

**NAME**

deckmate – simulate line printer paper output in PostScript

**SYNOPSIS**

**deckmate** [-i *input\_file.txt*] [-o *output\_file.ps*] [-C[C] [*c1*[,*c2*[,...[,*c12*]]]]] [-l {*f*|*c*|*r*}] [-c *R,G,B*] [-F *listing\_font*] [-f nob[order]] [-f noc[olumns]] [-f nop[agenumbers]] [-t *n1,n2*,...] [-w] [DD=[*stepname*].*ddname*]

**DESCRIPTION**

**deckmate**(1) reads a plain text program file and generates a PostScript output that simulates 80- and 132-column line printer paper, with alternating sets of three lines of white paper and three lines of colored paper. Output pages show 66 lines of input text per sheet as on line printer paper. By default, each page prints with column column headings numbered from 01 through 80 or 132, and with a border around the listing area. The `-f noborder` option turns off border printing, and the `-f nocolumns` option turns off the column number heading. The page number prints at the bottom of each page unless disabled with the `-f nopagenumbers` option.

The default output is 80 columns in portrait mode. The `-w` (wide) option selects 132 column output in landscape mode. Pages are scaled to fit on U.S. letter and A4 paper.

Special cases for FORTRAN, COBOL, and RPG reproduce vertical lines between columns corresponding to fields on programming template forms for early fixed-format versions of those languages. These lines can be especially advantageous when examining RPG, which still uses fixed-form statements. The `-t` option allows adding dashed gray lines at additional, user-selectable column boundaries. Among other uses, these customized column markings can delineate fields of fixed-format data records.

The first six lines of output are against a white background; following this, every other set of three lines are shaded a light green. This color prints as a light gray on a black and white PostScript printer. The default light green can be changed (even changed to white) with the `-c` option.

FORTRAN and COBOL listings (selected with `-l f` or `-l c`, respectively) will print a solid rule before column 72 to denote the comment area. RPG listings (selected with `-l r`) will print a solid rule before column 75. These last few columns on a punched card deck were often used for card sequence numbers. Among other benefits, this could allow a dropped deck to be put back in order by hand or by feeding through an IBM card sorter in multiple passes from the least significant number digit (e.g., in column 80) to the most significant. Nowadays the Unix **sort**(1) utility can accomplish the same task in an instant.

Vertical column lines between language-specific fields print with each line when in COBOL, FORTRAN, or RPG mode unless the line contains a comment or Job Control Language (JCL). A "/" character in the first column is interpreted as IBM JCL, and other non-numeric characters in the first five columns are interpreted as CDC NOS JCL (except for a "C" in column 1 in FORTRAN, which designates a comment line).

With the `-l c` (COBOL) option selected, **deckmate** prints a dashed line down the entire form between columns 11 and 12 to denote the Margin B area.

With the `-l r` (RPG) option selected, **deckmate** recognizes and delineates column boundaries between fields for these line types: Header (H), File Description (F), Extension (E), Line Counter (L), Input (I), Calculation (C), Output (O), plus the Telecommunications (T) and Auto Report (U) additions for IBM RPG II.

The `DD=` option allows specification of the JCL data definition line that begins an input data set to stop printing language-specific solid vertical lines between fields. For example, `DD=GO.SYSIN` will match a JCL line beginning with `//GO.SYSIN`, where `GO` is the *stepname* and `SYSIN` is the *ddname*. This would find the JCL line `//GO.SYSIN DD *`. At that point, **deckmate** will stop printing solid vertical lines between fields of the programming language that was chosen with the `-l` option.

FORTRAN IV carriage control is enabled with the `-CC` option. This is also referred to as ASA (or USASI or ANSI) carriage control. When enabled, line advancement is controlled by the first character, which is not printed. **deckmate** also supports the IBM carriage control tape extensions for their 1403 series and related line printers to advance a line printer carriage to preset channel positions 1 through 12. Any unrecognized character in the first column results in an advance to the next line before printing. Because **deckmate** generates simulated line printer output, it supports the full set of FORTRAN carriage control

characters and thus a superset of the POSIX `asa(1)` command's support. See the `-C[C]` option description for details.

**deckmate** also allows specifying a custom monospaced PostScript font for file listings from the built-in available fonts: Courier, Cardpunch, DOTwriter, and DOTwriterAPL. The Courier font is the default font; it is a built-in Type 1 PostScript font from Adobe Systems on PostScript devices. The other three are Type 3 PostScript fonts that are built into the `deckmate` program. The Cardpunch font simulates the 5-by-7 dot matrix printing on punched cards. The DOTwriter font simulates the dot matrix prinout on a Digital Equipment Corporation LA36 DECwriter. The DOTwriterAPL font simulates the ISO-IR-68 APL character set font available for the DECwriter LA37 model. The three Type 3 PostScript fonts that `deckmate` includes are described at <http://unifoundry.com/retro/>.

Line printers and dot matrix printers could simulate a boldface font by printing the same characters in the same positions multiple times. **deckmate** will switch to boldface printing in FORTRAN carriage control mode when the same character is overwritten in one position using the '+' overprinting format. Free form text input will switch to boldface printing when a character is followed by a backspace and then the same character. For proper APL support, simply printing one character on top of another will *not* print in boldface. Detecting that is also important for printing ASCII art that uses superimposed characters to produce an image.

All of the listing fonts have a boldface version.

The resulting PostScript output can be converted to a PDF file with the `ps2pdf(1)` utility.

## OPTIONS

`-i input_file` Specify the input file. The default is STDIN.

`-o output_file`  
Specify the output file. The default is STDOUT.

`-C[C] [c1[,c2[,c3...[,c12]]]]`

This enables carriage control mode, where the first character in each line controls vertical positioning of the line printer output prior to printing the line. Each line of the input file begins with a FORTRAN IV / ASA carriage control character. Optionally, a comma-separated list of one to twelve channel numbers can follow to support the IBM carriage control tape extensions to set line positions for channels 1 through 12. Unrecognized characters result in a carriage advance to the next line before printing the current line.

`+` Overprint the current line.

`space` Advance one line.

`0` Advance two lines.

`-` Advance three lines. This is an IBM extension.

`1` Advance to the top of the next page. If Channel 1 was set with a number following the `-C` option flag, this advances to the line corresponding to Channel 1 on the next page.

`2, 3, ..., 9, A, B, C`

Advance to channel number 2 through 12, respectively. Advance to the next page first if the corresponding line is already passed on the current page. The default line numbers for Channels 1 through 12 are: 1, 7, 13, 19, 25, 31, 37, 43, 49, 55, 61, and 63.

`<VT>` ASCII vertical tab character, Control-K. Advance to the first line in the next six-line group. This is not a FORTRAN code, but can appear in compiler and assembler listing outputs.

`<FF>` ASCII form feed character, Control-L. Advance to the top of the next page. This is not a FORTRAN code, but can appear in compiler and assembler listing outputs.

- `-c red,green,blue`  
Specify the color to use instead of the default light green, as the PostScript triplet red, green, and blue. Values must be between 0.0 and 1.0, inclusive. Specifying "`-c 1, 1, 1`" will set the background completely white. The default color is the equivalent of "`-c 0.75, 1.0, 0.75`". The combination "`-c 0.8, .93, 1`" produces a light blue that is suitable for printing on black and white printers.
- `-F Courier` Use the Type 1 PostScript Courier font for program listings. This is the default.
- `-F Cardpunch`  
Use a simulated card punch dot matrix font for listing, with lowercase letters added.
- `-F DOTwriter`  
Use a simulated DECwriter LA36 dot matrix font for listings.
- `-F DOTwriterAPL`  
Use a simulated DECwriter LA37 ISO-IR-68 APL dot matrix font for listings.
- `-f nob[order]` Do not print a border around the page listing contents.
- `-f noc[olumns]`  
Do not print column numbers at the top of a page.
- `-f nop[agenumbers]`  
Do not print page numbers at the bottom of a page.
- `-h` Print a list of commands as help output and exit.
- `-l c[obol]` Print output using a COBOL language template.
- `-l f[ortran]` Print output using a FORTRAN IV language template.
- `-l r[pg]` Print output using an RPG language template.
- `-t n1,n2,...` Specify tab stops to print along the entire form. The lines will be printed at the start of columns *n1*, *n2*, etc. As examples, this option could be used to print tab stops every 4 columns after the Margin B stop (column 12) in a COBOL listing, or every 8 columns for an assembler listing.
- `-v, --version`  
Print the program version.
- `-w` Print in wide mode, 132 columns by 66 lines. The output is scaled and printed in landscape orientation.
- `DD=ddname, DD=stepname.ddname`  
*This string is case-sensitive.* When a JCL Data Definition ("DD") line beginning with "`//ddname`" or "`//stepname.ddname`" is seen, treat it as the start of data input for a COBOL, FORTRAN, or RPG JCL batch job and stop inserting language-specific solid vertical field delimiter marks between line columns. The *stepname* and *ddname* fields each can be up to 8 characters long, so with the interposed '.' character, the maximum size of a *stepname.ddname* string is 8 + 1 + 8 = 17 characters long. (Yes, the "DD=" format is a play on IBM JCL syntax.)

**EXAMPLE**

Sample usage:

```
deckmate -i my_card_deck.for -o my_card_deck.ps -l fortran
```

The output file, `my_card_deck.ps`, can then be converted to the PDF file `my_card_deck.pdf` with the command "`ps2pdf my_card_deck.ps`" on systems where the **ps2pdf(1)** utility is installed.

The source distribution contains many examples and a Makefile in the "examples" directory.

## FILES

Input lines are expected to be ASCII text of up to 80 or 132 printable characters per line. There are two exceptions: an input stream can contain the special card punch characters cents (Unicode code point U+00A2) and logical not (U+00AC), either as a single binary byte or as the UTF-8 octal sequences "\302\242" and "\302\254", respectively. Historically, the EBCDIC cents symbol (EBCDIC hexadecimal value 0x4A) also has been mapped to the ASCII backslash (U+005C) and the EBCDIC logical not symbol (EBCDIC hexadecimal value 0x5F) has been mapped to the ASCII tilde (U+007E); see for example Appendix B of RFC 740, "NETRJS Protocol", 22 November 1977.

If any other byte sequence appears to be a UTF-8 encoding of code points in the range U+0080..U+00FF (octal sequences "\302\200" through "\303\277", inclusive), a double-dagger symbol is printed unless using the DOTwriterAPL font. If any other unrecognized binary byte value is encountered, each such byte is printed as a double-dagger symbol. When using the DOTwriterAPL font, a squish quad character is printed to designate an unrecognized character.

Output files are PostScript. Files that use the default Courier font for listings conform to version 1.0 of Adobe's PostScript Document Structuring Conventions (DSC) for the greatest portability. Files that use the Cardpunch, DOTwriter, or DOTwriterAPL font for listings conform to version 2.1 of the DSC to mark each included font definition. Version 2.1 is widely supported by today's PostScript utilities. The generated documents use the standard PostScript Type 1 Courier font for program listings and page numbers; Helvetica if the output contains a language-specific template form for COBOL, FORTRAN, or RGB; and Symbol if a document contains the logical not card punch symbol.

## SEE ALSO

**asa(1)**, **ps2pdf(1)**

## AUTHOR

**deckmate** was written by Paul Hardy.

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