/*_____
Assignment no :- 2
Title:- Installation and Configuration of virtualization using KVM.
Name:-Pravin Jain Roll No:-74 Batch:-T4 Subject:-AI
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Steps:

1. Before you begin with installing KVM, check if your CPU supports hardware virtualization:

```
egrep -c '(vmx|svm)' /proc/cpuinfo
```

If the command returns a value of **0**, your processor is not capable of running KVM. On the other hand, any other number means you can proceed with the installation.

2. Now, check if your system can use KVM acceleration by typing:

```
sudo kvm-ok
```

If **kvm-ok** returns an error stating KVM acceleration cannot be used, try solving the problem by installing cpu-checker.

3. To install cpu-checker, run the following command:

```
sudo apt install cpu-checker
```

4. When the installation completes, restart the terminal.

You are now ready to start installing KVM.

```
swl-12@COMP-SWL-12:~$ sudo apt install cpu-checker
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following package was automatically installed and is no longer required:
  libfwupdplugin1
Use 'sudo apt autoremove' to remove it.
The following additional packages will be installed:
  msr-tools
The following NEW packages will be installed:
  cpu-checker msr-tools
0 upgraded, 2 newly installed, 0 to remove and 17 not upgraded.
Need to get 17.2 kB of archives.
After this operation, 67.6 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://in.archive.ubuntu.com/ubuntu impish/main amd64 msr-tools amd64 1.3-3build1 [10.2 kB]
Get:2 http://in.archive.ubuntu.com/ubuntu impish/main amd64 cpu-checker amd64 0.7-1.2 [6,992 B]
Fetched 17.2 kB in 0s (123 kB/s)
Selecting previously unselected package msr-tools.
(Reading database ... 228093 files and directories currently installed.)
Preparing to unpack .../msr-tools_1.3-3build1_amd64.deb ...
Unpacking msr-tools (1.3-3build1) ...
Selecting previously unselected package cpu-checker.
Preparing to unpack .../cpu-checker_0.7-1.2_amd64.deb ...
Unpacking cpu-checker (0.7-1.2) ...
Setting up msr-tools (1.3-3build1) ...
Setting up cpu-checker (0.7-1.2) ...
Processing triggers for man-db (2.9.4-2) ...
swl-12@COMP-SWL-12:~$ sudo kvm-ok
INFO: /dev/kvm exists
KVM acceleration can be used
swl-12@COMP-SWL-12:~$
```

Install KVM on Ubuntu 20.04

Step 1: Install KVM Packages

1. First, update the repositories:

```
sudo apt update
```

2. Then, install essential KVM packages with the following command:

```
sudo apt install qemu-kvm libvirt-daemon-system libvirt-clients bridge-utils
```

3. When prompted, type **`Y`**, press **ENTER**, and wait for the installation to finish.

No need of Step 2

Step 3: Verify the Installation

1. Confirm the installation was successful by using the **`virsh`** command:

```
virsh list --all
```

```
swl-12@COMP-SWL-12:~$ virsh list --all
 Id   Name   State
--------------------
```

If no error occurs then no need to implement below steps and if error occurs then use the below steps:

2. Or use the **`systemctl`** command to check the status of libvirtd:

```
sudo systemctl status libvirtd
```

3. Press `Q` to quit the status screen.

4. If the virtualization daemon is not active, activate it with the following command:

```
sudo systemctl enable --now libvirtd
```

Creating a Virtual Machine on Ubuntu 20.04

1. Install virt-manager, a tool for creating and managing VMs:

```
sudo apt install virt-manager
```

2. Type `Y` and press **ENTER**. Wait for the installation to finish.

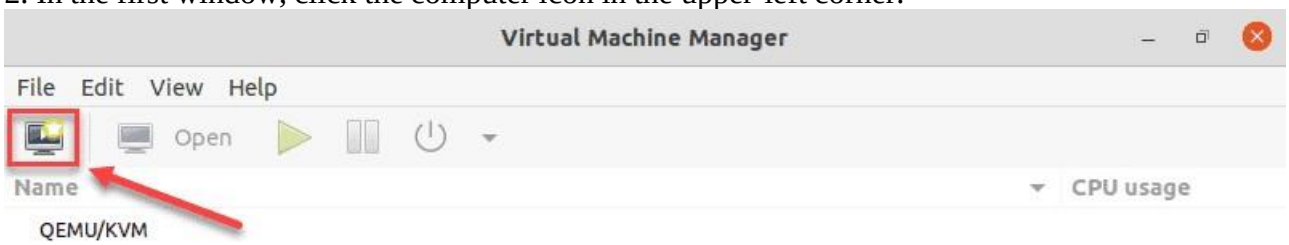
Make sure you download an ISO containing the OS you wish to install on a VM and proceed to pick an installation method.

Virt Manager GUI

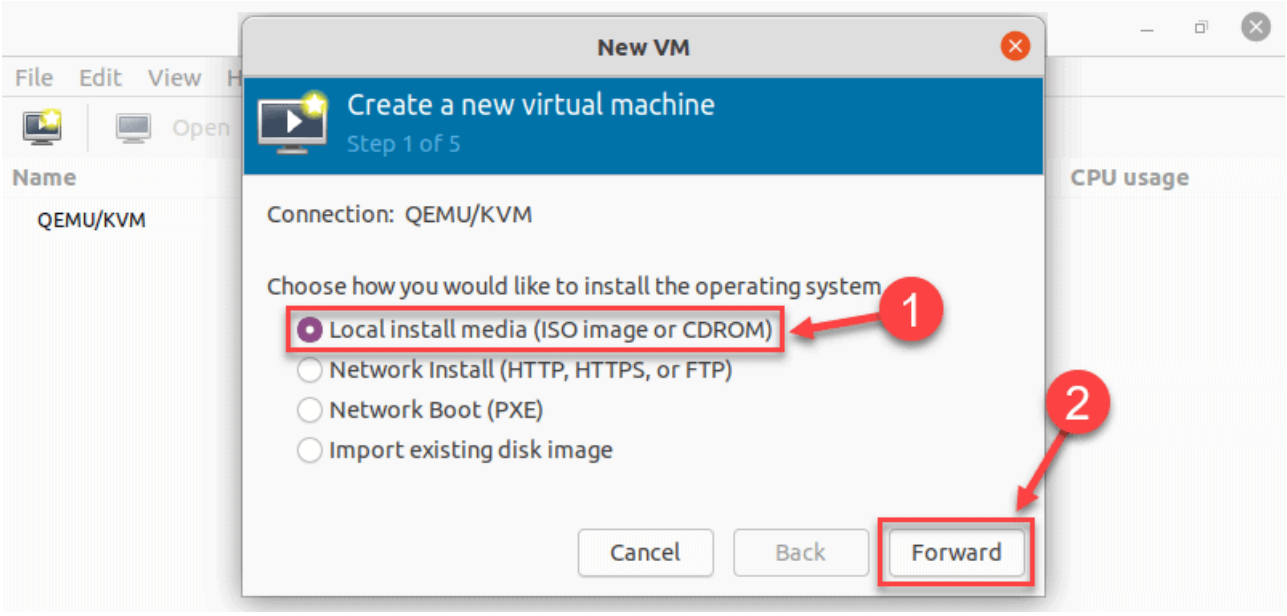
1. Start virt-manager with:

```
sudo virt-manager
```

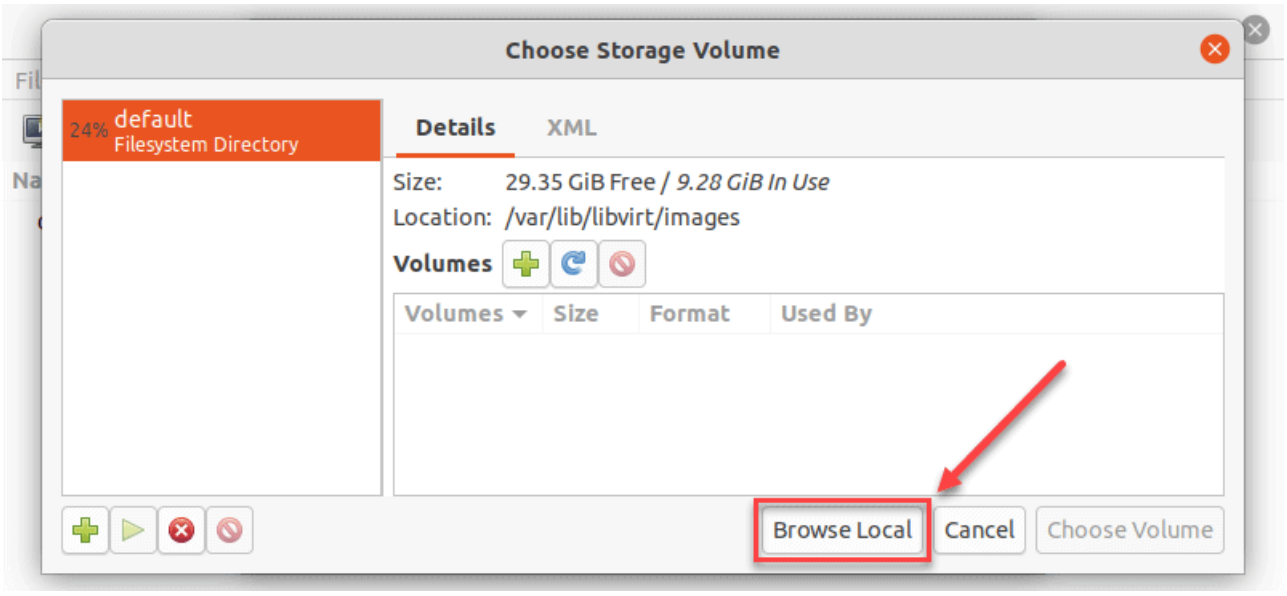
2. In the first window, click the computer icon in the upper-left corner.

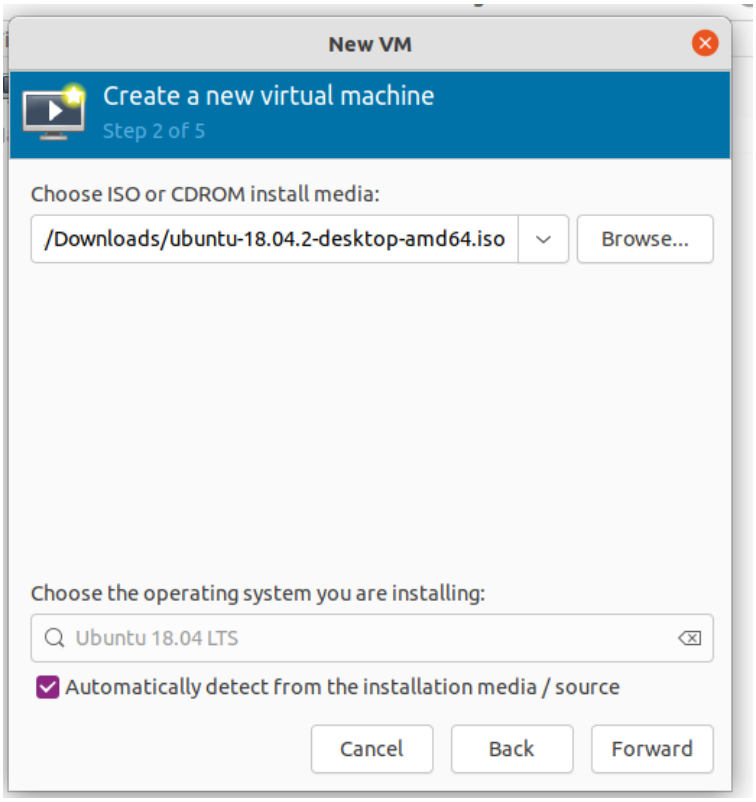


3. In the dialogue box that opens, select the option to install the VM using an ISO image. Then click **Forward**.



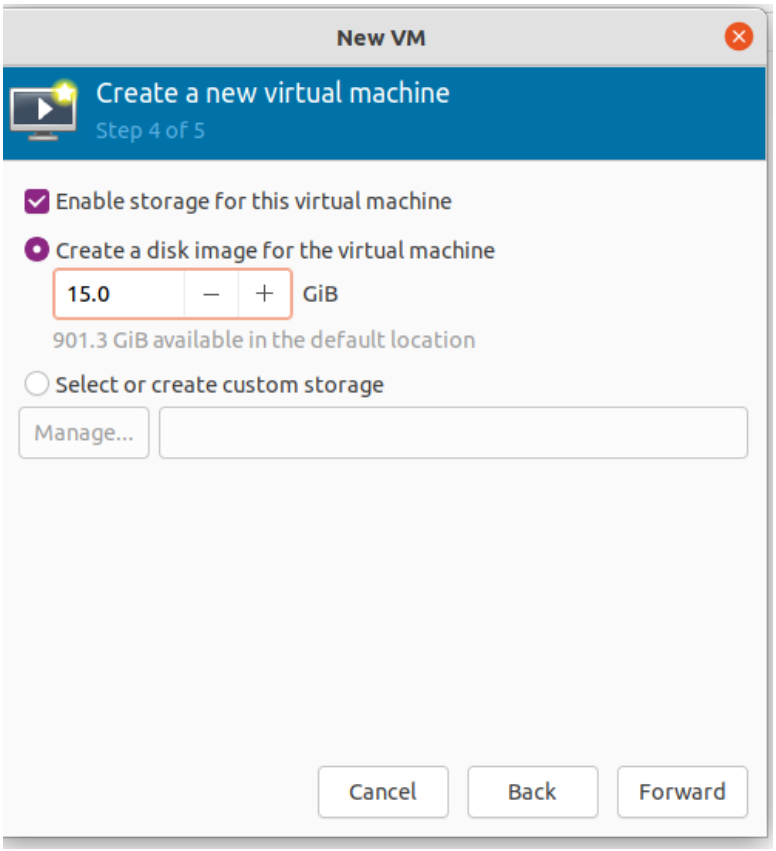
4. In the next dialogue, click **Browse Local** and navigate to the path where you stored the ISO you wish to install.



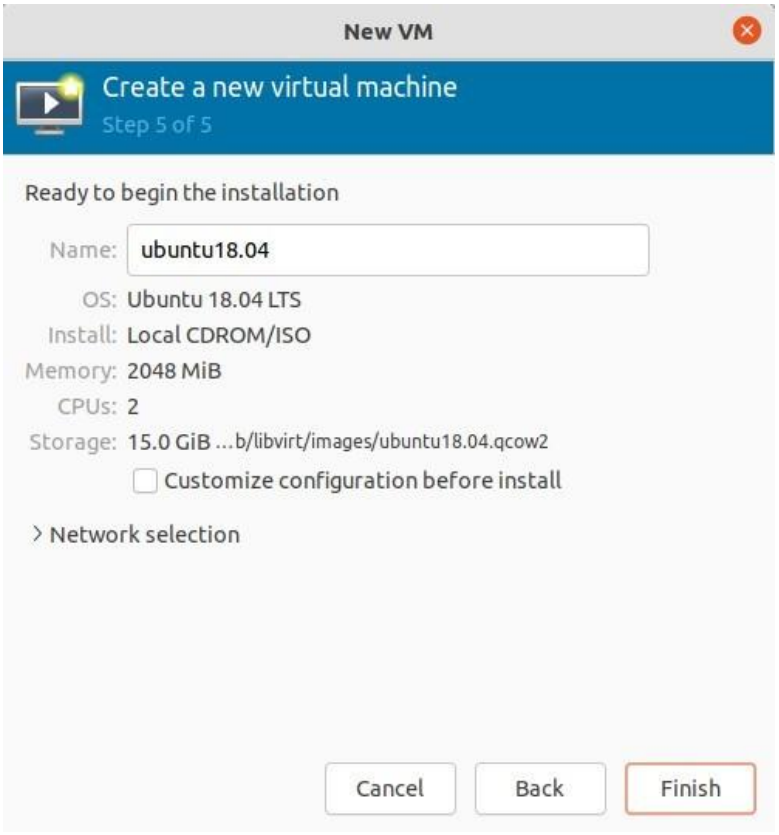


Forward

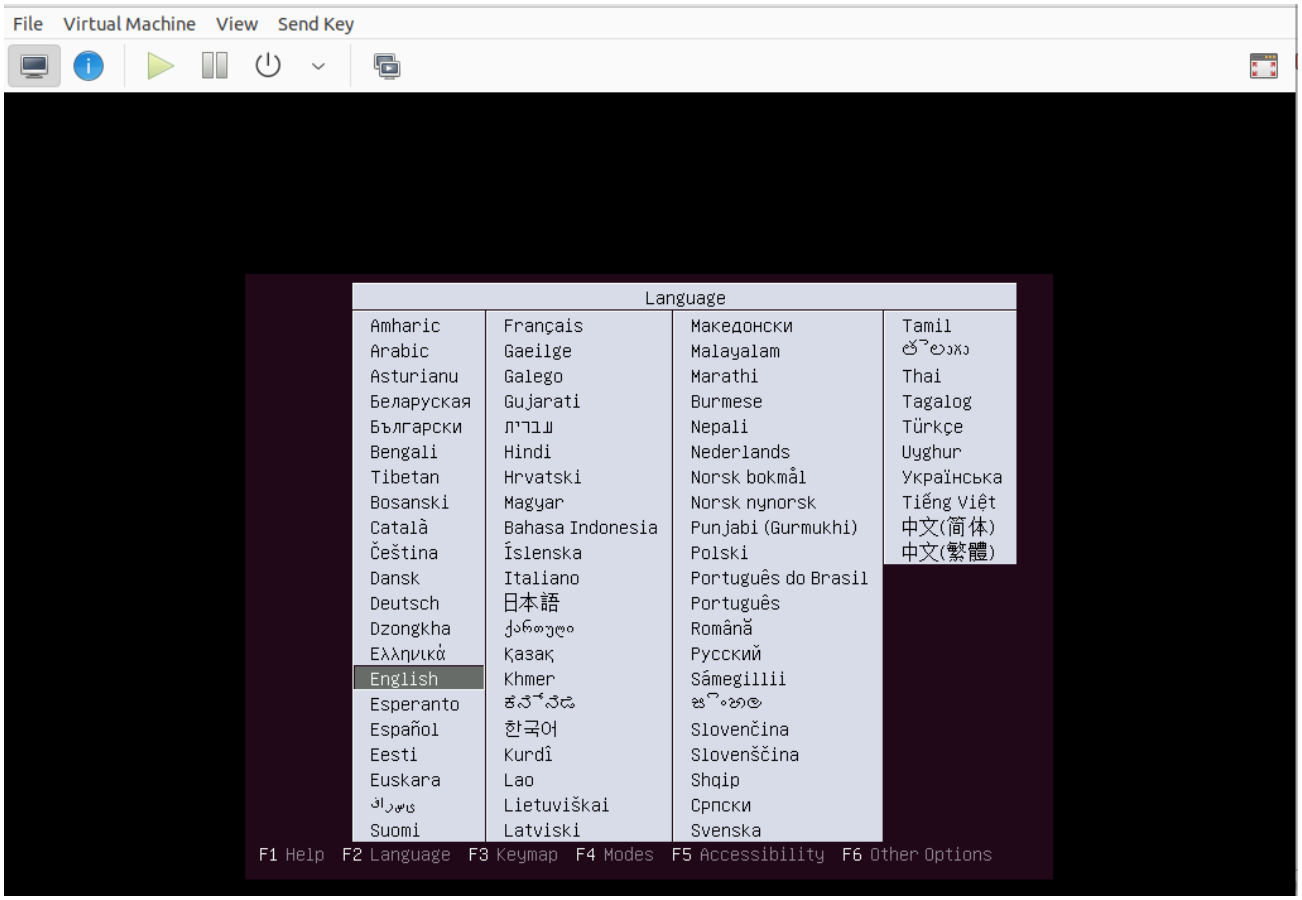
Forward



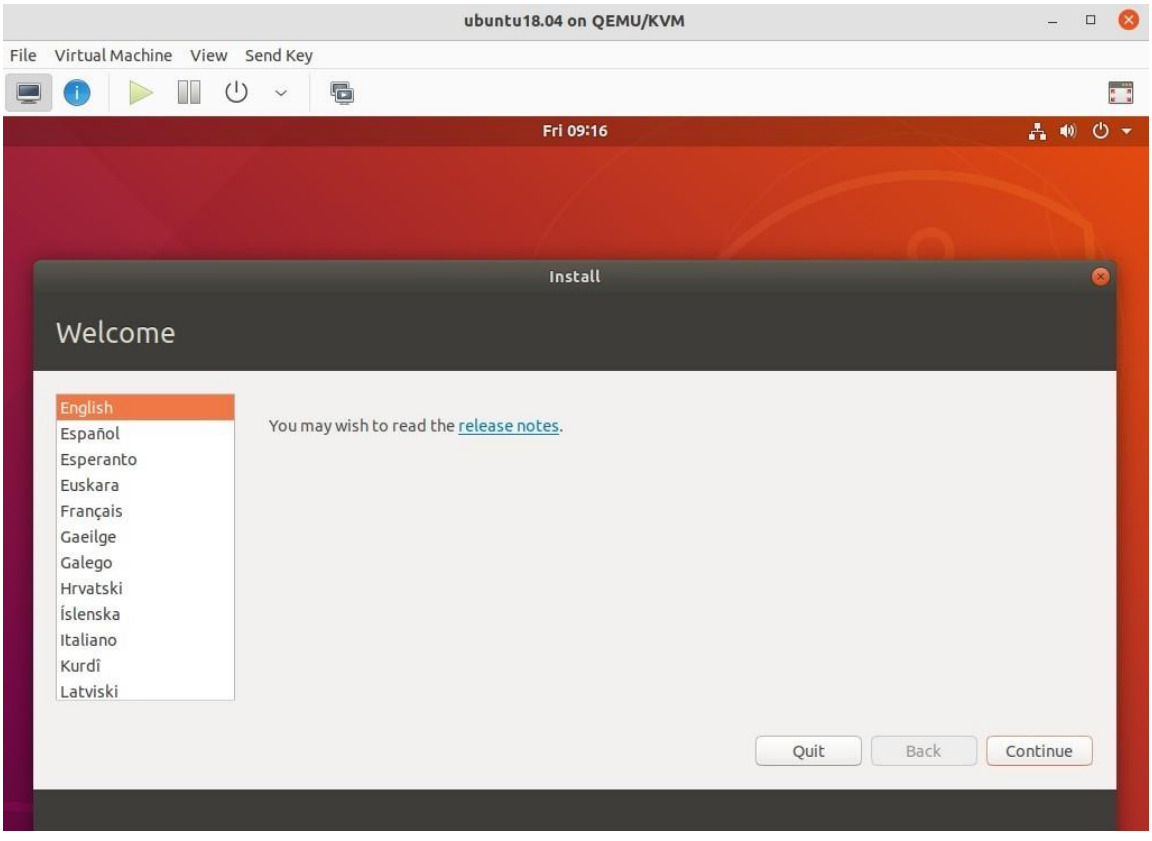
Forward



Finish

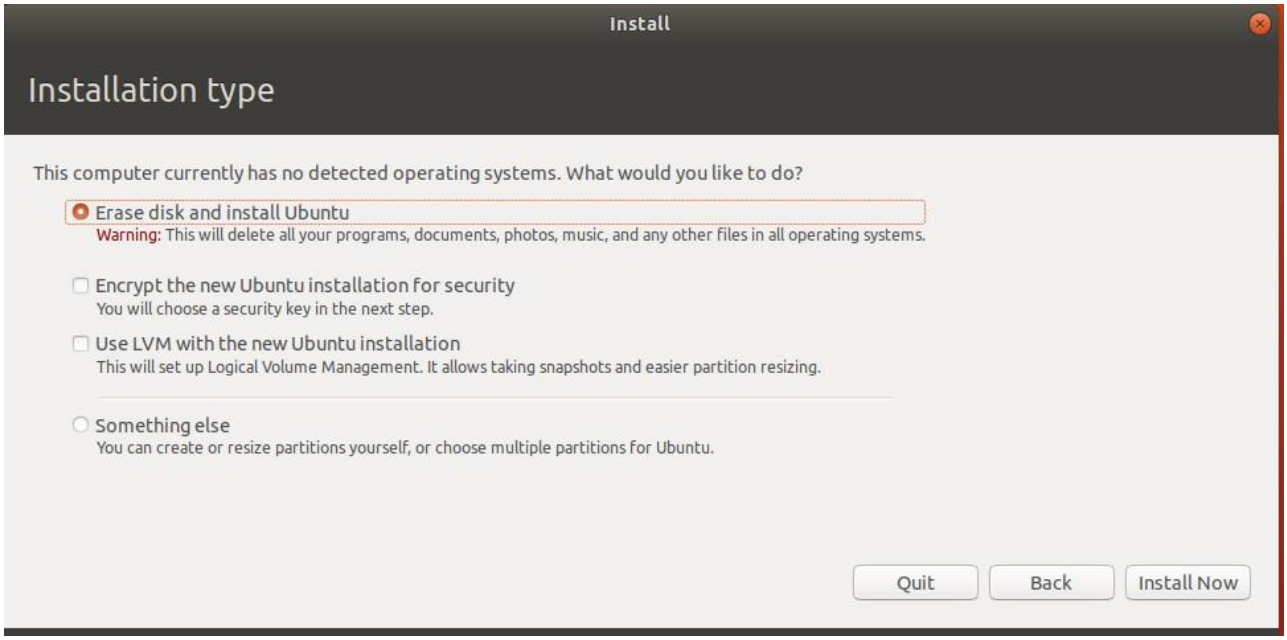


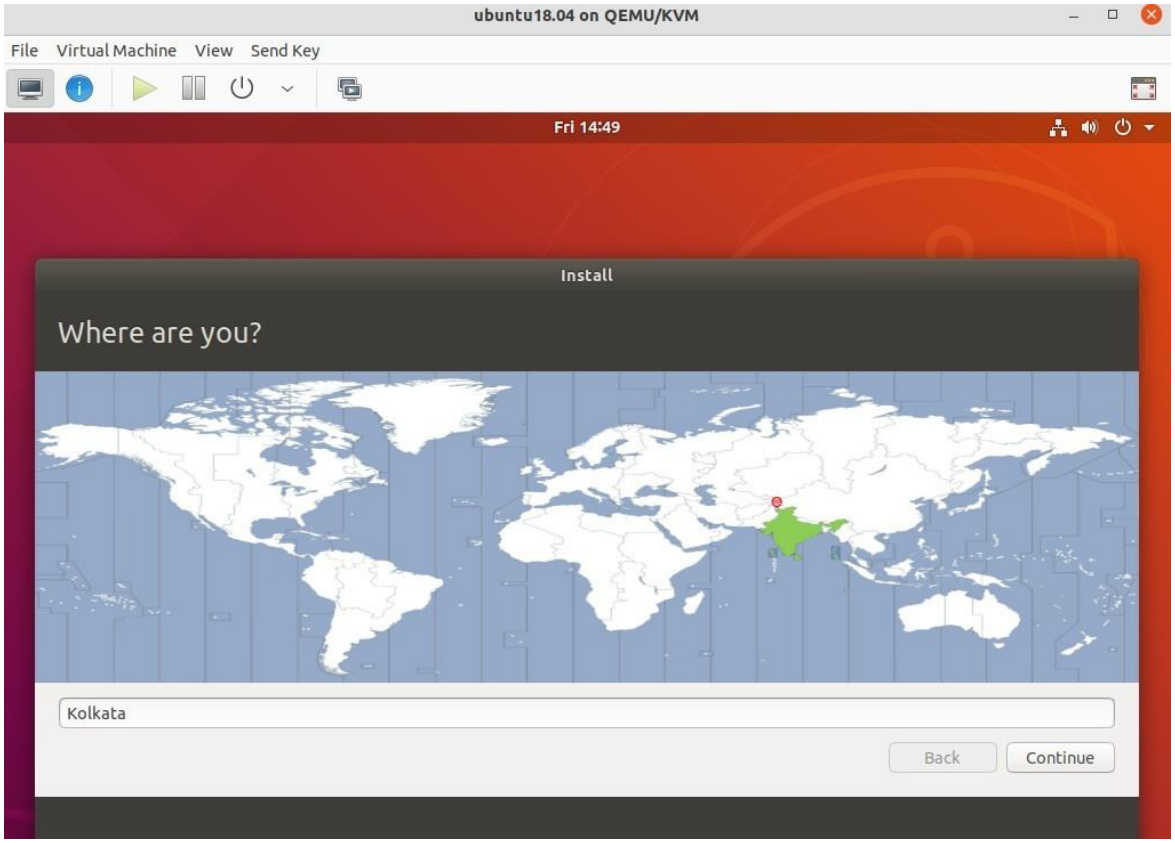
Enter --> select option Installing Ubuntu



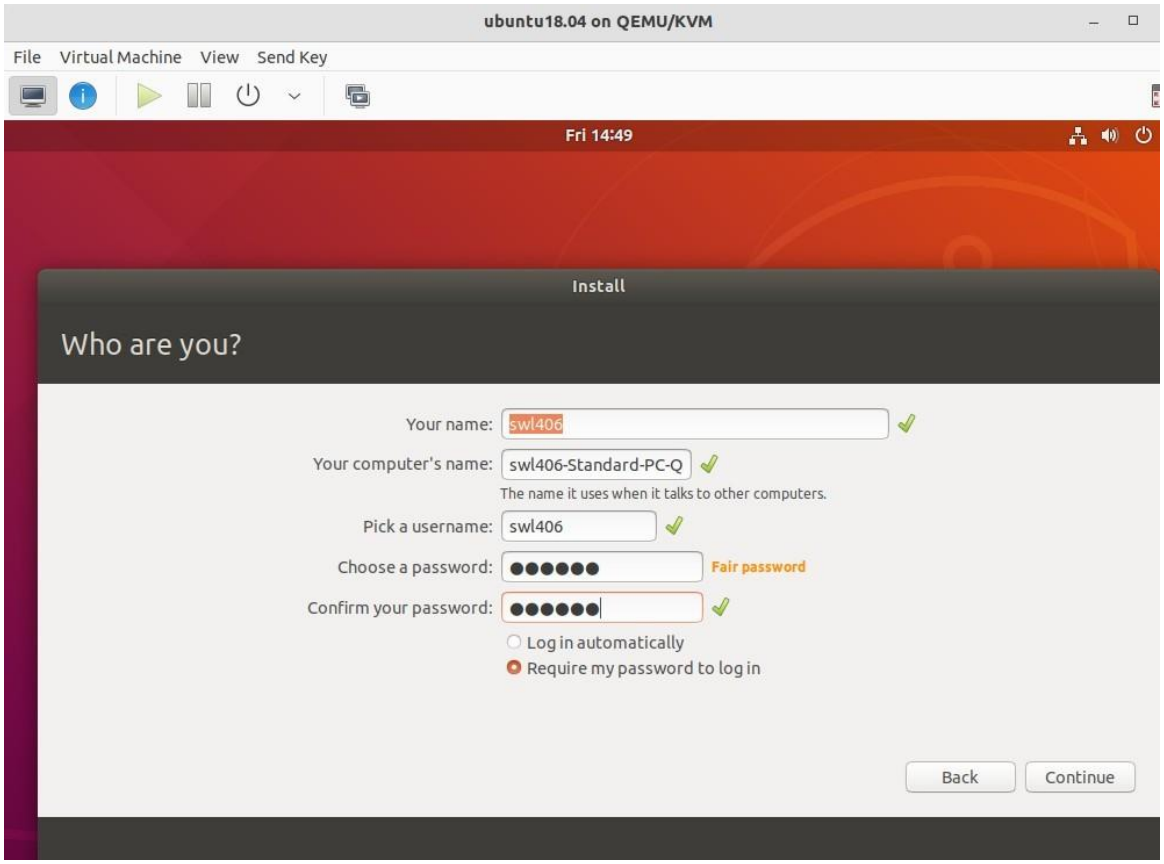
Continue


Install
Updates and other software
What apps would you like to install to start with?
Normal installation
Web browser, utilities, office software, games, and media players.
Minimal installation
Web browser and basic utilities.
Other options
Download updates while installing Ubuntu
This saves time after installation.
Install third-party software for graphics and Wi-Fi hardware and additional media formats
This software is subject to license terms included with its documentation. Some is proprietary.
Quit
Back
Continue


Install
Installation type
This computer currently has no detected operating systems. What would you like to do?
Erase disk and install Ubuntu
Warning: This will delete all your programs, documents, photos, music, and any other files in all operating systems.
Encrypt the new Ubuntu installation for security
You will choose a security key in the next step.
Use LVM with the new Ubuntu installation
This will set up Logical Volume Management. It allows taking snapshots and easier partition resizing.
Something else
You can create or resize partitions yourself, or choose multiple partitions for Ubuntu.
Quit
Back
Install Now



Continue



Continue

To remove virtual machine completely:

sudo apt-get remove --auto-remove virt-manager