Lec-01

COMPLETE DEVOPS TUTORIALS

Myths about Devops

* Programming Knowledge is required.
* Linux experience is must.
* Prior IT experience is required.
* Non-IT Background people Cannot do.

Note: Require above points:

Why Organisation needs Devops specialist?

* Fast Delivery
* Higher quality
* Less Capex+Opex
* Reduced outages.

Developers

Build .exe

Test

Lec-02: What is Devops, Devops stage and Agile:

Software Development Life Cycle: Example

Development Team:

Developer->Build->Test->QA

Operations Team:

Deploy->Maintenance->Monitoring.

Jenkins: Maven:

Selenium: Selenium is an open-source framework that is used to automate the testing process over web applications. The interface allows writing test scripts in various programming languages on web applications spread across several platforms and browsers.

Development tools: Chef: Ansible /Docker/Kubernetes/Puppet

Monitoring: CloudWatch

AWS tools: Code commit, Code pipeline, Code star or code deploy etc

Azure Devops: Repos, Artifact etc.

Devops: Implementing Automation at each and every stage:

Devops Stages:

|  |  |  |  |
| --- | --- | --- | --- |
| Version Control:  Maintain different version of code | Continuous Integration: Compile, Validate Code Review, Unit Testing, Integration Testing | Continuous Delivery: Deploying the build app to test servers, | Continuous Deployment:  Deploying the test app on the production server for release |

Tools Use of Above stages:

CI/CD:continuous integration and continuous delivery/continuous deployment

1.Version control: IT

2.Continous Integration: Jenkins

3.Continuous Delivery: Maven

4.Continuous deployment: Code commit, Code pipeline, Code star or code deploy etc

Waterfall Methodology: The Waterfall methodology — also known as the Waterfall model — is a sequential development process that flows like a waterfall through all phases of a project (analysis, design, development, and testing, for example), with each phase completely wrapping up before the next phase begins

Agile Methodology: The Agile methodology is a way to manage a project by breaking it up into several phases. It involves constant collaboration with stakeholders and continuous improvement at every stage. Once the work begins, teams’ cycle through a process of planning, executing, and evaluating.

Scrum: Agile scrum methodology is a project management system that relies on incremental development. Each iteration consists of two- to four-week sprints, where the goal of each sprint is to build the most important features first and come out with a Potentially Shippable Product.

Silos Issue: A silo mentality is the unwillingness to share information or knowledge between employees or across different departments within a company. The silo mentality usually begins with competition among senior managers. Successful firms encourage and facilitate a free flow of information.

Devops Methodology: DevOps is a methodology meant to improve work throughout the software development lifecycle. You can visualize a DevOps process as an infinite loop, comprising these steps: plan, code, build, test, release, deploy, operate, monitor and -- through feedback -- plan, which resets the loop.

The term Devops is a combination of two words i.e., development and operations.

* Devops is a Methodology that allows a single team to manage the entire application development life cycle, that is development, testing, deployment and operations.
* The Objective of Devops is to shorten the system’s development life cycle.
* Devops is a software development approach through which superior quality software can be developed quickly and with more reliability.

Agile: Build Short, Build Often

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Project Starts: | Sprint1  Login  Logout | Sprint 2:  Products Images  Catalogue  Price | Sprint3:  Dashboard  My Account  Settings | Sprint 4:  Cart  Payments  Delivery status |

Project End

Develop: - Build:-Test:-Deploy

Deploy

Plan

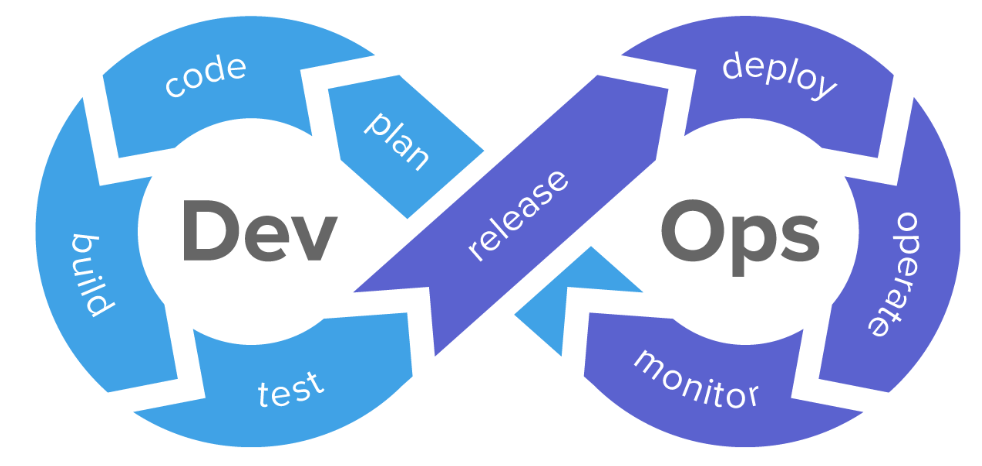
Monitor

Operate

Build

Test

Code



Lec-03: Basics of AWS Cloud required for Devops:

AWS is a public cloud:

IAAS: infrastructure as a service

Paas: Platform as a service.

SAAS: Software as a service.

AWS Details: <https://aws.amazon.com/about-aws/global-infrastructure>

31 Launched regions

* 99 Availability zone
* 450 +points of presence Regional Edge Caches

Let create the EC2 (Linux)

EC2Name:LinuxEC2:

Keypair: Devops

SG Name: DevopsSG

Instance ID: i-0fd714d2a3e4f1827

3-05-2023:

Lec-04: Everything About Linux From Scratch Part-1:

Basic and history of Linux:

It started in 1964 in New Jersey when some people of Bell Labs tried to create a multiuser operating system (OS), they worked on it till 1969, after facing lots of failures they withdraw the project.

In 1969 2 peoples (Dennis Ritchie and Ken Thompson start the project again.

Developed the UNICS: UNiplexed Information Computing System.

In 1975: launched the UNIX v6

Some company launched their paid version details are mentioned below.

Flavour of Unix.

1.IBM -AIX: February 1986(Advanced Interactive eXecutive)

2.Sun: Solaris :1992 (Safety and Operations of Large Area Rural Urban Intermodal Systems)

3.Apple: Mac OS :1999(Macintosh Operating System)

4.HP UX:1982 (UX:Hewlett Packard Unix)

5.Linux: Lovable Intellect Not Using XP(17 September 1991)

In 1991

Linus Benedict Torvalds is a Finnish American software engineer who is the creator and, historically, the lead developer of the Linux kernel, used by Linux distributions and other operating systems such as Android. He also created the distributed version control system Git.

Andrew Tanenbaum minix 1.0 in 1987

free software movement (GNU )

The free software movement is a social movement with the goal of obtaining and guaranteeing certain freedoms for software users, namely the freedoms to run the software, to study the software, to modify the software, and to share copies of the software.

Free Software Movement (founder: Richard Stallman)1983

GNU:

Linux +GNU: Operating system

Linus is kernel:

Linux version:

* RHEL (Red Hat Enterprise Linux)
* Fedora
* Debian
* Others (Ubuntu, Centos ,Amazon Linux, Kali Linux)

Kali Linux used by Mostly Hacker

Ubuntu is 3rd most usage operating systems.

Full Form:

1.Ubuntu: humanity towards others

2.Centos:Community Enterprise Operating System

OS Usage for 2 types:

1.CLI: Command line interface

2.GUI: Graphical User interface

* Linus is kernel not OS.
* Linux is not a Unix derivative.IT was written for scratch.
* A Linus distribution is the Linux kernel and a collection of software that together, create an OS.

Linux Features:

* Open Source
* Secure
* Simplified updates for all installed software
* Light weight
* Multiuser-multitask
* Multiple distribution -Red hat, Debian, Fedora.

Linux OS =Linux Kernel +GNU

Linus OS or Linux Distribution are same.

Lec-05:

Architects:

|  |  |
| --- | --- |
| Windows | Linux |
| HW/OS/Shell/User | HW/Kernel/Shell/User |
|  |  |
|  |  |
|  |  |

Folder->Directory

Administrator (windows) -> Root user (in Linux)

Software->Package

Windows Administrator also known as Windows Systems Administrators, are responsible for installing, managing, and upgrading Windows-based systems and servers within a company. They are also responsible for managing data security, configuring user access, and maintaining the stability of the system.

Linux Root User: Root is the superuser account in Unix and Linux. It is a user account for administrative purposes, and typically has the highest access rights on the system. Usually, the root user account is called root.

File System Hierarchy

Windows ->C:/, ->Program Files, ->Users, ->Program(X86),->Per logs,

Linux:/(root), ->,/Root,/home,/boot,/etc,/usr,/bin

/root(Top level root directory )

Backward Flash:\

Forward Flash: /

Linus Important Directory:

* /Home: home directory for other users
* /Root: It is home directory for root user
* /Boot: It contains bootable files for Linux eg->initred
* /Etc: It contains all configuration files
* /Usr:by default, software are installed in this directory
* /Bin: It Contains Commands used by all Users
* /Sbin: It Contains Commands used by only Root user
* /Opt: optional application software packages
* /dev:essential device files This include terminal devices, usb or any devices attached to the system.

POST: Power On Self-Test   
BIN: binaries in Linux(A binary package is an application package that contains (pre-built) executables, build from source code, and are not reversible.

Sbin: Utilities used for system administration (and other root-only commands) are stored in /sbin , /usr/sbin , and /usr/local/sbin . /sbin contains binaries essential for booting, restoring, recovering, and/or repairing the system in addition to the binaries in /bin.

Linux commands and its user cases:

1.Create a file commands:Cat,touch,vi/vim/, Nano

* Cat>file1 name>

Ctrl+D for save the files :

* Touch :for create empty files.
* Vi/VM/Nano : for editing in files.

Create a Amazon Linux EC2 and access through putty

Login as: Ec2-user

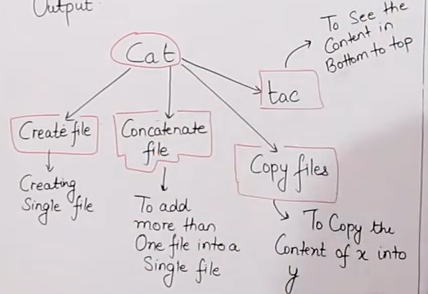
[ec2-user@ip] $sudo su

Sudo Su Full form :Super user do switch user

Root@IP#

Cat commands in details:

Cat command: The Cat Command is one of the most universal tools, yet all it does is copy standard input to standard output.



Cat: Create a single file

Concatenate files: To Add more than one file into a single file

Copy Files:To copy the content of x into y

Tac:To see the content in bottom to top.

root@ip Cat > file1

what is this how are you

Command for check the file is create:

root@ip ls

Check the contents of file

root@ip Cat file1

for add the content in exiting files:

root@ip #cat >> File1

Thanks, you etc

For save Ctrl +D

For add the contents of both file in new files:

root@ip #cat file1 file2 >all

2.Touch Command:

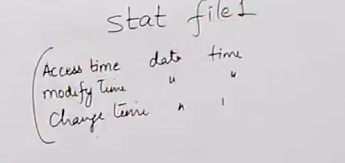
Use:

* Create an empty file
* Create multiple empty files
* Change all timestamp of a file
* Update only access time of file, modify time of file

Time Stamp:

* Access time (last time when a file was accessed) touch -a
* Modify time (last time when a file was modified) touch -m
* Change time (last time when file metadata was changed)

Stat file1



How to create a file (touch command)

root@ip #touch file1

for change the time stamp:

root@ip #touch file1

3.Vi Editor:

* A programmer text editor.
* It can be used to edit all kinds of plain text, it is specially useful for editing programs mainly used for Unix programs.

Note:

:w :To save

:wq or x :To save and quit

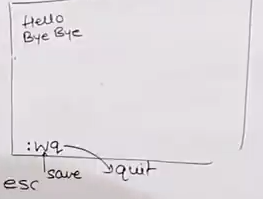
:q:Quit

:q!:force quit,on save

VI is a standard whereas ‘nano’ has to be available depending on the Linux you user.

How to create a file with help of VI commands:

root@ip #vi filea **↵**



Esc:

:wq for save file and quit

For check the file created or not:

root@ip #ls

navigation keys in Linux hjkl

4.Nano Commands:

root@ip # nano file3

Ctrl +X for exit editor

Ctrl +O for save the files

Added the contents in existing files and save the data :Ctrl+O,ctrl+X

Delete commands for file: rm hs (we are deleting the multiple file with same command)

rm hs1 hs2 hs3 hs4

for update the time stat

touch file name

touch hs1

Access time command

touch -a hs2

Modify time command change

touch -m hs2

Username: hanu

Password: India@2021 this root password also

For check the file all details:

root@ip # ls -l

same command ll

for show hidden files:

ls -a

for check the run command

history

Ctrl + l for clear the screen

|  |  |  |
| --- | --- | --- |
| SNO | Command | Descriptions |
| 1 | Cat > file1 | For create the file |
| 2 | Cat file1 | For check the contents |
| 3 | cat file1 file2 >all | For copy all contents from one file to another files |
| 4 | cat >> File1 | Update the content in existing file |
| 5 | Ls | Check the file already created |
| 6 | touch file1 | For create the empty files |
| 7 | touch file1 | Change the time stamp |
| 8 | touch hs1 | Update the time stamp |
| 9 | touch -a hs1 | Access time command |
| 10 | touch-m hs1 | Modify time |
| 11 | ls-l | For check the file all details: |
| 12 | ls-a | for show hidden files |
| 13 | history | for check the run command(history) |
| 14 | Mkdir direcname | For make the directory |
| 15 | mkdir hs6\hs7\hs9 | Make the subdirectory under directory |
| 16 | cd - | To navigate to the previous directory |
| 17 | cd .. | To navigate up one directory level |
| 18 | cd ,cd~ | To navigate to your home directory |
| 19 | **rm -r** | will recursively delete a directory and all its contents |
| 20 | sudo shutdown now | Shutdown the server |
| 21 | sudo shutdown -r now | Restart the server now |
| 22 | Ctrl + l | Clear the screen |
| 23 | ls -a | For show hidden files |
| 24 | cd directory name | Change the directory |
| 25 | cd. | For single directory |
| 26 | pwd(print working directory) |  |
| 27 | cd../../.. | For back to home directory |
| 28 | Touch .filename | Create hidden files |
| 29 | Mkdir .directory name | Make directory hidden |
| 30 | cp file 1 file 2 | Copy file to another location |
| 31 | mv filename directory name | Cut and paste file |
| 32 | mv old name new name | Name the file |
| 33 | rmdir | Used to remove the specified directory (empty) |
| 34 | rmdir -p directory1/directory2 | Remove both the parents and child directory |
| 35 | rmdir -pv | Remove all the parents and subdirectors along with verbrose |
| 36 | rm -rf | Removes even non-empty files & directory |
| 37 | rm -rp | Remove non-empty directors include parents and directory |
| 38 | rm -r | Remove empty directories |
| 39 | ls -l | For all details for files and directories |
| 40 | ls -la | For all details for files and directories details |
| 41 | mkdir -p hs001/hs002/hs003 | Make the parent directories |
| 42 | cd hs001/hs002/hs003 | Go to sub-directories |
| 43 | cd ../../.. | Come home directories |
| 44 | sudo useradd usernamed | How to create a user |
| 45 | sudo passwd username | For password set to user |
| 46 | sudo useradd -m username | Create the directory in the name of user |
| 47 | sudo useradd -m -d /opt/username username | Creating a User with Specific Home Directory |
| 48 | sudo useradd -u 1500 username |  |
| 49 | Cp file name directory name | Copy file to directory |
| 50 | mv directoryname1 direcotryname2 | Move directory to directory |
| 51 | mv oldfilename newfilename | Rename the file (usage the same command for change the name of files and DR |
| 52. | Hostname(if config, |  |
| 53. | Yum install httpd(D means)daemon) | For install apache server |
| 54. | Yum remove httd |  |
| 55. | Service httd start |  |
| 56. | Service httd status |  |
| 57. | Chkconfig http on |  |
| 58. | Chkconfig http off |  |
| 59. | which | The which command **allows users to search the list of paths in the $PATH environment variable and outputs the full path of the command specified as an argument**. The command works by locating the executable file matching the given command |
| 60. | whoami | It is basically the concatenation of the strings “who”,”am”,”i” as **whoami**. · It displays the username of the current user when this command is |
| 61. | Echo”hello” and echo”hello >file name for create new file with contents  And Delete the file contents  Echo >file name | echo command in linux is **used to display line of text/string that are passed as an argument** . This is a built in command that is mostly used in shell scripts and batch files to output status text to the screen or a file. In above example, text after \c is not printed and omitted trailing new line |
| 62 | yum list installed |  |
| 63 | Hostname -i | Only for IP address |
| 64 | cat/etc/os-release | For Check the os version |
| 65 | apt-get install yum\* | For install yum |
|  |  |  |
| 66 | sudo service httpd start | For start apache services |
| 67. | Chkconfig httpd on | For autostart the httpd services |
| 68 | grep | For find any worlds |
| 69 | Sort | **SORT command** is used to **sort** a file, arranging the records in a particular order. By default, the **sort command** sorts file assuming the contents |
| 70 | Less /More | it automatically adjust with the width and height of the teminal window, while 'more' command cuts the content as the width of the terminal window get shorter. |
| 71 | Head and tail | For see the top 10 lines and tail for see the last line. |
| 72 | sudo apt update | For update the package |
| 73 | sudo apt list --upgradable | check the list of packages for which updates are available with the following command: |
| 74 | sudo apt-get install tree  sudo apt-get install any app name | Command for install tree |
| 75 | Useradd | To create a new user |
| 76 | Groupadd | To create group |
| 77 | Gpasswd-a/-m | To Add user into group,to add multiple user |
| 78 | In | Hardlink(backup) |
| 79 | In-s | Softlink (means the create the shortcut of any app) |
| 80 | Tar | Tar is an archiver used to combine multiple files into one |
| 81. | Gzip filename | Gzip is a compression tool used to reduce the sized of a file |
| 82 | wget | Wget is the non-intervact network downloader |
| 83 | Unzip file name | For unzip the file name |
| 84 | tar -xcf filename | For extract the tar file |
| 85 | rm-rf \* | For delete all files not hidden files |

User check in Linux path :cat /etc/passwd

How to check the group is created or not :cat/etc/group

How to add the user in group:

gpasswd -a username groupname

gpasswd -a hanumant IT

Added multiple users in group

gpasswd -M username1,usernname2,username3 IT

how to check the member of group

cat /etc/group

How to create a softlink

ln -s filename softlinkname

ln-s hs1 softlinkhs1

how to check ls-l

how to check the softlink

cat softlinkhs1

how to added data in softlink

cat >>softlinkname

Demo of LN (hardlink)

ln hs4 hardlinkhs4

use of tar command for zip file

tar -cvf – Jaishreeramgi.tar Jaishreeramgi

CVF (Create Verbose Forcefully)

For zip the file :

Gzip file name

For unzip the file

gunzip Jaishreeramgi.tar

use of tar command for extract file

tar -xvf – Jaishreeramgi.tar

YUM :yellow dog updater modified

**sudo apt list –upgradable**

**sudo apt upgrade**

**sudo reboot**

Apache install command:

1. apt-cache search apache
2. sudo apt-get install apache2
3. sudo systemctl is-enabled apache2.service
4. sudo systemctl start apache2.service
5. sudo systemctl stop apache2.service
6. sudo systemctl restart apache2.service
7. sudo systemctl reload apache2.service
8. sudo systemctl status apache2.service

sudo ufw allow 80/tcp comment 'accept Apache'  
sudo ufw allow 443/tcp comment 'accept HTTPS connections'

sudo ufw status

sudo ufw default allow outgoing

sudo systemctl enable apache2.service

For ifconfig please install apt -install net -tools

For remove the apache2.

1. sudo apt-get remove apache2

Directory Means:

* Bin: **contains commands that may be used by both the system administrator and by users, but which are required when no other filesystems are mounted**
* Dev: is **the location of special or device files**. It is a very interesting directory that highlights one important aspect of the Linux filesystem - everything is a file or a directory.
* Home: The Linux home directory is **a directory for a particular user of the system and consists of individual files**. It is also referred to as the login directory. This is the first place that occurs after logging into a Linux system. It is automatically created as "/home" for each user in the directory'.
* Lib32: **The /lib directory contains kernel modules** and those shared library images (the C programming code library) needed to boot the system and run the commands in
* Media: **The /media directory contains subdirectories where removable media devices inserted into the computer are mounted**. For example, when you insert a CD into your Linux system, a directory will automatically be created inside the /media directory. You can access the contents of the CD inside this directory.
* Opt: The FHS defines /opt as “**reserved for the installation of add-on application software packages**.” In this context, “add-on” means software that is not part of the system; for example, any external or third-party software. This convention has its roots in the old UNIX systems built by vendors like AT&T, Sun, and DEC.
* Root: The root file system is **the top of the hierarchical file tree**. It contains the files and directories critical for system operation, including the device directory and programs for booting the system.
* Sbin: Purpose. **Utilities used for system administration (and other root-only commands) are stored in /sbin , /usr/sbin , and /usr/local/sbin** . /sbin contains binaries essential for booting, restoring, recovering, and/or repairing the system in addition to the binaries in /bin
* Srv: The /srv/ directory **contains site-specific data served by your system running Red Hat Enterprise Linux**. This directory gives users the location of data files for a particular service, such as FTP, WWW, or CVS. Data that only pertains to a specific user should go in the /home/ directory.
* Sys: /sys is **an interface to the kernel**. Specifically, it provides a filesystem-like view of information and configuration settings that the kernel provides, much like /proc . Writing to these files may or may not write to the actual device, depending on the setting you're changing.

how to install the chrome in Linux :

1. sudo apt update
2. sudo apt upgrade
3. wget –version
4. If you get an error because wget is not installed, type sudo apt install wget and press the **Enter** key to install it.
5. wget <https://dl.google.com/linux/direct/google-chrome-stable_current_amd64.deb>

6.sudo dpkg -i google-chrome-stable\_current\_amd64.deb

7. **Fix errors that occurred in the Chrome installation.** If you see any errors during the installation, type sudo apt-get install -f and press the **Enter** key to repair them.

8. **Type google-chrome and press ↵ Enter to launch Chrome.**

How to install Ubuntu GUI

sudo apt update

sudo apt upgrade

sudo apt install slim

sudo apt install lightdm

sudo apt install ubuntu-desktop

sudo apt install ubuntu-desktop

sudo reboot

sudo service slim start

10th Nov 2022

try learn Linux (Redhat)

username:root

Password:India@2021

hs

India@2021

How to enable multi-user login

systemctl get-default

systemctl set-default multi-user

|  |  |  |  |
| --- | --- | --- | --- |
| Access Mode | | File | Directory |
| r | 4 | To display the contents | To list the contents |
| W | 2 | To Modify | To create or remove |
| X | 1 | To execute the file | To enter into directory |

Commands:

Chmod: used to change the access mode of a file

Chown:Change the owner of a file or directory

Chgrp:Change the group of file or dir.

How to setup FTP in ubutnu

* [**What Is FTP?**](https://www.hostinger.in/tutorials/how-to-setup-ftp-server-on-ubuntu-vps/#What_Is_FTP)
* [**How to Set Up an FTP Server on Ubuntu**](https://www.hostinger.in/tutorials/how-to-setup-ftp-server-on-ubuntu-vps/#How_to_Set_Up_an_FTP_Server_on_Ubuntu)
  + [**Step 1 – Installing vsftpd**](https://www.hostinger.in/tutorials/how-to-setup-ftp-server-on-ubuntu-vps/#Step_1_-_Installing_vsftpd)
  + [**Step 2 – Allowing FTP Traffic from the Firewall**](https://www.hostinger.in/tutorials/how-to-setup-ftp-server-on-ubuntu-vps/#Step_2_-_Allowing_FTP_Traffic_from_the_Firewall)
  + [**Step 3 – Creating the User Directory**](https://www.hostinger.in/tutorials/how-to-setup-ftp-server-on-ubuntu-vps/#Step_3_-_Creating_the_User_Directory)
  + [**Step 4 – Configuring vsftpd**](https://www.hostinger.in/tutorials/how-to-setup-ftp-server-on-ubuntu-vps/#Step_4_-_Configuring_vsftpd)
  + [**Step 5 – Making FTP Secure**](https://www.hostinger.in/tutorials/how-to-setup-ftp-server-on-ubuntu-vps/#Step_5_-_Making_FTP_Secure)
  + [**Step 6 – Testing Connection with FileZilla**](https://www.hostinger.in/tutorials/how-to-setup-ftp-server-on-ubuntu-vps/#Step_6_-_Testing_Connection_with_FileZilla)

sudo apt install vsftpd

sudo systemctl start vsftpd

sudo systemctl enable vsftpd

For backup current configuration

sudo cp /etc/vsftpd.conf /etc/vsftpd.conf\_default

sudo useradd -m FTPUSER12

sudo passwd testuser

### Configure Firewall to Allow FTP Traffic

sudo ufw allow 20/tcp

sudo ufw allow 21/tcp

### Step 6: Connect to Ubuntu FTP Server

sudo ftp ubuntu-ftp