

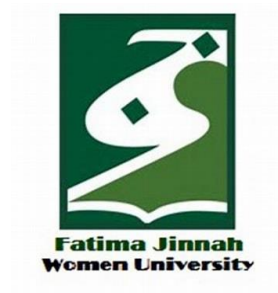
Name: Komal Kashif

Class: BSE- VA

Roll No: 2023-BSE-031

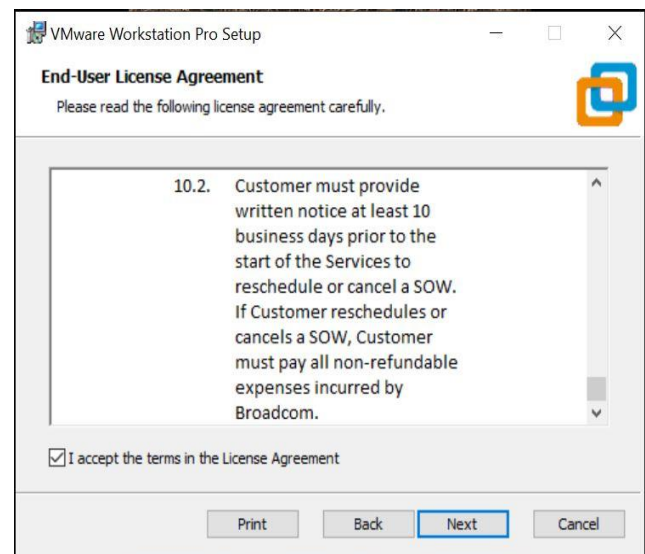
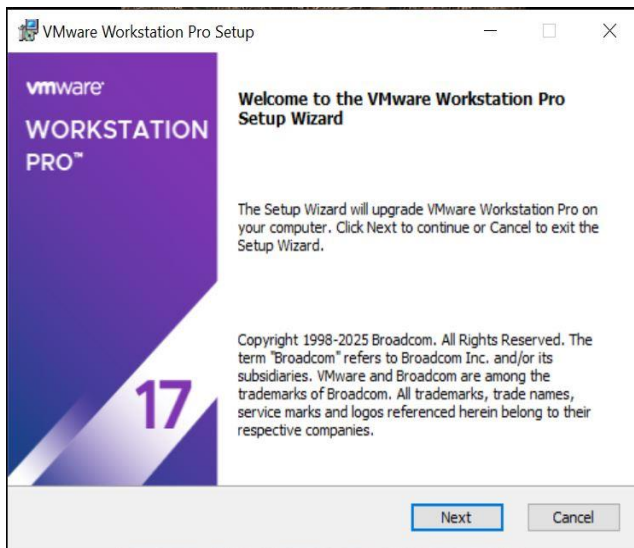
## CLOUD COMPUTING

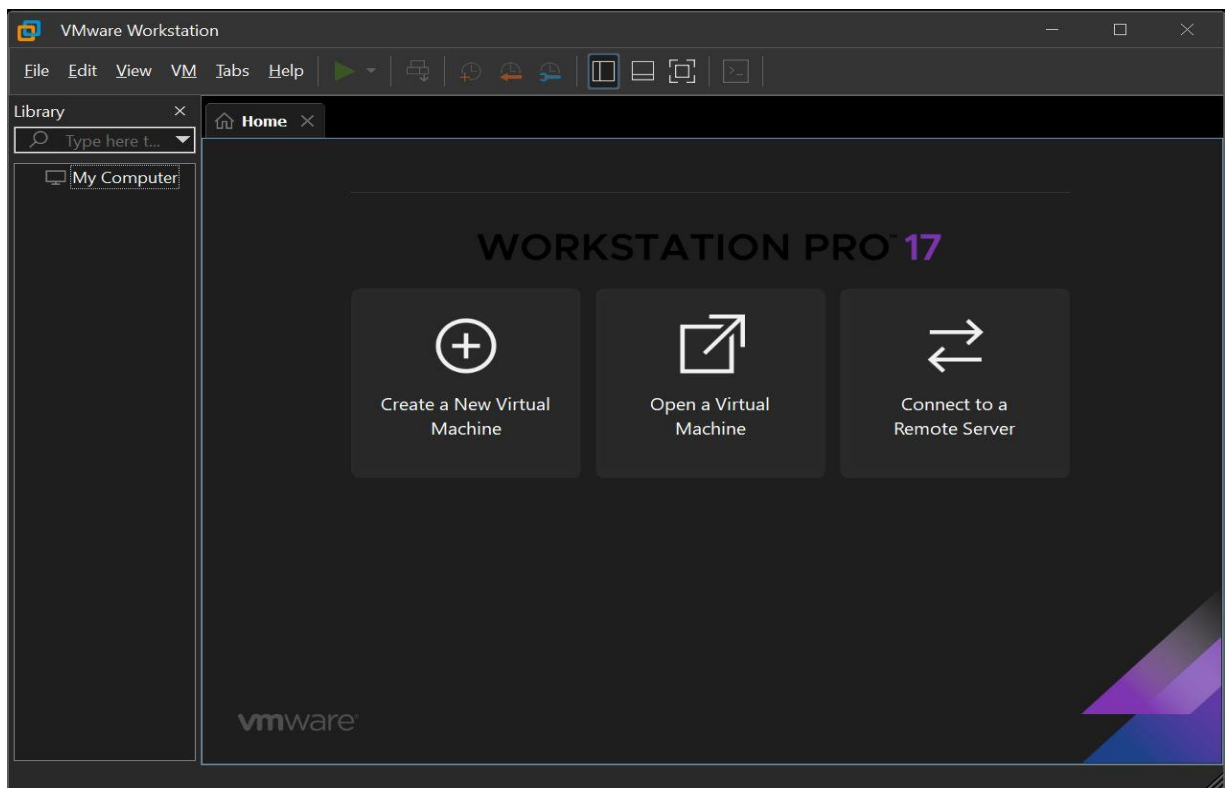
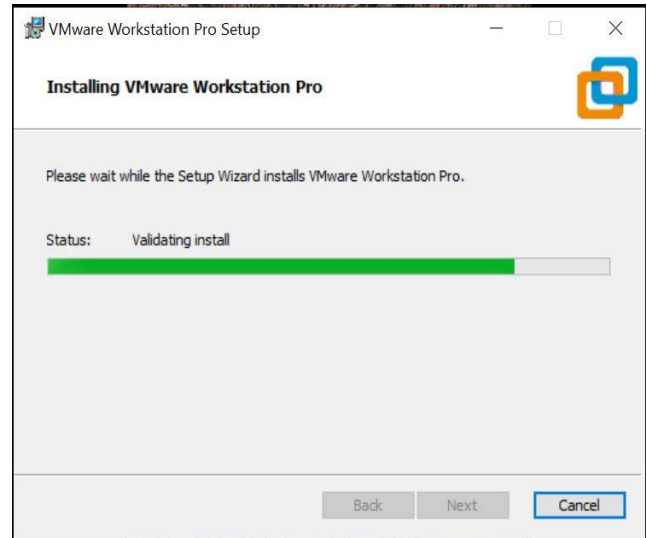
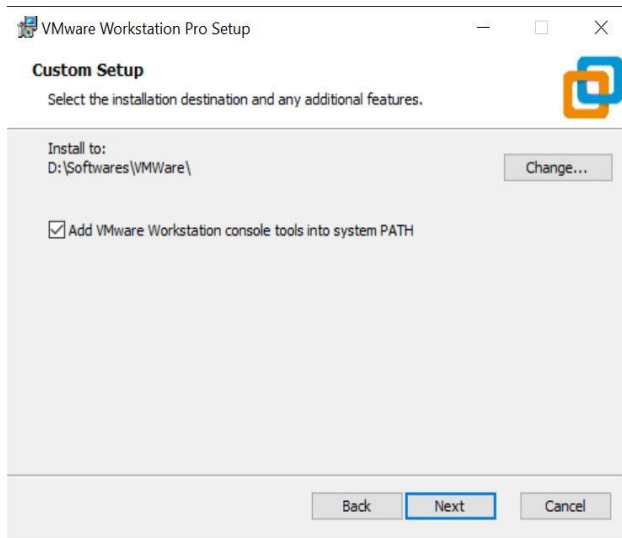
### LAB 01



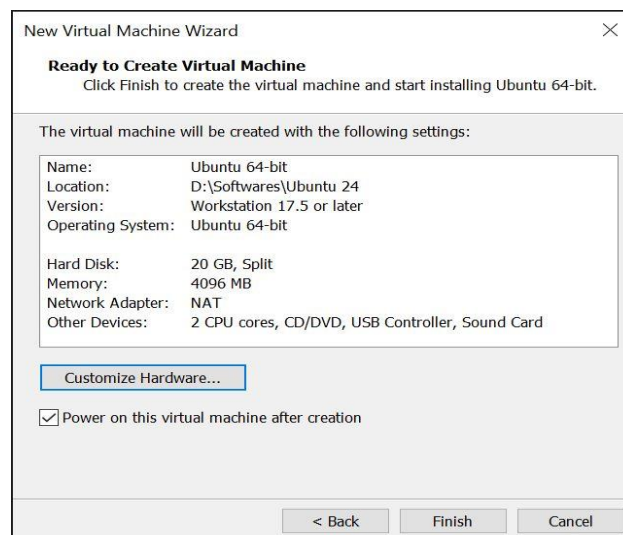
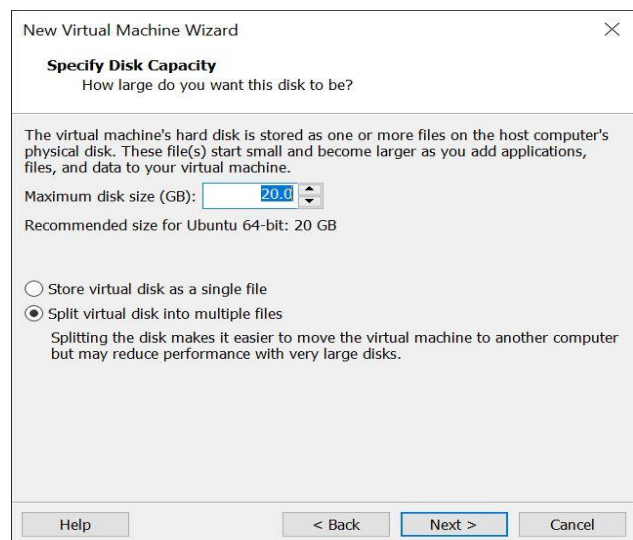
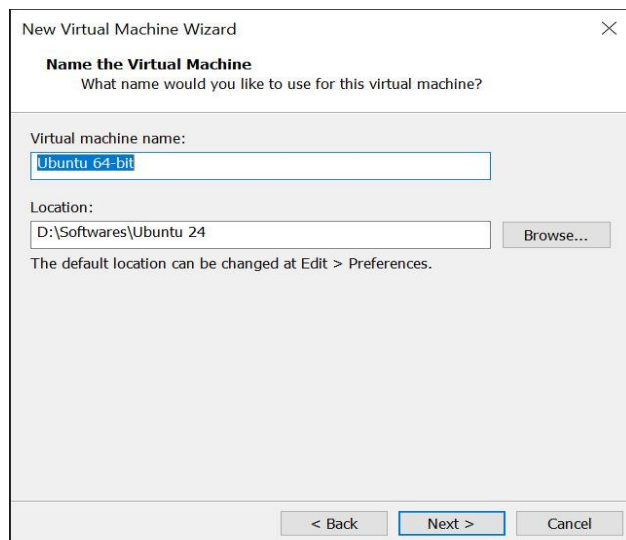
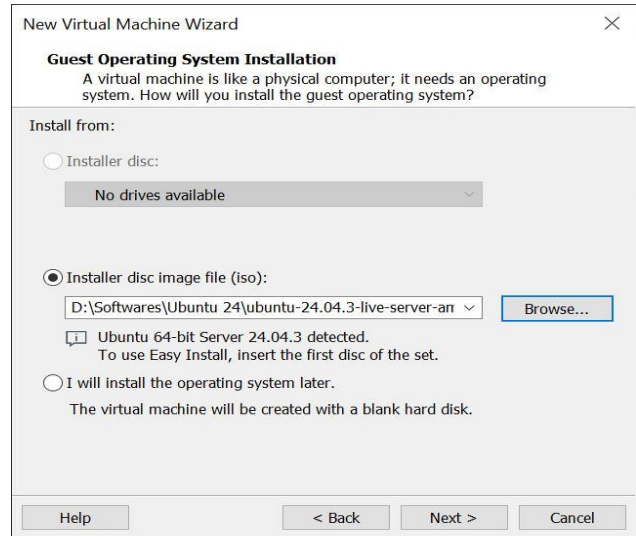
#### INSTALL UBUNTU SERVER:

First of all, we'll download VMware Workstation Pro,

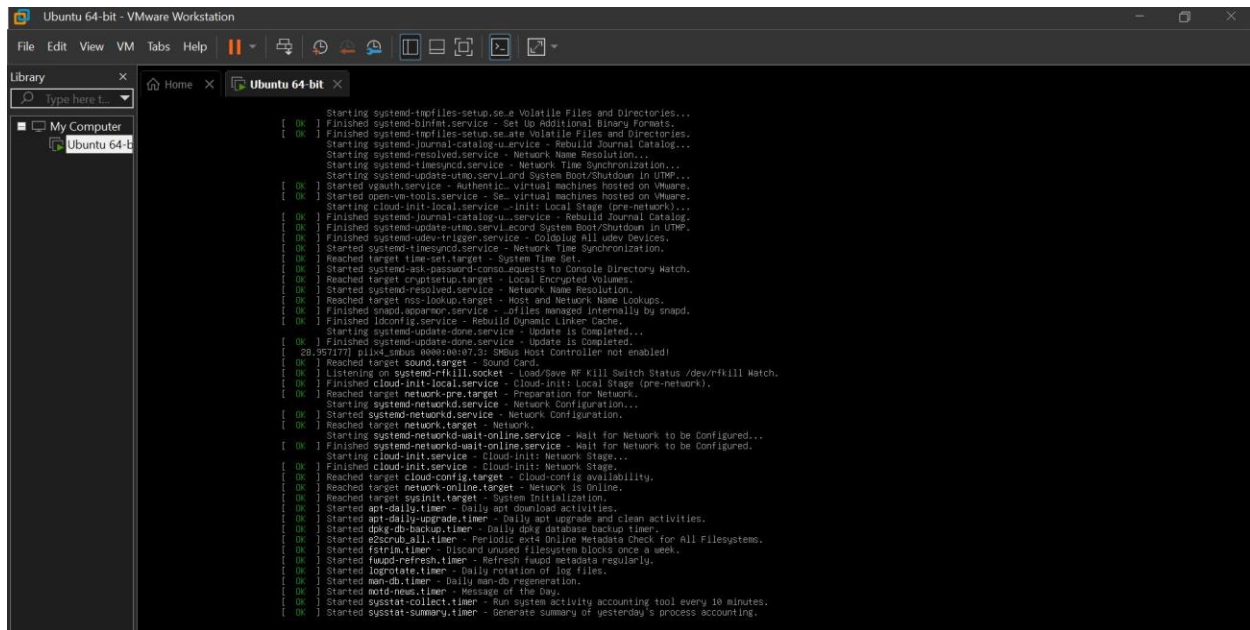




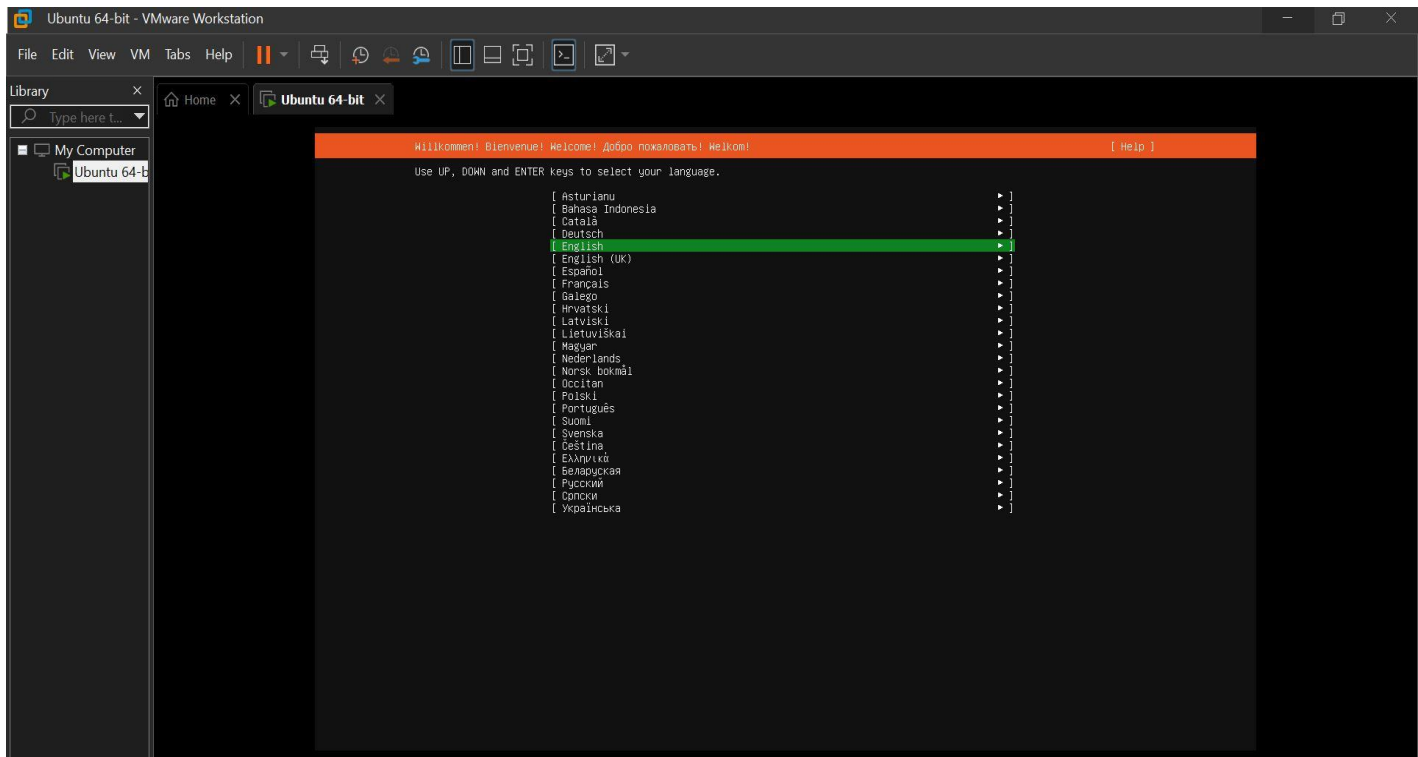
We'll click on 'Create a new machine',



Clicking Finish will create a Virtual Machine.



Now, selecting Language and Keyboard:



Keyboard configuration [ Help ]

Please select your keyboard layout below, or select "Identify keyboard" to detect your layout automatically.

Layout: [ English (US) ▼ ]

Variant: [ English (US) ▼ ]

[ Identify keyboard ]

The installation continues as follows,

Network configuration [ Help ]

Configure at least one interface this server can use to talk to other machines, and which preferably provides sufficient access for updates.

NAME	TYPE	NOTES
[ ens33	eth	- ▶ ]
DHCPv4	192.168.75.130/24	
00:0c:29:da:05:e2 / Intel Corporation / 82545EM Gigabit Ethernet Controller (Copper) (PRO/1000 MT Single Port Adapter)		

[ Create bond ▶ ]

Ubuntu archive mirror configuration

If you use an alternative mirror for Ubuntu, enter its details here.

Mirror address:

You may provide an archive mirror to be used instead of the default.

This mirror location passed tests.

```
Hit:1 http://pk.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://pk.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://pk.archive.ubuntu.com/ubuntu noble-backports InRelease
Reading package lists...
```

Guided storage configuration [ Help ]

Configure a guided storage layout, or create a custom one:

(X) Use an entire disk

[ /dev/sda local disk 25.000G ▼ ]

[X] Set up this disk as an LVM group

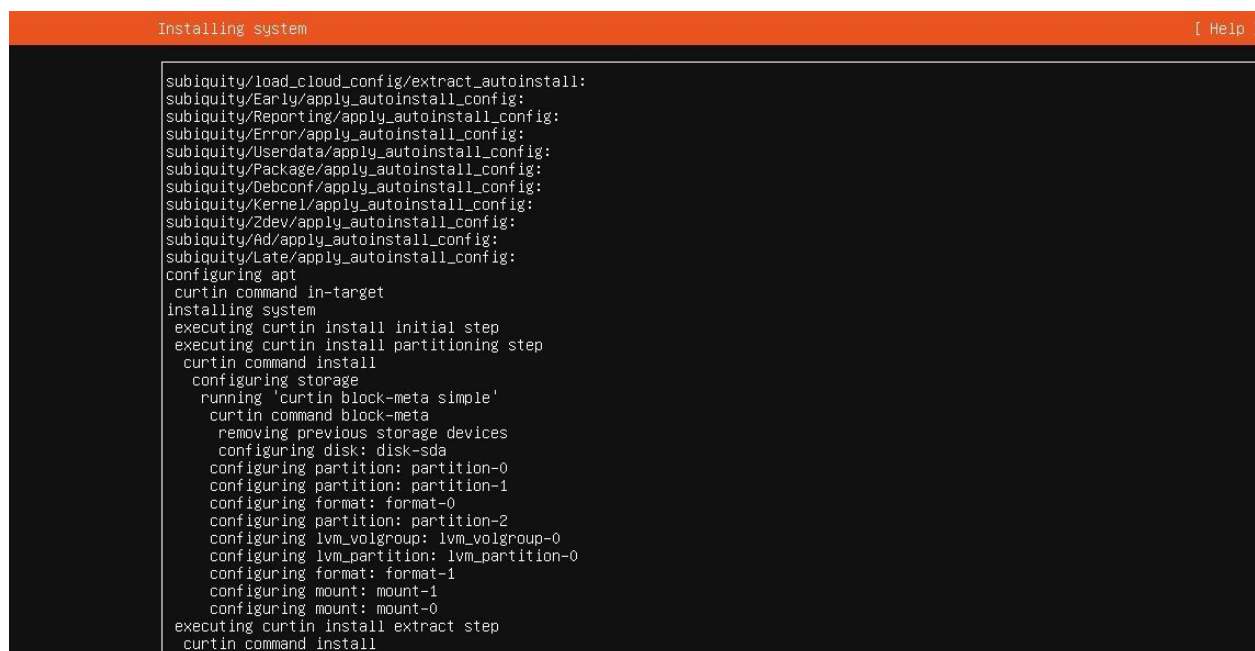
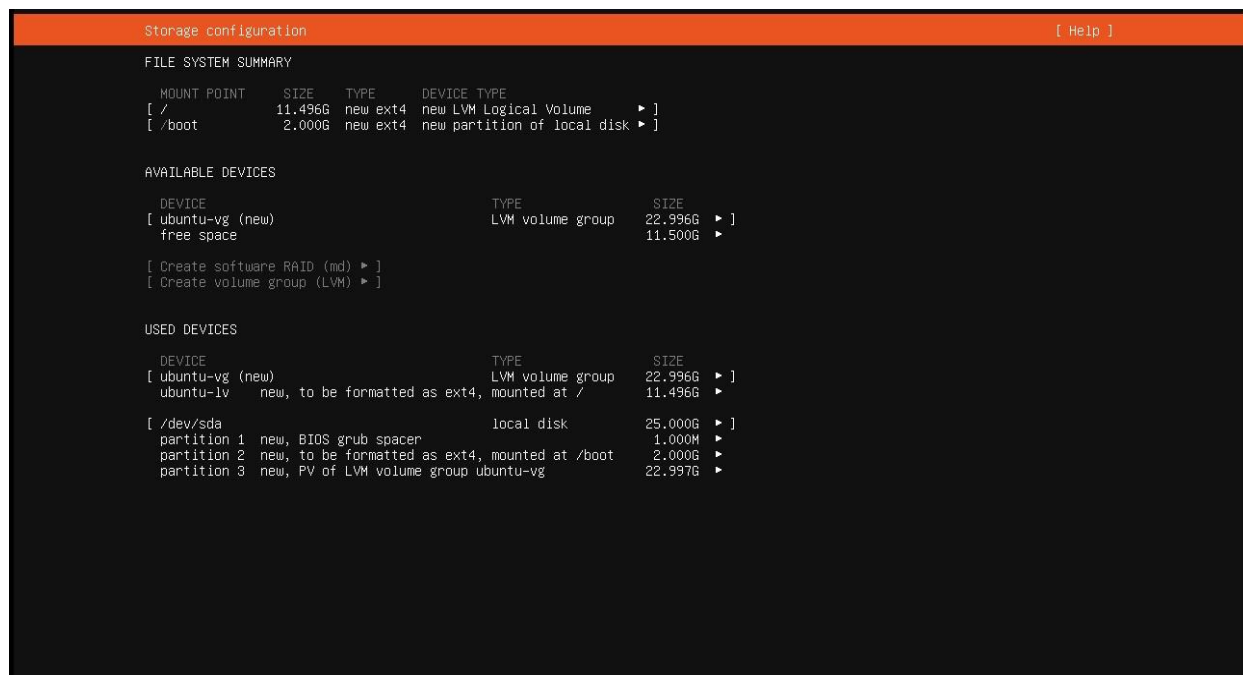
[ ] Encrypt the LVM group with LUKS

Passphrase:

Confirm passphrase:

[ ] Also create a recovery key  
The key will be stored as ~/recovery-key.txt in the live system and will be copied to /var/log/installer/ in the target system.

( ) Custom storage layout





```
Installation complete! [ Help ]

configuring mount: mount-0
executing curtin install extract step
curtin command install
writing install sources to disk
running 'curtin extract'
curtin command extract
acquiring and extracting image from cp:///tmp/tmp_mquxe1p/mount
configuring keyboard
curtin command in-target
executing curtin install curthooks step
curtin command install
configuring installed system
running 'curtin curthooks'
curtin command curthooks
configuring apt configuring apt
installing missing packages
Installing packages on target system: ['grub-pc']
configuring iscsi service
configuring raid (mdadm) service
configuring NVMe over TCP
installing kernel
setting up swap
apply networking config
writing etc/fstab
configuring multipath
updating packages on target system
configuring pollinate user-agent on target
updating initramfs configuration
configuring target system bootloader
installing grub to target devices
copying metadata from /cdrom
final system configuration
calculating extra packages to install
installing openssh-server
retrieving openssh-server
curtin command system-install
unpacking openssh-server
curtin command system-install
configuring cloud-init
restoring apt configuration
subiquity/Late/run:

[ View full log ]
[ Reboot Now ]
```

Setting up username and password:

Ubuntu 64-bit

Profile configuration [ Help ]

Enter the username and password you will use to log in to the system. You can configure SSH access on a later screen, but a password is still needed for sudo.

Your name:

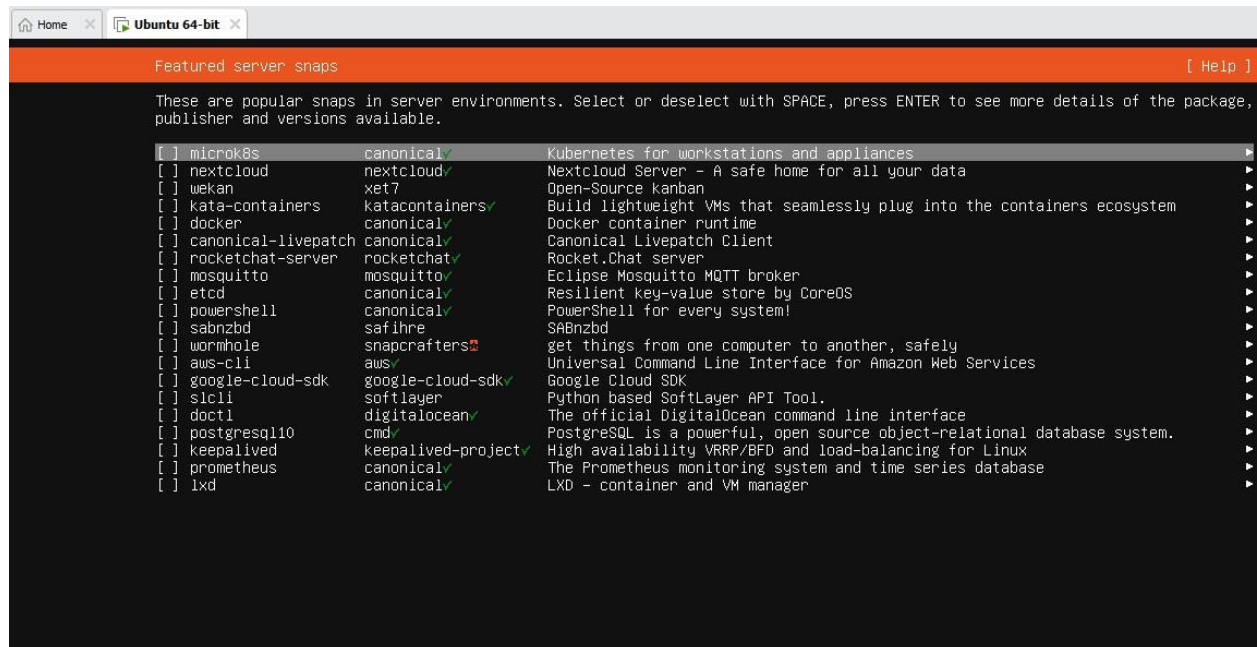
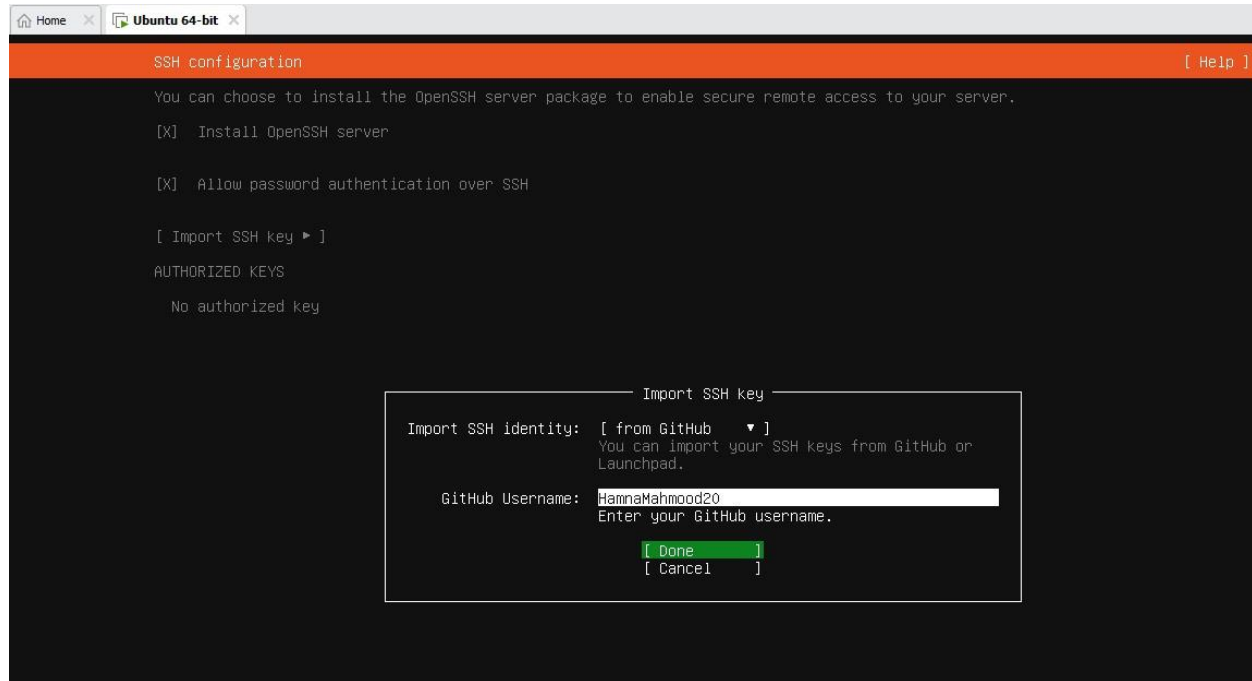
Your servers name:   
The name it uses when it talks to other computers.

Pick a username:

Choose a password:

Confirm your password:

## SSH Configuration





## Installing Ubuntu,

```
subiquity/Ad/apply_autoinstall_config:
subiquity/Late/apply_autoinstall_config:
configuring apt
curtin command in-target
installing system
executing curtin install initial step
executing curtin install partitioning step
curtin command install
configuring storage
running 'curtin block-meta simple'
curtin command block-meta
removing previous storage devices
configuring disk: disk-sda
configuring partition: partition-0
configuring partition: partition-1
configuring format: format-0
configuring partition: partition-2
configuring lvm_volgroup: lvm_volgroup-0
configuring lvm_partition: lvm_partition-0
configuring format: format-1
configuring mount: mount-1
configuring mount: mount-0
executing curtin install extract step
curtin command install
writing install sources to disk
running 'curtin extract'
curtin command extract
acquiring and extracting image from cp:///tmp/tmp5db3qq2w/mount
configuring keyboard
curtin command in-target
executing curtin install curthooks step
curtin command install
configuring installed system
```

```
Starting systemd-tmpfiles-setup.service - Create Volatile Files and Directories...
Starting ufw.service - Uncomplicated firewall...
OK ] Finished console-setup.service - Set console font and keymap.
OK ] Finished finalrd.service - Create runtime dir for shutdown pivot root.
OK ] Finished plymouth-read-write.service - Plymouth To Write Out Runtime Data.
OK ] Finished ldconfig.service - Rebuild Dynamic Linker Cache.
Mounting proc-sys-fs-binfmt_misc.mount - Executable File Formats File System...
OK ] Finished ufw.service - Uncomplicated firewall.
OK ] Mounted proc-sys-fs-binfmt_misc.mount - Executable File Formats File System.
OK ] Finished systemd-binfmt.service - Set Up Additional Binary Formats.
OK ] Finished systemd-tmpfiles-setup.service - Create Volatile Files and Directories.
Starting systemd-journal-catalog-update.service - Rebuild Journal Catalog...
Starting systemd-resolved.service - Network Name Resolution...
Starting systemd-timesyncd.service - Network Time Synchronization...
Starting systemd-update-utmp.service - Record System Boot/Shutdown in UTMP...
OK ] Finished systemd-journal-catalog-update.service - Rebuild Journal Catalog.
Starting systemd-update-done.service - Update is Completed...
OK ] Finished systemd-update-utmp.service - Record System Boot/Shutdown in UTMP.
OK ] Finished systemd-update-done.service - Update is Completed.
OK ] Started systemd-timesyncd.service - Network Time Synchronization.
OK ] Reached target time-set.target - System Time Set.
OK ] Started systemd-resolved.service - Network Name Resolution.
OK ] Reached target nss-lookup.target - Host and Network Name Lookups.
18.478251] plix4_smbus 0000:00:07.3: SMBus Host Controller not enabled!
OK ] Listening on systemd-rfkill.socket - Load/Save RF Kill Switch Status /dev/rfkill Watch.
OK ] Reached target sound.target - Sound Card.
OK ] Finished apparmor.service - Load AppArmor profiles.
Starting snapd.apparmor.service - Load AppArmor profiles managed internally by snapd...
OK ] Started vgauth.service - Authentication service for virtual machines hosted on VMware.
OK ] Started open-vm-tools.service - Service for virtual machines hosted on VMware.
Starting cloud-init-local.service - Cloud-init: Local Stage (pre-network)...
```

After a few minutes of installation, we are prompted to enter login and password which we set during installation,

```

Ubuntu 24.04.3 LTS ubuntu tty1

ubuntu login: komal_31
Password:
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.8.0-71-generic x86_64)

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

System information as of Thu Oct  2 07:27:30 AM UTC 2025

System load: 0.17           Memory usage: 7%    Processes:   244
Usage of /:  45.7% of 9.75GB Swap usage:   0%    Users logged in: 0

Expanded Security Maintenance for Applications is not enabled.

42 updates can be applied immediately.
42 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

```

So Ubuntu is installed on VMWare.

Checking IP address:

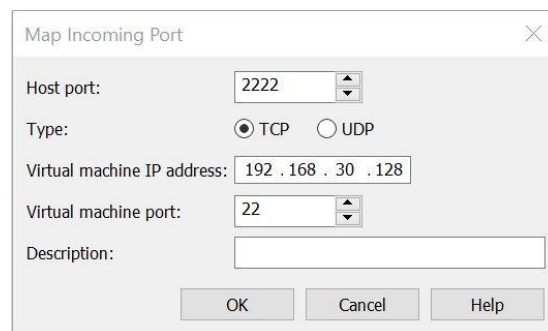
```

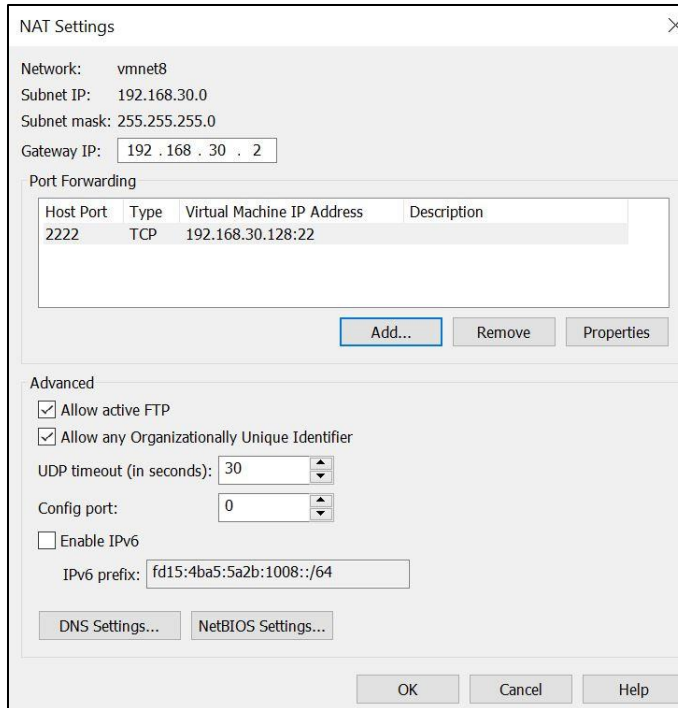
komal_31@ubuntu:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host noprefixroute
        valid_lft forever preferred_lft forever
2: ens33: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 00:0c:29:f6:a3:8d brd ff:ff:ff:ff:ff:ff
    altname enp2s1
    inet 192.168.30.128/24 metric 100 brd 192.168.30.255 scope global dynamic ens33
        valid_lft 1290sec preferred_lft 1290sec
    inet6 fe80::20c:29ff:fef6:a38d/64 scope link
        valid_lft forever preferred_lft forever

```

Setting up SSH:

Since my PC couldn't connect through ssh <username>@<ip>, I connected it through port forwarding. In Virtual Network Editor, open NAT settings and:





Then on Control Panel:

```
C:\Windows\system32>ssh -p 2222 komal_31@127.0.0.1
The authenticity of host '[127.0.0.1]:2222 ([127.0.0.1]:2222)' can't be established.
ED25519 key fingerprint is SHA256:auOSHasHuCI6xuB/2gJFqsQp2o0l3QYPAXD3w74fDDY.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '[127.0.0.1]:2222' (ED25519) to the list of known hosts.
komal_31@127.0.0.1's password:
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.8.0-87-generic x86_64)

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

System information as of Tue Aug 5 17:06:09 UTC 2025

System load:  0.88      Processes:      29
Usage of /home: unknown  Users logged in:  0
Memory usage: 5%       IPv4 address for eth0: 10.10.10.2
Swap usage:   0%

 * Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s
   just raised the bar for easy, resilient and secure K8s cluster deployment.

https://ubuntu.com/engage/secure-kubernetes-at-the-edge

Expanded Security Maintenance for Applications is not enabled.

25 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

komal_31@ubuntu:~$
```

Now, we are remotely logged into our Virtual Machine using SSH from Control Panel successfully.