

The Linux Basics Course

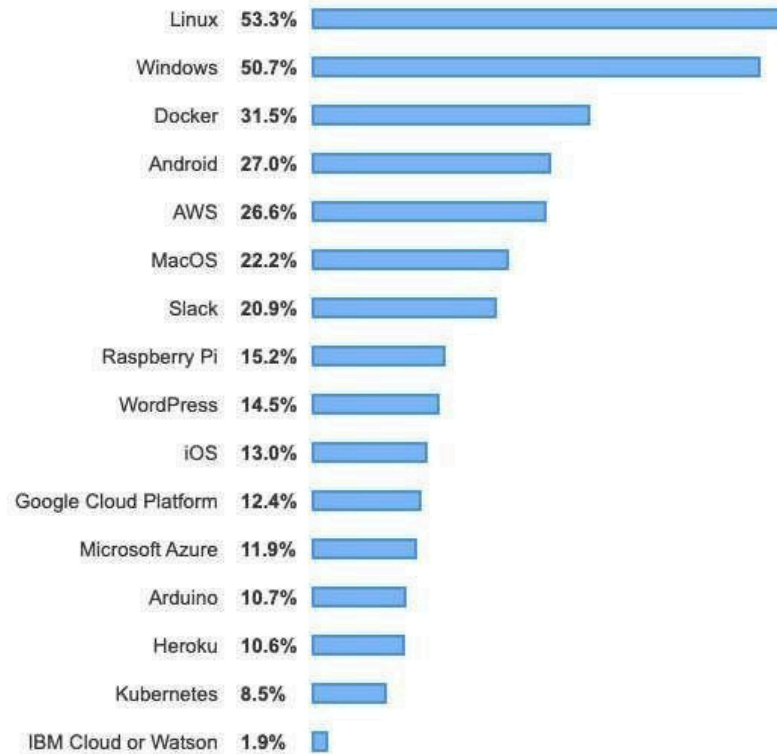


Why Linux?

Platforms

All Respondents

Professional Developers



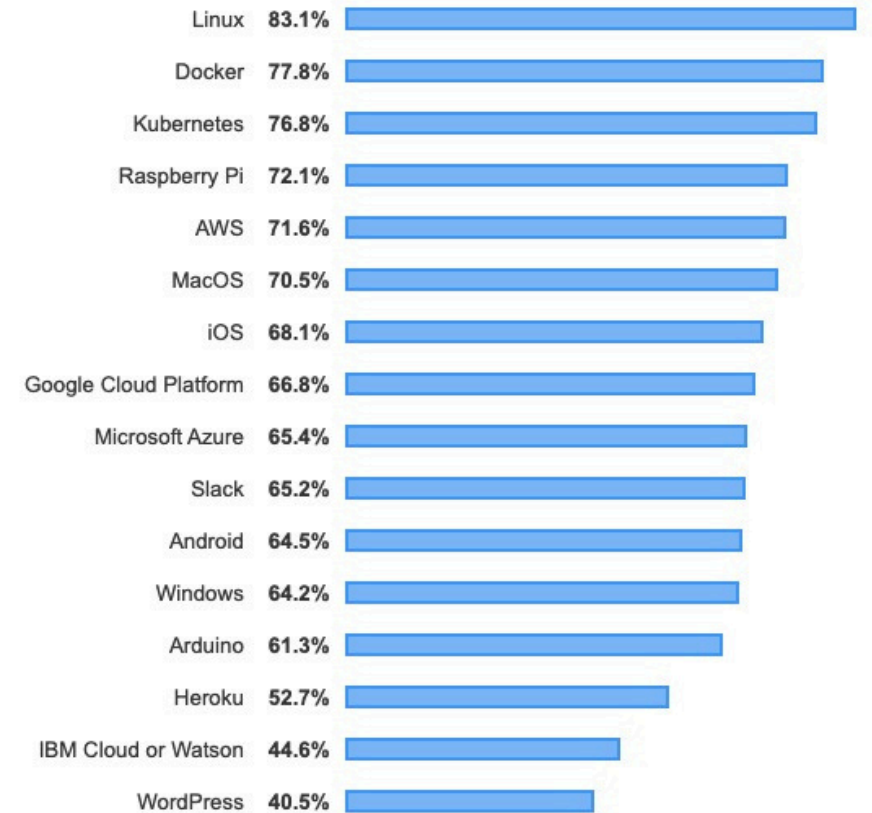
80,144 responses; select all that apply

Most Loved, Dreaded, and Wanted Platforms

Loved

Dreaded

Wanted



overflow
curve
19

Why Linux?

As per the latest report from Top 500, Linux now runs on all of the fastest 500 supercomputers in the world. The previous number was 498 as remaining two supercomputers ran Unix.

[Top500](#) is an independent project that was launched in 1993 to benchmark supercomputers. It publishes the details about the top 500 fastest supercomputers known to them, twice a year. You can go the website and [filter out the list](#) based on various criteria such as country, OS type, vendors etc.

<https://itsfoss.com/linux-runs-top-supercomputers/>

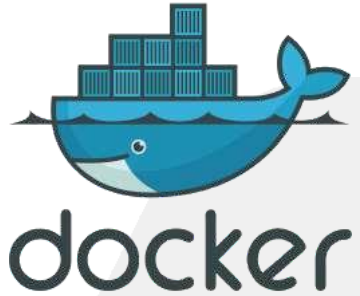
Looking deeper, Linux's importance to the Web is even more extreme. By [W3Cook's analysis](#) of Alexa's data, 96.3 percent of the top 1 million web servers are running Linux. The remainder is split between Windows, 1.9 percent, and FreeBSD, 1.8 percent.

<https://www.zdnet.com/article/can-the-internet-exist-without-linux/>

No, I didn't use a misleading blog title. Smartphones powered by Linux are in fact dominating the smartphone market. A few of you may be scratching your heads at this point (stop that, you'll go bald) while others are filled with that *Sound of Music* – “The Hills are Alive!” kind of Linux pride! Read on and I'll provide some pudding, filled with proof that ~~81%~~ 86% of all Smartphones are powered by Linux.

<https://haydenjames.io/81-percent-smartphones-powered-by-linux/>

Linux & DevOps



2013 - Docker was born
2016- Docker for Windows was born



Can Ansible run on Windows? 🐞

No, Ansible can only manage Windows hosts. Ansible cannot run on a Windows host natively, though it can run under the Windows Subsystem for Linux (WSL).

https://docs.ansible.com/ansible/latest/user_guide/windows_faq.html



Note: The Kubernetes control plane, including the **master components**, continues to run on Linux. There are no plans to have a Windows-only Kubernetes cluster.

[Kubernetes Documentation](https://kubernetes.io/docs/)

Why DevOps

LinkedIn search results for "devops" in Worldwide. 122,547 results.

Jobs ▾ | Sort by ▾ | Date Posted ▾ | LinkedIn Features ▾

Devops in Worldwide 122,547 results Job Alert Off ☐

- Junior DevOps Engineer** Promoted
Comcast
Mount Laurel, NJ, US
3 alumni work here
58 minutes ago
- DevOps Specialist** Promoted
UST Global
Midlands Occidental, Inglaterra, Reino Unido
23 connections work here
1 hour ago · Easy Apply
- DevOps Engineer** Promoted
Rakuten Viki
Singapore, Singapore
1 day ago · 19 applicants
- Devops**
Citi
Pune, IN

LinkedIn search results for "cloud" in Worldwide. 381,406 results.

Jobs ▾ | Sort by ▾ | Date Posted ▾ | LinkedIn Features ▾

Cloud in Worldwide 381,406 results Job Alert Off ☐

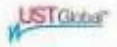
- Cloud Platform Engineer** Promoted
Capgemini
Cracow, Lesser Poland District, Poland
121 connections work here
1 week ago · 24 applicants · Easy Apply
- Cloud Engineer** Promoted
Fannie Mae
Reston, VA, US
7 connections work here
5 days ago · 12 applicants
- Cloud Solution Architect** Promoted
Swiss Re
Kansas City, MO, US
6 alumni work here
6 days ago · 6 applicants

Why DevOps

3 alumni work here

58 minutes ago

DevOps Specialist Promoted



UST Global

Midlands Occidental, Inglaterra, Reino Unido



23 connections work here

1 hour ago · Easy Apply



DevOps Engineer Promoted

Rakuten Viki

Singapore, Singapore

1 day ago · 19 applicants



Devops

Citi

Pune, IN



60 connections work here

1 day ago · 18 applicants



Devops

KWAN

Porto, PT

6 days ago · 1 applicant



DevOps Specialist

Amdocs

Toronto, Ontario, Canada



33 connections work here



121 connections work here

1 week ago · 24 applicants · Easy Apply



Cloud Engineer Promoted

Fannie Mae

Reston, VA, US



7 connections work here

5 days ago · 12 applicants



Cloud Solution Architect Promoted

Swiss Re

Kansas City, MO, US



6 alumni work here

6 days ago · 6 applicants



Cloud Architect

Anonymous

Dublin, IE

15 hours ago



Cloud Engineer

National Australia Bank

Melbourne, Victoria, Australia



6 connections work here

6 hours ago

Common Challenges...

- Trouble with navigating Linux CLI
- Navigating directory structures and files
- No experience working with text editors- VI editor
- Different flavors of Linux
- Errors during installation of applications and /dependencies
 - rpm, dpkg, apt and yum
- Issues with networking between VMs
- Trouble with permissions and security in Linux
- Lack of hands-on practice

Objectives



Working with Shell -I



Linux Core Concepts



Package
Management



Shell &BASH



Security and File
Permissions



Linux Networking

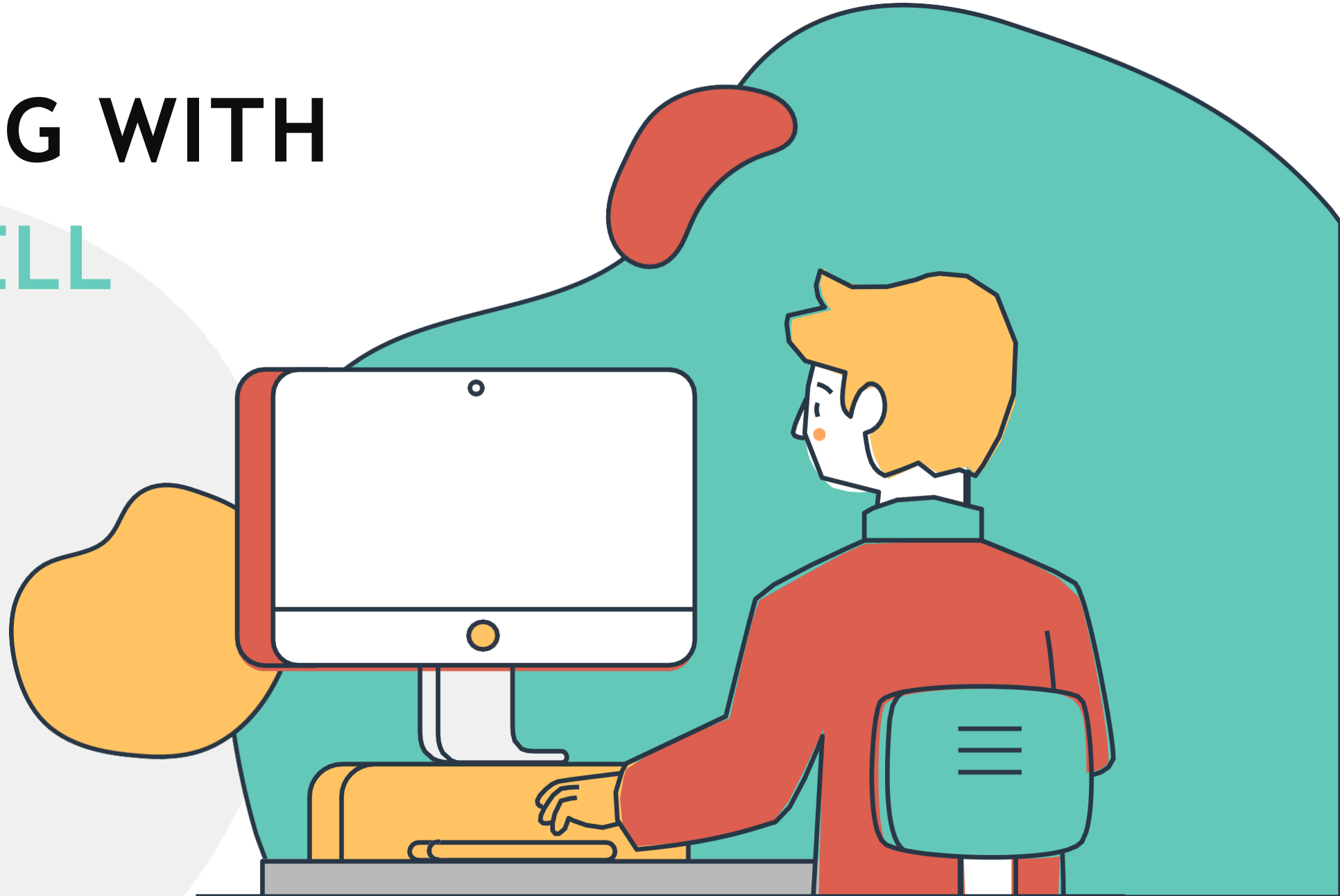


Storage in Linux



SYSTEMD and
Services

WORKING WITH THE SHELL



Working with the Shell - I

Linux Basic Commands

Lab: Linux Commands

Bash Shell

Lab: Bash Shell

Shell



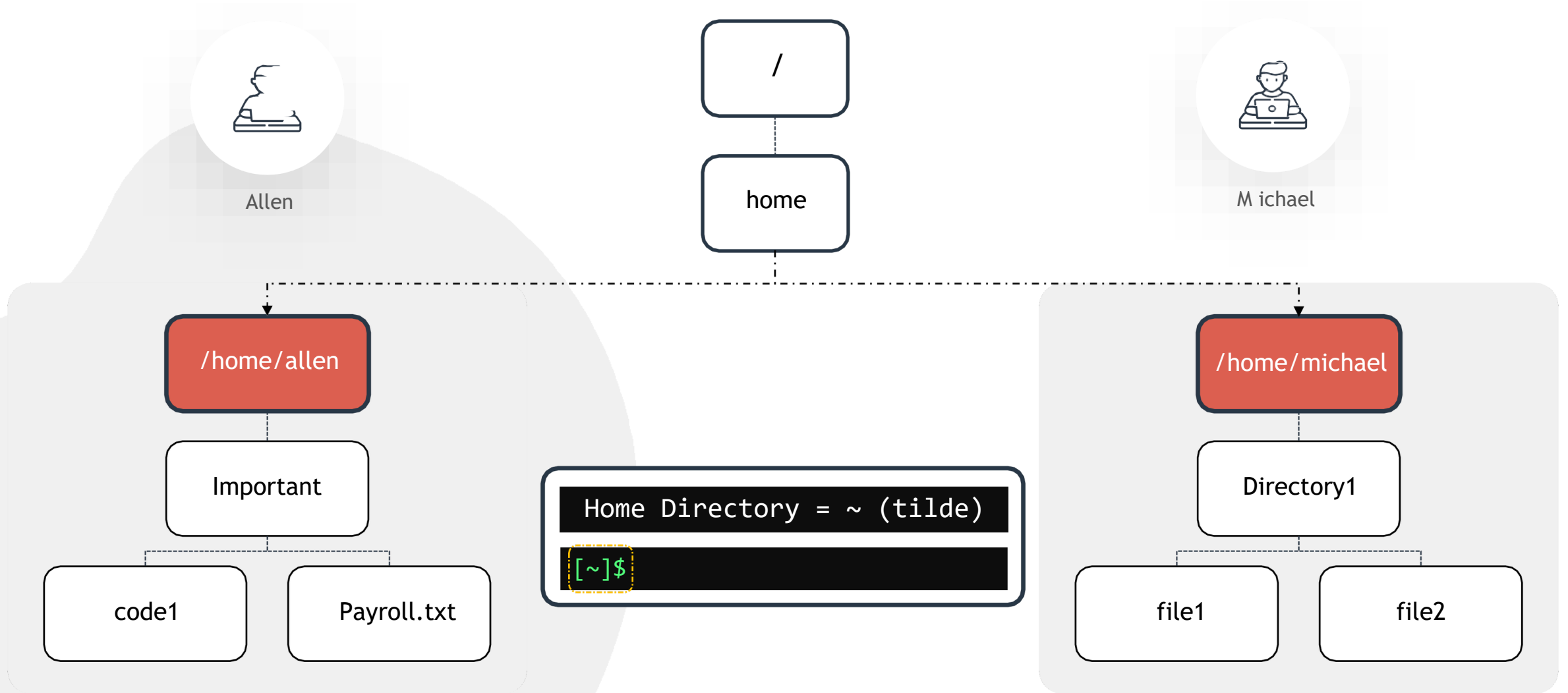
Ubuntu Desktop
/ Graphical View



Linux Shell

```
$ echo Hello  
Hello  
$
```

The Home Directory



Command and Arguments

```
[~]$ echo
```

```
[~]$
```

```
[~]$ uptime
```

```
19:18:51 up 19:48,  2 users,  load average:  
1.18, 0.49, 0.36
```

```
[~]$ echo Hello
```

```
Hello
```

```
[~]$
```

```
[~]$ echo -n Hello
```

```
Hello[~]$
```

```
command <options> <arguments>  
echo = command  
option = -n  
Hello = argument
```

Command Types

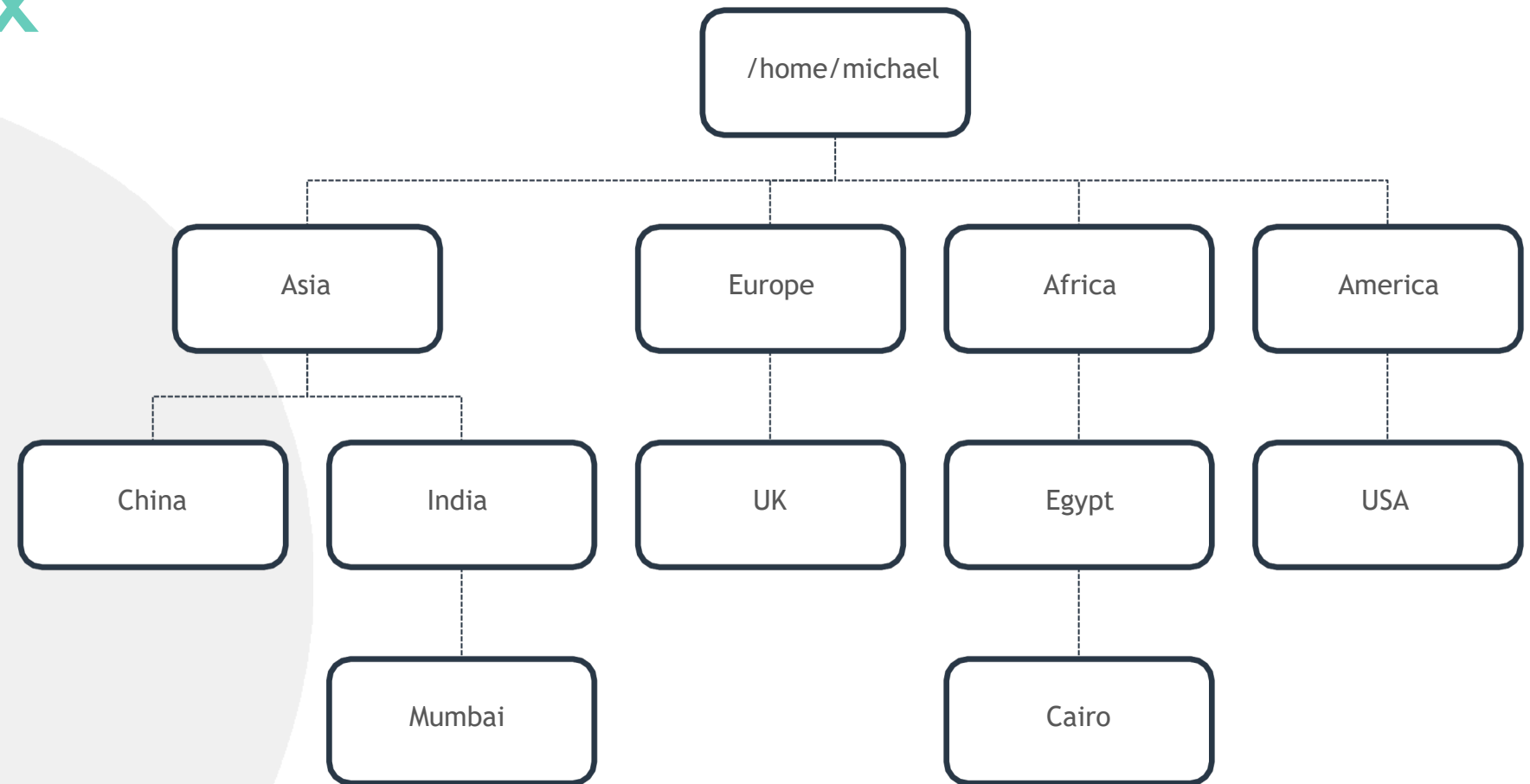
Internal or Built-in Commands
echo, cd, pwd, set e.t.c

```
[~]$ type echo  
echo is a shell built-in  
[~]$
```

External Commands
mv, date, uptime, cp, uptime e.t.c

```
[~]$ type mv  
mv is hashed (/bin/mv)  
[~]$
```


Basic Linux Commands



Basic Linux Commands

pwd (presentworking directory)

```
[~]$ pwd  
/home/michael
```

Ls (List contents)

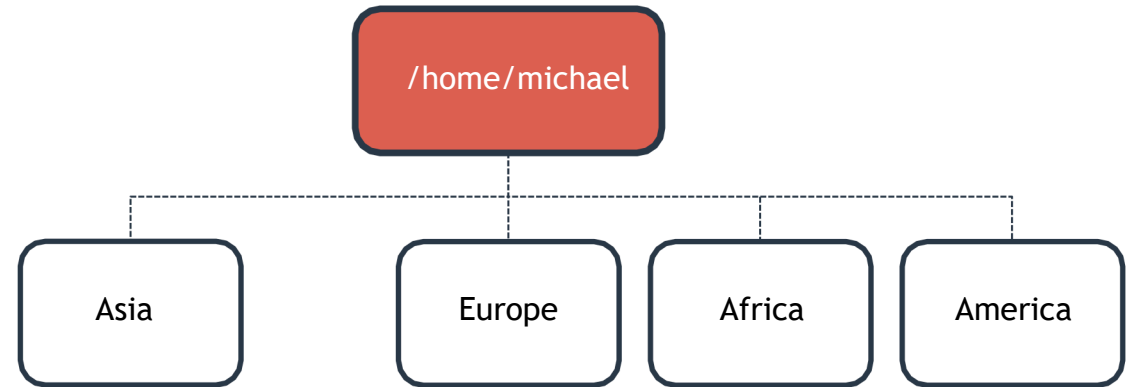
```
[~]$ ls
```

mkdir (make a newdirectory)

```
[~]$ mkdir Asia
```

mkdir (multiple directories)

```
[~]$ mkdir Europe Africa America
```



Ls (List contents)

```
[~]$ ls  
Asia Europe Africa America
```

Basic Linux Commands

cd (change directory)

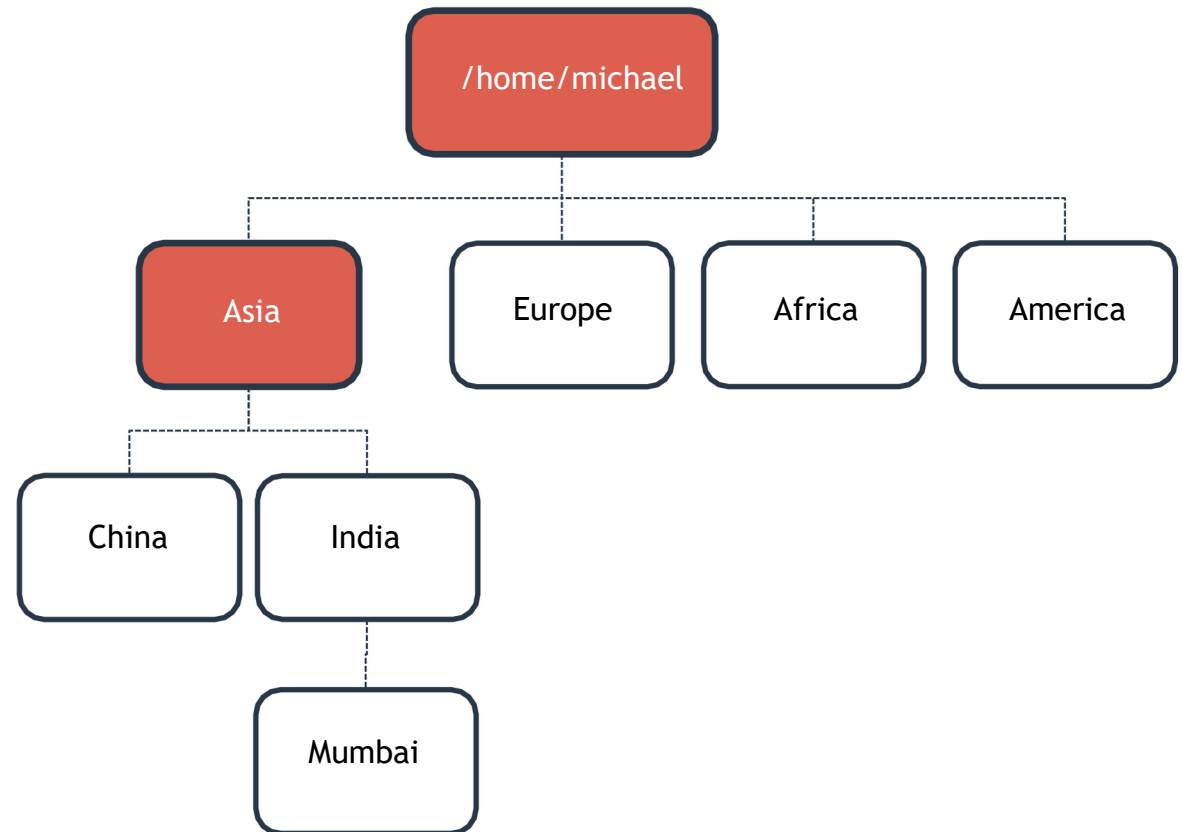
```
[~]$ cd Asia  
[~/Asia]$
```

```
[~/Asia]$ pwd  
/home/Michael/Asia
```

```
[~/Asia]$ mkdir China India
```

```
[~/Asia]$ mkdir India/Mumbai
```

```
[~/Asia]$ mkdir -p India/Mumbai
```



Basic Linux Commands

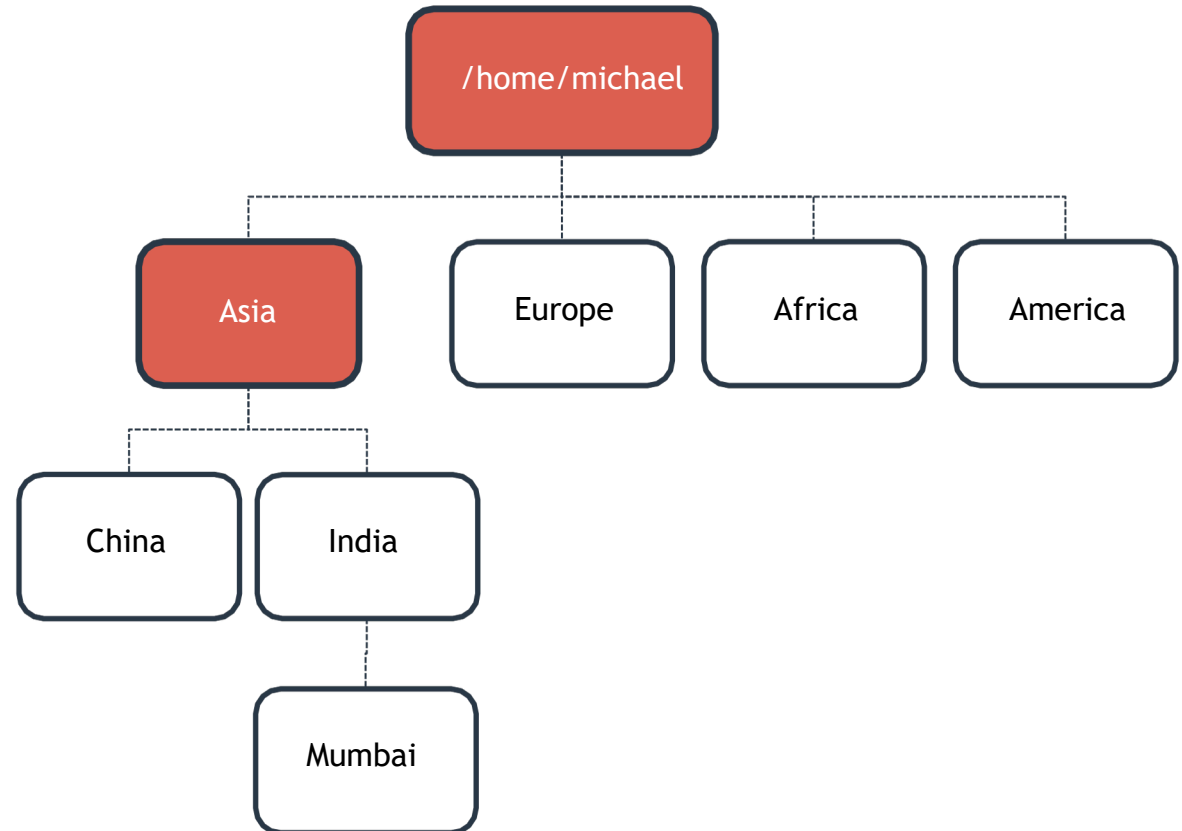
```
[ ~/Asia]$ cd ..  
[ ~]$
```

OR

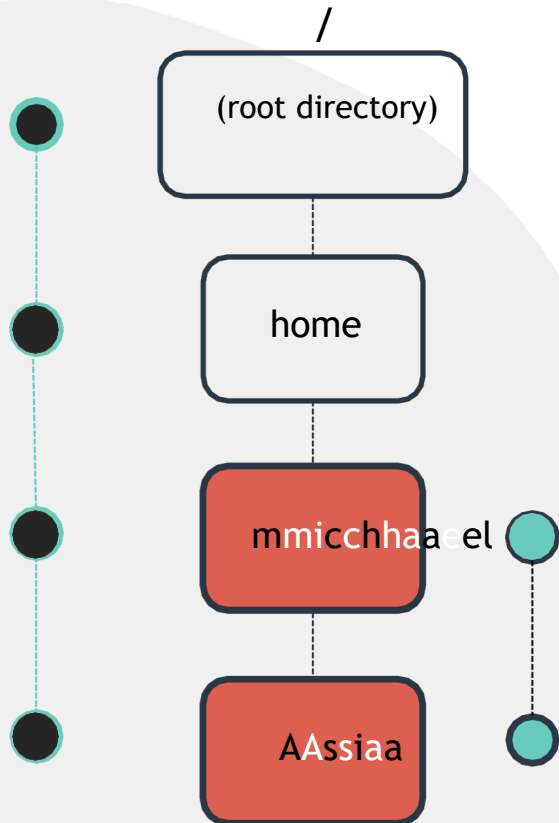
```
[ ~/Asia]$ cd  
[ ~]$
```

OR

```
[ ~/Asia]$ cd /home/michael  
[ ~]$
```



Absolute and Relative Path



cd= change directory

```
[~] pwd  
/home/michael
```

Absolute Path

```
[~]$ cd /home/michael/Asia
```

Relative Path

```
[~] cd Asia
```

pwd= print present working directory

Pro Tip - pushd/popd

Push



Pop



```
[~] pushd /etc  
/etc ~
```

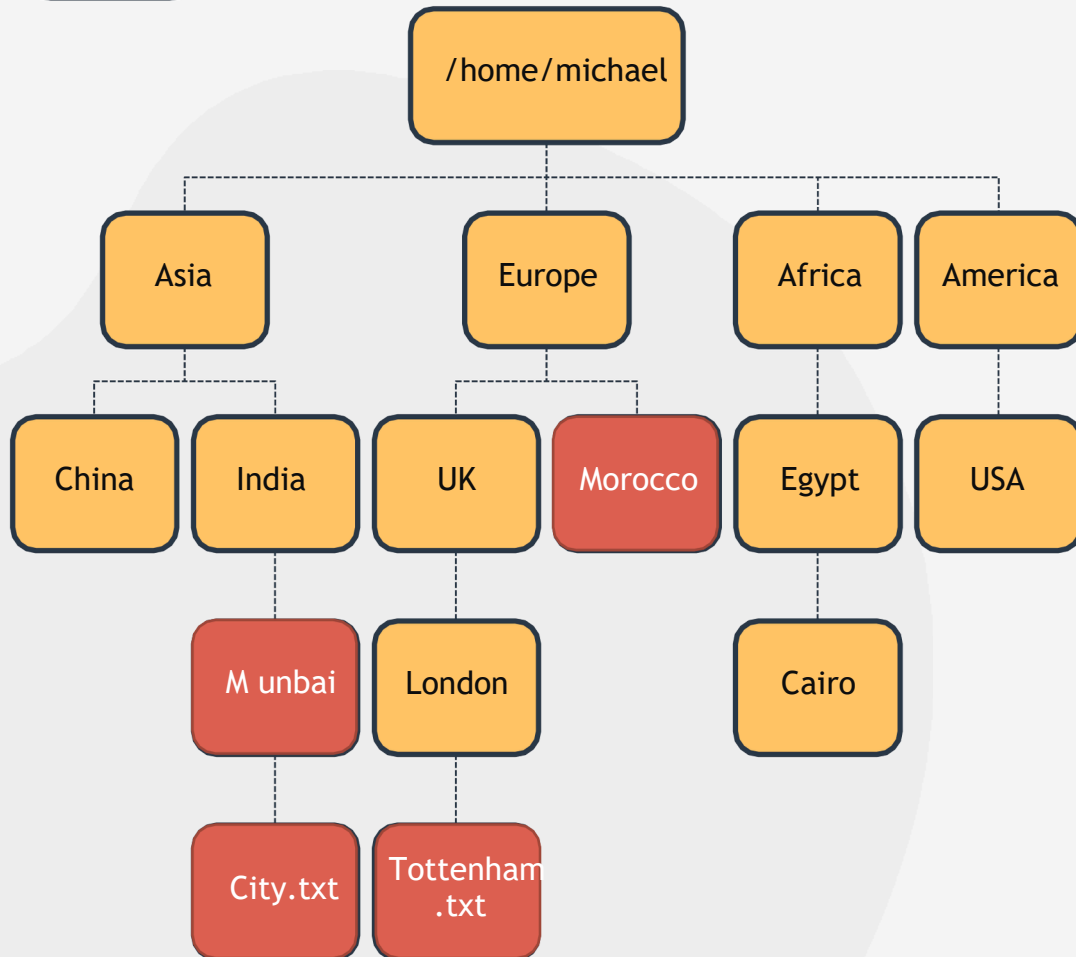
```
[/etc] cd /var
```

```
[/var] cd /tmp
```

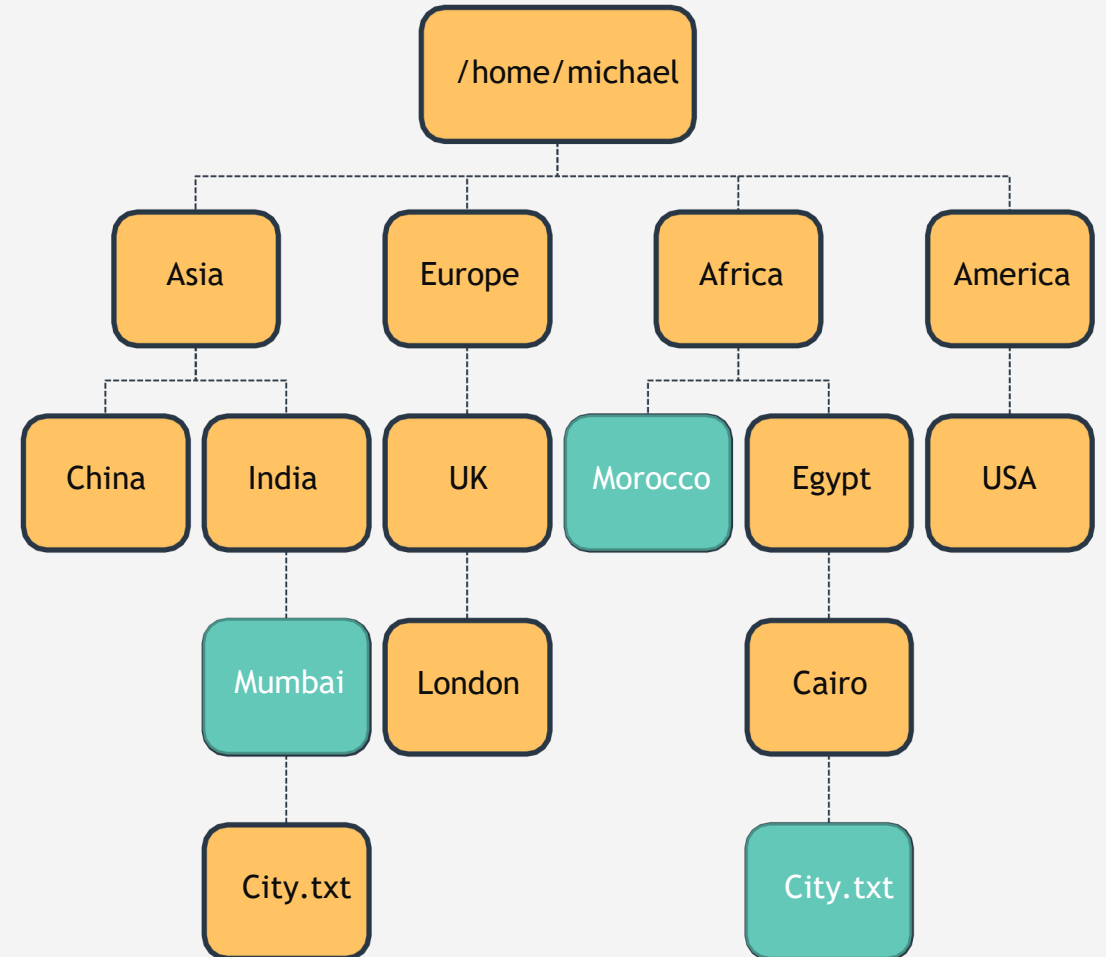
```
[/tmp] popd  
[~]
```


Basic Linux Commands

Before

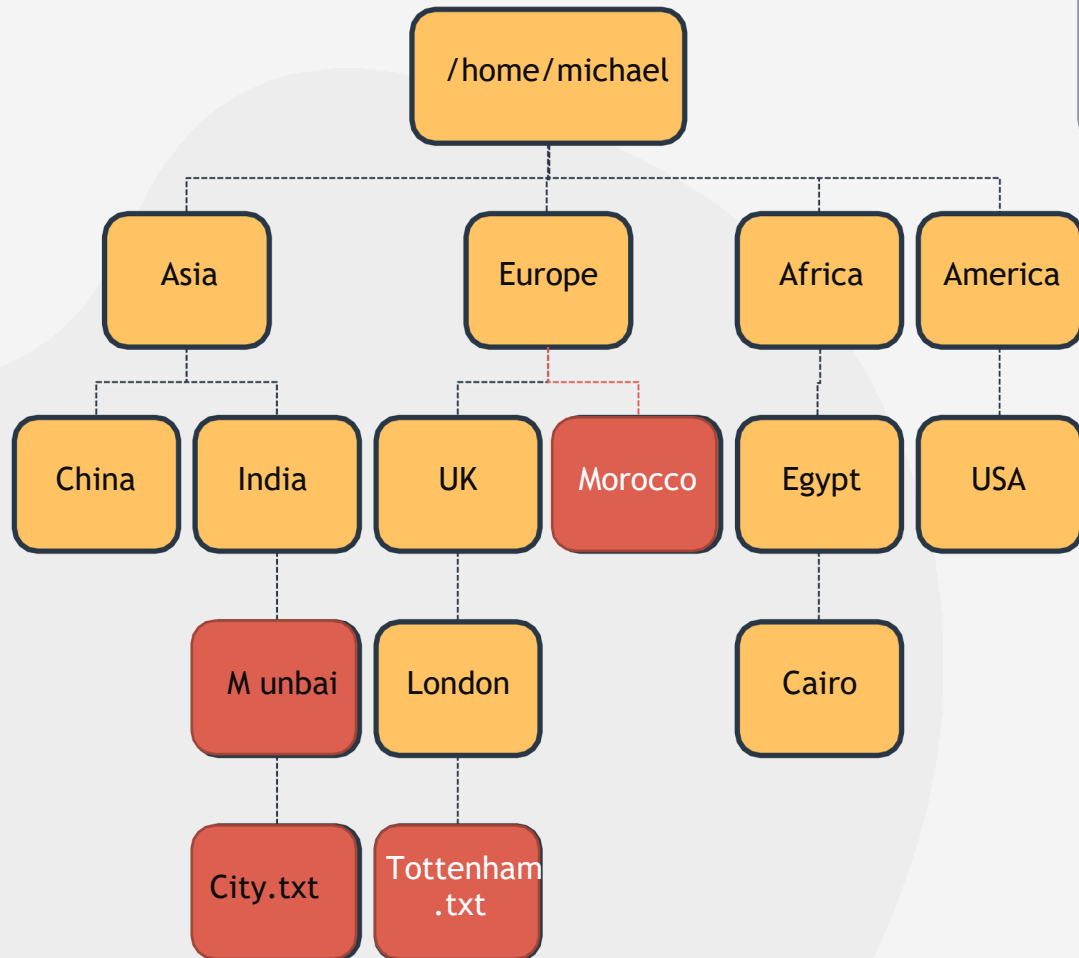


After



Basic Linux Commands

Before

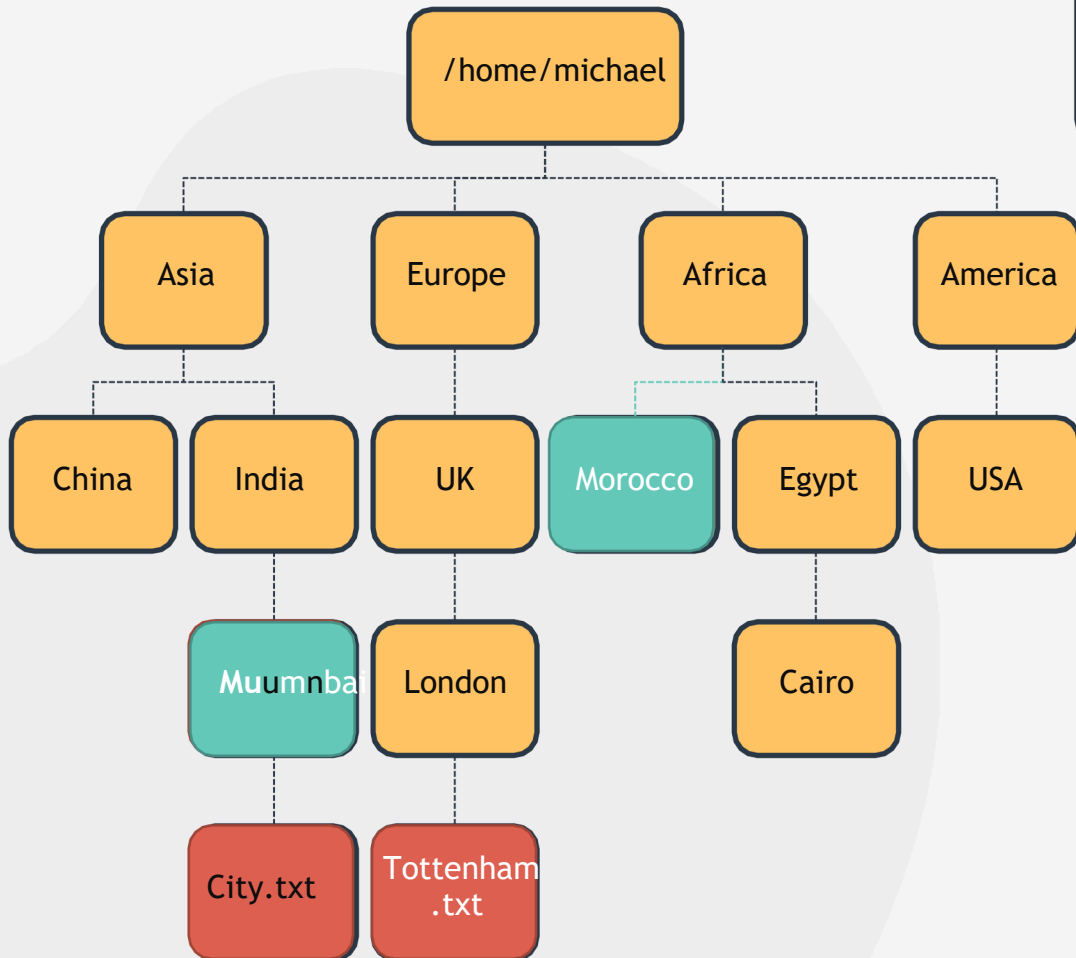


mv (M ove file or directory)

```
[~]$ mv /home/michael/Europe/Morocco /home/michael/Africa/
```

Basic Linux Commands

Before



mv (M ove file or directory)

```
[~]$ mv /home/michael/Europe/Morocco /home/michael/Africa/
```

OR

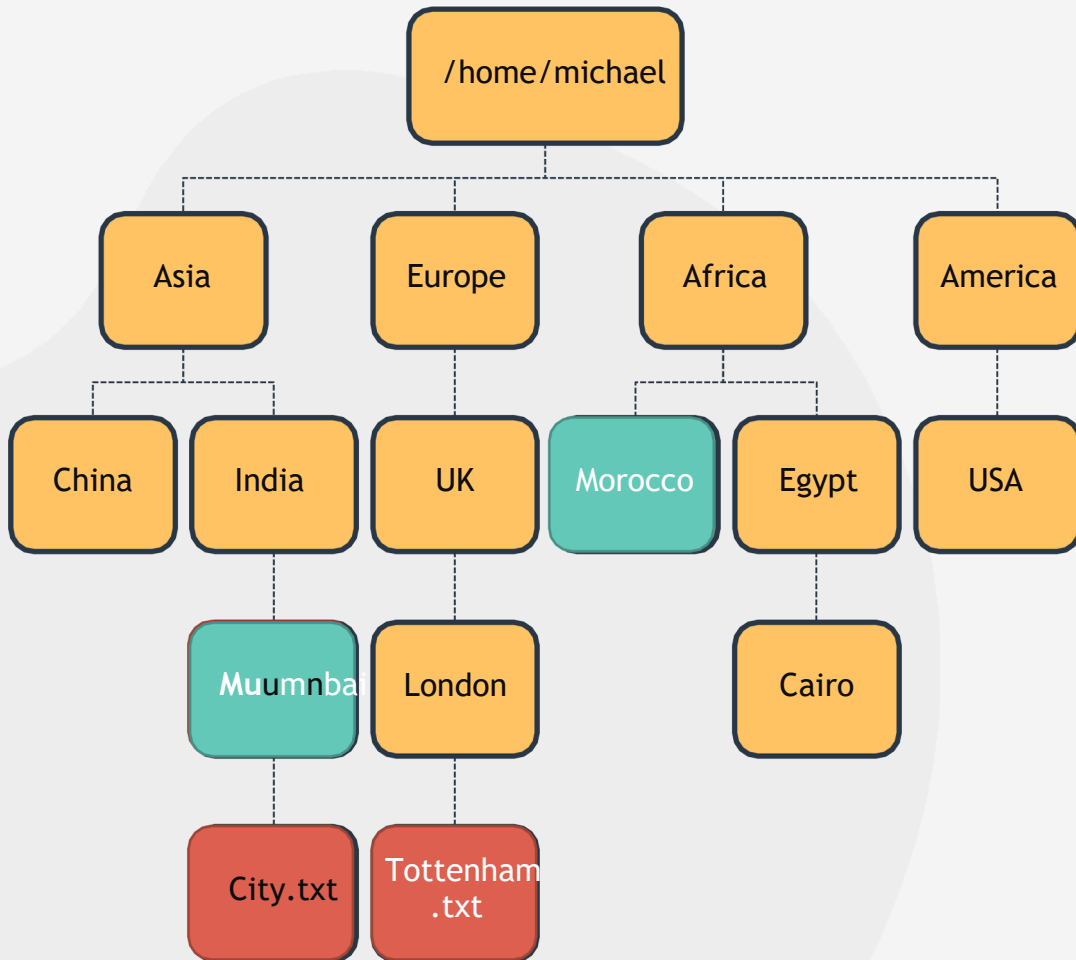
```
[~]$ mv Europe/Morocco Africa/
```

```
[~]$
```

```
[~]$ mv Asia/India/Mumbai Asia/India/Mumbai
```

Basic Linux Commands

Before

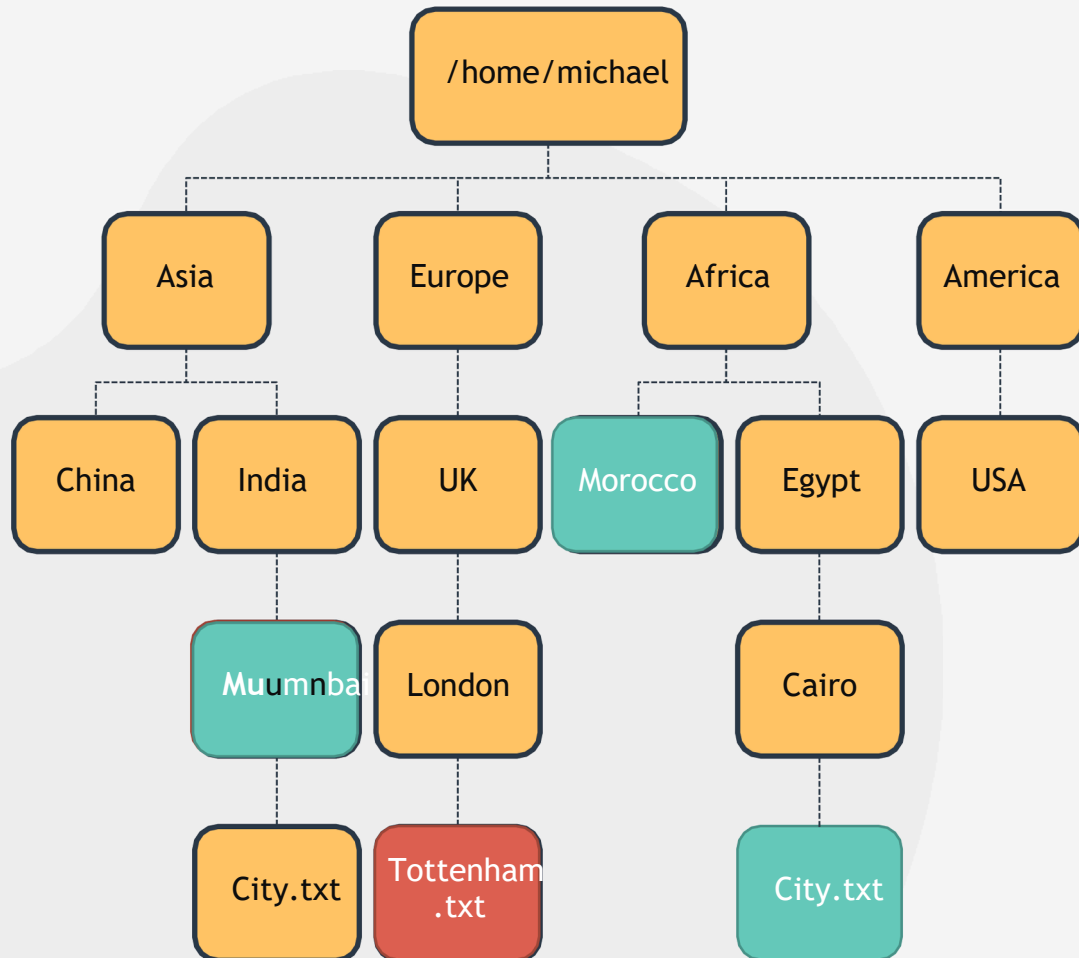


cp (Copy file)

```
[~]$ cp Asia/India/Mumbai/City.txt Africa/Egypt/Cairo
```

Basic Linux Commands

Before



cp (Copy file)

```
[~]$ cp Asia/India/Mumbai/City.txt Africa/Egypt/Cairo
```

rm (Remove file or directory)

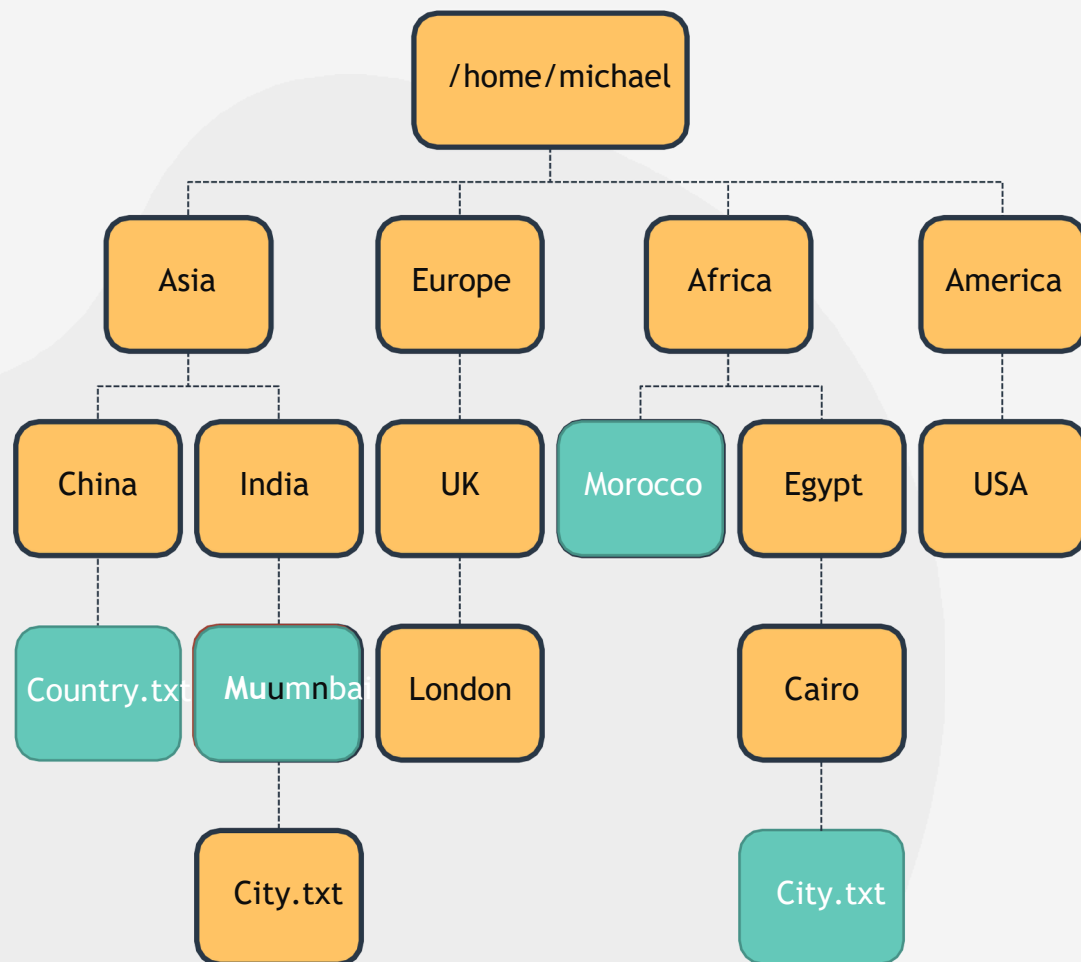
```
[~]$ rm Europe/UK/London/Tottenham.txt
```

cp -r (Copy directory)

```
[~]$ cp -r Europe/UK Europe/UnitedKingdom
```

Working with Files and Directories

before



```
[~]$ cat Asia/India/Mumbai/City.txt  
Mumbai
```

```
[~]$
```

cat (redirect)

```
[~]$ cat >  
Africa/Egypt/Cairo/City.txt Cairo  
ctrl d
```

touch (create a new file)

```
[~]$ touch /home/michael/Asia/China/Country.txt
```


Pagers



`</code>`

```
[~]$ more new_file.txt
```

[Space] - scrolls the display, one screenful of data at a time

[Enter] - scrolls the display one line

[b] - scrolls the display backwards one screenful of data

[/] - search text

```
[~]$ less new_file.txt
```

[Up Arrow] - scrolls up the display one line

[Down Arrow] - scrolls down the display one line

[/] - search text

LS (Long List)

ls -l (long list)

```
[~]$ ls -l
total 0
-rw-rw-r-- 1 bob bob 0 Mar 13 11:30 File.txt
-rw-rw-r-- 1 bob bob 0 Mar 13 11:30 index.html
-rw-rw-r-- 1 bob bob 0 Mar 13 11:30 caleston
```

ls -lt (long list files in order created)

```
[~]$ ls -lt
total 0
-rw-rw-r-- 1 bob bob 0 Mar 13 11:30 File.txt
-rw-rw-r-- 1 bob bob 0 Mar 13 11:28 index.html
-rw-rw-r-- 1 bob bob 0 Mar 13 11:27 caleston
```

ls -a (list all files including hidden)

```
[~]$ ls -a
. .. File.txt index.html caleston .test
```

ls -ltr (long list files in the reverse order created)

```
[~]$ ls -ltr
total 0
-rw-rw-r-- 1 bob bob 0 Mar 13 11:27 caleston
-rw-rw-r-- 1 bob bob 0 Mar 13 11:28 index.html
-rw-rw-r-- 1 bob bob 0 Mar 13 11:30 File.txt
```