

Unix/Linux Tutorial for Beginners

Session III

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How to create a file?

- use a text editor to create and modify a file
- only plain data → **no** tables, images, or any other human-friendly media
- command line text editors: [nano](#), [vi](#), [emacs](#)
- graphical editors: [gedit](#), [kate](#), [Notepad++](#) (windows)
- each editor has its own set of unique keystrokes for performing similar functions

Create an empty file

- the easiest way to create new, empty files
- `touch <options> <file_name(s)>`

```
$ touch myNewText.txt
$ ls -l
-rw-rw-r-- 1 duck duck 0 Oct 10 21:00 myNewText.txt
```

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- it does not overwrite existing files with the same name → it changes only the access time for such files to the current time

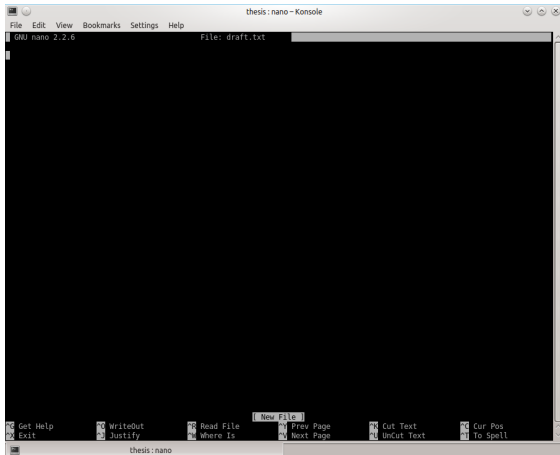
```
$ touch myNewText.txt
$ ls -l
-rw-rw-r-- 1 duck duck 38 Oct 10 22:30 myNewText.txt
```

Nano

- is a keyboard-oriented text editor controlled with control keys
- it displays the options at the bottom of the screen
- creates a new blank file or open an existing one

```
$ cd thesis  
$ nano draft.txt
```

Nano options



Ctrl o → save file

Ctrl x → exit nano

Ctrl y → scroll up

Ctrl v → scroll down

Ctrl g → help

Vi editor

- is generally considered the standard Unix editor
- can edit an existing file, create a new file, or read a text file

Vi editor

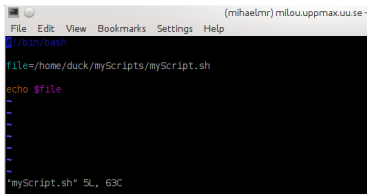
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- open/create a file:

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Vi editor

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The screenshot shows a terminal window titled "(mihaelmr) milou.uppmass.uu.se". The prompt is "/bin/bash". The user has executed the command `vi myScript.sh`, and the editor shows the file path `file=/home/duck/myScripts/myScript.sh`. The first line of the file contains the command `echo $file`. The editor interface shows a cursor on the first line, and the bottom of the window displays the status line `"myScript.sh" 5L, 63C`.

Vi operation modes

- 2 modes:
 - **command mode** – enables administrative tasks such as saving files, executing commands, find and replace ...
 - **insert mode** – enables to insert text into the file
- always starts in *command mode*
- start *insert mode* → type **i**
- exit the *insert mode* → press the **Esc** key
- save the content → **:w**
- quit without saving → **:q!**
- save and quite → **:x**
- delete the whole line → **dd**
- undo changes → **uu**

File statistics – wc

- counts the number of lines, words, and bytes in files
- usage: `wc <options> <file>`

```
$ cd ~/data/poetry
$ ls
rosesRobertBurns.txt
$ wc rosesRobertBurns.txt
19  106  527 rosesRobertBurns.txt
```

wc options

- **-l** – print the number of lines
- **-w** – print the number of words
- **-m** – print the number of characters
- **-c** – print the number of bytes
- **-L** – print the length of the longest line

```
$ wc -l rosesRobertBurns.txt  
19 rosesRobertBurns.txt
```





```
$ wc -L rosesRobertBurns.txt  
36 rosesRobertBurns.txt
```

less

- **less** – a program to view long text documents in a page-by-page manner
- loads only the part of a file into memory, which it is displaying
- usage: **less** <file>

```
$ less mySeq.fa
>Aeu4ULoc00005708.1
MATSSSPSSTAIQITPPTATKDVDDDEIPAPDTVPPPTATPTMDRVMSGVANLAQ
>Aeu4ULoc00008922.5
MLIISHSLYSTLTMVKNKRYTPPSARGSTETRSAPRTPGQDPSQRVERAQQHGGGD
```

less – navigation shortcuts

-  → next page
-  g → go to the end of the document
-   → move up or down a line
- 10g → go to line 10
- /abc → search for text 'abc'
- n → find next occurrence of 'abc'
- h → show help for less
- q → quit viewing

head

- `head` → prints the indicated number of lines from the beginning of a file (default 10)
- number of lines can be adjusted using the `-n` option, or the sign `-` followed by the number

```
$ head -n 4 rosesRobertBurns.txt
0 my Luve's like a red, red rose
That's newly sprung in June;
0 my Luve's like the melodie
That's sweetly play'd in tune.
```

```
$ head -2 rosesRobertBurns.txt
0 my Luve's like a red, red rose
That's newly sprung in June;
```

tail

- **tail** → prints the indicated number of lines from the end of a file (default 10)
- adjust the number of lines: **tail -n 3** or **tail -3**
- **tail -f** → view the last few lines of a growing file, updated continuously

```
$ tail -3 rosesRobertBurns.txt
And fare thee well, a while!
And I will come again, my Luve,
Tho' it were ten thousand mile.
```


cat

- concatenates files and prints the content on the screen
- can be used to display files without paging
- usage: `cat <file>`

```
$ cat wishlistA.txt
more money


$ cat wishlistB.txt
less work

$ cat wishlistA.txt wishlistB.txt
more money
less work
```

Redirection operators


- most commands read input and write output
 - the input is given with the keyboard (`stdin, 0`)
 - the output is displayed on the screen (`stdout, 1`)
 - the error messages are displayed, too (`stderr, 2`)
- command's output can be redirected to files instead of printing it to the screen
- operators: `>>`, `<`, `>`, `|`

Redirecting the input

- some commands receive their input from the keyboard (– the standard input) → press  d to end the input

```
$ wc  
Holocentric chromosomes occur in a number of independent  
eukaryotic lineages , and they form holokinetic kinetochores  
along the entire poleward chromatid surfaces .  
 3   21  164
```

Redirecting the input


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Holocentric chromosomes occur in a number of independent  
eukaryotic lineages , and they form holokinetic kinetochores  
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3 21 164
```

- data can be received as a command line parameter

```
$ wc paper.txt  
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along the entire poleward chromatid surfaces .  
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```

- data can be received as a command line parameter

```
$ wc paper.txt  
  3   21  164
```

- or it can be read from stdin

```
$ wc < paper.txt  
  3   21  164
```

Redirecting the output

- most programs print their result on the standard output (– terminal window)
- redirect into a file by using:
 - `>` – overwrites an existing file, or creates a new file
 - `>>` – appends the output to a file if it exists

```
$ cat ath_IDs.txt
AT1G01010
AT1G01020
AT1G01050
$ cat bradi_IDs.txt
Bradi1g00200.1
Bradi1g00260.1
Bradi1g00270.3
$ cat ath_IDs.txt bradi_IDs.txt > all_myIDs.txt
$ cat all_myIDs.txt
AT1G01010
AT1G01020
AT1G01050
Bradi1g00200.1
Bradi1g00260.1
Bradi1g00270.3
```

Pipes

- | – redirects output from one command to another command
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$ sort -n lengths.txt > sorted_lengths.txt
$ head -1 sorted_lengths.txt
9 methane.pdb
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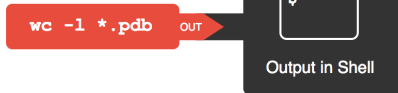
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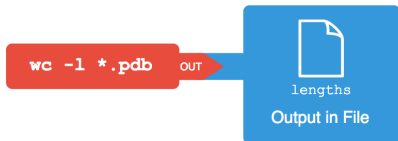
```
$ wc -l *.pdb | sort -n | head -1
9 methane.pdb
```

Summary I/O redirections

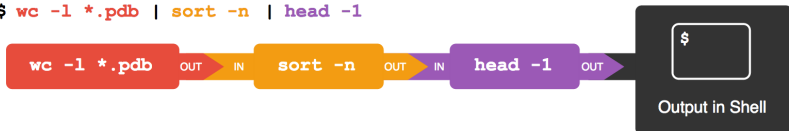
```
$ wc -l *.pdb
```



```
$ wc -l *.pdb > lengths
```



```
$ wc -l *.pdb | sort -n | head -1
```



Summary

- create files using command line editors (`nano`, `vi`, `emacs`), graphical editors (`gedit`, `kate`, `Notepad++`), or the command `touch`
- get file statistics using the command `wc`
- display file content using the commands `head`, `tail`, `less`, `cat`