to 1 x sup 2 dx = 1 over 3
.EN
.PP
The formatter draws notation; it does not evaluate these expressions.
```

Actual output



GRF-09-002 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`sum from ... to`	Place limits around a summation operator.
`int`	Typeset an integral.
`sub / sup`	Create subscripts and superscripts.

GRF-09-003

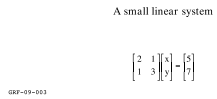
Matrices and scalable delimiters

Matrix columns define an aligned rectangular structure. Left and right delimiters grow with the expression.

Complete roff document

```
.TL
A small linear system
.LP
.ie n \{\
.LP
Linear system: 2x + y = 5; x + 3y = 7.
.\}
.el \{\
.EQ
left [ matrix { ccol { 2 above 1 } ccol { 1 above 3 } } right ]
left [ pile { x above y } right ] =
left [ pile { 5 above 7 } right ]
.EN
.\}
```

Actual output



GRF-09-003 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`matrix / ccol`	Build a matrix from centered columns.
`above`	Separate vertical entries.
`left / right`	Scale delimiters to the enclosed material.

GRF-09-004

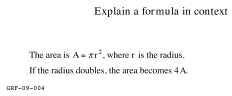
Inline equations in explanatory prose

Declare delimiters inside an EQ block. Inline math then shares the paragraph baseline; turn the delimiters off when no longer needed.

Complete roff document

```
.TL
Explain a formula in context
.LP
.EQ
delim $$
.EN
.PP
The area is $A = pi r sup 2$, where $r$ is the radius.
.PP
If the radius doubles, the area becomes $4 A$.
.EQ
delim off
.EN
```

Actual output



GRF-09-004 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`delim $$`	Enable dollar-delimited inline mathematics.
`delim off`	Restore ordinary treatment of the delimiter characters.

Diagrams with pic

The pic preprocessor describes shapes, relative placement and connections. Its native drawing commands fit into the same document as prose, tables and mathematics.

GRF-10-001

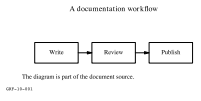
A left-to-right workflow

Named shapes and short arrows describe a process. Pic measures its geometry in inches by default.

Complete roff document

```
.TL
A documentation workflow
.LP
.ie n \{\
.LP
Diagram: Write, then Review, then Publish.
.\}
.el \{\
.PS
boxwid = 0.95; boxht = 0.45
A: box "Write"
arrow right 0.3
B: box "Review"
arrow right 0.3
C: box "Publish"
.PE
.\}
.PP
The diagram is part of the document source.
```

Actual output



GRF-10-001 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`.PS / .PE`	Bound a pic drawing.
`box / arrow`	Draw a node or a directed connection.

GRF-10-002

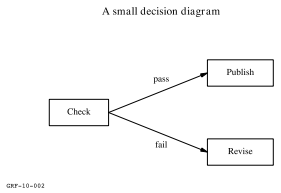
Branches and named anchors

Named shapes expose compass-point anchors. Separate two outcomes vertically, then label the routes.

Complete roff document

```
.TL
A small decision diagram
.LP
.ie n \{\
.LP
Diagram: Check branches to Publish on pass, and Revise on fail.
.\}
.el \{\
.PS
A: box "Check" width 0.9 height 0.4
B: box "Publish" at A.e + (2,0.6) width 1 height 0.4
C: box "Revise" at A.e + (2,-0.6) width 1 height 0.4
arrow from A.e to B.w
"pass" at A.e + (0.8,0.5)
arrow from A.e to C.w
"fail" at A.e + (0.8,-0.5)
.PE
.\}
```

Actual output



GRF-10-002 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`A.e / B.w`	Refer to the east and west anchors of named shapes.
`at`	Place a shape or text at an explicit coordinate.

GRF-10-003

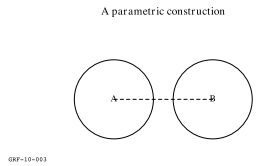
Geometry from variables

A small set of variables controls the drawing. Changing the radius changes both circles and their spacing.

Complete roff document

```
.TL
A parametric construction
.LP
.ie n \{\
.LP
Diagram: Two equal circles A and B share one horizontal centre line.
.\}
.el \{\
.PS
r = 0.6
A: circle radius r
B: circle radius r at A.e + (r*1.5,0)
line dashed from A.c to B.c
"A" at A.c
"B" at B.c
.PE
.\}
```

Actual output



GRF-10-003 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`variable assignment`	Reuse one geometric quantity.
`circle radius`	Set a circle size.
dashed	Use a construction-line stroke.

GRF-10-004

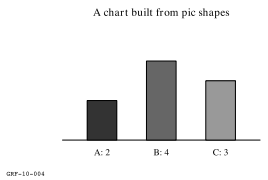
A small chart from rectangles

Three rectangles encode supplied values 2, 4 and 3 using one linear height scale. This is a deliberate primitive construction, not an automatic charting package.

Complete roff document

```
.TL
A chart built from pic shapes
.LP
.ie n \{\
.LP
Diagram: Three bars have values A=2, B=4 and C=3, on a shared baseline.
.\}
.el \{\
.PS
scale = 1
barw = 0.45
line from (0,0) to (3,0)
box width barw height 0.6 with .s at (0.6,0.0) fill 0.8
box width barw height 1.2 with .s at (1.5,0.0) fill 0.6
box width barw height 0.9 with .s at (2.4,0.0) fill 0.4
"A: 2" at (0.6,-0.2)
"B: 4" at (1.5,-0.2)
"C: 3" at (2.4,-0.2)
.PE
.\}
```

Actual output



GRF-10-004 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`height`	Map a supplied value to one fixed geometric scale.
`with .s at`	Anchor every bar at the same baseline.
`fill`	Choose a gray fill fraction.

Define reusable formatting

Strings, registers and macros reduce repeated source. Keep custom names distinct from macro-package internals, and escape parameters when a macro definition must delay evaluation.

GRF-11-001

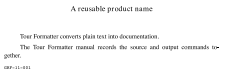
Strings for repeated names

A string is text that can be interpolated later. Changing the product name once updates every use.

Complete roff document

```
.ds Product Tour Formatter
.TL
A reusable product name
.PP
\*[Product] converts plain text into documentation.
.PP
The \*[Product] manual records the source and output commands together.
```

Actual output


A reusable product name

Tour Formatter converts plain text into documentation.

The Tour Formatter manual records the source and output commands together.

GRF-11-001

GRF-11-001 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`.ds`	Define a named string.
`\*[Product]`	Interpolate its current value.

GRF-11-002

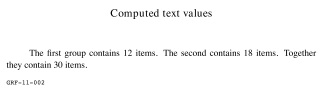
Number registers and arithmetic

Registers hold numeric values. The formatter evaluates ordinary roff arithmetic left to right unless parentheses specify a different grouping.

Complete roff document

```
.nr Samples 12
.nr Added 18
.nr Total (\n[Samples]+\n[Added])
.TL
Computed text values
.PP
The first group contains \n[Samples] items.
The second contains \n[Added] items.
Together they contain \n[Total] items.
```

Actual output



GRF-11-002 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`.nr`	Define a numeric register.
`\n[Total]`	Interpolate a numeric value.
`parentheses`	Make the intended grouping explicit.

GRF-11-003

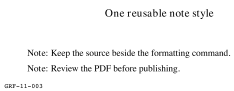
A macro with an argument

Double escapes delay argument expansion until the macro is called. The custom macro gives every note the same form.

Complete roff document

```
.de TourNote
.PP
.B "Note:"
\\$1
..
.TL
One reusable note style
.TourNote "Keep the source beside the formatting command."
.TourNote "Review the PDF before publishing."
```

Actual output



GRF-11-003 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`.de / ..`	Begin and end a macro definition.
`\\$1`	Delay the first-argument reference until macro invocation.

GRF-11-004

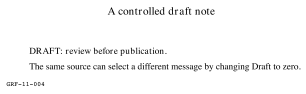
Conditional text for a chosen edition

A numeric register selects a branch. This explicit edition switch is part of the source and works across output devices.

Complete roff document

```
.nr Draft 1
.TL
A controlled draft note
.ie \n[Draft] \{\
.PP
.B "DRAFT: review before publication."
.\}
.el \{\
.PP
Approved publication edition.
.\}
.PP
The same source can select a different message by changing Draft to zero.
```

Actual output



GRF-11-004 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`.ie / .el`	Select one of two conditional branches.
`\{ / \}`	Group multiple requests in a conditional block.

Write and ship a longer manual

These complete projects combine the earlier structures. They explain how to document purpose, installation, command usage, configuration, troubleshooting and maintenance in a readable manual.

GRF-12-001

A user guide from title to troubleshooting

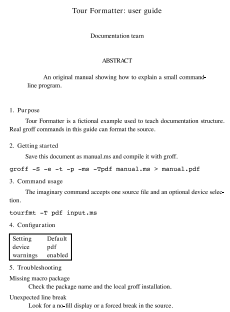
This original manual documents the fictional tourfmt command. Its prose answers practical questions in reading order; tables and code blocks keep the interface easy to scan.

Complete roff document

```
.TL
Tour Formatter: user guide
.AU
Documentation team
.AB
An original manual showing how to explain a small command-line program.
.AE
.NH 1
Purpose
.PP
Tour Formatter is a fictional example used to teach documentation structure. Real groff commands in this guide can format the source.
.NH 1
Getting started
.PP
Save this document as manual.ms and compile it with groff.
.DS L
.ft CR
groff -S -e -t -p -ms -Tpdf manual.ms > manual.pdf
.ft
.DE
.NH 1
Command usage
.PP
The imaginary command accepts one source file and an optional device selection.
.DS L
.ft CR
tourfmt -T pdf input.ms
.ft
.DE
.NH 1
Configuration
.TS
box tab(;);
l l.
Setting;Default
device;pdf
```

```
warnings;enabled
.TE
.NH 1
Troubleshooting
.IP "Missing macro package" 6
Check the package name and the local groff installation.
.IP "Unexpected line break" 6
Look for a no-fill display or a forced break in the source.
.NH 1
Maintenance
.PP
Keep the source, sample inputs and build command under version control. Inspect the generated output after a source change.
```

Actual output



Tour Formatter: user guide

Documentation team

ABSTRACT

An original manual showing how to explain a small command-line program.

1. Purpose

Tour Formatter is a fictional example used to teach documentation structure. Real groff commands in this guide can format the source.

2. Getting started

Save this document as manual.ms and compile it with groff.

```
groff -S -e -t -p -ms -Tpdf manual.ms > manual.pdf
```

3. Command usage

The imaginary command accepts one source file and an optional device selection.

```
tourfmt -T pdf input.ms
```

4. Configuration

Setting	Default
device	pdf
warnings	enabled

5. Troubleshooting

Missing macro package

Check the package name and the local groff installation.

Unexpected line break

Look for a `.br` request, a full display or a forced break in the source.

GRF-12-001 · Rendered by troff / groff

First-page preview · 2 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`reading order`	Lead from purpose to a working command, then reference details and failures.
`complete source`	Keep the title, prose, code and tables together in a standalone document.

GRF-12-002

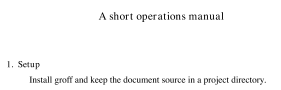
A manual with a generated contents page

XS/XE capture entries with their current page numbers. TC emits them at the end; a print workflow can reorder the PDF pages if front matter is required.

Complete roff document

```
.TL
A short operations manual
.NH 1
Setup
.XS
1. Setup
.XE
.PP
Install groff and keep the document source in a project directory.
.bp
.NH 1
Build
.XS
2. Build
.XE
.PP
Compile the reviewed source and inspect the result.
.bp
.NH 1
Publish
.XS
3. Publish
.XE
.PP
Ship the selected output together with source and licensing information.
.TC
```

Actual output



GRF-12-002 · Rendered by troff / groff

First-page preview · 4 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`.XS / .XE`	Capture a contents entry with the current page number.
`.TC`	Print the collected table of contents on a new page.
`placement`	This complete example deliberately places the contents at the end.

GRF-12-003

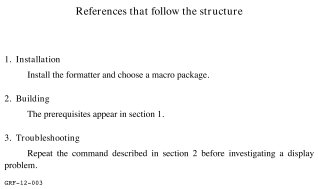
Stable references to numbered sections

Capture the ms section-number string immediately after a heading. Later prose can refer to that saved value rather than hard-coding the number.

Complete roff document

```
.TL
References that follow the structure
.NH 1
Installation
.ds SetupSection \*[SN-NO-DOT]
.PP
Install the formatter and choose a macro package.
.NH 1
Building
.ds BuildSection \*[SN-NO-DOT]
.PP
The prerequisites appear in section \*[SetupSection].
.NH 1
Troubleshooting
.PP
Repeat the command described in section \*[BuildSection] before investigating a
display problem.
```

Actual output



References that follow the structure

1. Installation
   Install the formatter and choose a macro package.
2. Building
   The prerequisites appear in section 1.
3. Troubleshooting
   Repeat the command described in section 2 before investigating a display problem.

GRF-12-003

GRF-12-003 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`\*[SN-NO-DOT]`	Read the current ms section number.
`.ds SetupSection`	Save the current number at the heading, before another heading changes it.

GRF-12-004

A compact API reference

Document a fictional configuration-file interface using purpose, fields, defaults and examples. An interface manual needs exact names and clear failure behavior.

Complete roff document

```
.TL
Configuration reference
.NH 1
Format
.PP
This invented interface reads one key=value pair per line. Unknown keys cause a
configuration error.
.NH 1
Fields
.TS
box tab(;);
l l lw(1.7i).
Name;Default;Meaning
_
device;pdf;Output device
strict;yes;Reject unknown keys
.TE
.NH 1
Example
.DS L
.ft CR
device=pdf
strict=yes
.ft
.DE
.NH 1
Compatibility
.PP
Document changes to defaults and accepted values when the interface changes. Examples
must match the version being described.
```

Actual output



Configuration reference

1. Format

This invented interface reads one key=value pair per line. Unknown keys cause a configuration error.

2. Fields

Name	Default	Meaning
device	pdf	Output device
strict	yes	Reject unknown keys

3. Example

```
device=pdf
strict=yes
```

4. Compatibility

Document changes to defaults and accepted values when the interface changes. Examples must match the version being described.

GRF-12-004

GRF-12-004 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`exact field names`	Make configuration keys easy to copy without ambiguity.
`defaults and failures`	State omitted-value behavior and invalid-input behavior.

GRF-12-005

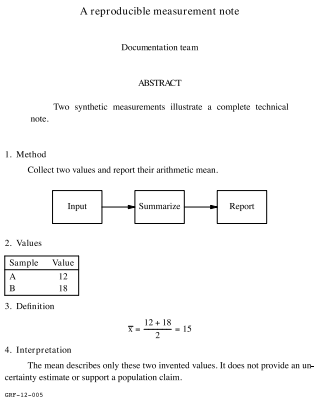
A technical note with prose, table, math and diagram

A single source combines all three preprocessors with ms. The supplied numbers are invented, and the equation defines the summary printed in the table.

Complete roff document

```
.TL
A reproducible measurement note
.AU
Documentation team
.AB
Two synthetic measurements illustrate a complete technical note.
.AE
.NH 1
Method
.PP
Collect two values and report their arithmetic mean.
.ie n \{\
.LP
Diagram: Input, then Summarize, then Report.
.\}
.el \{\
.PS
box "Input"; arrow; box "Summarize"; arrow; box "Report"
.PE
.\}
.NH 1
Values
.TS
box tab(;);
l n.
Sample;Value
_
A;12
B;18
.TE
.NH 1
Definition
.EQ
x bar = {12 + 18} over 2 = 15
.EN
.NH 1
Interpretation
.PP
The mean describes only these two invented values. It does not provide an uncertainty estimate or support a population claim.
```

Actual output



A reproducible measurement note

Documentation team

ABSTRACT

Two synthetic measurements illustrate a complete technical note.

1. Method

Collect two values and report their arithmetic mean.

2. Values

Sample	Value
A	12
B	18

3. Definition

$$\bar{x} = \frac{12 + 18}{2} = 15$$

4. Interpretation

The mean describes only these two invented values. It does not provide an uncertainty estimate or support a population claim.

GRF-12-005

GRF-12-005 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`-e / -t / -p`	Run eqn, tbl and pic before formatting.
`explicit definition`	State exactly how the reported summary relates to the displayed input.

GRF-12-006

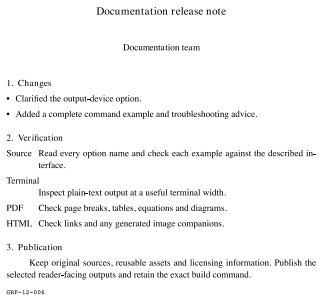
A release note and documentation checklist

Release documentation explains user-visible changes and how to verify them. The checklist is part of an original example document.

Complete roff document

```
.TL
Documentation release note
.AU
Documentation team
.NH 1
Changes
.IP \(bu 2
Clarified the output-device option.
.IP \(bu 2
Added a complete command example and troubleshooting advice.
.NH 1
Verification
.IP "Source" 7
Read every option name and check each example against the described interface.
.IP "Terminal" 7
Inspect plain-text output at a useful terminal width.
.IP "PDF" 7
Check page breaks, tables, equations and diagrams.
.IP "HTML" 7
Check links and any generated image companions.
.NH 1
Publication
.PP
Keep original sources, reusable assets and licensing information. Publish the selected
reader-facing outputs and retain the exact build command.
```

Actual output


Documentation release note

Documentation team

1. Changes

- Clarified the output-device option.
- Added a complete command example and troubleshooting advice.

2. Verification

Source Read every option name and check each example against the described interface.

Terminal
Inspect plain-text output at a useful terminal width.

PDF Check page breaks, tables, equations and diagrams.

HTML Check links and any generated image companions.

3. Publication

Keep original sources, reusable assets and licensing information. Publish the selected reader-facing outputs and retain the exact build command.

GRF-12-006

GRF-12-006 · Rendered by troff / groff

First-page preview · 1 page(s) in the complete PDF.

troff / groff · exit 0

Command or parameter	Meaning
`user-visible changes`	Explain the changed interface or explanation, rather than only listing edited files.
`multiple devices`	Review each output device used for publication.

Example and command index

- GRF-01-001 · Your first typeset page
- GRF-01-002 · Filled and literal lines
- GRF-01-003 · Spaces, comments and literal control characters
- GRF-01-004 · Units and relative changes
- GRF-02-001 · Title, author and abstract
- GRF-02-002 · Numbered sections and subsections
- GRF-02-003 · Indented and flush-left paragraphs
- GRF-02-004 · Document-wide settings
- GRF-03-001 · Emphasis and font families
- GRF-03-002 · Special characters and accents
- GRF-03-003 · Alignment choices
- GRF-03-004 · Size changes with restoration
- GRF-04-001 · Bullets, numbers and terms
- GRF-04-002 · A code block with preserved spacing
- GRF-04-003 · Quotations and footnotes
- GRF-04-004 · Keep a small explanation together
- GRF-05-001 · Headers and page numbers
- GRF-05-002 · Two columns for a compact report
- GRF-05-003 · Landscape geometry in raw troff
- GRF-05-004 · Page breaks and space reservations
- GRF-06-001 · A complete minimal man page
- GRF-06-002 · Command synopsis and options
- GRF-06-003 · Examples, literal code and escaping
- GRF-06-004 · Files, environment and exit status
- GRF-06-005 · Links and manual cross-references
- GRF-06-006 · A small command reference ready to ship
- GRF-07-001 · The mdoc document skeleton
- GRF-07-002 · Options as a tagged semantic list
- GRF-07-003 · Paths, variables and references
- GRF-07-004 · Literal examples and a caution
- GRF-08-001 · A small numeric table
- GRF-08-002 · Heading rules and column alignment
- GRF-08-003 · A paragraph inside a table cell
- GRF-08-004 · A table with a spanned heading
- GRF-09-001 · Fractions and square roots
- GRF-09-002 · Sums, limits and integrals
- GRF-09-003 · Matrices and scalable delimiters
- GRF-09-004 · Inline equations in explanatory prose
- GRF-10-001 · A left-to-right workflow
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- GRF-10-003 · Geometry from variables
- GRF-10-004 · A small chart from rectangles
- GRF-11-001 · Strings for repeated names
- GRF-11-002 · Number registers and arithmetic
- GRF-11-003 · A macro with an argument
- GRF-11-004 · Conditional text for a chosen edition
- GRF-12-001 · A user guide from title to troubleshooting
- GRF-12-002 · A manual with a generated contents page
- GRF-12-003 · Stable references to numbered sections
- GRF-12-004 · A compact API reference
- GRF-12-005 · A technical note with prose, table, math and diagram
- GRF-12-006 · A release note and documentation checklist

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