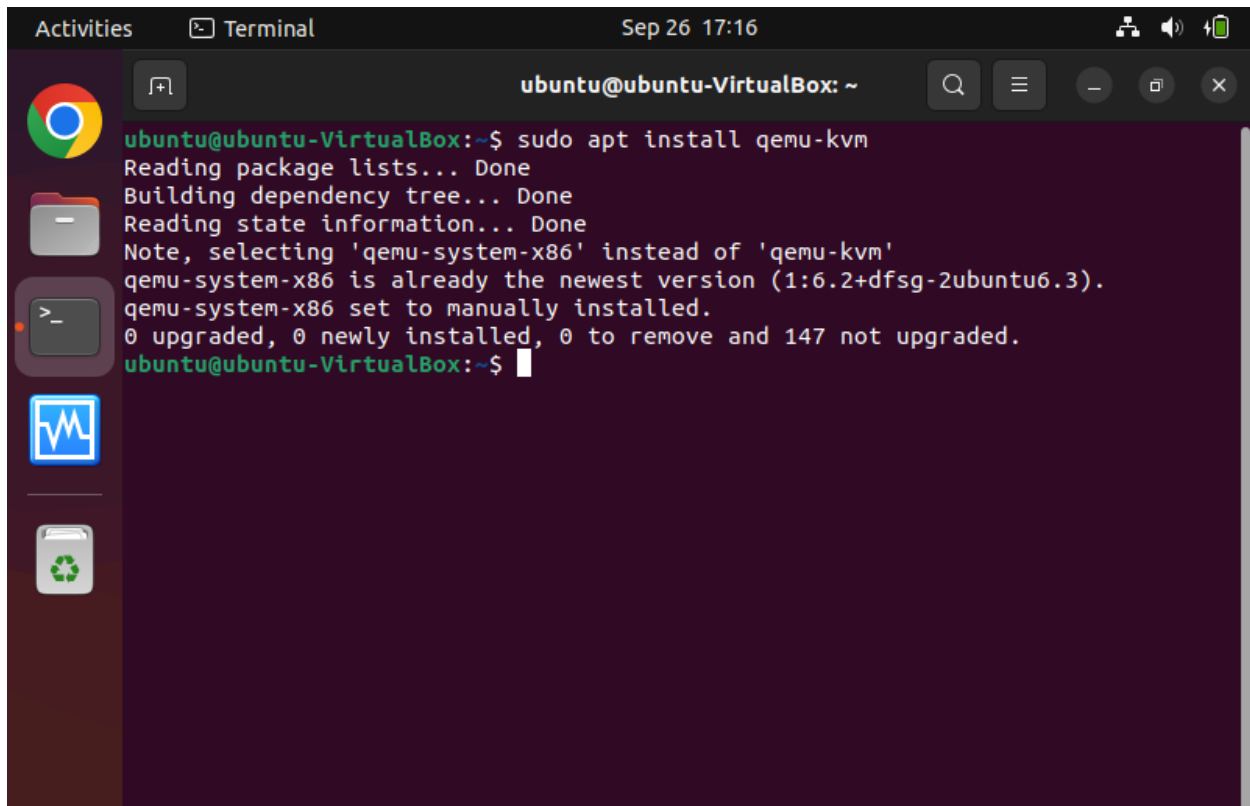


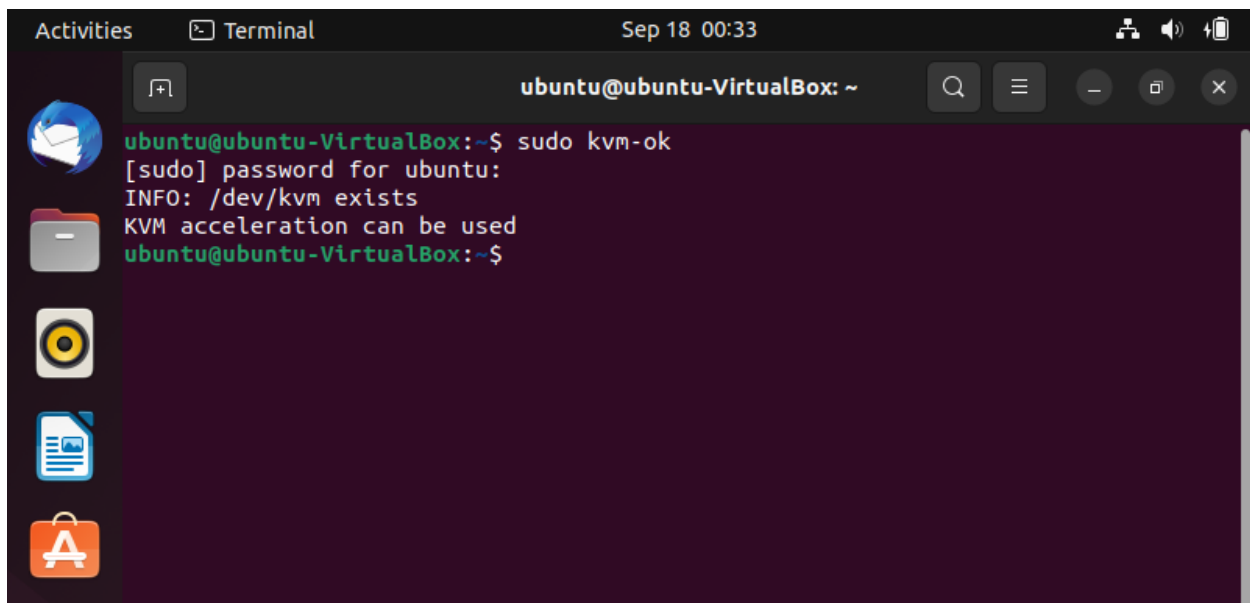
## Lab 5: Ubuntu Commands And Installing KVM

Step1: `sudo apt install qemu-kvm`: This command is used for installing kvm.

A terminal window titled 'Terminal' with the date 'Sep 26 17:16'. The prompt is 'ubuntu@ubuntu-VirtualBox: ~'. The user enters 'sudo apt install qemu-kvm'. The output shows the package lists being read, the dependency tree being built, and state information being read. A note indicates that 'qemu-system-x86' is selected instead of 'qemu-kvm' because it is already the newest version (1:6.2+dfsg-2ubuntu6.3). The final status is '0 upgraded, 0 newly installed, 0 to remove and 147 not upgraded.'

```
ubuntu@ubuntu-VirtualBox:~$ sudo apt install qemu-kvm
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Note, selecting 'qemu-system-x86' instead of 'qemu-kvm'
qemu-system-x86 is already the newest version (1:6.2+dfsg-2ubuntu6.3).
qemu-system-x86 set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 147 not upgraded.
ubuntu@ubuntu-VirtualBox:~$
```

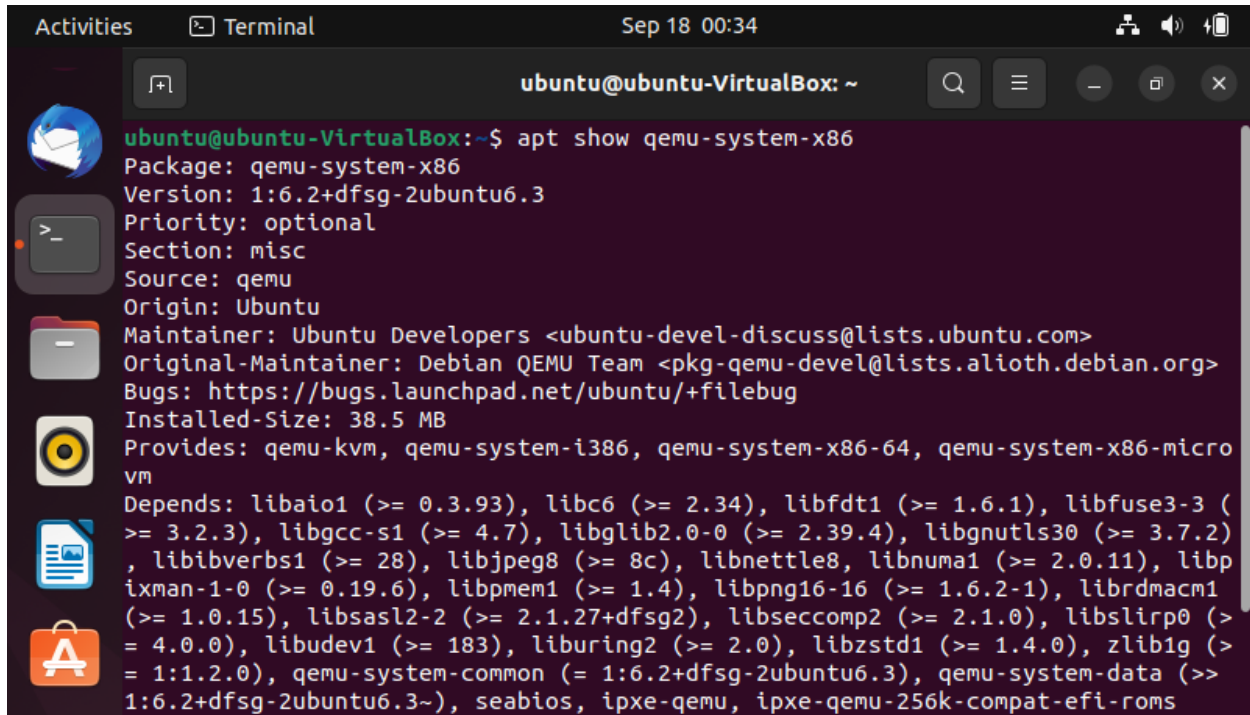
Step2: `sudo kvm-ok`: this command tell us weather we can use kvm or not.

A terminal window titled 'Terminal' with the date 'Sep 18 00:33'. The prompt is 'ubuntu@ubuntu-VirtualBox: ~'. The user enters 'sudo kvm-ok'. The output shows the password prompt, the path '/dev/kvm' existing, and a confirmation that KVM acceleration can be used.

```
ubuntu@ubuntu-VirtualBox:~$ sudo kvm-ok
[sudo] password for ubuntu:
INFO: /dev/kvm exists
KVM acceleration can be used
ubuntu@ubuntu-VirtualBox:~$
```

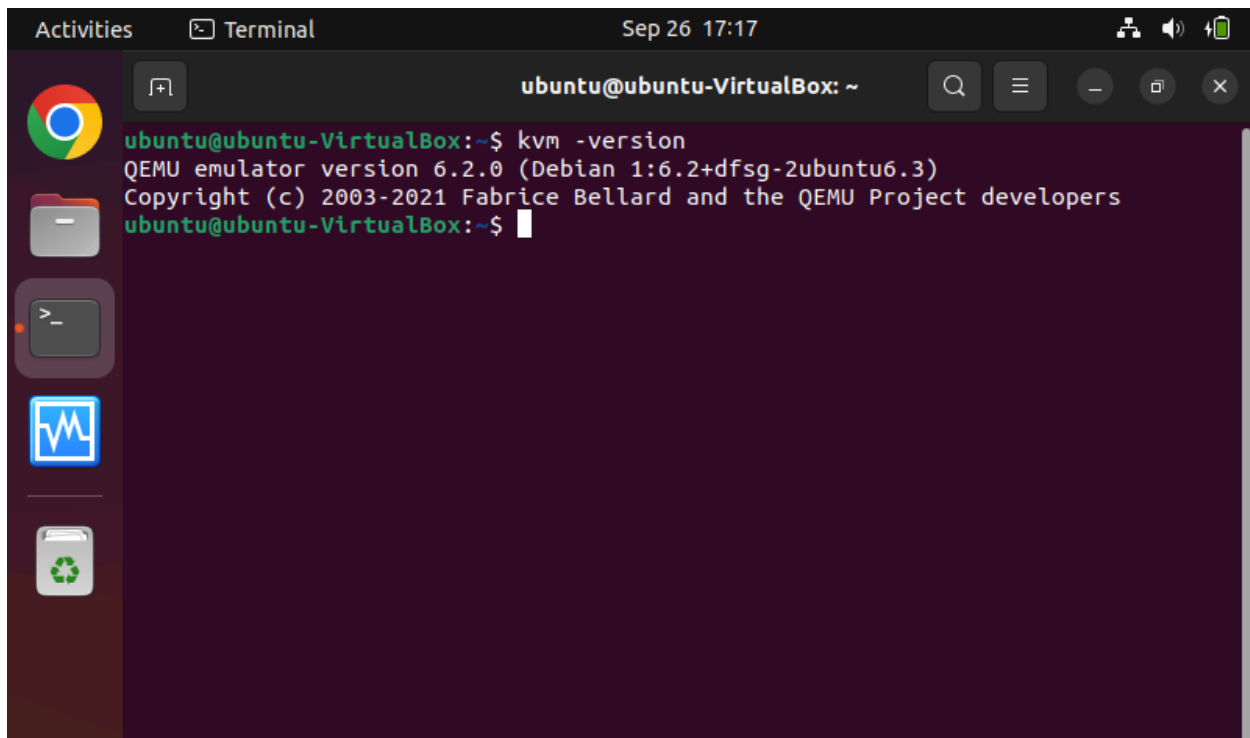
## Lab 5: Ubuntu Commands And Installing KVM

Step3: apt show qemu-system-x86: this command is used to check the version of qemu.



```
ubuntu@ubuntu-VirtualBox: ~$ apt show qemu-system-x86
Package: qemu-system-x86
Version: 1:6.2+dfsg-2ubuntu6.3
Priority: optional
Section: misc
Source: qemu
Origin: Ubuntu
Maintainer: Ubuntu Developers <ubuntu-devel-discuss@lists.ubuntu.com>
Original-Maintainer: Debian QEMU Team <pkg-qemu-devel@lists.alioth.debian.org>
Bugs: https://bugs.launchpad.net/ubuntu/+filebug
Installed-Size: 38.5 MB
Provides: qemu-kvm, qemu-system-i386, qemu-system-x86-64, qemu-system-x86-micro
vm
Depends: libaio1 (>= 0.3.93), libc6 (>= 2.34), libfdt1 (>= 1.6.1), libfuse3-3 (>= 3.2.3), libgcc-s1 (>= 4.7), libglib2.0-0 (>= 2.39.4), libgnutls30 (>= 3.7.2), libibverbs1 (>= 28), libjpeg8 (>= 8c), libnettle8, libnuma1 (>= 2.0.11), libp
ixman-1-0 (>= 0.19.6), libpmem1 (>= 1.4), libpng16-16 (>= 1.6.2-1), librdmacm1 (>= 1.0.15), libsasl2-2 (>= 2.1.27+dfsg2), libseccomp2 (>= 2.1.0), libslirp0 (>= 4.0.0), libudev1 (>= 183), liburing2 (>= 2.0), libzstd1 (>= 1.4.0), zlib1g (>= 1:1.2.0), qemu-system-common (= 1:6.2+dfsg-2ubuntu6.3), qemu-system-data (>= 1:6.2+dfsg-2ubuntu6.3~), seabios, ipxe-qemu, ipxe-qemu-256k-compatible-efi-roms
```

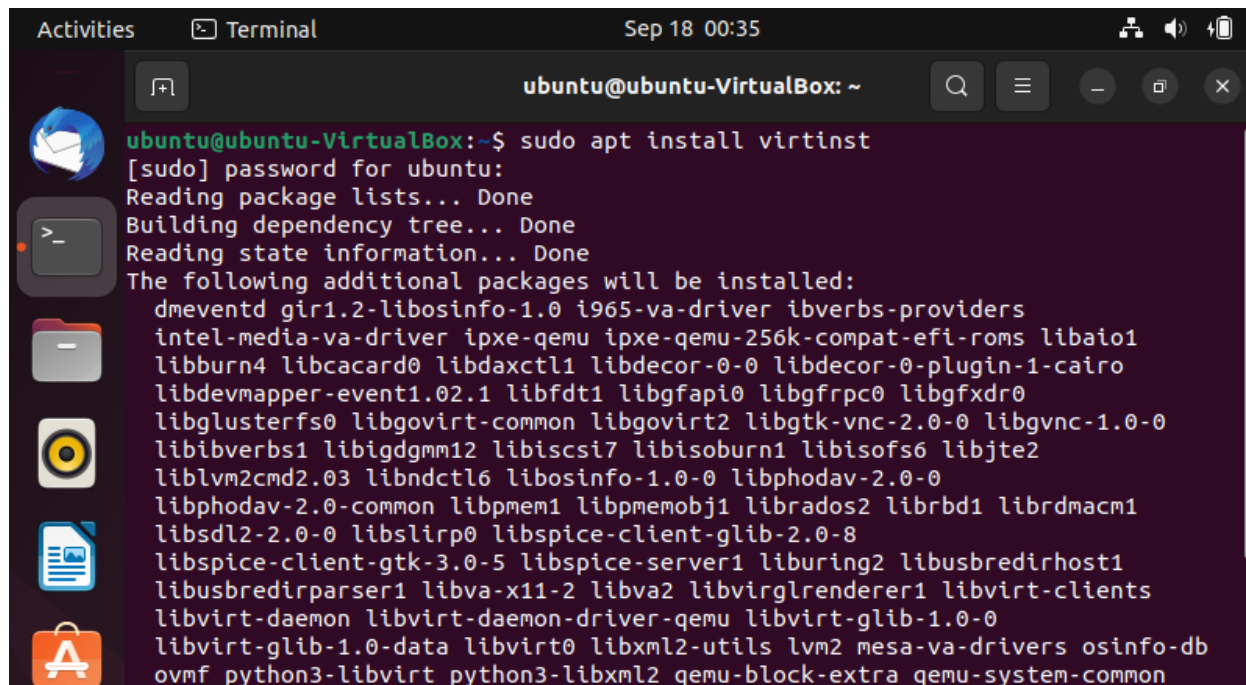
Step4: kvm -version: This command is used to check version of kvm installed in previous steps.



```
ubuntu@ubuntu-VirtualBox: ~$ kvm -version
QEMU emulator version 6.2.0 (Debian 1:6.2+dfsg-2ubuntu6.3)
Copyright (c) 2003-2021 Fabrice Bellard and the QEMU Project developers
ubuntu@ubuntu-VirtualBox: ~$
```

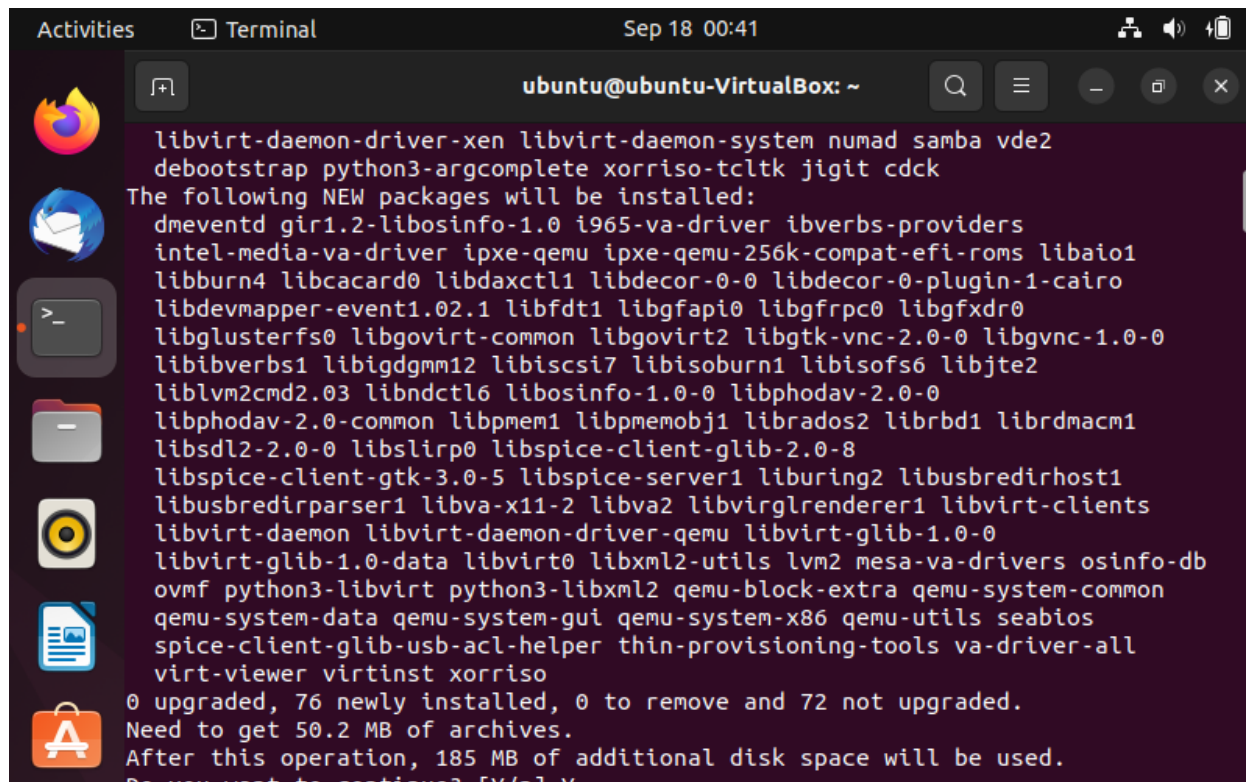
## Lab 5: Ubuntu Commands And Installing KVM

Step5: sudo apt install virtinst: Used for installation of virtinst.



```
Activities Terminal Sep 18 00:35
ubuntu@ubuntu-VirtualBox: ~
ubuntu@ubuntu-VirtualBox:~$ sudo apt install virtinst
[sudo] password for ubuntu:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
dmeventd gir1.2-libosinfo-1.0 i965-va-driver ibverbs-providers
intel-media-va-driver ipxe-qemu ipxe-qemu-256k-compat-efi-roms libaio1
libburn4 libcacard0 libdaxctl1 libdecor-0-0 libdecor-0-plugin-1-cairo
libdevmapper-event1.02.1 libfdt1 libgfbapi0 libgfrpc0 libgfxdr0
libglusterfs0 libgovirt-common libgovirt2 libgtk-vnc-2.0-0 libgvnc-1.0-0
libibverbs1 libigdgmm12 libiscsi7 libisoburn1 libisofs6 libjte2
liblvm2cmd2.03 libndctl6 libosinfo-1.0-0 libphodav-2.0-0
libphodav-2.0-common libpmem1 libpmemobj1 librados2 librbd1 librdmacm1
libsd12-2.0-0 libslirp0 libspice-client-glib-2.0-8
libspice-client-gtk-3.0-5 libspice-server1 liburing2 libusbredirhost1
libusbredirparser1 libva-x11-2 libva2 libvirglrenderer1 libvirt-clients
libvirt-daemon libvirt-daemon-driver-qemu libvirt-glib-1.0-0
libvirt-glib-1.0-data libvirt0 libxml2-utils lvm2 mesa-va-drivers osinfo-db
ovmf python3-libvirt python3-libxml2 qemu-block-extra qemu-system-common
```

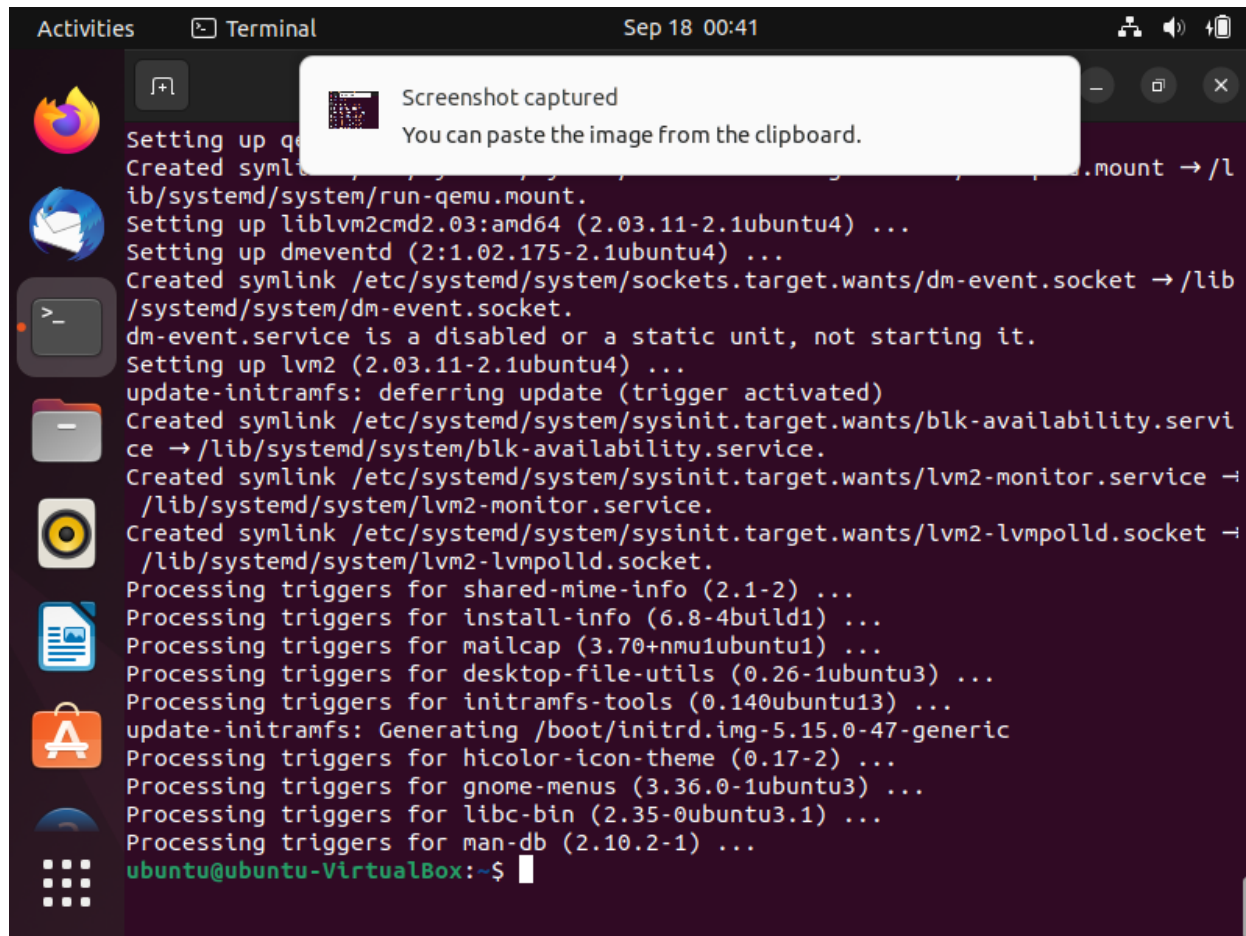
Step6: Wait till installation being completed.



```
Activities Terminal Sep 18 00:41
ubuntu@ubuntu-VirtualBox: ~
libvirt-daemon-driver-xen libvirt-daemon-system numad samba vde2
debootstrap python3-argcomplete xorriso-tcltk jigit cdck
The following NEW packages will be installed:
dmeventd gir1.2-libosinfo-1.0 i965-va-driver ibverbs-providers
intel-media-va-driver ipxe-qemu ipxe-qemu-256k-compat-efi-roms libaio1
libburn4 libcacard0 libdaxctl1 libdecor-0-0 libdecor-0-plugin-1-cairo
libdevmapper-event1.02.1 libfdt1 libgfbapi0 libgfrpc0 libgfxdr0
libglusterfs0 libgovirt-common libgovirt2 libgtk-vnc-2.0-0 libgvnc-1.0-0
libibverbs1 libigdgmm12 libiscsi7 libisoburn1 libisofs6 libjte2
liblvm2cmd2.03 libndctl6 libosinfo-1.0-0 libphodav-2.0-0
libphodav-2.0-common libpmem1 libpmemobj1 librados2 librbd1 librdmacm1
libsd12-2.0-0 libslirp0 libspice-client-glib-2.0-8
libspice-client-gtk-3.0-5 libspice-server1 liburing2 libusbredirhost1
libusbredirparser1 libva-x11-2 libva2 libvirglrenderer1 libvirt-clients
libvirt-daemon libvirt-daemon-driver-qemu libvirt-glib-1.0-0
libvirt-glib-1.0-data libvirt0 libxml2-utils lvm2 mesa-va-drivers osinfo-db
ovmf python3-libvirt python3-libxml2 qemu-block-extra qemu-system-common
qemu-system-data qemu-system-gui qemu-system-x86 qemu-utils seabios
spice-client-glib-usb-acl-helper thin-provisioning-tools va-driver-all
virt-viewer virtinst xorriso
0 upgraded, 76 newly installed, 0 to remove and 72 not upgraded.
Need to get 50.2 MB of archives.
After this operation, 185 MB of additional disk space will be used.
Do you want to continue? [Y/n] Y
```

## Lab 5: Ubuntu Commands And Installing KVM

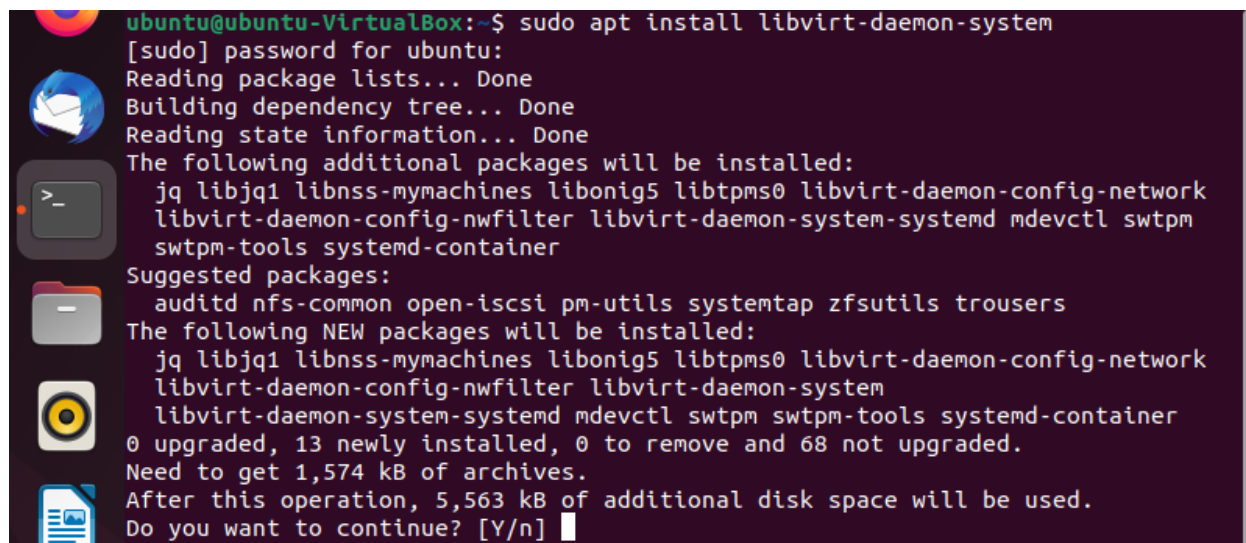
Step7: Progress bar showing the installation of virtinst.



```
Activities Terminal Sep 18 00:41
Screenshot captured
You can paste the image from the clipboard.

Setting up qemu (2.12.0-2ubuntu1) ...
Created symlink /etc/systemd/system/run-qemu.mount → /lib/systemd/system/run-qemu.mount.
Setting up liblvm2cmd2.03:amd64 (2.03.11-2.1ubuntu4) ...
Setting up dmeventd (2:1.02.175-2.1ubuntu4) ...
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 (2.03.11-2.1ubuntu4) ...
update-initramfs: deferring update (trigger activated)
Created symlink /etc/systemd/system/sysinit.target.wants/blk-availability.service → /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 shared-mime-info (2.1-2) ...
Processing triggers for install-info (6.8-4build1) ...
Processing triggers for mailcap (3.70+nmu1ubuntu1) ...
Processing triggers for desktop-file-utils (0.26-1ubuntu3) ...
Processing triggers for initramfs-tools (0.140ubuntu13) ...
update-initramfs: Generating /boot/initrd.img-5.15.0-47-generic
Processing triggers for hicolor-icon-theme (0.17-2) ...
Processing triggers for gnome-menus (3.36.0-1ubuntu3) ...
Processing triggers for libc-bin (2.35-0ubuntu3.1) ...
Processing triggers for man-db (2.10.2-1) ...
ubuntu@ubuntu-VirtualBox:~$
```

Step8: sudo apt install libvirt-daemon-system: Used for installation of libvirt. libvirt is a library, allowing you to use programming languages to configure virtual machines

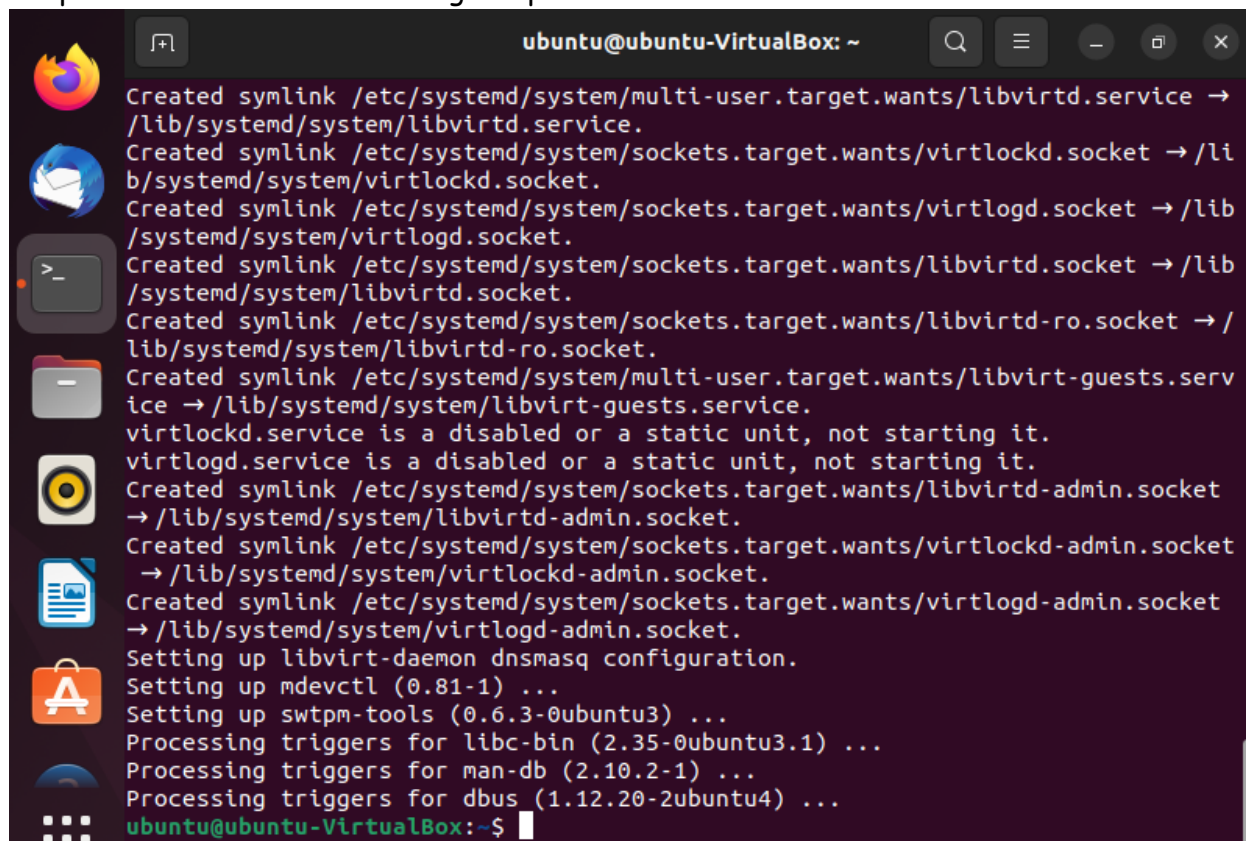


```
ubuntu@ubuntu-VirtualBox:~$ sudo apt install libvirt-daemon-system
[sudo] password for ubuntu:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
jq libjq1 libnss-mymachines libonig5 libtpms0 libvirt-daemon-config-network
libvirt-daemon-config-nwfilter libvirt-daemon-system-systemd mdevctl swtpm
swtpm-tools systemd-container
Suggested packages:
auditd nfs-common open-iscsi pm-utils systemtap zfsutils trousers
The following NEW packages will be installed:
jq libjq1 libnss-mymachines libonig5 libtpms0 libvirt-daemon-config-network
libvirt-daemon-config-nwfilter libvirt-daemon-system
libvirt-daemon-system-systemd mdevctl swtpm swtpm-tools systemd-container
0 upgraded, 13 newly installed, 0 to remove and 68 not upgraded.
Need to get 1,574 kB of archives.
After this operation, 5,563 kB of additional disk space will be used.
Do you want to continue? [Y/n]
```



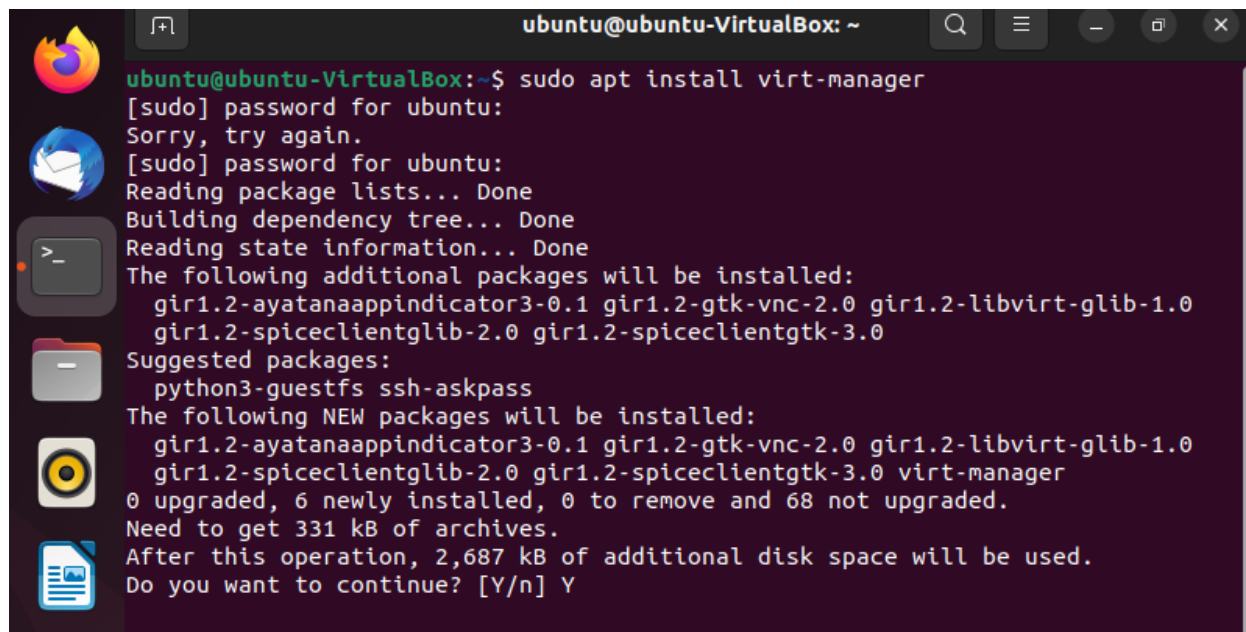
## Lab 5: Ubuntu Commands And Installing KVM

Step9: Wait till installation being completed.



```
ubuntu@ubuntu-VirtualBox: ~  
Created symlink /etc/systemd/system/multi-user.target.wants/libvirtd.service →  
/lib/systemd/system/libvirtd.service.  
Created symlink /etc/systemd/system/sockets.target.wants/virtlockd.socket → /li  
b/systemd/system/virtlockd.socket.  
Created symlink /etc/systemd/system/sockets.target.wants/virtlogd.socket → /lib  
/systemd/system/virtlogd.socket.  
Created symlink /etc/systemd/system/sockets.target.wants/libvirtd.socket → /lib  
/systemd/system/libvirtd.socket.  
Created symlink /etc/systemd/system/sockets.target.wants/libvirtd-ro.socket → /  
lib/systemd/system/libvirtd-ro.socket.  
Created symlink /etc/systemd/system/multi-user.target.wants/libvirt-guests.serv  
ice → /lib/systemd/system/libvirt-guests.service.  
virtlockd.service is a disabled or a static unit, not starting it.  
virtlogd.service is a disabled or a static unit, not starting it.  
Created symlink /etc/systemd/system/sockets.target.wants/libvirtd-admin.socket  
→ /lib/systemd/system/libvirtd-admin.socket.  
Created symlink /etc/systemd/system/sockets.target.wants/virtlockd-admin.socket  
→ /lib/systemd/system/virtlockd-admin.socket.  
Created symlink /etc/systemd/system/sockets.target.wants/virtlogd-admin.socket  
→ /lib/systemd/system/virtlogd-admin.socket.  
Setting up libvirt-daemon dnsmasq configuration.  
Setting up mdevctl (0.81-1) ...  
Setting up swtpm-tools (0.6.3-0ubuntu3) ...  
Processing triggers for libc-bin (2.35-0ubuntu3.1) ...  
Processing triggers for man-db (2.10.2-1) ...  
Processing triggers for dbus (1.12.20-2ubuntu4) ...  
ubuntu@ubuntu-VirtualBox:~$
```

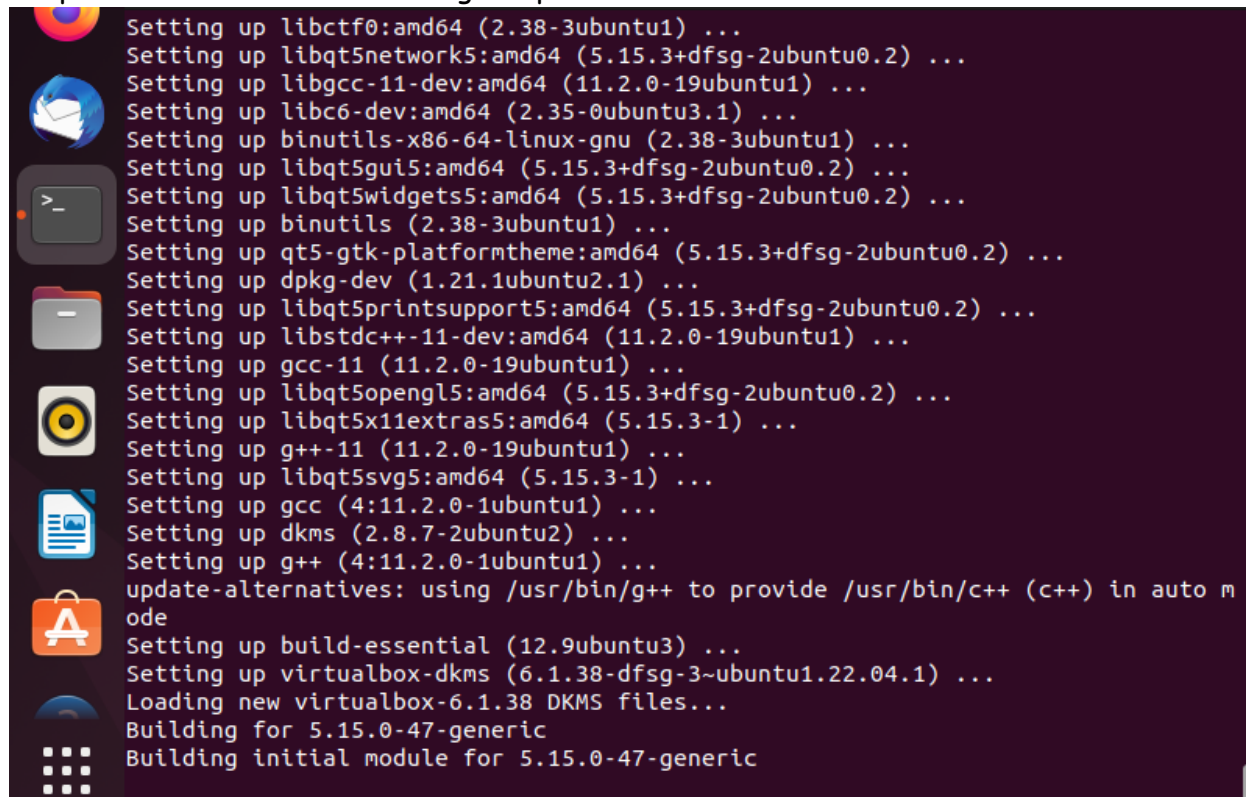
Step10: `sudo apt install virt-manager`: used for installation of virt-manamger. virt-manager provides an easy-to-use GUI similar to VMware/virtual box for managing virtual machines through libvirt.



```
ubuntu@ubuntu-VirtualBox: ~  
ubuntu@ubuntu-VirtualBox:~$ sudo apt install virt-manager  
[sudo] password for ubuntu:  
Sorry, try again.  
[sudo] password for ubuntu:  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
The following additional packages will be installed:  
  gir1.2-ayatanaappindicator3-0.1 gir1.2-gtk-vnc-2.0 gir1.2-libvirt-glib-1.0  
  gir1.2-spiceclientglib-2.0 gir1.2-spiceclientgtk-3.0  
Suggested packages:  
  python3-guestfs ssh-askpass  
The following NEW packages will be installed:  
  gir1.2-ayatanaappindicator3-0.1 gir1.2-gtk-vnc-2.0 gir1.2-libvirt-glib-1.0  
  gir1.2-spiceclientglib-2.0 gir1.2-spiceclientgtk-3.0 virt-manager  
0 upgraded, 6 newly installed, 0 to remove and 68 not upgraded.  
Need to get 331 kB of archives.  
After this operation, 2,687 kB of additional disk space will be used.  
Do you want to continue? [Y/n] Y
```

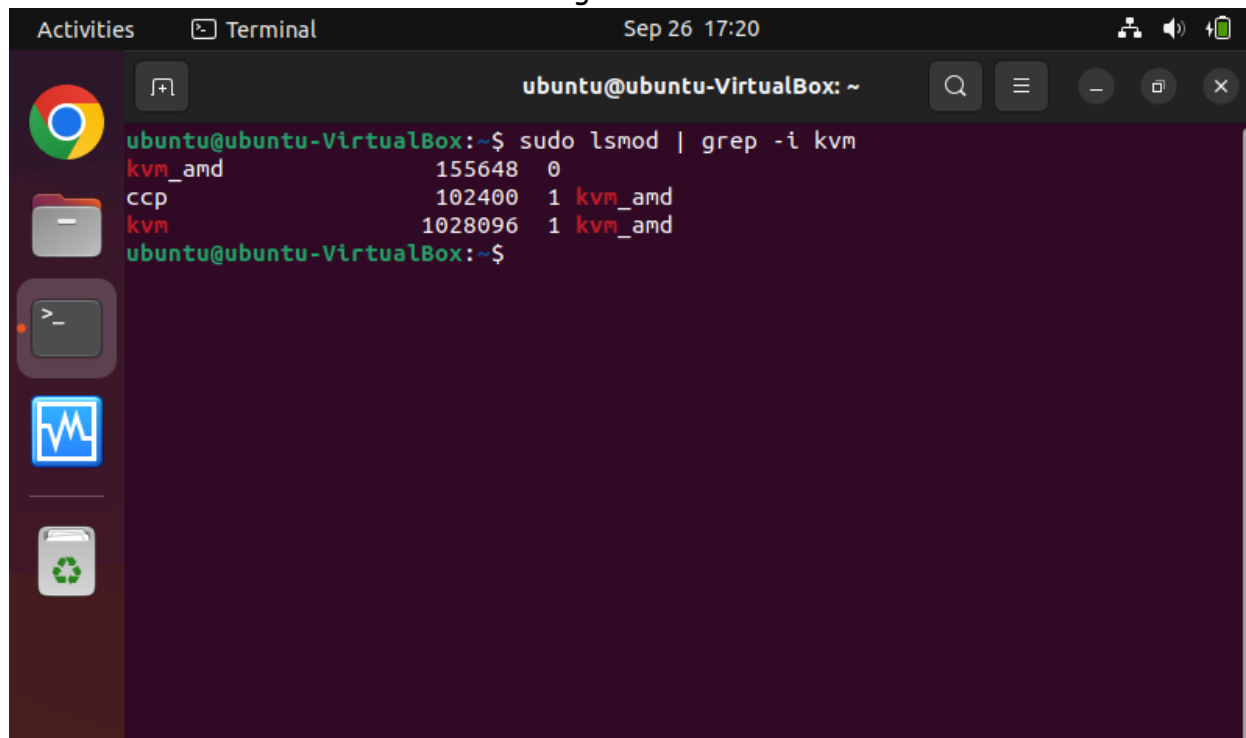
## Lab 5: Ubuntu Commands And Installing KVM

Step11: Wait till installation being completed.



```
Setting up libctf0:amd64 (2.38-3ubuntu1) ...
Setting up libqt5network5:amd64 (5.15.3+dfsg-2ubuntu0.2) ...
Setting up libgcc-11-dev:amd64 (11.2.0-19ubuntu1) ...
Setting up libc6-dev:amd64 (2.35-0ubuntu3.1) ...
Setting up binutils-x86-64-linux-gnu (2.38-3ubuntu1) ...
Setting up libqt5gui5:amd64 (5.15.3+dfsg-2ubuntu0.2) ...
Setting up libqt5widgets5:amd64 (5.15.3+dfsg-2ubuntu0.2) ...
Setting up binutils (2.38-3ubuntu1) ...
Setting up qt5-gtk-platformtheme:amd64 (5.15.3+dfsg-2ubuntu0.2) ...
Setting up dpkg-dev (1.21.1ubuntu2.1) ...
Setting up libqt5printsupport5:amd64 (5.15.3+dfsg-2ubuntu0.2) ...
Setting up libstdc++-11-dev:amd64 (11.2.0-19ubuntu1) ...
Setting up gcc-11 (11.2.0-19ubuntu1) ...
Setting up libqt5opengl5:amd64 (5.15.3+dfsg-2ubuntu0.2) ...
Setting up libqt5x11extras5:amd64 (5.15.3-1) ...
Setting up g++-11 (11.2.0-19ubuntu1) ...
Setting up libqt5svg5:amd64 (5.15.3-1) ...
Setting up gcc (4:11.2.0-1ubuntu1) ...
Setting up dkms (2.8.7-2ubuntu2) ...
Setting up g++ (4:11.2.0-1ubuntu1) ...
update-alternatives: using /usr/bin/g++ to provide /usr/bin/c++ (c++) in auto m
ode
Setting up build-essential (12.9ubuntu3) ...
Setting up virtualbox-dkms (6.1.38-dfsg-3~ubuntu1.22.04.1) ...
Loading new virtualbox-6.1.38 DKMS files...
Building for 5.15.0-47-generic
Building initial module for 5.15.0-47-generic
```

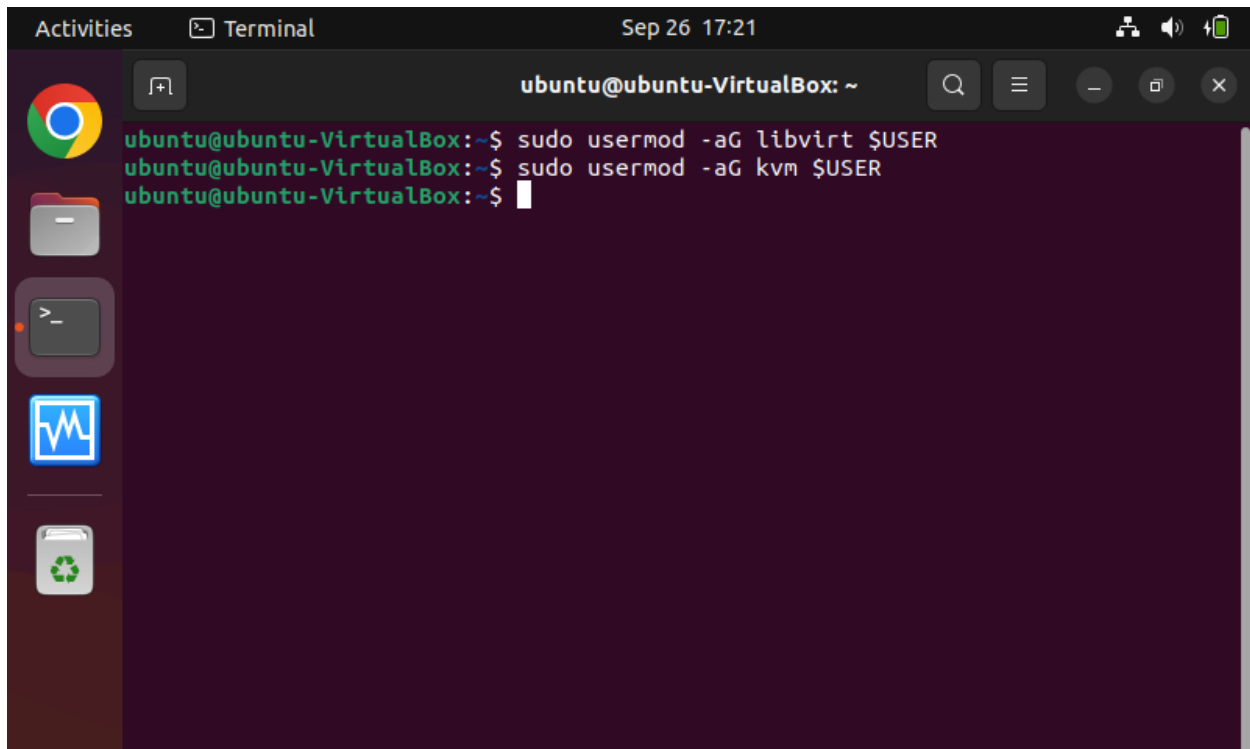
Step12: `sudo lsmod | grep -i kvm`: In case of amd cpu we will get `kvm_amd` module. From this command we able to create and manage virtual machines.



```
Activities  Terminal  Sep 26 17:20
ubuntu@ubuntu-VirtualBox: ~
ubuntu@ubuntu-VirtualBox:~$ sudo lsmod | grep -i kvm
kvm_amd            155648      0
ccp                102400      1  kvm_amd
kvm                1028096      1  kvm_amd
ubuntu@ubuntu-VirtualBox:~$
```

## Lab 5: Ubuntu Commands And Installing KVM

Step13: The \$USER environment variable points to the name of the currently logged-in user. To apply this change, we need to log out and log back again.



```
Activities Terminal Sep 26 17:21
ubuntu@ubuntu-VirtualBox: ~
ubuntu@ubuntu-VirtualBox:~$ sudo usermod -aG libvirt $USER
ubuntu@ubuntu-VirtualBox:~$ sudo usermod -aG kvm $USER
ubuntu@ubuntu-VirtualBox:~$
```