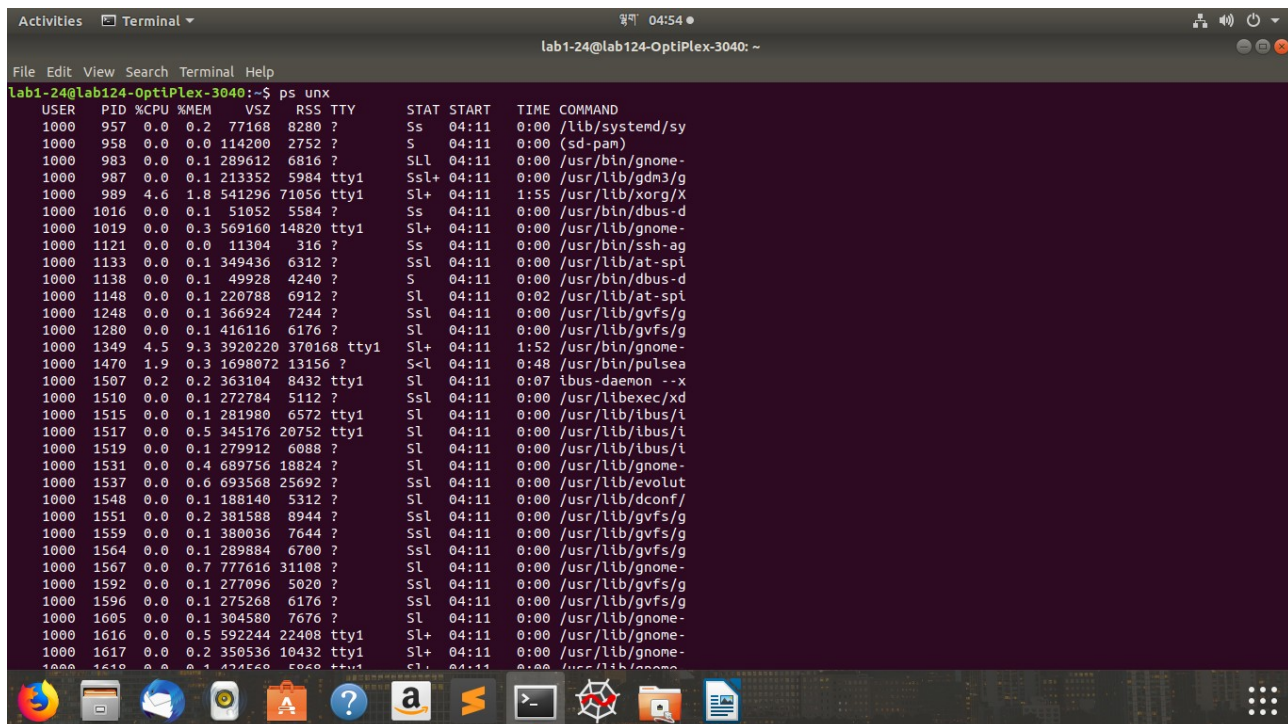


Please make the report on the getting process information in different ways.

1. Through command line

COMMAND:PS unx.

The PS command lists running processes.



```
lab1-24@lab124-OptiPlex-3040:~$ ps unx
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
1000     957  0.0  0.2  77168  8280 ?        Ss   04:11   0:00 /lib/systemd/sy
1000     958  0.0  0.0  114200  2752 ?        S    04:11   0:00 (sd-pam)
1000     983  0.0  0.1  289612  6816 ?        Sll  04:11   0:00 /usr/bin/gnome-
1000     987  0.0  0.1  213352  5984 tty1     Ssl+ 04:11   0:00 /usr/lib/gdm3/g
1000     989  4.6  1.8  541296  71056 tty1     Sl+  04:11   1:55 /usr/lib/xorg/X
1000    1016  0.0  0.1  51052   5584 ?        Ss   04:11   0:00 /usr/bin/dbus-d
1000    1019  0.0  0.3  569160 14820 tty1     Sl+  04:11   0:00 /usr/lib/gnome-
1000    1121  0.0  0.0  11304    316 ?        Ss   04:11   0:00 /usr/bin/ssh-ag
1000    1133  0.0  0.1  349436  6312 ?        Ssl  04:11   0:00 /usr/lib/at-spi
1000    1138  0.0  0.1  49928   4240 ?        S    04:11   0:00 /usr/bin/dbus-d
1000    1148  0.0  0.1  220788  6912 ?        Sl   04:11   0:02 /usr/lib/at-spi
1000    1248  0.0  0.1  366924  7244 ?        Ssl  04:11   0:00 /usr/lib/gvfs/g
1000    1280  0.0  0.1  416116  6176 ?        Sl   04:11   0:00 /usr/lib/gvfs/g
1000    1349  4.5  9.3  3920220 370168 tty1     Sl+  04:11   1:52 /usr/bin/gnome-
1000    1470  1.9  0.3  1698072 13156 ?        Scl  04:11   0:48 /usr/bin/pulsea
1000    1507  0.2  0.2  363104  8432 tty1     Sl   04:11   0:07 ibus-daemon --x
1000    1510  0.0  0.1  272784   5112 ?        Ssl  04:11   0:00 /usr/libexec/xd
1000    1515  0.0  0.1  281980  6572 tty1     Sl   04:11   0:00 /usr/lib/ibus/i
1000    1517  0.0  0.5  345176  20752 tty1     Sl   04:11   0:00 /usr/lib/ibus/i
1000    1519  0.0  0.1  279912  6088 ?        Sl   04:11   0:00 /usr/lib/ibus/i
1000    1531  0.0  0.4  689756 18824 ?        Sl   04:11   0:00 /usr/lib/gnome-
1000    1537  0.0  0.6  693568 25692 ?        Ssl  04:11   0:00 /usr/lib/evolut
1000    1548  0.0  0.1  188140   5312 ?        Sl   04:11   0:00 /usr/lib/dconf/
1000    1551  0.0  0.2  381588  8944 ?        Ssl  04:11   0:00 /usr/lib/gvfs/g
1000    1559  0.0  0.1  380036  7644 ?        Ssl  04:11   0:00 /usr/lib/gvfs/g
1000    1564  0.0  0.1  289884  6700 ?        Ssl  04:11   0:00 /usr/lib/gvfs/g
1000    1567  0.0  0.7  777616 31108 ?        Sl   04:11   0:00 /usr/lib/gnome-
1000    1592  0.0  0.1  277096  5020 ?        Ssl  04:11   0:00 /usr/lib/gvfs/g
1000    1596  0.0  0.1  275268  6176 ?        Ssl  04:11   0:00 /usr/lib/gvfs/g
1000    1605  0.0  0.1  304580  7676 ?        Sl   04:11   0:00 /usr/lib/gnome-
1000    1616  0.0  0.5  592244 22408 tty1     Sl+  04:11   0:00 /usr/lib/gnome-
1000    1617  0.0  0.2  350536 10432 tty1     Sl+  04:11   0:00 /usr/lib/gnome-
1000    1618  0.0  0.1  424560  5058 tty1     Sl+  04:11   0:00 /usr/lib/gnome-
```

Command:Top

The top command is the traditional way to view your system's resource usage and see the processes that are taking up the most system resources. Top displays a list of processes, with the ones using the most CPU at the top.

```
Activities Terminal 04:59
lab1-24@lab124-OptiPlex-3040: ~

File Edit View Search Terminal Help
lab1-24@lab124-OptiPlex-3040:~$ top

top - 04:59:55 up 48 min, 1 user, load average: 1.26, 1.12, 0.95
Tasks: 242 total, 1 running, 191 sleeping, 0 stopped, 0 zombie
%Cpu(s): 20.3 us, 4.1 sy, 0.0 ni, 75.2 id, 0.2 wa, 0.0 hi, 0.2 si, 0.0 st
KiB Mem : 3938524 total, 459988 free, 1599656 used, 1878880 buff/cache
KiB Swap: 2097148 total, 2097148 free, 0 used, 1771484 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR   S   %CPU  %MEM    TIME+  COMMAND
 1349 lab1-24    20   0 3926944 376852 136132 S   31.1   9.6   2:31.62  gnome-shell
 2946 lab1-24    20   0 2971892 315020 141416 S   15.6   8.0   7:08.39  Web Content
 4969 lab1-24    20   0 1289656 33980  25928 S    8.6   0.9   0:00.26  nautilus
 2892 lab1-24    20   0 3539044 345436 131176 S    4.3   8.8   3:34.07  firefox
 5062 lab1-24    20   0 625604  31624  25404 S    4.3   0.8   0:00.13  gnome-screensho
 4973 lab1-24    20   0 1480316 49372  39320 S    4.0   1.3   0:00.12  gnome-calendar
 4978 lab1-24    20   0 703980  37616  25236 S    4.0   1.0   0:00.12  seahorse
 989 lab1-24    20   0 514116  68664  48428 S    3.6   1.7   2:13.53  Xorg
1470 lab1-24    9  -11 1698400 13504  9732 S    2.3   0.3   0:58.87  pulseaudio
4470 lab1-24    20   0 655824  47500  33816 S    2.3   1.2   0:10.83  gnome-system-mo
1016 lab1-24    20   0 51136  5688  3900 S    1.3   0.1   0:00.76  dbus-daemon
4967 lab1-24    20   0 344832  18980  14560 S    1.3   0.5   0:00.04  gnome-control-c
1507 lab1-24    20   0 363104  8436  6552 S    0.7   0.2   0:07.49  ibus-daemon
4244 lab1-24    20   0 801288  37108  27512 S    0.7   0.9   0:01.28  gnome-terminal-
4958 lab1-24    20   0 52564  4172  3468 R    0.7   0.1   0:00.23  top
   7 root      20   0 0 0 0 S    0.3   0.0   0:00.00  ksoftirqd/0
   8 root      20   0 0 0 0 I    0.3   0.0   0:03.06  rcu_sched
 257 root      19  -1 182000  65592  64564 S    0.3   1.7   0:01.24  systemd-journal
 812 message+  20   0 51636  5848  3796 S    0.3   0.1   0:00.78  dbus-daemon
 983 lab1-24    20   0 289612  6816  5860 S    0.3   0.2   0:00.10  gnome-keyring-d
1148 lab1-24    20   0 220788  6912  6208 S    0.3   0.2   0:02.30  at-spi2-registr
1551 lab1-24    20   0 381588  8944  7100 S    0.3   0.2   0:00.86  gvfs-udisks2-vo
1559 lab1-24    20   0 380036  7644  6760 S    0.3   0.2   0:00.02  gvfs-afc-volume
1564 lab1-24    20   0 290012  6728  5912 S    0.3   0.2   0:00.04  gvfs-gphoto2-vo
1746 lab1-24    20   0 893516  67320  27408 S    0.3   1.7   0:00.33  evolution-calen
1789 lab1-24    20   0 1137344 62464 23264 S    0.3   1.6   0:00.26  evolution-calen
```

Command:ps tree

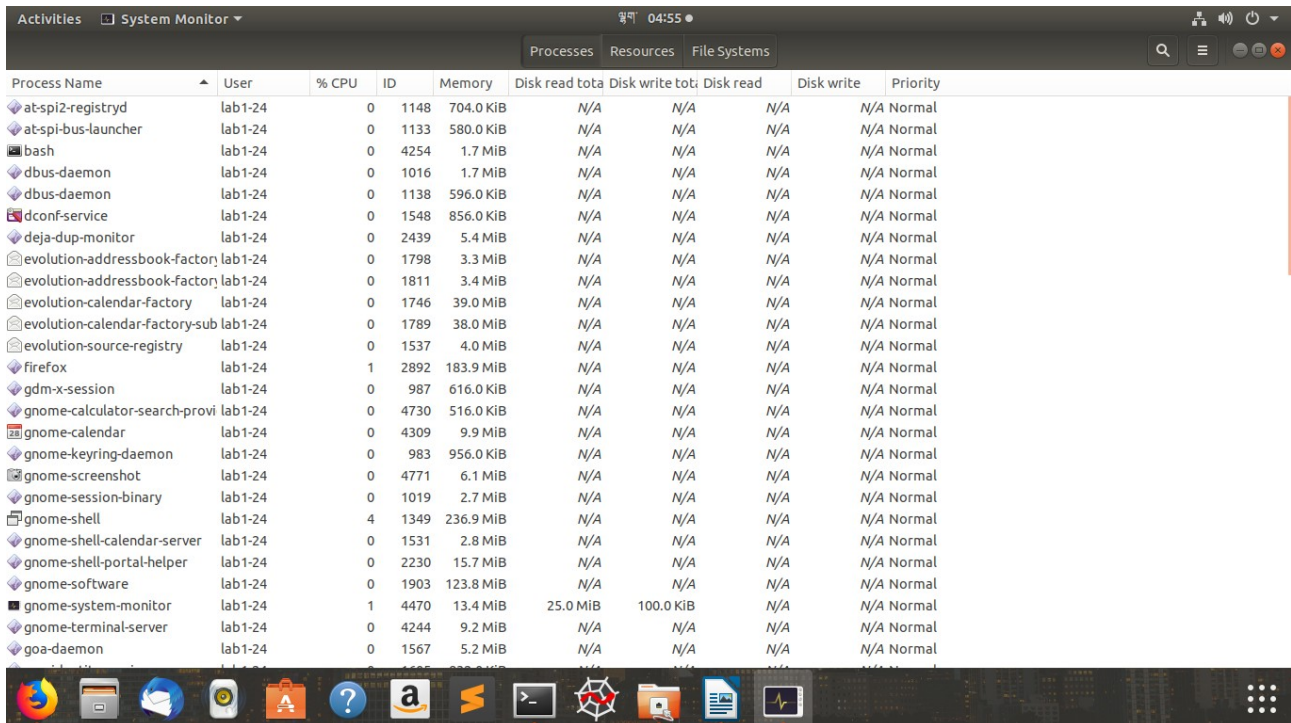
The **ps tree** command is another way of visualizing processes. It displays them in tree format

```
Activities Terminal 05:10
lab1-24@lab124-OptiPlex-3040: ~

File Edit View Search Terminal Help
lab1-24@lab124-OptiPlex-3040:~$ pstree
systemd--ModemManager--2*[{ModemManager}]
--NetworkManager--dhcpcd
--accounts-daemon--2*[{accounts-daemon}]
--acpid
--avahi-daemon--avahi-daemon
--boltd--2*[{boltd}]
--colord--2*[{colord}]
--cron
--cups-browsed--2*[{cups-browsed}]
--cupsd
--dbus-daemon
--firefox--Web Content--42*[{Web Content}]
--Web Content--28*[{Web Content}]
--Web Content--33*[{Web Content}]
--Web Content--21*[{Web Content}]
--WebExtensions--25*[{WebExtensions}]
--67*[{firefox}]
--fwupd--4*[{fwupd}]
--gdm3--gdm-session-wor--gdm-x-session--Xorg--3*[{Xorg}]
--gnome-session-b--deja-dup-m+
--gnome-shel+
--gsd-a11y-s+
--gsd-clipbo+
--gsd-color+++
--gsd-dateti+
--gsd-disk-u+
--gsd-housek+
--gsd-keyboa+
--gsd-media+
--gsd-mouse+++
--gsd-power+++
--gsd-print+
```

2. Through Graphical User Interface

A Graphical user interface is visual way of interacting with a computer using items such as windows, icons, and menus, used by most modern operating systems and is a collection of software programs that use the computer's graphics capabilities to make apps easy to use. Just open the system monitor application to know the process information.



Process Name	User	% CPU	ID	Memory	Disk read tota	Disk write tota	Disk read	Disk write	Priority
at-spi2-registrd	lab1-24	0	1148	704.0 KiB	N/A	N/A	N/A	N/A	Normal
at-spi-bus-launcher	lab1-24	0	1133	580.0 KiB	N/A	N/A	N/A	N/A	Normal
bash	lab1-24	0	4254	1.7 MiB	N/A	N/A	N/A	N/A	Normal
dbus-daemon	lab1-24	0	1016	1.7 MiB	N/A	N/A	N/A	N/A	Normal
dbus-daemon	lab1-24	0	1138	596.0 KiB	N/A	N/A	N/A	N/A	Normal
dconf-service	lab1-24	0	1548	856.0 KiB	N/A	N/A	N/A	N/A	Normal
deja-dup-monitor	lab1-24	0	2439	5.4 MiB	N/A	N/A	N/A	N/A	Normal
evolution-addressbook-factory	lab1-24	0	1798	3.3 MiB	N/A	N/A	N/A	N/A	Normal
evolution-addressbook-factory	lab1-24	0	1811	3.4 MiB	N/A	N/A	N/A	N/A	Normal
evolution-calendar-factory	lab1-24	0	1746	39.0 MiB	N/A	N/A	N/A	N/A	Normal
evolution-calendar-factory-sub	lab1-24	0	1789	38.0 MiB	N/A	N/A	N/A	N/A	Normal
evolution-source-registry	lab1-24	0	1537	4.0 MiB	N/A	N/A	N/A	N/A	Normal
firefox	lab1-24	1	2892	183.9 MiB	N/A	N/A	N/A	N/A	Normal
gdm-x-session	lab1-24	0	987	616.0 KiB	N/A	N/A	N/A	N/A	Normal
gnome-calculator-search-provi	lab1-24	0	4730	516.0 KiB	N/A	N/A	N/A	N/A	Normal
gnome-calendar	lab1-24	0	4309	9.9 MiB	N/A	N/A	N/A	N/A	Normal
gnome-keyring-daemon	lab1-24	0	983	956.0 KiB	N/A	N/A	N/A	N/A	Normal
gnome-screenshot	lab1-24	0	4771	6.1 MiB	N/A	N/A	N/A	N/A	Normal
gnome-session-binary	lab1-24	0	1019	2.7 MiB	N/A	N/A	N/A	N/A	Normal
gnome-shell	lab1-24	4	1349	236.9 MiB	N/A	N/A	N/A	N/A	Normal
gnome-shell-calendar-server	lab1-24	0	1531	2.8 MiB	N/A	N/A	N/A	N/A	Normal
gnome-shell-portal-helper	lab1-24	0	2230	15.7 MiB	N/A	N/A	N/A	N/A	Normal
gnome-software	lab1-24	0	1903	123.8 MiB	N/A	N/A	N/A	N/A	Normal
gnome-system-monitor	lab1-24	1	4470	13.4 MiB	25.0 MiB	100.0 KiB	N/A	N/A	Normal
gnome-terminal-server	lab1-24	0	4244	9.2 MiB	N/A	N/A	N/A	N/A	Normal
goa-daemon	lab1-24	0	1567	5.2 MiB	N/A	N/A	N/A	N/A	Normal

Report on how to install the open source operating system (Ubuntu) in the virtual machine.

virtual box is a software which allow users to run multiple operating system in a single machine and to freely switch between OS instances running simultaneously.

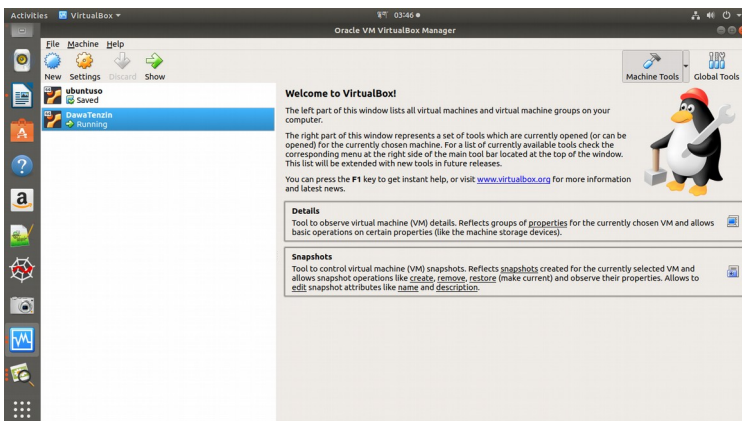
Step:1

First to start virtual box we have to start by going to the terminal and writing the install command. Here the virtual box will get installed.

```
lab1-33@lab133-OptiPlex-3040:~$ sudo apt-get install virtualbox
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  virtualbox-qt
Suggested packages:
  vde2 virtualbox-guest-additions-iso
The following NEW packages will be installed:
  virtualbox virtualbox-qt
0 upgraded, 2 newly installed, 0 to remove and 0 not upgraded.
Need to get 25.9 MB of archives.
After this operation, 109 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://bt.archive.ubuntu.com/ubuntu bionic-updates/multiverse amd64 virtua
lbox amd64 5.2.32-dfsg-0-ubuntu18.04.1 [17.3 MB]
Get:2 http://bt.archive.ubuntu.com/ubuntu bionic-updates/multiverse amd64 virtua
lbox-qt amd64 5.2.32-dfsg-0-ubuntu18.04.1 [8,605 kB]
Fetched 25.9 MB in 40s (648 kB/s)
Selecting previously unselected package virtualbox.
(Reading database ... 209718 files and directories currently installed.)
Preparing to unpack .../virtualbox_5.2.32-dfsg-0-ubuntu18.04.1_amd64.deb ...
Unpacking virtualbox (5.2.32-dfsg-0-ubuntu18.04.1) ...
Selecting previously unselected package virtualbox-qt.
```

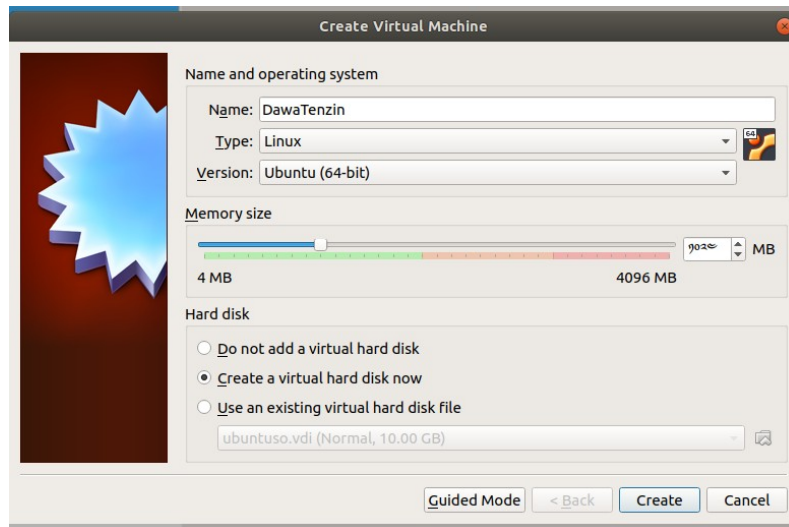
Step2:

Select the virtual Box application then There select new to create virtual box of the Ubuntu. Click New. It's a blue badge in the upper-left corner of the Virtual Box window. Doing so opens a pop-up menu.



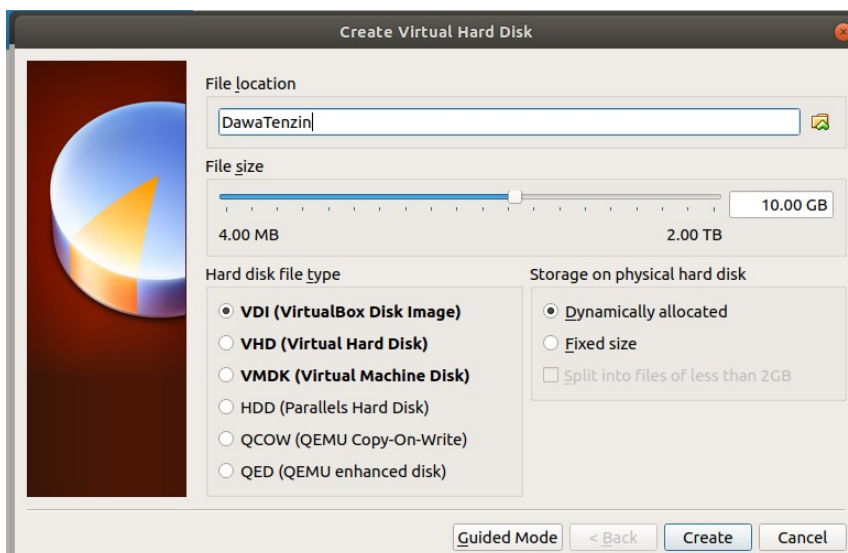
- Type whatever you want to name your virtual machine into the "Name" text field that's near the top of the pop-up menu.

- Click the "Type" drop-down box, then click Linux in the resulting drop-down menu. Ubuntu should be selected by default after you set the "Type" value to Linux, but if it isn't, click the "Version" drop-down box and click Ubuntu (64-bit) before proceeding.
- Select an amount of RAM to use: Click and drag the slider left or right to decrease or increase the amount of RAM that Virtual Box will have available for your Ubuntu virtual machine.



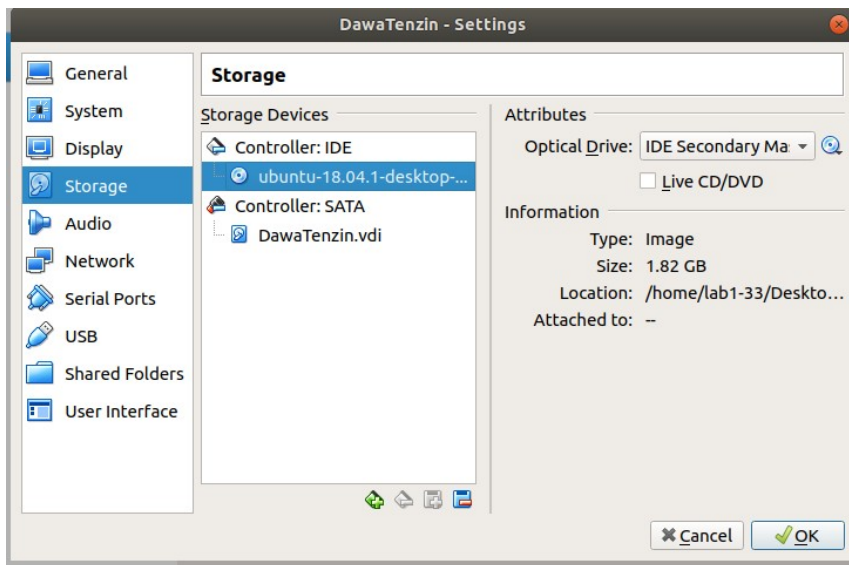
Step3:

Here we should give the file location .



Step 4:

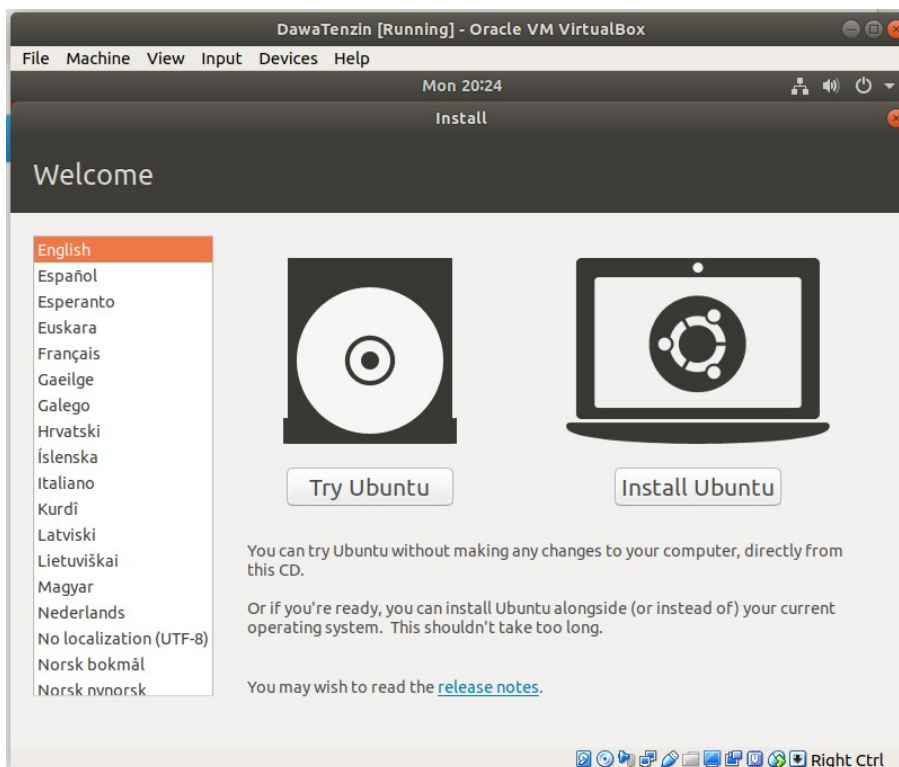
In the setting option we should go to the storage and then select the empty option and then select the Ubuntu IOS .



Step 5:

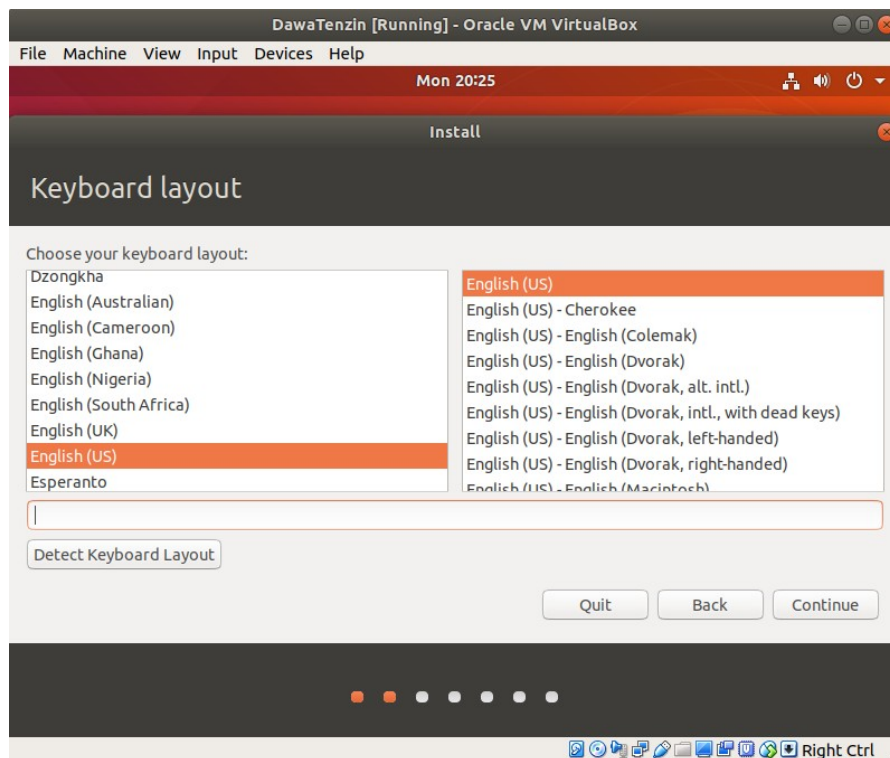
Then Click on the Install Ubuntu option, after making sure that we have selected preferred language .

Here we should select the language and then there are two option the try and install Ubuntu. I have select the install Ubuntu.



Step6:

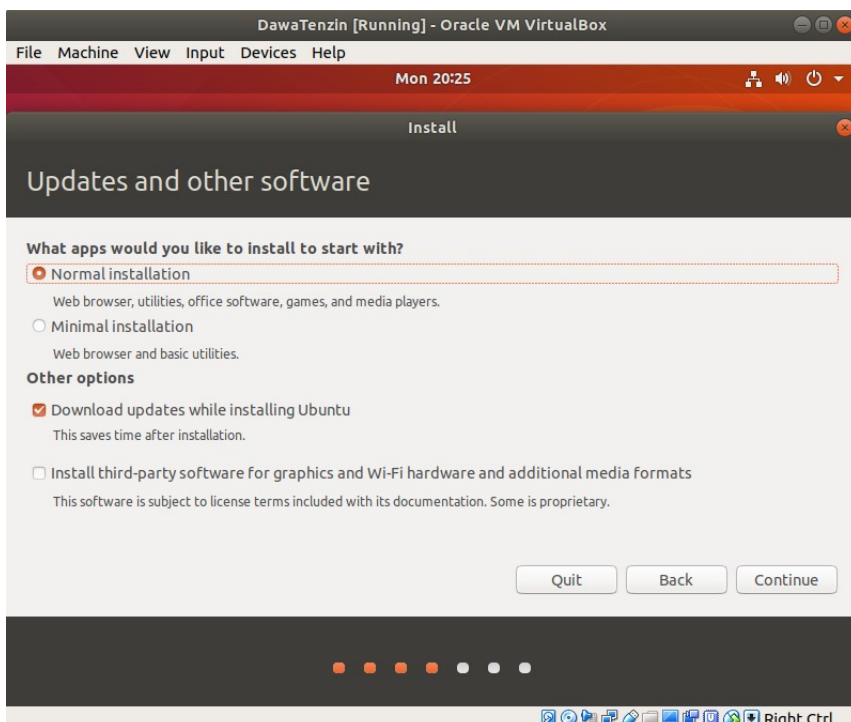
Then in keyboard layout select the keyboard like English or other like Dzongkha.



Step7:

Also when creating a VM (like in our case) I have selected the normal installation where it will support with the web browser,utilities,games and media players .

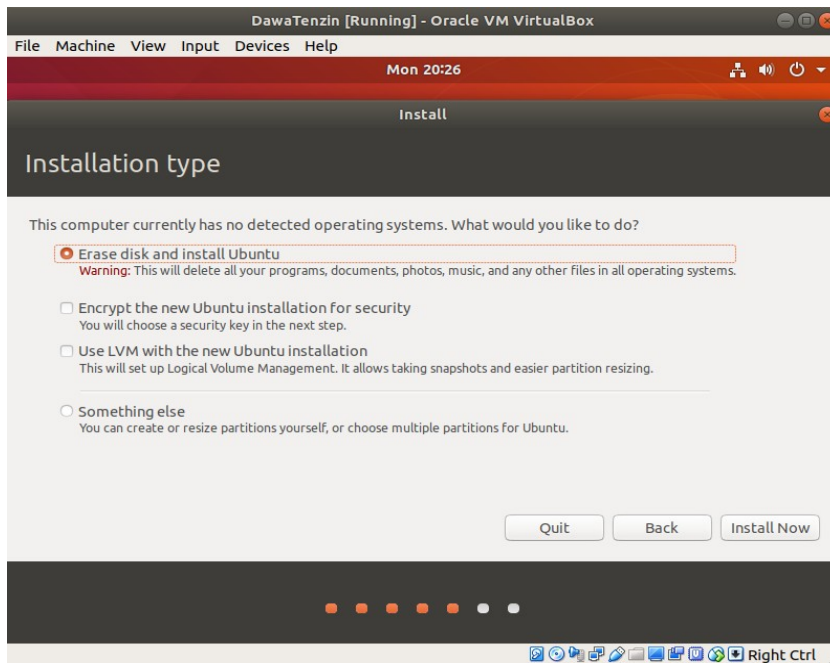
We have also select the options for downloading updates and installing third-party software as shown in the screenshot below.



Step8:

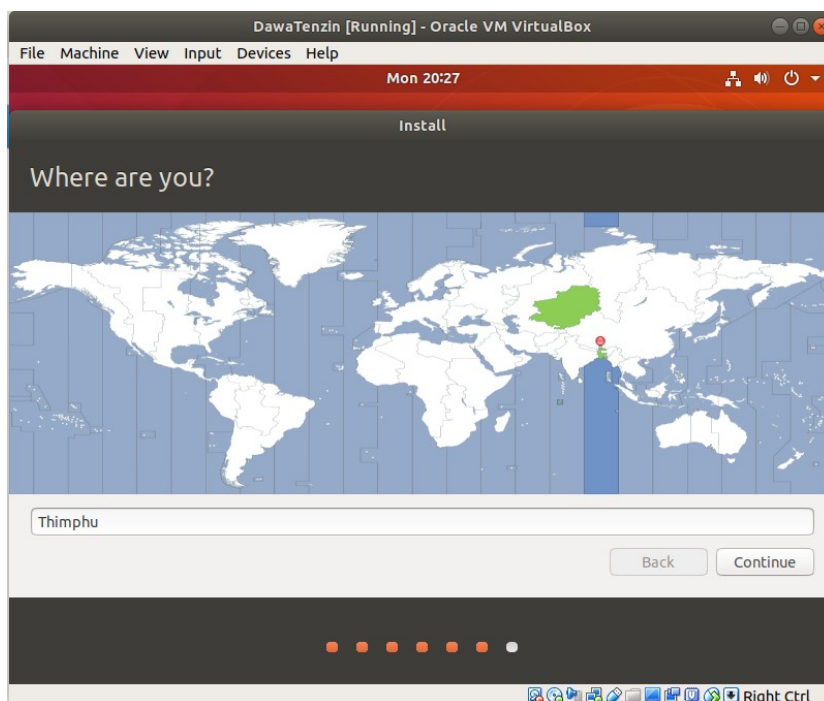
Now comes the most controversial part of any Linux installation — The disk layout. If it were our main rig, and I would have to consider a lot of variables, like whether or not you are going to dual-boot, what partitions you would need and will you go for LVM or not.

Since, we are using a VM and we have one quite disposable Virtual Disk to experiment with, we can simply select “Erase Disk and Install Ubuntu” option, as shown below:



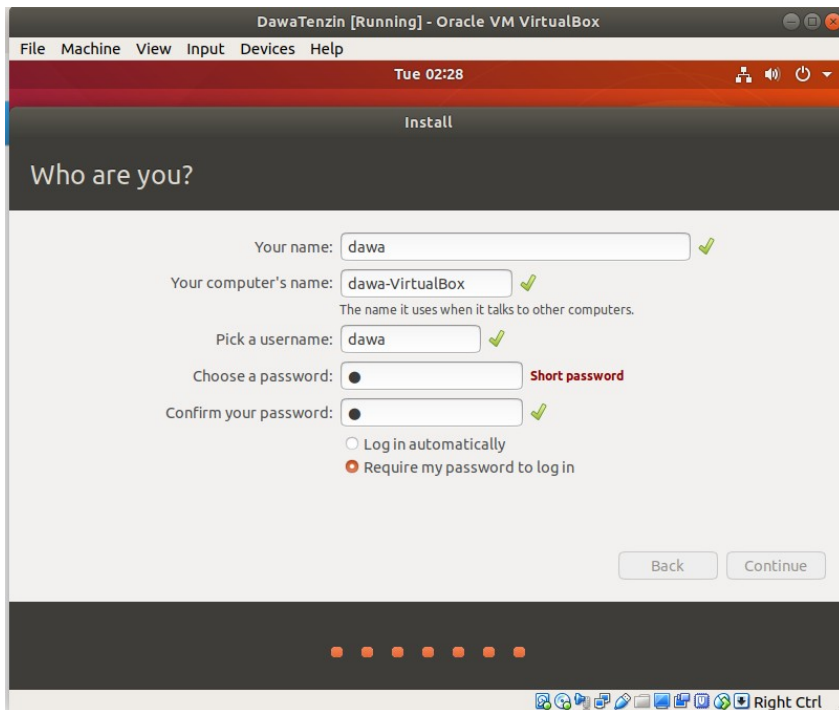
Step9:

Then we simply select timezone, by simply clicking on the world map indicating roughly where you live.



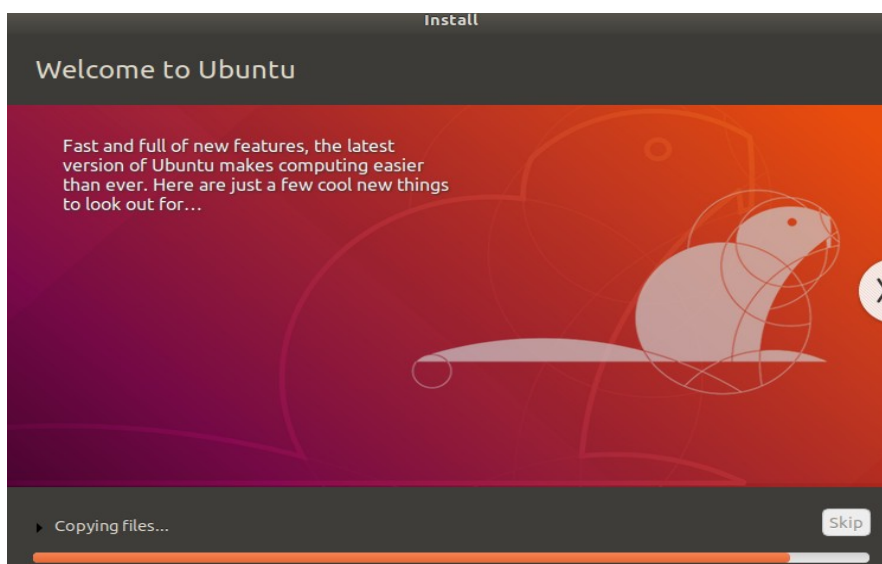
Step10:

We have enter our desired username, computer's name and password.



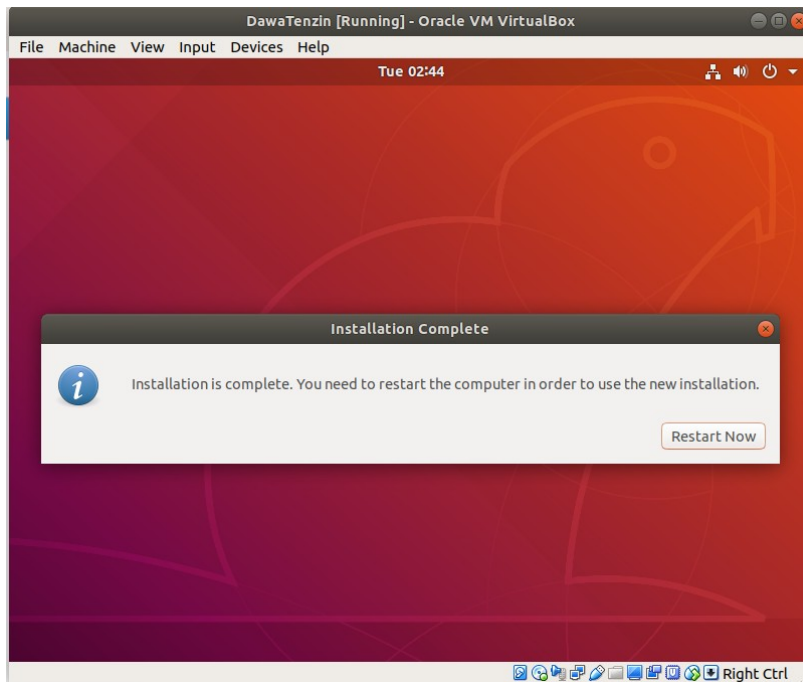
Step11:

Then the installation will start with coping the files it will take some time...



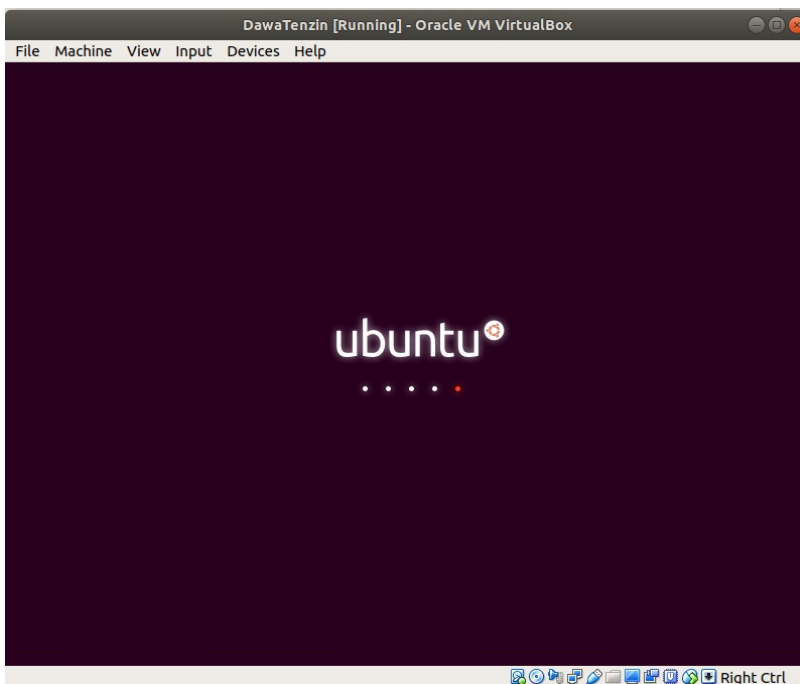
Step12:

when the coping of files and installation finish then the pop up box will appear where saying installation completed.



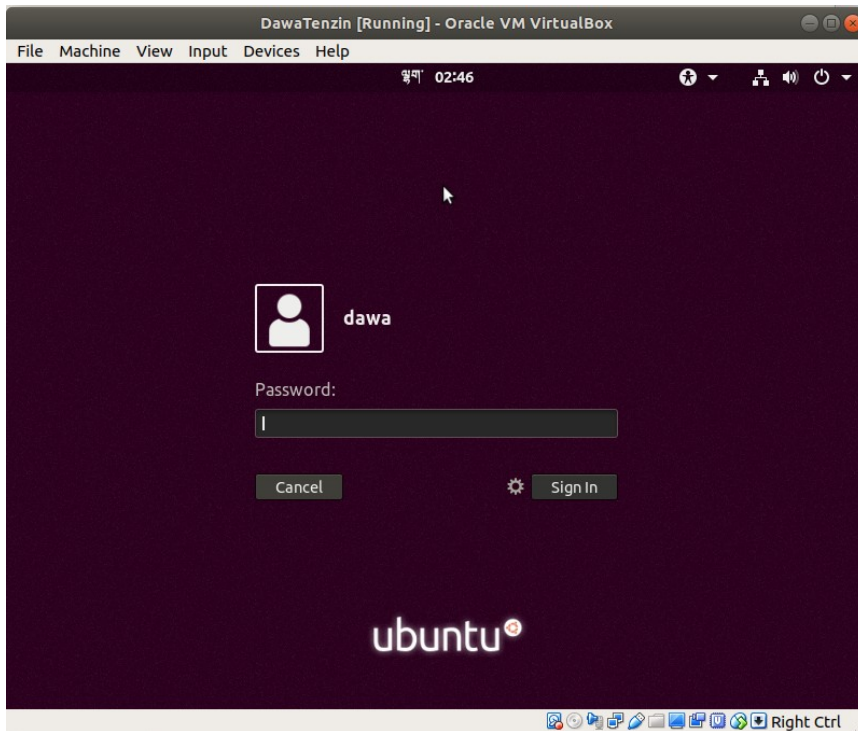
Step13:

It will take some time to fully complete we just have to wait....



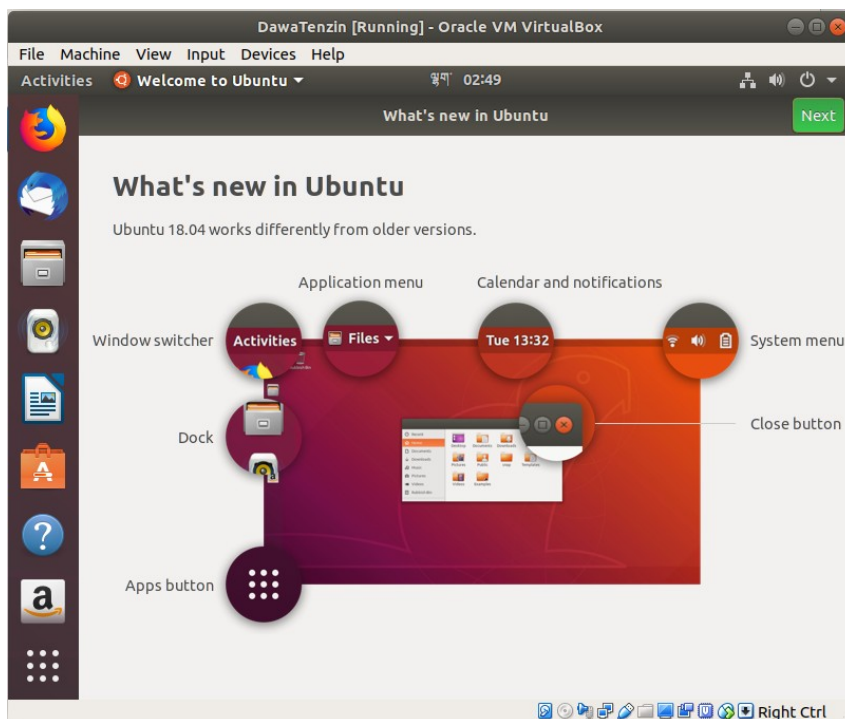
Step15:

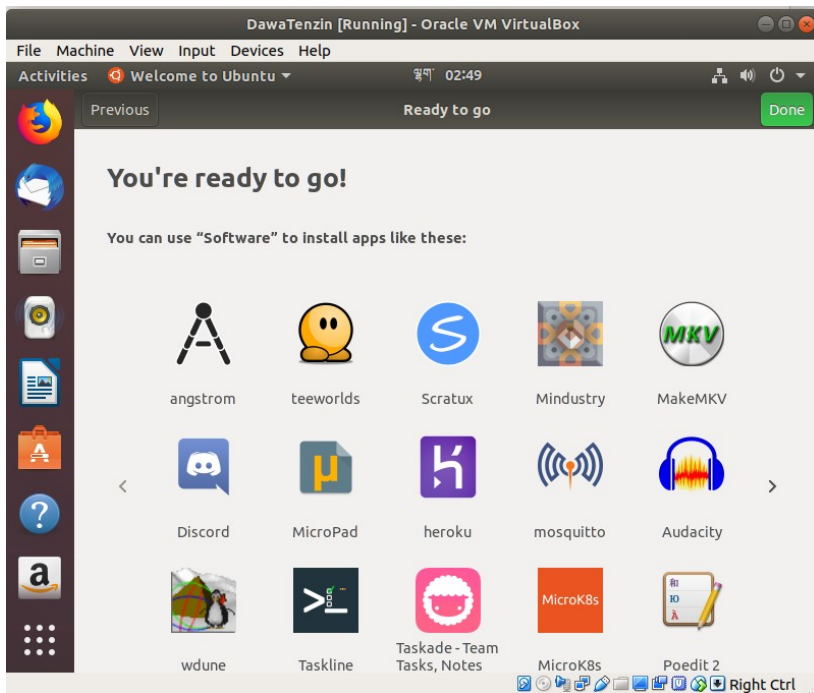
Then it will ask for the password that we have to enter where we have made before...



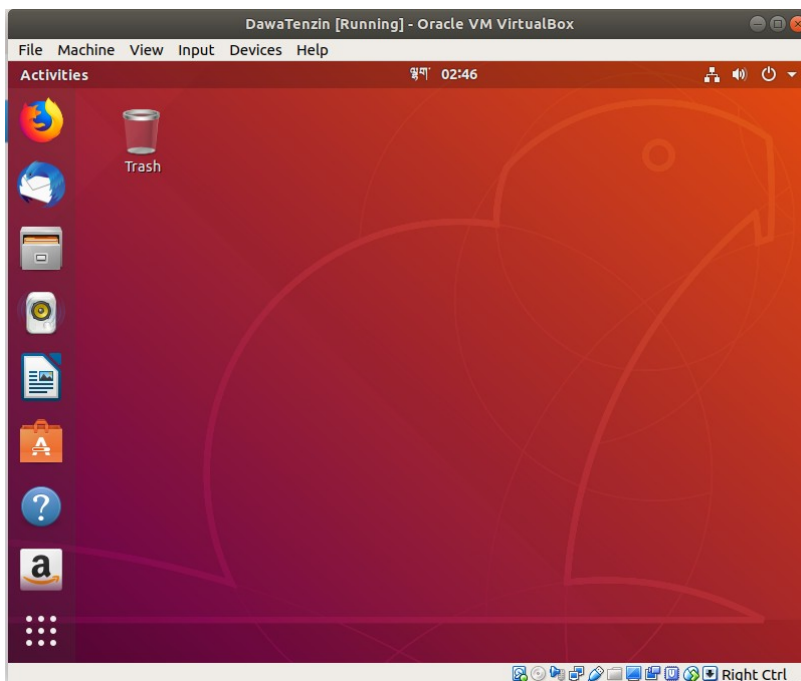
Step16:

when we reach to the final destination it will show some of the updates and the introduction to the new features..





Step 17:
Finally the work of the installation of the Ubuntu have been finished.



Brief note on virtualization technology.

Virtualization is a word used in computing. Virtualization means that the users (programs, or real people) only see an abstraction of a computer resource. Virtualization can be done in software, or with hardware. ... Virtual memory makes it possible to use more memory than is physically in the computer.

Benefits of Virtualization

- Reduced capital and operating costs.
- Minimized or eliminated downtime.
- Increased IT productivity, efficiency, agility and responsiveness.
- Faster provisioning of applications and resources.

Examples include VMware Workstation and SWSOft's Parallels Desktop