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VIDYAVIHAR UNIVERSITY
K J Somaiya College of Engineering

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T R U S T

Batch: B1	**Roll No.:16010121045**
Experiment / assignment / tutorial No. 2	
Grade: AA / AB / BB / BC / CC / CD /DD	
Signature of the Staff In-charge with date	

Experiment No: 2

Title: Virtualization

Aim and Objective of the Experiment:

To perform VM Creation on windows and KVM on Linux Based Operating System.

COs to be achieved:

CO2: Investigate the system virtualization and outline its role in enabling the cloud computing System model

Theory:
Virtualization:

Virtualization enables the hardware resources of a single computer—processors, memory, storage and more—to be divided into multiple virtual computers, called virtual machines (VMs).

Virtualization uses software to create an abstraction layer over computer hardware that allows the hardware elements of a single computer—processors, memory, storage and more—to be divided into multiple virtual computers, commonly called virtual machines (VMs). Each VM runs its own operating system (OS) and behaves like an independent computer, even though it is running on just a portion of the actual underlying computer hardware.

Today, virtualization is a standard practice in enterprise IT architecture. It is also the technology that drives cloud computing economics. Virtualization enables cloud providers to serve users with their existing physical computer hardware; it enables cloud users to purchase only the computing resources they need when they need it, and to scale those resources cost-effectively as their workloads grow.
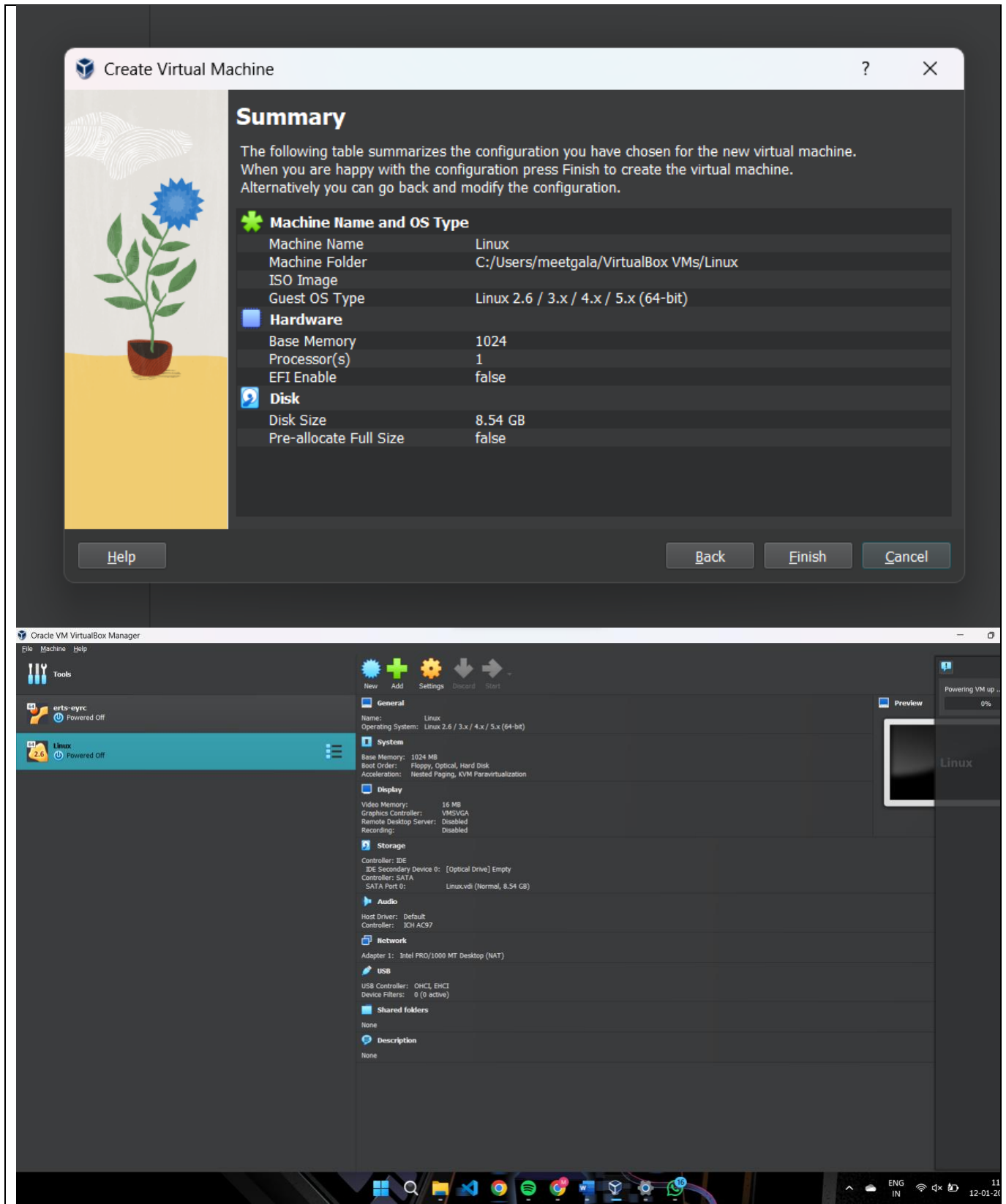
- Task (Take screenshots of all intermediate steps and paste here)

Installing Vmbox on Windows:
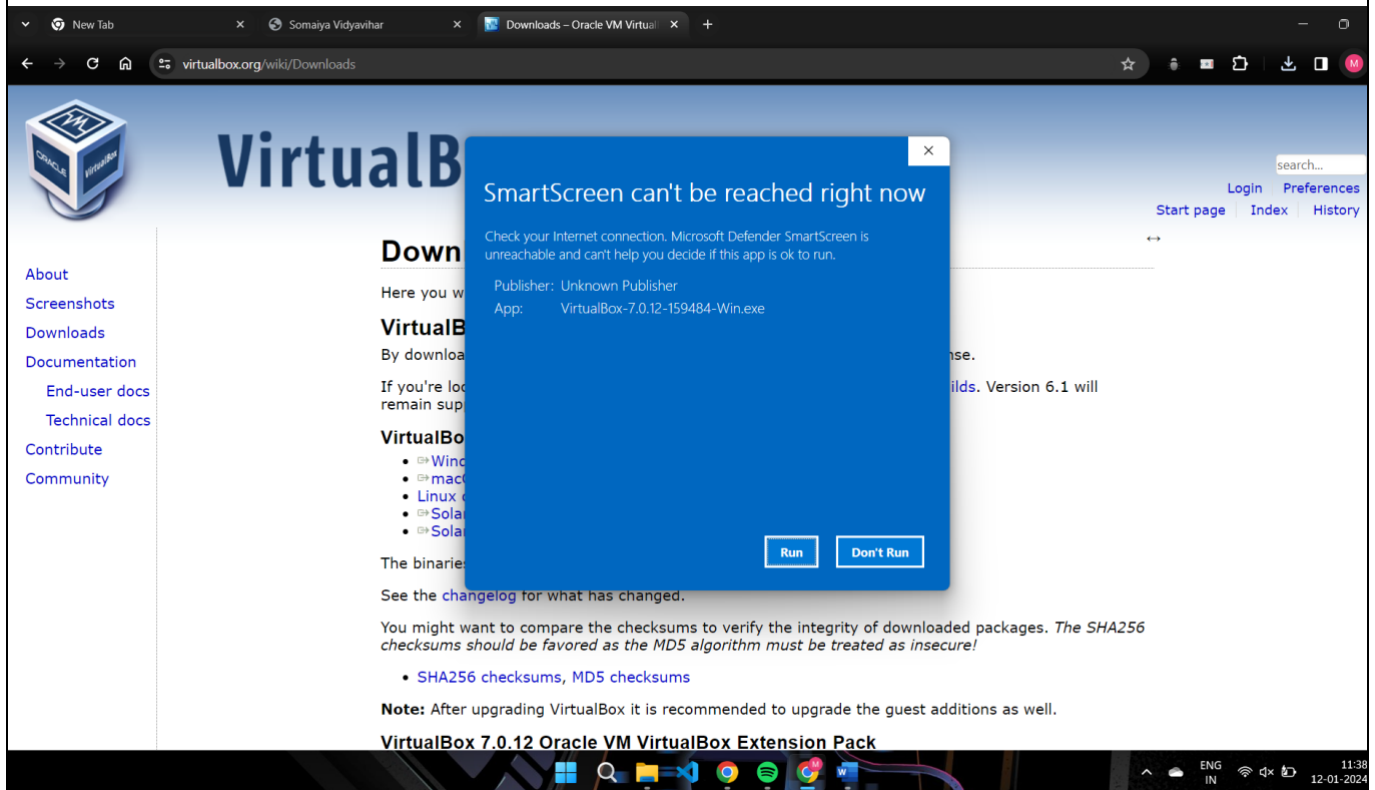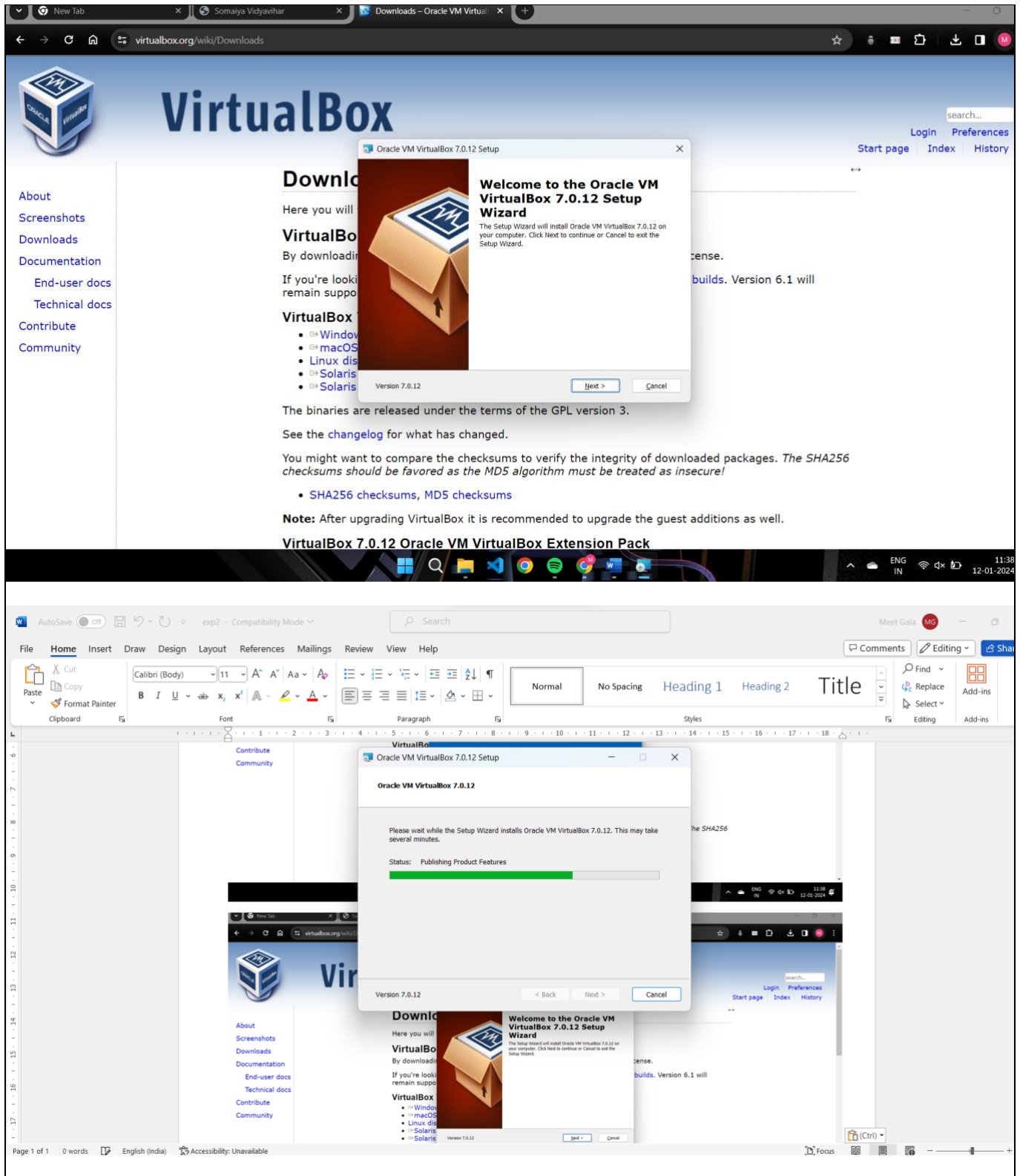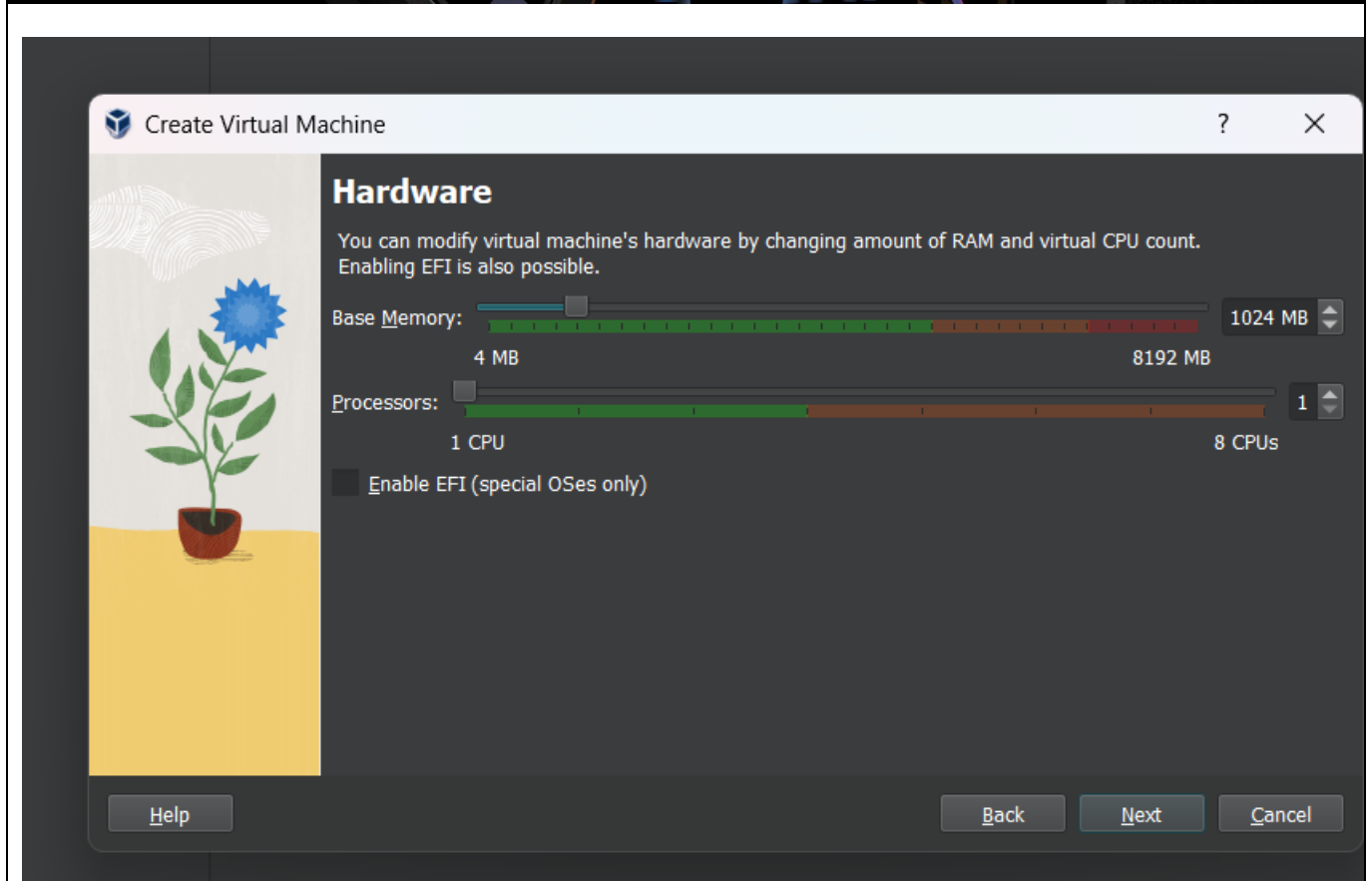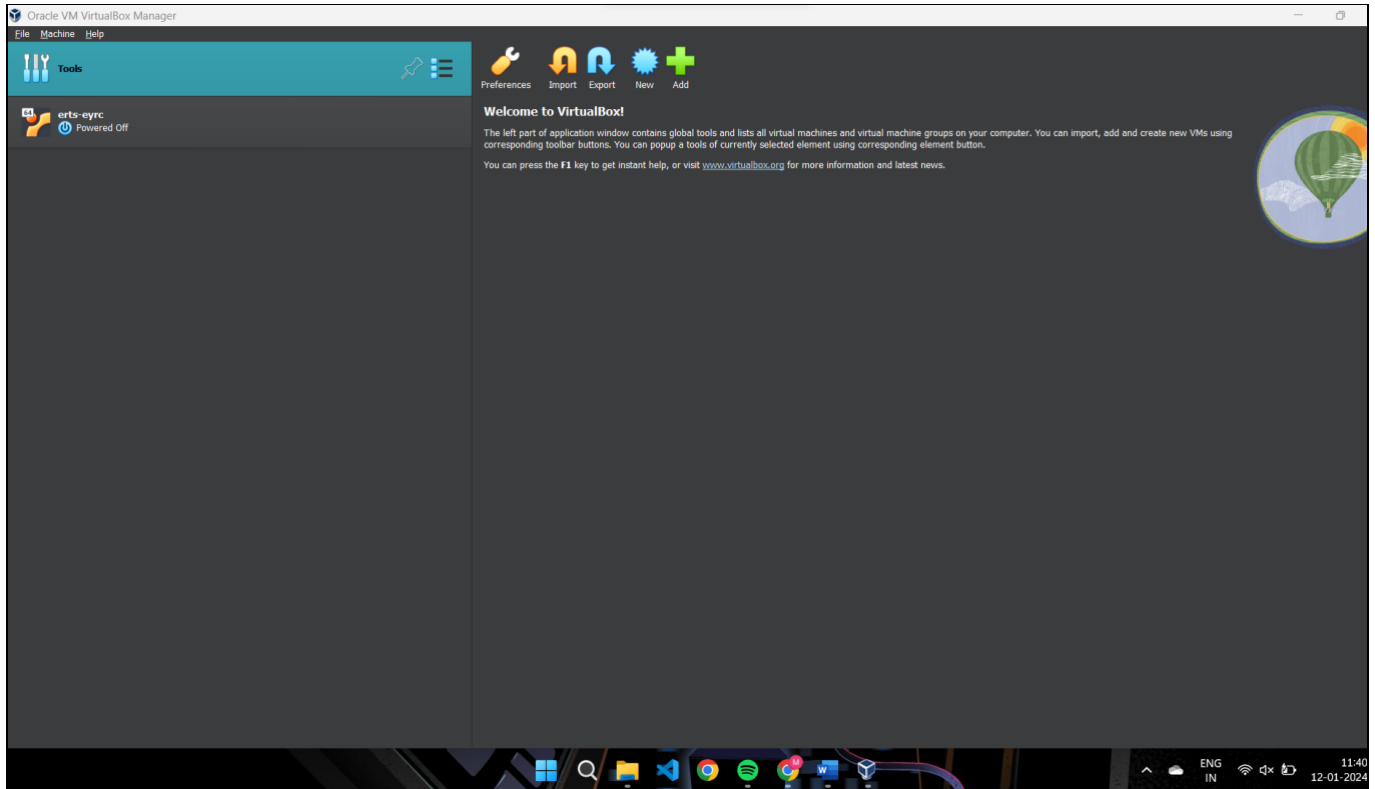
Boot Order: Floppy, Optical, Hard Disk

Create Virtual Machine   ?   ✕

Virtual machine Name and Operating System

Please choose a descriptive name and destination folder for the new virtual machine. The name you choose will be used throughout VirtualBox to identify this machine. Additionally, you can select an ISO image which may be used to install the guest operating system.

Name:	Mac ✔
Folder:	📁 C:\Users\meetgala\VirtualBox VMs ▼
ISO Image:	<not selected> ▼
Edition:	
Type:	Mac OS X ▼
Version:	Mac OS X (64-bit) ▼

☐ Skip Unattended Installation

ℹ No ISO image is selected, the guest OS will need to be installed manually.

Help   Expert Mode   Back   Next   Cancel

None

💬 **Description**

None

🖥 **System**
Base Memory: 1024 MB
Boot Order: Floppy, Optical, Hard Disk

Create Virtual Machine   ?   ✕

Summary

The following table summarizes the configuration you have chosen for the new virtual machine. When you are happy with the configuration press Finish to create the virtual machine. Alternatively you can go back and modify the configuration.
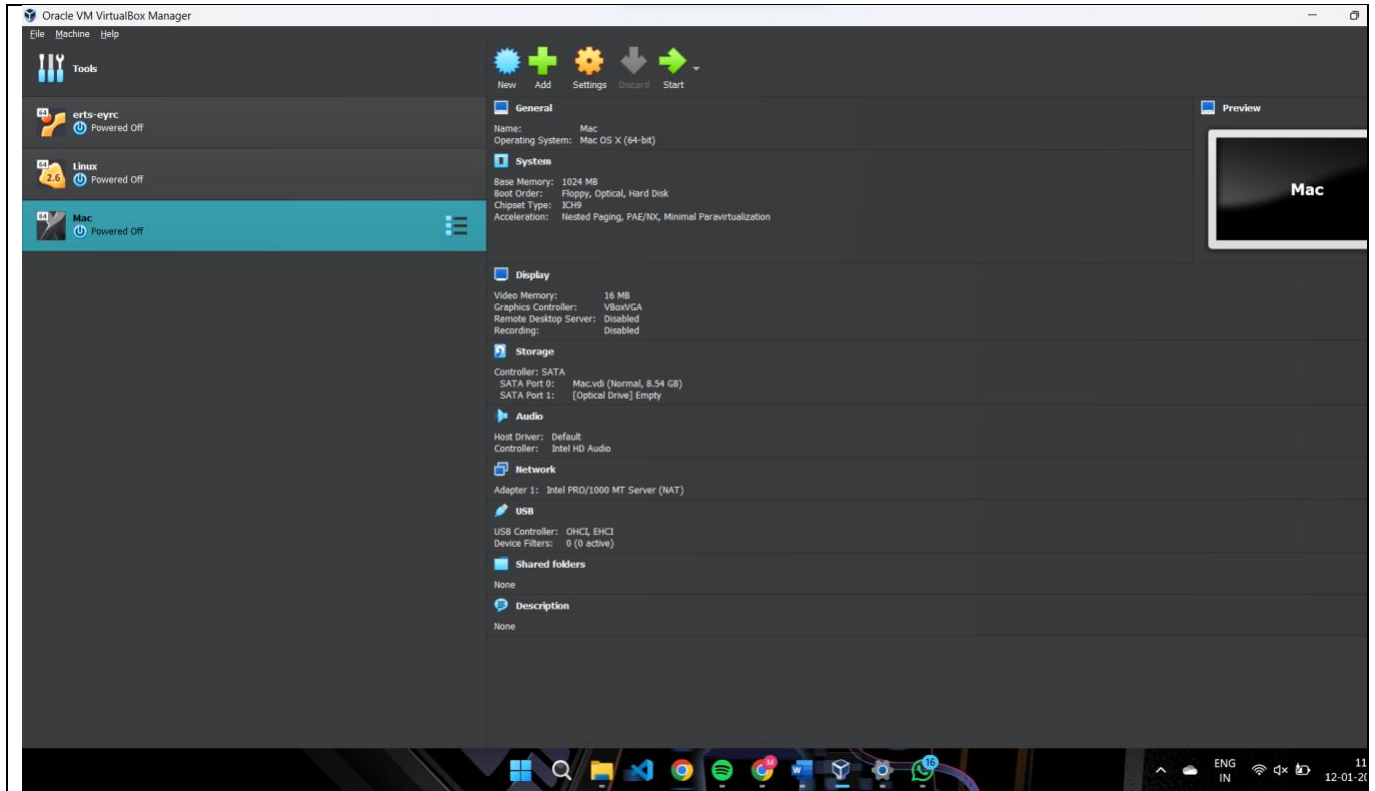
✳ Machine Name and OS Type
Machine Name	Mac
Machine Folder	C:/Users/meetgala/VirtualBox VMs/Mac
ISO Image	
Guest OS Type	Mac OS X (64-bit)

Hardware
Base Memory	1024
Processor(s)	1
EFI Enable	false

Disk
Disk Size	8.54 GB
Pre-allocate Full Size	false

Help   Back   Finish   Cancel

None

💬 Description

None

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Installing Kvm Windows virual machine on Ubuntu :

```
/etc/kernel/postinst.d/zz-update-grub:
Sourcing file `/etc/default/grub'
Sourcing file `/etc/default/grub.d/init-select.cfg'
Generating grub configuration file ...
Found linux image: /boot/vmlinuz-5.19.0-46-generic
Found initrd image: /boot/initrd.img-5.19.0-46-generic
Found linux image: /boot/vmlinuz-5.19.0-21-generic
Found initrd image: /boot/initrd.img-5.19.0-21-generic
Memtest86+ needs a 16-bit boot, that is not available on EFI, exiting
Warning: os-prober will be executed to detect other bootable partitions.
Its output will be used to detect bootable binaries on them and create new boot
entries.
Found Windows Boot Manager on /dev/nvme0n1p1@/EFI/Microsoft/Boot/bootmgfw.efi
Adding boot menu entry for UEFI Firmware Settings ...
done
Processing triggers for ca-certificates (20230311ubuntu0.22.10.1) ...
Updating certificates in /etc/ssl/certs...
0 added, 0 removed; done.
Running hooks in /etc/ca-certificates/update.d...
done.
kjsce@kjsce-HP-Elite-Tower-600-G9-Desktop-PC:~$ egrep -c '(vmx|svm)' /proc/cpuin
fo
40
kjsce@kjsce-HP-Elite-Tower-600-G9-Desktop-PC:~$
```

```
entries.
Found Windows Boot Manager on /dev/nvme0n1p1@/EFI/Microsoft/Boot/bootmgfw.efi
Adding boot menu entry for UEFI Firmware Settings ...
done
Processing triggers for ca-certificates (20230311ubuntu0.22.10.1) ...
Updating certificates in /etc/ssl/certs...
0 added, 0 removed; done.
Running hooks in /etc/ca-certificates/update.d...
done.
kjsce@kjsce-HP-Elite-Tower-600-G9-Desktop-PC:~$ egrep -c '(vmx|svm)' /proc/cpuin
fo
40
kjsce@kjsce-HP-Elite-Tower-600-G9-Desktop-PC:~$ sudo apt-get install qemu-kvm li
bvirt-daemon-system libvirt-clients bridge-utils -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Note, selecting 'qemu-system-x86' instead of 'qemu-kvm'
The following additional packages will be installed:
  cpu-checker dmeventd ibverbs-providers ipxe-qemu
  ipxe-qemu-256k-compat-efi-roms libaio1 libcacard0 libdaxctl1 libdecor-0-0
  libdecor-0-plugin-1-cairo libdevmapper-event1.02.1 libfdt1 libgfapi0
  libgfrpc0 libgfxdr0 libglusterfs0 libibverbs1 libiscsi7 liblvm2cmd2.03
  libndctl6 libnss-mymachines libpmem1 libpmemobj1 librados2 librbd1
```

```
amd64 8.6.0-0ubuntu3.2 [1,770 kB]
Get:36 http://old-releases.ubuntu.com/ubuntu kinetic-updates/main amd64 libvirt-
clients amd64 8.6.0-0ubuntu3.2 [441 kB]
Get:37 http://old-releases.ubuntu.com/ubuntu kinetic-updates/main amd64 libvirt-
daemon-driver-qemu amd64 8.6.0-0ubuntu3.2 [759 kB]
Get:38 http://old-releases.ubuntu.com/ubuntu kinetic-updates/main amd64 libvirt-
daemon amd64 8.6.0-0ubuntu3.2 [438 kB]
Get:39 http://old-releases.ubuntu.com/ubuntu kinetic-updates/main amd64 libvirt-
daemon-config-network all 8.6.0-0ubuntu3.2 [10.9 kB]
Get:40 http://old-releases.ubuntu.com/ubuntu kinetic-updates/main amd64 libvirt-
daemon-config-nwfilter all 8.6.0-0ubuntu3.2 [13.8 kB]
Get:41 http://old-releases.ubuntu.com/ubuntu kinetic-updates/main amd64 systemd-
container amd64 251.4-1ubuntu7.3 [400 kB]
Get:42 http://old-releases.ubuntu.com/ubuntu kinetic-updates/main amd64 libvirt-
daemon-system-systemd all 8.6.0-0ubuntu3.2 [75.6 kB]
Get:43 http://old-releases.ubuntu.com/ubuntu kinetic-updates/main amd64 libvirt-
daemon-system amd64 8.6.0-0ubuntu3.2 [52.1 kB]
Get:44 http://old-releases.ubuntu.com/ubuntu kinetic-updates/main amd64 libxml2-
utils amd64 2.9.14+dfsg-1ubuntu0.2 [39.5 kB]
Get:45 http://old-releases.ubuntu.com/ubuntu kinetic/main amd64 mdevctl amd64 1.
2.0-1ubuntu1 [706 kB]
Get:46 http://old-releases.ubuntu.com/ubuntu kinetic/main amd64 libfdt1 amd64 1.
6.1-2ubuntu1 [19.0 kB]
51% [Waiting for headers]                                        713 kB/s 33s
```

```
Setting up libvirt-daemon dnsmasq configuration.
Setting up qemu-block-extra (1:7.0+dfsg-7ubuntu2.6) ...
Created symlink /etc/systemd/system/multi-user.target.wants/run-qemu.mount → /li
b/systemd/system/run-qemu.mount.
Setting up liblvm2cmd2.03:amd64 (2.03.16-1ubuntu1) ...
Setting up dmeventd (2:1.02.185-1ubuntu1) ...
Created symlink /etc/systemd/system/sockets.target.wants/dm-event.socket → /lib/
systemd/system/dm-event.socket.
dm-event.service is a disabled or a static unit, not starting it.
Setting up lvm2 (2.03.16-1ubuntu1) ...
update-initramfs: deferring update (trigger activated)
Created symlink /etc/systemd/system/sysinit.target.wants/blk-availability.servic
e → /lib/systemd/system/blk-availability.service.
Created symlink /etc/systemd/system/sysinit.target.wants/lvm2-monitor.service →
/lib/systemd/system/lvm2-monitor.service.
Created symlink /etc/systemd/system/sysinit.target.wants/lvm2-lvmpolld.socket →
/lib/systemd/system/lvm2-lvmpolld.socket.
Processing triggers for dbus (1.14.0-2ubuntu3) ...
Processing triggers for initramfs-tools (0.140ubuntu17) ...
update-initramfs: Generating /boot/initrd.img-5.19.0-46-generic
Processing triggers for hicolor-icon-theme (0.17-2) ...
Processing triggers for libc-bin (2.36-0ubuntu4) ...
Processing triggers for man-db (2.10.2-2) ...
kjsce@kjsce-HP-Elite-Tower-600-G9-Desktop-PC:~$
```

```
Processing triggers for dbus (1.14.0-2ubuntu3) ...
Processing triggers for initramfs-tools (0.140ubuntu17) ...
update-initramfs: Generating /boot/initrd.img-5.19.0-46-generic
Processing triggers for hicolor-icon-theme (0.17-2) ...
Processing triggers for libc-bin (2.36-0ubuntu4) ...
Processing triggers for man-db (2.10.2-2) ...
kjsce@kjsce-HP-Elite-Tower-600-G9-Desktop-PC:~$ sudo systemctl enable libvirtd
kjsce@kjsce-HP-Elite-Tower-600-G9-Desktop-PC:~$ sudo systemctl start libvirtd
kjsce@kjsce-HP-Elite-Tower-600-G9-Desktop-PC:~$ sudo systemctl status libvirtd
● libvirtd.service - Virtualization daemon
     Loaded: loaded (/lib/systemd/system/libvirtd.service; enabled; preset: ena>
     Active: active (running) since Fri 2024-01-19 11:42:38 IST; 2min 33s ago
TriggeredBy: ● libvirtd-ro.socket
             ● libvirtd-admin.socket
             ● libvirtd.socket
       Docs: man:libvirtd(8)
             https://libvirt.org
   Main PID: 43760 (libvirtd)
      Tasks: 21 (limit: 32768)
     Memory: 8.8M
        CPU: 185ms
     CGroup: /system.slice/libvirtd.service
             ─43760 /usr/sbin/libvirtd
             ─43899 /usr/sbin/dnsmasq --conf-file=/var/lib/libvirt/dnsmasq/def>
```

```
             ● libvirtd.socket
             ● libvirtd-ro.socket
       Docs: man:libvirtd(8)
             https://libvirt.org
   Main PID: 43760 (libvirtd)
      Tasks: 21 (limit: 32768)
     Memory: 8.8M
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     CGroup: /system.slice/libvirtd.service
             ─43760 /usr/sbin/libvirtd
             ─43899 /usr/sbin/dnsmasq --conf-file=/var/lib/libvirt/dnsmasq/def>
             ─43900 /usr/sbin/dnsmasq --conf-file=/var/lib/libvirt/dnsmasq/def>

Jan 19 11:42:38 kjsce-HP-Elite-Tower-600-G9-Desktop-PC systemd[1]: Started Virt>
Jan 19 11:42:38 kjsce-HP-Elite-Tower-600-G9-Desktop-PC dnsmasq[43899]: started,>
Jan 19 11:42:38 kjsce-HP-Elite-Tower-600-G9-Desktop-PC dnsmasq[43899]: compile >
Jan 19 11:42:38 kjsce-HP-Elite-Tower-600-G9-Desktop-PC dnsmasq-dhcp[43899]: DHC>
Jan 19 11:42:38 kjsce-HP-Elite-Tower-600-G9-Desktop-PC dnsmasq-dhcp[43899]: DHC>
Jan 19 11:42:38 kjsce-HP-Elite-Tower-600-G9-Desktop-PC dnsmasq[43899]: reading >
kjsce@kjsce-HP-Elite-Tower-600-G9-Desktop-PC:~$ sudo kvm-ok
INFO: /dev/kvm exists
KVM acceleration can be used
kjsce@kjsce-HP-Elite-Tower-600-G9-Desktop-PC:~$ 
```

```
c unit, not starting it.
.16)
rbd
.
c/d
```

```
                kjsce@kjsce-HP-Elite-Tower-600-G9-Desktop-PC: ~

Note, selecting 'qemu-system-x86' instead of 'qemu-kvm'
qemu-system-x86 is already the newest version (1:7.0+dfsg-7ubuntu2.6).
libvirt-daemon-system is already the newest version (8.6.0-0ubuntu3.2).
libvirt-clients is already the newest version (8.6.0-0ubuntu3.2).
bridge-utils is already the newest version (1.7-1ubuntu3).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
kjsce@kjsce-HP-Elite-Tower-600-G9-Desktop-PC:~$ sudo adduser Meeeet
adduser: Please enter a username matching the regular expression configured
via the NAME_REGEX[_SYSTEM] configuration variable.  Use the `--force-badname'
option to relax this check or reconfigure NAME_REGEX.
kjsce@kjsce-HP-Elite-Tower-600-G9-Desktop-PC:~$ sudo adduser meeeet
Adding user `meeeet' ...
Adding new group `meeeet' (1003) ...
Adding new user `meeeet' (1003) with group `meeeet' ...
Creating home directory `/home/meeeet' ...
Copying files from `/etc/skel' ...
New password:
BAD PASSWORD: The password fails the dictionary check - it is based on a diction
ary word
Retype new password:
passwd: password updated successfully
Changing the user information for meeeet
Enter the new value, or press ENTER for the default
        Full Name []:
```

```
c unit, not starting it.
.16)
rbd
.
c/d
```

```
                kjsce@kjsce-HP-Elite-Tower-600-G9-Desktop-PC: ~

Adding new user `meeeet' (1003) with group `meeeet' ...
Creating home directory `/home/meeeet' ...
Copying files from `/etc/skel' ...
New password:
BAD PASSWORD: The password fails the dictionary check - it is based on a diction
ary word
Retype new password:
passwd: password updated successfully
Changing the user information for meeeet
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] n
Changing the user information for meeeet
Enter the new value, or press ENTER for the default
        Full Name []: Meet Gala
        Room Number []: 1
        Work Phone []: 1234567890
        Home Phone []: 0987654321
        Other []:
Is the information correct? [Y/n]
```

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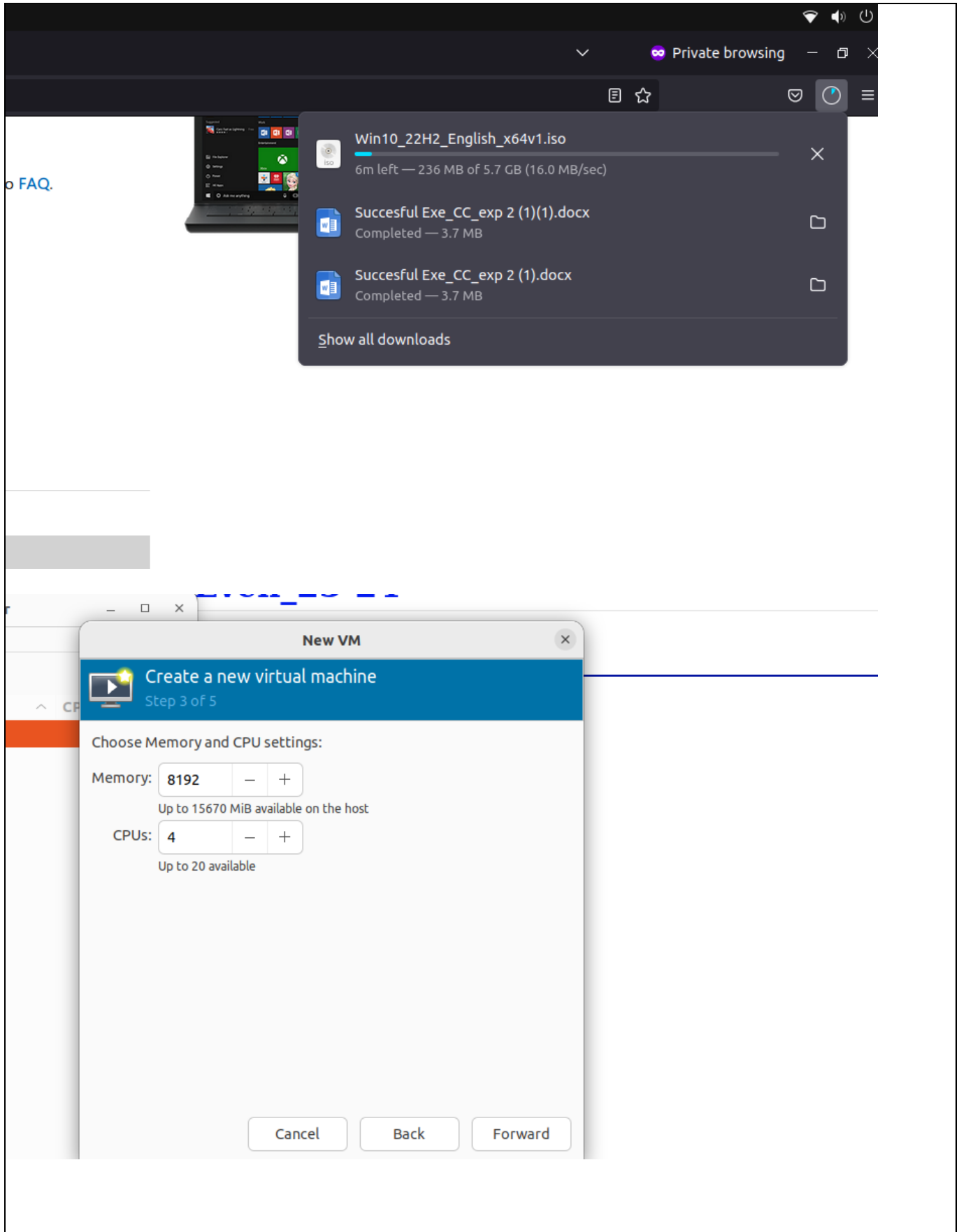SOMAIYA
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```
-2.0 gir1.2-libosinfo-1.0
entglib-2.0 gir1.2-spiceclientgtk-3.0
bgovirt-common libgovirt2
```

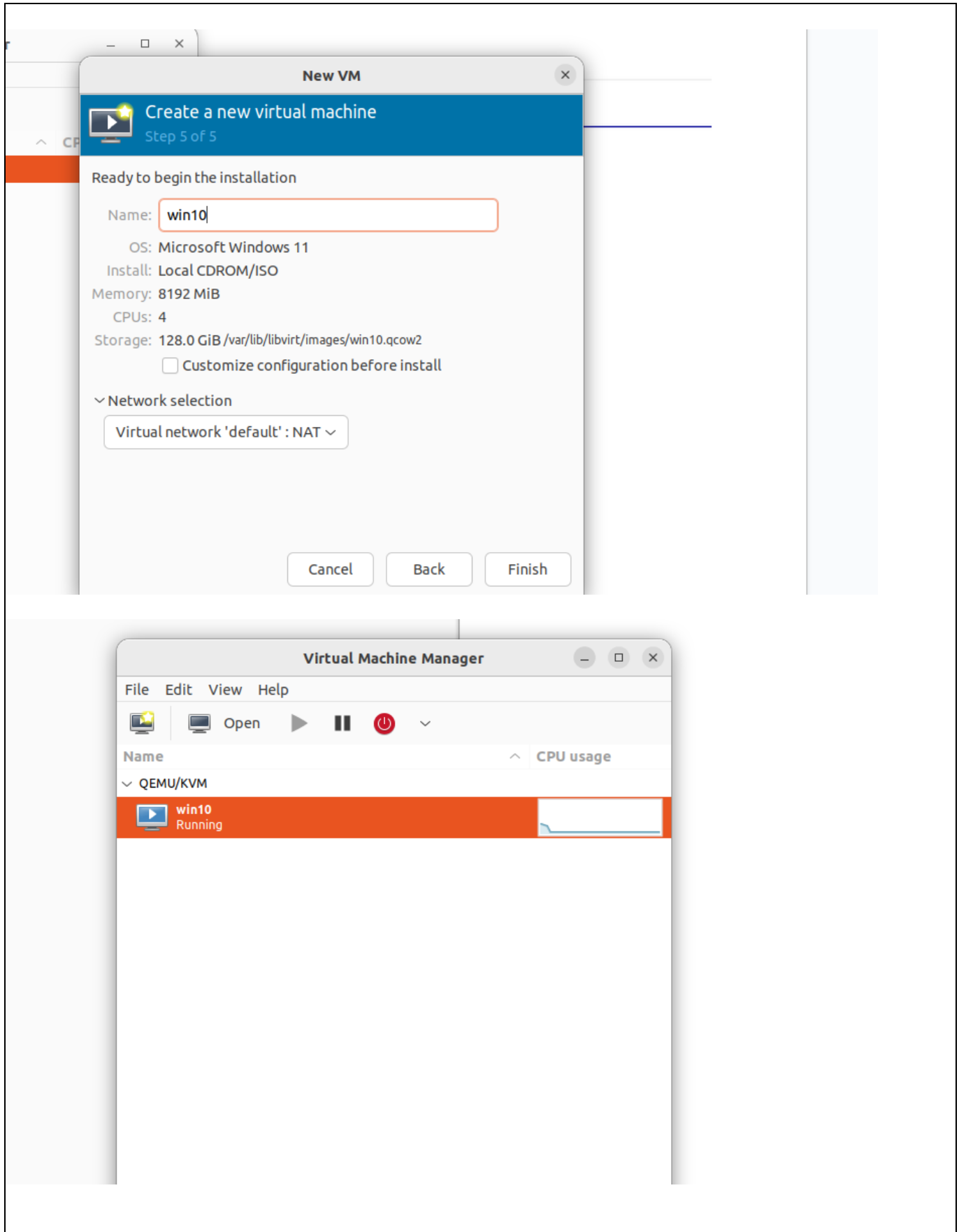kjsce@kjsce-HP-Elite-Tower-600-G9-Desktop-PC: ~

```
                    ● libvirtd.socket
                    ● libvirtd-ro.socket
          Docs: man:libvirtd(8)
                https://libvirt.org
     Main PID: 43760 (libvirtd)
         Tasks: 21 (limit: 32768)
        Memory: 8.8M
           CPU: 196ms
        CGroup: /system.slice/libvirtd.service
                ├─43760 /usr/sbin/libvirtd
                ├─43899 /usr/sbin/dnsmasq --conf-file=/var/lib/libvirt/dnsmasq/def>
                └─43900 /usr/sbin/dnsmasq --conf-file=/var/lib/libvirt/dnsmasq/def>

Jan 19 11:42:38 kjsce-HP-Elite-Tower-600-G9-Desktop-PC systemd[1]: Started Virt>
Jan 19 11:42:38 kjsce-HP-Elite-Tower-600-G9-Desktop-PC dnsmasq[43899]: started,>
Jan 19 11:42:38 kjsce-HP-Elite-Tower-600-G9-Desktop-PC dnsmasq[43899]: compile >
Jan 19 11:42:38 kjsce-HP-Elite-Tower-600-G9-Desktop-PC dnsmasq-dhcp[43899]: DHC>
Jan 19 11:42:38 kjsce-HP-Elite-Tower-600-G9-Desktop-PC dnsmasq-dhcp[43899]: DHC>
Jan 19 11:42:38 kjsce-HP-Elite-Tower-600-G9-Desktop-PC dnsmasq[43899]: reading >
Jan 19 11:42:38 kjsce-HP-Elite-Tower-600-G9-Desktop-PC dnsmasq[43899]: using na>
Jan 19 11:42:38 kjsce-HP-Elite-Tower-600-G9-Desktop-PC dnsmasq[43899]: read /et>
Jan 19 11:42:38 kjsce-HP-Elite-Tower-600-G9-Desktop-PC dnsmasq[43899]: read /va>
Jan 19 11:42:38 kjsce-HP-Elite-Tower-600-G9-Desktop-PC dnsmasq-dhcp[43899]: rea>
lines 5-27/27 (END)
```

kjsce@kjsce-HP-Elite-Tower-600-G9-Desktop-PC: ~

```
Setting up gir1.2-libvirt-glib-1.0:amd64 (4.0.0-2) ...
Setting up libgtksourceview-4-0:amd64 (4.8.3-1ubuntu1) ...
Setting up libosinfo-1.0-0:amd64 (1.10.0-2) ...
Setting up va-driver-all:amd64 (2.15.0-1) ...
Setting up python3-requests (2.27.1+dfsg-1ubuntu2.1) ...
Setting up gir1.2-gtk-vnc-2.0:amd64 (1.3.1-1) ...
Setting up libspice-client-gtk-3.0-5:amd64 (0.41-2) ...
Setting up gir1.2-spiceclientgtk-3.0:amd64 (0.41-2) ...
Setting up virt-viewer (11.0-2ubuntu2) ...
Setting up gir1.2-libosinfo-1.0:amd64 (1.10.0-2) ...
Setting up gir1.2-gtksource-4:amd64 (4.8.3-1ubuntu1) ...
Setting up virtinst (1:4.1.0-1) ...
Setting up virt-manager (1:4.1.0-1) ...
Processing triggers for mailcap (3.70+nmu1ubuntu1) ...
Processing triggers for desktop-file-utils (0.26-1ubuntu4) ...
Processing triggers for hicolor-icon-theme (0.17-2) ...
Processing triggers for gnome-menus (3.36.0-1ubuntu3) ...
Processing triggers for libglib2.0-0:amd64 (2.74.3-0ubuntu1.2) ...
Processing triggers for libc-bin (2.36-0ubuntu4) ...
Processing triggers for man-db (2.10.2-2) ...
Processing triggers for shared-mime-info (2.2-1) ...
kjsce@kjsce-HP-Elite-Tower-600-G9-Desktop-PC:~$ sudo virt-manager
kjsce@kjsce-HP-Elite-Tower-600-G9-Desktop-PC:~$ 
```

o FAQ.

Win10_22H2_English_x64v1.iso
6m left — 236 MB of 5.7 GB (16.0 MB/sec)

Succesful Exe_CC_exp 2 (1)(1).docx
Completed — 3.7 MB

Succesful Exe_CC_exp 2 (1).docx
Completed — 3.7 MB

Show all downloads

New VM

Create a new virtual machine
Step 3 of 5

Choose Memory and CPU settings:

Memory: **8192**   — +
Up to 15670 MiB available on the host

CPUs: **4**   — +
Up to 20 available

Cancel   Back   Forward

Conclusion: Successfully performed Virtualization by installing vmbox on windows and kvm on linux   .