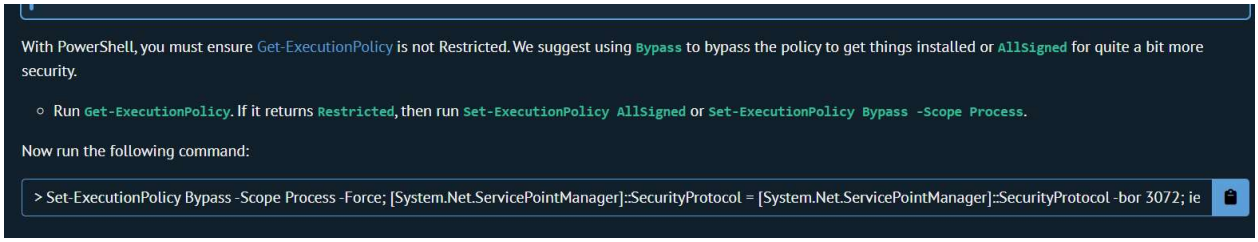
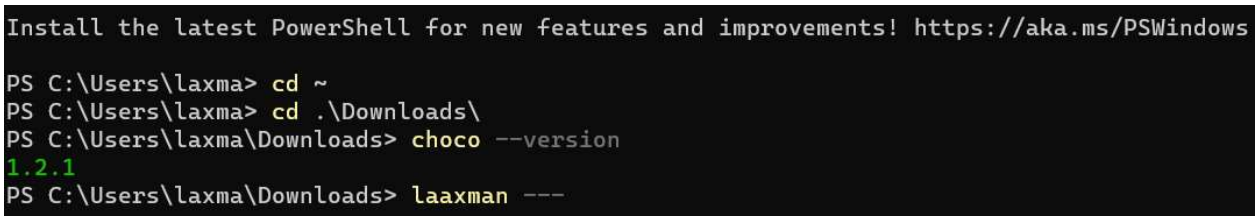
1.Chocolatey install on windows

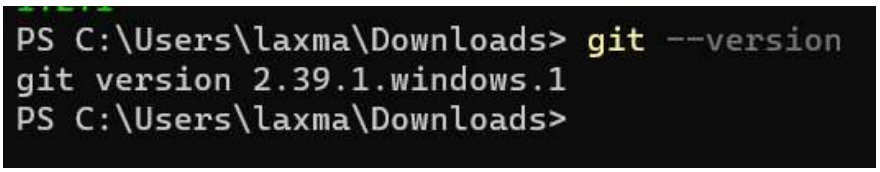
https://chocolatey.org/install





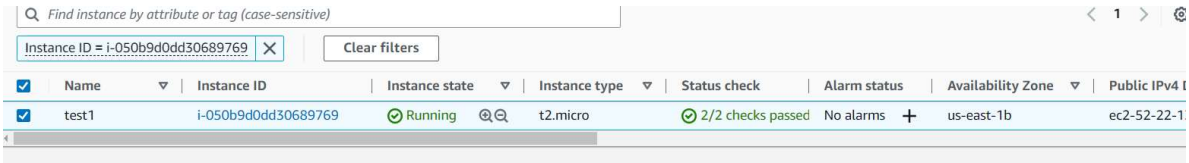
2. Install below softwares using chocolatey.

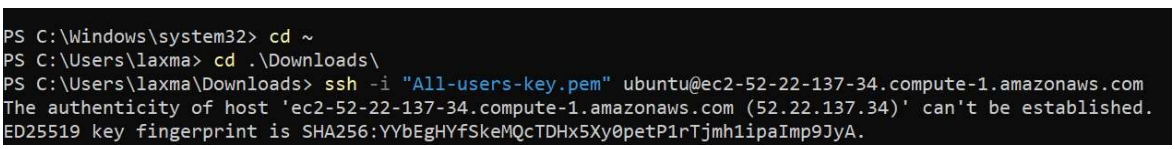
-> Git



-> Vscode
-> Notepadplusplus
-> Vlc
-> Mobaxterm
-> WinScp
-> Beyond Compare

3.Create and connect EC2/VM using AWS/AZURE Portal/Console





```
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-83-136:~$
```

4. Create Directories/Files and hands-on ls,cd,cp,mv,rmdir,rm,touch,mkdir,cat and vi.

```
ubuntu@ip-172-31-83-136:~$
ubuntu@ip-172-31-83-136:~$ mkdir laxman1
ubuntu@ip-172-31-83-136:~$ mkdir laxman2
ubuntu@ip-172-31-83-136:~$ mkdir laxman3
ubuntu@ip-172-31-83-136:~$ ls
laxman1  laxman2  laxman3
```

```
ubuntu@ip-172-31-93-106:~$
ubuntu@ip-172-31-93-106:~$ ls
file1.txt  file2.txt  laxman2  test1
ubuntu@ip-172-31-93-106:~$ cat file2.txt
this is my second file
ubuntu@ip-172-31-93-106:~$ rm -r laxman2/
ubuntu@ip-172-31-93-106:~$ ls
file1.txt  file2.txt  test1
ubuntu@ip-172-31-93-106:~$ mkdir laxman2
ubuntu@ip-172-31-93-106:~$ ls
file1.txt  file2.txt  laxman2  test1
ubuntu@ip-172-31-93-106:~$ rm test1
ubuntu@ip-172-31-93-106:~$ ls
file1.txt  file2.txt  laxman2
ubuntu@ip-172-31-93-106:~$ cd laxman2/
ubuntu@ip-172-31-93-106:~/laxman2$ mkdir laxman3
ubuntu@ip-172-31-93-106:~/laxman2$ ls
laxman3
ubuntu@ip-172-31-93-106:~/laxman2$ cd laxman3/
ubuntu@ip-172-31-93-106:~/laxman2/laxman3$ ls
ubuntu@ip-172-31-93-106:~/laxman2/laxman3$ ls
ubuntu@ip-172-31-93-106:~/laxman2/laxman3$ touch file1
ubuntu@ip-172-31-93-106:~/laxman2/laxman3$ ls
file1.txt
ubuntu@ip-172-31-93-106:~/laxman2/laxman3$ pwd
/home/ubuntu/laxman2/laxman3
ubuntu@ip-172-31-93-106:~/laxman2/laxman3$ cd ../..
```

```
ubuntu@ip-172-31-93-106:~/laxman2/laxman3$ pwd
/home/ubuntu/laxman2/laxman3
ubuntu@ip-172-31-93-106:~/laxman2/laxman3$ cd ../..
ubuntu@ip-172-31-93-106:~$ pwd
/home/ubuntu
ubuntu@ip-172-31-93-106:~$ touch 1.txt
ubuntu@ip-172-31-93-106:~$ vi 1.txt
ubuntu@ip-172-31-93-106:~$ cat 1.txt
This is my first file name
ubuntu@ip-172-31-93-106:~$ rm 1.txt
ubuntu@ip-172-31-93-106:~$ rm -r laxman3
rm: cannot remove 'laxman3': No such file or directory
ubuntu@ip-172-31-93-106:~$ rm -r laxman3/
rm: cannot remove 'laxman3/': No such file or directory
ubuntu@ip-172-31-93-106:~$ rm -r laxman2/
ubuntu@ip-172-31-93-106:~$ ls
file1.txt  file2.txt
ubuntu@ip-172-31-93-106:~$ cat file1.txt
HAPPY PONGAL TO ALL OF YOU
ubuntu@ip-172-31-93-106:~$ cat file2.txt
this is my second file
```

5. Create 50 files using touch command

```
ubuntu@ip-172-31-93-106:~$ touch file1 file2 file3 file4 file5 file6 file7 file8 file9 file10
ubuntu@ip-172-31-93-106:~$ ls
file1  file10  file2  file3  file4  file5  file6  file7  file8  file9
ubuntu@ip-172-31-93-106:~$ touch file11 file12 file13 file14 file15 file16 file17 file18 file19 file20
ubuntu@ip-172-31-93-106:~$ ls
file1   file11  file13  file15  file17  file19  file20  file4  file6  file8
file10  file12  file14  file16  file18  file2   file3   file5  file7  file9
ubuntu@ip-172-31-93-106:~$
```

6. Try to find a shortcut command to create 50 files at a time.

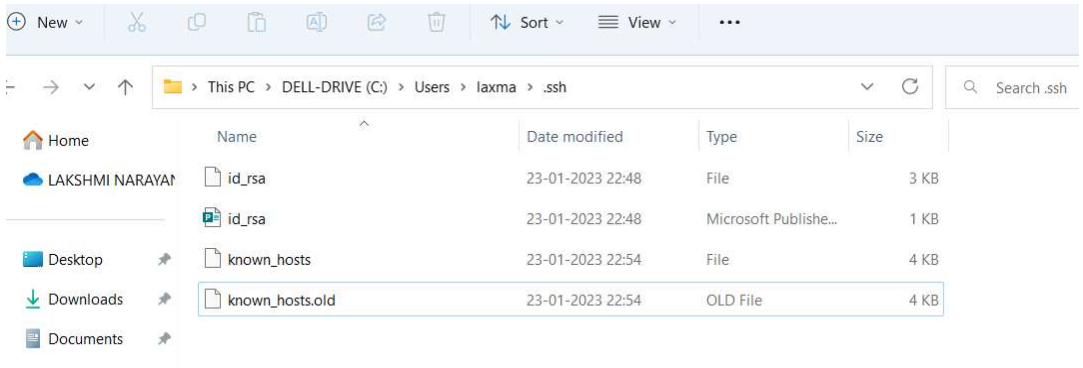
```
ubuntu@ip-172-31-38-97:~$
ubuntu@ip-172-31-38-97:~$ mkdir laxman1
ubuntu@ip-172-31-38-97:~$ cd laxman1
ubuntu@ip-172-31-38-97:~/laxman1$ /
-bash: /: Is a directory
ubuntu@ip-172-31-38-97:~/laxman1$ touch file{001..100}
ubuntu@ip-172-31-38-97:~/laxman1$ ls
file001  file009  file017  file025  file033  file041  file049  file057  file065  file073  file081  file089  file097
file002  file010  file018  file026  file034  file042  file050  file058  file066  file074  file082  file090  file098
file003  file011  file019  file027  file035  file043  file051  file059  file067  file075  file083  file091  file099
file004  file012  file020  file028  file036  file044  file052  file060  file068  file076  file084  file092  file100
file005  file013  file021  file029  file037  file045  file053  file061  file069  file077  file085  file093
file006  file014  file022  file030  file038  file046  file054  file062  file070  file078  file086  file094
file007  file015  file023  file031  file039  file047  file055  file063  file071  file079  file087  file095
file008  file016  file024  file032  file040  file048  file056  file064  file072  file080  file088  file096
```

```
file-014  file-028  file-042  file006   file020  file034  file048  file062  file076  file090  fileD    fileR
ubuntu@ip-172-31-38-97:~/laxman1$ rm -f file-*
ubuntu@ip-172-31-38-97:~/laxman1$ ls
file001  file008  file015  file022  file029  file036  file043  file050  file057  file064  file071  file078  file085  file092  file099  fileF  fileM  fileT
file002  file009  file016  file023  file030  file037  file044  file051  file058  file065  file072  file079  file086  file093  file100  fileG  fileN  fileU
file003  file010  file017  file024  file031  file038  file045  file052  file059  file066  file073  file080  file087  file094  fileA    fileH  fileO  fileV
file004  file011  file018  file025  file032  file039  file046  file053  file060  file067  file074  file081  file088  file095  fileB    fileI  fileP  fileW
file005  file012  file019  file026  file033  file040  file047  file054  file061  file068  file075  file082  file089  file096  fileC    fileJ  fileQ  fileX
file006  file013  file020  file027  file034  file041  file048  file055  file062  file069  file076  file083  file090  file097  fileD    fileK  fileR  fileY
file007  file014  file021  file028  file035  file042  file049  file056  file063  file070  file077  file084  file091  file098  fileE    fileL  fileS  fileZ
ubuntu@ip-172-31-38-97:~/laxman1$ rm -f file*
ubuntu@ip-172-31-38-97:~/laxman1$ ls
ubuntu@ip-172-31-38-97:~/laxman1$ ^C
```

7. Hands-on import keys/ssh keys concept.

Import-keys>>>>

Go to below image



To connect to powershell
Next step

```
PS C:\Users\laxma\.ssh> ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (C:\Users\laxma/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in C:\Users\laxma/.ssh/id_rsa
Your public key has been saved in C:\Users\laxma/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:BvuKzPCp9sJjKhpRUAMAWZuLI6aQ5dDHUm/hdWuuHxA laxma@LAXMAN
The key's randomart image is:
+---[RSA 3072]----+
|B=+ . . . .      |
|.o * o o . .     |
|. B o = E o      |
| B + . o +       |
|B.o   . S .      |
|=o     o o       |
|o..     o .      |
|..*= o . . .     |
|=+.=B  .   .     |
+----[SHA256]-----+
PS C:\Users\laxma\.ssh> ls


    Directory: C:\Users\laxma\.ssh


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
-a----         23-01-2023     22:48           2602 id_rsa
-a----         23-01-2023     22:48            567 id_rsa.pub
-a----         23-01-2023     21:04           3210 known_hosts
-a----         23-01-2023     20:54           2315 known_hosts.old
```

```
PS C:\Users\laxma\.ssh> cat .\id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAABgQC6nTOxnwXKnBFawX4Mqf2i0cDzXzf4kHLkCLh6QGq1ldXIQfi37JPgAK///U
ne1CZj+vPTZoYyE9uG47vCkOabSgtSFlX4UKjq8MI1iCaVD8BUPrik5H5J+iwaaagqVsuPFvN6JxXNUZ/f+muLudvVs6JwXptk
6hbBkOlxhA9/8SurubG7CdRObT/bOnIfHTtIhLWuokozCmDd3PCdNqoXPCJpAthtVDwaqGZopATzNemXR/03HGQEDrE9lEFrLI
```

>.Copy this encrypted file and next
>.Go to EC2 dash board
>.Select key-pairs and then select actions import - key word shown select it

>.Give a name and paste the encrypted file and hit enter
>.Launch new instance and select above given key-pair
>.Open terminal connect machine with
ssh ubuntu@public-ip of machine

```
PS C:\Users\laxma\Downloads> ssh ubuntu@54.172.171.92
The authenticity of host '54.172.171.92 (54.172.171.92)' can't be established.
ED25519 key fingerprint is SHA256:bRPWZjymS0VT8xfxpZKZ1yFEVuSsAUNFa7D8WLlVags.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '54.172.171.92' (ED25519) to the list of known hosts.
```

```
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-53-180:~$
```

8. Hands-on file permissions and change ownerships

```
PS C:\Windows\system32> cd ~
PS C:\Users\laxma> cd .\Downloads\
PS C:\Users\laxma\Downloads> ssh -i "all-users.pem" ubuntu@ec2-3-110-176-182.ap-south-1.compute.amazonaws.com
The authenticity of host 'ec2-3-110-176-182.ap-south-1.compute.amazonaws.com (3.110.176.182)' can't be established.
ED25519 key fingerprint is SHA256:SVo1cLNgZ+FdjUS933zoruHa/iJJdu+Yx3wvb9XAEo8.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
```

```
ubuntu@ip-172-31-12-127:~$ mkdir laxman
ubuntu@ip-172-31-12-127:~$ cd laxman
ubuntu@ip-172-31-12-127:~/laxman$ ls
ubuntu@ip-172-31-12-127:~/laxman$ touch bb.txt
ubuntu@ip-172-31-12-127:~/laxman$ ls
bb.txt
ubuntu@ip-172-31-12-127:~/laxman$ ls -ll
total 0
-rw-rw-r-- 1 ubuntu ubuntu 0 Jan 26 05:22 bb.txt
ubuntu@ip-172-31-12-127:~/laxman$ ll
total 8
drwxrwxr-x 2 ubuntu ubuntu 4096 Jan 26 05:22 ./
drwxr-x--- 5 ubuntu ubuntu 4096 Jan 26 05:20 ../
-rw-rw-r-- 1 ubuntu ubuntu    0 Jan 26 05:22 bb.txt
ubuntu@ip-172-31-12-127:~/laxman$ chmod 777 bb.txt
ubuntu@ip-172-31-12-127:~/laxman$ ll
total 8
drwxrwxr-x 2 ubuntu ubuntu 4096 Jan 26 05:22 ./
drwxr-x--- 5 ubuntu ubuntu 4096 Jan 26 05:20 ../
-rwxrwxrwx 1 ubuntu ubuntu    0 Jan 26 05:22 bb.txt*
ubuntu@ip-172-31-12-127:~/laxman$ aa.txt
ubuntu@ip-172-31-12-127:~/laxman$ touch aa.txt
ubuntu@ip-172-31-12-127:~/laxman$ ll
total 8
drwxrwxr-x 2 ubuntu ubuntu 4096 Jan 26 05:25 ./
drwxr-x--- 5 ubuntu ubuntu 4096 Jan 26 05:20 ../
-rw-rw-r-- 1 ubuntu ubuntu    0 Jan 26 05:25 aa.txt
-rwxrwxrwx 1 ubuntu ubuntu    0 Jan 26 05:22 bb.txt*
```

```
ubuntu@ip-172-31-12-127:~/laxman$ chmod 004 aa.txt
ubuntu@ip-172-31-12-127:~/laxman$ ll
total 8
drwxrwxr-x 2 ubuntu ubuntu 4096 Jan 26 05:25 ./
drwxr-x--- 5 ubuntu ubuntu 4096 Jan 26 05:20 ../
-------r-- 1 ubuntu ubuntu    0 Jan 26 05:25 aa.txt
-rwxrwxrwx 1 ubuntu ubuntu    0 Jan 26 05:22 bb.txt*
ubuntu@ip-172-31-12-127:~/laxman$ mkdir narayana
ubuntu@ip-172-31-12-127:~/laxman$ ls
aa.txt  bb.txt  narayana
ubuntu@ip-172-31-12-127:~/laxman$ cd narayana
ubuntu@ip-172-31-12-127:~/laxman/narayana$ touch aa.txt
ubuntu@ip-172-31-12-127:~/laxman/narayana$ chmod 777 aa.txt
ubuntu@ip-172-31-12-127:~/laxman/narayana$ ll
total 8
drwxrwxr-x 2 ubuntu ubuntu 4096 Jan 26 05:28 ./
drwxrwxr-x 3 ubuntu ubuntu 4096 Jan 26 05:27 ../
-rwxrwxrwx 1 ubuntu ubuntu    0 Jan 26 05:28 aa.txt*
ubuntu@ip-172-31-12-127:~/laxman/narayana$ cd ../..
```

>> chown permissions

```
ubuntu@ip-172-31-12-127:~$ sudo -i
root@ip-172-31-12-127:~# mkdir gottipati
root@ip-172-31-12-127:~# ls
gottipati  snap
root@ip-172-31-12-127:~# touch 1.txt
root@ip-172-31-12-127:~# ll
total 28
drwx------  5 root root 4096 Jan 26 05:32 ./
drwxr-xr-x 19 root root 4096 Jan 26 05:14 ../
-rw-r--r--  1 root root 3106 Oct 15  2021 .bashrc
-rw-r--r--  1 root root  161 Jul  9  2019 .profile
drwx------  2 root root 4096 Jan 26 05:14 .ssh/
-rw-r--r--  1 root root    0 Jan 26 05:32 1.txt
drwxr-xr-x  2 root root 4096 Jan 26 05:31 gottipati/
drwx------  4 root root 4096 Jan 26 05:14 snap/
root@ip-172-31-12-127:~# ccd
root@ip-172-31-12-127:~# cd gottipati
root@ip-172-31-12-127:~/gottipati# touch 1.txt
root@ip-172-31-12-127:~/gottipati# ll
total 8
```

```
root@ip-172-31-12-127:~/gottipati# adduser lakshmi
Adding user `lakshmi' ...
Adding new group `lakshmi' (1001) ...
Adding new user `lakshmi' (1001) with group `lakshmi' ...
Creating home directory `/home/lakshmi' ...
Copying files from `/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for lakshmi
Enter the new value, or press ENTER for the default
        Full Name []:
        Room Number []:
        Work Phone []:
        Home Phone []:
        Other []:
Is the information correct? [Y/n] y
root@ip-172-31-12-127:~/gottipati# cdown lakshmi 1.txt
Command 'cdown' not found, but can be installed with:
apt install cdtool
root@ip-172-31-12-127:~/gottipati# ll
total 8
```

```
total 8
drwxr-xr-x 2 root root 4096 Jan 26 05:33 ./
drwx------ 5 root root 4096 Jan 26 05:32 ../
-rw-r--r-- 1 root root    0 Jan 26 05:33 1.txt
root@ip-172-31-12-127:~/gottipati# chown lakshmi 1.txt
root@ip-172-31-12-127:~/gottipati# ll
total 8
drwxr-xr-x 2 root    root 4096 Jan 26 05:33 ./
drwx------ 5 root    root 4096 Jan 26 05:32 ../
-rw-r--r-- 1 lakshmi root    0 Jan 26 05:33 1.txt
root@ip-172-31-12-127:~/gottipati# addgroup lakshmi
addgroup: The group `lakshmi' already exists.
root@ip-172-31-12-127:~/gottipati# addgroup narayana
Adding group `narayana' (GID 1002) ...
Done.
root@ip-172-31-12-127:~/gottipati# chown narayana 1.txt
chown: invalid user: ‘narayana’
root@ip-172-31-12-127:~/gottipati# chown lakshmi:narayana 1.txt
root@ip-172-31-12-127:~/gottipati# ll
total 8
drwxr-xr-x 2 root    root     4096 Jan 26 05:33 ./
drwx------ 5 root    root     4096 Jan 26 05:32 ../
-rw-r--r-- 1 lakshmi narayana    0 Jan 26 05:33 1.txt
root@ip-172-31-12-127:~/gottipati# ^C
```

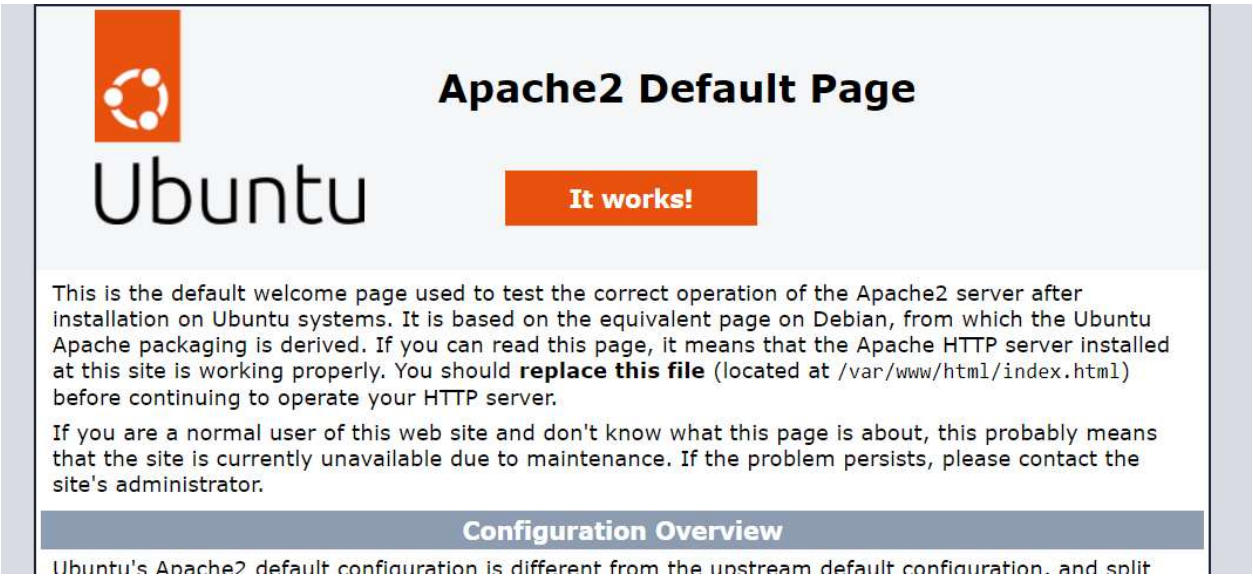
9. Create,Delete users,passwords and groups and verify whether users,passwords and groups are created or not by its file location. (Ubuntu and Centos)

10. Create a VM/EC2 and install apache2 and Tomcat web server on ubuntu/CentOS and access it through the internet

```
PS C:\Users\laxma> cd ~
PS C:\Users\laxma> cd .\Downloads\
PS C:\Users\laxma\Downloads> ssh -i "apache2-key.pem" ubuntu@ec2-3-110-133-82.ap-south-1.compute.amazonaws.com
The authenticity of host 'ec2-3-110-133-82.ap-south-1.compute.amazonaws.com (3.110.133.82)' can't be established.
ED25519 key fingerprint is SHA256:jhh49Yv0cnfgC8qUkF6qVrw4NjCuCw4DyqJZeDW2Q7w.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-3-110-133-82.ap-south-1.compute.amazonaws.com' (ED25519) to the list of known hosts
```

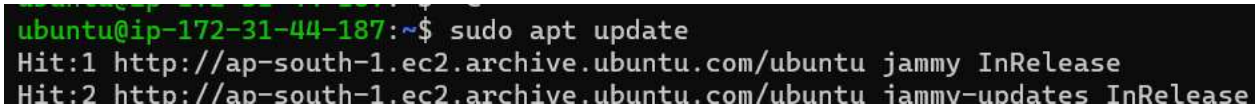
$ sudo apt update
$ sudo apt install apache2 -y
$ sudo systemctl status apache2

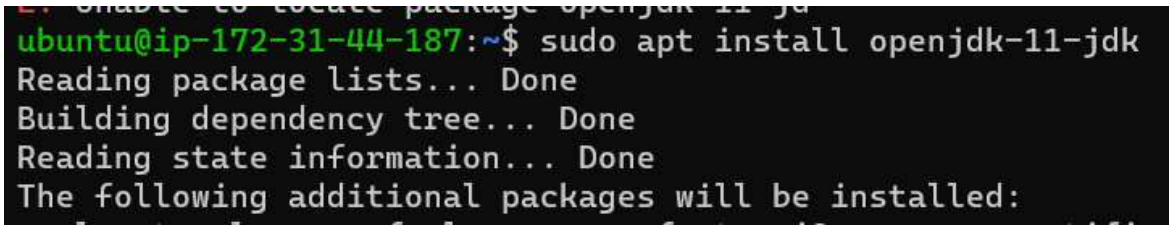
```
ubuntu@ip-172-31-44-187:~$ sudo systemctl status apache2
● apache2.service - The Apache HTTP Server
     Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)
     Active: active (running) since Tue 2023-01-24 06:33:16 UTC; 54s ago
       Docs: https://httpd.apache.org/docs/2.4/
   Main PID: 2177 (apache2)
      Tasks: 55 (limit: 1143)
     Memory: 5.1M
        CPU: 32ms
     CGroup: /system.slice/apache2.service
             ├─2177 /usr/sbin/apache2 -k start
             ├─2179 /usr/sbin/apache2 -k start
             └─2180 /usr/sbin/apache2 -k start

Jan 24 06:33:16 ip-172-31-44-187 systemd[1]: Starting The Apache HTTP Server...
Jan 24 06:33:16 ip-172-31-44-187 systemd[1]: Started The Apache HTTP Server.
```



Install tomcat on ubuntu

https://linuxize.com/post/how-to-install-tomcat-10-on-ubuntu-22-04/



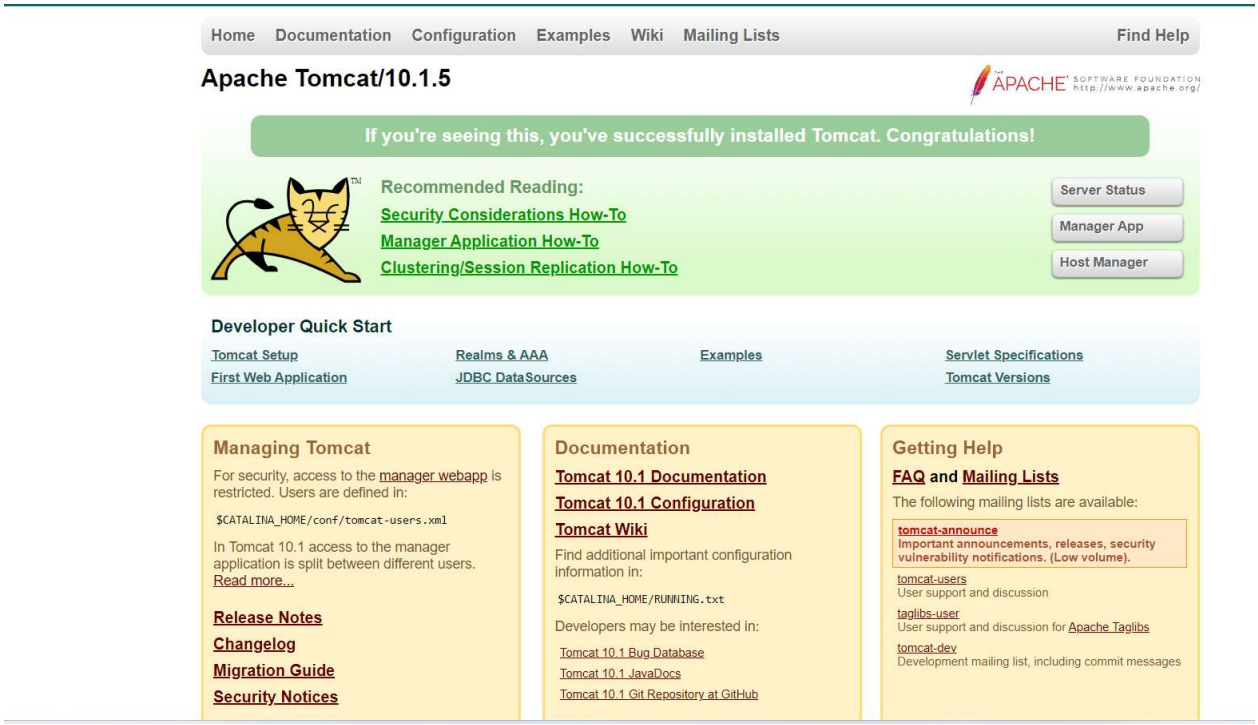


```
No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-1-62:~$ java -version
openjdk version "11.0.17" 2022-10-18
OpenJDK Runtime Environment (build 11.0.17+8-post-Ubuntu-1ubuntu222.04)
OpenJDK 64-Bit Server VM (build 11.0.17+8-post-Ubuntu-1ubuntu222.04, mixed mode, sharing)
ubuntu@ip-172-31-1-62:~$ sudo useradd -m -U -d /opt/tomcat -s /bin/false tomcat
ubuntu@ip-172-31-1-62:~$ VERSION=10.1.5
ubuntu@ip-172-31-1-62:~$ wget https://www-eu.apache.org/dist/tomcat/tomcat-10/v${VERSION}/bin/apache-tomcat-${VERSION}.tar.gz -P /tmp
--2023-01-25 10:43:13--  https://www-eu.apache.org/dist/tomcat/tomcat-10/v10.1.5/bin/apache-tomcat-10.1.5.tar.gz
Resolving www-eu.apache.org (www-eu.apache.org)... 65.108.131.22, 2a01:4f9:6b:2ecf::1
Connecting to www-eu.apache.org (www-eu.apache.org)|65.108.131.22|:443... connected.
HTTP request sent, awaiting response... 302 Found
Location: https://downloads.apache.org/tomcat/tomcat-10/v10.1.5/bin/apache-tomcat-10.1.5.tar.gz [following]
--2023-01-25 10:43:14--  https://downloads.apache.org/tomcat/tomcat-10/v10.1.5/bin/apache-tomcat-10.1.5.tar.gz
Resolving downloads.apache.org (downloads.apache.org)... 88.99.95.219, 135.181.214.104, 2a01:4f9:3a:2c57::2, ...
Connecting to downloads.apache.org (downloads.apache.org)|88.99.95.219|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 12127326 (12M) [application/x-gzip]
Saving to: '/tmp/apache-tomcat-10.1.5.tar.gz'

apache-tomcat-10.1.5.tar.gz       100%[===================================================>]  11.57M  6.50MB/s    in 1.8s
```

```
2023-01-25 10:43:16 (6.50 MB/s) - '/tmp/apache-tomcat-10.1.5.tar.gz' saved [12127326/12127326]

ubuntu@ip-172-31-1-62:~$ sudo tar -xf /tmp/apache-tomcat-${VERSION}.tar.gz -C /opt/tomcat/
ubuntu@ip-172-31-1-62:~$
ubuntu@ip-172-31-1-62:~$ sudo ln -s /opt/tomcat/apache-tomcat-${VERSION} /opt/tomcat/latest
ubuntu@ip-172-31-1-62:~$ sudo chown -R tomcat: /opt/tomcat
ubuntu@ip-172-31-1-62:~$ sudo sh -c 'chmod +x /opt/tomcat/latest/bin/*.sh'
ubuntu@ip-172-31-1-62:~$ sudo nano /etc/systemd/system/tomcat.service
ubuntu@ip-172-31-1-62:~$
ubuntu@ip-172-31-1-62:~$ sudo vi /etc/systemd/system/tomcat.service
ubuntu@ip-172-31-1-62:~$ sudo systemctl daemon-reload
ubuntu@ip-172-31-1-62:~$ sudo systemctl enable --now tomcat
Created symlink /etc/systemd/system/multi-user.target.wants/tomcat.service → /etc/systemd/system/tomcat.service.
ubuntu@ip-172-31-1-62:~$ sudo systemctl status tomcat
● tomcat.service - Tomcat 10 servlet container
     Loaded: loaded (/etc/systemd/system/tomcat.service; enabled; vendor preset: enabled)
     Active: active (running) since Wed 2023-01-25 10:48:27 UTC; 13s ago
    Process: 5247 ExecStart=/opt/tomcat/latest/bin/startup.sh (code=exited, status=0/SUCCESS)
   Main PID: 5254 (java)
      Tasks: 29 (limit: 1143)
     Memory: 134.4M
```

```
Jan 25 10:48:27 ip-172-31-1-62 systemd[1]: Starting Tomcat 10 servlet container...
Jan 25 10:48:27 ip-172-31-1-62 startup.sh[5247]: Tomcat started.
Jan 25 10:48:27 ip-172-31-1-62 systemd[1]: Started Tomcat 10 servlet container.
lines 1-14/14 (END)
ubuntu@ip-172-31-1-62:~$ sudo systemctl start tomcat
ubuntu@ip-172-31-1-62:~$ sudo systemctl stop tomcat
ubuntu@ip-172-31-1-62:~$ sudo systemctl restart tomcat
ubuntu@ip-172-31-1-62:~$ sudo ufw allow 8080/tcp
Rules updated
Rules updated (v6)
ubuntu@ip-172-31-1-62:~$ sudo nano /opt/tomcat/latest/conf/tomcat-users.xml
ubuntu@ip-172-31-1-62:~$
ubuntu@ip-172-31-1-62:~$  sudo vi /opt/tomcat/latest/conf/tomcat-users.xml
ubuntu@ip-172-31-1-62:~$ sudo vi /opt/tomcat/latest/webapps/manager/META-INF/context.xml
ubuntu@ip-172-31-1-62:~$ sudo vi /opt/tomcat/latest/webapps/host-manager/META-INF/context.xml
ubuntu@ip-172-31-1-62:~$
ubuntu@ip-172-31-1-62:~$  sudo vi /opt/tomcat/latest/webapps/host-manager/META-INF/context.xml
ubuntu@ip-172-31-1-62:~$ sudo systemctl restart tomcat
ubuntu@ip-172-31-1-62:~$ ^C
ubuntu@ip-172-31-1-62:~$ ^C
```

http://3.110.164.196:8080/



Tomcat install on centos-7

>launch instance with centos7

Install Tomcat

Installing Tomcat on CentOS 7 requires one simple command:

```
sudo yum install tomcat
```

This will install Tomcat and its dependencies, including Java.

There are several additional packages which many users, particularly those who are new to Tomcat, will find useful. Install them with the command:

```
sudo yum install tomcat-webapps tomcat-admin-webapps tomcat-docs-webapp tomcat-javadoc
```

This will install:

- The Tomcat root webpage (tomcat-webapps)
- The Tomcat Web Admin Manager (tomcat-admin-webapps)

```
sudo systemctl stop httpd
```

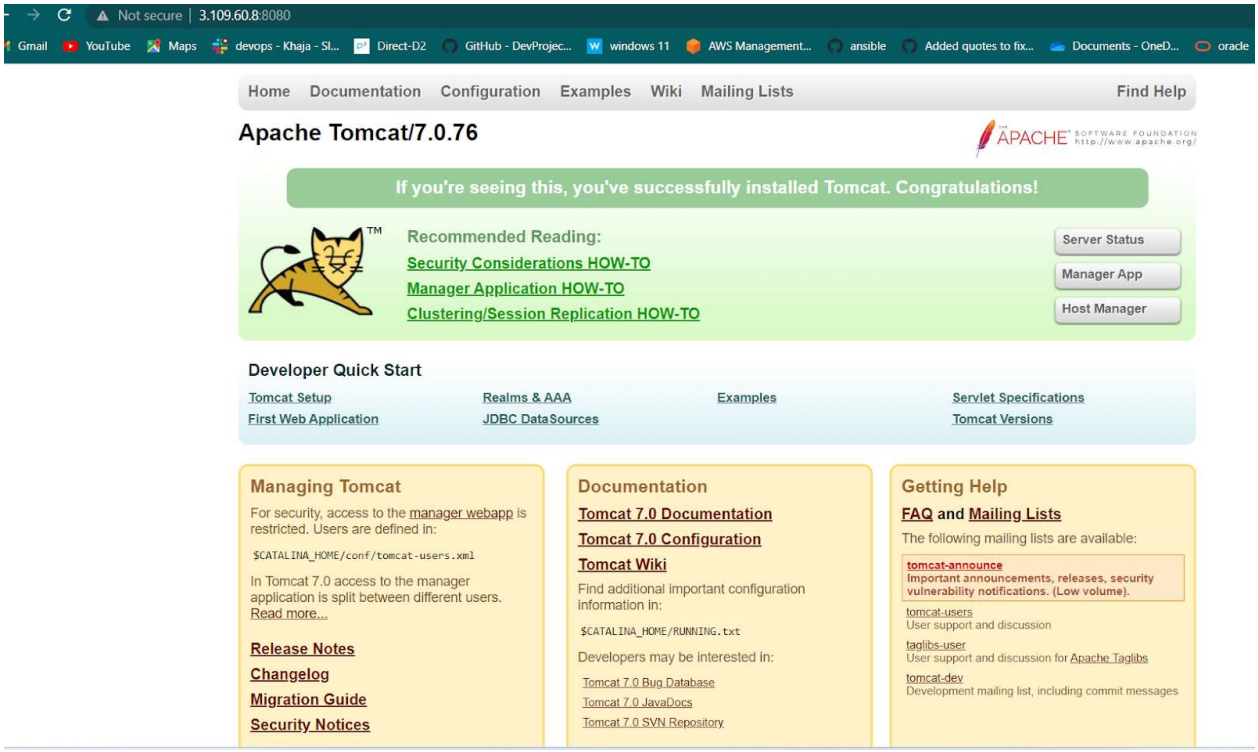
Start Tomcat with the command:

```
sudo systemctl start tomcat
```

And enable Tomcat to automatically start if the server is rebooted:

```
sudo systemctl enable tomcat
```

You can verify that Tomcat is running by visiting the URL http://example.com:8080 in a web browser. You will see

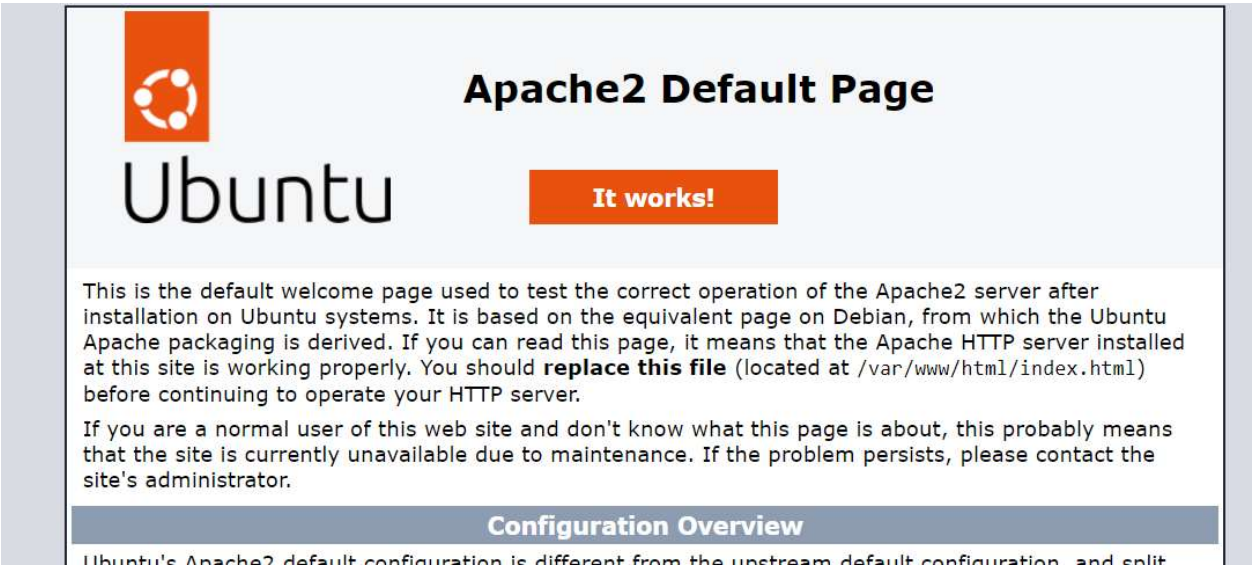


11. Upload any image inside the web app path and access it through the web.

In EC2 machine (additional settings)
We add

```
#!/bin/sh
$ sudo apt update
$ sudo apt install apache2 -y
```

Next
Check public ip in search bar




```
PS C:\Users\laxma> cd .\Downloads\
PS C:\Users\laxma\Downloads> sftp -i "all-users.pem" ubuntu@ec2-13-126-24-227.ap-south-1.compute.amazonaws.com
The authenticity of host 'ec2-13-126-24-227.ap-south-1.compute.amazonaws.com (13.126.24.227)' can't be established.
ED25519 key fingerprint is SHA256:cB3vvQih4eFrJ67Ass8RalAGFIuCfOnBRZLoQQGw78c.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])?
Warning: Permanently added 'ec2-13-126-24-227.ap-south-1.compute.amazonaws.com' (ED25519) to the list of known hosts
```

```
Connected to ec2-13-126-24-227.ap-south-1.compute.amazonaws.com.
sftp> put subhash.jpg
stat subhash.jpg: No such file or directory
sftp> put subhash.jpeg
Uploading subhash.jpeg to /home/ubuntu/subhash.jpeg
subhash.jpeg                                                                  100% 5897    88.1KB/s   00
sftp> bye
PS C:\Users\laxma\Downloads> ssh -i "all-users.pem" ubuntu@ec2-13-126-24-227.ap-south-1.compute.amazonaws.com
Welcome to Ubuntu 22.04.1 LTS (GNU/Linux 5.15.0-1028-aws x86_64)
```

```
ubuntu@ip-172-31-2-252:~$ ls
subhash.jpeg
ubuntu@ip-172-31-2-252:~$ sudo cp subhash.jpeg /var/www/html/
ubuntu@ip-172-31-2-252:~$ cd /var/www/html/
ubuntu@ip-172-31-2-252:/var/www/html$ ^C
```

To check

http://13.126.24.227/subhash.jpeg

12. Add users and groups to the sudoers file, Enable password based authentication method.

```
PS C:\Users\laxma> cd .\Downloads\
PS C:\Users\laxma\Downloads> ssh -i "all-users.pem" ubuntu@ec2-15-206-153-75.ap-south-1.compute.amazonaws.com
The authenticity of host 'ec2-15-206-153-75.ap-south-1.compute.amazonaws.com (15.206.153.75)' can't be established.
ED25519 key fingerprint is SHA256:hruGgyRXBmXqQ8khAwtqoerUzuxKJGqsv8MwGvx6THw.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
```

```
ubuntu@ip-172-31-41-73:~$ sudo apt update
Hit:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease
Get:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease [114 kB]
Get:3 http://security.ubuntu.com/ubuntu jammy-security InRelease [110 kB]
Get:4 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-backports InRelease [99.8 kB]
Get:5 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 Packages [14.1 MB]
Get:6 http://security.ubuntu.com/ubuntu jammy-security/main amd64 Packages [594 kB]
```

```
Building dependency tree... Done
Reading state information... Done
23 packages can be upgraded. Run 'apt list --upgradable' to see them
ubuntu@ip-172-31-41-73:~$ sudo adduser laxman
Adding user `laxman' ...
Adding new group `laxman' (1001) ...
Adding new user `laxman' (1001) with group `laxman' ...
Creating home directory `/home/laxman' ...
Copying files from `/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for laxman
Enter the new value, or press ENTER for the default
        Full Name []:
        Room Number []:
        Work Phone []:
        Home Phone []:
        Other []:
Is the information correct? [Y/n] y
```

```
23 packages can be upgraded. Run 'apt list --upgradable' to see them.
ubuntu@ip-172-31-41-73:~$ su laxman
Password:
laxman@ip-172-31-41-73:/home/ubuntu$ sudo apt update
[sudo] password for laxman:
laxman is not in the sudoers file.  This incident will be reported.
laxman@ip-172-31-41-73:/home/ubuntu$ exit
exit
ubuntu@ip-172-31-41-73:~$ sudo vi /etc/sudoers
"/etc/sudoers" 54L, 1695B written
ubuntu@ip-172-31-41-73:~$ su laxman
Password:
laxman@ip-172-31-41-73:/home/ubuntu$ sudo apt update
[sudo] password for laxman:
Hit:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease
Get:3 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-backports InRelease [99.8
```

```
Reading state information... Done
23 packages can be upgraded. Run 'apt list --upgradable' to see them.
laxman@ip-172-31-41-73:/home/ubuntu$ exit
exit
ubuntu@ip-172-31-41-73:~$ sudo vi /etc/sudoers

ubuntu@ip-172-31-41-73:~$ su laxman
Password:
laxman@ip-172-31-41-73:/home/ubuntu$ sudo apt update
Hit:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:3 http://security.ubuntu.com/ubuntu jammy-security InRelease
Get:4 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-backports InRelease [99.8 kB]
Fetched 99.8 kB in 0s (207 kB/s)
Reading package lists... Done
Building dependency tree... Done
```

13. Download and Install java using tar file and set environment variable for java.

`wget` https://download.oracle.com/java/19/latest/jdk-19_linux-x64_bin.tar.gz

Copy above command

```
ubuntu@ip-172-31-9-166:~$ sudo -i
root@ip-172-31-9-166:~#  wget https://download.oracle.com/java/19/latest/jdk-19_linux-x64_bin.tar.gz
--2023-01-24 15:26:16--  https://download.oracle.com/java/19/latest/jdk-19_linux-x64_bin.tar.gz
Resolving download.oracle.com (download.oracle.com)... 23.212.160.83
Connecting to download.oracle.com (download.oracle.com)|23.212.160.83|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 189896383 (181M) [application/x-gzip]
Saving to: ‘jdk-19_linux-x64_bin.tar.gz’

jdk-19_linux-x64_bin.tar.gz 100%[=====================================>] 181.10M   110MB/s    in 1.6s

2023-01-24 15:26:18 (110 MB/s) - ‘jdk-19_linux-x64_bin.tar.gz’ saved [189896383/189896383]

root@ip-172-31-9-166:~# ls
jdk-19_linux-x64_bin.tar.gz  snap
root@ip-172-31-9-166:~# tar -zxvf jdk-19_linux-x64_bin.tar.gz
```

```
root@ip-172-31-9-166:~# ls
jdk-19.0.2  jdk-19_linux-x64_bin.tar.gz  snap
root@ip-172-31-9-166:~# cd jdk-19.0.2/
root@ip-172-31-9-166:~/jdk-19.0.2# cd bin
root@ip-172-31-9-166:~/jdk-19.0.2/bin# pwd
/root/jdk-19.0.2/bin
root@ip-172-31-9-166:~/jdk-19.0.2/bin# java --version
Command 'java' not found, but can be installed with:
apt install openjdk-11-jre-headless  # version 11.0.17+8-1ubuntu2~22.04, or
apt install default-jre              # version 2:1.11-72build2
apt install openjdk-17-jre-headless  # version 17.0.5+8-2ubuntu1~22.04
apt install openjdk-18-jre-headless  # version 18.0.2+9-2~22.04
apt install openjdk-19-jre-headless  # version 19.0.1+10-1ubuntu1~22.04
apt install openjdk-8-jre-headless   # version 8u352-ga-1~22.04
root@ip-172-31-9-166:~/jdk-19.0.2/bin# vi /etc/env
"/etc/env" [New] 2L, 54B written
root@ip-172-31-9-166:~/jdk-19.0.2/bin# vi /etc/environment
root@ip-172-31-9-166:~/jdk-19.0.2/bin# cat /etc/environment
PATH="/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local/games:/snap/bin
JAVA_HOME=/root/jdk-19.0.2/
PATH=$PATH:$JAVA_HOME/bin
root@ip-172-31-9-166:~/jdk-19.0.2/bin# source /etc/environment
root@ip-172-31-9-166:~/jdk-19.0.2/bin# java --version
java 19.0.2 2023-01-17
Java(TM) SE Runtime Environment (build 19.0.2+7-44)
Java HotSpot(TM) 64-Bit Server VM (build 19.0.2+7-44, mixed mode, sharing)
root@ip-172-31-9-166:~/jdk-19.0.2/bin# ^C
```

14. Copy/Move files from one folder to another folder and practice folder navigation.

>>> To connect one virtual machine

```
ubuntu@ip-172-31-12-127:~$ mkdir laxman
```

```
ubuntu@ip-172-31-12-127:~$ mkdir folder1
ubuntu@ip-172-31-12-127:~$
ubuntu@ip-172-31-12-127:~$ mkdir folder2
ubuntu@ip-172-31-12-127:~$ ls
folder1  folder2  laxman
ubuntu@ip-172-31-12-127:~$ mkdir folder3
ubuntu@ip-172-31-12-127:~$ ls
folder1  folder2  folder3  laxman
ubuntu@ip-172-31-12-127:~$ mv folder1 laxman
ubuntu@ip-172-31-12-127:~$ ls
folder2  folder3  laxman
ubuntu@ip-172-31-12-127:~$ mv folder2 folder3 laxman
ubuntu@ip-172-31-12-127:~$ ls
laxman
```

```
ubuntu@ip-172-31-12-127:~$ mkdir narayana
ubuntu@ip-172-31-12-127:~$ ls
laxman  narayana
ubuntu@ip-172-31-12-127:~$ mkdir file1
ubuntu@ip-172-31-12-127:~$ mkdir file2
ubuntu@ip-172-31-12-127:~$ mkdir file3
ubuntu@ip-172-31-12-127:~$ ls
file1  file2  file3  laxman  narayana
ubuntu@ip-172-31-12-127:~$ mv file1 narayana
ubuntu@ip-172-31-12-127:~$ ls
file2  file3  laxman  narayana
ubuntu@ip-172-31-12-127:~$ mv file2 file3 narayana
ubuntu@ip-172-31-12-127:~$ ls
laxman  narayana
ubuntu@ip-172-31-12-127:~$ n
ubuntu@ip-172-31-12-127:~$ cd narayana
ubuntu@ip-172-31-12-127:~/narayana$ ls
file1  file2  file3
ubuntu@ip-172-31-12-127:~/narayana$ cd ..
ubuntu@ip-172-31-12-127:~$ cd laxman
ubuntu@ip-172-31-12-127:~/laxman$ ls
aa.txt  bb.txt  folder1  folder2  folder3  laxmanbatch8  narayana
```

```
ubuntu@ip-172-31-12-127:~$ cd laxman
ubuntu@ip-172-31-12-127:~/laxman$ ls
aa.txt  bb.txt  folder1  folder2  folder3  laxmanbatch8  narayana
ubuntu@ip-172-31-12-127:~/laxman$ cd ..
ubuntu@ip-172-31-12-127:~$ cp laxman narayana
cp: -r not specified; omitting directory 'laxman'
ubuntu@ip-172-31-12-127:~$ cp -r laxman narayana/.
cp: cannot open 'laxman/aa.txt' for reading: Permission denied
ubuntu@ip-172-31-12-127:~$ sudo cp -r laxman narayana/.
ubuntu@ip-172-31-12-127:~$
```

15.Generate ssh and Connect 2 linux machines using ssh-copy-id.

```
PS C:\Users\laxma\Downloads> ssh -i "all-users.pem" ubuntu@ec2-43-204-101-109.ap-south-1.compute.amazonaws.com
Welcome to Ubuntu 22.04.1 LTS (GNU/Linux 5.15.0-1028-aws x86_64)
```

```
Last login: Thu Jan 26 02:17:00 2023 from 202.164.132.137
ubuntu@ip-172-31-2-139:~$
ubuntu@ip-172-31-2-139:~$ sudo adduser laxman
Adding user `laxman' ...
Adding new group `laxman' (1001) ...
Adding new user `laxman' (1001) with group `laxman' ...
The home directory `/home/laxman' already exists.  Not copying from `/etc/skel'.
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for laxman
Enter the new value, or press ENTER for the default
        Full Name []:
        Room Number []:
        Work Phone []:
        Home Phone []:
```

```
Is the information correct? [Y/n] y
ubuntu@ip-172-31-2-139:~$ sudo cat /etc/passwd |grep laxman
laxman:x:1001:1001:,,,:/home/laxman:/bin/bash
```

```
ubuntu@ip-172-31-2-139:~$ su laxman
Password:
laxman@ip-172-31-2-139:/home/ubuntu$ pwd
/home/ubuntu
laxman@ip-172-31-2-139:/home/ubuntu$ cd ~
laxman@ip-172-31-2-139:~$
laxman@ip-172-31-2-139:~$ pwd
/home/laxman
laxman@ip-172-31-2-139:~$ exit
exit
ubuntu@ip-172-31-2-139:~$ cd .ssh/
ubuntu@ip-172-31-2-139:~/.ssh$ ls
authorized_keys
ubuntu@ip-172-31-2-139:~/.ssh$ su laxman
Password:
laxman@ip-172-31-2-139:/home/ubuntu/.ssh$ cd
laxman@ip-172-31-2-139:~$ pwd
/home/laxman
laxman@ip-172-31-2-139:~$ ssh-keygen
```

```
|  ++.  . . *E.XoB|
|   +.     o o+ *o|
|    o   S     o +|
|   . . .       o.|
|      o         .|
|     . .         |
|      .          |
+----[SHA256]-----+
laxman@ip-172-31-2-139:~$ cd .ssh/
laxman@ip-172-31-2-139:~/.ssh$ ls
id_rsa  id_rsa.pub  known_hosts  known_hosts.old
laxman@ip-172-31-2-139:~/.ssh$ cat id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAABgQDGxbRwIU7LJwn9kyYpgX4rupDkfy33bQT8
EOv0AADoqC9yX+b7VTkL0qreNzG/j+ogmwOh/9/qS2ClXuzrxk7zl60qXWVT8h30ICzXyzP1
vQhM4LHMjmKlwp93pXPbQ1VL2XEe2AYqeNne4602ZWoOukW1/kBmqe4dytLgUEqQYtgwXnSP
5TtPZoMFM/hDhxVewTb1FXtesS6iBoUNymj3JoYtj47kN+4kkNh2hJ8i6JLbN8fTNDOfsdUR
sYwaANhOpqM2qGR45eoDpzyN09w6TvngpdYZcWQRw3+NGFc= laxman@ip-172-31-2-139
```

```
laxman@ip-172-31-2-139:~$ ssh-copy-id 172.31.5.30
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/laxman/.ssh/id_rsa.pub"
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that ar
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are prompted now it is to
laxman@172.31.5.30's password:

Number of key(s) added: 1

Now try logging into the machine, with:   "ssh '172.31.5.30'"
and check to make sure that only the key(s) you wanted were added.

laxman@ip-172-31-2-139:~$ ssh 172.31.5.30
Welcome to Ubuntu 22.04.1 LTS (GNU/Linux 5.15.0-1028-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
```

```
laxman@ip-172-31-5-30:~$
```

Machine-2

```
laxma@LAXMAN MINGW64 ~/Downloads
$ ssh -i "laxman.pem" ubuntu@ec2-13-232-139-108.ap-south-1.compute.amazonaws.com
The authenticity of host 'ec2-13-232-139-108.ap-south-1.compute.amazonaws.com (13.232.139
ished
```

```
ubuntu@ip-172-31-5-30:~$
ubuntu@ip-172-31-5-30:~$ sudo adduser laxman
Adding user `laxman' ...
Adding new group `laxman' (1001) ...
Adding new user `laxman' (1001) with group `laxman' ..
Creating home directory `/home/laxman' ...
Copying files from `/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for laxman
Enter the new value, or press ENTER for the default
        Full Name []:
        Room Number []:
        Work Phone []:
        Home Phone []:
        Other []:
Is the information correct? [Y/n] y
```

```
        Other []:
Is the information correct? [Y/n] y
ubuntu@ip-172-31-5-30:~$ sudo cat /etc/passwd | grep laxman
laxman:x:1001:1001:,,,:/home/laxman:/bin/bash
ubuntu@ip-172-31-5-30:~$ sudo vi /etc/ssh/sshd_config
```

```
# To disable tunneled clear text
PasswordAuthentication yes
#PermitEmptyPasswords no
```

```
ubuntu@ip-172-31-5-30:~$ sudo service sshd restart
```

```
$ sudo vi /etc/sudoers
```

```
We write laxman ALL=(ALL=ALL) NOPASSWD:ALL
```

18. Install Docker and Jenkins on Ubuntu 20.04.

To connect ec2 machine with t2-medium

Connect terminal

https://linuxhint.com/install-docker-ubuntu-22-04/

Follow the commands above search bar

```
See "man sudo_root" for details.

ubuntu@ip-172-31-36-15:~$  sudo apt update
Hit:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease
Get:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates In
Get:3 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-backports
Get:4 http://security.ubuntu.com/ubuntu jammy-security InRelease [110
Get:5 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy/universe a
```

```
No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-36-15:~$ sudo systemctl status docker
● docker.service - Docker Application Container Engine
     Loaded: loaded (/lib/systemd/system/docker.service; enabled; vendor preset: enabled)
     Active: active (running) since Sat 2023-01-28 10:07:44 UTC; 23s ago
TriggeredBy: ● docker.socket
       Docs: https://docs.docker.com
   Main PID: 3155 (dockerd)
      Tasks: 7
     Memory: 23.0M
        CPU: 254ms
     CGroup: /system.slice/docker.service
             └─3155 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock
```

```
ubuntu@ip-172-31-36-15:~$ sudo docker run hello-world
Unable to find image 'hello-world:latest' locally
latest: Pulling from library/hello-world
2db29710123e: Pull complete
Digest: sha256:aa0cc8055b82dc2509bed2e19b275c8f463506616377219d9642221ab53cf9
Status: Downloaded newer image for hello-world:latest

Hello from Docker!
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
 1. The Docker client contacted the Docker daemon.
 2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
    (amd64)
 3. The Docker daemon created a new container from that image which runs the
```

```
https://docs.docker.com/get-started/

ubuntu@ip-172-31-36-15:~$  sudo docker ps -a
CONTAINER ID   IMAGE         COMMAND    CREATED          STATUS                      PORTS     NAMES
2d9877585b2c   hello-world   "/hello"   12 seconds ago   Exited (0) 12 seconds ago             keen_ganguly
ubuntu@ip-172-31-36-15:~$  sudo apt-get purge docker-ce
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  containerd.io docker-ce-cli docker-ce-rootless-extras docker-scan-plugin libltdl7 libslirp0 pigz slirp4netns
Use 'sudo apt autoremove' to remove them.
The following packages will be REMOVED:
  docker-ce*
0 upgraded, 0 newly installed, 1 to remove and 2 not upgraded.
After this operation, 88.5 MB disk space will be freed.
Do you want to continue? [Y/n] y
(Reading database ... 63835 files and directories currently installed.)
Removing docker-ce (5:20.10.23~3-0~ubuntu-jammy) ...
Warning: Stopping docker.service, but it can still be activated by:
  docker.socket
(Reading database ... 63827 files and directories currently installed.)
Purging configuration files for docker-ce (5:20.10.23~3-0~ubuntu-jammy) ...
ubuntu@ip-172-31-36-15:~$ docker --version
Docker version 20.10.23, build 7155243
ubuntu@ip-172-31-36-15:~$
```

20. Generate ssh and Connect 2 linux machines using a manual process .

Machine1 process

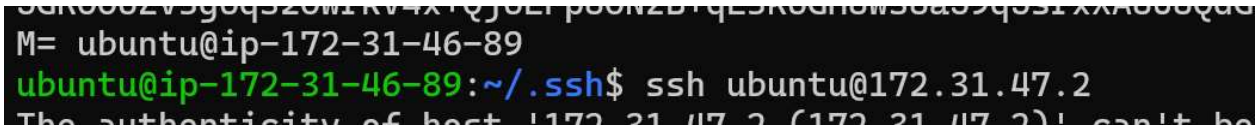
```
ubuntu@ip-172-31-46-89:~$
ubuntu@ip-172-31-46-89:~$ cd .ssh/
ubuntu@ip-172-31-46-89:~/.ssh$ ls
authorized_keys
ubuntu@ip-172-31-46-89:~/.ssh$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/home/ubuntu/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/ubuntu/.ssh/id_rsa
Your public key has been saved in /home/ubuntu/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:0YN9MPVzBlE3CaPzQvGUbiQae2/8Lz7xHxkMf4k0ihs ubuntu@ip-172-31-46-8
The key's randomart image is:
```

```
ubuntu@ip-172-31-46-89:~/.ssh$ ls
authorized_keys  id_rsa  id_rsa.pub
ubuntu@ip-172-31-46-89:~/.ssh$ cat id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAABgQDrQkUkw3cAkYE94/b9ddlyk4N3suj1eajGKGFRxd9jsjesGcLSbvLoea453HwIU1fyaAoAus
gi1fhNoRKL11S//tdrfyUdSYkptjeuqWVqXRdZdgxoqUxjsgp5Yy2hN7ku0U59LPVOVtkILZLMQ768Hufp4UD8J2hHIKmu67amanvn5bXnuL9r
UBbyL2SEerrD1EnA0eXzF13wBnzb7qyMT9jQiI+R3G3USNndg9UBWZ6MpKgGD9K1r8EOizSROEJZVJ1QoYnXqya6/YK2Gw2kuWc+e6YVUGe/Lp
xAwEGppSi9LJJYEYbJNZpWsHbLJpdc9mZSE/iaib2xvk1f0AH/6AHp7AZd3OmBiqQQz2MR+P8KgDleq3EEeWFBaLSnPVbhBOcNH1acgVu+uUIR
5GROO6ZV3g6qS2OwrkV4x+Qj6EFp8ONzB+qE3K6GM8wS8a59q5srxXA8U8QdGEAJ62+KaOQ8W4y47hIPC9voTAsy1brqwe3hYeK6QQT2cXrLCr
M= ubuntu@ip-172-31-46-89
```

Machine2 process below

```
To run a command as administrator (user "root"), use "s
See "man sudo_root" for details.

ubuntu@ip-172-31-47-2:~$
ubuntu@ip-172-31-47-2:~$ cd .ssh/
ubuntu@ip-172-31-47-2:~/.ssh$ ls
authorized_keys
ubuntu@ip-172-31-47-2:~/.ssh$ sudo vi authorized_keys
ubuntu@ip-172-31-47-2:~/.ssh$
```

In machine1 we add ssh ubuntu@private-ip of machine2


M= ubuntu@ip-172-31-46-89
ubuntu@ip-172-31-46-89:~/.ssh$ ssh ubuntu@172.31.47.2