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COMPUTER SCIENCE & ENGINEERING

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Experiment : 2.3

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Branch: BE-CSE   **Section/Group:** 601 A

Semester: 6th   **Date of Performance** 18-03-2024

Subject Name: Cloud Computing   **Subject Code:** 21CSH-355

1. **Aim:** To implement IaaS by installing OpenStack

2. **Software Required:**
   a. VM VirtualBox
   b. Ubuntu OS

3. Procedure/Steps:
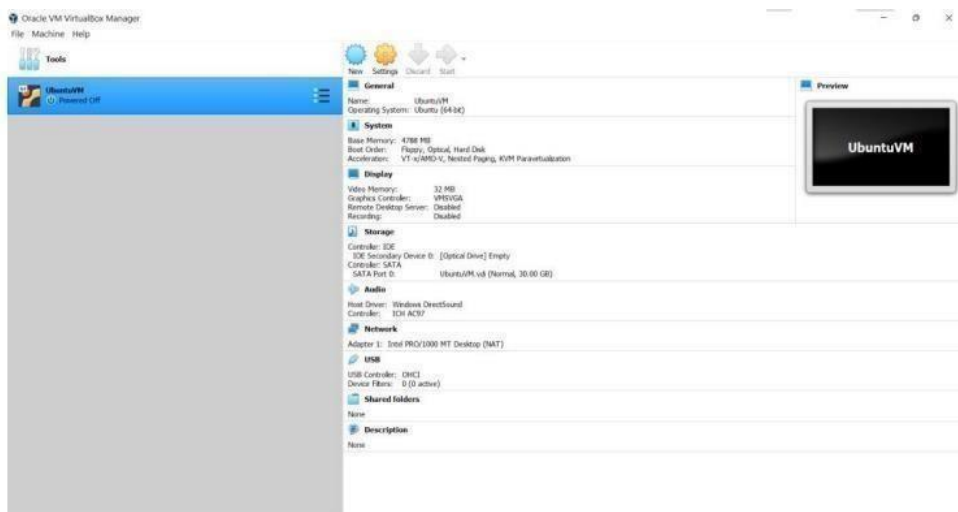
1. Open VirtualBox with Virtual Ubuntu OS installed in it.
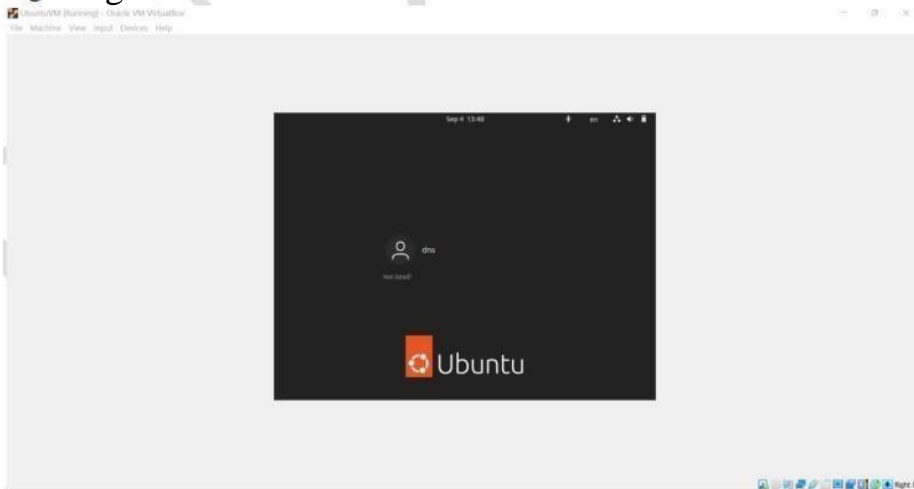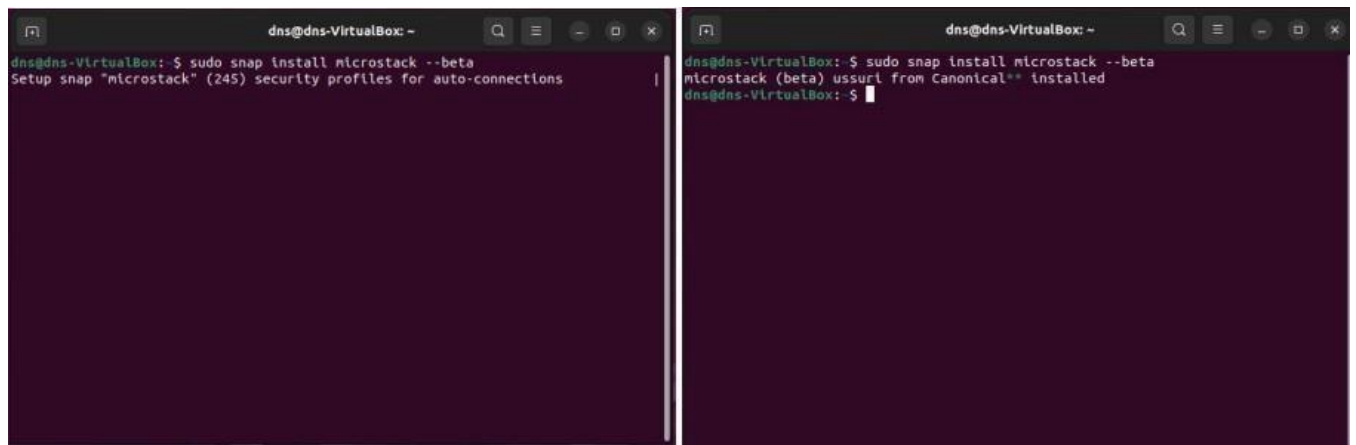

Fig 1

2. Login to the Ubuntu OS.

Fig 2

3. Open Terminal and type the command
   a. sudo snap install microstack --beta

Fig 3

4. Check installation completion with the command
   a. snap list microstack

Fig 4

5. Initialize microstack with the command

 a. sudo microstack init --auto –control

Fig 5

6. After initialization of OpenStack. Use browser to launch OpenStack Dashboard. Use the IP address 10.20.20.1 to login to the dashboard.
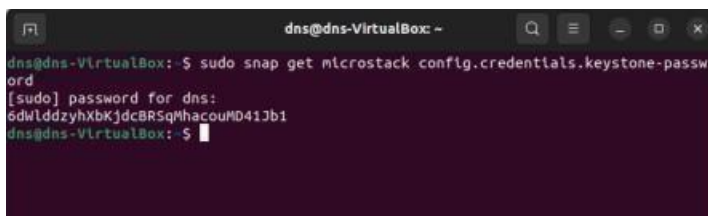
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 Fig
6

7. Use "admin" as username. Get password for the login from Terminal using the command

   a. sudo snap get microstack config.credentials.keystone-password

 Fig
7

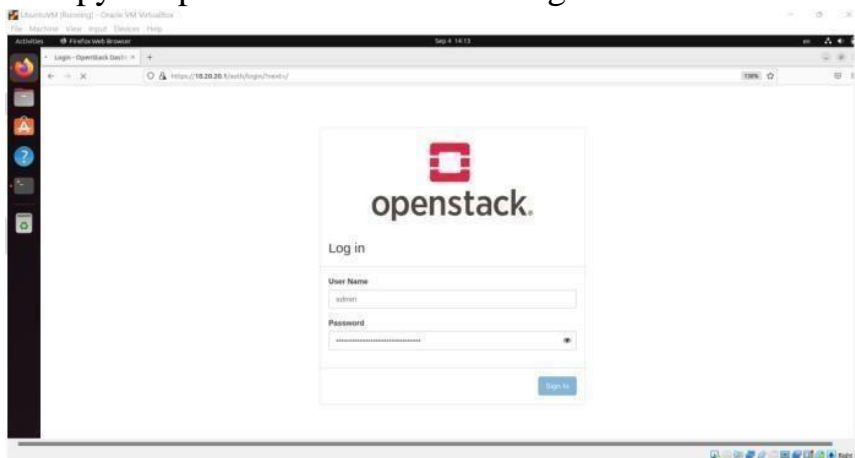8. Copy the password and use it to login to the dashboard.

Fig 8

9.Open Images Tab and click Create Image
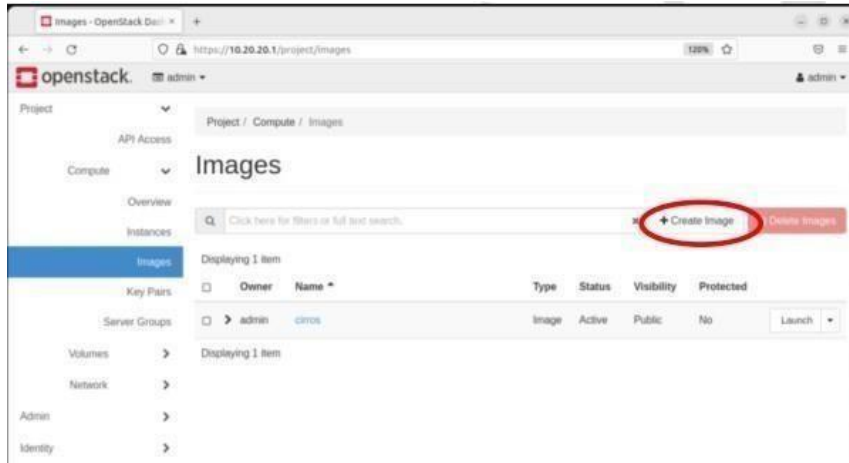
Fig 9

10. Provide the Image downloaded from https://docs.openstack.org/image-guide/obtainimages.html to create a new image. a. Provide Image Name

Fig 9

b. Choose Image Source – Downloaded Cloud OS Image
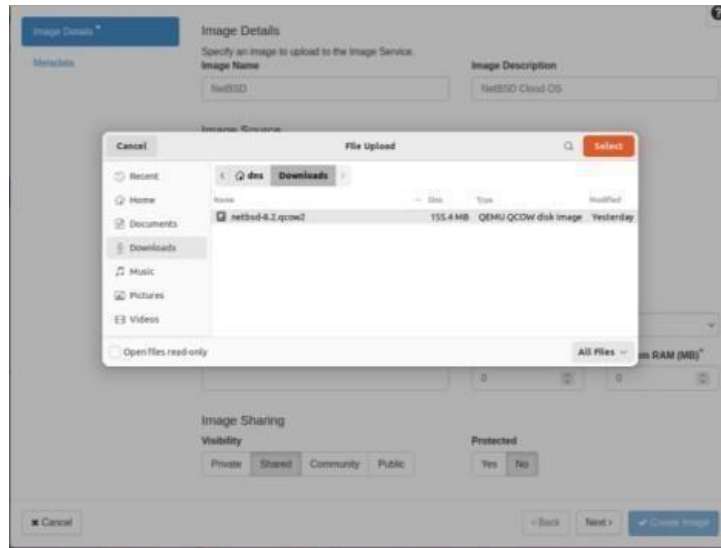
Fig 10

c. Choose File Format QCOW2
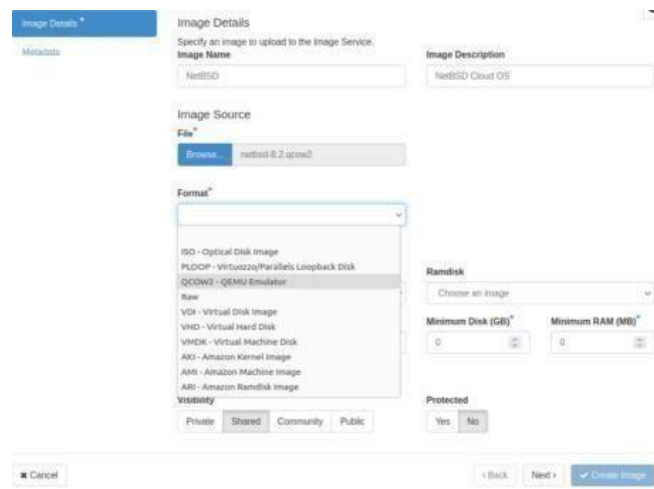
Fig 11

d. Choose Visibility Public and Create Image

Fig 12

11. Create Instance from the available Images using web interface or Terminal Interface.
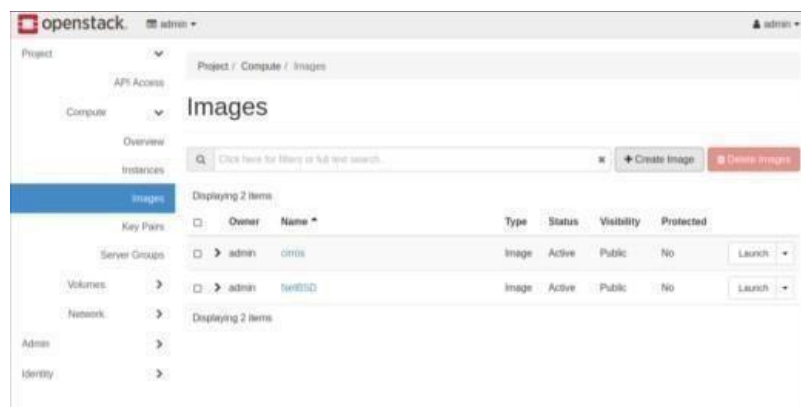
Fig 13

12. Instance Creation Using Web Interface

a. Open Interfaces section and select Launch Instance
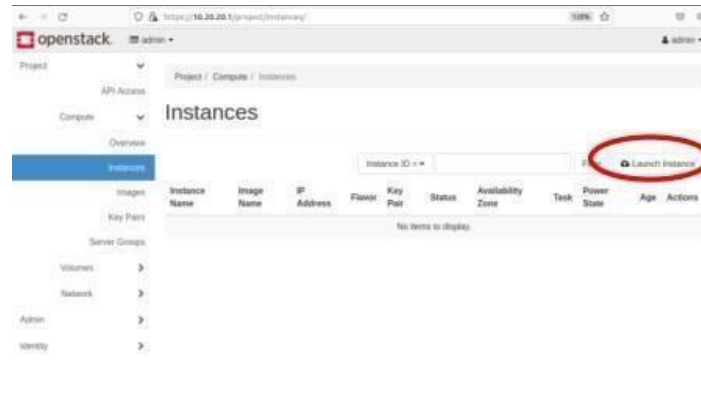
Fig 14

b. Provide Instance Name and select Next

Fig 15

c. Select "cirros" as source form the available images

d. Select Flavor "m1.tiny" from the available Flavors

Fig 16

e. Select "external" network as the network for the Instance

Fig 17

Fig 18

f. Network Ports and Security Group use the default Options. In Key Pair Section Create a new SSH Key Pair with name "microstack" and select it

Fig 19

g. Provide Key Name "microstack" and Choose Key Type as "SSH"

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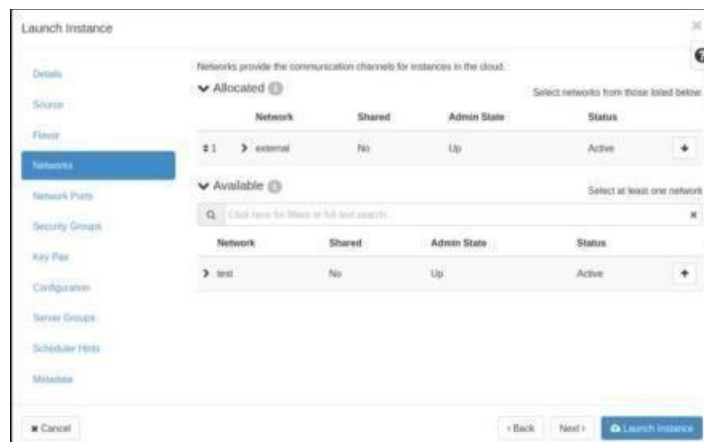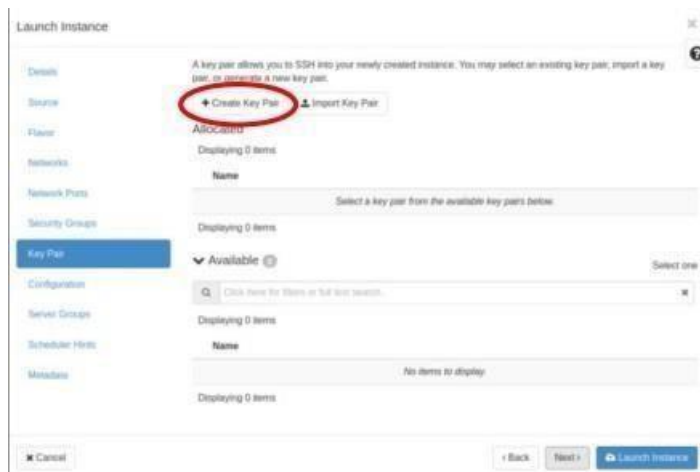# COMPUTER SCIENCE & ENGINEERING
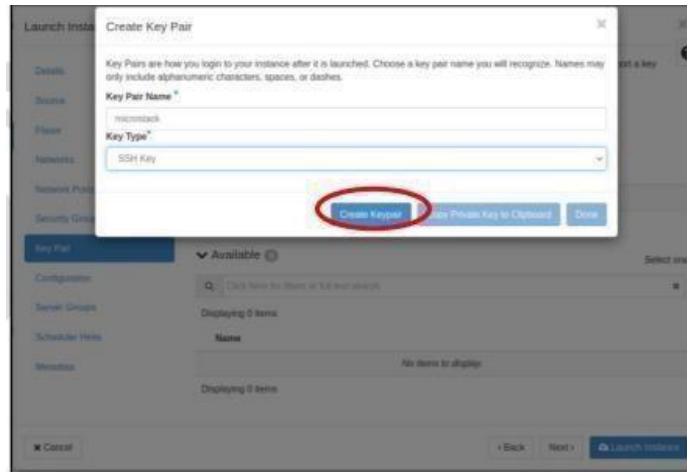
Fig 20
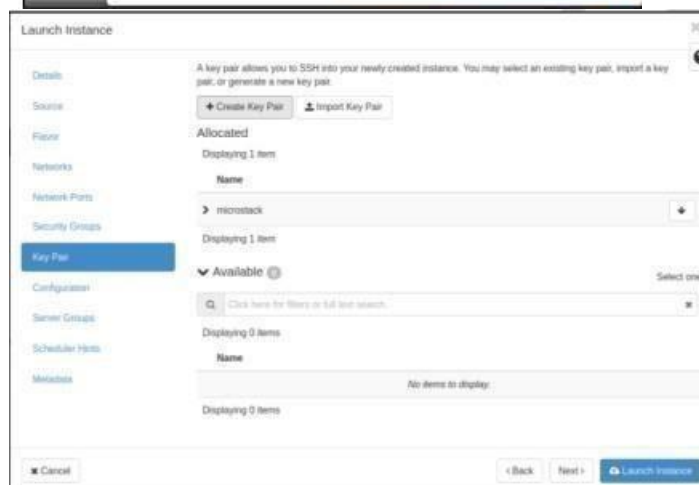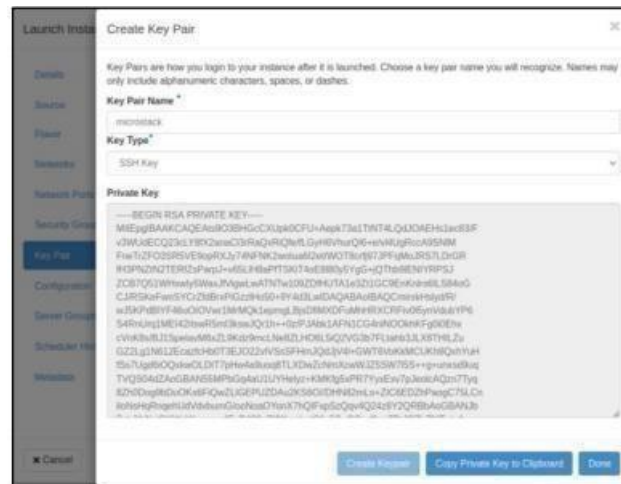
Fig 21

h. Remaining Options "Configuration", "Server Groups", "Scheduler Hints" and "Metadata" keep the default values. Launch the Instance.

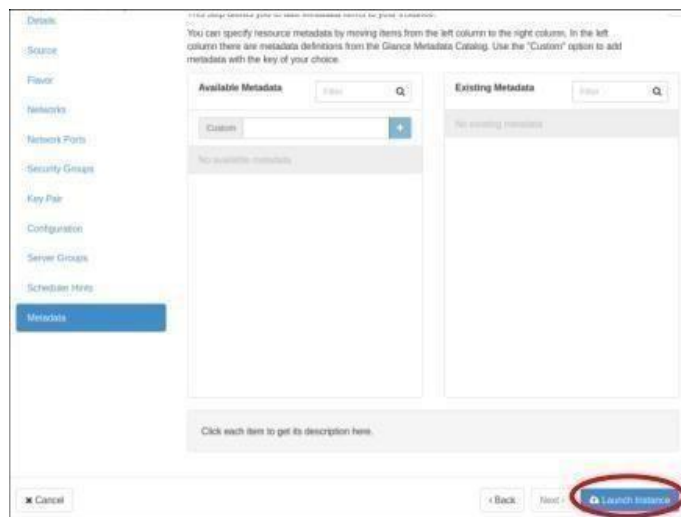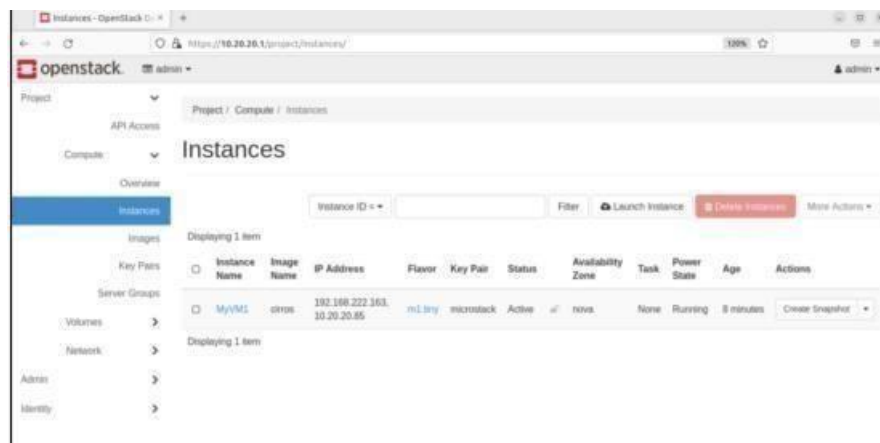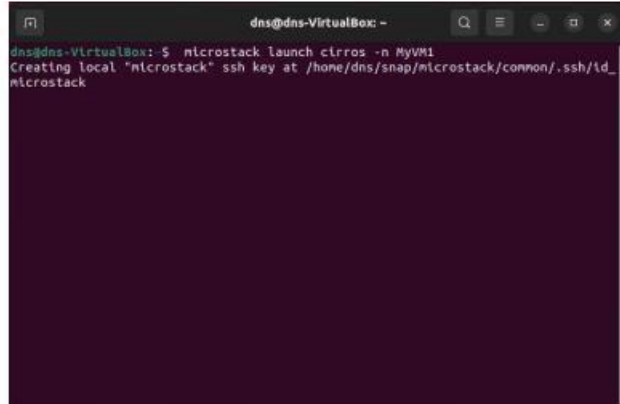
Fig 22

Fig 23

13. Instance Creation using Terminal Interface using the given command
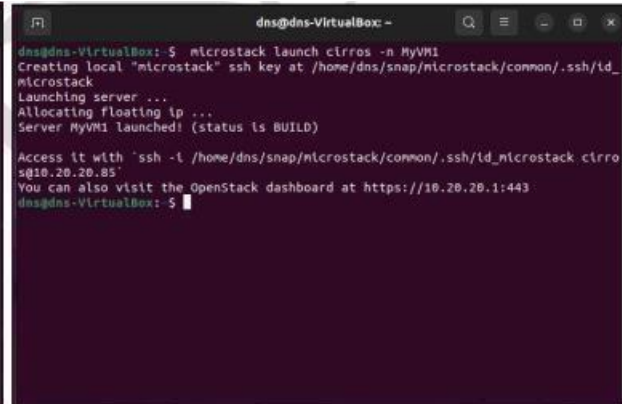
a. microstack launch cirros -n MyVM1

| Fig 24 | Fig 25 |

14. Type the "ssh" command created to login to the system
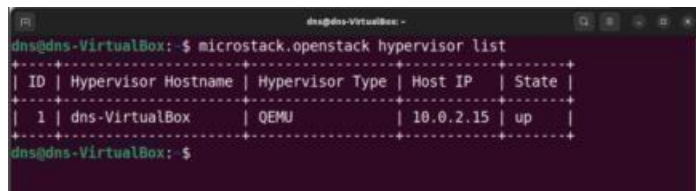
15. Enter "gocubsgo" as the password to login to the instance. Create a folder "test" and display it.

Fig 26

14. Try Creating another Instance with NetBSD Image using the Command a. Get the host name using microstack.openstack hypervisor list

Fig 27

b. Use the Terminal Command microstack launch NetBSD -n MyVM2 -f m1.small -t external - -availability-zone nova:dns-VirtualBox

Result: Thus implementation of OpenStack installation to realize IaaS is completed and verified.

Fig 28

6. Analysis:

Constructing Infrastructure as a Service (IaaS) through OpenStack involves orchestrating a symphony of components: Nova, Swift, Cinder, Neutron, Keystone, Glance, and Horizon. This intricate dance demands a deep dive into hardware prerequisites, network intricacies, storage nuances, security fortifications, and seamless integration with existing ecosystems. Vigilant oversight, adept management, and empowering education form the bedrock for sustaining peak performance and ensuring a frictionless experience. While OpenStack empowers with flexibility and dominion over infrastructure, organizations must navigate the fiscal landscape and invest judiciously in expertise to unlock its full potential.