

[illegible]

$$\begin{array}{ccccccc} & & & & & & | \\ & & & & & & | \\ (& - & - & - & - & - & - \\ & & & & & & | \\ (& - & - & - & - & - & | \\ & & & & & & | \end{array}$$

```
> cat example.txt
```

```
This is the first line with three spaces at the end.
```

```
This line contains some garbage.
```

There are some empty lines around this one.

Finally, this is the last line.

```
~|~  ( ) ( ) |  ( ) ~|~  -|-|-| (/ _  vv (/ _ (/ _ |<
```

```
( ( | |
```

```
-n, --number  
    number all output lines
```

```
> cat --number example.txt  
 1 This is the first line with three spaces at the end.  
 2 This is the second line containing      TAB      characters.  
 3 This line contains some garbage.  
 4  
 5 There are some empty lines around this one.  
 6  
 7  
 8  
 9 Finally, this is the last line.
```

```
~|~  ( ) ( ) |  ( ) ~|~  -|-|-| (/ _  vv (/ _ (/ _ |<
```

```
( _ ( _ | -| -
```

```
-b, --number-nonblank  
    number nonempty output lines, overrides -n
```

```
> cat --number-nonblank example.txt  
1 This is the first line with three spaces at the end.  
2 This is the second line containing      TAB      characters.  
3 This line contains some garbage.  
  
4 There are some empty lines around this one.  
  
5 Finally, this is the last line.
```



```
~|~( )(| ( )~|~ -|-|-|(/_ vv(/_(/_|<
```

```
( (| |
```

-s, --squeeze-blank
suppress repeated empty output lines

```
> cat --squeeze-blank example.txt
This is the first line with three spaces at the end.
This is the second line containing      TAB      characters.
This line contains some garbage.
```

There are some empty lines around this one.

Finally, this is the last line.

$$\begin{array}{cccc} & & & | \\ _ & _ & _ & _ \\ (& (& | & | \\ _ & _ & _ & _ \end{array}$$

```
--squeeze-blank
```

- - number

```
> cat --squeeze-blank --number example.txt
```

```
1 This is the first line with three spaces at the end.
```

```
3 This line contains some garbage.
```

4

```
5  There are some empty lines around this one.
```

6

```
7 Finally, this is the last line.
```

```
> cat example.txt | sqz | nbr
```



[illegible]

Some character-oriented terminal emulators:



```
(~. |
_) | ( | ( / _ | ( _ ) | ( / _ \
```

```
~ | ~
 | ( / _ | | | | | | | | ( _ | | ( / _ | | | | | | ( _ | | ( _ ) |
```

emulates a video terminal within some other display architecture

terminal window \cong terminal emulator inside a GUI

Some character-oriented terminal emulators (continued):

- Command-line interface
 - GNU screen (1987, terminal multiplexer)
 - tmux (2007, includes most features of GNU screen)
- Others (for MS-DOS, Microsoft Windows, macOS, etc.)

There are block-oriented terminal emulators, too.

References:

- https://en.wikipedia.org/wiki/Terminal_emulator
- https://en.wikipedia.org/wiki/List_of_terminal_emulators


```
(~. _| _| _| _| _|
_)|(_|(_|(_|(_|(_|(_|(_|
```

```
\ /~|~'| /X/X / / ^ | \ | (~~|~
 \ / | .|.X/X/ / / /~~\ | \ | _)_|_
```

VT100: video terminal, introduced in 1978 by DEC

- 132 columns and 24 rows
- ANSI X3.64 standard for command codes
 - blinking, bolding, reverse video, and underlining
 - box-drawing character set

Esc (0 switched the codes for lower-case ASCII letters to draw this set, and the sequence Esc (B switched back.

References:

- <https://en.wikipedia.org/wiki/VT100>

$$\bar{N}(\bar{r}_1) = \bar{N}(\bar{r}_2) = \bar{N}(\bar{r}_3)$$

Window management

Change to

- last-visited active window C-a C-a
- window by number C-a <number>
- window by number or name C-a '
- next window in list C-a n or C-a <space>
- previous window in list C-a p or C-a <backspace>
- chosen window from list C-a " (lists windows, then you can choose)

```
Rename current window
```

C-a A

$$\bar{N}(\bar{I}) = (\bar{I} - \bar{I}_1) \bar{I}_1$$

If you want...

... we can see more

- commands,
- details,
- configuration settings

next time!

/~_\ \ || | / | . _ ||>< ~|~ _ | _ ~|~~|~
_ / | \ || | / | _ || | _ |>< | (_) (_) | _ \ _ | _ | _ .

- Tool of the week
- Request of the week
- Homework

