

VARDHAMAN COLLEGE OF ENGINEERING **(AUTONOMOUS)**

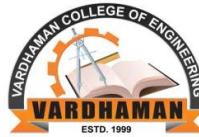
Affiliated to **JNTUH**, Approved by **AICTE**, Accredited by **NAAC** with **A++** Grade, **ISO 9001:2015** Certified
Kacharam, Shamshabad, Hyderabad - 501218, Telangana, India

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DEPARTMENT OF **COMPUTER SCIENCE & ENGINEERING** **(ARTIFICIAL INTELLIGENCE & MACHINE LEARNING)**

LABORATORY RECORD

Registration Number	:	21881A6676
Student Name	:	Chetla Praneeth Kumar
Class / Semester	:	III B. TECH II
Course Name	:	Cloud Computing & Virtualization
Course Code	:	A7514
Academic Year	:	2023-24
Regulation	:	VCE-R21



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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING (ARTIFICIAL INTELLIGENCE & MACHINE LEARNING)

CERTIFICATE

*Certified that this is the bonafied record of practical work
done by Mr. Chetla Praneeth Kumar, Roll Number 21881A6691
of B.Tech III Year CSE(AI&ML) in the Cloud Computing &
Virtualization laboratory during the year 2023-24.*

Date:

HOD

Staff Incharge

Internal Examiner

External Examiner

1. Course Description:

Course Overview

This course provides a hands-on comprehensive study of Cloud concepts and capabilities across the various Cloud service models including Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS). In IaaS mainstream Cloud infrastructure services and related vendor solutions are covered in detail. The course also covers the Cloud migration and security model. Students will gain hands-on experience on virtual box and advanced open-source tools like Azure, Open stack and Eucalyptus. The major motto of this course is to not just stick with the academic portion but also to encourage students to prepare for cloud certifications to brighten their future endeavours in IT sectors.

2. Course Outcomes (COs)

After the completion of the course, the student will be able to:

A7514.1 Demonstrate cloud services, architecture and layers in cloud environment.

A7514.2 Identify the cloud migration model and challenges of integration in cloud sectors.

A7514.3 Make use of virtualization concepts in cloud.

A7514.4 Select cloud storage, privacy approaches for efficient implementation of cloud.

A7514.5 Implement IaaS / PaaS service on a public cloud using any open-source tool.

INDEX

S.No	Date	Title of the Experiment	Page	Signature
1		Install the Virtual Box (or) a Malware work station and launch Linux Server		
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4		Launch Linux Server through Azure Portal.		
5		Perform scaling in Azure Portal.		
6		Implementing locks in Azure Portal.		
7		Create a Ubuntu VM and transfer files using WinScp		
8		How to make Linux server as web server in AZURE.		
9		Setup and configure AZURE web server for windows server(IIS).		
10		How we are adding new users, login credentials, changing owner, create authorized key files.		
11		Create a Windows VM and transfer files from desktop to remote desktopVM.		
12		How to attach and detach data disks to Windows server in azure data center		
13		Create Azure Storage Account, Container and upload and delete objects in it.		

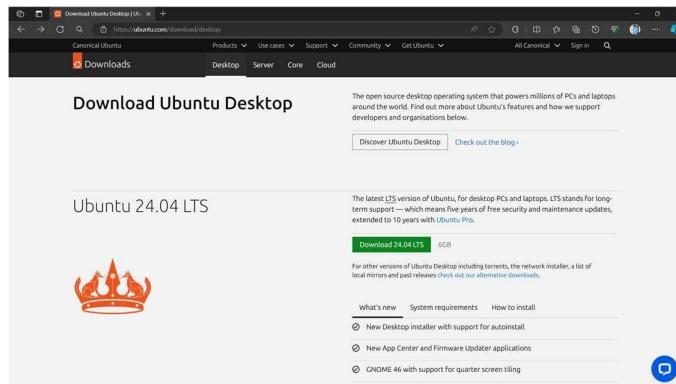
Q1. Install the Virtual Box (or) a Malware work station and launch Linux Server.

Step-1: Download VirtualBox for Windows and install it on your computer



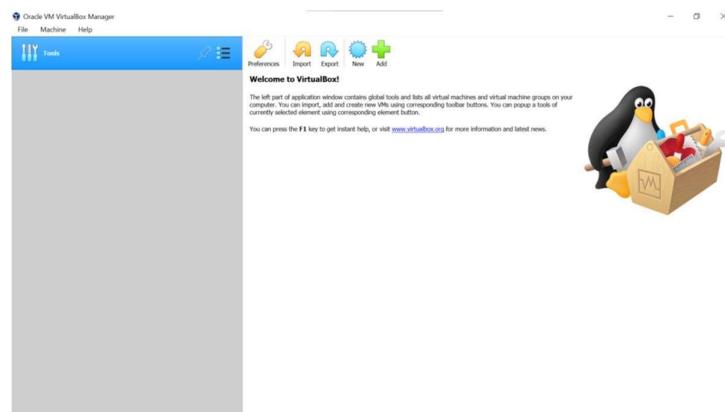
<https://www.virtualbox.org/wiki/Downloads>

Step-2: Download the Ubuntu ISO file you want to install from the Ubuntu download page.

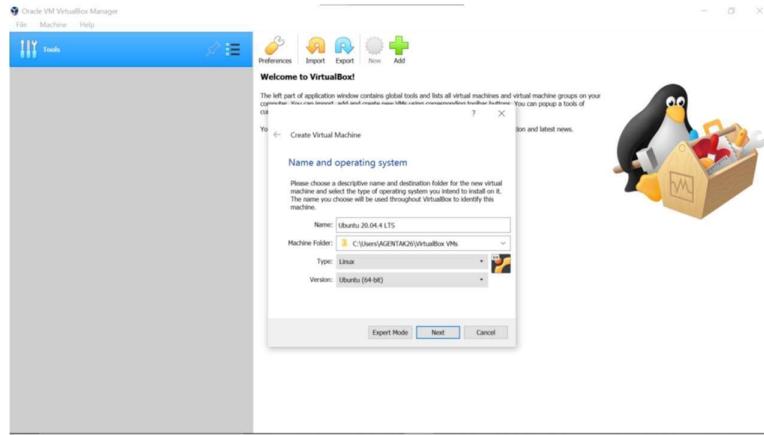


Note: The current version of Ubuntu only works on 64-bit machines.

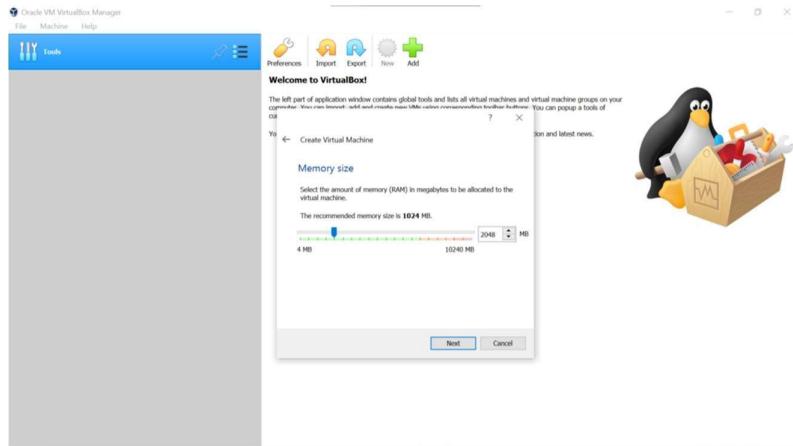
Step-3: Open VirtualBox and select New in the top taskbar.



Step-4: Give your VM a name, choose Linux as the Type, then choose Ubuntu as the Version and select Next.

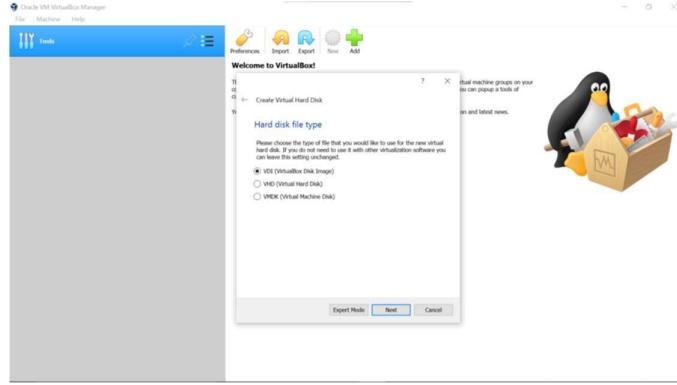


Step-5: Choose how much RAM you want to assign to the virtual machine and select Next. The recommended minimum is 1024 MB.



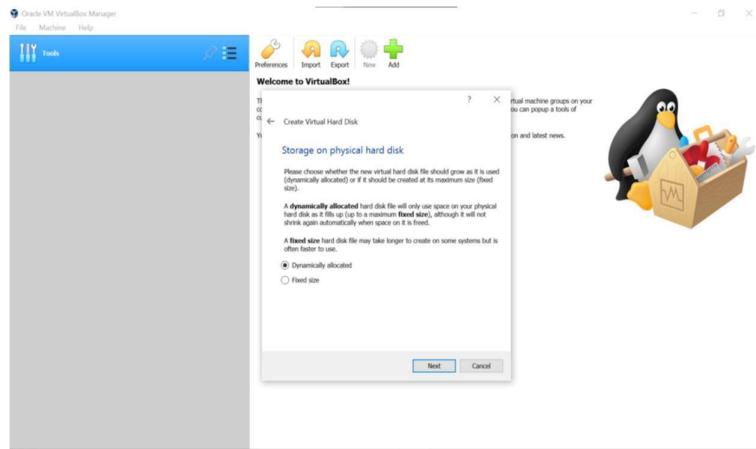
Step-6: Choose Create a virtual hard disk now and select Create.

Step-7: Choose VDI (VirtualBox Disk Image) and select Next.



Note on (VDI): Normally, Oracle VM VirtualBox uses its own container format for guest hard disks. This is called a Virtual Disk Image (VDI) file. This format is used when you create a new virtual machine with a new disk.

Step-8: Choose Dynamically allocated or Fixed size for the storage type and select Next.

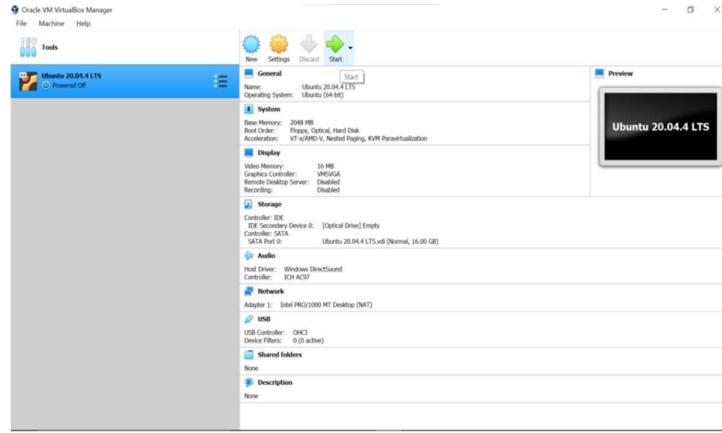


Tip: A fixed size disk performs better because the virtual machine doesn't have to increase the file size as you install software.

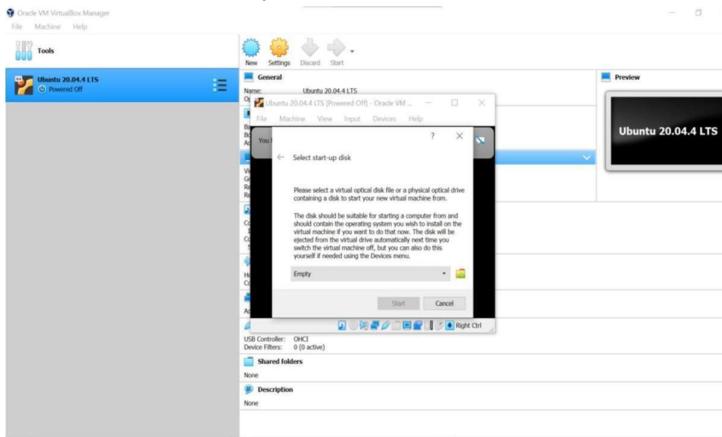
Step-9: Choose how much space you wish to set aside for Ubuntu and select Create.

Note: The amount of space you allocate for your virtual machine determines how much room you must install applications, so set aside a sample amount.

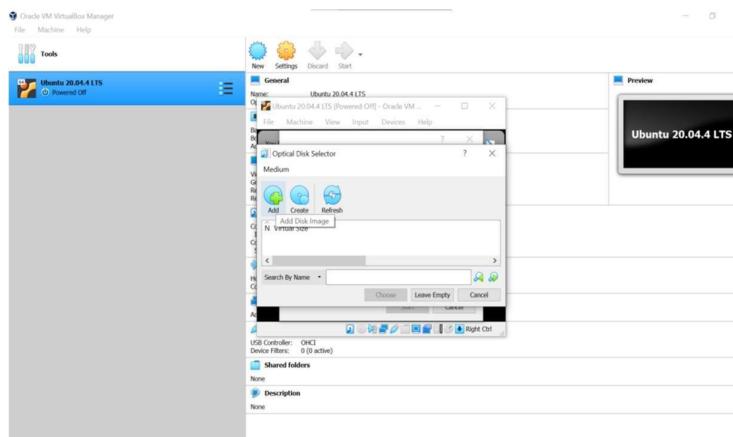
Step-10: The name of your virtual machine will now appear on the left side of the VirtualBox manager. Select Start in the toolbar to launch your VM.



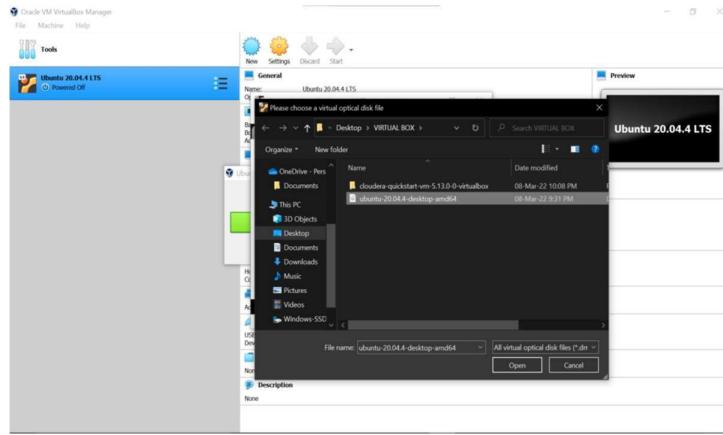
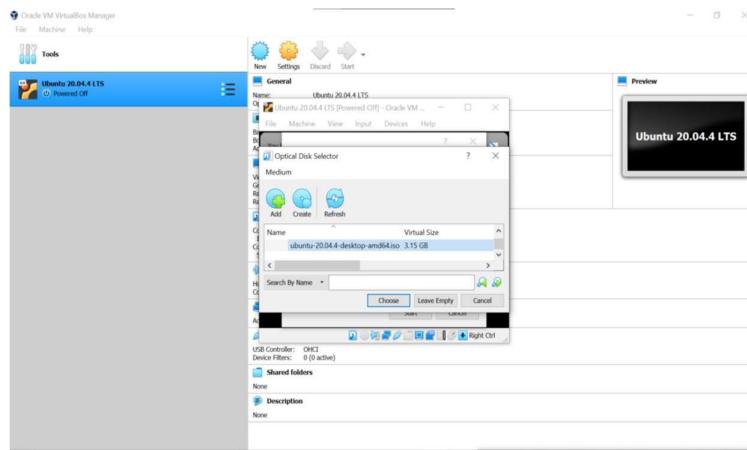
Step-11: This is the point where you need to choose the Ubuntu ISO file you downloaded earlier. If the VM doesn't automatically detect it, select the folder next to the Empty field.

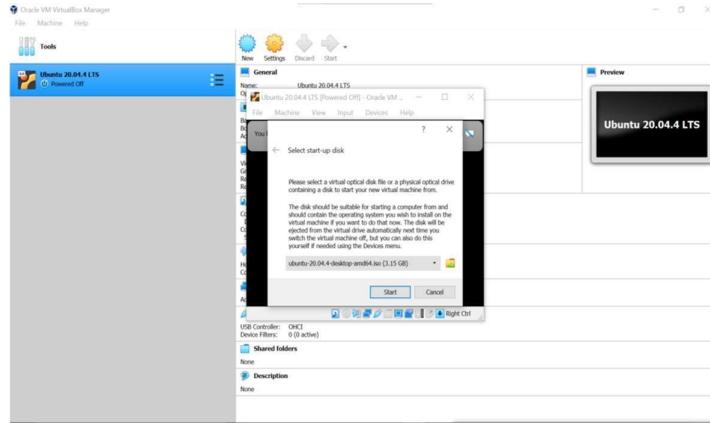


Step-12: Select Add in the window that pops up.

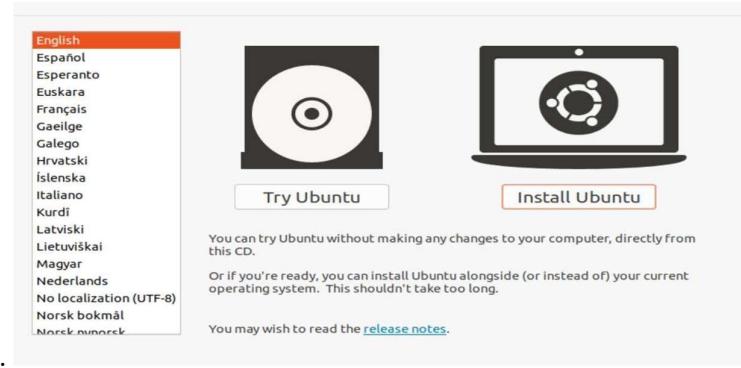


Step-13: Choose your Ubuntu disk image and select Open.

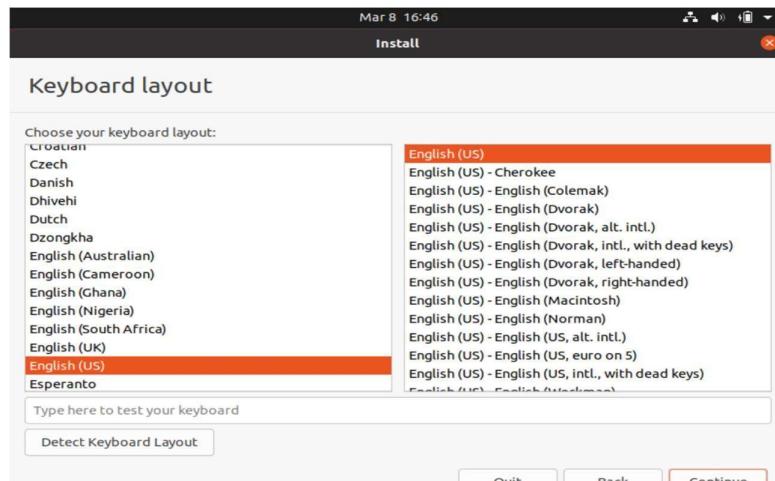
**Step-14:** - Select Choose**Step-15:** Select Start.



Step-16: Your VM will now boot into a live version of Ubuntu. Choose your language and select Install Ubuntu



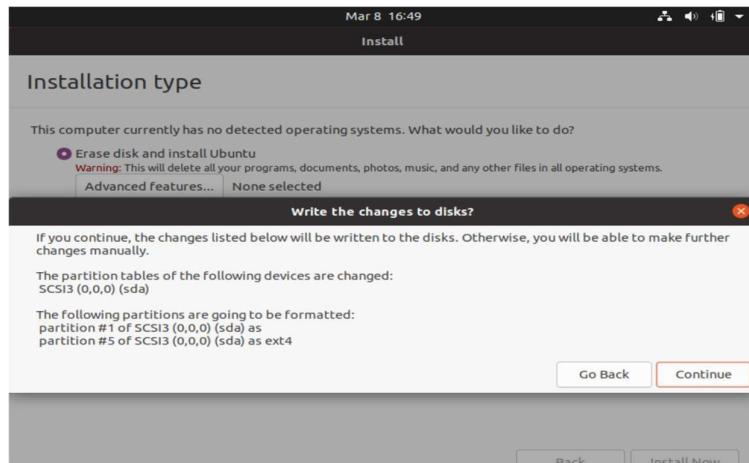
Step-17: Choose your keyboard layout and select Continue.



Step-18: Choose Normal installation or Minimal installation, then select Continue.

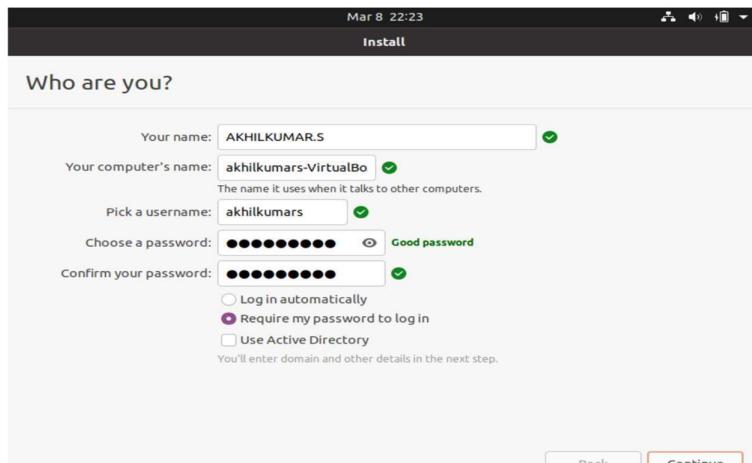
Step-19: Choose Erase disk and install Ubuntu and select Install Now, then select Continue to ignore the warning.

Note: This step will not erase your computer's physical hard drive; it only applies to the virtual machine.

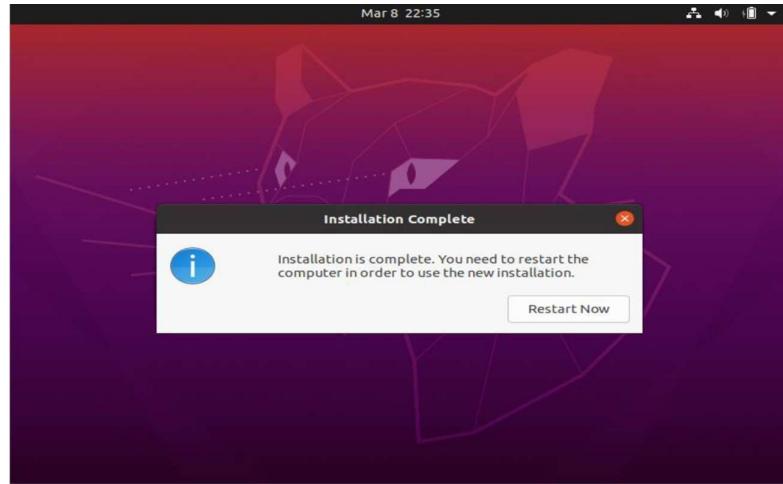


Step-20: - Choose your time zone on the map, then select Continue.

Step-21: - Set up your user account and select Continue.

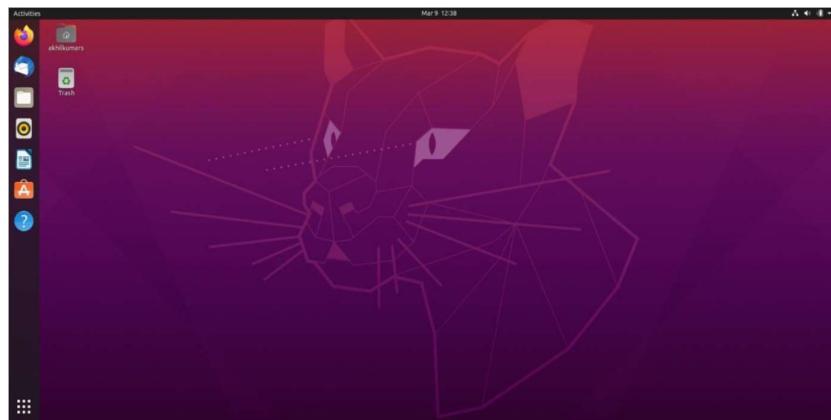


Step-22: - Select Restart Now.



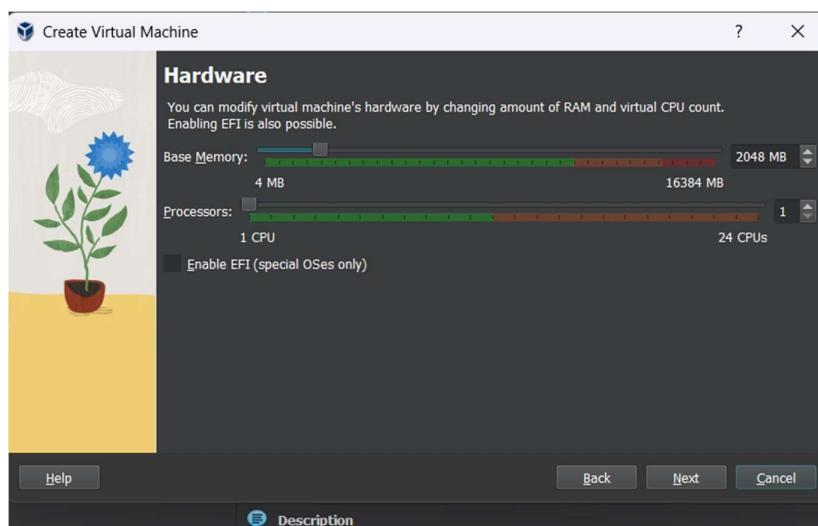
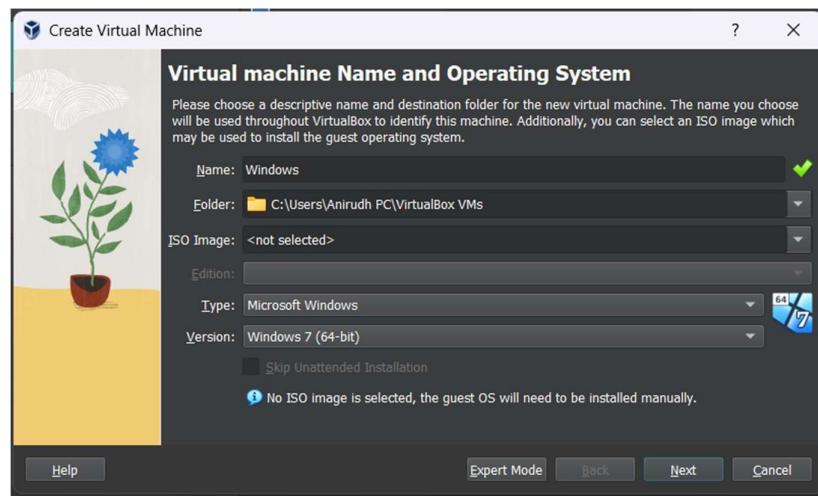
Step-23: - After restarting your VM and booting into Ubuntu, you may notice that the desktop doesn't scale correctly if you choose to view it in full-screen mode. You can fix this problem by selecting the VBox_Gas icon to install VirtualBox Guest Additions.

Output:



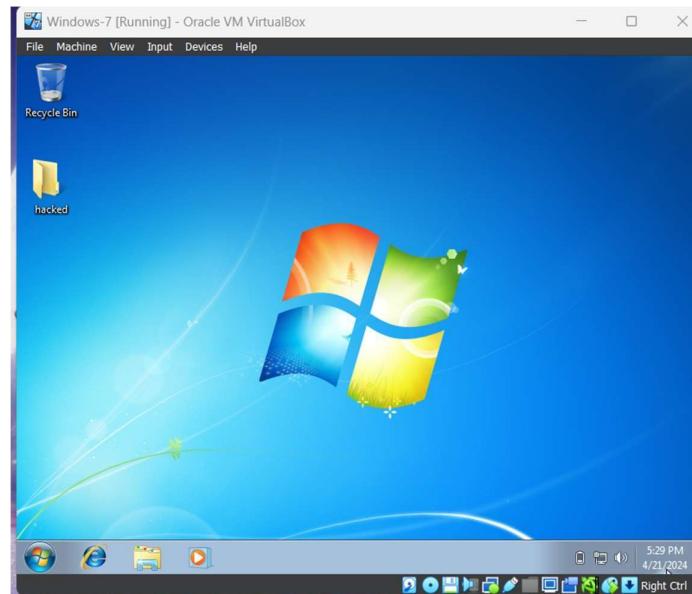
Q2. Install the Virtual Box (or) a Malware work station and launch Linux Server.

Similarly, Follow the same steps above to Build Windows Virtual Machine.





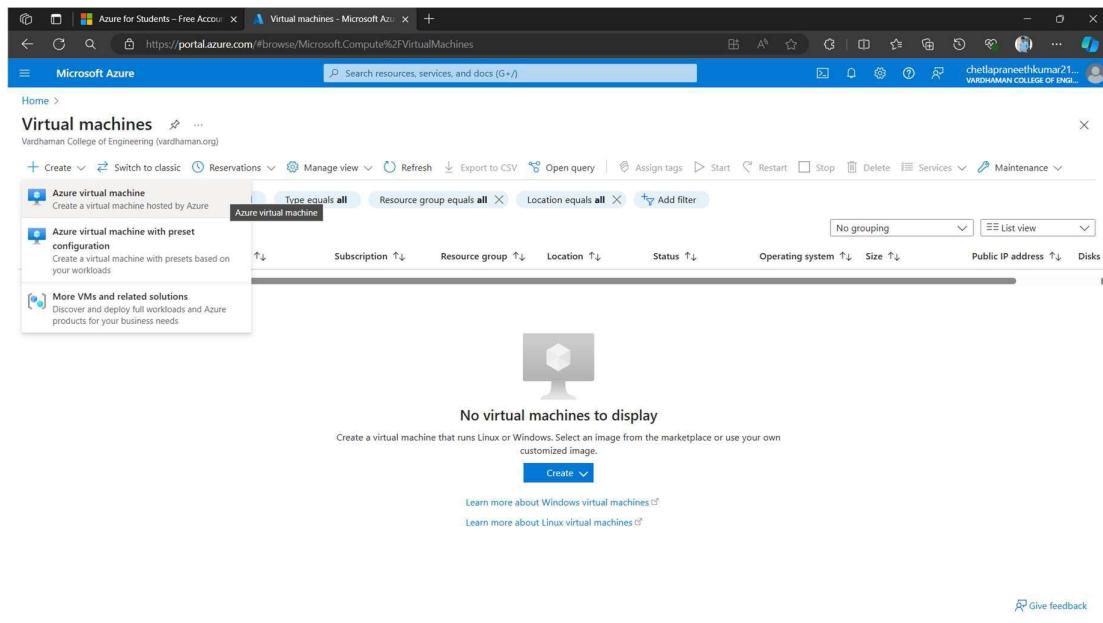
Output:



Q3) Create an instance in Virtual Machine & Launch Windows Server through Azure Portal.

Step-1: Sign in to your Microsoft Azure account.

Step-2: Go To Virtual machine, and click on “Create” to create a window virtual machine.



Step-3: Fill the details in that window by creating a “Resource Group”, Zone: Asia, Image: window, Select the disk storage and so on. After that click on “Create + Review”. And Finally click on “Create”

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription *

Resource group *

Instance details

Virtual machine name *

Region *

Availability options

Availability zone *

You can now select multiple zones. Selecting multiple zones will create one VM per zone. [Learn more](#)

Security type

Image *

VM architecture
Ami64 is not supported with the selected image.

Microsoft Azure

Search resources, services, and docs (G+)

cheetlapraneethkumar21...
VARDHMAN COLLEGE OF ENGI...

Home > Virtual machines >

Create a virtual machine

⚠️ Changing Basic options may reset selections you have made. Review all options prior to creating the virtual machine.

Size * Standard_DS1_v2 - 1 vcpu, 3.5 GiB memory (₹7,895.17/month) [See all sizes](#)

Enable Hibernation **ⓘ** Hibernate is not supported by the size that you have selected. Choose a size that is compatible with Hibernate to enable this feature. [Learn more](#)

Administrator account

Username * **Password *** **Confirm password ***

Inbound port rules

Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.

Public inbound ports * None Allow selected ports

Select inbound ports * RDP (3389)

ⓘ All traffic from the internet will be blocked by default. You will be able to change inbound port rules in the VM > Networking page.

< Previous Next : Disks > **Review + create** [Give feedback](#)

Step-4: Firstly, copy the public IP Address of that created virtual machine.

vm5 - Microsoft Azure

Essentials

- Resource group: Tom
- Status: Running
- Location: Central India (Zone 1)
- Subscription: Azure for Students
- Subscription ID: f884d85b-333b-4d4b-8ef0-88425ea85807
- Availability zone: 1
- Operating system: Windows (Windows Server 2019 Datacenter)
- Size: Standard DS1 v2 (1 vcpu, 3.5 GiB memory)
- Public IP address: 20.40.52.113
- Virtual network/subnet: vm5-vnet/default
- DNS name: Not configured
- Health state: -
- Time created: 6/18/2024, 1:35 PM UTC

Tags (edit): Add tags

Properties **Networking** **Capabilities (8)** **Recommendations** **Tutorials**

Virtual machine

Computer name	vm5
Operating system	Windows (Windows Server 2019 Datacenter)
VM generation	V2
VM architecture	x64
Agent status	Ready
Agent version	2.7.41491.1121
Hibernation	Disabled
Host group	-
Host	-

Networking

Public IP address	20.40.52.113 (Network interface vm5110_x1)
Public IP address (IPv6)	-
Private IP address	10.0.0.4
Private IP address (IPv6)	-
Virtual network/subnet	vm5-vnet/default
DNS name	Configure

Size

Size	Standard DS1 v2
------	-----------------

Step-6: By using that copied IP Address open the window virtual machine through remote desktop connection.

vm5 - Microsoft Azure

Remote Desktop Connection

Computer: 20.40.52.113

User name: azuresuser

You will be asked for credentials when you connect.

Essentials

- Resource group: Tom
- Status: Running
- Location: Central India (Zone 1)
- Subscription: Azure for Students
- Subscription ID: f884d85b-333b-4d4b-8ef0-88425ea85807
- Availability zone: 1
- Operating system: Windows (Windows Server 2019 Datacenter)
- Size: Standard DS1 v2 (1 vcpu, 3.5 GiB memory)
- Public IP address: 20.40.52.113
- Virtual network/subnet: vm5-vnet/default
- DNS name: Not configured
- Health state: -
- Time created: 6/18/2024, 1:35 PM UTC

Properties **Monitoring** **Capabilities (8)** **Recommendations** **Tutorials**

Virtual machine

Computer name	vm5
Operating system	Windows (Windows Server 2019 Datacenter)
VM generation	V2
VM architecture	x64
Agent status	Ready
Agent version	2.7.41491.1121
Hibernation	Disabled
Host group	-
Host	-

Networking

Public IP address	20.40.52.113 (Network interface vm5110_x1)
Public IP address (IPv6)	-
Private IP address	10.0.0.4
Private IP address (IPv6)	-
Virtual network/subnet	vm5-vnet/default
DNS name	Configure

Size

Size	Standard DS1 v2
------	-----------------

Output:

Q4) Launch Linux Server through Azure Portal.

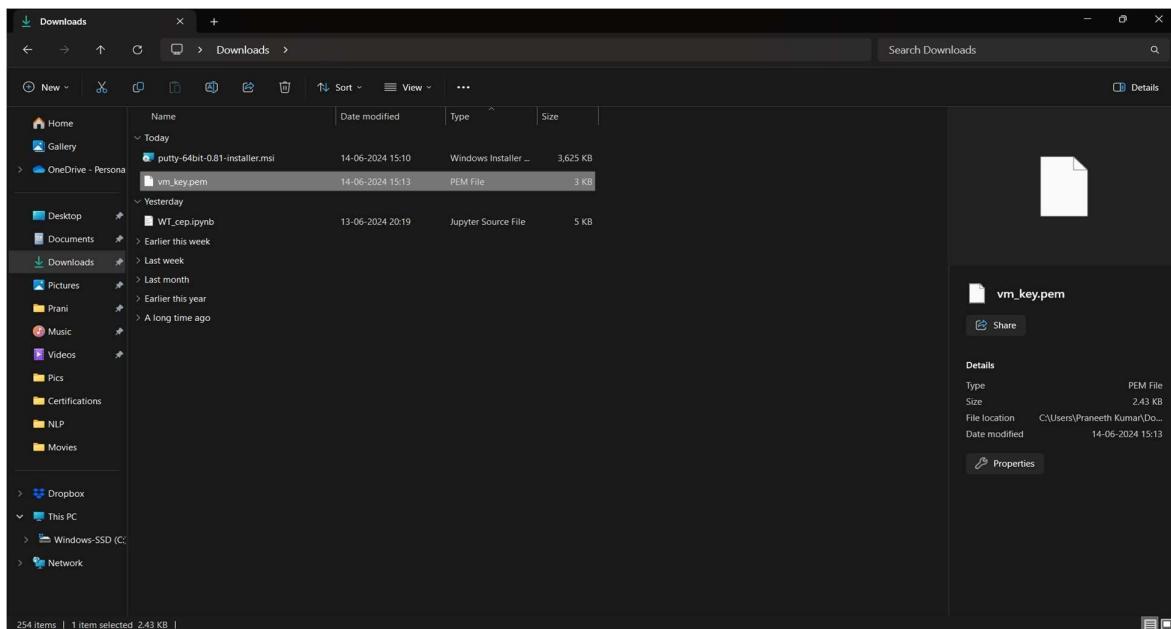
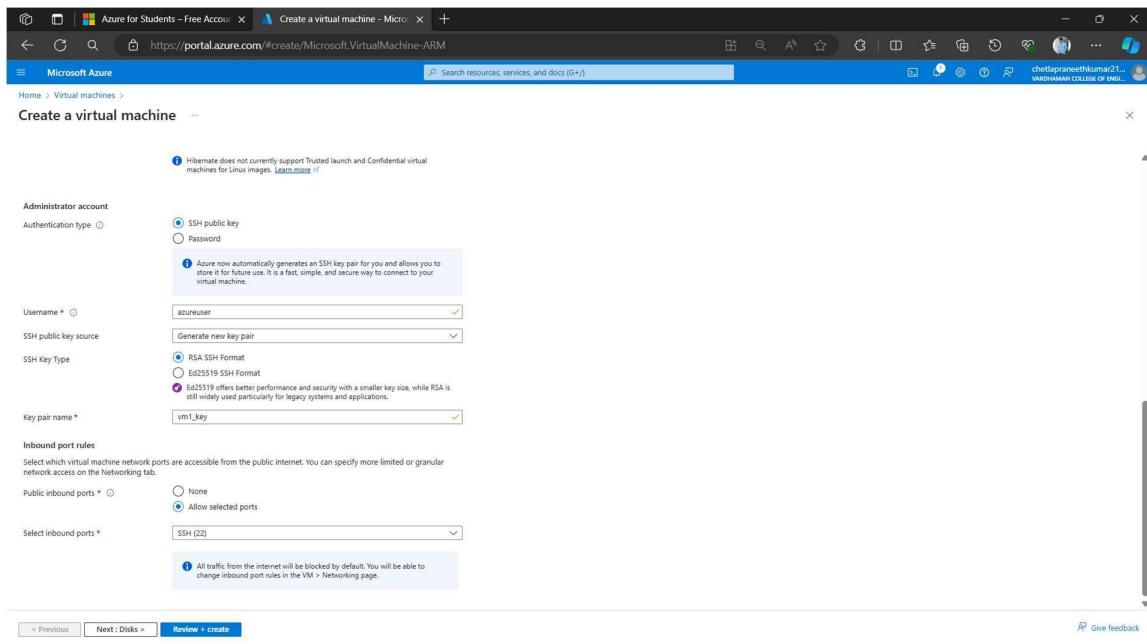
Step-1: Sign in to your Microsoft Azure account.

Step-2: Go To Virtual machine, and click on “Create” to create a window virtual machine.

The screenshot shows the Microsoft Azure portal interface. The top navigation bar includes 'Azure for Students - Free Account' and 'Virtual machines - Microsoft Azure'. The main title is 'Virtual machines' under 'Microsoft Azure'. A search bar says 'Search resources, services, and docs (G+)'. Below the title, there are filter options: 'Type equals all', 'Resource group equals all', 'Location equals all', and a 'Create filter' button. A dropdown menu is open on the left, showing 'Create a virtual machine hosted by Azure' and 'Azure virtual machine with preset configuration'. Other options include 'More VMs and related solutions'. The main content area displays a message: 'No virtual machines to display' with a small icon of a computer monitor. Below it, instructions say 'Create a virtual machine that runs Linux or Windows. Select an image from the marketplace or use your own customized image.' A large blue 'Create' button is centered. At the bottom right, there's a 'Give feedback' link.

Step-3: Fill the details in that ubuntu by creating a “Resource Group”, Zone: Asia, Image: ubuntu, select “SSH”, Select the disk storage and so on. After that click on “Create + Review” and click on “Create” then download key and open resource group.

The screenshot shows the 'Create a virtual machine' wizard in the Microsoft Azure portal. The title is 'Create a virtual machine - Microsoft Azure'. The top navigation bar includes 'Azure for Students - Free Account' and 'Virtual machines - Microsoft Azure'. The main title is 'Create a virtual machine'. Below it, tabs for 'Basics', 'Disks', 'Networking', 'Management', 'Monitoring', 'Advanced', 'Tags', and 'Review + create' are visible. A note says 'Create a virtual machine that runs Linux or Windows. Select an image from Azure marketplace or use your own customized image. Complete the Basics tab then Review + create to provision a virtual machine with default parameters or review each tab for full customization. Learn more.' A warning message in a box says 'This subscription may not be eligible to deploy VMs of certain sizes in certain regions.' Under 'Project details', 'Subscription' is set to 'Azure for Students' and 'Resource group' is set to 'Ram' (with a 'Create new' option). Under 'Instance details', 'Virtual machine name' is 'vm1', 'Region' is '(Asia Pacific) Central India', 'Availability options' is 'Availability zone', and 'Availability zone' is 'Zone 1'. A note says 'You can now select multiple zones. Selecting multiple zones will create one VM per zone. Learn more.' Under 'Security type', 'Trusted launch virtual machines' is selected. Under 'Image', 'Ubuntu Server 20.04 LTS - x64 Gen2' is selected. Under 'VM architecture', 'Amd64' is selected. At the bottom, buttons for '< Previous', 'Next : Disks >', and 'Review + create' are shown.



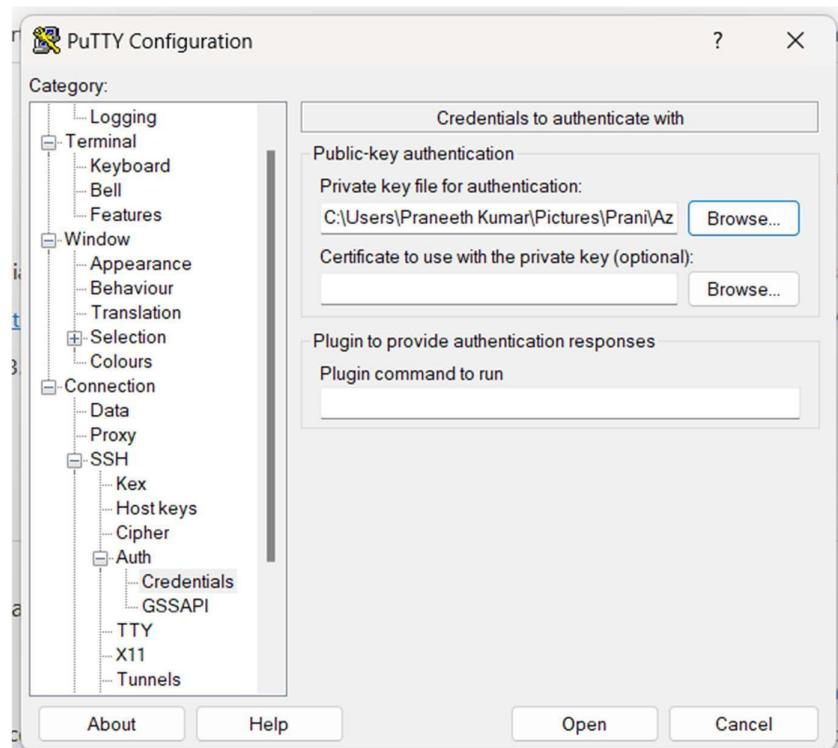
Step-5: Firstly, copy the public IP Address of that created virtual machine and after Deployment is over, Go to the remote desktop connection.

^ Essentials		J:	
Resource group (move)	: Azure1	Operating system	: Linux (ubuntu 20.04)
Status	: Running	Size	: Standard DS1 v2 (1 vcpu, 3.5 GiB memory)
Location	: Central India (Zone 1)	Public IP address	: 20.244.97.63
Subscription (move)	: Azure for Students	Virtual network/subnet	: vce1-vnet/default
Subscription ID	: f884d85b-333b-4d4b-8ef0-88425ea85807	DNS name	: Not configured
Availability zone	: 1	Health state	: -
		Time created	: 6/14/2024, 2:16 PM UTC
Tags (edit)	: Add tags		

Step-6: Go to putty gen and click on load the key generator that you have downloaded.

The screenshot shows the Microsoft Azure portal interface. On the left, the navigation pane includes sections like Overview, Activity log, Tags, Diagnose and solve problems, Connect, Bastion, Networking, Settings, and Configuration. The main content area shows a virtual machine named 'vce1'. A context menu is open over the VM, with the 'PuTTY Key Generator' option selected. The generator window displays a public key for OpenSSH authorized_keys format. The Azure details panel on the right provides information about the VM, including its operating system (Ubuntu 20.04), size (Standard DS1 v2), and network settings (vce1-vnet/default). The status bar at the bottom indicates the date and time: 6/14/2024, 2:16 PM UTC.

Step-7: In putty, put the Copied IP Adress into it, and then go to ssh->auth->credentials And the put the generated private key.



Step-8: A login page will be opened in that type your username and you will be into the ubuntu.

Step-9: After this delete its resource group and virtual machine.

Output:

```
azureuser@uba: ~
login as: azureuser
Authenticating with public key "imported-openssh-key"
Welcome to Ubuntu 22.04.4 LTS (GNU/Linux 6.5.0-1021-azure x86_64)

 * Documentation: https://help.ubuntu.com
 * Management: https://landscape.canonical.com
 * Support: https://ubuntu.com/pro

System information as of Tue Jun 11 18:13:04 UTC 2024

System load: 0.0 Processes: 117
Usage of /: 5.1% of 28.89GB Users logged in: 0
Memory usage: 9% IPv4 address for eth0: 10.0.0.4
Swap usage: 0%

Expanded Security Maintenance for Applications is not enabled.

43 updates can be applied immediately.
31 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status
```

Q5) Perform scaling in Azure Portal.

Step-1: Create a virtual machine (ubuntu or windows).

Step-2: After deployment of VM stop VM for scaling.

Stop this virtual machine

Do you want to stop 'vce1'?

i Deallocation operations usually complete within 1-2 minutes but may take up to 90 minutes in some cases. You can leave the page and track the progress via notifications.

Yes

No

Step-3: On the left side there will be settings and click on disks.

vce1 | Disks

OS disk

Disk name	Storage type	Size (GiB)	Max IOPS	Max throughput	Encryption	Host caching
vce1_disk1_56f4c5efb727460d81522a45ccc1f8e3	Premium SSD LRS	30	120	25	SSE with PMK	Read/write

Data disks

LUN	Disk name	Storage type	Size (GiB)	Max IOPS	Max throughput	Encryption	Host caching
No data disks attached							

Settings

- Disks (selected)
- Extensions + applications
- Operating system
- Configuration

Apply **Discard changes**

Step-4: click on disk name and select your preferred size, save it.

vce1_disk1_56f4c5efb727460d81522a45ccc1f8e3 | Size + performance

Storage type: Premium SSD (locally-redundant storage)

Size	Disk tier	Provisioned IOPS	Provisioned throughput	Max Shares	Max burst IOPS	Max burst throughput
4 GiB	P1	120	25	3	3500	170
8 GiB	P2	120	25	3	3500	170
16 GiB	P3	120	25	3	3500	170
32 GiB	P4	120	25	3	3500	170
64 GiB	P6	240	50	3	3500	170
128 GiB	P10	500	100	3	3500	170
256 GiB	P15	1100	125	3	3500	170
512 GiB	P20	2300	150	3	3500	170
1024 GiB	P30	5000	200	5	-	-
2048 GiB	P40	7500	250	5	-	-
4096 GiB	P50	7500	250	5	-	-
8192 GiB	P60	16000	500	10	-	-
16384 GiB	P70	18000	750	10	-	-
32767 GiB	P80	20000	900	10	-	-

Custom disk size (GiB):

Save **Discard** **Give feedback**

Step-5: On the left side there will be select + performance and click on size then click on disk name and select your preferred ram size, save it.

If the virtual machine is currently running, changing its size will cause it to be restarted. Stopping the virtual machine may reveal additional sizes. →

Search by VM size... Display cost: Monthly vCPUs: All RAM (GiB): All Add filter

Showing 451 VM sizes. Subscription: Azure for Students Region: Central India Current size: Standard_DS1_v2 Learn more about VM sizes Group by series

VM Size ↑	Type ↑	vCPUs ↑	RAM (GiB) ↑	Data disks ↑	Max IOPS ↑	Local storage (GiB) ↑
D1_v2 ↗	General purpose	1	3.5	4	3200	7 (SCSI)
D2s_v3 ↗	General purpose	2	8	4	3200	16 (SCSI)
DS1_v2 ↗	General purpose	2	7	8	6400	14 (SCSI)
D2s_v2 ↗	General purpose	4	16	8	6400	32 (SCSI)
D4s_v3 ↗	General purpose	4	14	16	12800	28 (SCSI)
DS2_v2 ↗	General purpose	4	14	16	12800	28 (SCSI)
The most used sizes by users in Azure						
> D-Series v4 The 4th generation D family sizes for your general purpose needs						
> E-Series v4 The 4th generation E family sizes for your high memory needs						
> F-Series v2 Up to 2X performance boost for vector processing workloads						
> D-Series v3 The 3rd generation D family sizes for your general purpose needs						
> E-Series v3 The 3rd generation E family sizes for your high memory needs						
< D-Series v2 The 2nd generation D family sizes for your general purpose needs						

Prices presented are estimates in INR that include only Azure infrastructure costs and any discounts for the subscription and location. The prices don't include any applicable software costs. Final charges will appear in your local currency in cost analysis and billing views. View Azure pricing calculator. ↗ Give feedback

Result:

Conducted scaling operations in Azure Portal, successfully increasing and decreasing the number of virtual machine instances. The scaling process was seamless, with new instances provisioning correctly and load distribution verified.

Q6) Implementing locks in Azure Portal.

Step-1: Create a virtual machine (ubuntu or windows).

The screenshot shows the Microsoft Azure portal interface for a virtual machine named 'vce1'. The left sidebar contains navigation links for Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Connect, Networking, Settings, Extensions + applications, Operating system, Configuration, and Advisor recommendations. The main content area displays the 'Essentials' section with details like Resource group (Azure1), Status (Running), Location (Central India (Zone 1)), Subscription (Azure for Students), and Size (Standard DS1 v2). Below this is a 'Properties' tab showing the Virtual machine and Networking sections. The Virtual machine section includes fields for Computer name, Operating system (Linux (ubuntu 20.04)), VM generation (V2), VM architecture (x64), Agent status (Ready), Agent version (2.11.1.4), Hibernation (Disabled), Host group (-), and Host (-). The Networking section shows Public IP address (20.244.97.63), Private IP address (10.0.0.4), and DNS name (Configure). At the bottom right, there is a 'Size' section indicating Standard DS1 v2.

Step-2: On the left side there will be settings and click on locks, give lock name and select lock type.

The screenshot shows the Microsoft Azure portal interface for the 'vce1' virtual machine, specifically on the 'Locks' page. The left sidebar includes a 'Locks' link under the 'Settings' category. A central modal dialog box titled 'Add lock' is open, prompting for 'Lock name' (set to 'vce') and 'Lock type' (set to 'Read-only'). There is also a 'Notes' field and 'OK' and 'Cancel' buttons at the bottom of the dialog.

Step-3: click on ok.

The screenshot shows the Microsoft Azure portal interface. On the left, there's a sidebar with 'Resource groups' listed under 'Vardhaman College of Engineering (vardhaman.org)'. A 'Locks' section is selected. In the main content area, a 'NetworkWatcherRG | Locks' page is displayed. A modal dialog box titled 'Add lock' is open, prompting for 'Lock name' (with 'vce1' entered) and 'Lock type' (set to 'Read-only'). There are 'OK' and 'Cancel' buttons at the bottom of the dialog.

Similarly, you can do for Resource groups and subscriptions.

This screenshot shows the 'Locks' list for the 'Azure for Students' subscription. The table displays two entries:

Lock name	Lock type	Scope	Notes
vce	Read-only	vce1	Edit Delete
vce1	Read-only	NetworkWatcherRG	Edit Delete

Result:

Implemented resource locks in the Azure portal to prevent accidental deletion or modification of critical resources. The locks were tested and effectively restricted changes, ensuring resource protection.

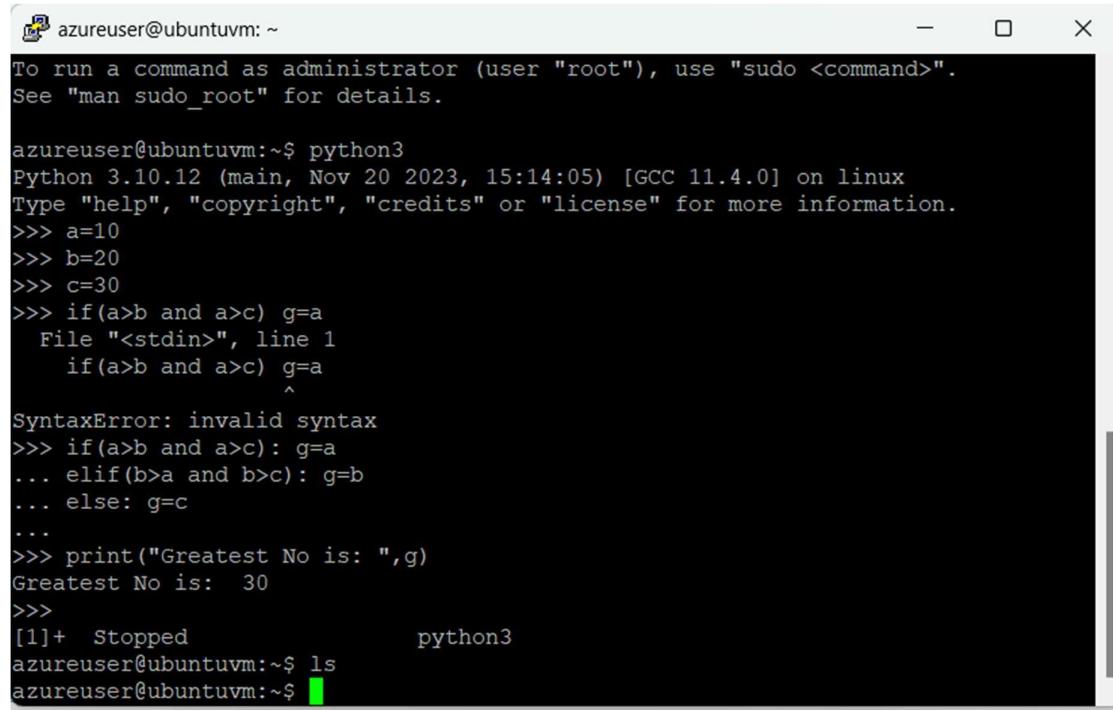
Q7) Create a Ubuntu VM and transfer files using WinScp.

Step-1: Create a ubuntu virtual machine using SSH as previous experiment and copy public IP address.

The screenshot shows the Microsoft Azure portal with the URL <https://portal.azure.com/#/resource/subscriptions/f884d85b-333b-4d4b-8ef0-88425ea85807/resourcegroups/>. The page displays the overview of a virtual machine named 'vm3'. The 'Networking' tab is active, showing the following details:

Virtual machine	Networking
Computer name: vm3 Operating system: Linux VM generation: V2 VM architecture: x64 Agent status: Not Ready Agent version: Unknown Hibernation: Disabled	Public IP address: 98.70.74.95 (Network interface vm369_x1) Public IP address (IPv6): - Private IP address: 10.0.0.4 Private IP address (IPv6): - Virtual network/subnet: vm3-vnet/default DNS name: Configure

Step-2: Login into your ubuntu VM using PUTTY and type ls command as you can see nothing.



```

azureuser@ubuntuvm: ~
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

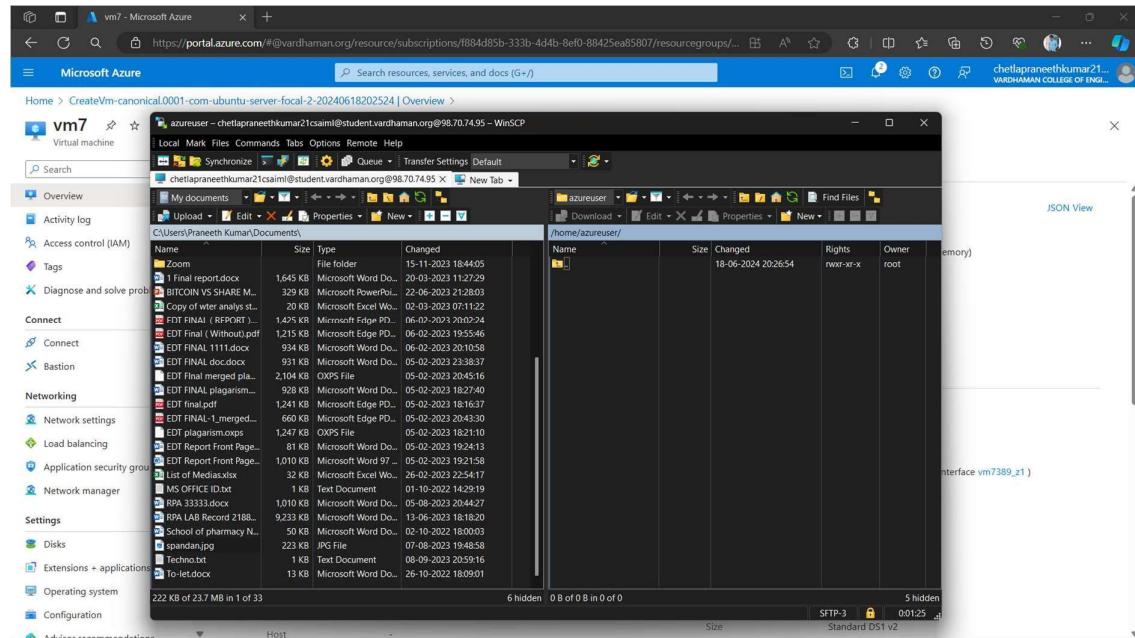
azureuser@ubuntuvm:~$ python3
Python 3.10.12 (main, Nov 20 2023, 15:14:05) [GCC 11.4.0] on linux
Type "help", "copyright", "credits" or "license" for more information.
>>> a=10
>>> b=20
>>> c=30
>>> if(a>b and a>c) g=a
      File "<stdin>", line 1
        if(a>b and a>c) g=a
                           ^
SyntaxError: invalid syntax
>>> if(a>b and a>c): g=a
... elif(b>a and b>c): g=b
... else: g=c
...
>>> print("Greatest No is: ",g)
Greatest No is:  30
>>>
[1]+  Stopped                  python3
azureuser@ubuntuvm:~$ ls
azureuser@ubuntuvm:~$ 

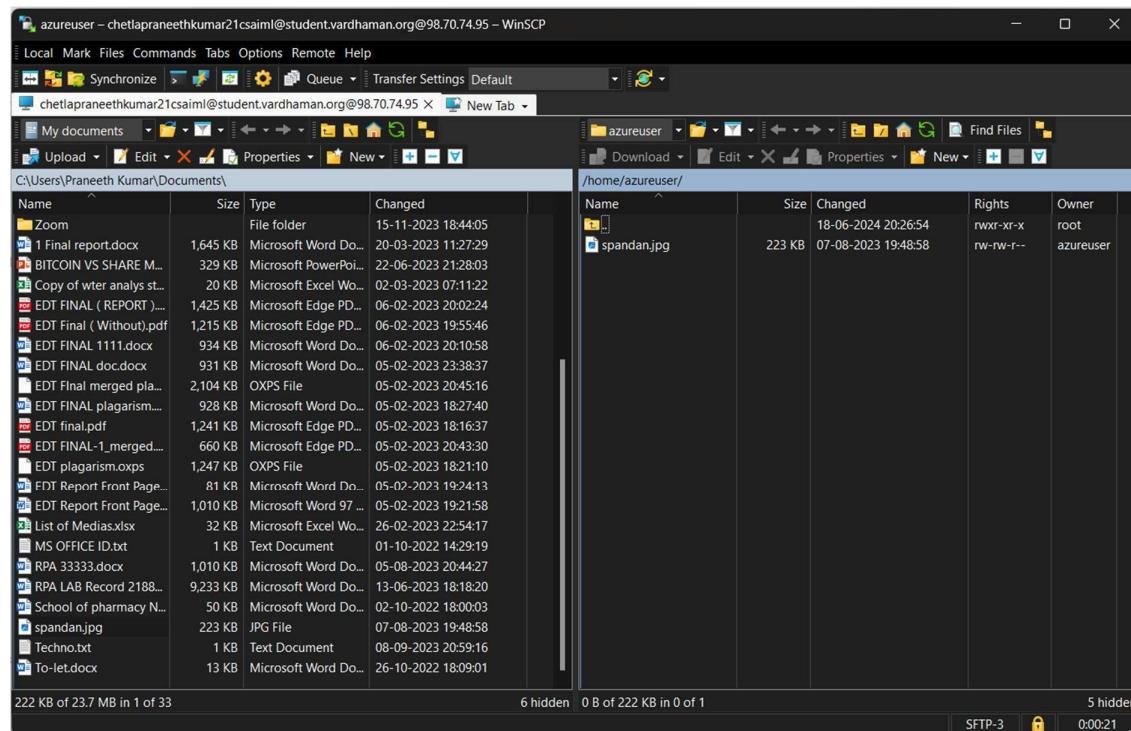
```

Step-3: Open WinScp at right bottom you can see Advanced option->SSH->Authentication->In that drag private key file and click on ok.

At last Login into your account using public IP address and username in WinScp.

Now, you can drag your files from your desktop to ubuntu VM in WinScp.



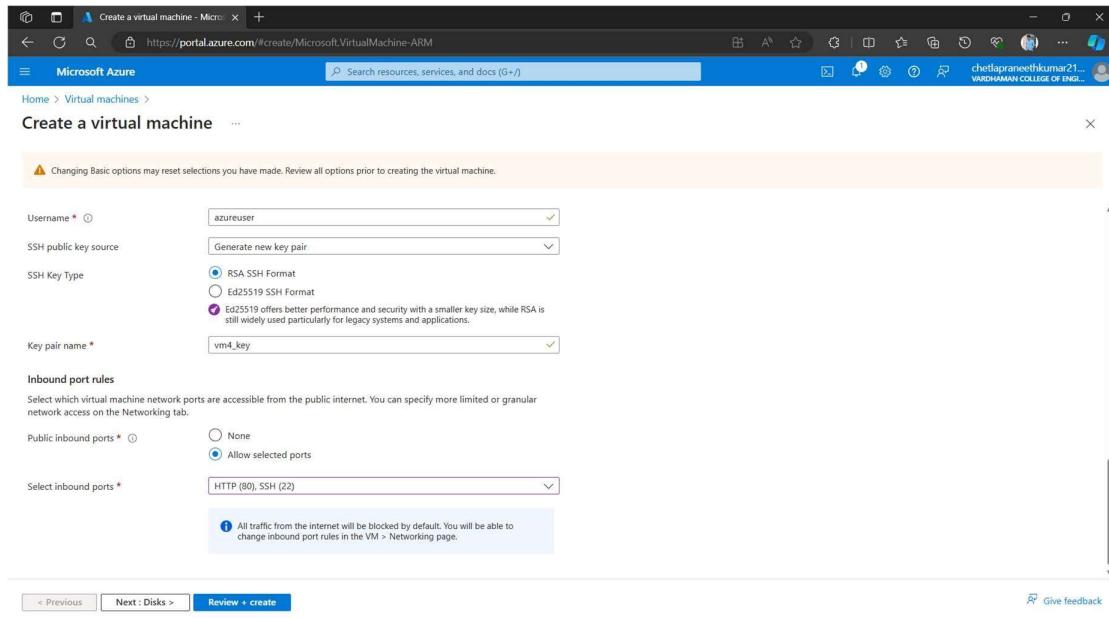


Step-4: Now again type ls command as you can see file inside ubuntu VM.

```
azureuser@ubuntuvm:~$ python3
Python 3.10.12 (main, Nov 20 2023, 15:14:05) [GCC 11.4.0] on linux
Type "help", "copyright", "credits" or "license" for more information.
>>> a=10
>>> b=20
>>> c=30
>>> if(a>b and a>c) g=a
      File "<stdin>", line 1
        if(a>b and a>c) g=a
          ^
SyntaxError: invalid syntax
>>> if(a>b and a>c): g=a
... elif(b>a and b>c): g=b
... else: g=c
...
>>> print("Greatest No is: ",g)
Greatest No is:  30
>>>
[1]+  Stopped                  python3
azureuser@ubuntuvm:~$ ls
azureuser@ubuntuvm:~$ ls
azureuser@ubuntuvm:~$ ls
'Laugher is the best medicine.pptx.part'
azureuser@ubuntuvm:~$
```

Q8) How to make Linux server as web server in AZURE.

Step-1: Create a ubuntu virtual machine using SSH and enable HTTP port as well, as previous experiment and copy public IP address.



Step-2: Login into your Ubuntu VM using your username and type the following commands.
`$sudo su`

`$sudo apt-get update`

After typing the two command, now install web server using the below command

`$sudo apt-get install nginx`

After installing in VM, paste the public ip address in desktop browser and you can see.



Step-3: To remove following information and keep new information in that page type the following command and refresh the browser page.

`$cd /var/www/html`

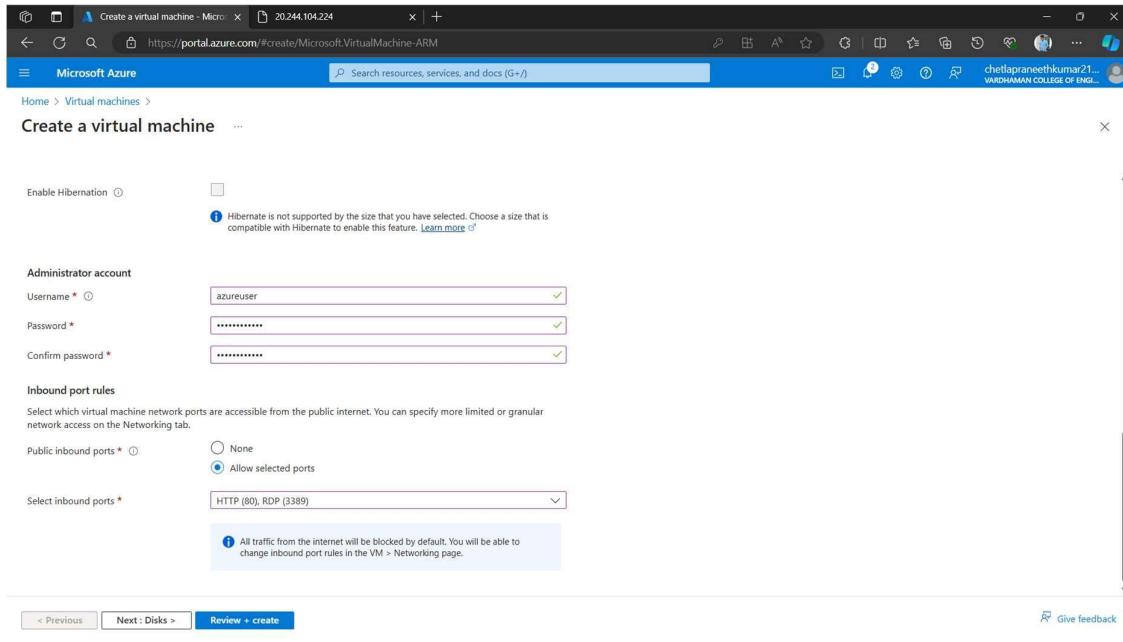
```
$rm index.nginx-debian.html  
$echo "Welcome Praneeth ">index.html
```

```
root@vm4: /var/www/html  
Setting up libwebp6:amd64 (0.6.1-2ubuntu0.20.04.3) ...  
Setting up fonts-dejavu-core (2.37-1) ...  
Setting up libjpeg-turbo8:amd64 (2.0.3-0ubuntu1.20.04.3) ...  
Setting up libjpeg8:amd64 (8c-2ubuntu8) ...  
Setting up libnginx-mod-mail (1.18.0-0ubuntu1.4) ...  
Setting up fontconfig-config (2.13.1-2ubuntu3) ...  
Setting up libnginx-mod-stream (1.18.0-0ubuntu1.4) ...  
Setting up libtiff5:amd64 (4.1.0+git191117-2ubuntu0.20.04.13) ...  
Setting up libfontconfig1:amd64 (2.13.1-2ubuntu3) ...  
Setting up libgd3:amd64 (2.2.5-5.2ubuntu2.1) ...  
Setting up libnginx-mod-http-image-filter (1.18.0-0ubuntu1.4) ...  
Setting up nginx-core (1.18.0-0ubuntu1.4) ...  
Setting up nginx (1.18.0-0ubuntu1.4) ...  
Processing triggers for ufw (0.36-6ubuntu1.1) ...  
Processing triggers for systemd (245.4-4ubuntu3.23) ...  
Processing triggers for man-db (2.9.1-1) ...  
Processing triggers for libc-bin (2.31-0ubuntu9.16) ...  
root@vm4:/home/azureuser# cd/var/www/html  
bash: cd/var/www/html: No such file or directory  
root@vm4:/home/azureuser# cd /var/www/html  
root@vm4:/var/www/html# rm index.nginx-debian.html  
root@vm4:/var/www/html# echo "Welcome Praneeth!" >index.html  
root@vm4:/var/www/html#
```

Welcome Praneeth

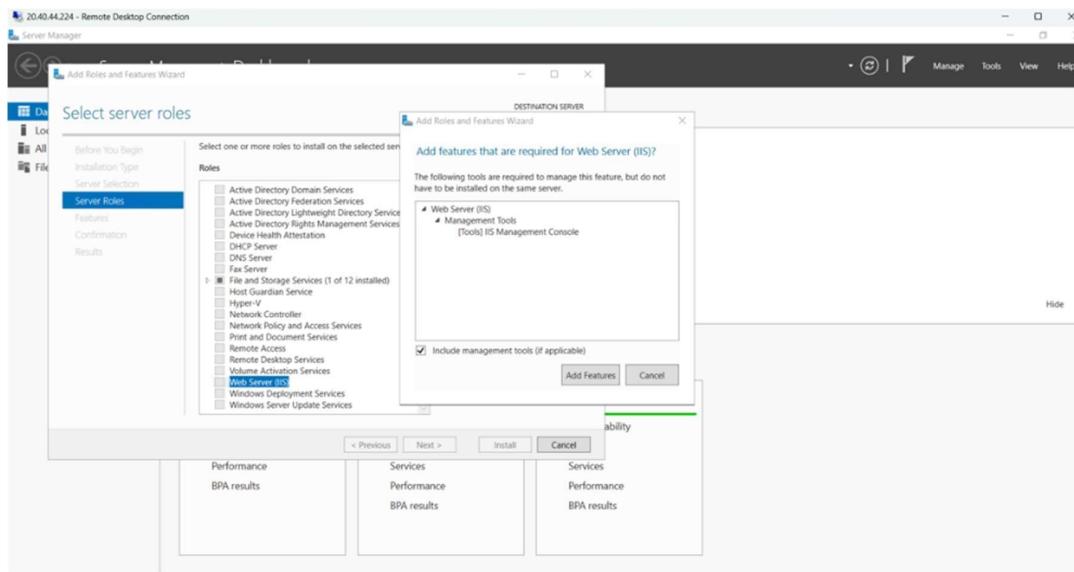
Q9) Setup and configure AZURE web server for windows server(IIS).

Step-1: Create VM with Rdp and Http port enable and login windows VM same as previous experiment and copy public IP address.

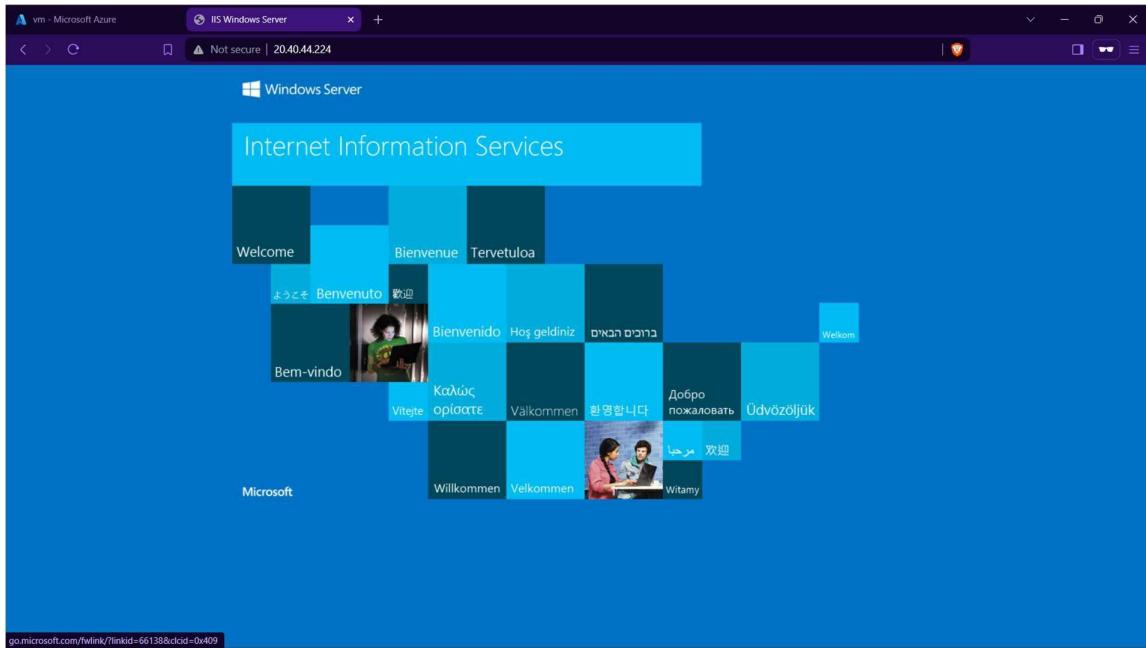


Step-2: When remote desktop will start(windows vm) you can see there will be Sever Manager will be opened and in that you can see Configure this local server , Click on “Add roles and features”.

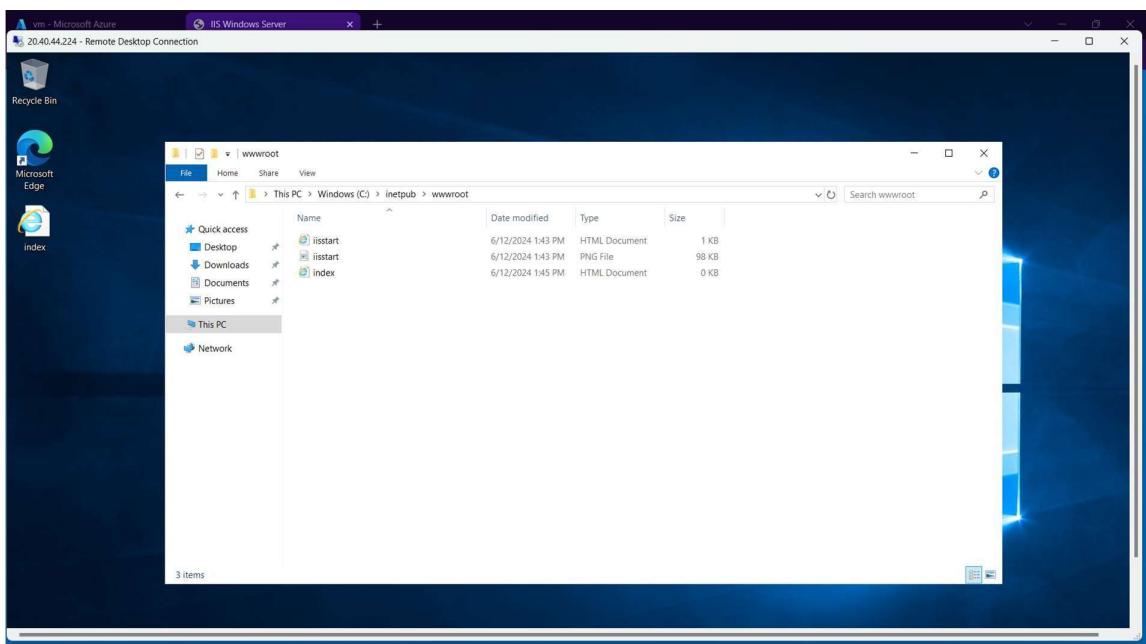
Step-3: Click on next, next and in Server Roles select Web Server(IIS) click on add feature ,click on next, next till you can get install button and click on install .



Step-4: Paste the public ip address in desktop browser and you can see.



Now to remove this all information first of all create index.html in desktop.



Step-5: Refresh the browser page.



Q10) How we are adding new users, login credentials, changing owner, create authorized key files.

Step-1: Create a ubuntu virtual machine using SSH as previous experiment.

Step-2: Login into your Ubuntu VM using your username and type the following commands.

To add new user in Linux server:

```
$sudo useradd -m PraneethKumar
```

To set new password:

```
$sudo passwd Praneethkumar
```

Enter new password and Retype password.

To modify login credentials:

```
$sudo usermod -aG sudo Praneethkumar
```

To switch the user:

```
$sudo su Praneethkumar
```

 A screenshot of a terminal window titled 'PraneethKumar@vm3: /home/azureuser'. The terminal output shows the following steps:


```
New release '22.04.3 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

Last login: Sun Jun 16 07:03:44 2024 from 103.174.81.58
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

azureuser@vm3:~$ sudo useradd -m PraneethKumar
azureuser@vm3:~$ sudo password PraneethKumar
sudo: password: command not found
azureuser@vm3:~$ sudo passwd PraneethKumar
New password:
Retype new password:
passwd: password updated successfully
azureuser@vm3:~$ sudo usermod -aG sudo praneeth
usermod: user 'praneeth' does not exist
azureuser@vm3:~$ sudo usermod -aG sudo PraneethKumar
azureuser@vm3:~$ sudo su PraneethKumar
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

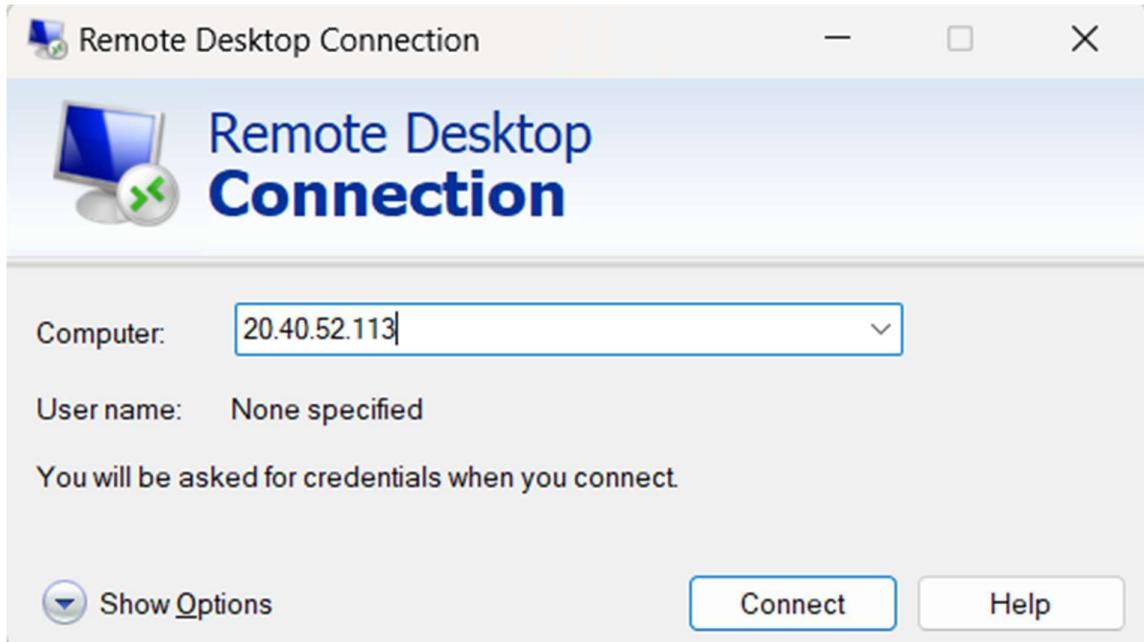
PraneethKumar@vm3:/home/azureuser$
```

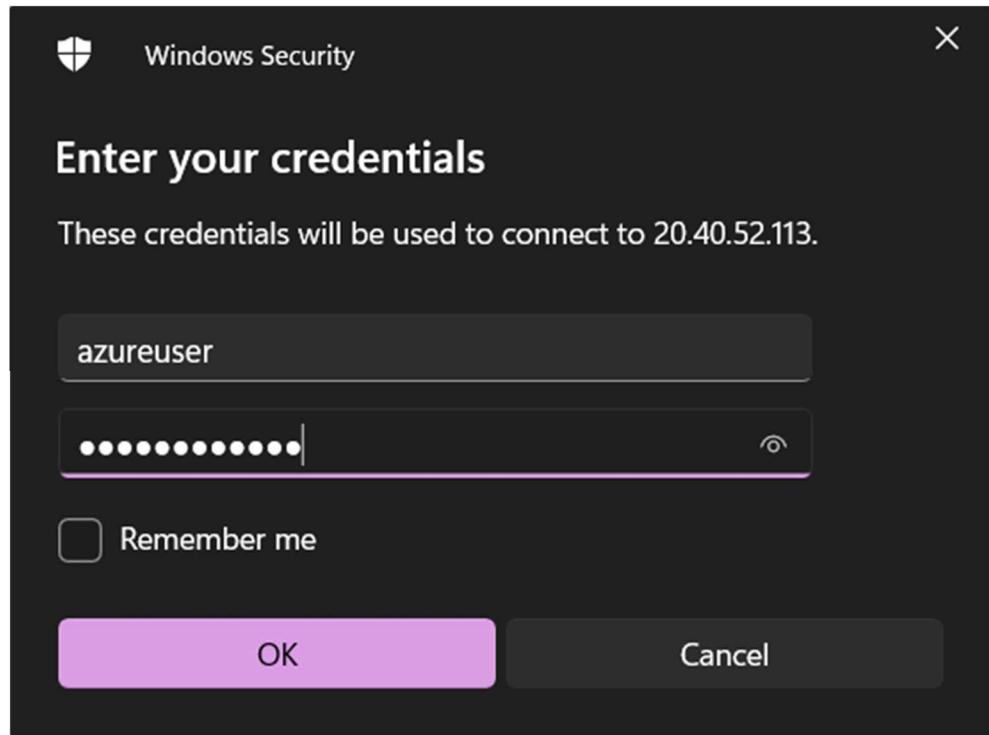
Q11) Create a Windows VM and transfer files from desktop to remote desktop VM.

Step-1: Create Windows VM same as previous experiments and copy public IP Address.

The screenshot shows the Microsoft Azure 'Create a virtual machine' wizard. The 'Basics' tab is selected. In the 'Project details' section, the subscription is set to 'Azure for Students' and the resource group is 'Tom'. Under 'Instance details', the virtual machine name is 'vm6', located in the '(Asia Pacific) Central India' region, using the 'Availability zone' option, and assigned to 'Zone 1'. A note at the bottom states: 'You can now select multiple zones. Selecting multiple zones will create one VM.' Navigation buttons at the bottom include '< Previous', 'Next : Disks >', and 'Review + create'.

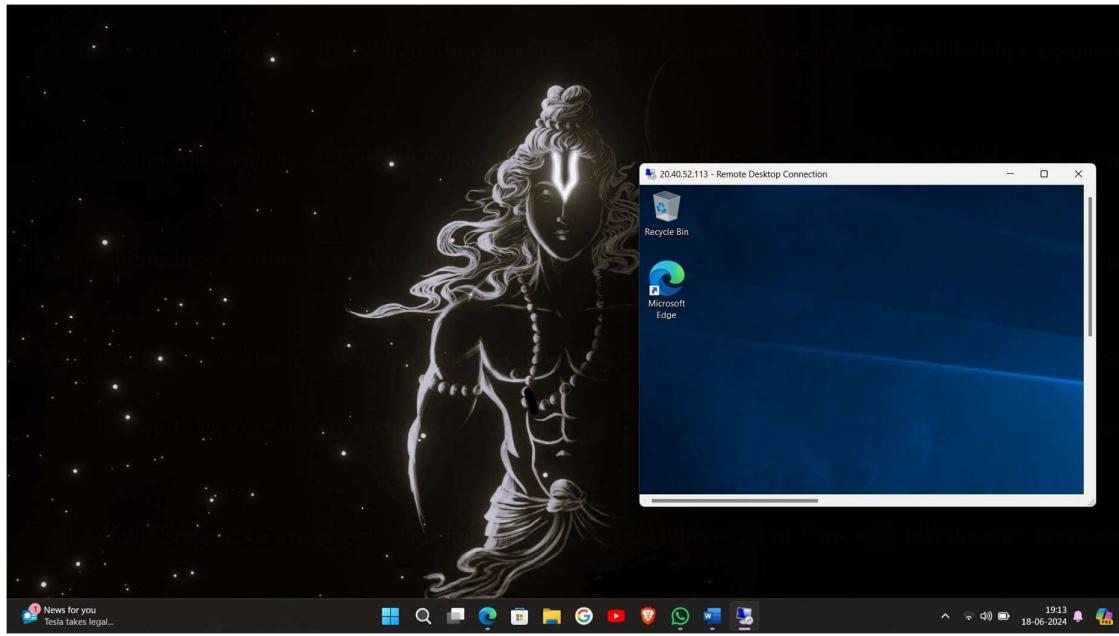
Step-2: Login into your account using username and password using remote desktop.

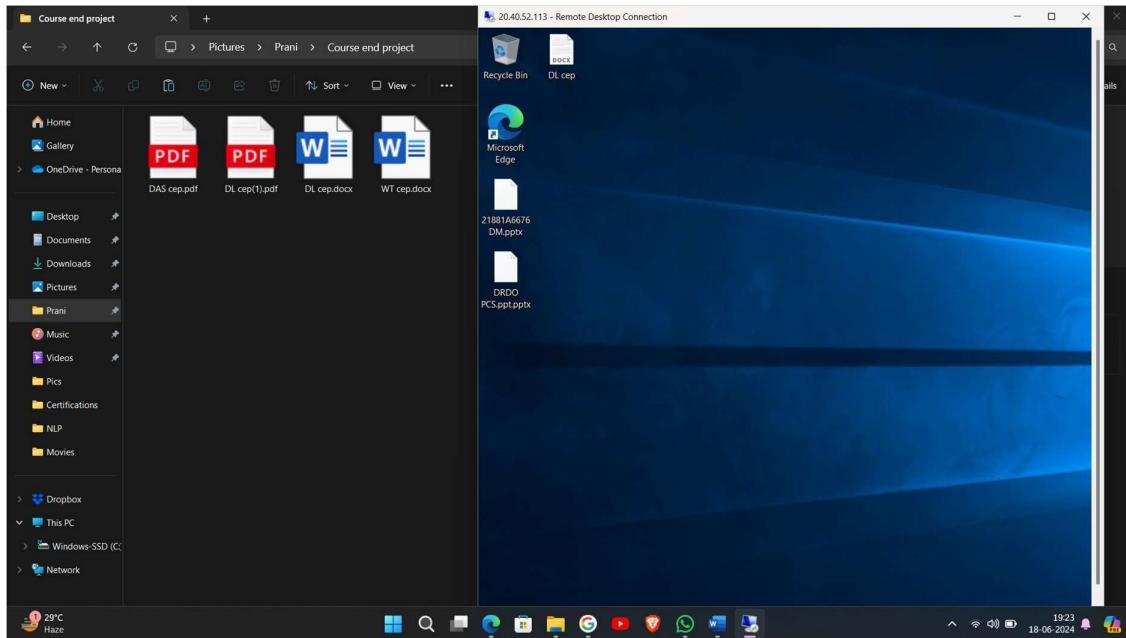




Step-3: Minimize the Remote desktop and copy file from desktop.

Right click in remote desktop and click on paste.





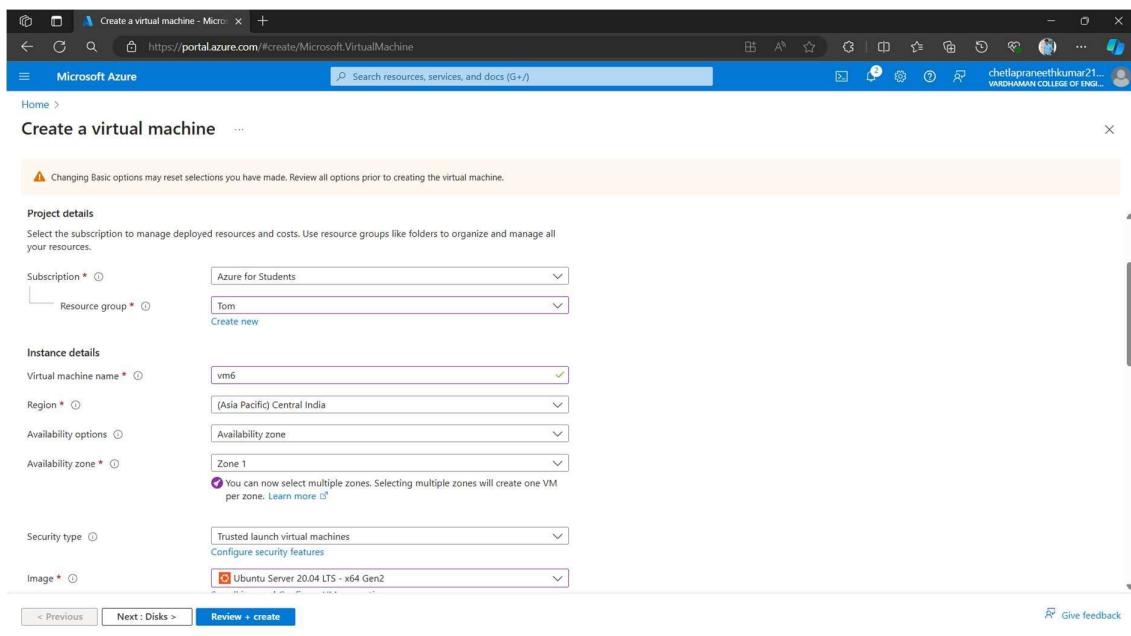
21881A6676

CCV

Q12) How to attach and detach data disks to Windows server in azure data center

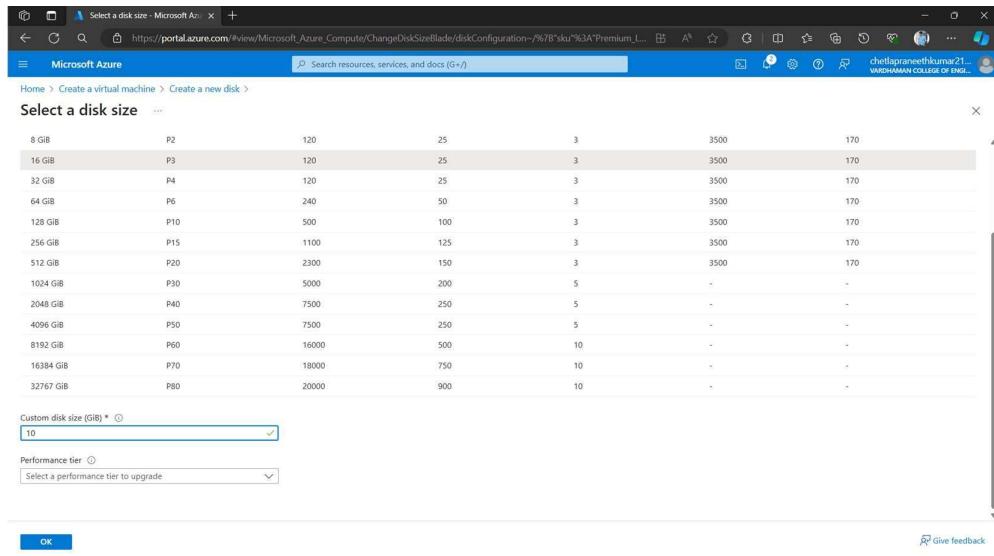
Steps:-

Step-1: Create a Virtual name with VM name as "vm6" with username & password



Step 2: click on "Next:Disks>"

Step 3: Click on "Create & attach a new disk"



Step 4: Click on “change size”

Step 5 Customize data size to 10 GiB and click on OK

Step 6: Enable delete with VM and click on OK

Step 7: Click on "Review+create" & click on create

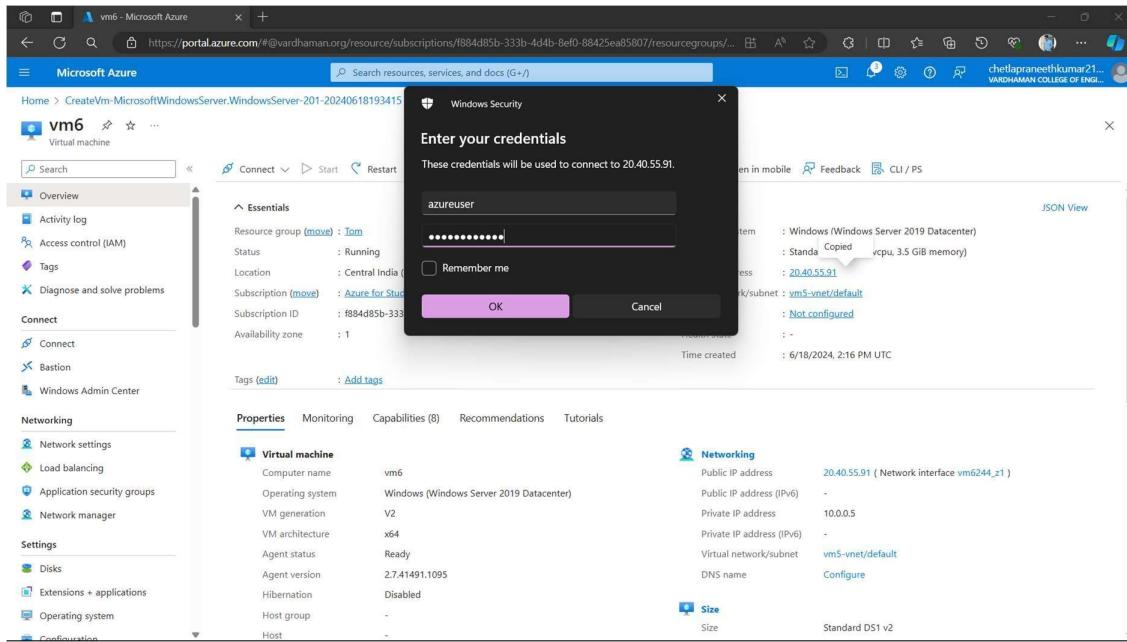
Step 8: Click on "Go to resource group"

Step 9: Copy public IP Address.

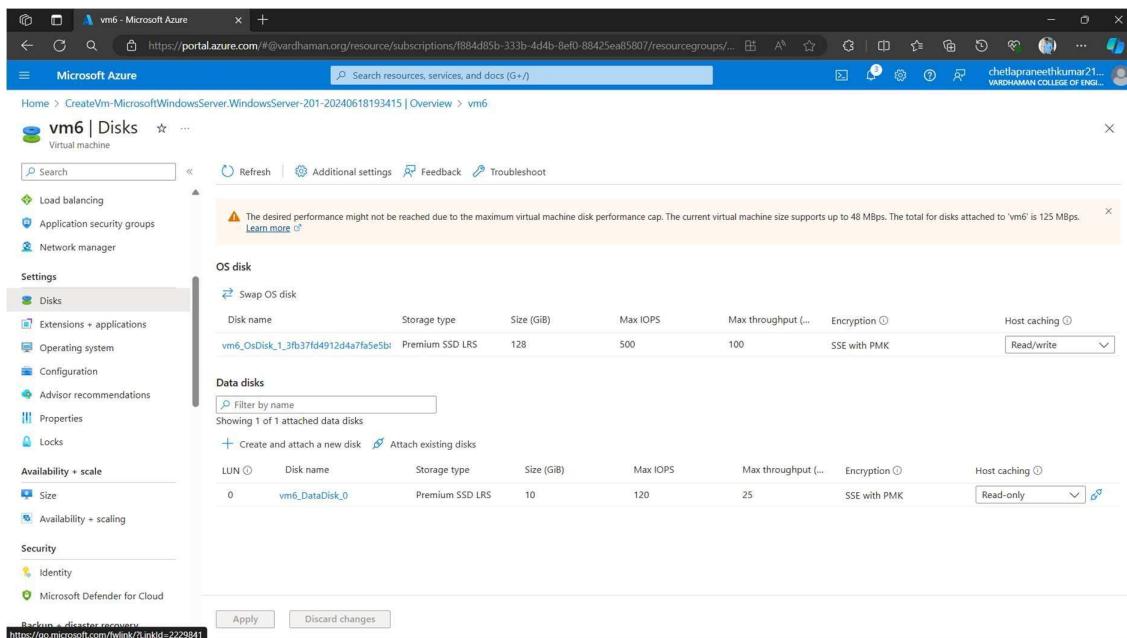
Step 10: Open Remote Desktop Connection in your windows/system and paste the public IP Address

Step 11: Click on “More choices”

Step 12: Click on “Use a different account”, enter the credentials and click on OK



Step 13: Click on “Disks” in your VM and you can see the attached data disks to the windows server.



Step 14: Detach the data disks from the windows server by clicking on the detach symbol

Step 15: Click on “Apply”

Step 16: Now the data disks are detached from the windows server

The screenshot shows the Microsoft Azure portal interface for managing a virtual machine named 'vm6'. The left sidebar navigation includes 'Connect', 'Networking', 'Settings' (with 'Disks' selected), and 'Availability + scale'. The main content area displays the 'OS disk' configuration for 'vm6_OsDisk_1_3fb37fd4912d4a7fa5e5b1', which is a Premium SSD LRS type disk with a size of 128 GiB, max IOPS of 500, and max throughput of 100 MBps. It also mentions SSE with PMK encryption and host caching set to 'Read/write'. Below this, the 'Data disks' section shows 0 attached data disks, with options to 'Create and attach a new disk' or 'Attach existing disks'. A note at the bottom indicates that the desired performance might not be reached due to a performance cap of 48 MBps.

Result:

Successfully attached and detached a data disk to a Windows server in Azure. The disk was available for use upon attachment and removed cleanly without data loss.

Q13) Create Azure Storage Account, Container and upload and delete objects in it.

Step-1: Click On Storage Account and Create one and select redundancy as GRS/LRS.

Step-2: Go to advance and Allow enabling anonymous access on individual containers.

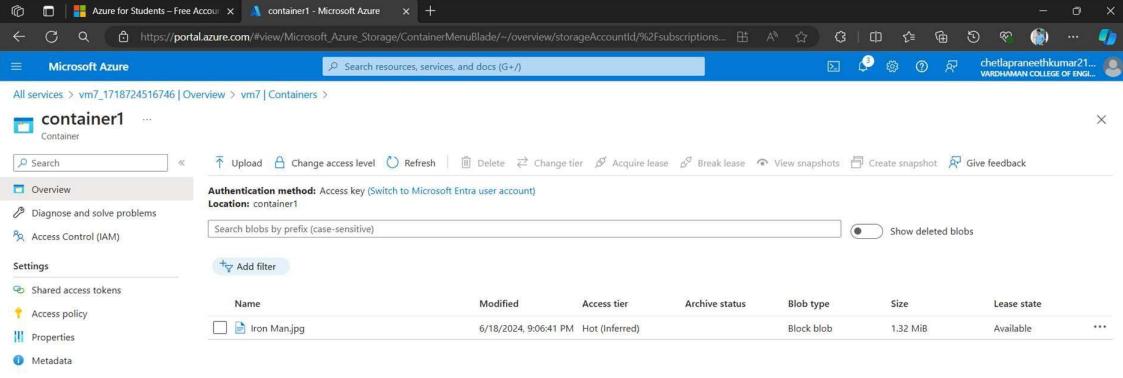
Step-3: After deployment Click on go to resource group and on Left Click on Containers and Create it with anonymous access level as blob (anonymous read access to blob only)

The screenshot shows the Microsoft Azure portal interface. On the left, there's a sidebar for the 'vm7' storage account with options like Overview, Activity log, Tags, Diagnose and solve problems, Access Control (IAM), Data migration, Events, Storage browser, and Storage Mover. Under Data storage, 'Containers' is selected. In the main pane, it says 'All services > vm7_1718724516746 | Overview > vm7'. A search bar at the top right says 'Search resources, services, and docs (G+ /)'. To the right, a 'New container' dialog is open with the name 'container1' entered. The 'Anonymous access level' dropdown is set to 'Blob (anonymous read access for blobs only)'. A warning message below states: 'Blobs within the container can be read by anonymous request, but container data is not available. Anonymous clients cannot enumerate the blobs within the container.' At the bottom right of the dialog are 'Create' and 'Give feedback' buttons.

Step-4: Then open new container, click on upload and upload a file from desktop.

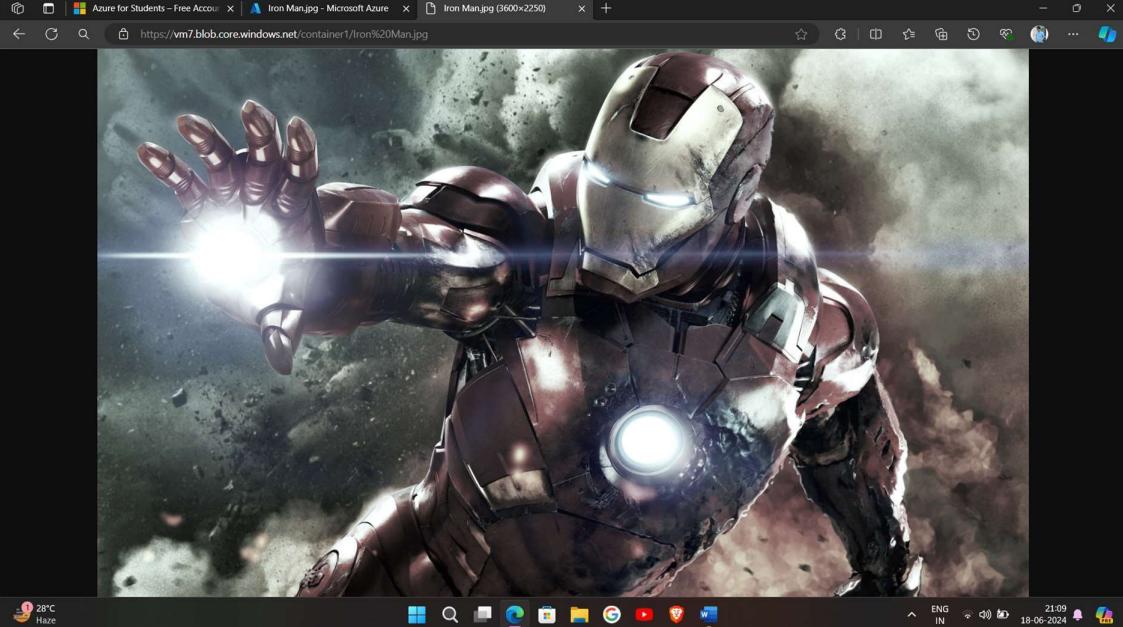
This screenshot shows the 'Upload blob' interface for the 'container1' in the 'vm7' storage account. The left sidebar shows the container structure with 'Overview', 'Diagnose and solve problems', 'Access Control (IAM)', 'Settings', 'Shared access tokens', 'Access policy', 'Properties', and 'Metadata'. The main pane shows the 'Upload blob' dialog. It has a large dashed area for dragging files with the text 'Drag and drop files here or Browse for files'. Below this are checkboxes for 'Overwrite if files already exist' and 'Advanced'. At the bottom right are 'Upload' and 'Give feedback' buttons.

Step-5: Select the file and click on provided URL to open the file.



The screenshot shows the Microsoft Azure Storage Container Overview page for 'container1'. The container has one blob named 'Iron Man.jpg' with the following details:

Name	Modified	Access tier	Archive status	Blob type	Size	Lease state
Iron Man.jpg	6/18/2024, 9:06:41 PM	Hot (Inferred)		Block blob	1.32 MiB	Available



The screenshot shows a web browser displaying the file 'Iron Man.jpg' from the Azure storage container. The image is a high-resolution rendering of Iron Man in his suit, with his repulsor hand extended forward.

Step-6: On container click Change access level to Private (no anonymous access) and try to open the file in new tab it will show error.

The screenshot shows two windows side-by-side. The left window is the Microsoft Azure portal, specifically the 'Container' settings for 'container1'. A modal dialog box titled 'Change access level' is open, showing the current setting as 'Private (no anonymous access)'. The right window is a web browser displaying a 404 Not Found error page from 'vm7.blob.core.windows.net'. The error message is: 'This XML file does not appear to have any style information associated with it. The document tree is shown below.' followed by an XML error code.

Step-7: Then delete blob container and storage account.

Blob Details:

- Name: Iron Man.jpg
- Type: BLOCK BLOB
- Size: 1.32 MiB
- Access Tier: Hot (Inferred)
- Access Tier Last Modified: N/A
- Archive Status: -
- Rehydrate Priority: -
- Server Encrypted: true
- ETAG: 0x8DC8FAC736D80EE
- Version-Level Immutability Policy: Disabled
- Cache-Control:
- Content-Type: image/jpeg
- Content-MD5: pK05f32x8+wZB6olEE8hRg==
- Content-Encoding:
- Content-Language:
- Content-Disposition:

Delete container(s)

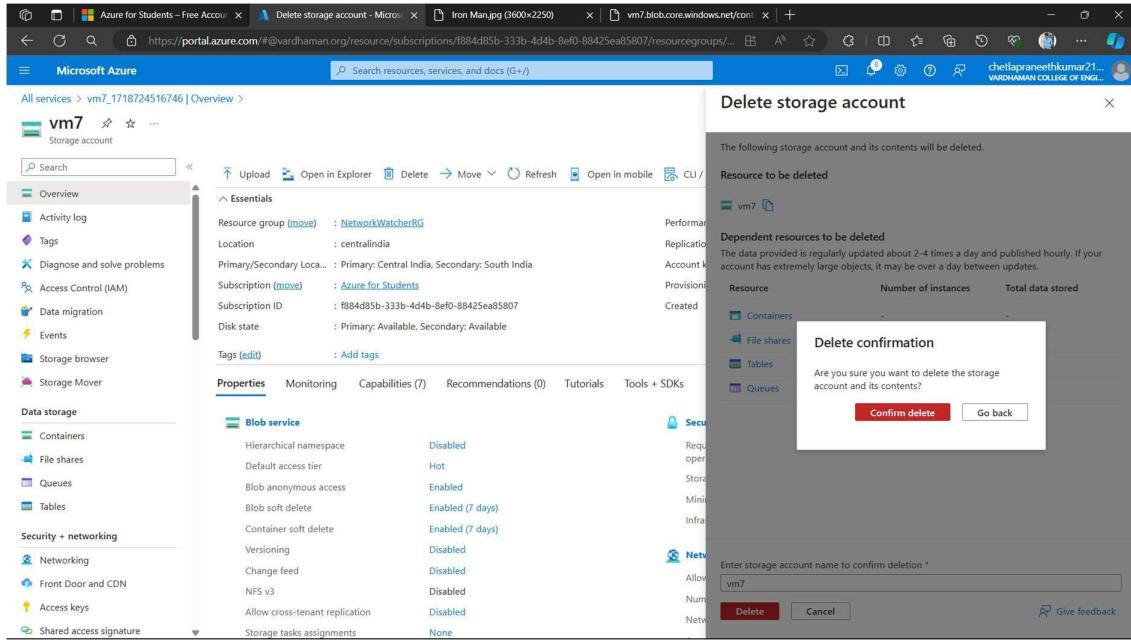
Containers which are in a leased state are locked for deletion and will be skipped. This action will move the following container(s) and its contents to a soft deleted state. The container(s) will remain recoverable for the retention period of 7 days. [Learn more](#)

Container(s) to be soft deleted

- container1

Actions:

- Delete
- Cancel



Result:

Created an Azure Storage Account and container, then uploaded and deleted objects within it. All operations were successfully performed, confirming the storage functionalities.