

Cloud Computing and Virtualization

Submitted in the Partial Fulfillment of the
Requirements
for the Award of the Degree of

BACHELOR OF TECHNOLOGY
IN
COMPUTER SCIENCE AND ENGINEERING (AI&ML)

Submitted by

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Under the Esteemed Guidance of
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Associate professor



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERRING (AI&ML)

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

2023- 24

ACKNOWLEDGEMENT

The satisfaction that accompanies the successful completion of the task would be put incomplete without the mention of the people who made it possible, whose constant guidance and encouragement crown all the efforts with success.

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
(AI&ML)

CERTIFICATE

Certified that this is the bonafied record of practical work done by Mr. R.Sai Siddarth, roll number 21881A66B5 of B. Tech in the “CLOUD COMPUTING & VIRTUALIZATION” laboratory during the year 2024.

No. of Experiments done:

Total No. of Experiments:

Date: HOD Staff Member Incharge

Roll Number 21881A66B5

Submitted for the practical exam held on

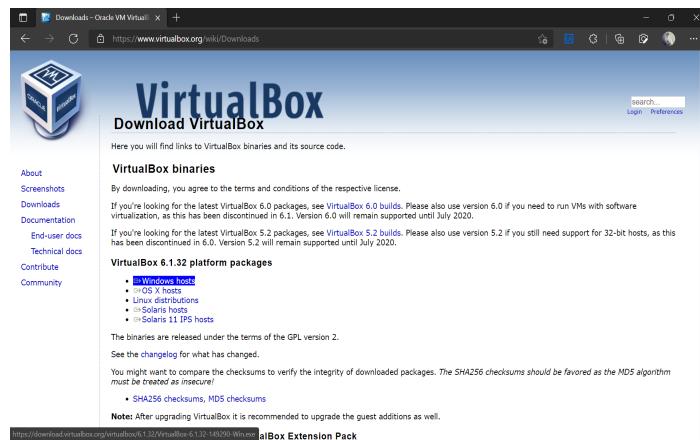
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Q1. Install Virtual box and making Ubuntu and Window Virtual Machine.

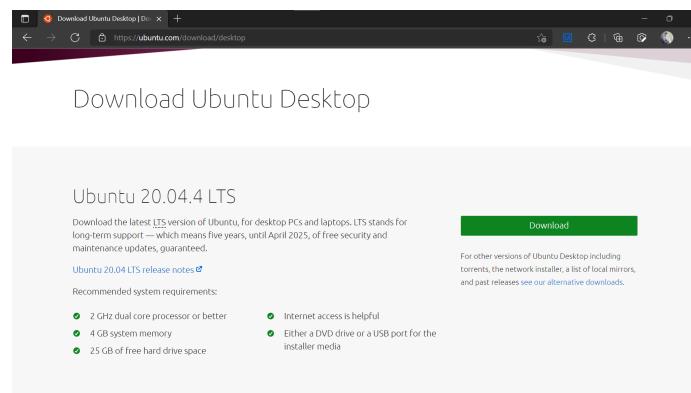
Ubuntu:

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



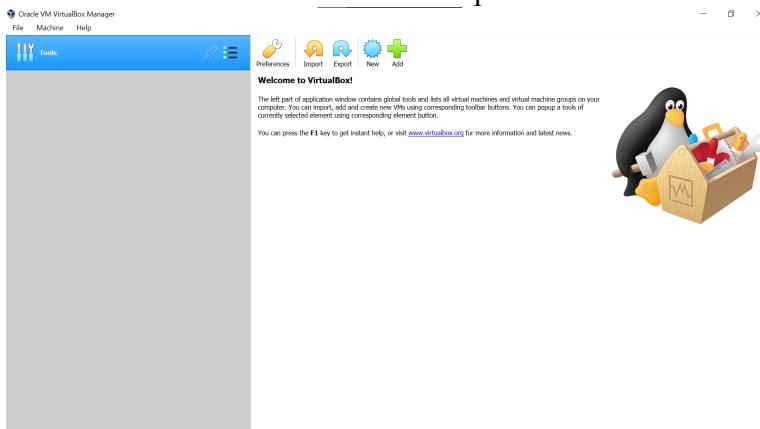
<https://www.virtualbox.org/wiki/Downloads>

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

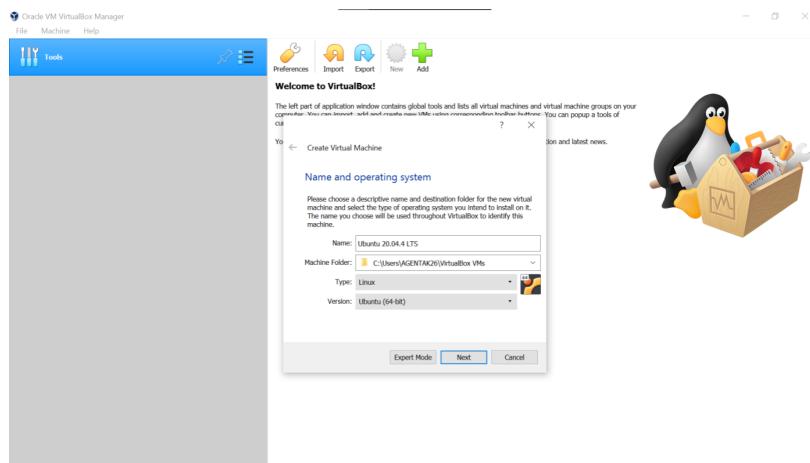


Note: The current version of Ubuntu only works on 64-bit machines.

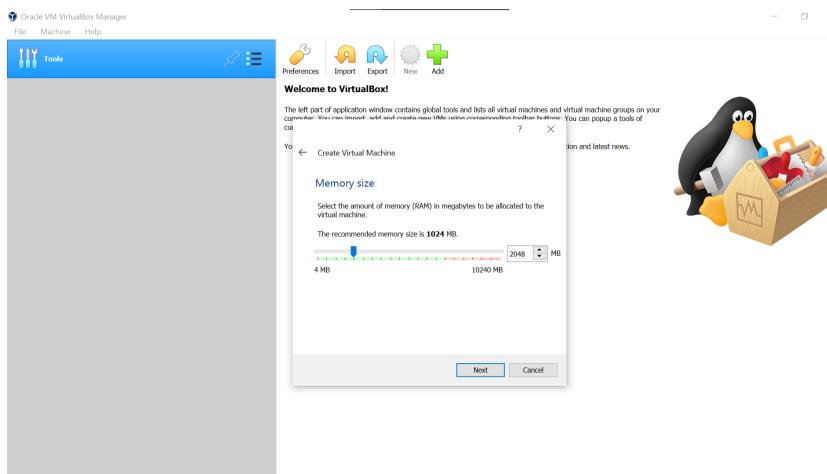
Step-3: Open VirtualBox and select New in the top taskbar.



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

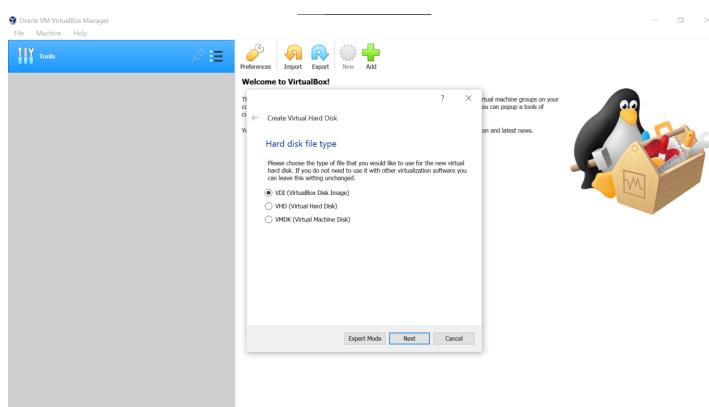


Step-5: Choose how much RAM you want to assign to the virtual machine and select Next. The recommended minimum is 1024 MB.



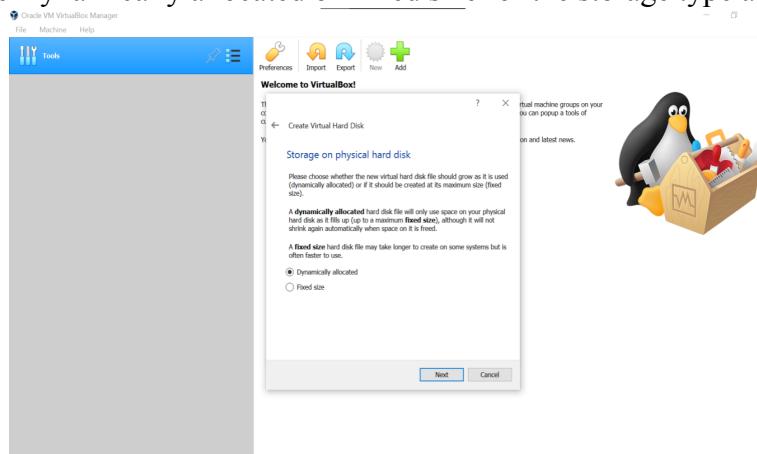
Step-6: Choose Create a virtual hard disk now and select Create.

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.

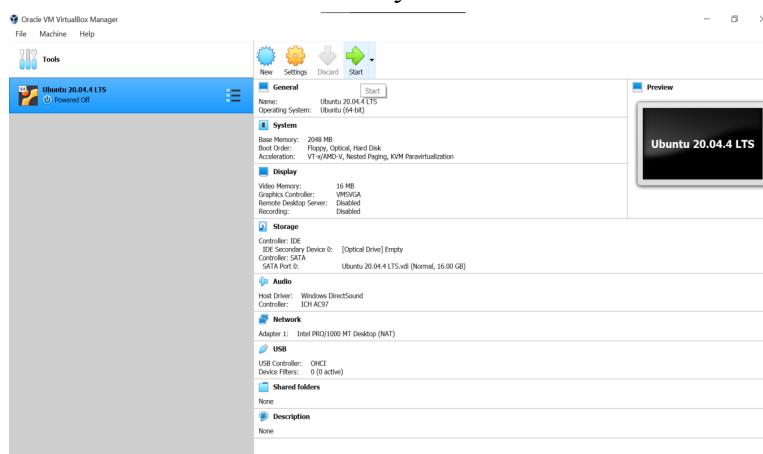


Tip: A fixed size disk performs better because the virtual machine doesn't have to increase the file size as you install software.

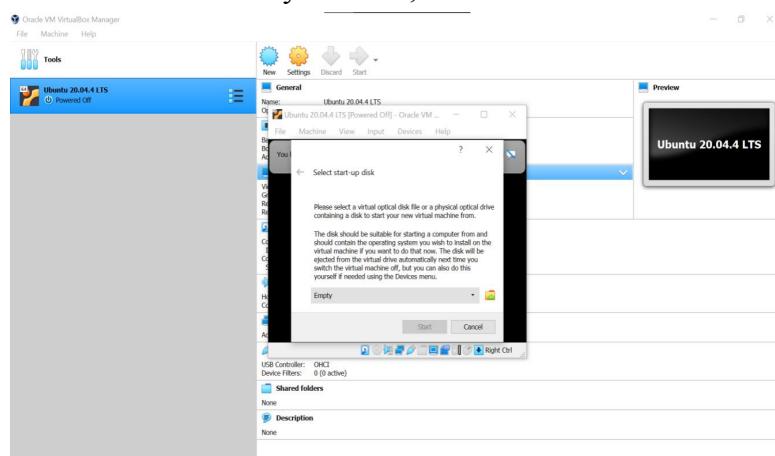
Step-9: Choose how much space you wish to set aside for Ubuntu and select Create.

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.

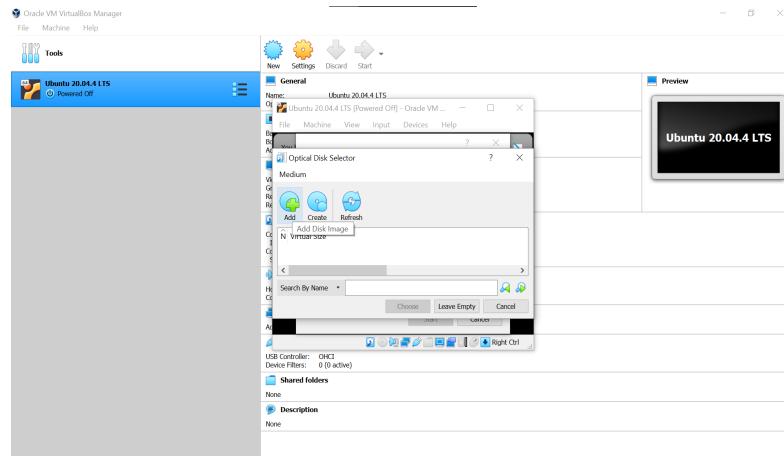
Step-10: The name of your virtual machine will now appear on the left side of the VirtualBox manager. Select Start in the toolbar to launch your VM.



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.

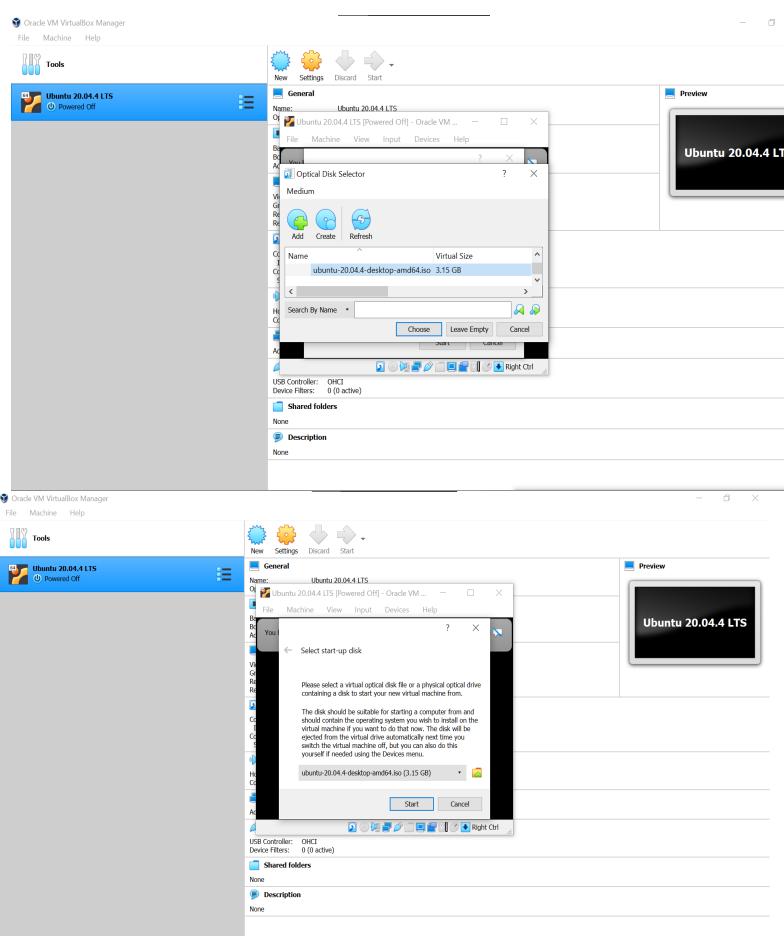


Step-12: Select Add in the window that pops up.

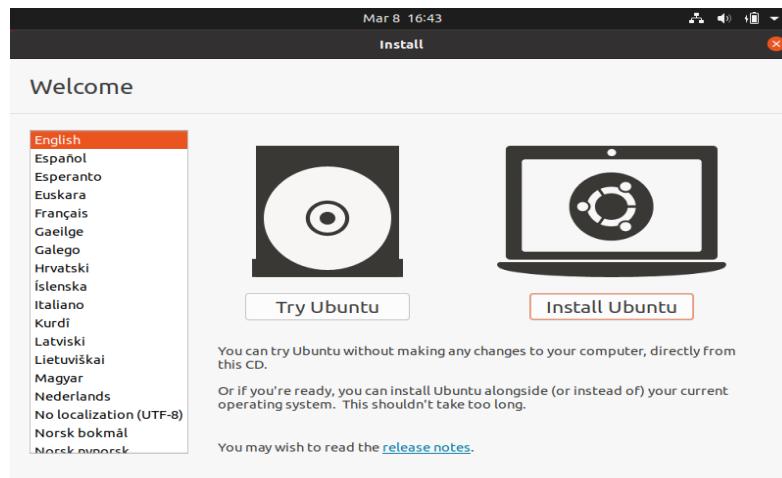


Step-13: Choose your Ubuntu disk image and select Open.

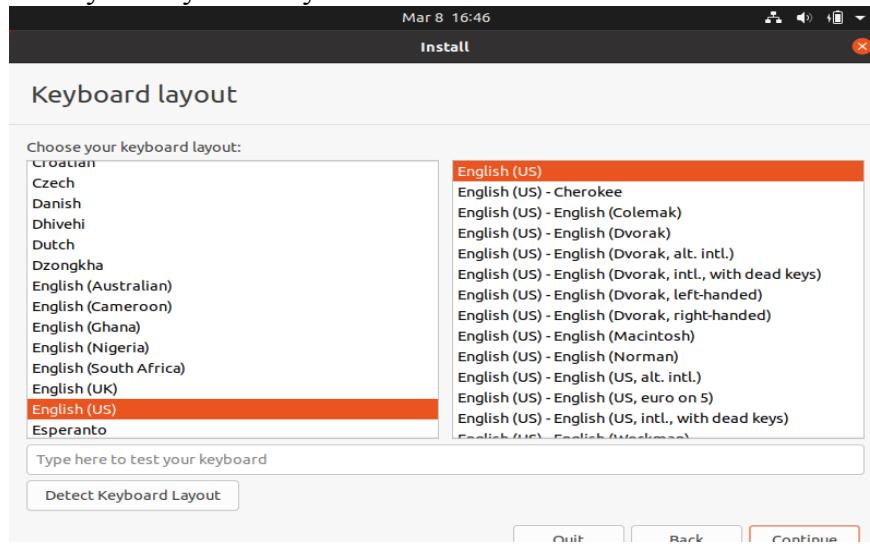
Step-14: - Select Choose



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



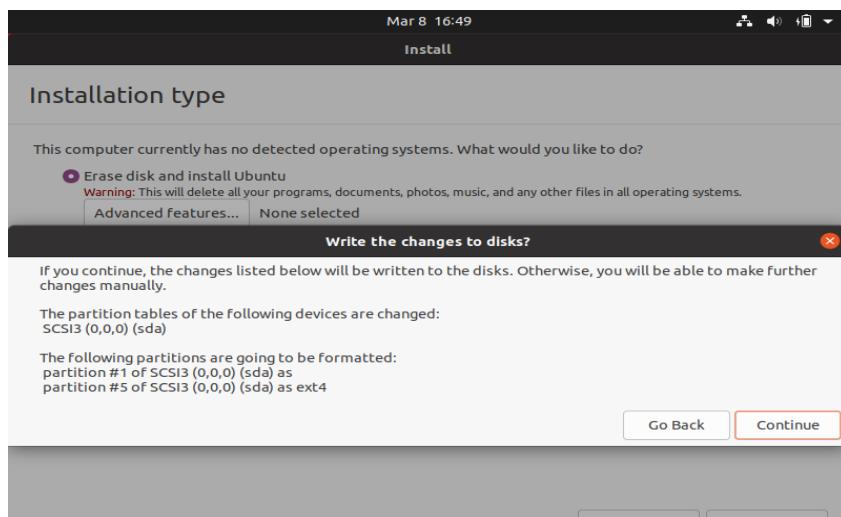
Step-17: Choose your keyboard layout and select Continue.



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

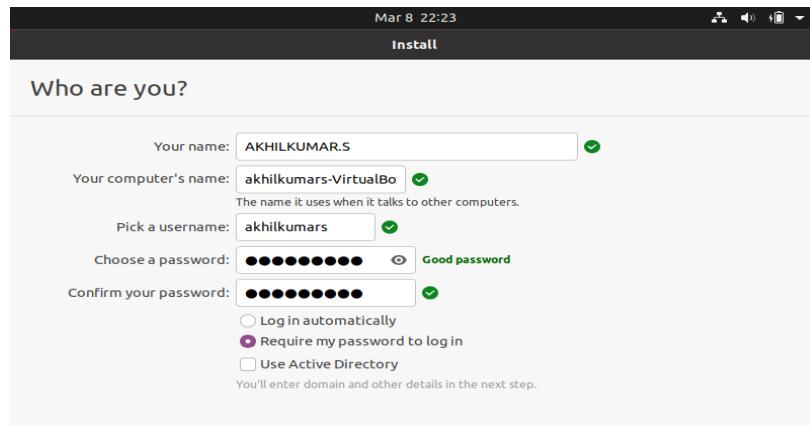
Step-19: Choose Erase disk and install Ubuntu and select Install Now, then select Continue to ignore the warning.

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

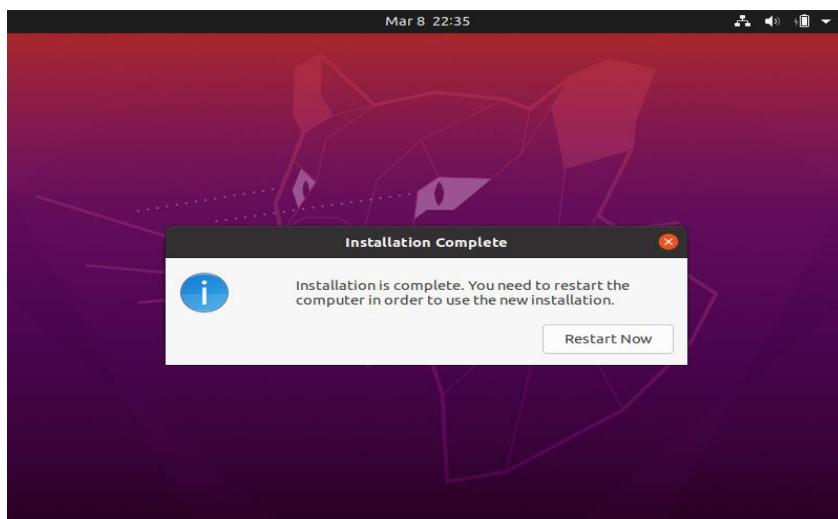


Step-20: - Choose your time zone on the map, then select Continue.

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

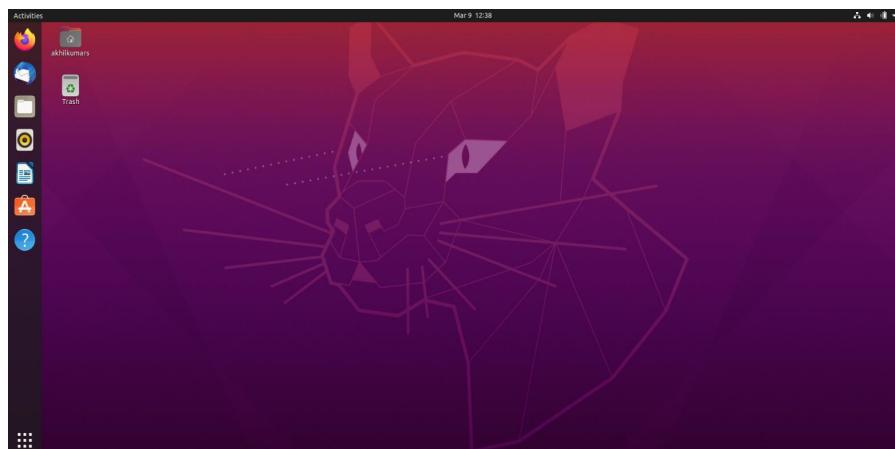


Step-22: - Select Restart Now.



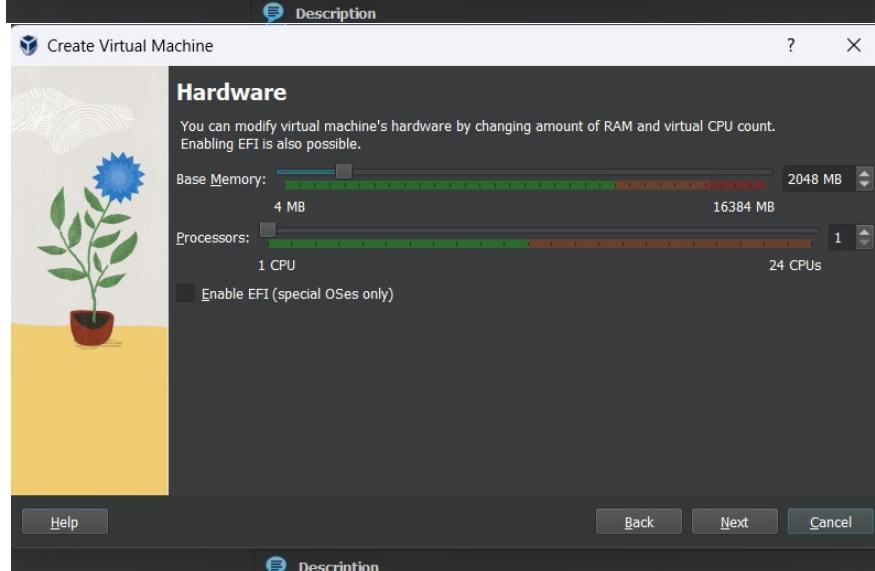
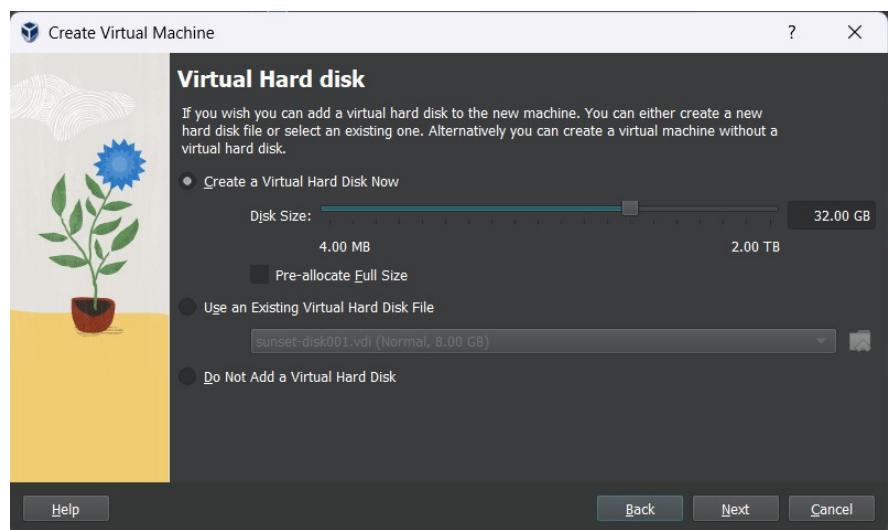
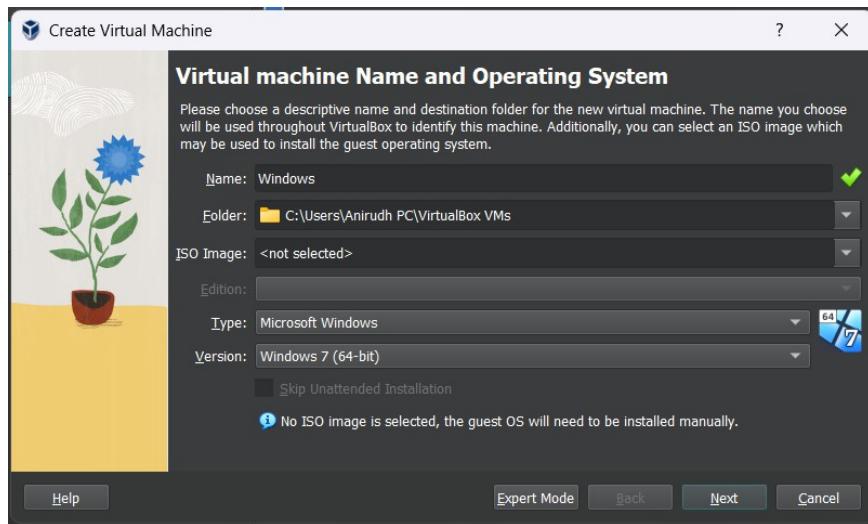
Step-23: - After restarting your VM and booting into Ubuntu, you may notice that the desktop doesn't scale correctly if you choose to view it in full-screen mode. You can fix this problem by selecting the VBox_Gas icon to install VirtualBox Guest Additions.

Output:

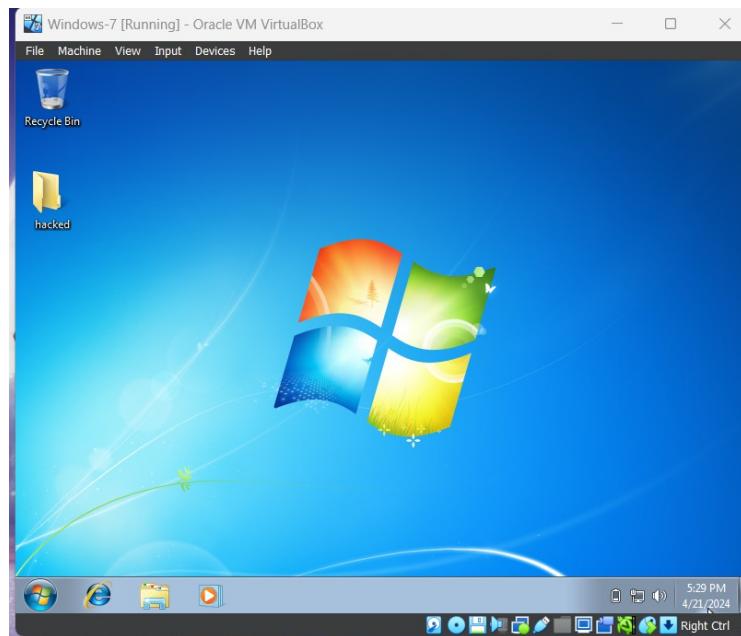


Windows:

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



Output:

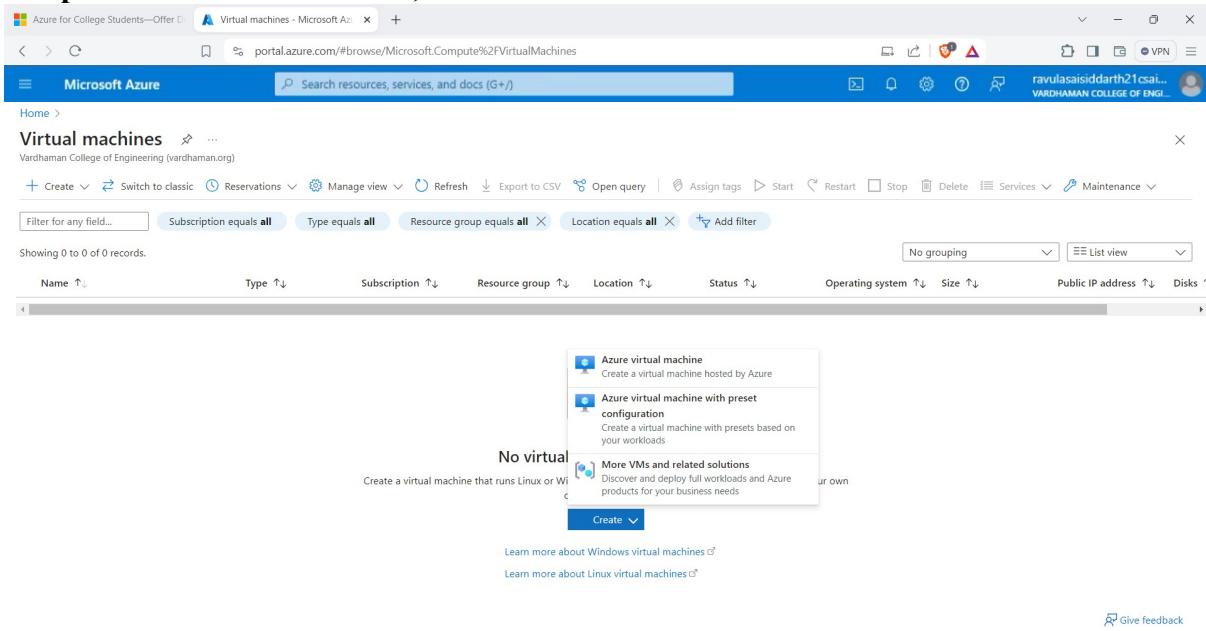


Result: Above experiment is successful executed And verified.

Q2) Create a Windows Virtual Machine in Microsoft Azure

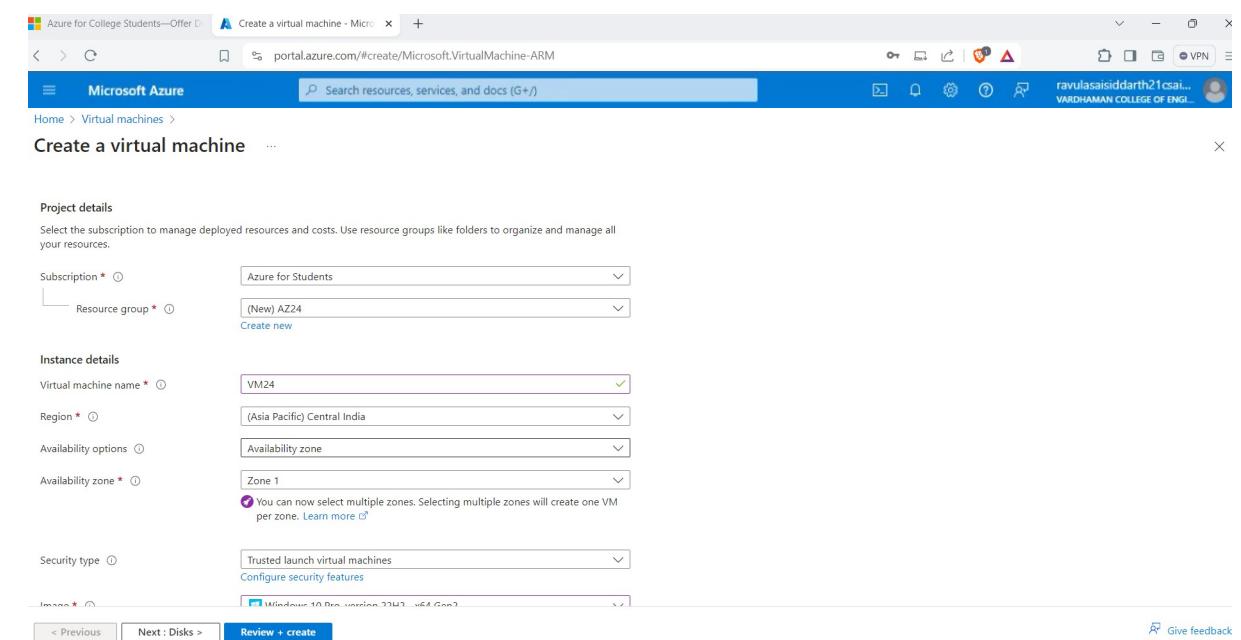
Step-1: Sign in to your Microsoft Azure account.

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



Azure for College Students—Offer D Virtual machines - Microsoft Azure +
portal.azure.com/#browse/Microsoft.Compute%2FVirtualMachines
Microsoft Azure Search resources, services, and docs (G+) Home > Virtual machines ... Vardhaman College of Engineering (vardhaman.org)
+ Create Switch to classic Reservations Manage view Refresh Export to CSV Open query Assign tags Start Restart Stop Delete Services Maintenance
Filter for any field... Subscription equals all Type equals all Resource group equals all Location equals all Add filter No grouping List view
Showing 0 to 0 of 0 records.
Name ↑ Type ↑ Subscription ↑ Resource group ↑ Location ↑ Status ↑ Operating system ↑ Size ↑ Public IP address ↑ Disks ↑
No virtual Create a virtual machine that runs Linux or Windows
Create Learn more about Windows virtual machines
Create a virtual machine with preset configuration Learn more about Linux virtual machines
More VMs and related solutions Discover and deploy full workloads and Azure Products for your business needs
Create
Give feedback

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”



Azure for College Students—Offer D Create a virtual machine - Microsoft Azure +
portal.azure.com/#create/Microsoft.VirtualMachine-ARM
Microsoft Azure Search resources, services, and docs (G+) Home > Virtual machines ... ravulasaisiddarth21csai... VARDHAMAN COLLEGE OF ENGI...
Create a virtual machine ...

Project details
Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.
Subscription * Azure for Students
Resource group * (New) AZ24 Create new

Instance details
Virtual machine name * VM24
Region * (Asia Pacific) Central India
Availability options Availability zone
Availability zone * Zone 1
You can now select multiple zones. Selecting multiple zones will create one VM per zone. Learn more
Security type Trusted launch virtual machines
Configure security features
Image * Windows 10 Pro, version 22H2, v220923-061909
< Previous Next : Disks > Review + create Give feedback

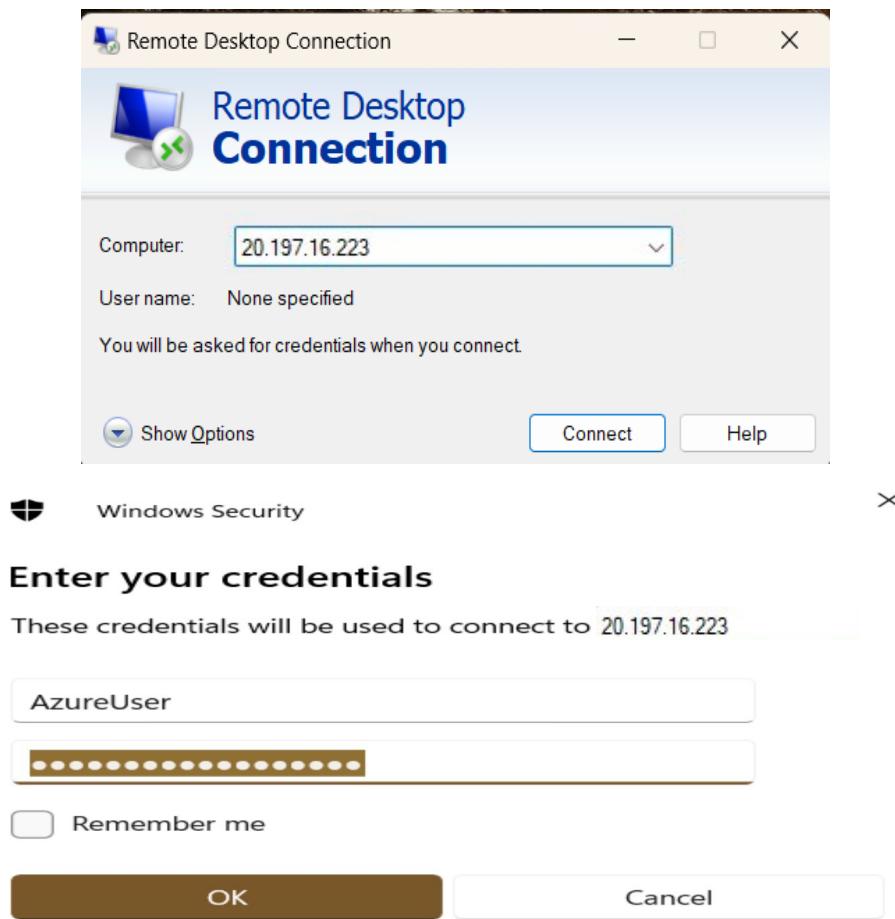
The screenshot shows the 'Create a virtual machine' wizard in the Azure portal. Step 3: Configure VM settings. The processor type is set to x64. A note says 'Arm64 is not supported with the selected image.' The size is set to Standard_DS1_v2 - 1 vcpu, 3.5 GiB memory (\$5.101.50/month). The administrator account is set to AzureUser. A note says 'Hibernate is not supported by the size that you have selected. Choose a size that is compatible with Hibernate to enable this feature.' The 'Inbound port rules' section is visible at the bottom.

Step-4: After Deployment is over, Go to the remote desktop connection.

The screenshot shows the 'Create a virtual machine' wizard in the Azure portal. Step 4: Review + create. Validation passed. The review summary shows 1 X Standard DS1 v2 by Microsoft, 6.9884 INR/hr, and a note about subscription credits apply. The 'TERMS' section contains legal agreement details. A note at the bottom says 'You have set RDP port(s) open to the internet. This is only recommended for testing. If you want to change this setting, go back to Basics tab.' The 'Create' button is at the bottom.

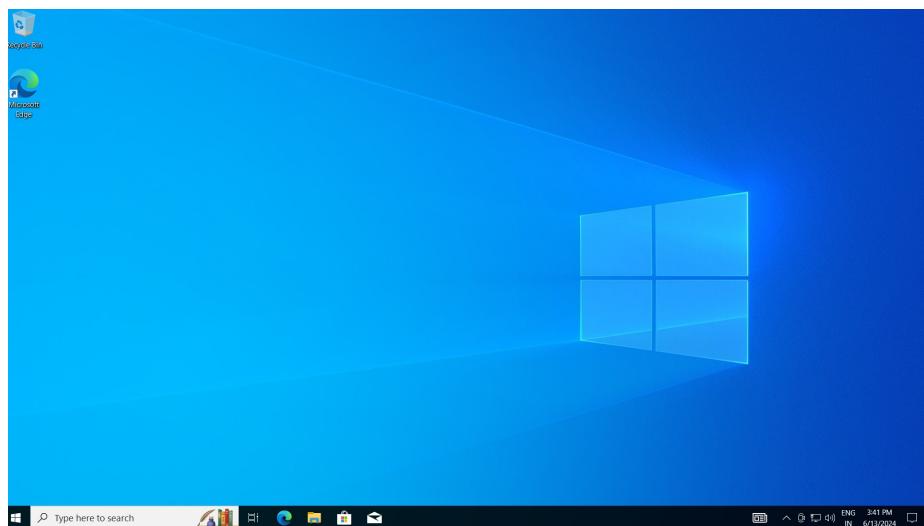
The screenshot shows the 'CreateVm-MicrosoftWindowsDesktop.Windows-10-win10-20240613203743 | Overview' page in the Azure portal. Deployment completed. Deployment name: CreateVm-MicrosoftWindowsDesktop.Windows... Start time: 6/13/2024, 8:41:09 PM. Deployment details: Setup auto-shutdown (Recommended), Monitor VM health, performance and network dependencies (Recommended), Run a script inside the virtual machine (Recommended). Next steps: Go to resource, Create another VM. Right sidebar includes links for Cost Management, Microsoft Defender for Cloud, and Free Microsoft tutorials.

Step-5: Firstly, copy the public IP Address of that created virtual machine.



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

Output:

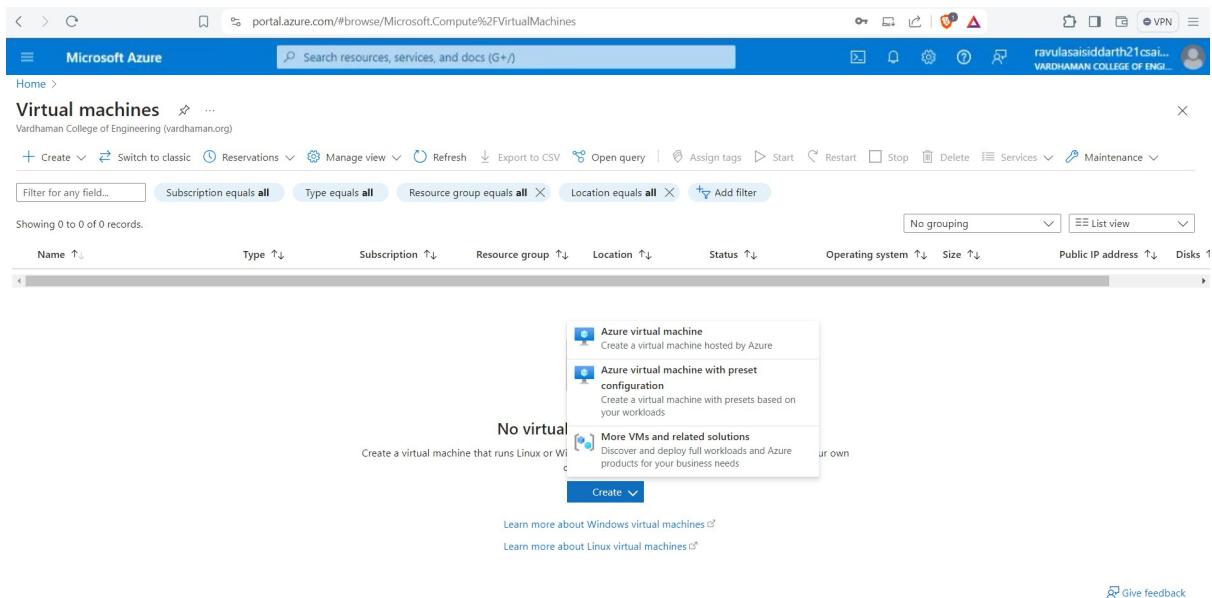


Result: Above experiment is successful executed And verified.

Q3) Create an Ubuntu Virtual Machine in Microsoft Azure

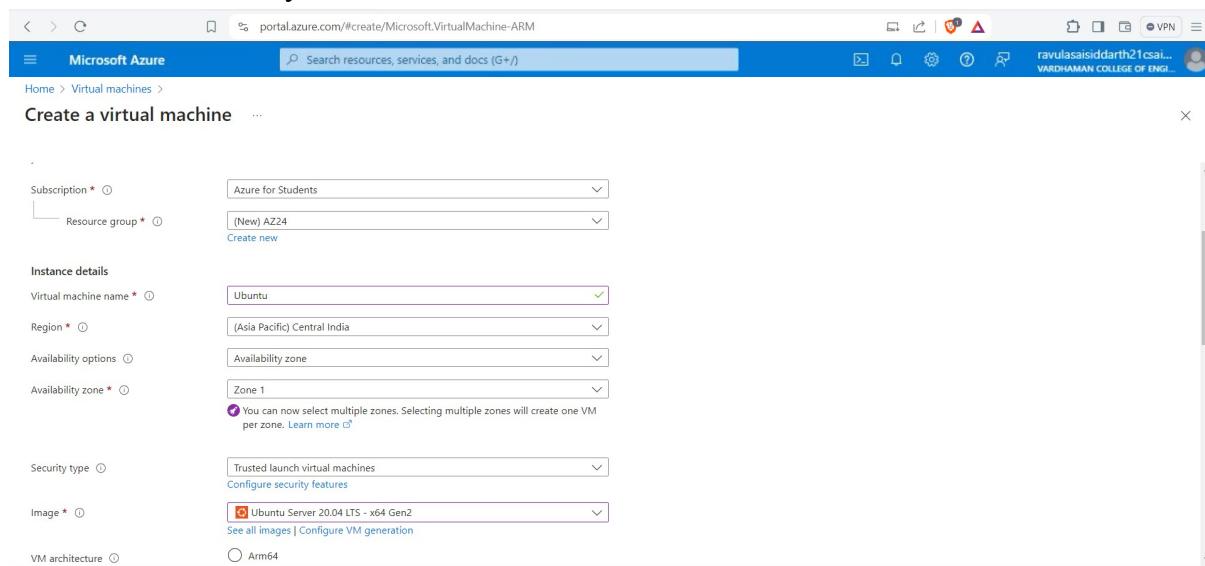
Step-1: Sign in to your Microsoft Azure account.

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



The screenshot shows the Microsoft Azure portal's Virtual machines page. At the top, there's a search bar and various navigation links. Below the header, there are several filter options like 'Subscription equals all', 'Type equals all', etc. The main area displays a message 'No virtual' with a sub-instruction 'Create a virtual machine that runs Linux or Windows'. A tooltip is overlaid on the 'Create' button, listing three options: 'Azure virtual machine', 'Azure virtual machine with preset configuration', and 'More VMs and related solutions'. The 'Create' button itself is a prominent blue button at the bottom of the tooltip.

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 finally click on “Create”.



The screenshot shows the 'Create a virtual machine' wizard in the Microsoft Azure portal. The 'Instance details' step is active. It requires filling out several fields: 'Subscription' (set to 'Azure for Students'), 'Resource group' (set to '(New) AZ24'), 'Virtual machine name' (set to 'Ubuntu'), 'Region' (set to '(Asia Pacific) Central India'), 'Availability zone' (set to 'Zone 1'), 'Security type' (set to 'Trusted launch virtual machines'), 'Image' (set to 'Ubuntu Server 20.04 LTS - x64 Gen2'), and 'VM architecture' (set to 'Arm64'). A note on the right side of the form states: 'You can now select multiple zones. Selecting multiple zones will create one VM per zone.' followed by a 'Learn more' link.

Microsoft Azure

Create a virtual machine

VM architecture: x64

Run with Azure Spot discount:

Size: Standard_DS1_v2 - 1 vcpu, 3.5 GiB memory (₹5,101.50/month)

Enable Hibernation:

Hibernate does not currently support Trusted launch and Confidential virtual machines for Linux images. [Learn more](#)

Administrator account

Authentication type: SSH public key

SSH public key: Azure now automatically generates an SSH key pair for you and allows you to store it for future use. It is a fast, simple, and secure way to connect to your virtual machine.

Username: azureuser

SSH public key source: Generate new key pair

Microsoft Azure

Create a virtual machine

Username: azureuser

SSH public key source: Generate new key pair

SSH Key Type: RSA SSH Format

Ed25519 SSH Format

Ed25519 offers better performance and security with a smaller key size, while RSA is still widely used particularly for legacy systems and applications.

Key pair name: ubuntu_key

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: Allow selected ports

Select inbound ports: SSH (22)

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: After Deployment is over, Go to the remote desktop connection.

Generate new key pair

An SSH key pair contains both a public key and a private key. **Azure doesn't store the private key.** After the SSH key resource is created, you won't be able to download the private key again. [Learn more](#)

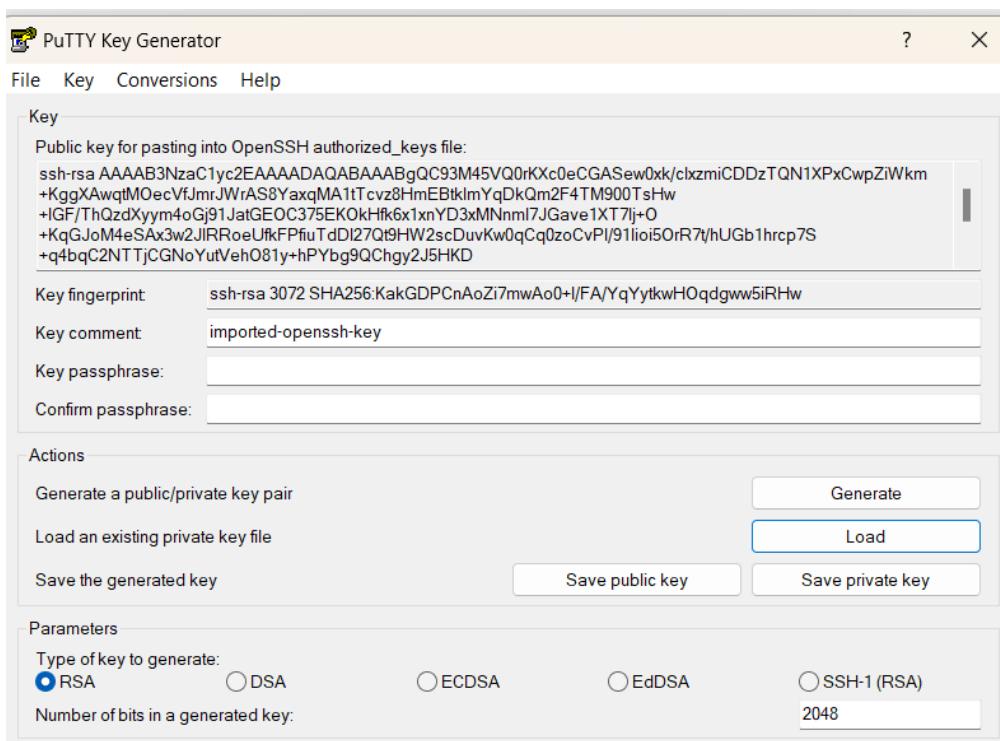
Download private key and create resource

Return to create a virtual machine

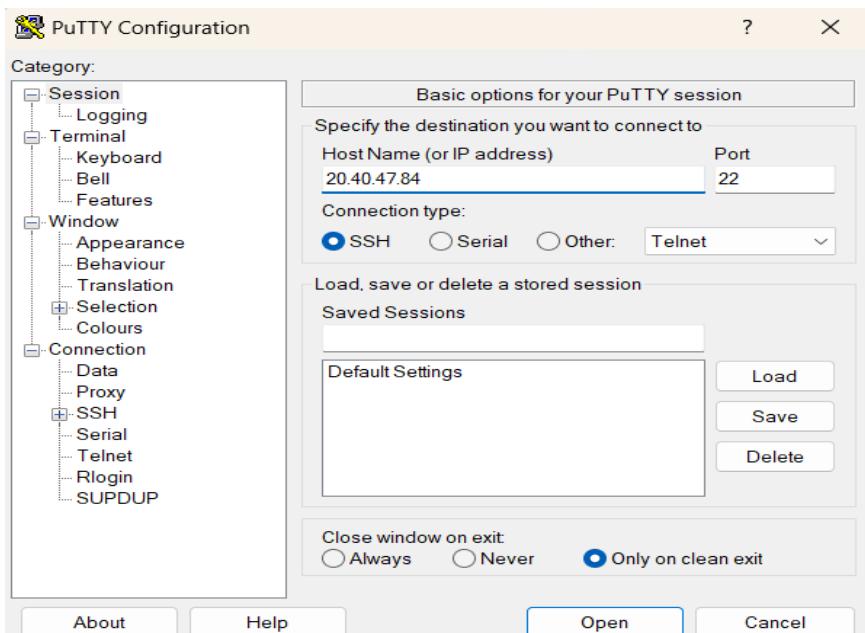
Step-5: Firstly, copy the public IP Address of that created virtual machine.

The screenshot shows the Microsoft Azure portal interface. The top navigation bar includes 'Microsoft Azure', a search bar, and user information. Below it, the 'Virtual machines' section is active, showing a list of VMs. One VM, named 'Ubuntu', is selected and detailed on the right. The 'Essentials' pane displays the VM's configuration: Resource group (AZ24), Status (Running), Location (Central India (Zone 1)), Subscription (Azure for Students), and more. The IP address listed is 20.40.47.84. The left sidebar contains navigation links for 'Create', 'Switch to classic', 'Search', 'Access control (IAM)', 'Tags', 'Diagnose and solve problems', 'Networking', 'Network settings', 'Load balancing', 'Application security groups', 'Network manager', 'Settings', 'Availability + scale', and 'Security'.

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

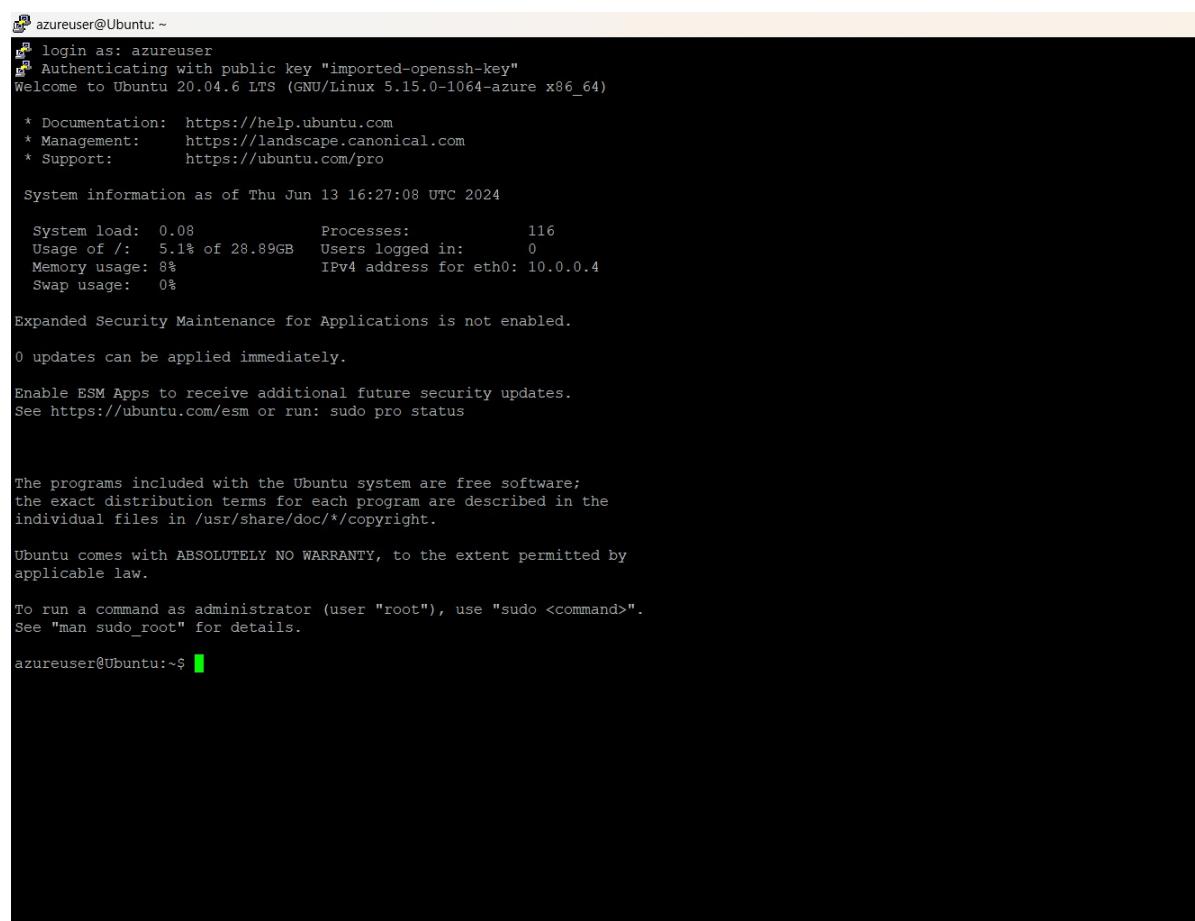


Step-7: In putty, put the Copied IP Adress into it, and then go to ssh->auth->credentials and then put the generated private key.



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

Output:



```
azureuser@Ubuntu: ~
[?] login as: azureuser
[?] Authenticating with public key "imported-openssh-key"
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-1064-azure x86_64)

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

System information as of Thu Jun 13 16:27:08 UTC 2024

System load: 0.08      Processes:           116
Usage of /: 5.1% of 28.89GB  Users logged in: 0
Memory usage: 8%          IPv4 address for eth0: 10.0.0.4
Swap usage: 0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

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

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

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

azureuser@Ubuntu:~$
```

Result: Above experiment is successful executed And verified.

Q4) Create a Virtual machine and do scale up in Azure.

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

The screenshot shows the Microsoft Azure portal's 'Virtual machines' blade. A specific Ubuntu VM is selected. The 'Overview' tab is active, displaying details such as Resource group (AZ24), Status (Running), Location (Central India (Zone 1)), and Public IP address (20.40.47.84). The 'Properties' tab shows the VM's configuration, including Computer name (Ubuntu) and Operating system (Linux (ubuntu 20.04)). The 'Networking' tab shows the public IP address (20.40.47.84) and network interface (ubuntu537_z1).

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

The screenshot shows the Microsoft Azure portal's 'Virtual machines' blade. A modal dialog box titled 'Stop this virtual machine' is open, asking 'Do you want to stop 'Ubuntu'?'. The 'Yes' button is highlighted. The background shows the same VM details as the previous screenshot.

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

Microsoft Azure

Search resources, services, and docs (G+)

Home > Virtual machines > Ubuntu

Ubuntu | Disks

Virtual machine

disk

Refresh Additional settings Feedback Troubleshoot

Settings

Disks

Backup + disaster recovery

Disaster recovery

OS disk

Swap OS disk

Disk name	Storage type	Size (GiB)	Max IOPS	Max throughput (MiB/s)	Encryption	Host caching
Ubuntu_disk1_a8c7bb2ef74d4bbdae4	Premium SSD LRS	30	120	25	SSE with PMK	Read/write

Data disks

Filter by name

Showing 0 of 0 attached data disks

Create and attach a new disk Attach existing disks

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

Apply Discard changes

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

Microsoft Azure

Search resources, services, and docs (G+)

Home > Virtual machines > Ubuntu

Ubuntu | Disks

Virtual machine

disk Refresh Additional settings Feedback Troubleshoot

Settings Disks

Backup + disaster recovery Disaster recovery

OS disk

Swap OS disk

Disk name	Storage type	Size (GiB)	Max IOPS	Max throughput (MiB/s)	Encryption	Host caching
Ubuntu_disk1_a8c7bb2ef74d4bbdae4	Premium SSD LRS	30	120	25	SSE with PMK	Read/write

Data disks

Filter by name

Showing 0 of 0 attached data disks

Create and attach a new disk Attach existing disks

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

Step-5: On the left side there will be select + performance and click on size.

The screenshot shows the Microsoft Azure portal interface for selecting a virtual machine size. The top navigation bar includes the Microsoft Azure logo, a search bar, and account information. Below the header, the breadcrumb path "Home > Ubuntu" is visible. The main content area is titled "Ubuntu | Size" and shows a list of VM sizes. A sidebar on the left lists "Availability + scale" and "Size". The "Size" tab is selected. At the top of the main content, a note says, "If the virtual machine is currently running, changing its size will cause it to be restarted. Stopping the virtual machine may reveal additional sizes." Below this are filters for "Search by VM size...", "vCPUs : All", "RAM (GiB) : All", "Display cost : Monthly", and "Add filter". The table displays 416 VM sizes, grouped by series. The columns are: VM Size ↑, Type ↑, vCPUs ↑↓, RAM (GiB) ↑↓, Data disks ↑↓, Max IOPS ↑↓, and Local storage (GiB) ↑↓. The first six rows show the most used sizes by Azure users: DS1_v2, D2s_v3, D2as_v4, DS2_v2, D4s_v3, and DS3_v2. Each row includes a link to more details. The table also shows sections for "D-Series v4", "E-Series v4", and "F-Series v2". A "Group by series" button is located at the top right of the table. The bottom of the page contains a "Resize" button and a note about pricing.

VM Size ↑	Type ↑	vCPUs ↑↓	RAM (GiB) ↑↓	Data disks ↑↓	Max IOPS ↑↓	Local storage (GiB) ↑↓
DS1_v2 ↗	General purpose	1	3.5	4	3200	7 (SCSI)
D2s_v3 ↗	General purpose	2	8	4	3200	16 (SCSI)
D2as_v4 ↗	General purpose	2	8	4	3200	16 (SCSI)
DS2_v2 ↗	General purpose	2	7	8	6400	14 (SCSI)
D4s_v3 ↗	General purpose	4	16	8	6400	32 (SCSI)
DS3_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						

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](#)

Step-6: click on disk name and select your preferred ram size, save it.

The screenshot shows the Microsoft Azure interface for managing a disk named "Ubuntu_disk1_a8c7bb2ef74d4bbdae4312c4683c2c8b". The "Size + performance" tab is selected. A table lists various storage configurations:

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	-	-

Buttons at the bottom: Save, Discard, Give feedback.

The screenshot shows the Microsoft Azure interface for managing disks under the "Ubuntu" virtual machine. The "Disks" section is selected. It displays the "OS disk" and "Data disks" sections:

- OS disk:** Disk name: Ubuntu_disk1_a8c7bb2ef74d4bbdae431, Storage type: Premium SSD LRS, Size (GiB): 30, Max IOPS: 120, Max throughput: 25, Encryption: SSE with PMK, Host caching: Read/write.
- Data disks:** Shows 0 attached data disks. Buttons: Create and attach a new disk, Attach existing disks.

Left sidebar navigation includes: Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Connect, Networking, Network settings, Load balancing, Application security groups, Network manager, Settings, and Extensions + applications.

Result: Above experiment is successful executed And verified.

Q5) Create a Virtual machine and do lock for VM in AZURE.

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

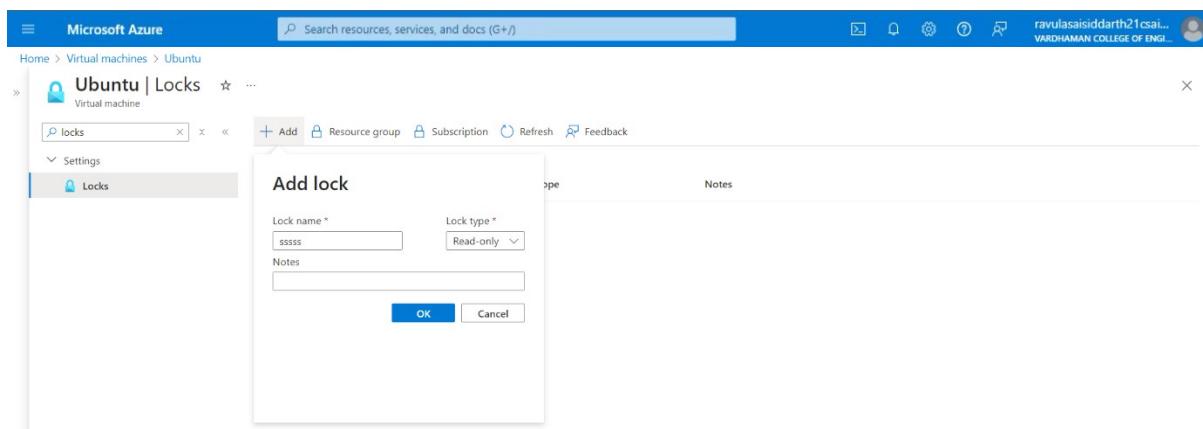
The screenshot shows the Microsoft Azure portal interface for a virtual machine named 'Ubuntu'. The left sidebar shows navigation options like Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Connect, Networking, Network settings, Load balancing, Application security groups, Network manager, Settings, Availability + scale, Security, Backup + disaster recovery, Operations, and Monitoring. The main content area displays the 'Essentials' section with details such as Resource group (AZ22), Status (Running), Location (Central India (Zone 1)), Subscription (Azure for Students), Subscription ID (763b4aa1-744d-4fa4-9b3a-815e4bdc0be8), Availability zone (1), Operating system (Linux (ubuntu 20.04)), Size (Standard DS1 v2 (1 vcpu, 3.5 GB memory)), Public IP address (20.40.47.84), Virtual network/subnet (Ubuntu-vnet/default), DNS name (Not configured), Health state (-), and Time created (6/13/2024, 4:15 PM UTC). Below this is a 'Tags (edit)' section with 'Add tags'. At the bottom, there are tabs for Properties, Monitoring, Capabilities (7), Recommendations, and Tutorials. The 'Virtual machine' properties section shows details like Computer name (Ubuntu), Operating system (Linux (ubuntu 20.04)), VM generation (V2), VM architecture (x64), Agent status (Ready), Agent version (2.11.1.4), and Hibernation (Disabled). The 'Networking' section shows a public IP address of 20.40.47.84 and a private IP address of -.

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 'Ubuntu' virtual machine. The left sidebar shows 'Settings' and 'Locks'. The main content area shows a 'Locks' blade with a search bar for 'locks'. Below it is an 'Add lock' dialog box. The dialog box has fields for 'Lock name *' (containing 'sssss') and 'Lock type *' (set to 'Read-only'). There is also a 'Notes' field and 'OK' and 'Cancel' buttons. The background shows the virtual machine's details and networking information.

Step-3: click on ok.

Similarly, you can do for Resource group and subscriptions.



Note: After creating the lock, you need to delete it for deleting VM.

Property	Value
Resource group	(move) A224
Status	Running
Location	Central India (Zone 1)
Subscription (move)	Azure for Students
Subscription ID	763b4aa1-744d-4fa4-9b3a-815e4bd0be8
Availability zone	1
Operating system	Linux (ubuntu 20.04)
Size	Standard_B1ms_v3 3.5 GB memory
Public IP address	20.40.47.84
Virtual network/subnet	Ubuntu-u-net/default
DNS name	Not configured
Health state	Normal
Time created	6/13/2024, 4:15 PM UTC

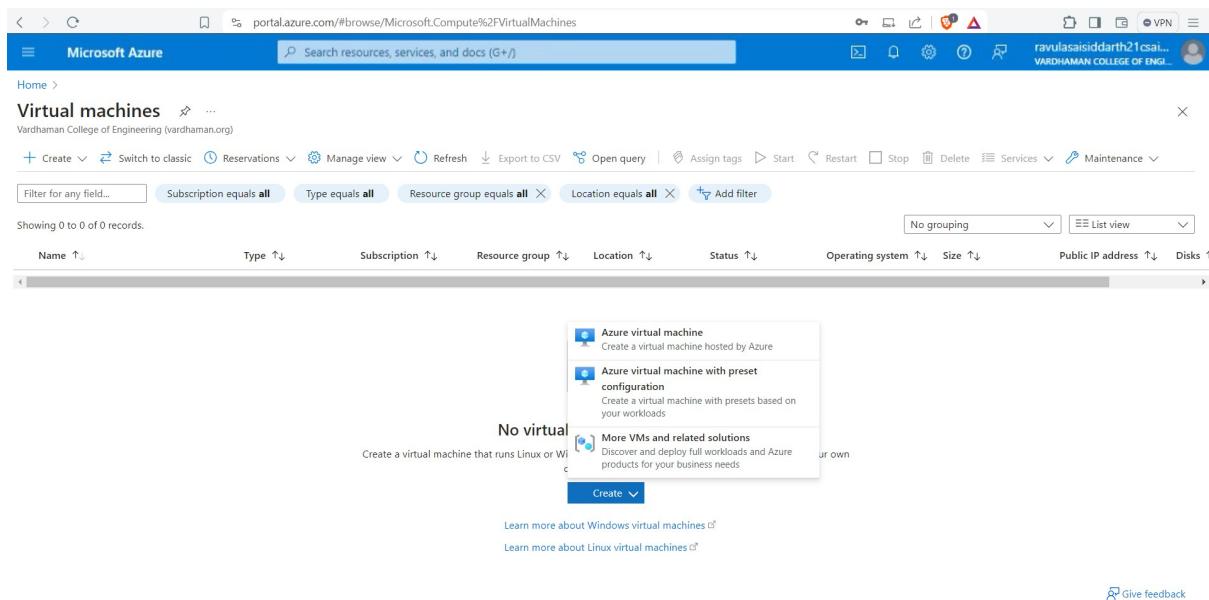
Lock name	Lock type	Scope	Notes
This resource has no locks.			

Result: Above experiment is successful executed And verified.

Q6) Create Ubuntu VM and run a python program in it.

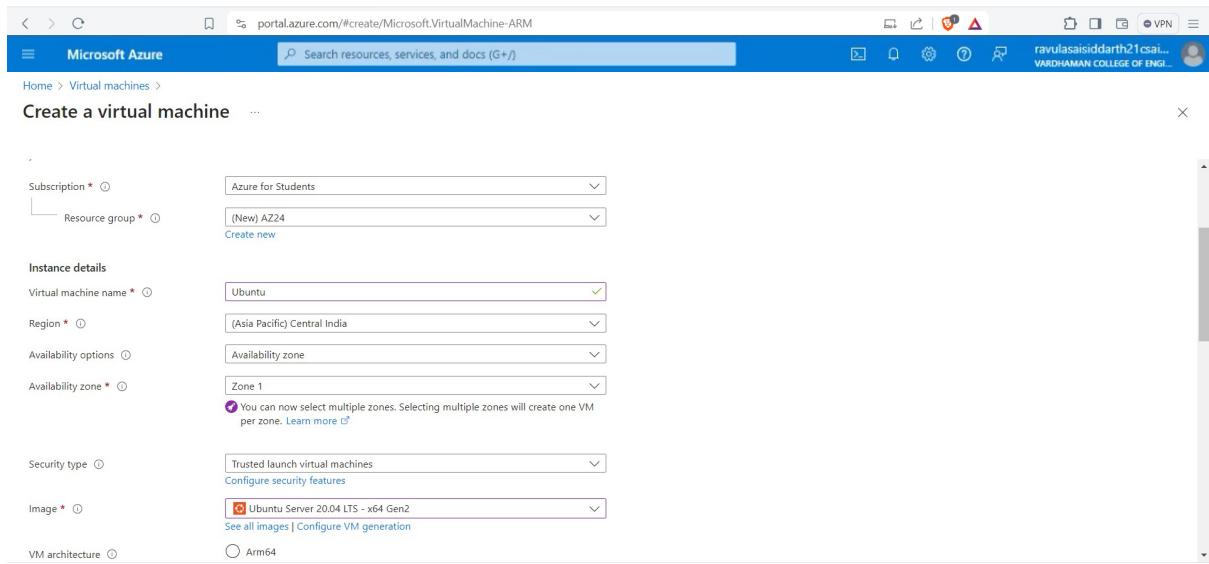
Step-1: Sign in to your Microsoft Azure account.

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



The screenshot shows the Microsoft Azure portal's Virtual machines page. At the top, there are various filters like 'Subscription equals all', 'Type equals all', etc. Below the filters, it says 'Showing 0 to 0 of 0 records'. In the center, there is a 'Create' button with a tooltip. The tooltip lists three options: 'Azure virtual machine' (which is selected and highlighted in blue), 'Azure virtual machine with preset configuration', and 'More VMs and related solutions'. Below the tooltip, there are two links: 'Learn more about Windows virtual machines' and 'Learn more about Linux virtual machines'.

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 finally click on “Create”.



The screenshot shows the 'Create a virtual machine' wizard in the Microsoft Azure portal. The current step is 'Instance details'. The form includes the following fields:

- Subscription: Azure for Students
- Resource group: (New) AZ24
- Virtual machine name: Ubuntu
- Region: (Asia Pacific) Central India
- Availability options: Availability zone (Zone 1)
- Security type: Trusted launch virtual machines
- Image: Ubuntu Server 20.04 LTS - x64 Gen2
- VM architecture: Arm64

The screenshot shows the 'Create a virtual machine' wizard in the Microsoft Azure portal. The 'Basic' step is selected. Configuration options include:

- VM architecture:** x64 (selected)
- Run with Azure Spot discount:** Unchecked
- Size:** Standard_DS1_v2 - 1 vcpu, 3.5 GB memory (₹5,101.50/month)
- Enable Hibernation:** Unchecked
- Administrator account:**
 - Authentication type:** SSH public key (selected)
 - Username:** azureuser
 - SSH public key source:** Generate new key pair

The screenshot shows the 'Create a virtual machine' wizard in the Microsoft Azure portal. The 'Inbound port rules' step is selected. Configuration options include:

- Username:** azureuser
- SSH public key source:** Generate new key pair
- SSH Key Type:** RSA SSH Format (selected)
- Key pair name:** ubuntu_key
- 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:** Allow selected ports (selected)
 - Select inbound ports:** SSH (22)
 - Note:** All traffic from the internet will be blocked by default. You will be able to change inbound port rules in the VM > Networking page.

Step-4: After Deployment is over, Go to the remote desktop connection.

The screenshot shows a confirmation dialog titled 'Generate new key pair'. It contains the following text:

An SSH key pair contains both a public key and a private key. **Azure doesn't store the private key.** After the SSH key resource is created, you won't be able to download the private key again. [Learn more](#)

Below the text are two buttons:

- Download private key and create resource** (in blue)
- Return to create a virtual machine** (in white box)

Step-5: Firstly, copy the public IP Address of that created virtual machine.

Virtual machines

Ubuntu Virtual machine

Essentials

- Resource group (move) **A24**
- Status: Running
- Location: Central India (Zone 1)
- Subscription (move) **Azure for Students**
- Subscription ID: 763ba4a1-744d-4fa4-9b3a-815e4bcd0be8
- Availability zone: 1
- Tags (edit) [Add tags](#)

Operating system: Linux (ubuntu 20.04)

Size: Standard_b1ms_vcpu_3.5_GiB_memory

Public IP address: 20.40.47.241

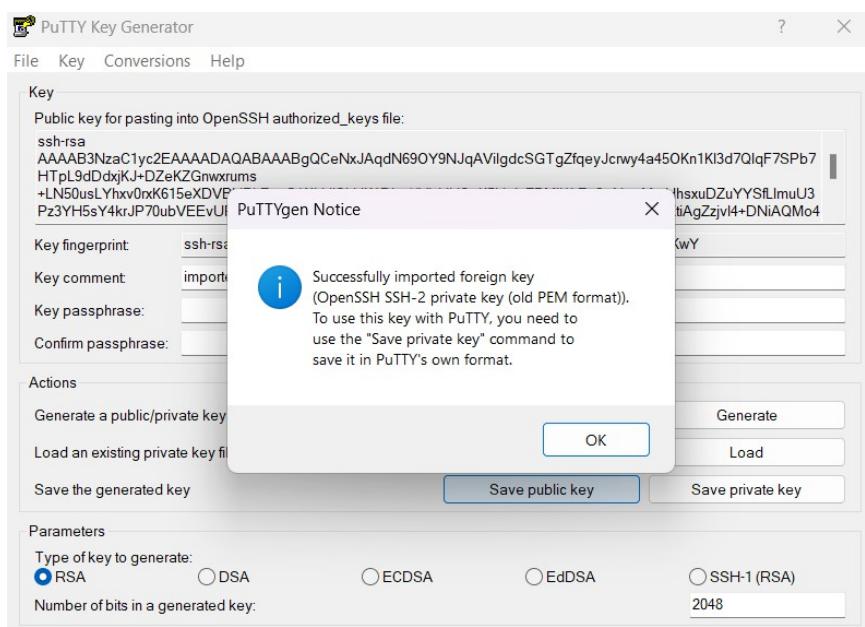
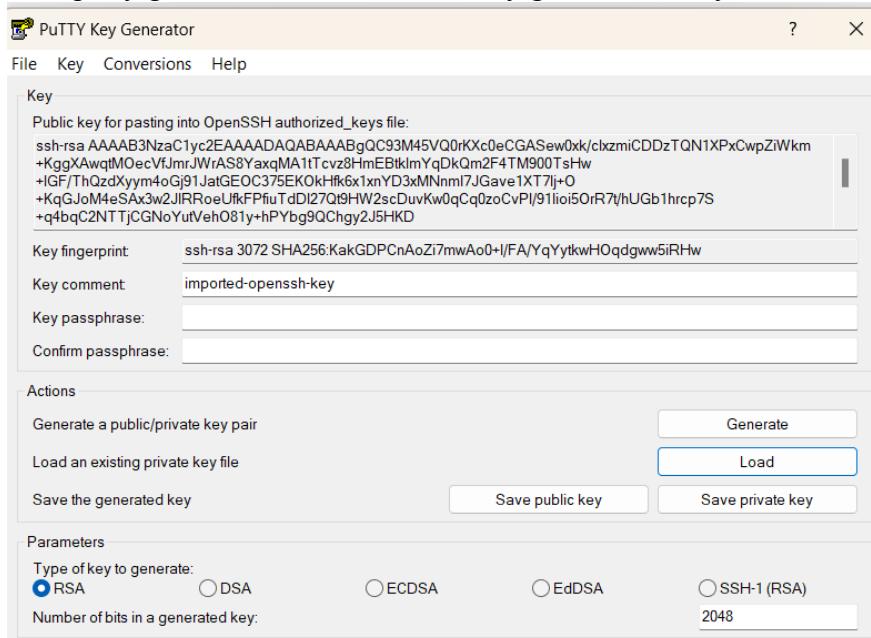
Virtual network/subnet: Ubuntu-vnet.default

DNS name: Not configured

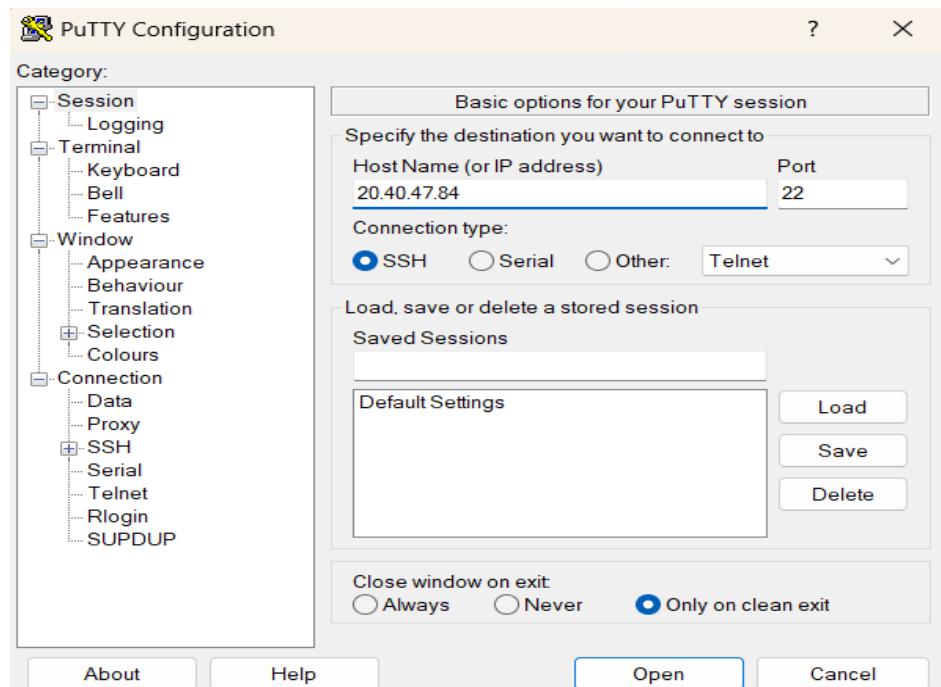
Health state: -

Time created: 6/13/2024, 4:15 PM UTC

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



Step-7: In putty, put the Copied IP Adress into it, and then go to ssh->auth->credentials and then 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: Login with your username and type python3, write your python program and execute it.

```
azureuser@Ubuntu: ~
[1] login as: azureuser
[2] Authenticating with public key "imported-openssh-key"
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-1064-azure x86_64)

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

System information as of Thu Jun 13 16:27:08 UTC 2024

System load: 0.08      Processes:           116
Usage of /: 5.1% of 28.89GB   Users logged in: 0
Memory usage: 8%
Swap usage: 0%

Expanded Security Maintenance for Applications is not enabled.
0 updates can be applied immediately.

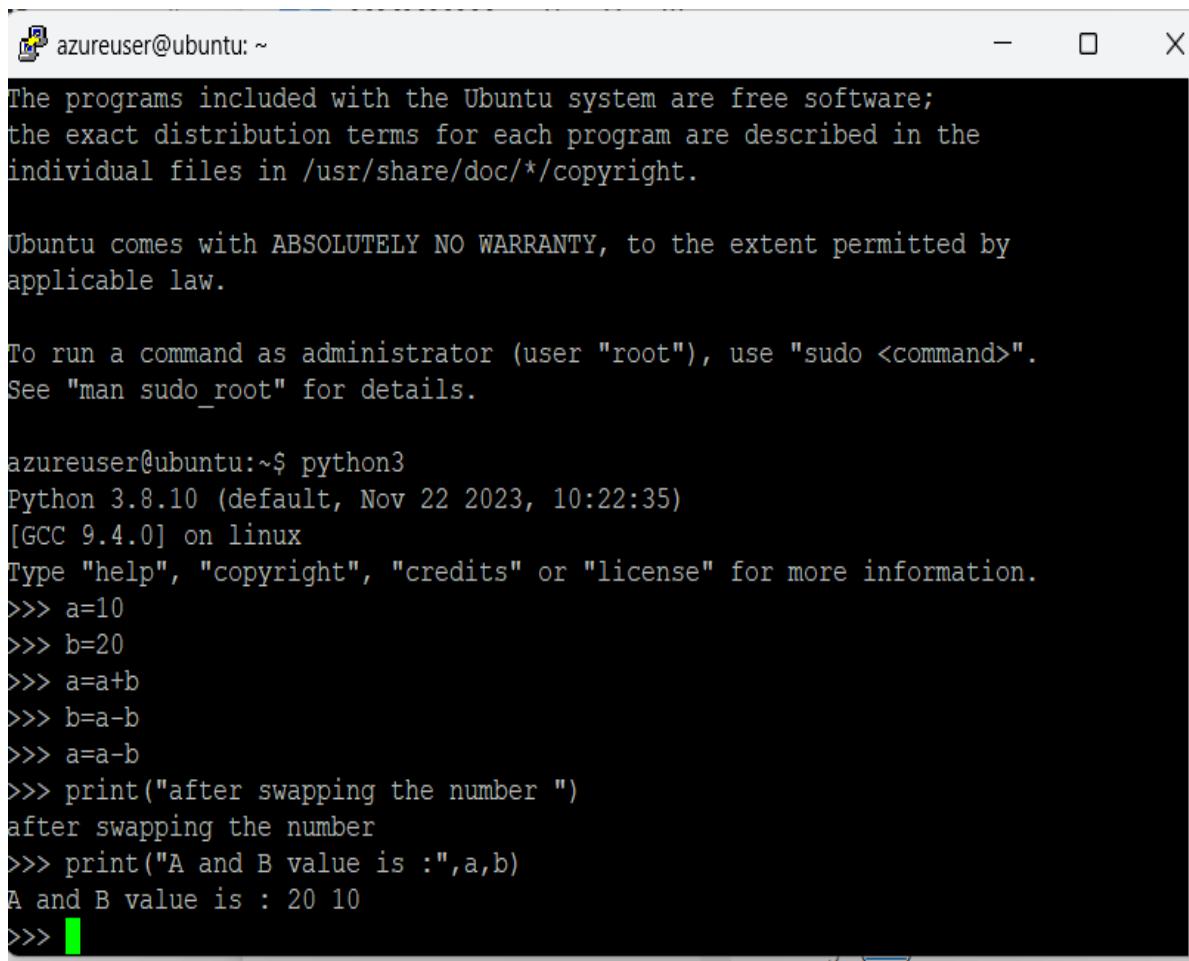
Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

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

azureuser@Ubuntu:~$
```



The screenshot shows a terminal window titled "azureuser@ubuntu: ~". The window contains the following text:

```
The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

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

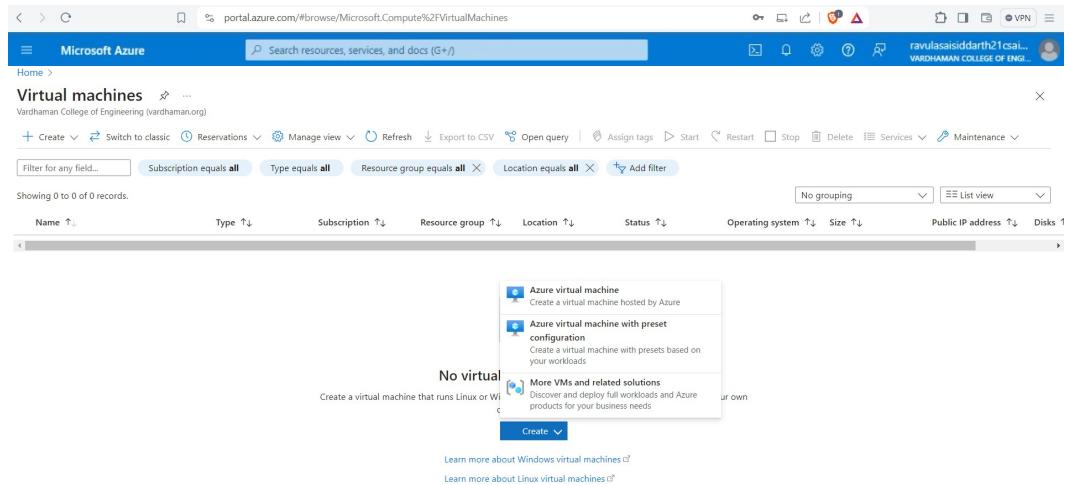
azureuser@ubuntu:~$ python3
Python 3.8.10 (default, Nov 22 2023, 10:22:35)
[GCC 9.4.0] on linux
Type "help", "copyright", "credits" or "license" for more information.
>>> a=10
>>> b=20
>>> a=a+b
>>> b=a-b
>>> a=a-b
>>> print("after swapping the number ")
after swapping the number
>>> print("A and B value is :",a,b)
A and B value is : 20 10
>>> 
```

Result: Above experiment is successful executed And verified.

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

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 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 finally click on “Create”.

The form fields shown in the screenshots include:

- Subscription:** Azure for Students
- Resource group:** (New) AZ24
- Instance details:**
 - Virtual machine name:** Ubuntu
 - Region:** (Asia Pacific) Central India
 - Availability options:** Availability zone
 - Availability zone:** Zone 1
- Security type:** Trusted launch virtual machines
- Image:** Ubuntu Server 20.04 LTS - x64 Gen2
- VM architecture:** Arm64 (radio button)
- Run with Azure Spot discount:** (checkbox)
- Size:** Standard_DS1_v2 - 1 vcpu, 3.5 GiB memory (\$5.101.50/month)
- Enable Hibernation:** (checkbox)
- Administrator account:**
 - Authentication type:** SSH public key (radio button)
 - Username:** azureuser
 - Generate new key pair:** (checkbox)

The screenshot shows the 'Create a virtual machine' wizard in Microsoft Azure. The current step is 'Inbound port rules'. The configuration includes:

- Username:** azureuser
- SSH public key source:** Generate new key pair
- SSH Key Type:** RSA SSH Format (selected)
- Key pair name:** ubuntu_key
- Inbound port rules:** Allow selected ports (SSH (22))

Step-4: After Deployment is over, Go to the remote desktop connection.

Generate new key pair

i An SSH key pair contains both a public key and a private key. **Azure doesn't store the private key.** After the SSH key resource is created, you won't be able to download the private key again. [Learn more](#)

Download private key and create resource

Return to create a virtual machine

Step-5: Firstly, copy the public IP Address of that created virtual machine.

Ubuntu Virtual machine

Essentials

- Resource group: (move) A224
- Status: Running
- Location: Central India (Zone 1)
- Subscription: (move) Azure for Students
- Subscription ID: 763b4aa1-744d-4fa4-9b3a-815e4bcd0be8
- Availability zone: 1
- Tags: (edit) Add tags

Operating system: Linux (ubuntu 20.04)

Size: Standard_B2s (1 vCPU, 3.5 GB memory)

Public IP Address: 20.40.47.84

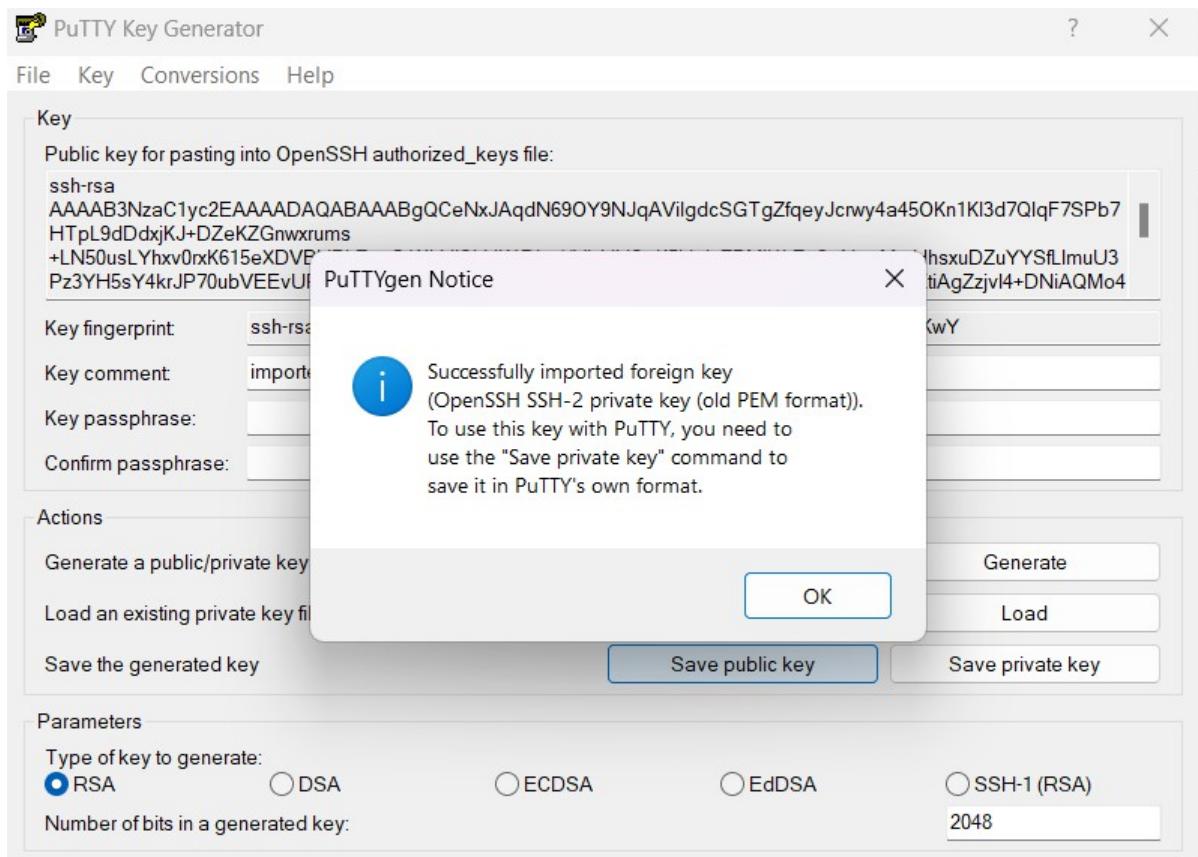
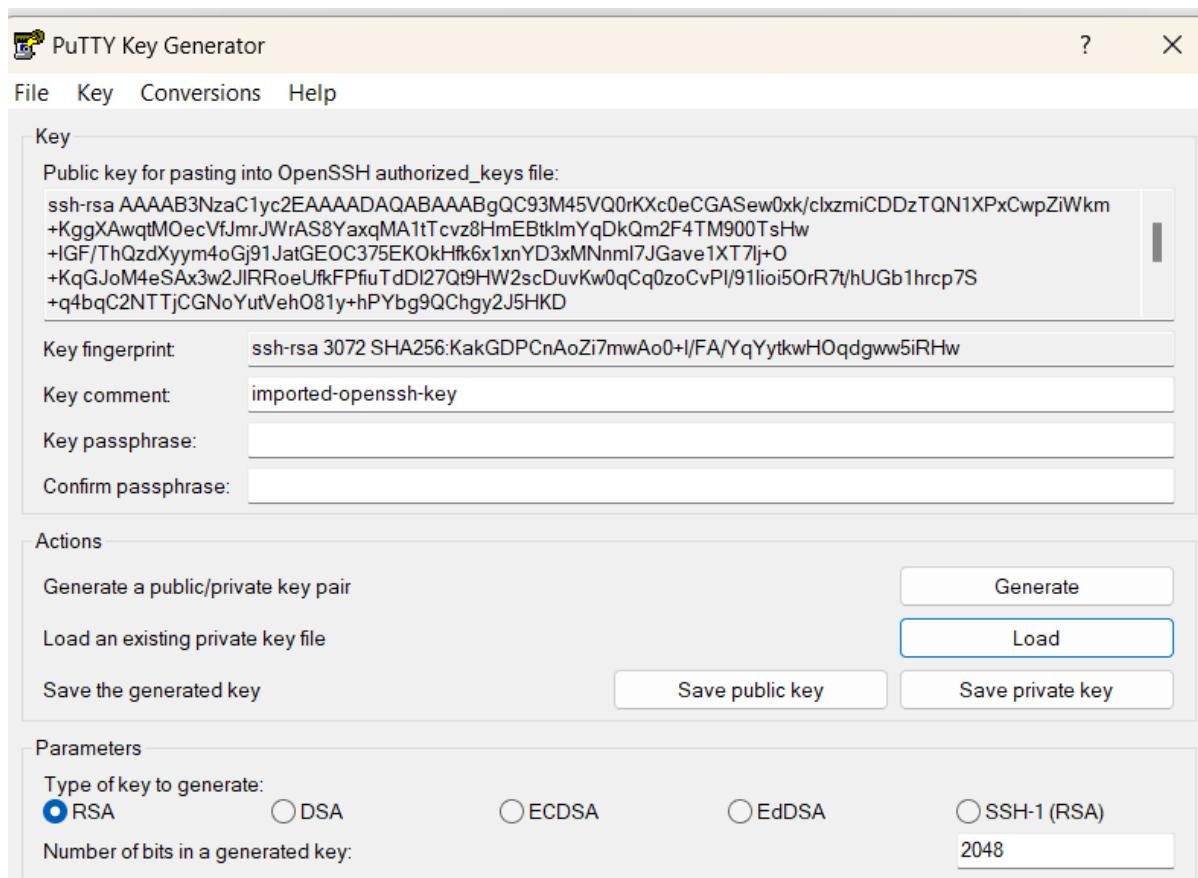
Virtual network/subnet: Ubuntu-vnet/default

DNS name: Not configured

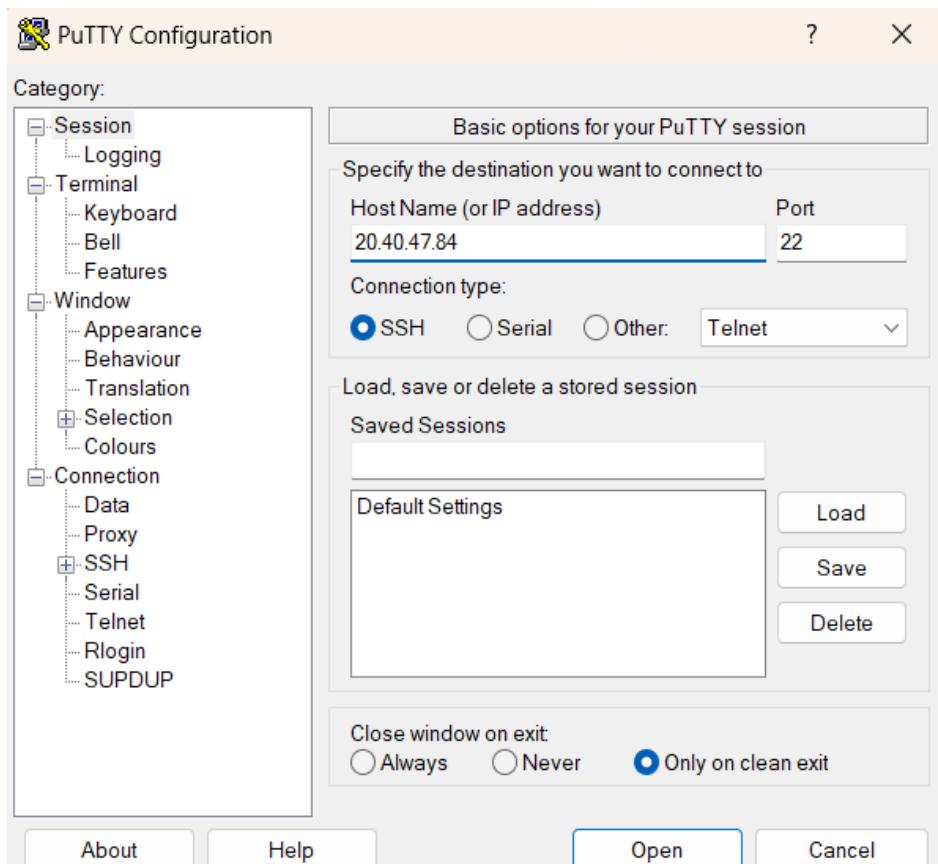
Health state: -

Time created: 6/13/2024, 4:15 PM UTC

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



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

```
azureuser@Ubuntu: ~
[?] login as: azureuser
[?] Authenticating with public key "imported-openssh-key"
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-1064-azure x86_64)

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

System information as of Thu Jun 13 16:27:08 UTC 2024

System load: 0.08           Processes:          116
Usage of /: 5.1% of 28.89GB  Users logged in: 0
Memory usage: 8%            IPv4 address for eth0: 10.0.0.4
Swap usage: 0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

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

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

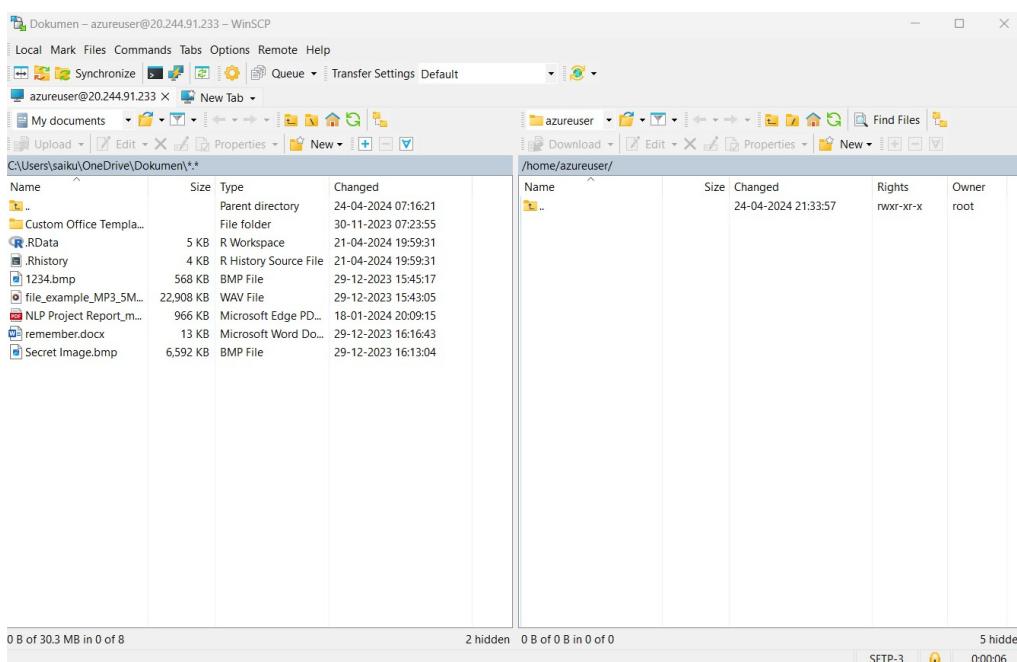
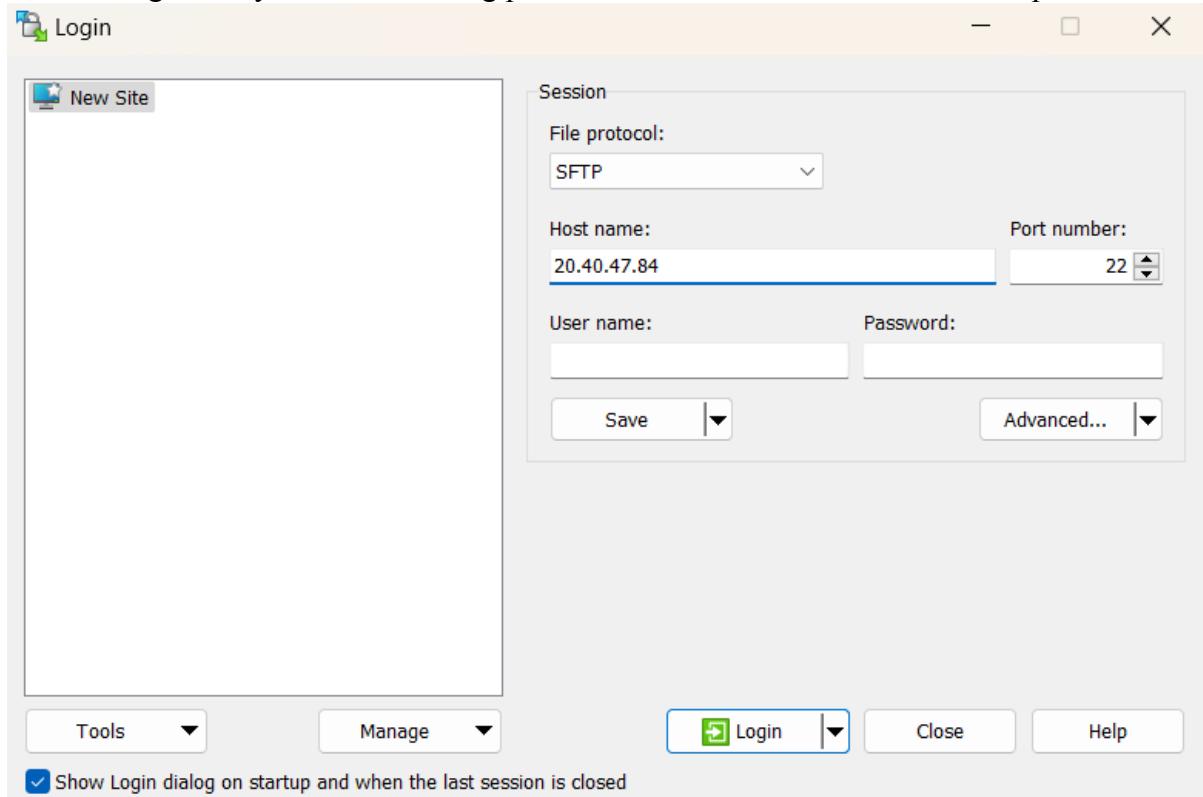
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

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

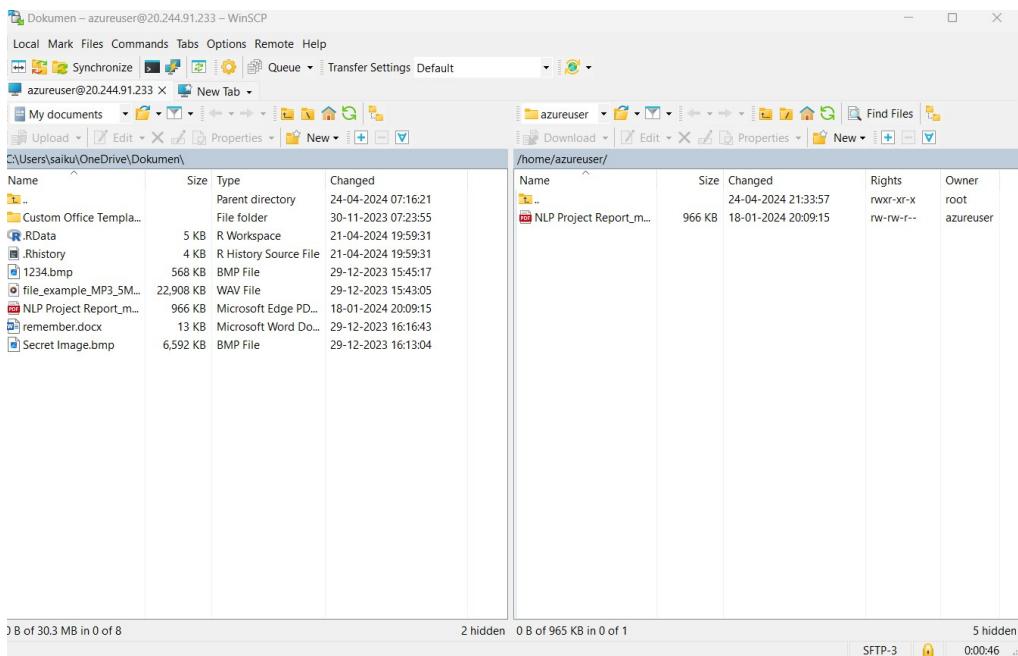
azureuser@Ubuntu:~$
```

Step-10: 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-11: Now again type ls command as you can see file inside ubuntu VM.

```
azureuser@ubuntu: ~
0 updates can be applied immediately.

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

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

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

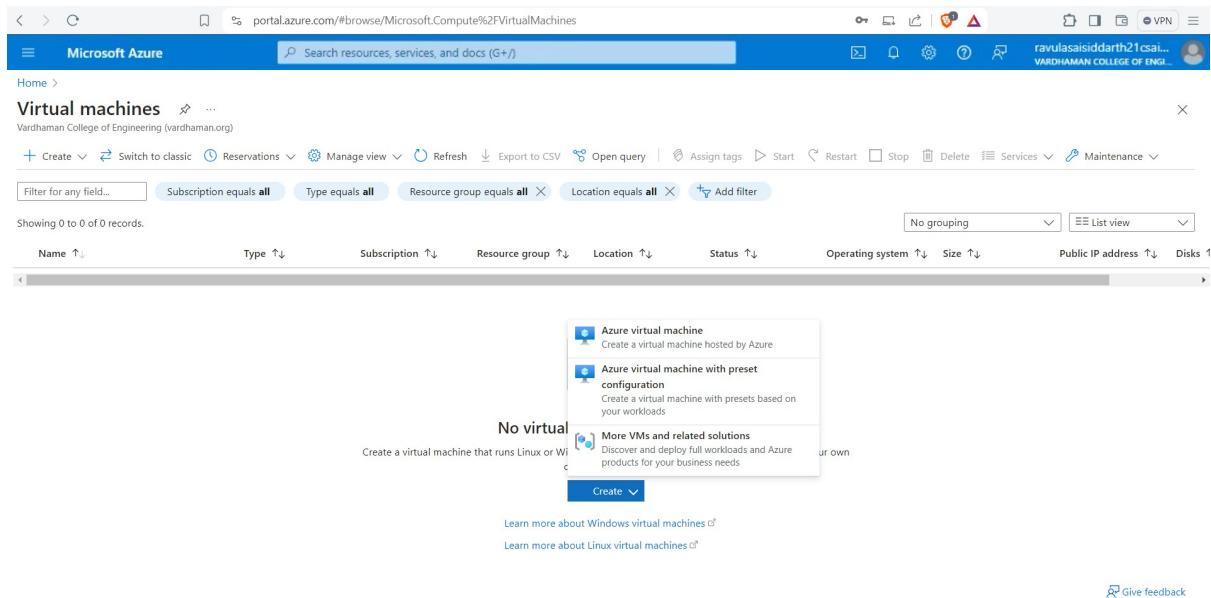
azureuser@ubuntu:~$ ls
azureuser@ubuntu:~$ ls
'NLP Project Report_main.pdf'
azureuser@ubuntu:~$
```

Result: Above experiment is successful executed And verified.

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

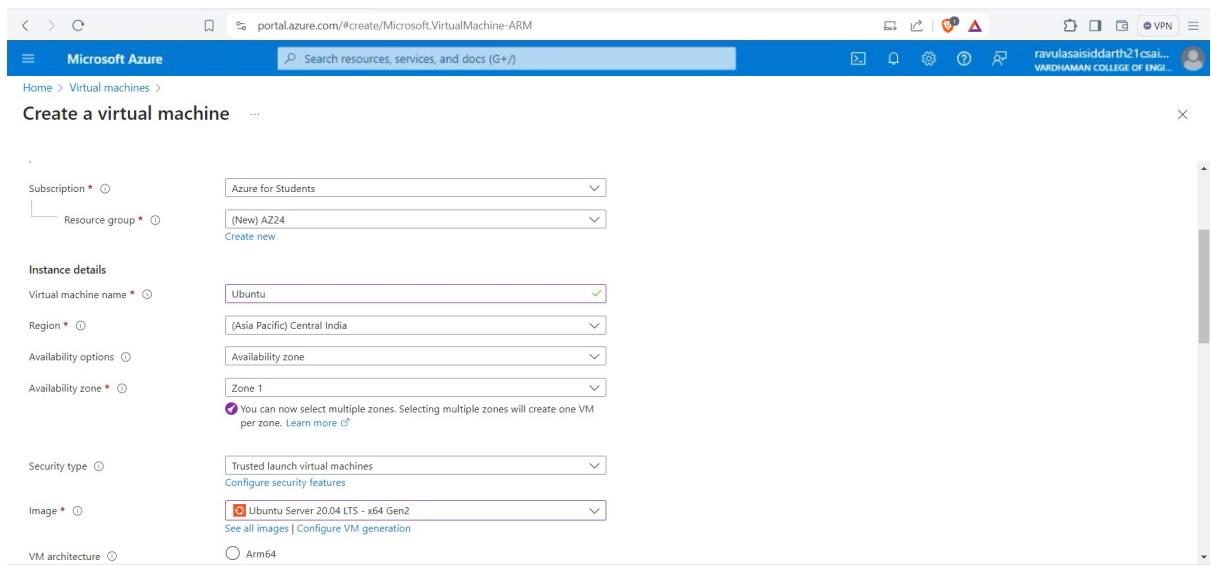
Step-1: Sign in to your Microsoft Azure account.

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 user is on the 'Virtual machines' page. A tooltip is displayed over the 'Create' button, listing three options: 'Azure virtual machine' (selected), 'Azure virtual machine with preset configuration', and 'More VMs and related solutions'. Below the tooltip, there are links to 'Learn more about Windows virtual machines' and 'Learn more about Linux virtual machines'. The main page shows a message 'No virtual' with a sub-instruction 'Create a virtual machine that runs Linux or Windows'.

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 finally click on “Create”.



The screenshot shows the 'Create a virtual machine' wizard. The 'Subscription' dropdown is set to 'Azure for Students'. The 'Resource group' dropdown is set to '(New) AZ24'. Under 'Instance details', the 'Virtual machine name' is 'Ubuntu', 'Region' is '(Asia Pacific) Central India', 'Availability zone' is 'Zone 1', and 'Security type' is 'Trusted launch virtual machines'. The 'Image' dropdown is set to 'Ubuntu Server 20.04 LTS - x64 Gen2'. The 'VM architecture' dropdown is set to 'Arm64'.

Microsoft Azure

Create a virtual machine

VM architecture: Arm64 x64

Run with Azure Spot discount:

Size *: Standard_DS1_v2 - 1 vcpu, 3.5 GiB memory (₹5.101.50/month)

Enable Hibernation:

Hibernate does not currently support Trusted launch and Confidential virtual machines for Linux images. [Learn more](#)

Administrator account

Authentication type: SSH public key Password

Azure now automatically generates an SSH key pair for you and allows you to store it for future use. It is a fast, simple, and secure way to connect to your virtual machine.

Username *: azureuser

SSH public key source:

Microsoft Azure

Create a virtual machine

virtual machine.

Username *: azureuser

SSH public key source:

SSH Key Type: RSA SSH Format Ed25519 SSH Format

Ed25519 offers better performance and security with a smaller key size, while RSA is still widely used particularly for legacy systems and applications.

Key pair name *: ubuntu_key

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 *:

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

Step-4: After Deployment is over, Go to the remote desktop connection.

Generate new key pair

i An SSH key pair contains both a public key and a private key. **Azure doesn't store the private key.** After the SSH key resource is created, you won't be able to download the private key again. [Learn more](#)

Download private key and create resource

Return to create a virtual machine

Step-5: Firstly, copy the public IP Address of that created virtual machine.

The screenshot shows the Microsoft Azure portal interface. The top navigation bar includes 'Microsoft Azure', a search bar ('Search resources, services, and docs (G+)'), and user information ('ravulasaisiddarth21csai... VARDHAMAN COLLEGE OF ENGI...'). Below the navigation is a breadcrumb trail: 'Home > Virtual machines >'. The main area is titled 'Ubuntu' and shows it's a 'Virtual machine'. On the left, there's a sidebar with options like 'Create', 'Switch to classic', 'Search', 'Activity log', 'Tags', 'Diagnose and solve problems', 'Networking' (selected), 'Network settings', 'Load balancing', 'Application security groups', 'Network manager', 'Settings', 'Availability + scale', and 'Security'. The right panel displays 'Essentials' information for the VM, including Resource group (AZ24), Status (Running), Location (Central India (Zone 1)), Subscription (Azure for Students), Subscription ID (763b4aa1-744d-4fa4-9b3a-815e4bcd0be8), Availability zone (1), Operating system (Linux (ubuntu 20.04)), Size (Standard_b1msv2, 1 vcpu, 3.5 GiB memory), Public IP address (20.40.47.84), Virtual network/subnet (Ubuntu-vnet/default), DNS name (Not configured), Health state (-), and Time created (6/13/2024, 4:15 PM UTC). There are also 'Tags (edit)' and 'Add tags' buttons.

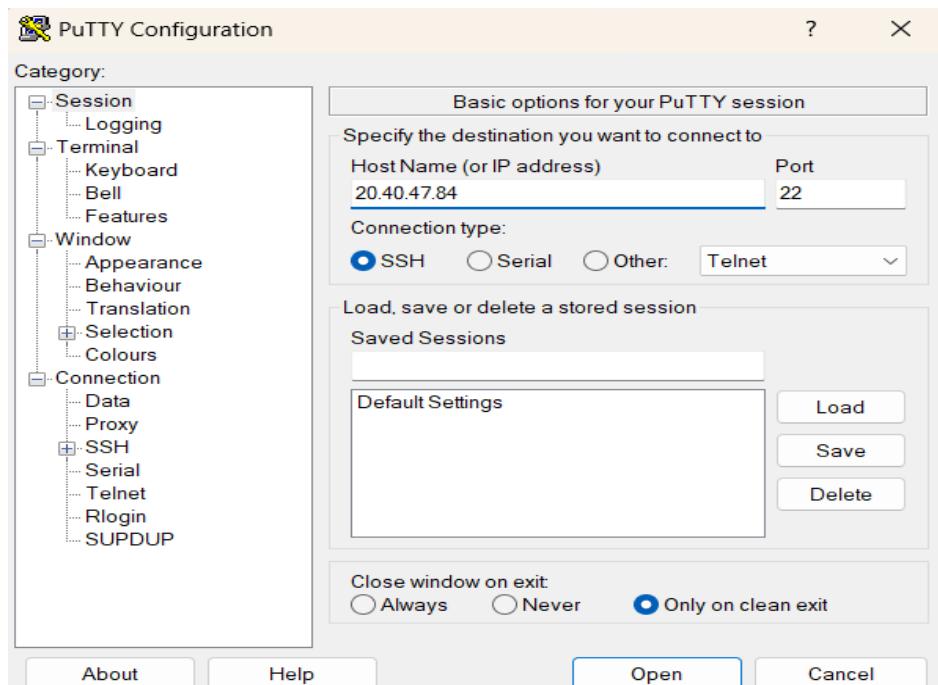
Step-6: Go to putty gen and click on load the key generator that you have downloaded.

The screenshot shows the PuTTY Key Generator application window. The title bar says 'PuTTY Key Generator'. The menu bar includes 'File', 'Key', 'Conversions', and 'Help'. The main area is titled 'Key' and contains a text box with a public SSH key:

```
ssh-rsa AAAAB3NzaC1yc2EAAAQABAAABgQC93M45VQ0rKXc0eCGASew0xk/clxzmiCDDzTQN1XPxCwpZiWkm+KggXAwqM0ecVfJmrJWrAS8YaxqMA1tTcvz8HmEBtklmYqDkQm2F4TM900TsHw+IGF/ThQzdXyym4oGj91JatGEOC375EKOkHfk6x1xnYD3xMNml7JGave1XT7lj+O+KqGJoM4eSAx3w2JIRoeUfkFPfiuTdDI27Qt9HW2scDuvKw0qCq0zoCvPI/91lio5OrR7/hUGb1hrcp7S+q4bqC2NTTjCGNoYutVeh081y+hPYbg9QChgy2J5HKD
```

. Below this are fields for 'Key fingerprint' (ssh-rsa 3072 SHA256:KakGDPCnAoZi7mwAo0+l/FA/YqYytkwHOqdgww5iRHw), 'Key comment' (imported-openssh-key), 'Key passphrase', and 'Confirm passphrase'. The 'Actions' section includes buttons for 'Generate' (disabled), 'Load' (highlighted in blue), 'Save public key', and 'Save private key'. The 'Parameters' section shows 'Type of key to generate:' with 'RSA' selected (radio button is checked), and 'Number of bits in a generated key:' set to '2048'.

Step-7: In putty, put the Copied IP Address 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.

```
azureuser@Ubuntu: ~
[1] login as: azureuser
[2] Authenticating with public key "imported-openssh-key"
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-1064-azure x86_64)

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

System information as of Thu Jun 13 16:27:08 UTC 2024

System load: 0.08      Processes:          116
Usage of /: 5.1% of 28.89GB  Users logged in: 0
Memory usage: 8%          IPv4 address for eth0: 10.0.0.4
Swap usage: 0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

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

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

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

azureuser@Ubuntu:~$
```

Step-9: Login into your Ubuntu VM using your username and type the following commands.

```
$sudo su
```

```
$sudo apt-get update
```

After typing the two commands, 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.

```
azreuser@Ubuntu: ~
azreuser login as: azreuser
Authenticating with public key "imported-openssh-key"
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-1064-azure x86_64)

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

System information as of Thu Jun 13 16:27:08 UTC 2024

 System load: 0.08      Processes:           116
 Usage of /: 5.1% of 28.89GB   Users logged in:     0
 Memory usage: 8%          IPv4 address for eth0: 10.0.0.4
 Swap usage: 0%          

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

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

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individual files in /usr/share/doc/*/*copyright.

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applicable law.

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

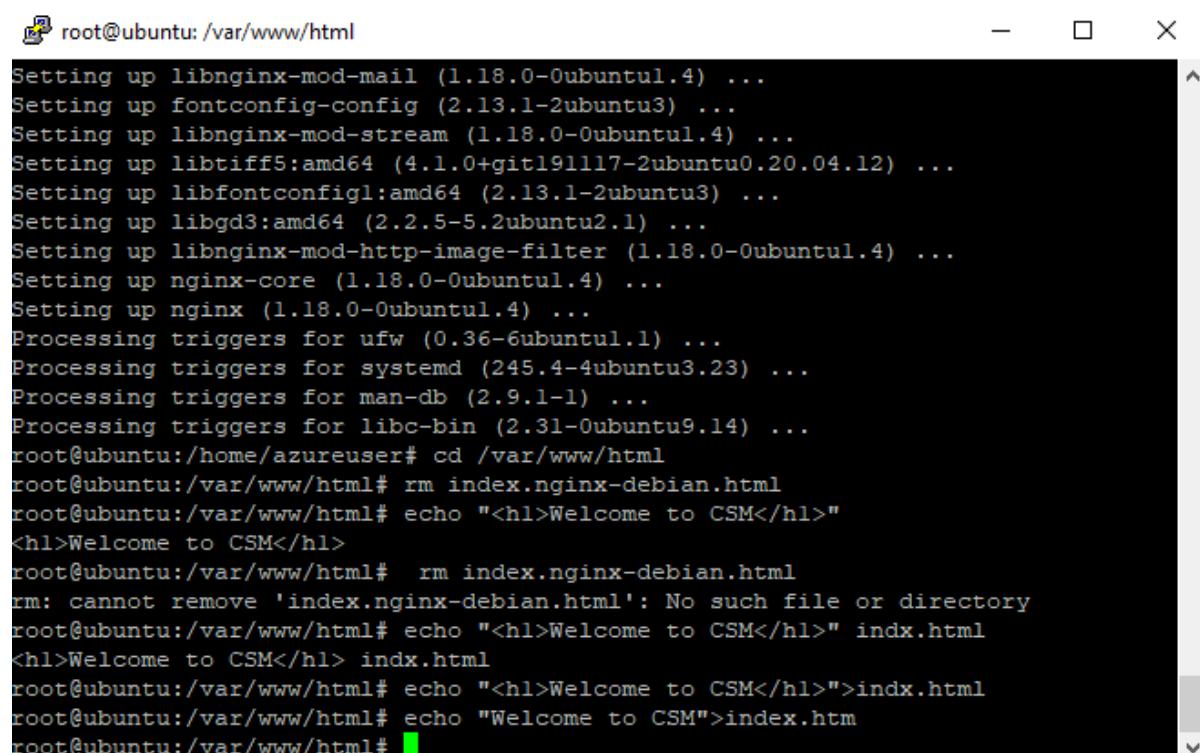
azreuser@Ubuntu:~$
```

Step-10: To remove following information and keep new information in that page type the following command and refresh the browser page.

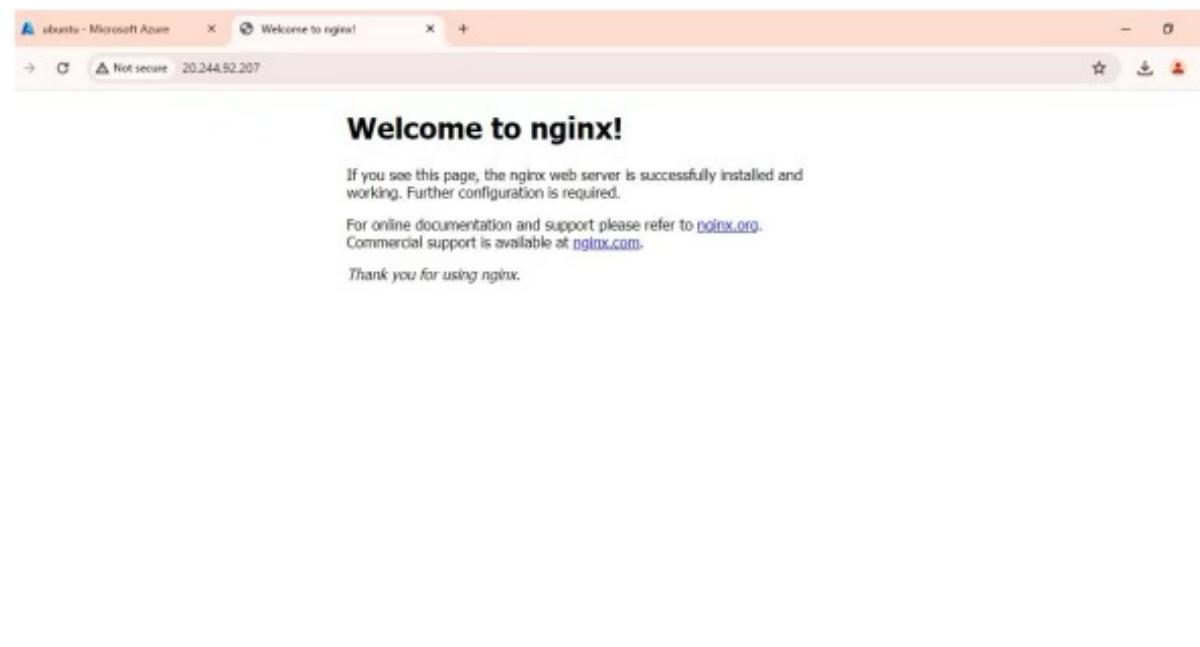
```
$cd /var/www/html
```

```
$rm index.nginx-debian.html
```

```
$echo "Welcome to CSM" >index.html
```



```
root@ubuntu:/var/www/html
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+git191117-2ubuntu0.20.04.12) ...
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 (2.31-0ubuntu9.14) ...
root@ubuntu:/home/azureuser# cd /var/www/html
root@ubuntu:/var/www/html# rm index.nginx-debian.html
root@ubuntu:/var/www/html# echo "<h1>Welcome to CSM</h1>" > index.html
<h1>Welcome to CSM</h1>
root@ubuntu:/var/www/html# rm index.nginx-debian.html
rm: cannot remove 'index.nginx-debian.html': No such file or directory
root@ubuntu:/var/www/html# echo "<h1>Welcome to CSM</h1>" > index.html
<h1>Welcome to CSM</h1>
root@ubuntu:/var/www/html# echo "<h1>Welcome to CSM</h1>" > index.html
root@ubuntu:/var/www/html# echo "Welcome to CSM" > index.htm
root@ubuntu:/var/www/html#
```



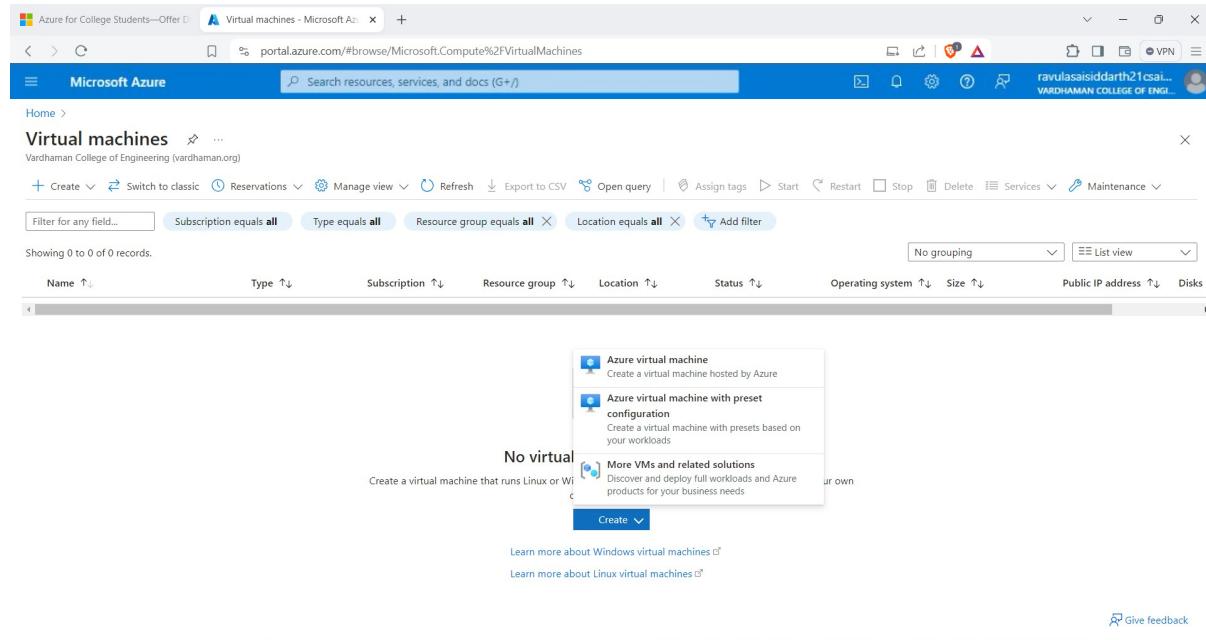


Result: Above experiment is successful executed And verified.

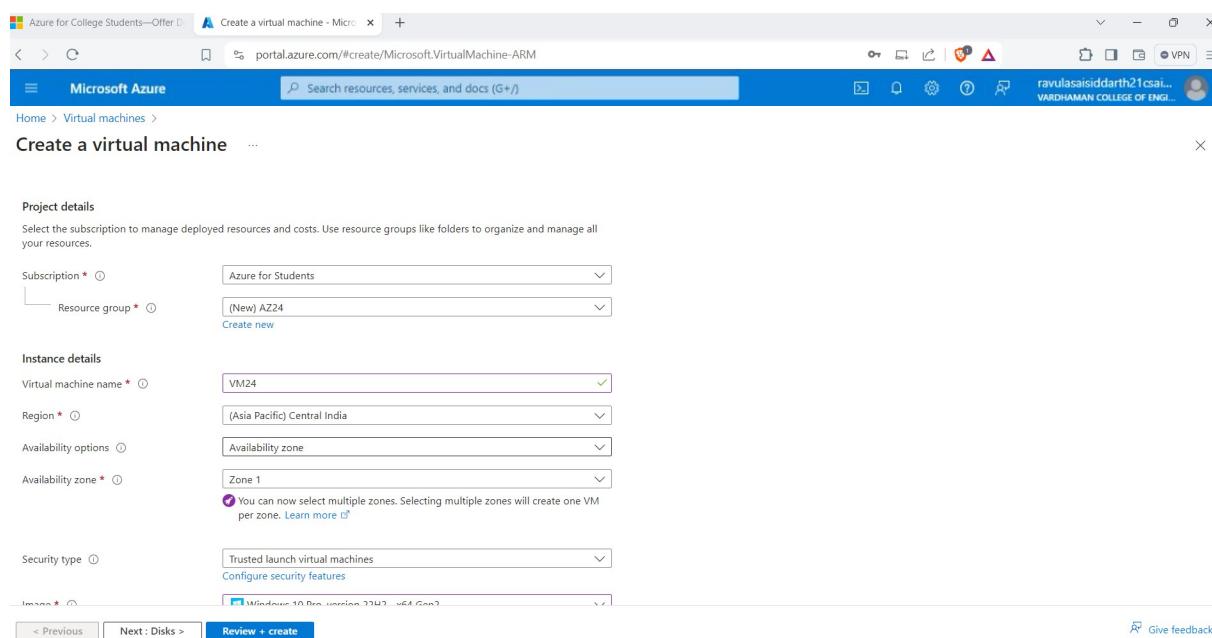
Q9) Setup and configure AZURE web server for windows server (IIS).

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”



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 * ✓

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

Licensing

I confirm I have an eligible Windows 10/11 license with multi-tenant hosting rights. *

< Previous Next : Disks > Review + create Give feedback

Validation passed

Basics Disks Networking Management Monitoring Advanced Tags Review + create

Price

1 X Standard DS1 v2 by Microsoft Subscription credits apply ⓘ 6.9884 INR/hr Pricing for other VM sizes

TERMS

By clicking "Create", I (a) agree to the legal terms and privacy statement(s) associated with the Marketplace offering(s) listed above; (b) authorize Microsoft to bill my current payment method for the fees associated with the offering(s), with the same billing frequency as my Azure subscription; and (c) agree that Microsoft may share my contact, usage and transactional information with the provider(s) of the offering(s) for support, billing and other transactional activities. Microsoft does not provide rights for third-party offerings. See the [Azure Marketplace Terms](#) for additional details.

⚠ You have set RDP port(s) open to the internet. This is only recommended for testing. If you want to change this setting, go back to Basics tab.

< Previous Next > Create Download a template for automation Give feedback

Step-4: After Deployment is over, Go to the remote desktop connection.

Step-5: Firstly, copy the public IP Address of that created virtual machine.

The screenshot shows the Microsoft Azure Deployment Overview page. The deployment is complete, with a green checkmark icon. Key details include:

- Deployment name:** CreateVm-MicrosoftWindowsDesktop.Windows-10-win10-20240613203743
- Subscription:** Azure for Students
- Resource group:** A224
- Start time:** 6/13/2024, 8:41:09 PM
- Correlation ID:** 91279413-fe42-433c-a5ca-c9066b78be85

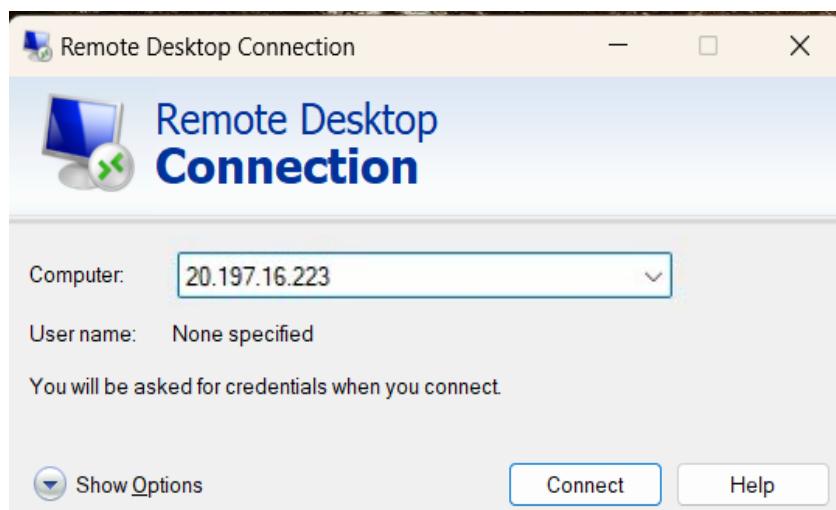
The page also displays deployment details, next steps, and links to cost management, Microsoft Defender for Cloud, and free Microsoft tutorials.

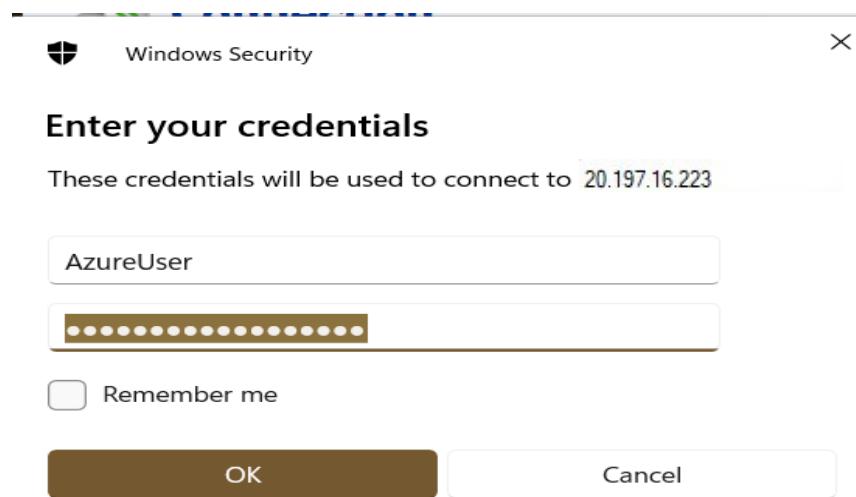
The screenshot shows the Microsoft Azure Virtual machines page. The VM24 virtual machine is selected. Key details include:

- Name:** VM24
- Resource group:** A224
- Status:** Running
- Location:** Central India (Zone 1)
- Subscription:** Azure for Students
- Subscription ID:** 763b4aa1-744d-4fa4-9b3a-815e4bcd0be8
- Availability zone:** 1
- Operating system:** Windows
- Size:** Standard DS1 v2 (1 vcpu, 3.5 GiB memory)
- Public IP address:** 20.40.44.213
- Virtual network/subnet:** VM24-vnet/default
- DNS name:** Not configured
- Health state:** -
- Time created:** 6/13/2024, 3:11 PM UTC

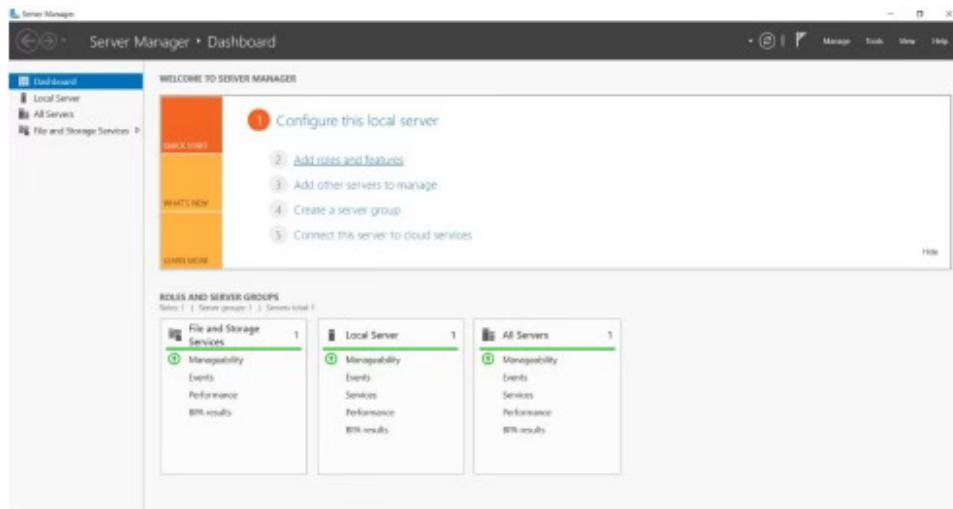
The page includes tabs for Properties, Monitoring, Capabilities (8), Recommendations, and Tutorials.

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

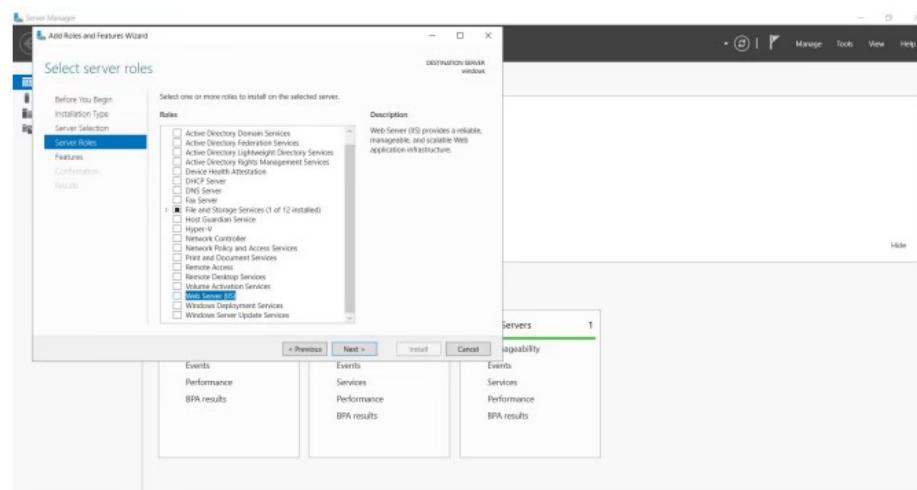


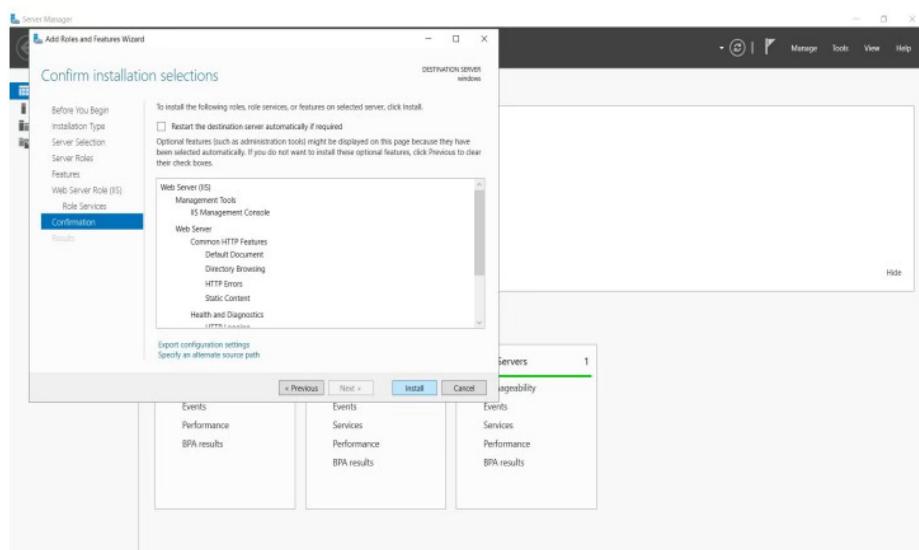
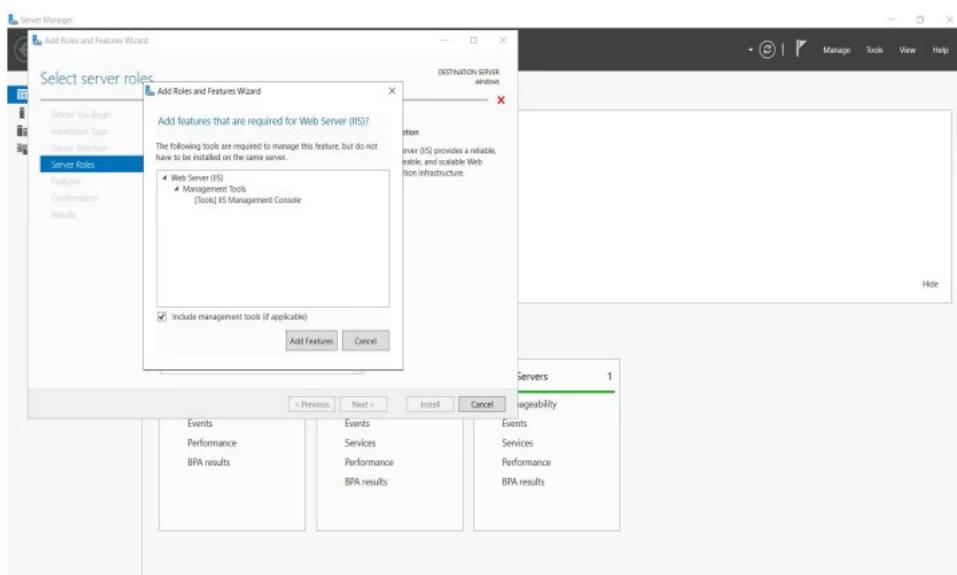


Step-7: When remote desktop will start (windows VM) you can see there will be Sever Manager will be opened and in that you can see Configure this local server, click on “Add roles and features”.

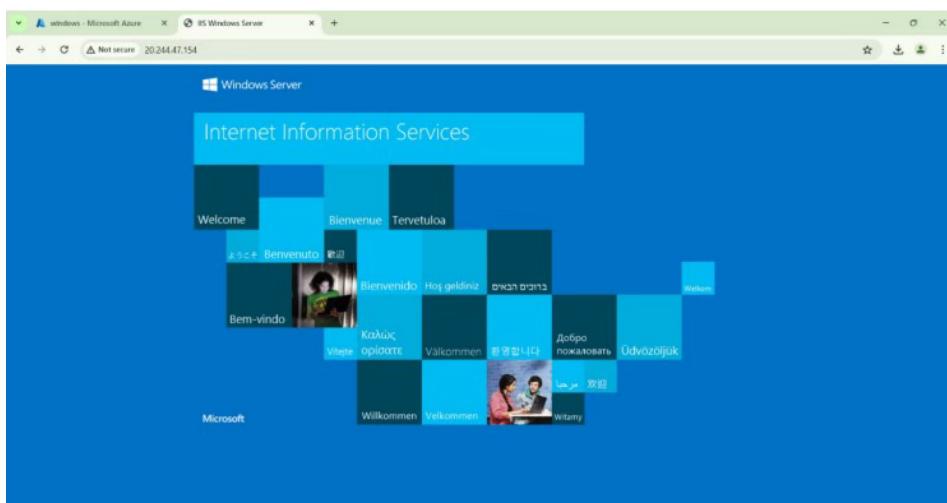


Step-8: Click on next, next and in Server Roles select Web Server (IIS) click on add feature, click on next, next till you can get install button and click on install.

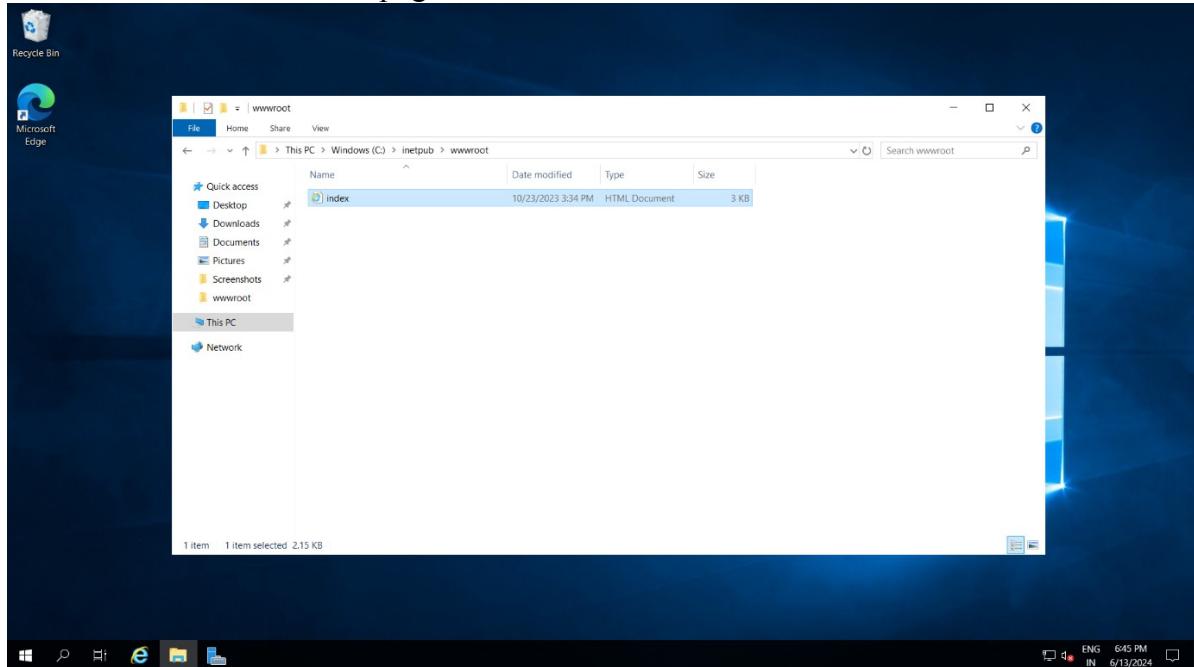




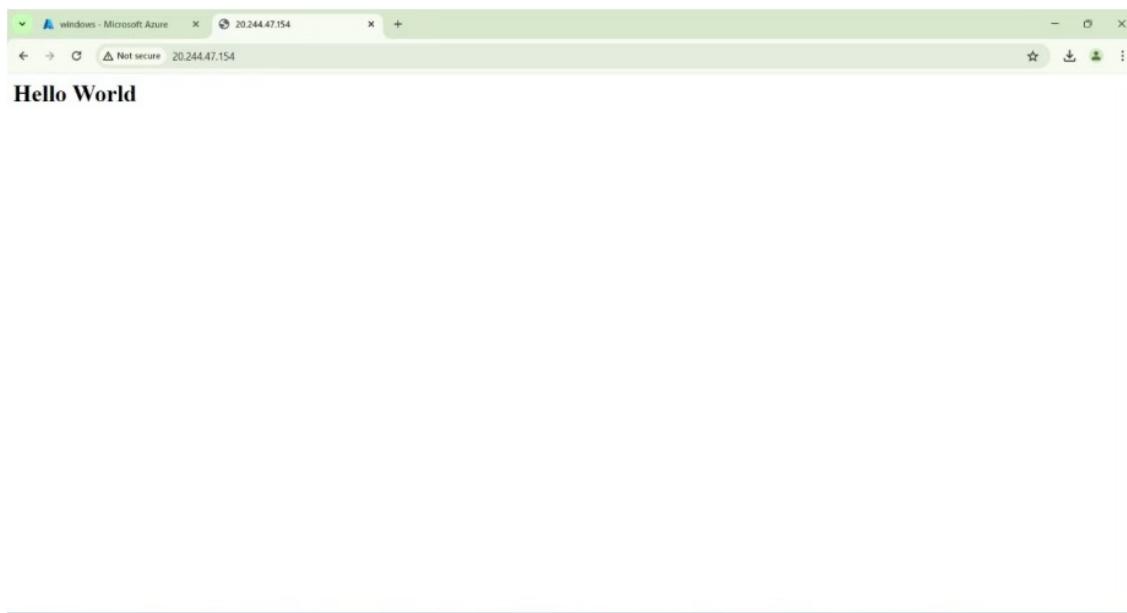
Step- 9: paste the public ip address in desktop browser and you can see.



Now to remove this all information first of all create index.html in desktop and that should paste in the specified location of remote desktop VM that is ThisPC->windows(c)->inetup->wwwroot and remove iistart.png.



Step-10: Refresh the browser page.

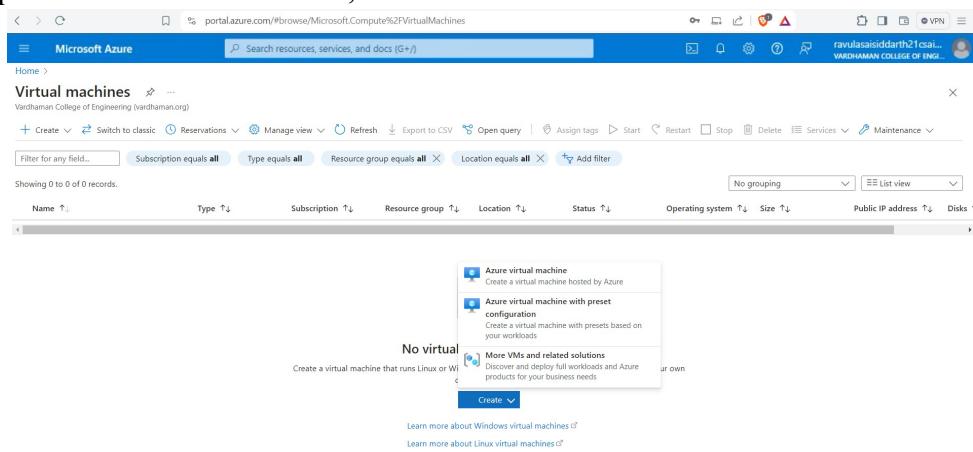


Result: Above experiment is successful executed And verified.

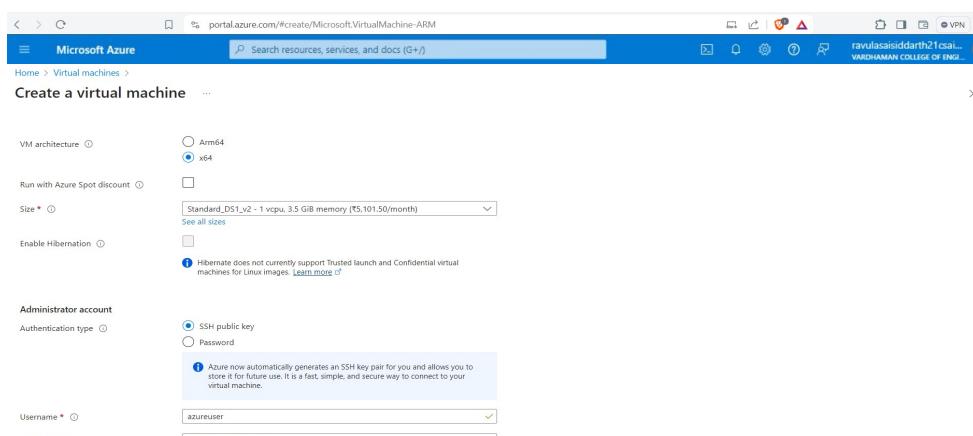
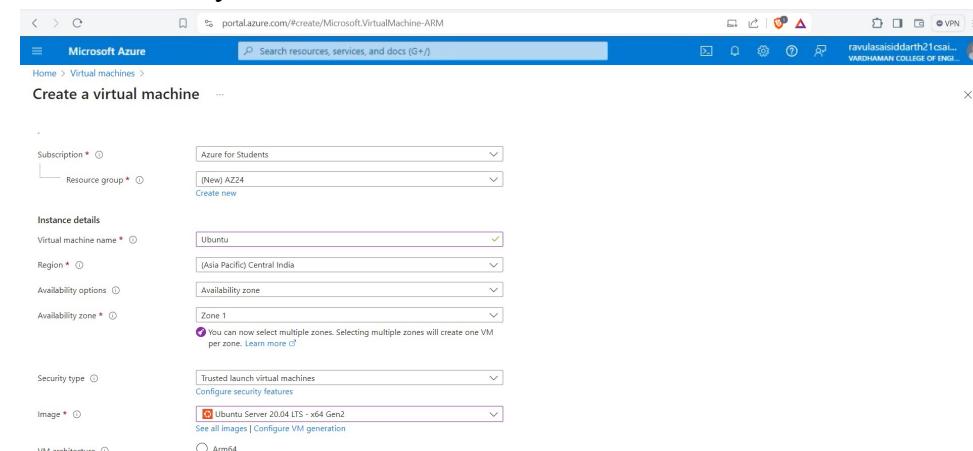
Q10) How we are adding new users, login credentials, changing owner, create authorized key files.

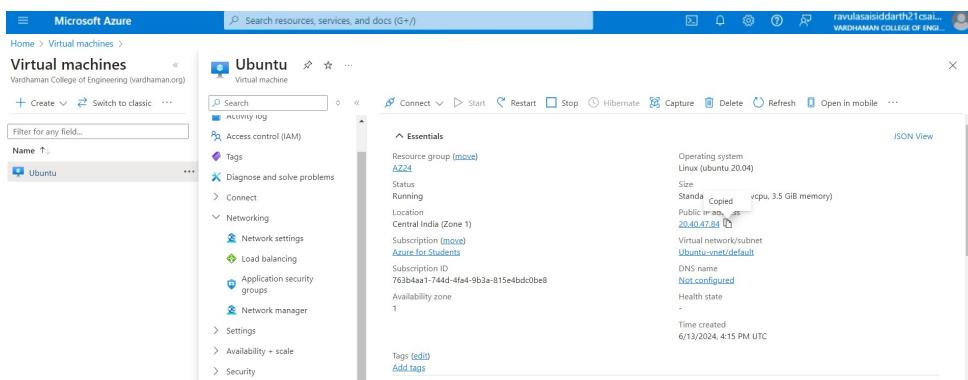
Step-1: Sign in to your Microsoft Azure account.

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

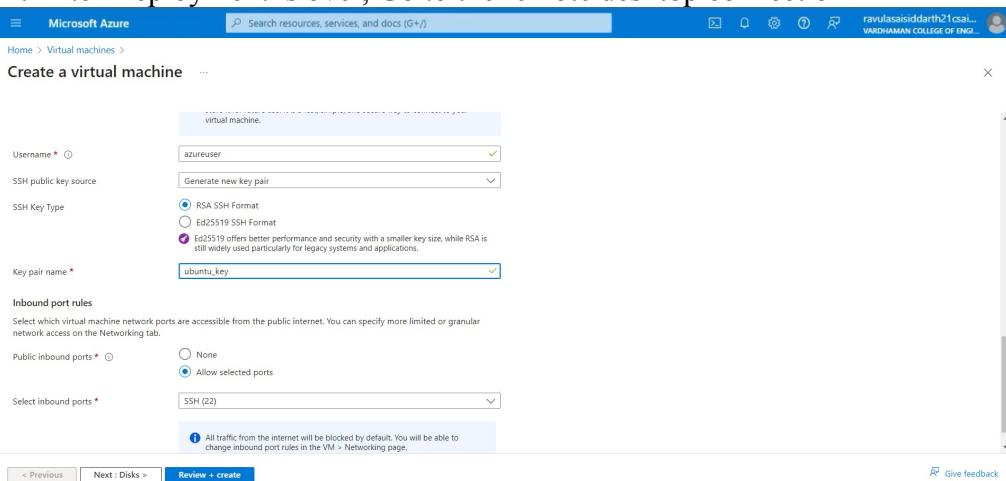


Step-3: Fill the details in that ubuntu by creating a “Resource Group”, Zone: Asia, Image: ubuntu, select “SSH”, Select the disk storage and so on. After that click on “Create + Review”. And finally click on “Create”.

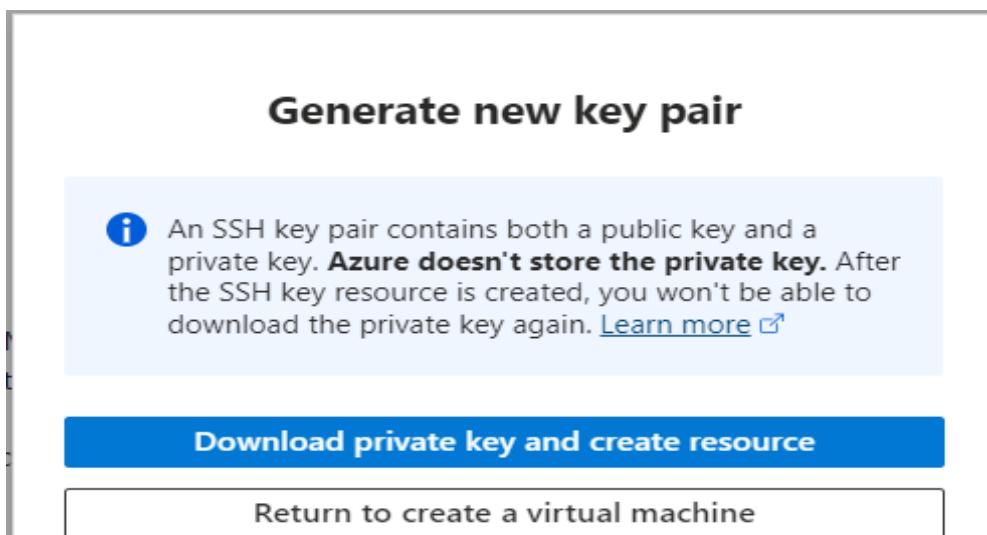




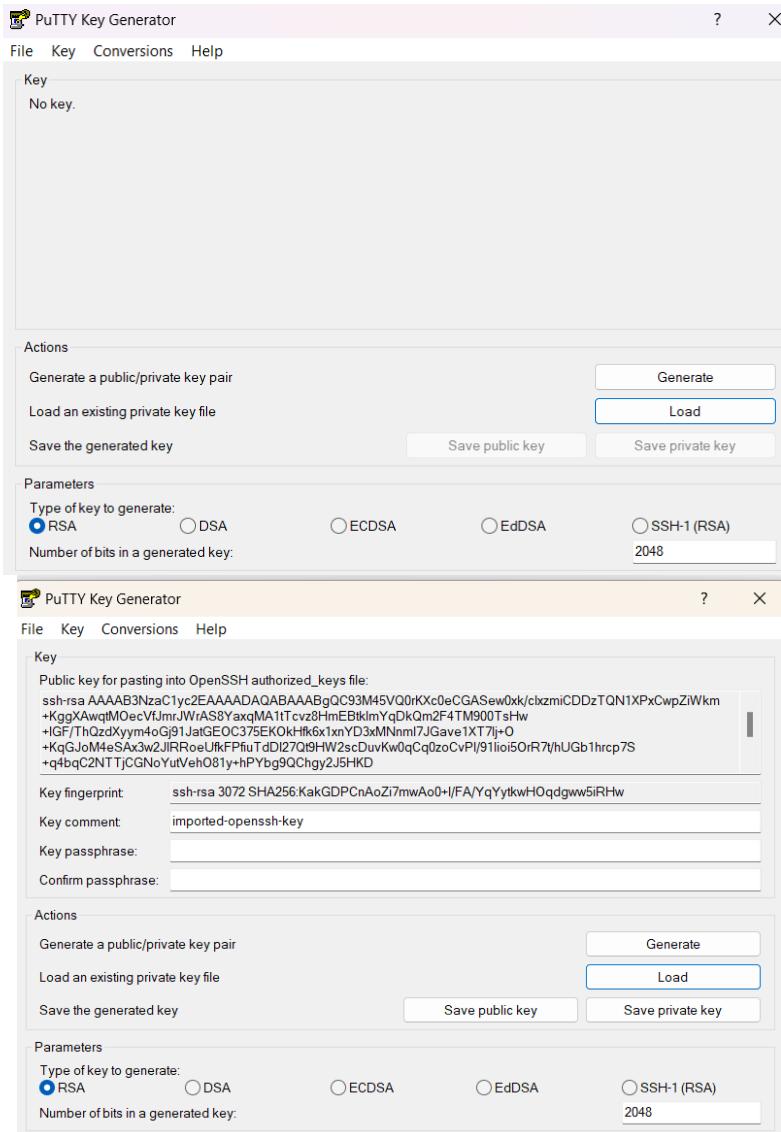
Step-4: After Deployment is over, Go to the remote desktop connection



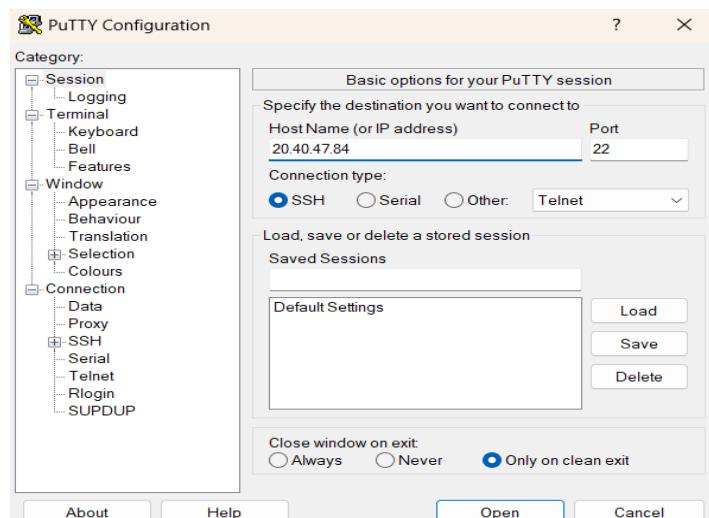
Step-5: Firstly, copy the public IP Address of that created virtual machine.



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



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

To add new user in Linux server:

```
$sudo useradd -m saisiddarth
```

To set new password:

```
$sudo password saisiddarth
```

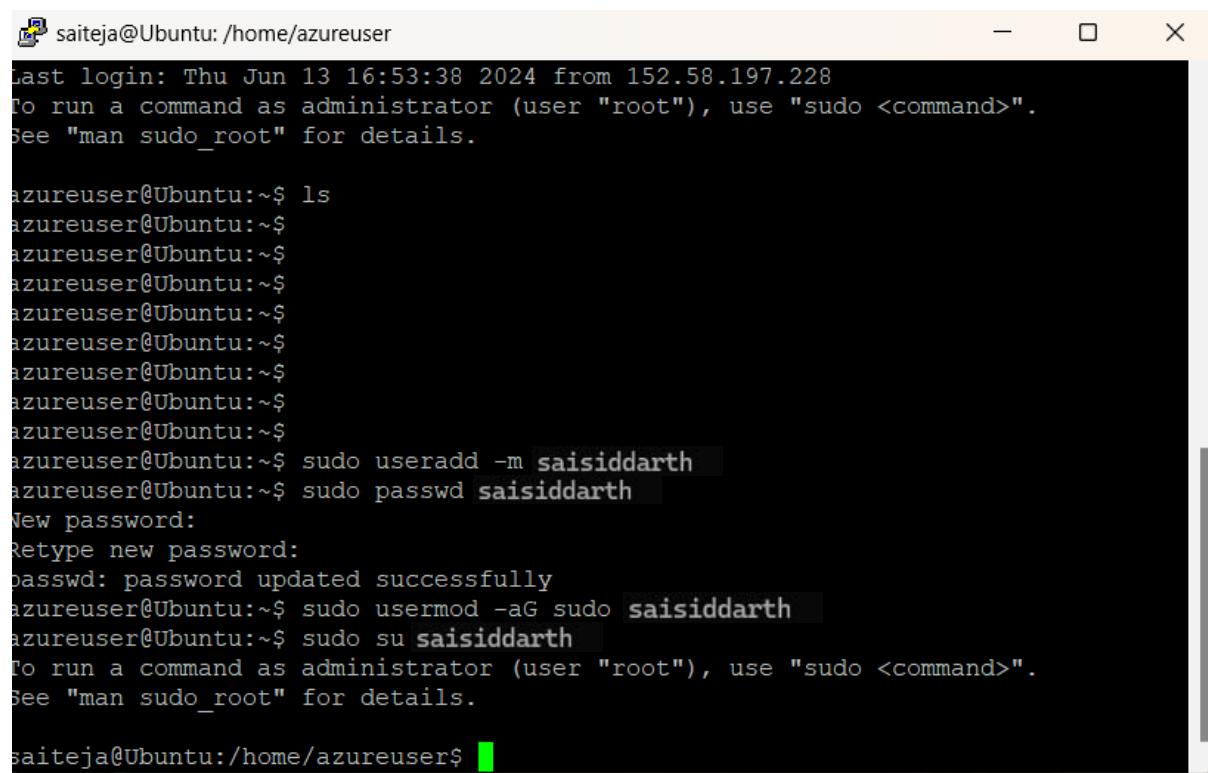
Enter new password and Retype password.

To modify login credentials:

```
$sudo usermod -aG sudo saisiddarth
```

To switch the user:

```
$sudo su saisiddarth
```



The screenshot shows a terminal window titled 'saiteja@Ubuntu: /home/azureuser'. The session log indicates the last login was on Thursday, June 13, 2024. It provides instructions for running commands as root using 'sudo'. The user 'azureuser' is logged in. The terminal history shows the following commands being run:

```
Last login: Thu Jun 13 16:53:38 2024 from 152.58.197.228
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

azureuser@Ubuntu:~$ ls
azureuser@Ubuntu:~$ 
azureuser@Ubuntu:~$ 
azureuser@Ubuntu:~$ 
azureuser@Ubuntu:~$ 
azureuser@Ubuntu:~$ 
azureuser@Ubuntu:~$ 
azureuser@Ubuntu:~$ 
azureuser@Ubuntu:~$ 
azureuser@Ubuntu:~$ sudo useradd -m saisiddarth
azureuser@Ubuntu:~$ sudo passwd saisiddarth
New password:
Retype new password:
passwd: password updated successfully
azureuser@Ubuntu:~$ sudo usermod -aG sudo saisiddarth
azureuser@Ubuntu:~$ sudo su saisiddarth
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

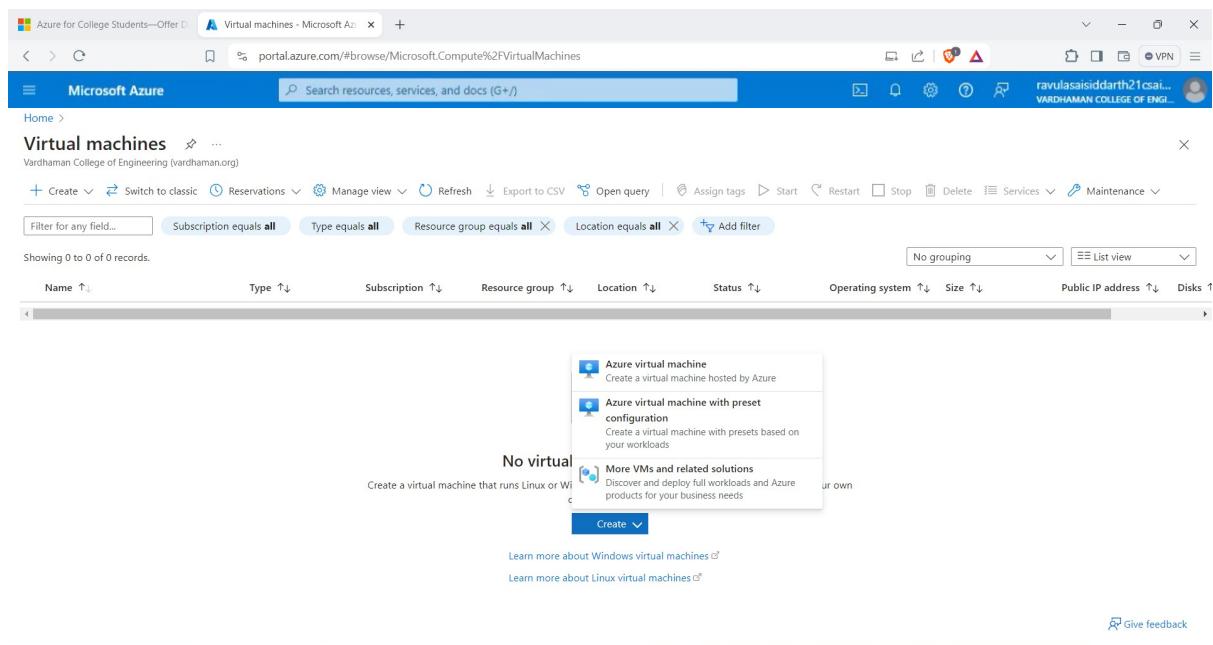
saiteja@Ubuntu:/home/azureuser$
```

Result: Above experiment is successful executed And verified.

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

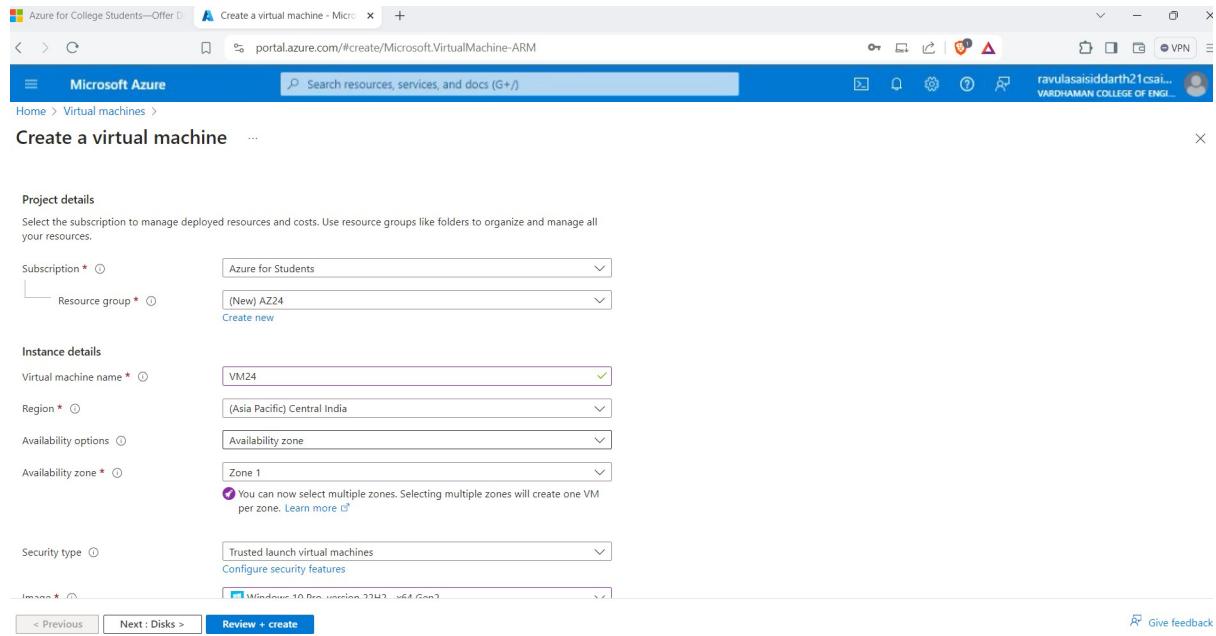
Step-1: Sign in to your Microsoft Azure account.

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



The screenshot shows the Microsoft Azure portal's Virtual machines page. At the top, there are various filters and sorting options. A prominent 'Create' button is visible. A tooltip is open over this button, providing three options: 'Azure virtual machine', 'Azure virtual machine with preset configuration', and 'More VMs and related solutions'. Below the 'Create' button, there is a link to 'Learn more about Windows virtual machines' and another to 'Learn more about Linux virtual machines'.

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”



The screenshot shows the 'Create a virtual machine' wizard. The current step is 'Project details'. It requires selecting a subscription (Azure for Students) and a resource group ((New) AZ24). The virtual machine name is set to VM24. The region is (Asia Pacific) Central India. Under 'Availability options', 'Availability zone' is selected, and 'Zone 1' is chosen. A note states: 'You can now select multiple zones. Selecting multiple zones will create one VM per zone.' The security type is set to 'Trusted launch virtual machines'. At the bottom, there are buttons for '< Previous', 'Next : Disks >', and 'Review + create'.

The screenshot shows the 'Create a virtual machine' wizard in the Azure portal. Step 1: Set instance details. Processor architecture is set to x64. Size is Standard_DS1_v2 (~1 vcpu, 3.5 GiB memory). Hibernation is disabled. An error message states: "Arm64 is not supported with the selected image." Below the configuration, there's an 'Administrator account' section with fields for Username (AzureUser), Password, and Confirm password. The 'Inbound port rules' section is present but empty. At the bottom, there are 'Review + create' and 'Next : Disks >' buttons.

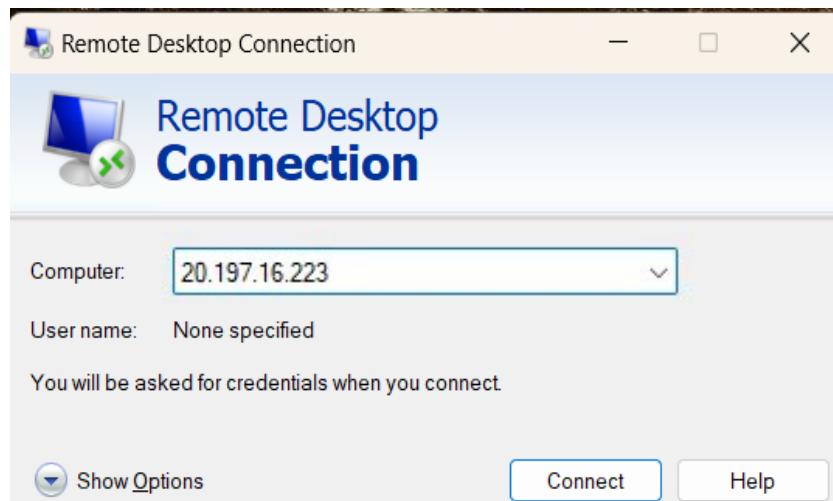
The screenshot shows the 'Create a virtual machine' wizard in the Azure portal. Step 2: Set networking and storage. It shows the same configuration as the previous step, including the 'Inbound port rules' section where RDP (3389) is selected. The 'Licensing' section includes a checkbox for confirming a Windows 10/11 license. At the bottom, there are 'Review + create' and 'Next : Disks >' buttons.

Step-4: After Deployment is over, Go to the remote desktop connection.

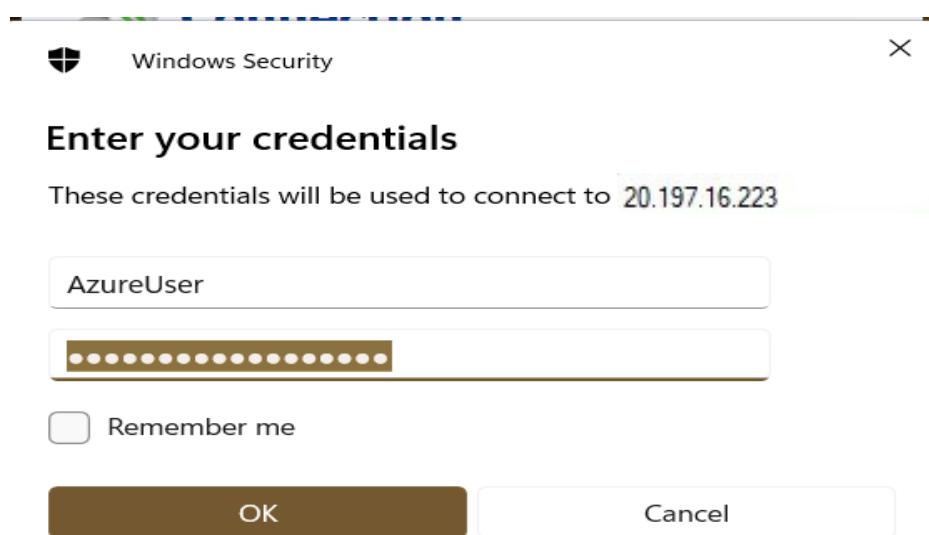
The screenshot shows the 'CreateVm-MicrosoftWindowsDesktop.Windows-10-win10-20240613203743 | Overview' page in the Azure portal. It displays a summary of the deployment: Deployment name, Subscription, Start time, and Correlation ID. A 'Cost Management' sidebar provides information on budget and cost alerts. A 'Microsoft Defender for Cloud' sidebar offers security features. Buttons at the bottom include 'Go to resource' and 'Create another VM'.

The screenshot shows the Microsoft Azure portal interface. On the left, there's a sidebar titled 'Virtual machines' with a list of items like 'Create', 'Switch to classic', and a search bar. The main area is titled 'VM24' and shows the 'Overview' tab. A warning message at the top right says 'VM24 virtual machine agent status is not ready. Troubleshoot the issue →'. The 'Essentials' section displays various details about the VM, such as its resource group (AZ24), status (Running), location (Central India (Zone 1)), subscription (Azure for Students), and public IP address (20.40.44.213). At the bottom, there are tabs for 'Properties', 'Monitoring', 'Capabilities (8)', 'Recommendations', and 'Tutorials'.

Step-5: Firstly, copy the public IP Address of that created virtual machine.



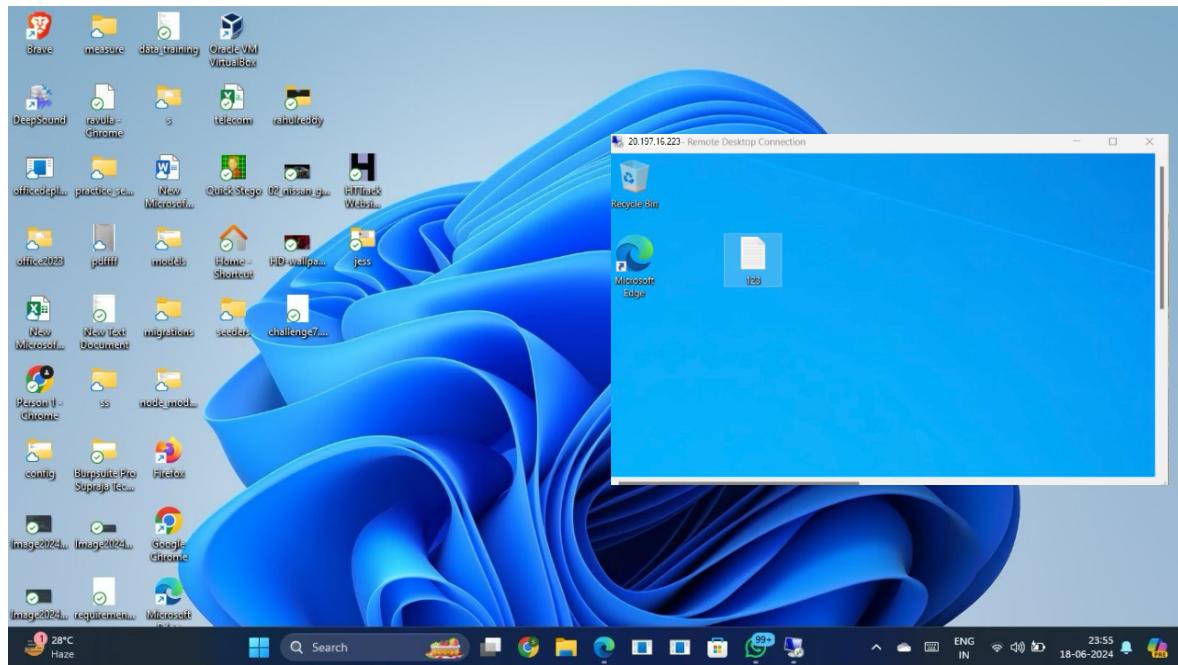
Step-6: By using that copied IP Address open the window virtual machine through remote desktop connection.



Step-7: Minimize the Remote desktop and copy file from desktop.

Right click in remote desktop and click on paste.





Result: Above experiment is successful executed And verified.

12Q) How to attach and detach data disks to Windows server in azure data center

Steps:-1) Create a Virtual machine with VM name as "UbuntU" with username &password

The screenshot shows the Microsoft Azure portal interface for the 'Virtual machines' section. At the top, there are various navigation and search tools. Below, a message says 'No virtual machines to display' with a note to 'Create a virtual machine that runs Linux or Windows. Select an image from the marketplace or use your own customized image.' A 'Create' button is prominent. Below the button, there are links for 'Azure virtual machine' and 'Azure virtual machine with preset configuration'. A sidebar on the right lists 'More VMs and related solutions'.

This screenshot shows the 'Create a virtual machine' wizard on the 'Basics' tab. It includes fields for 'Subscription' (set to 'Azure for Students'), 'Resource group' ('(New) RG24'), 'Virtual machine name' ('vm'), 'Region' ('(Asia Pacific) Central India'), 'Availability option' ('Availability zone'), and 'Availability zone' ('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'.

This screenshot shows the 'Create a virtual machine' wizard on the 'Advanced' tab. It includes fields for 'Security type' ('Trusted launch virtual machines'), 'Image' ('Ubuntu Server 20.04 LTS - x64 Gen2'), 'VM architecture' ('x64'), 'Size' ('Standard_DS1_v2 - 1 vcpu, 3.5 GiB memory (₹5.101.50/month)'), and 'Enable Hibernation' (checkbox checked). A note says, 'Hibernate does not currently support Trusted launch and Confidential virtual machines for Linux images. Learn more'. Under 'Administrator account', 'Authentication type' is set to 'Password', and the 'Username' is 'azureuser'. Navigation buttons at the bottom include '< Previous', 'Next : Disks >', and 'Review + create'.

Create a virtual machine

OS disk

OS disk size: 128 GiB (P10)

OS disk type: Premium SSD (locally-redundant storage)

Key management: Platform-managed key

Enable Ultra Disk compatibility: Ultra disk is not supported for the selected VM size Standard_DS1_v2 in Central India.

Data disks for vm

You can add and configure additional data disks for your virtual machine or attach existing disks. This VM also comes with a temporary disk.

< Previous | Next : Networking | Review + create | Give feedback

2) click on "Next:Disks>"

Create a new disk

Name: vm_DataDisk_0

Source type: None (empty disk)

Size: 1024 GiB (Premium SSD LRS) Change size

Key management: Platform-managed key

Enable shared disk: No

Delete disk with VM:

OK | Give feedback

3) Click on "Create & attach a new disk"

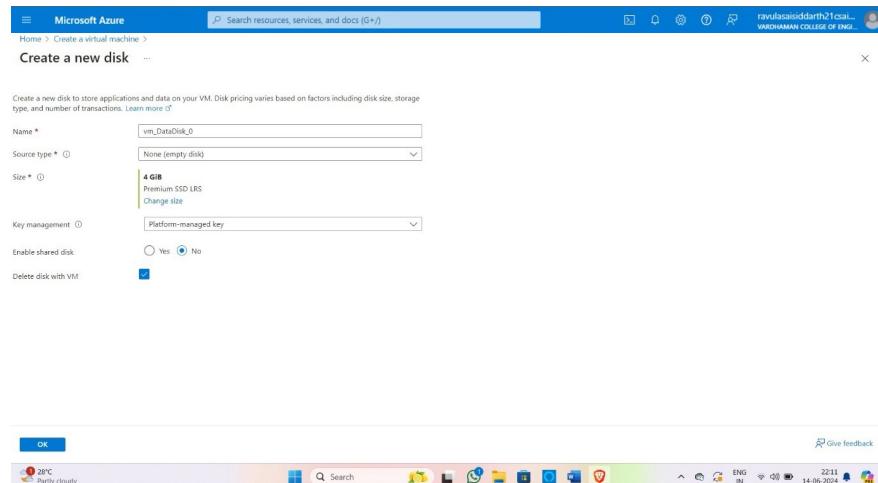
4) Click on “change size”

Storage type	Premium SSD (locally-redundant storage)					
Size	Performance 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	19000	750	10	-	-
32767 GiB	P80	20000	900	10	-	-

OK | Give feedback

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

6) Enable delete with VM and click on OK



7) Click on "Review+create" & click on create

8) Click on "Go to resource group"

9) Copy public IP Address

Property	Value
Resource group	RG24
Status	Running
Location	Central India (Zone 1)
Subscription	Azure for Students
Subscription ID	760b4aa1-744d-4fa4-9b1a-013e4bdc1be1
Availability zone	1
Tags (edit)	Add tags
Properties	Computer name: vm Operating system: Linux VM generation: V2 VM architecture: x64 Agent status: Not Ready Agent version: Unknown Hibernation: Disabled
Networking	public IP address: 20.40.46.16 (Network interface vmNic0_1) private IP address: 10.0.0.4 private IP address (IPv6): - Virtual network/subnet: vm-vnet/default DNS name: Configure

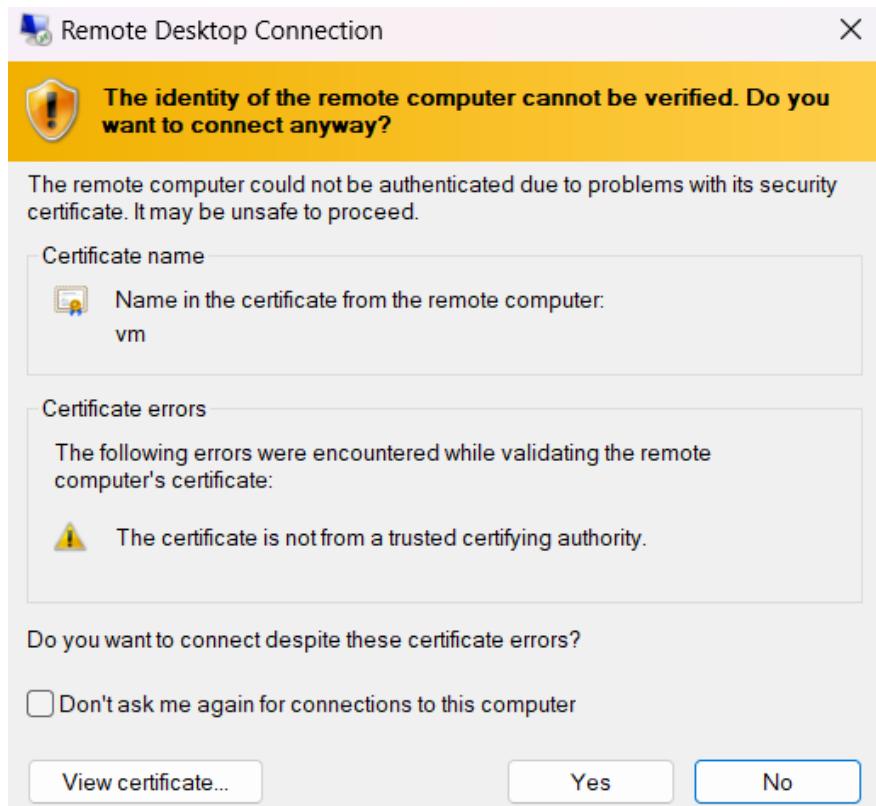
10) Open Remote Desktop Connection in your windows/system and paste the public IP Address

11) Click on “More choices”

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



13) Click on yes and now the data disks are attached to the windows server



14) Click on “Disks” in your VM and you can see the attached data disks to the windows server

The screenshot shows the Microsoft Azure portal interface for a virtual machine named 'vm'. The left sidebar shows 'Disks' selected under 'Settings'. The main area displays disk information. An OS disk is listed with details: Disk name: vm_OsDisk_1_8b113cab1fb4c90b0fc, Storage type: Premium SSD LRS, Size (GiB): 128, Max IOPS: 500, Max throughput: 100, Encryption: SSE with PMK, Host caching: Read/write. Below it, a data disk is listed: Disk name: vm_DataDisk_0, Storage type: Premium SSD LRS, Size (GiB): 4, Max IOPS: 120, Max throughput: 25, Encryption: SSE with PMK, Host caching: Read-only. A note at the top states: 'The desired performance might not be reached due to the maximum virtual machine disk performance cap. The current virtual machine size supports up to 48 MBps. The total for disks attached to 'vm' is 125 MBps.' A link to 'Learn more' is provided. At the bottom, there are 'Apply' and 'Discard changes' buttons.

15) Detach the data disks from the windows server by clicking on the detach symbol

16) Click on “Apply”

17) Now the data disks are detached from the windows server

Result: Above experiment is successful executed And verified.

13Q) How to add data disks to linux server in azure data center

Steps:-

Step 1 : Create a Virtual Machine with username &password.

The screenshot shows the Microsoft Azure portal interface for 'Virtual machines'. The top navigation bar includes 'Microsoft Azure', a search bar, and user information. Below the navigation is a toolbar with various icons like 'Create', 'Reservations', 'Manage view', 'Refresh', 'Export to CSV', 'Open query', 'Assign tags', 'Start', 'Restart', 'Stop', 'Delete', 'Services', and 'Maintenance'. A filter bar at the top allows filtering by 'Subscription equals all', 'Type equals all', 'Resource group equals all', 'Location equals all', and 'Add filter'. Below the toolbar, there are columns for 'Name', 'Type', 'Subscription', 'Resource group', 'Location', 'Status', 'Operating system', 'Size', 'Public IP address', and 'Disks'. A message 'No virtual machines to display' is centered, followed by instructions to 'Create a virtual machine that runs Linux or Windows. Select an image from the marketplace or use your own customized image.' Below this, there are three main options: 'Create' (with 'Azure virtual machine' sub-options), 'Azure virtual machine with preset configuration' (with 'Create a virtual machine with presets based on your workloads'), and 'More VMs and related solutions' (with 'Discover and deploy full workloads and Azure products for your business needs'). At the bottom right, there is a 'Give feedback' link.

Step 2 : click on "Next:Disks>"

The screenshot shows the 'Create a virtual machine' wizard on the 'Project details' step. The top navigation bar and toolbar are visible. The form fields include 'Subscription' (set to 'Azure for Students'), 'Resource group' (set to '(New) RG24'), 'Virtual machine name' (set to 'vm'), 'Region' (set to '(Asia Pacific) Central India'), 'Availability options' (set to 'Availability zone'), 'Availability zone' (set to 'Zone 1'), 'Security type' (set to 'Trusted launch virtual machines'), and 'Image' (set to 'Ubuntu Server 20.04 LTS - v64 Gen2'). A note at the bottom says 'You can now select multiple zones. Selecting multiple zones will create one VM per zone. Learn more'.

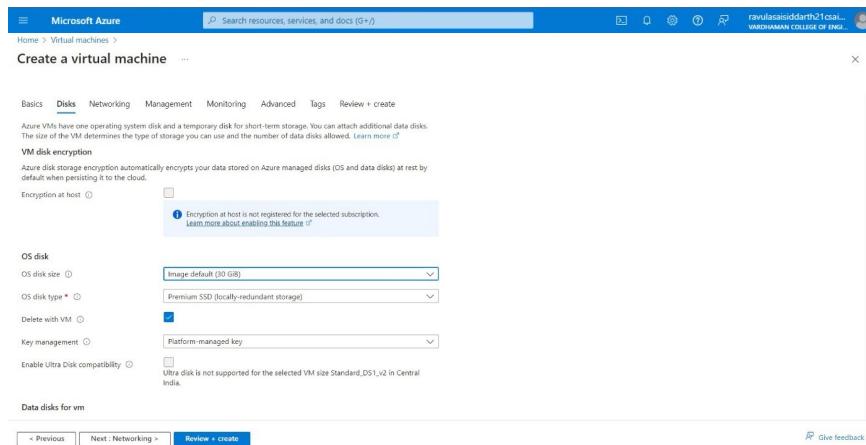
The screenshot shows the 'Create a virtual machine' wizard on the 'Configuration' step. The top navigation bar and toolbar are visible. The form fields include 'Size' (set to 'Standard_DS1_v2 - 1 vcpu, 3.5 GB memory (£5.101.50/month)'), 'Enable Hibernation' (unchecked), 'Administrator account' (Authentication type set to 'Password', Username 'azureuser', Password '*****', Confirm password '*****'), and 'Inbound port rules' (Public inbound ports set to 'Allow selected ports' with 'SSH (22)' selected). At the bottom, there are buttons for '< Previous', 'Next: Disks >', 'Review + create', and 'Give feedback'.

Step 3 : Select

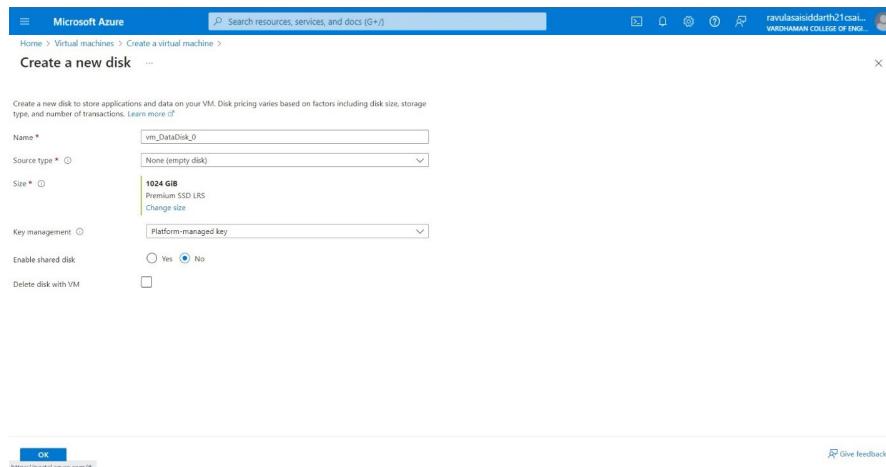
OS disk size -----30GB

OS disk type -----Premium SSD(LRS)

enable "Delete with VM"



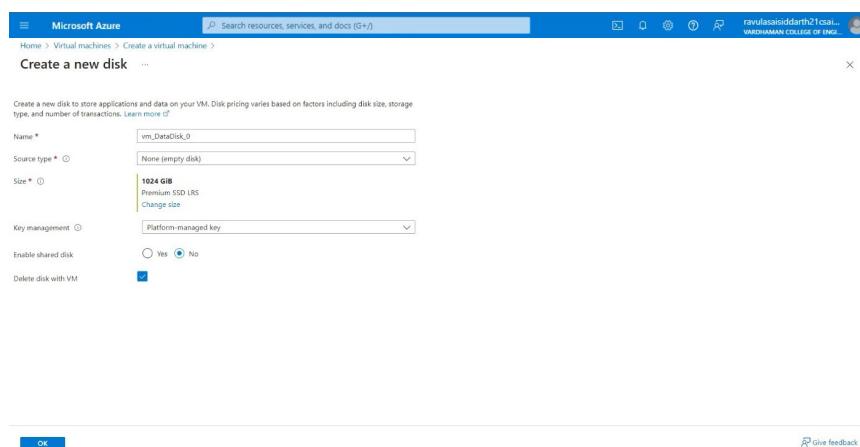
Step 4 : Click on "Create & attach a new disk"



Step 5 : Select

Source type -----None (empty disk), Size -----1024GB, Key manager-----Platform managed key,

Enable shared disk -----NO and finally click on OK

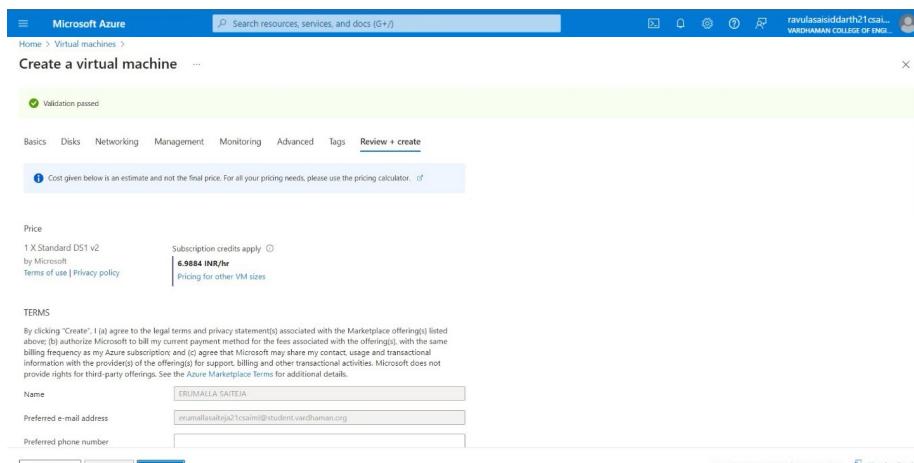
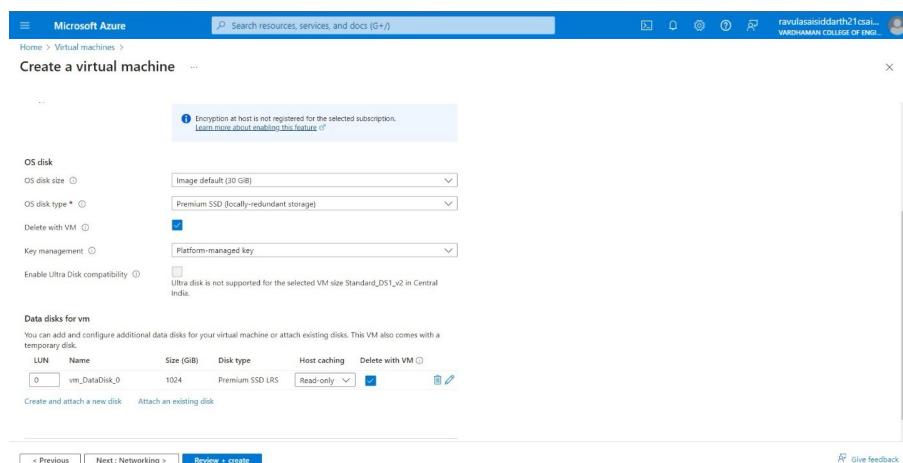


Step 6 : Select

Storage type -----Premium SSD(LRS), Custom disk size (GB)-----5

click on OK

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



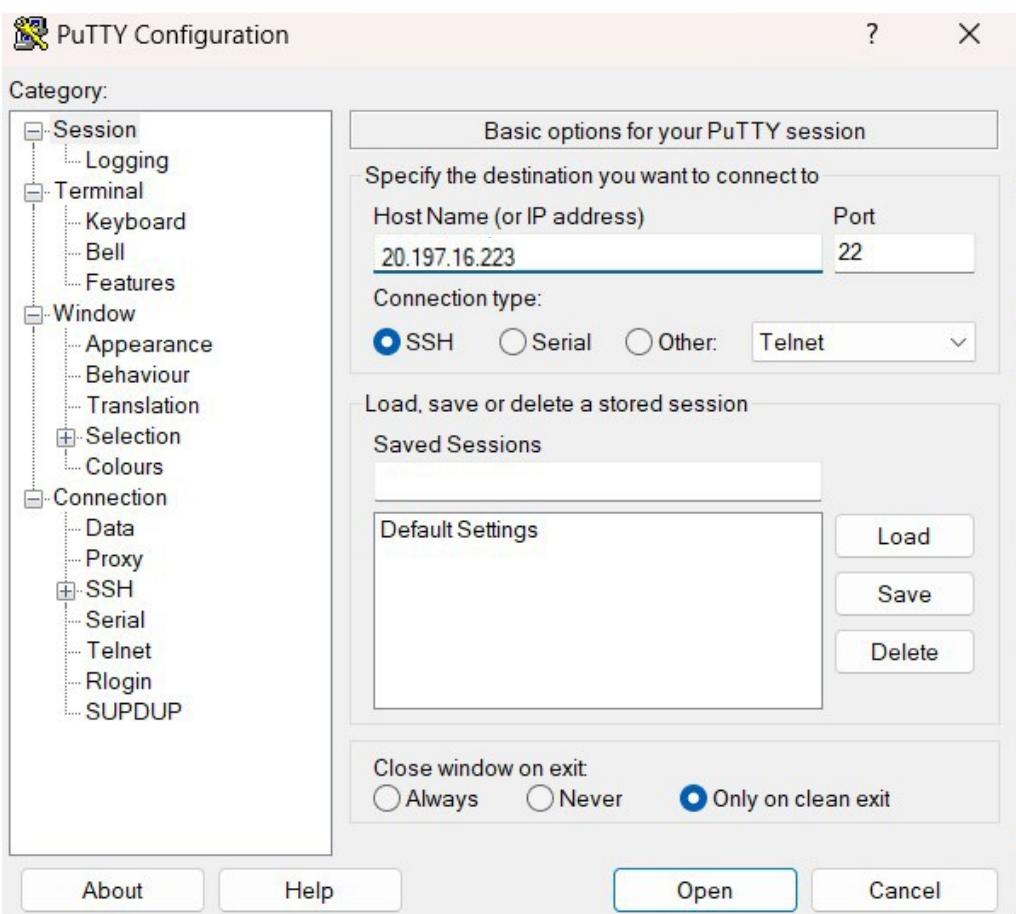
Step 8 : Click on "Go to resource group

The screenshot shows the Microsoft Azure Deployment Overview page for a deployment named 'CreateVm-canonical.0001-com-ubuntu-server-focal-2-20240614224205'. The status is 'Your deployment is complete'. It provides details like deployment name, start time (6/14/2024, 10:45:53 PM), subscription (Azure for Students), and resource group (RG24). The 'Deployment details' section includes 'Setup auto-shutdown' (Recommended) and 'Monitor VM health, performance and network dependencies' (Recommended). The 'Next steps' section has 'Go to resource' and 'Create another VM' buttons. A sidebar on the right offers links to Cost Management, Microsoft Defender for Cloud, Free Microsoft tutorials, and Work with an expert.

Step 9 : Copy public IP Address

The screenshot shows the Microsoft Azure Virtual Machines Overview page for a VM named 'vm'. The VM is listed under the 'Virtual machine' section. The 'Overview' tab is selected, showing details such as Resource group (RG24), Status (Running), Location (Central India (Zone 1)), Subscription (Azure for Students), Subscription ID, Availability zone (1), and Tags (None). The 'Properties' tab is also visible, showing the VM's properties like Computer name (vm), Operating system (Linux (ubuntu 20.04)), VM generation (V2), VM architecture (x64), Agent status (Ready), Agent version (2.11.14), Hibernation (Disabled), Host group (-), and Host (-). The 'Networking' tab shows the Public IP address (20.40.46.16), Private IP address (10.0.0.4), Virtual network/subnet (vm-vnet/default), and DNS name (Not configured). The 'Size' tab indicates the VM is Standard DS1 v2.

Step 10 : Open "PUTTY" & paste the IP address and click on "open"



Step 11 : Login into it with username and password

```
azureuser@vm: ~
az login as: azureuser
az user@20.40.46.16's password:
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-1064-azure x86_64)

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

System information as of Fri Jun 14 17:18:57 UTC 2024

System load: 0.1 Processes: 120
Usage of /: 5.0% of 28.89GB Users logged in: 0
Memory usage: 9% IPv4 address for eth0: 10.0.0.4
Swap usage: 0%

* Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s
just raised the bar for easy, resilient and secure K8s cluster deployment.
https://ubuntu.com/engage/secure-kubernetes-at-the-edge

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

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

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

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

azureuser@vm:~$
```

Step 12 : Type the below commands

```
$ df -hT  
$ lsblk  
$ sudo filoe -s/dev/sdc  
$ sudo mkfs -t ext4 /dev/sdc  
$ mkdir test  
$ sudo mount /dev/sdc/ test  
$ cd test
```

```
azureuser@vm:~/test  
Enable ESM Apps to receive additional future security updates.  
See https://ubuntu.com/esm or run: sudo pro status  
  
The list of available updates is more than a week old.  
To check for new updates run: sudo apt update  
  
The programs included with the Ubuntu system are free software;  
the exact distribution terms for each program are described in the  
individual files in /usr/share/doc/*copyright.  
  
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by  
applicable law.  
  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
azureuser@vm:~$ df -hT  
Filesystem      Type   Size  Used Avail Use% Mounted on  
/dev/root       ext4   29G  1.5G  28G  6% /  
devtmpfs        devtmpfs 1.7G    0  1.7G  0% /dev  
tmpfs          tmpfs   1.7G    0  1.7G  0% /dev/shm  
tmpfs          tmpfs   336M  988K 335M  1% /run  
tmpfs          tmpfs   5.0M    0  5.0M  0% /run/lock  
tmpfs          tmpfs   1.7G    0  1.7G  0% /sys/fs/cgroup  
/dev/loop0      squashfs 64M   64M   0 100% /snap/core20/2318  
/dev/loop2      squashfs 39M   39M   0 100% /snap/snapd/21759  
/dev/loop1      squashfs 92M   92M   0 100% /snap/1xd/24061  
/dev/sda15     vfat    105M  6.1M  99M  6% /boot/efi  
/dev/sdb1       ext4    6.8G  28K  6.5G  1% /mnt  
tmpfs          tmpfs   336M    0  336M  0% /run/user/1000  
azureuser@vm:~$ lsblk  
NAME   MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT  
loop0    7:0    0  64M  1 loop /snap/core20/2318  
loop1    7:1    0 91.9M  1 loop /snap/1xd/24061  
loop2    7:2    0 38.8M  1 loop /snap/snapd/21759  
sda     8:0    0  30G  0 disk  
└─sda1   8:1    0 29.9G  0 part /  
└─sda14  8:14   0   4M  0 part  
└─sda15  8:15   0 106M  0 part /boot/efi  
sdb     8:16   0   7G  0 disk  
└─sdb1   8:17   0   7G  0 part /mnt  
sdc     8:32   0   1T  0 disk  
sr0     11:0   1 628K  0 rom  
azureuser@vm:~$ sudo filoe -s/dev/sdc  
sudo: filoe: command not found  
azureuser@vm:~$ sudo mkfs -t ext4/dev/sdc  
mkfs: no device specified  
Try 'mkfs --help' for more information.  
azureuser@vm:~$ mkdir test  
azureuser@vm:~$ sudo mount /dev/sdc/test  
mount: /dev/sdc/test: can't find in /etc/fstab.  
azureuser@vm:~$ cd test  
azureuser@vm:~/test$
```

Microsoft Azure

Home > Virtual machines > vm

vm | Disks

Virtual machine

Disks

OS disk

Swap OS disk

Disk name Storage type Size (GiB) Max IOPS Max throughput (...) Encryption Host caching

vm_disk1_6f1bda4a10824148a92d6b1 Premium SSD LRS 30 120 25 SSE with PMK Read/write

Data disks

Filter by name

Showing 1 of 1 attached data disks

Create and attach a new disk Attach existing disks

LUN Disk name Storage type Size (GiB) Max IOPS Max throughput (...) Encryption Host caching

0 vm_DataDisk_0 Premium SSD LRS 4 120 25 SSE with PMK Read-only

Apply Discard changes

Step 13 : Click on Apply

Microsoft Azure

Home > Virtual machines > vm

vm | Disks

Virtual machine

Disks

OS disk

Swap OS disk

Disk name Storage type Size (GiB) Max IOPS Max throughput (...) Encryption Host caching

vm_disk1_6f1bda4a10824148a92d6b1 Premium SSD LRS 30 120 25 SSE with PMK Read/write

Data disks

Filter by name

Showing 0 of 0 attached data disks

Create and attach a new disk Attach existing disks

LUN Disk name Storage type Size (GiB) Max IOPS Max throughput (...) Encryption Host caching

No data disks attached

Apply Discard changes

Result: Above experiment is successful executed And verified.

Q14) Move Server Files from one Resource Group to another.

Step-1: Create ResourceGroup1, ResourceGroup2 and a Virtual machine on ResourceGroup1.

The screenshot shows the 'Create a resource group' wizard in the Microsoft Azure portal. The 'Project details' section is filled with 'Subscription' set to 'Azure for Students' and 'Resource group' set to 'RG1'. The 'Resource details' section shows 'Region' set to '(Asia Pacific) Central India'. At the bottom, there are buttons for 'Review + create' and 'Next: Tags >'. The URL in the address bar is [https://portal.azure.com/#create/Microsoft.ResourceGroup](#).

The screenshot shows the 'Resource groups' page in the Microsoft Azure portal. It lists two resource groups: 'RG1' and 'RG2', both belonging to the 'Azure for Students' subscription and located in 'Central India'. There are filter and sorting options at the top, and a 'List view' button on the right.

The screenshot shows the 'Virtual machines' page in the Microsoft Azure portal. A single VM named 'vm' is selected. The 'Overview' tab is active, displaying basic information like status (Running), location (Central India), and subscription (Azure for Students). The 'Properties' tab is open, showing detailed settings for the VM, including its computer name ('vm'), operating system ('Windows'), and networking details. The VM's public IP address is listed as 20.197.16.223. The 'Networking' section also shows the private IP address (10.0.0.4) and the fact that it is not ready. The URL in the address bar is [https://portal.azure.com/#blade/Microsoft_Azure_Virtual_Machines/VM_DashboardBlade/resourceId%3D/273b4aa1-744d-4fb4-9b3a-815e4bdc0be8](#).

Step-2: Select all the resources from ResourceGroup1 and then click on Move->Move to another resource group.

The screenshot shows the Microsoft Azure portal interface for Resource Group RG1. The 'Overview' tab is selected. In the 'Resources' section, there is a list of six resources: vm, vm-ip, vm-nsg, vm-vnet, vm748_z1, and vm_OsDisk_1. Each resource has a checkbox next to its name, which is checked for all. To the right of the list, there are columns for 'Type' and 'Location', both of which are 'Central India'. At the top right of the page, there is a 'Move' button with a dropdown menu. The menu items include 'Move to another resource group', 'Move to another subscription', and 'Move to another region'. The 'Move to another resource group' option is highlighted.

Step-3: Select the target Resource Group as ResourceGroup2 and click on move.

This screenshot is identical to the one above, showing the Microsoft Azure portal for Resource Group RG1. The 'Overview' tab is selected, and the list of resources is the same. The 'Move' button with its dropdown menu is also present in the top right corner.

The screenshot shows the 'Move resources' wizard in the Microsoft Azure portal. It is on Step 1: Source + target. The 'Source' section shows 'Subscription: Azure for Students' and 'Resource group: RG1'. The 'Target' section shows 'Subscription: Azure for Students' and 'Resource group: RG2'. A progress bar at the top indicates '1 Source + target', '2 Resources to move', and '3 Review'. Below the sections, there is a note: 'To move a resource, select a source and a destination. The source and destination resource groups will both be locked during the move. Learn more'.

The image contains three screenshots of the Microsoft Azure portal:

- Screenshot 1: Move resources - RG1**
Shows the 'Move resources' wizard step 2: Resources to move. It lists resources to be moved from RG1 to another target. The resources include a Disk, Network interface, Virtual network, Network security group, Public IP address, and a Virtual machine. All resources have a pending validation status.
- Screenshot 2: RG1 - Resource group**
Shows the 'RG1' resource group overview. It displays the subscription (Azure for Students), subscription ID, location (Central India), and tags. A search bar and filter options are also present. The main area shows a message: "No resources match your filters".
- Screenshot 3: RG2 - Resource group**
Shows the 'RG2' resource group overview. It displays the same subscription information as RG1. The main area lists the resources moved from RG1: vm, vm-ip, vm-msg, vm-vnet, vm748_z1, and vm_OsDisk_1_acf52507ebab4fad8260b65454ef155d, all located in Central India.

Result: Above experiment is successful executed And verified.

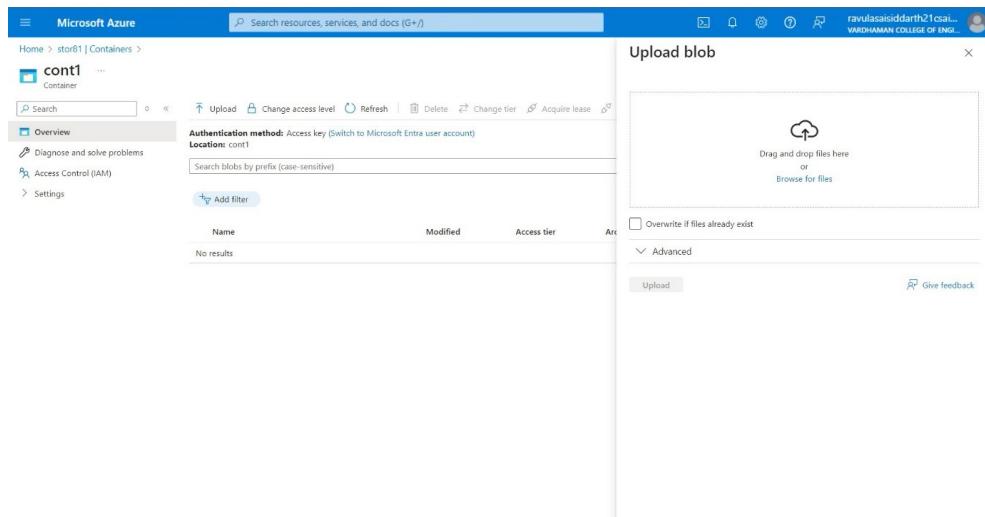
Q15) Create Azure Storage Account, Container – Upload and Delete Objects(blob) in it.

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.

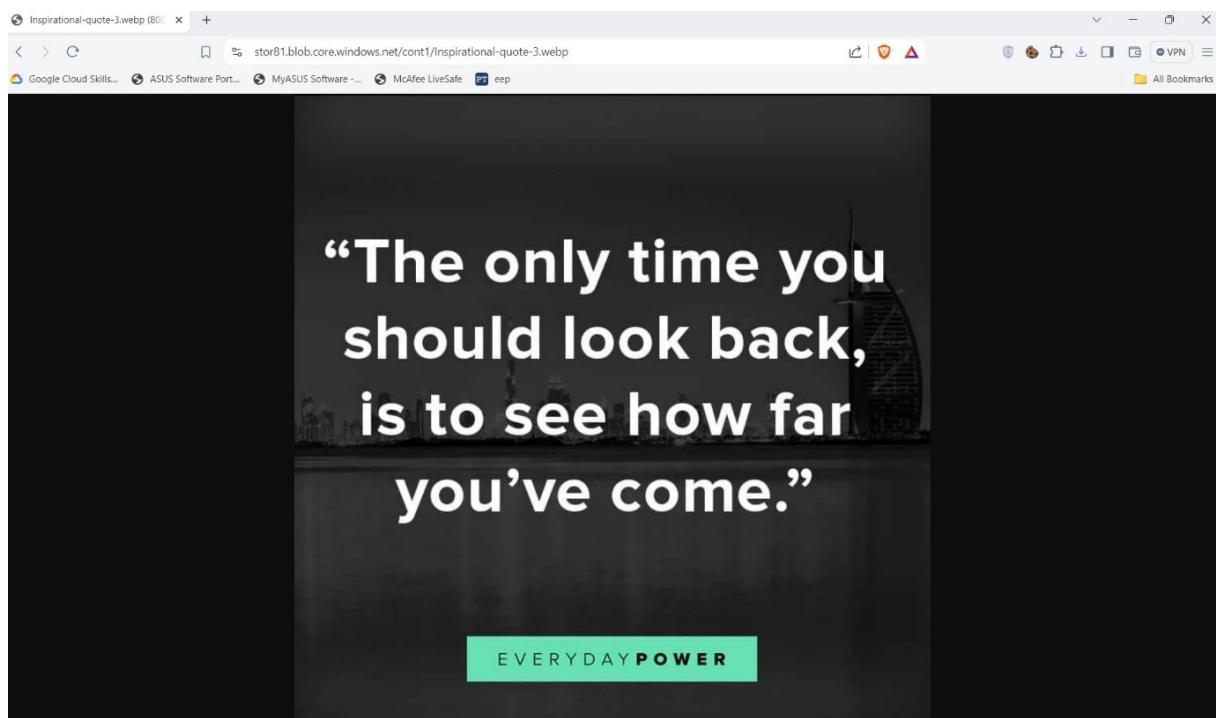
Step-3: After deployment Click on go to resource group and on Left Click on Containers and Create it with anonymous access level as blob (anonymous read access to blob only)

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



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

This screenshot shows the same Azure Storage Explorer interface as the previous one, but now it lists a single file named 'Inspirational-quote-3.webp'. The file was modified on 6/14/2024 at 11:37:13 and is in the 'Hot (inferred)' access tier. The table columns are 'Name', 'Modified', 'Access tier', 'Archive status', 'Blob type', 'Size', and 'Lease state'. The 'Show deleted blobs' button is also visible.



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.

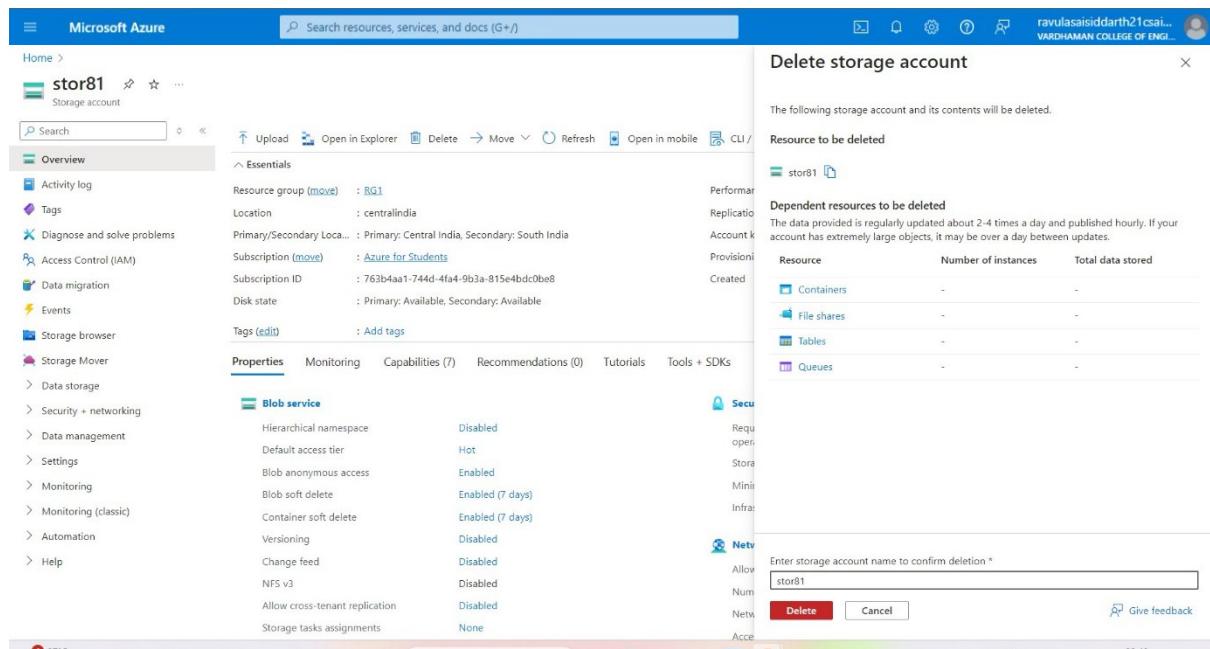
The screenshot shows the Microsoft Azure Storage Container Overview page for 'cont1'. A modal dialog titled 'Change access level' is open, showing the dropdown menu set to 'Private (no anonymous access)'. Below the dialog, a table lists blobs: 'Inspirational-quote-3.webp' (Block blob, 26.76 KB, Available). At the bottom of the dialog are 'OK' and 'Cancel' buttons.



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

The screenshot shows the Microsoft Azure Storage Container Overview page for 'cont1'. A modal dialog titled 'Delete blob(s)' is open, asking 'Are you sure you would like to delete the selected blobs?'. It lists three points: 1. Blobs in leased state are locked for deletion and will be skipped. 2. Folder deletion is not supported and any selected folders will be skipped. To delete a folder, delete all containing blobs. 3. If an immutable policy is applied to a blob, the blob will not be deleted. There is a checkbox 'Also delete blob snapshots' and 'OK' and 'Cancel' buttons.

The screenshot shows the Microsoft Azure Storage Account Overview page for 'stor81'. On the left, the 'Containers' section is expanded, showing 'cont1' selected. On the right, a modal dialog titled 'Delete container(s)' is open, stating '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.' It lists 'Container(s) to be soft deleted: cont1'. At the bottom are 'Delete' and 'Cancel' buttons.



The screenshot shows the Microsoft Azure portal interface. On the left, the 'Overview' tab of a storage account named 'stor81' is visible. On the right, a modal dialog titled 'Delete storage account' is open, confirming the deletion of the account and its contents. The dialog includes sections for 'Resource to be deleted' (listing 'stor81') and 'Dependent resources to be deleted' (listing 'Containers', 'File shares', 'Tables', and 'Queues'). A confirmation input field contains the account name 'stor81'. At the bottom of the dialog are 'Delete' and 'Cancel' buttons.

Result: Above experiment is successful executed And verified.

GITHUB LINK: <https://github.com/SaiSiddarth21/CCV>