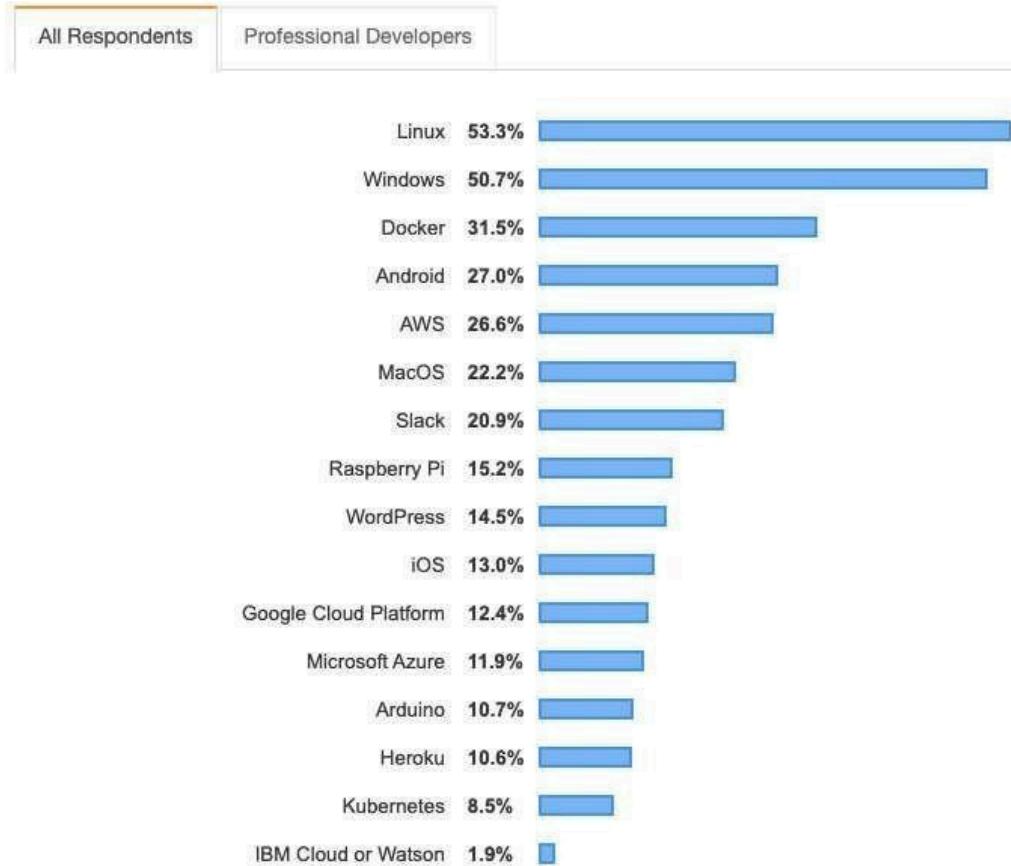


The Linux Basics Course



Why Linux?

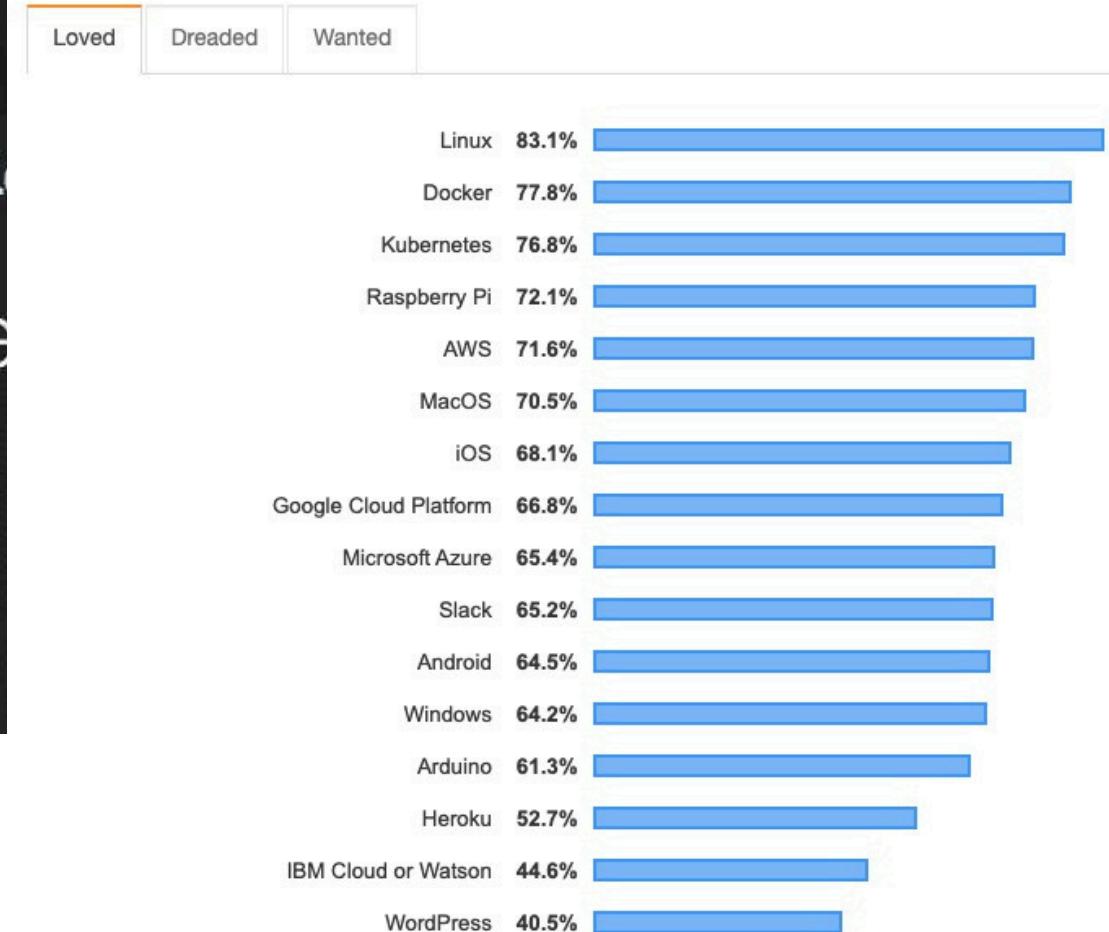
Platforms



80,144 responses; select all that apply



Most Loved, Dreaded, and Wanted Platforms



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



docker



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](#)



Why DevOps



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Swiss Re

Kansas City, MO, US

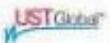


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Cloud Architect

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

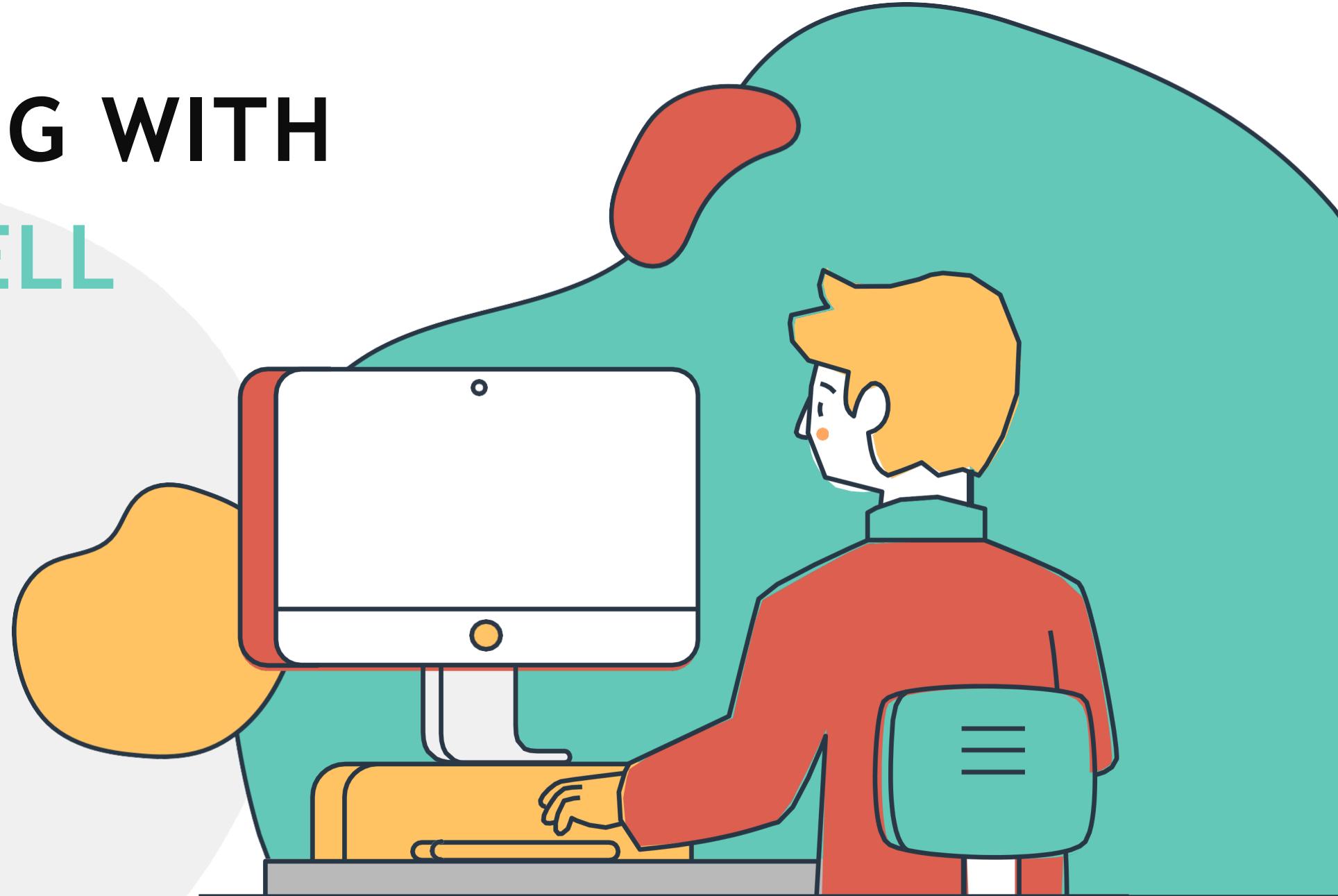
Linux Networking

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



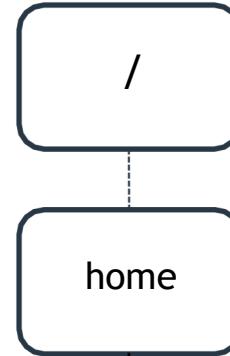
Allen

/home/allen

Important

code1

Payroll.txt



Michael

/home/michael

Directory1

file1

file2

Home Directory = ~ (tilde)

[~]\$



Command and Arguments

```
[~]$ echo
```

```
[~]$
```

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

```
Hello  
[~]$
```

```
[~]$ uptime
```

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

```
[~]$ 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

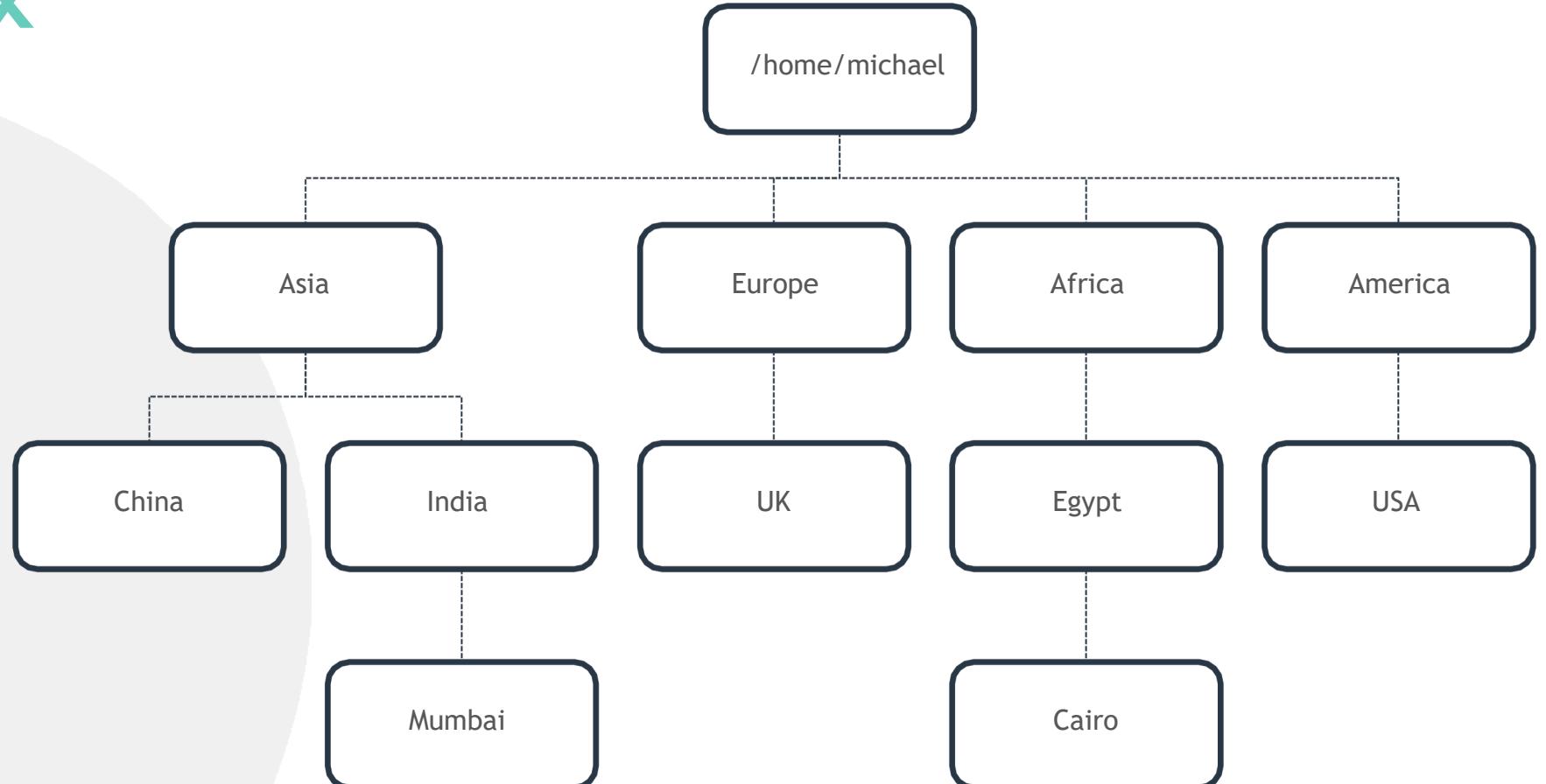
```
[~]$ type echo
echo is a shell built-in
[~]$
```

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
```

/home/michael

Asia

Europe

Africa

America

ls (List contents)

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

...

Basic Linux Commands

cd (change directory)

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

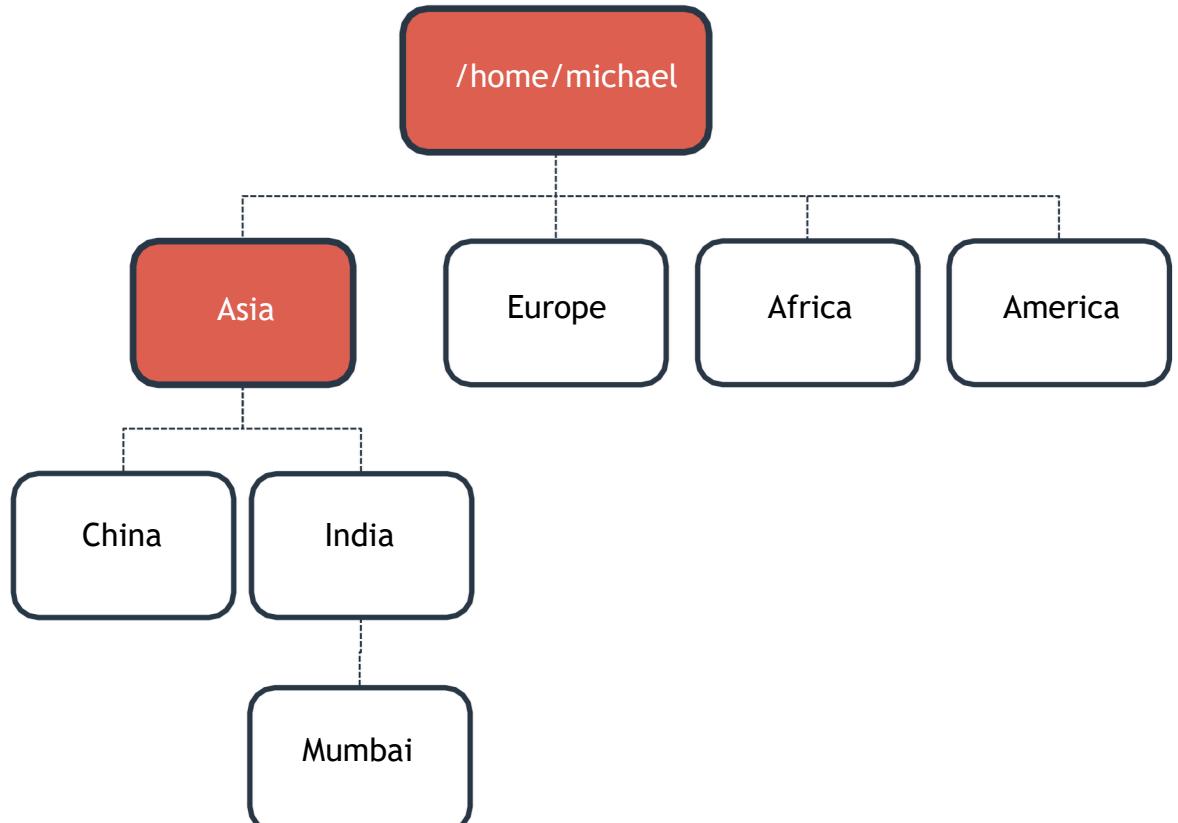
```
[~/Asia]$ pwd  
/home/Michael/Asia
```

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

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

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

```
/home/michael
```



...

Basic Linux Commands

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

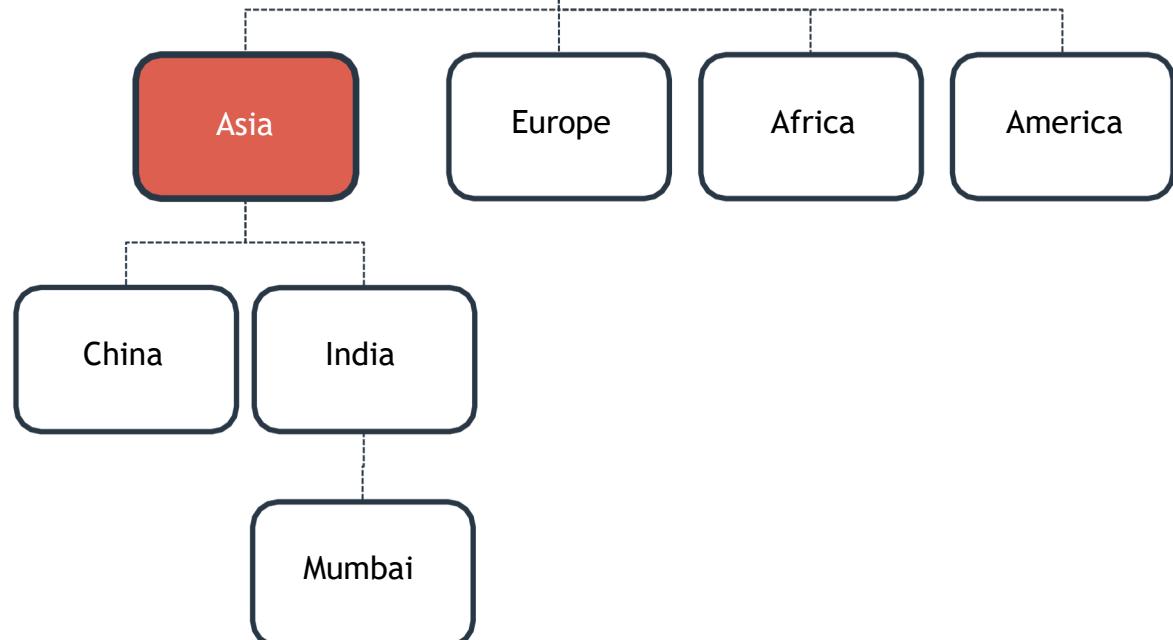
OR

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

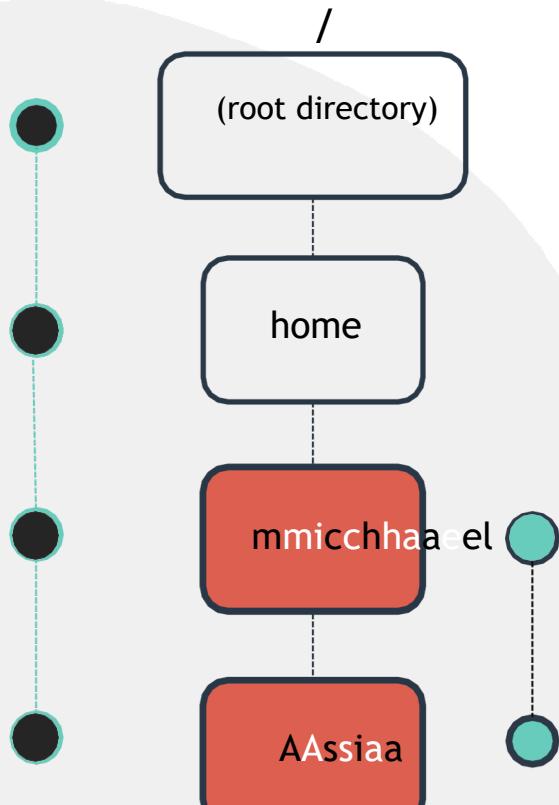
OR

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

```
/home/michael
```



Absolute and Relative Path



cd= change directory

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

Absolute Path

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

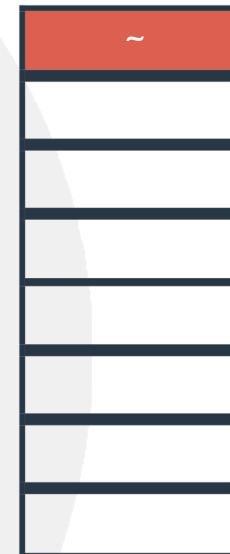
Relative Path

```
[~] cd Asia
```

pwd= print present working directory

Pro Tip - pushd/popd

Push



Pop



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

```
/etc ~
```

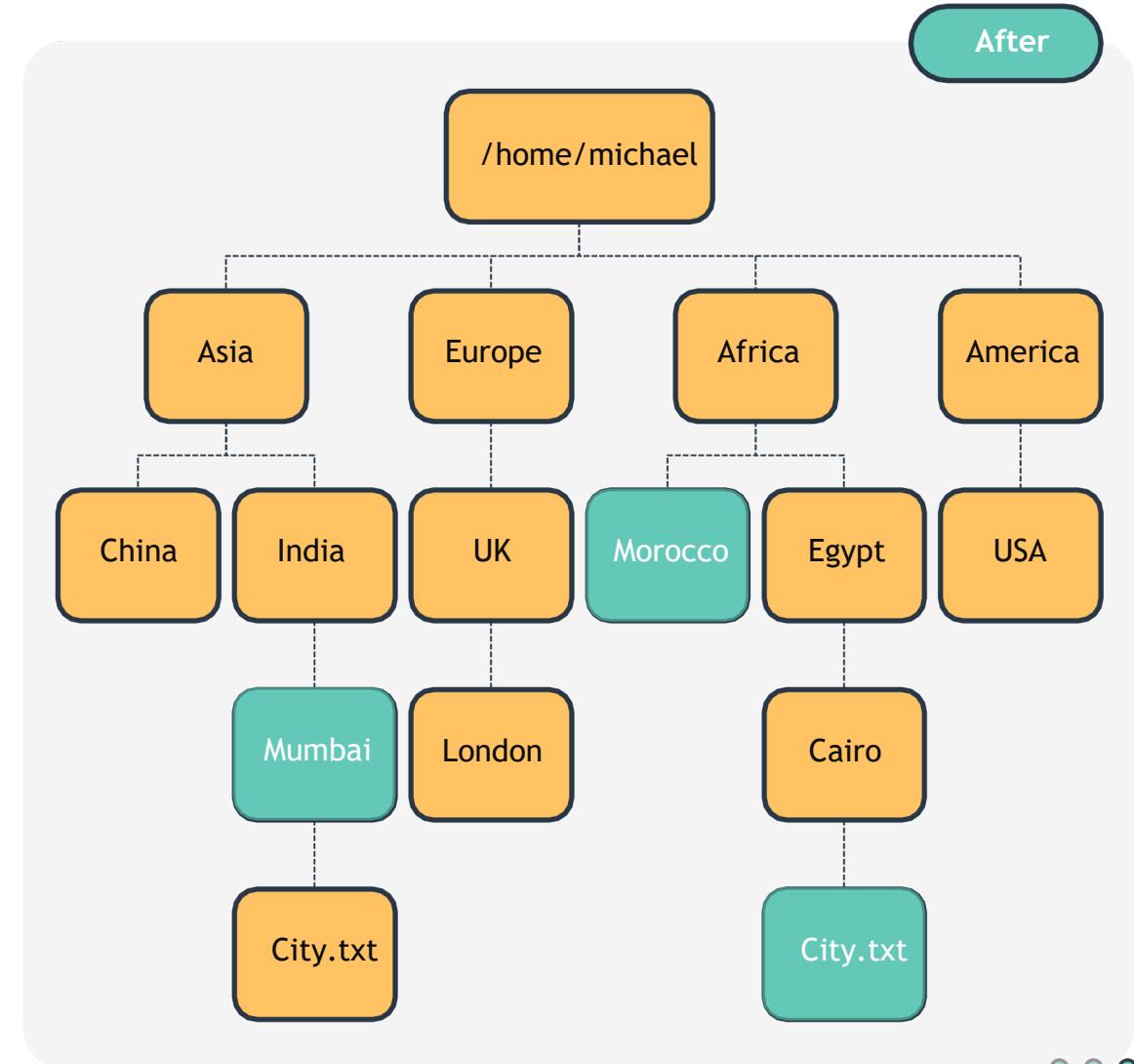
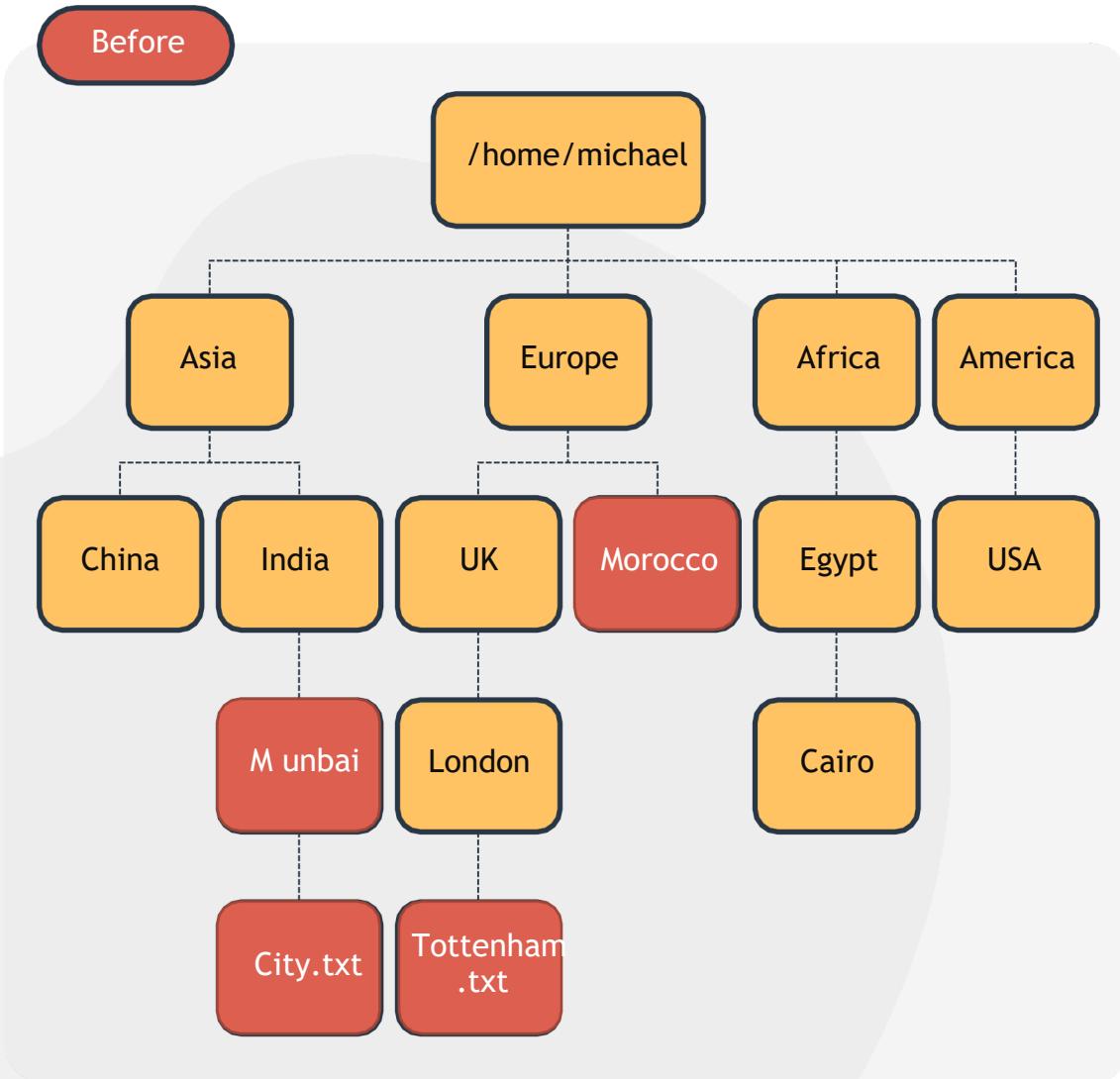
```
[/etc] cd /var
```

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

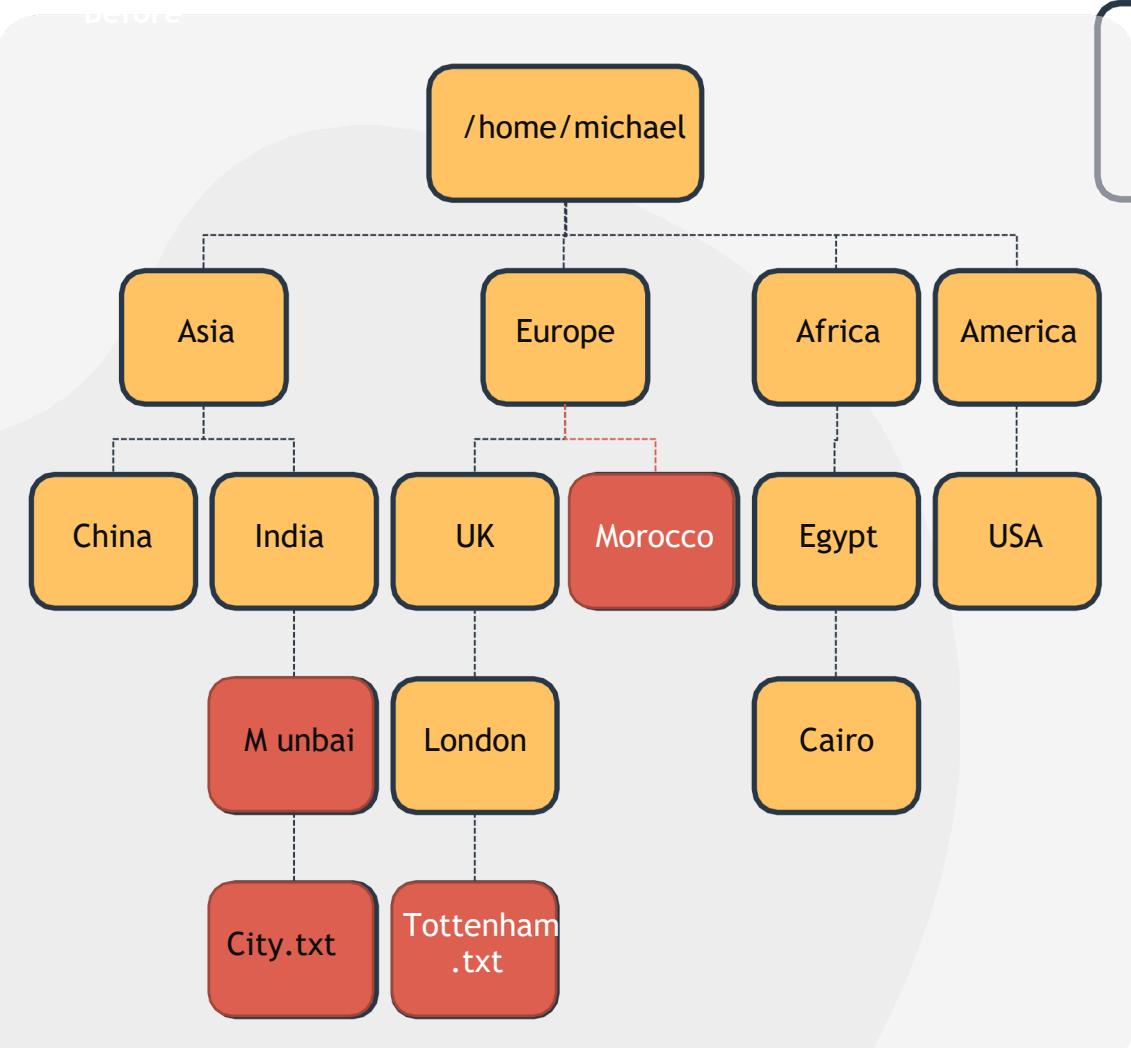
```
[/tmp] popd
```

```
[~]
```

Basic Linux Commands



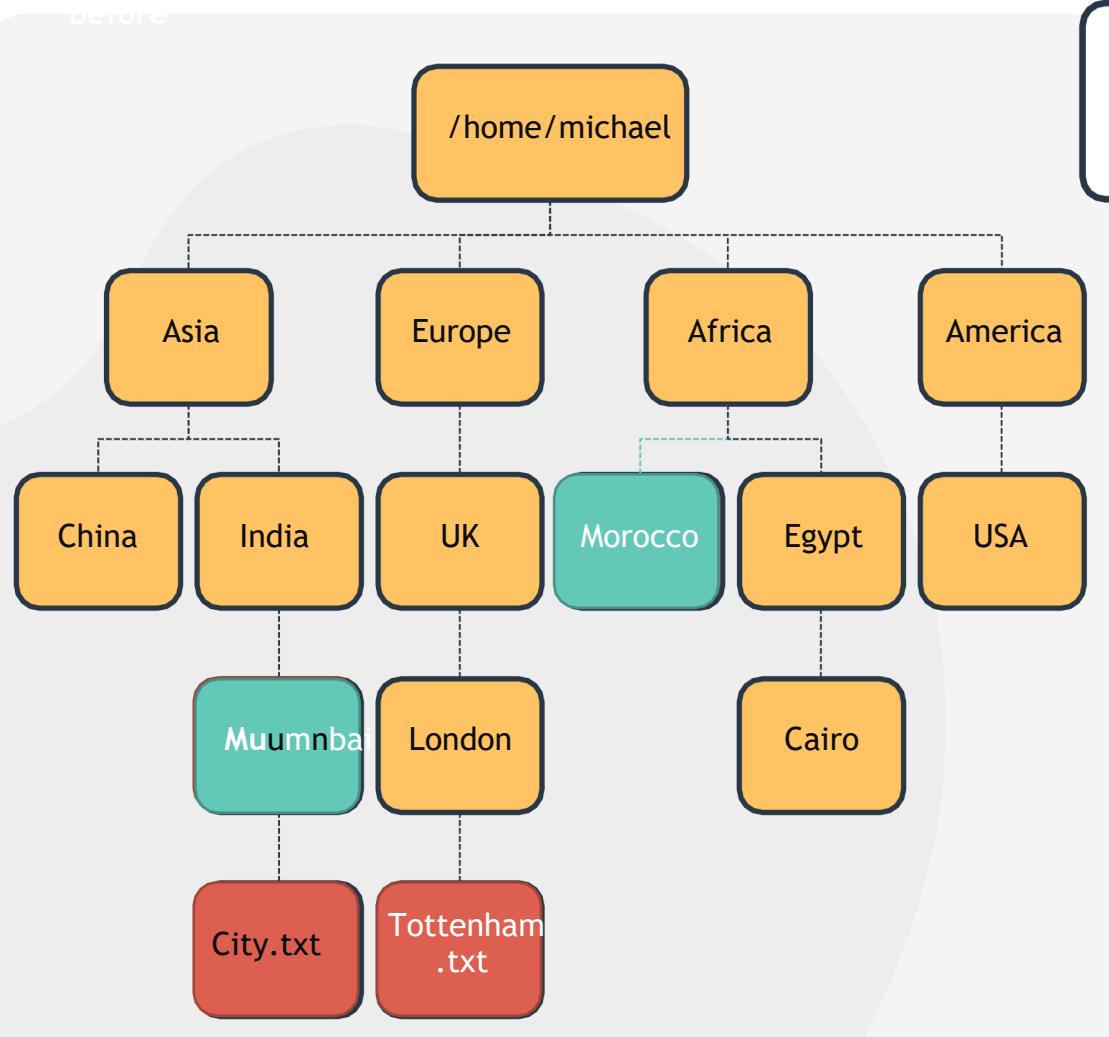
Basic Linux Commands



mv (Move file or directory)

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

Basic Linux Commands



mv (Move file or directory)

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

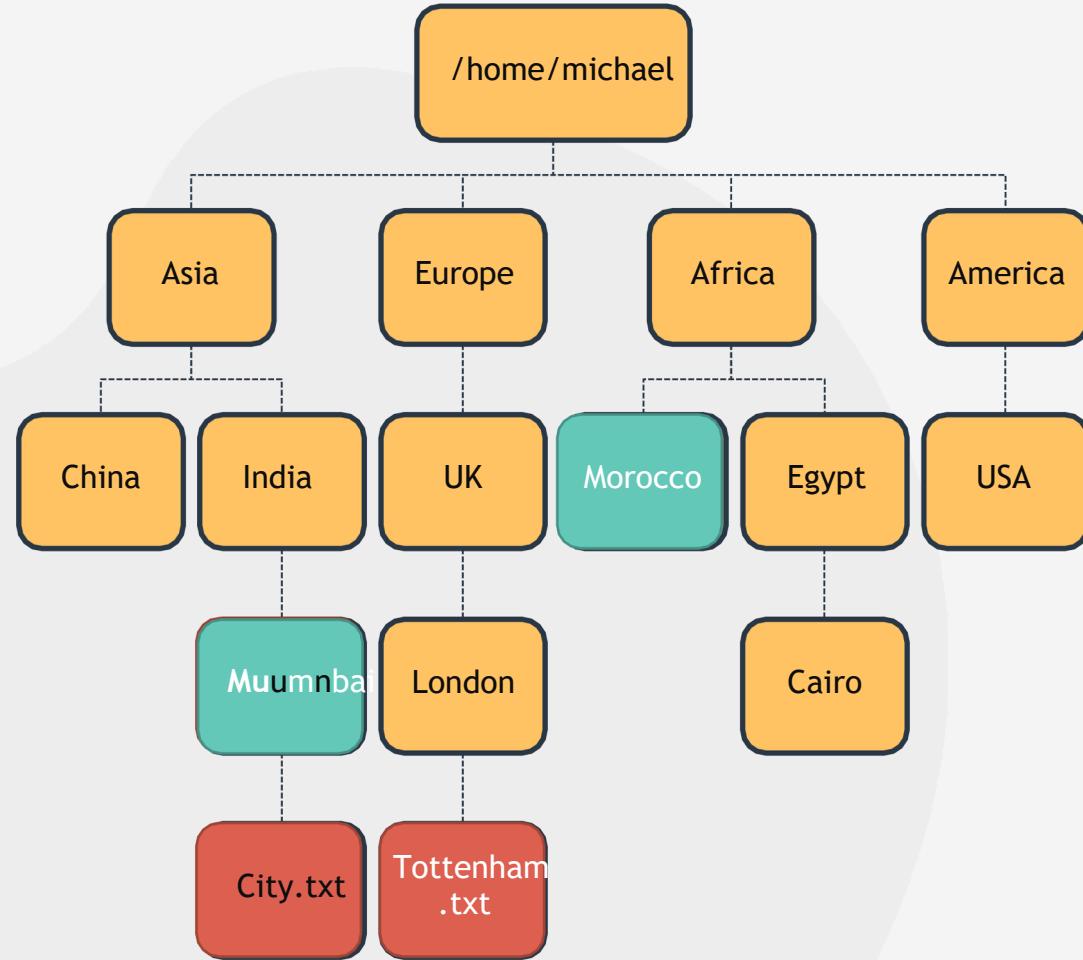
OR

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

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

Basic Linux Commands

BEFORE



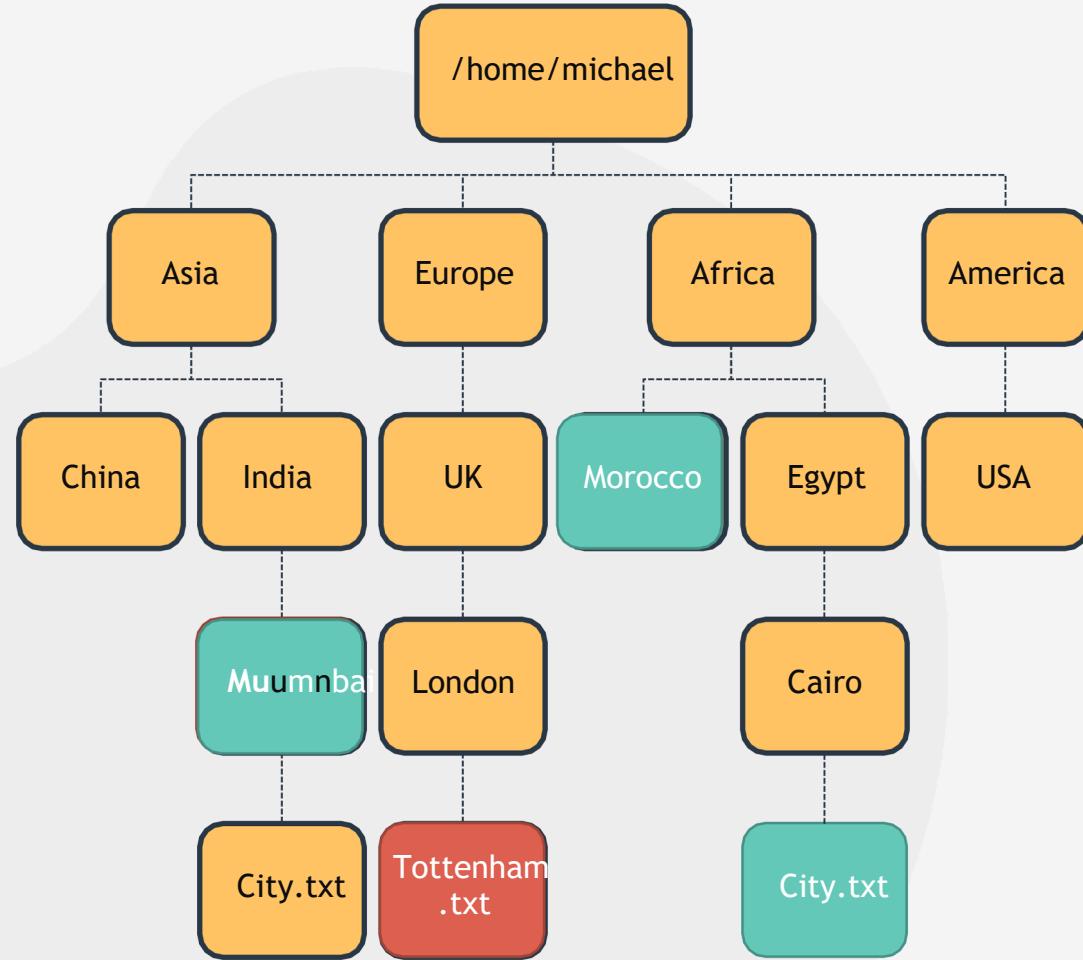
cp (Copy file)

```
[~]$ 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)

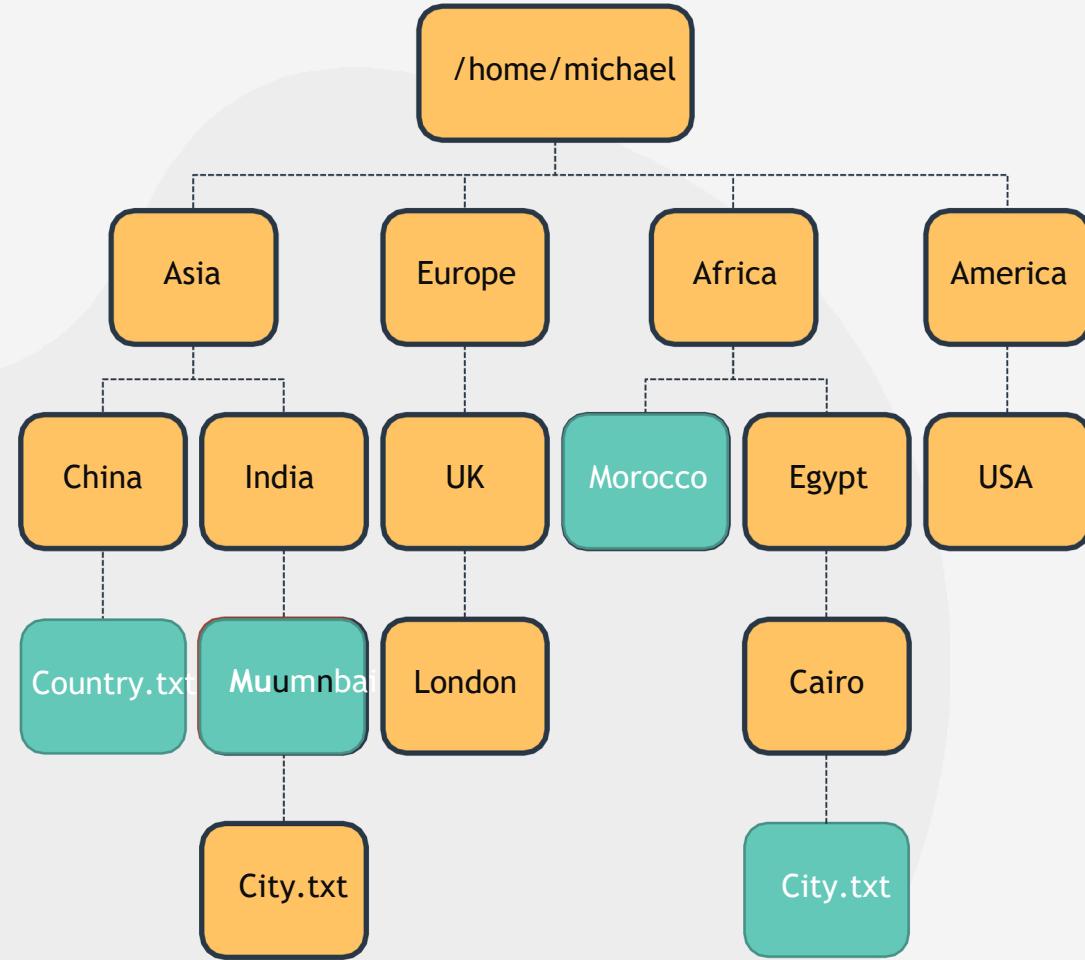
```
[~]$ cp -r Europe/UK Europe/UnitedKingdom
```





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

```
[~]$ 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
```

