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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

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We are particularly thankful to **Dr. M. A. Jabbar**, Professor & Head, Department of Computer Science and Engineering (AI&ML) for his guidance, intense support and encouragement, which helped us to mould our project into a successful one.

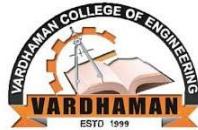
We show gratitude to our honorable Principal **Dr. J. V. R. Ravindra**, for having provided all the facilities and support.

We avail this opportunity to express our deep sense of gratitude and heartful thanks to **Dr. Teegala Vijender Reddy**, Chairman and **Sri Teegala Upender Reddy**, Secretary of VCE, for providing congenial atmosphere to complete this project successfully.

We also thank all the staff members of the department of **CSE(AI&ML)** for their valuable support and generous advice. Finally, thanks to all our friends and family members for their continuous support and enthusiastic help.

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(AI&ML)

CERTIFICATE

Certified that this is the bonafied record of practical work done by Mr. Raju Barkunti, roll number 21881A6673 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 21881A6673

Submitted for the practical exam held on

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

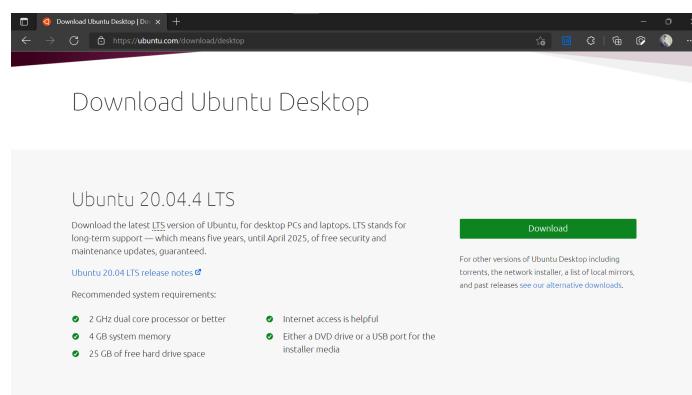
Ubuntu:

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



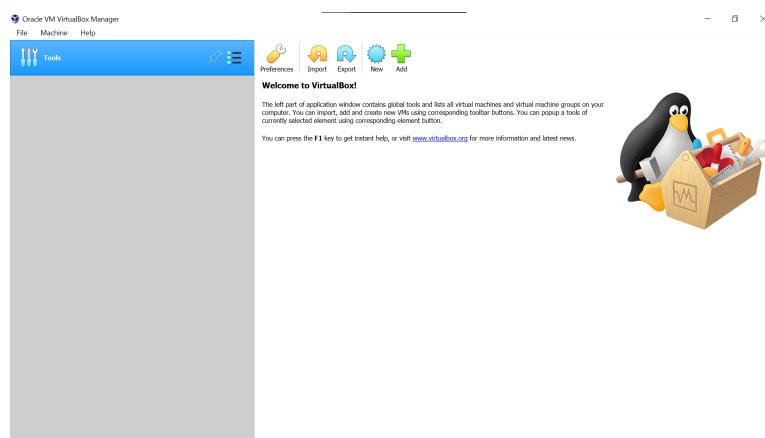
<https://www.virtualbox.org/wiki/Downloads>

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

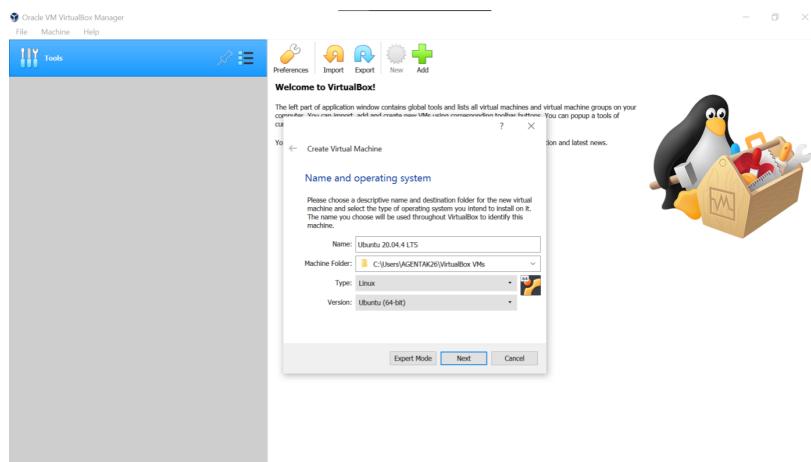


Note: The current version of Ubuntu only works on 64-bit machines.

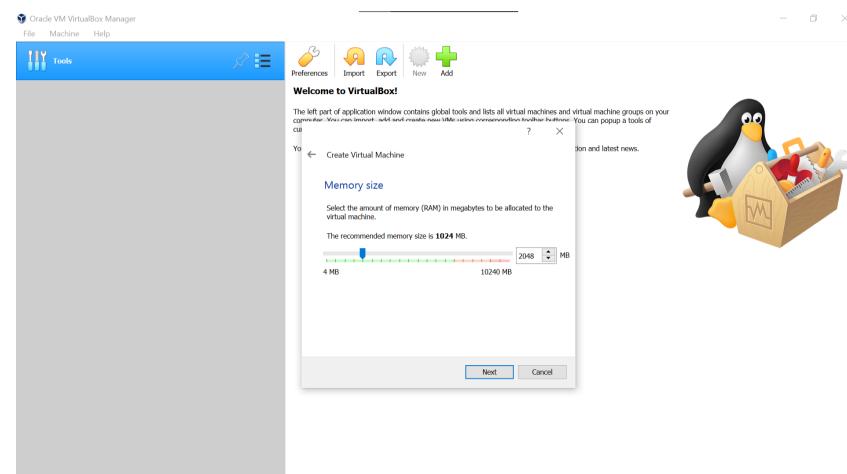
Step-3: Open VirtualBox and select New in the top taskbar.



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

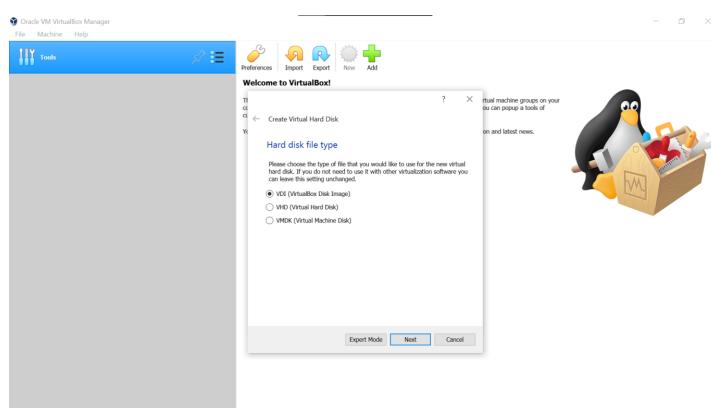


Step-5: Choose how much RAM you want to assign to the virtual machine and select Next. The recommended minimum is 1024 MB.



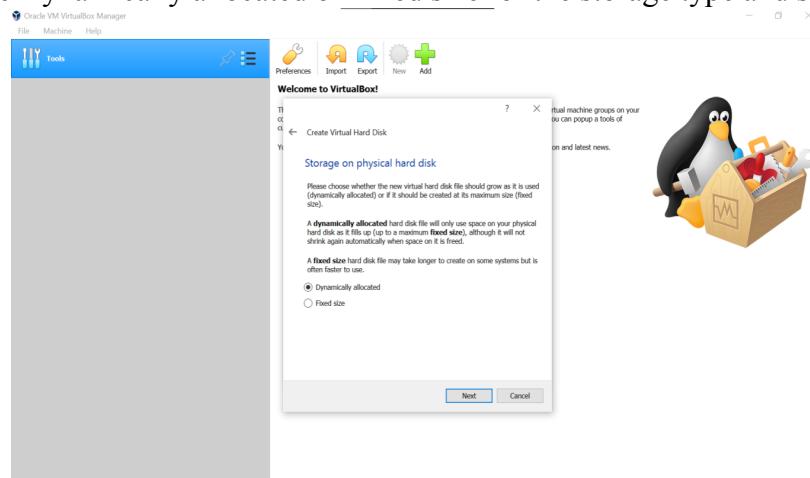
Step-6: Choose Create a virtual hard disk now and select Create.

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.

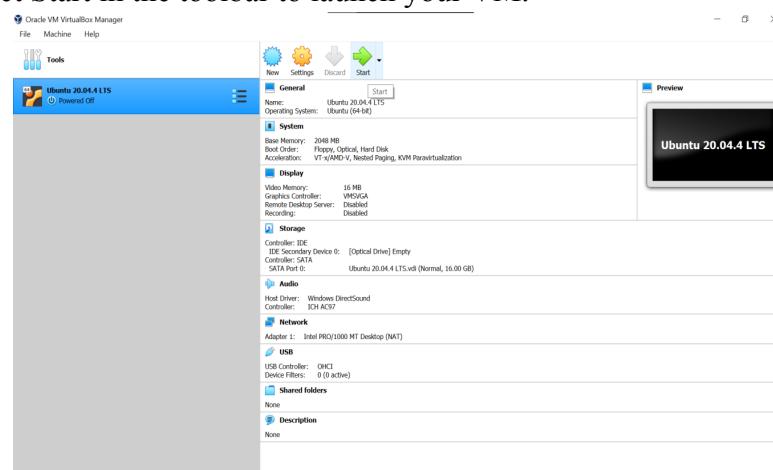


Tip: A fixed size disk performs better because the virtual machine doesn't have to increase the file size as you install software.

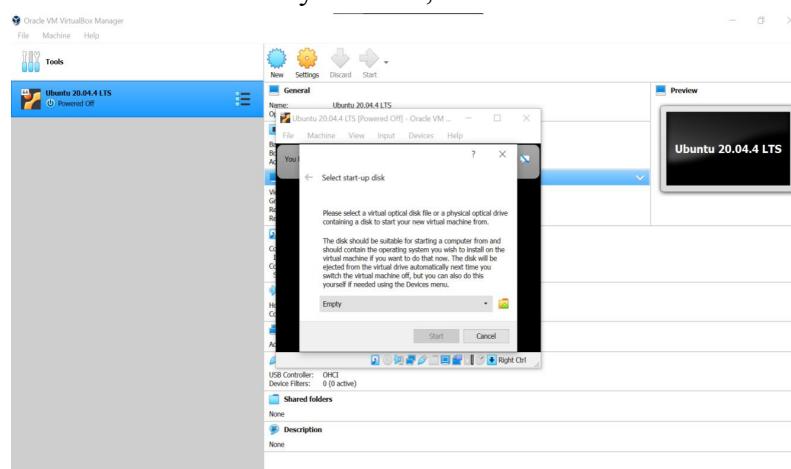
Step-9: Choose how much space you wish to set aside for Ubuntu and select Create.

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.

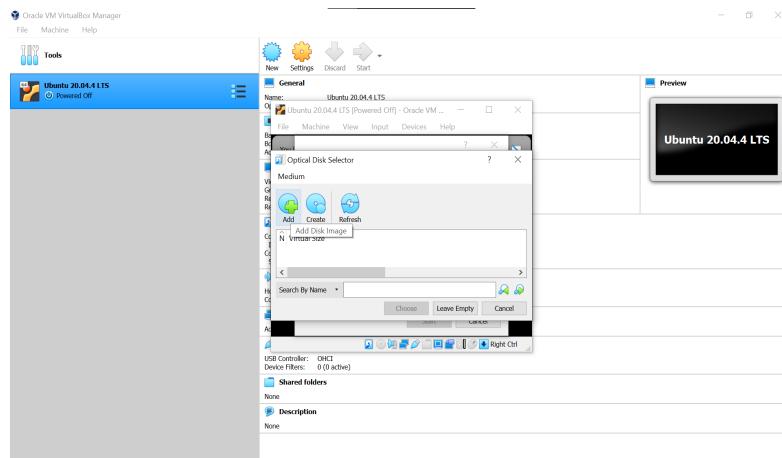
Step-10: The name of your virtual machine will now appear on the left side of the VirtualBox manager. Select Start in the toolbar to launch your VM.



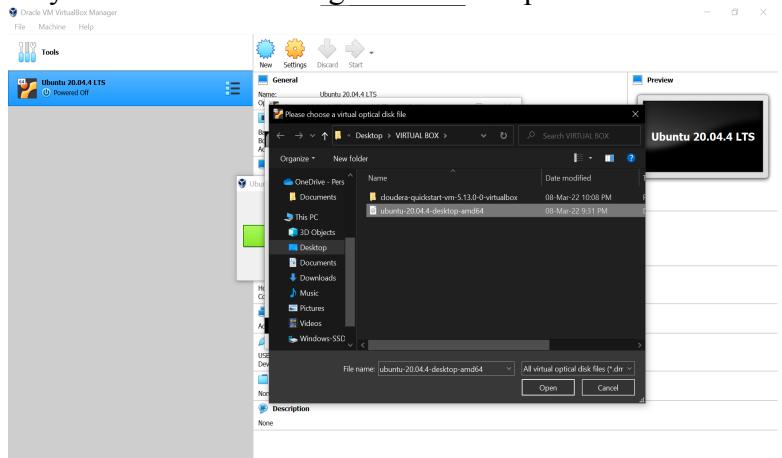
Step-11: This is the point where you need to choose the Ubuntu ISO file you downloaded earlier. If the VM doesn't automatically detect it, select the folder next to the Empty field.



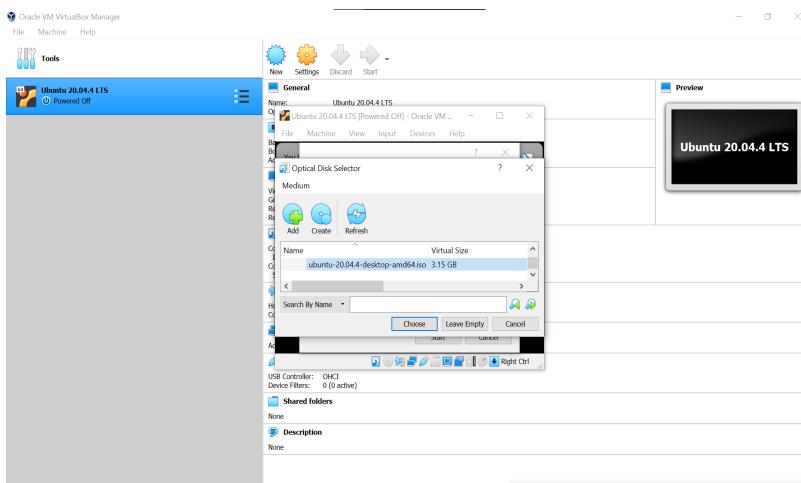
Step-12: Select Add in the window that pops up.



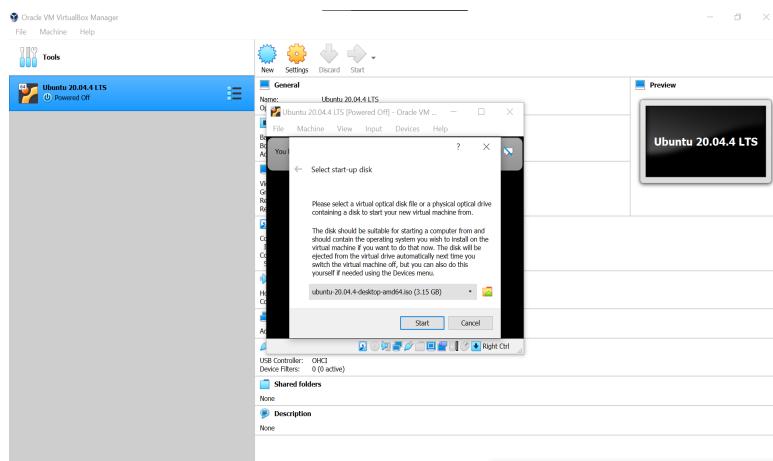
Step-13: Choose your Ubuntu disk image and select Open.



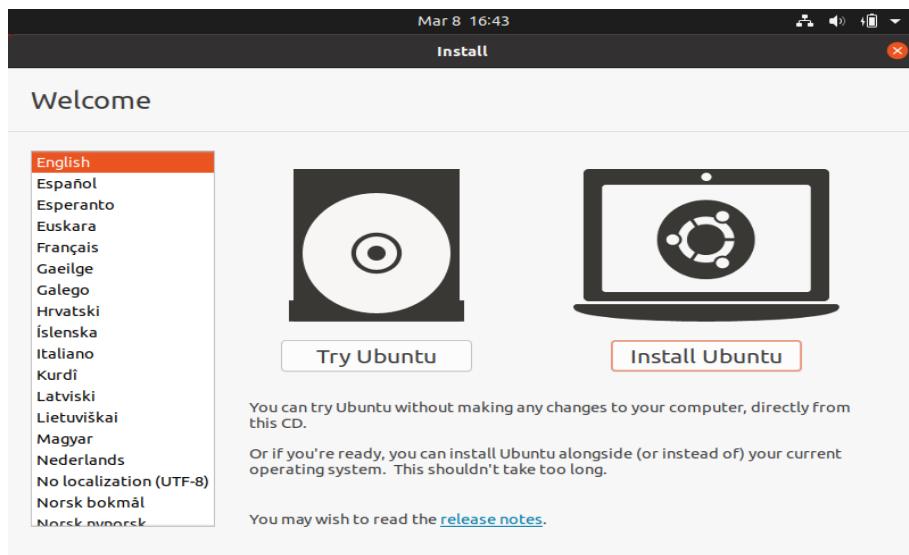
Step-14: - Select Choose



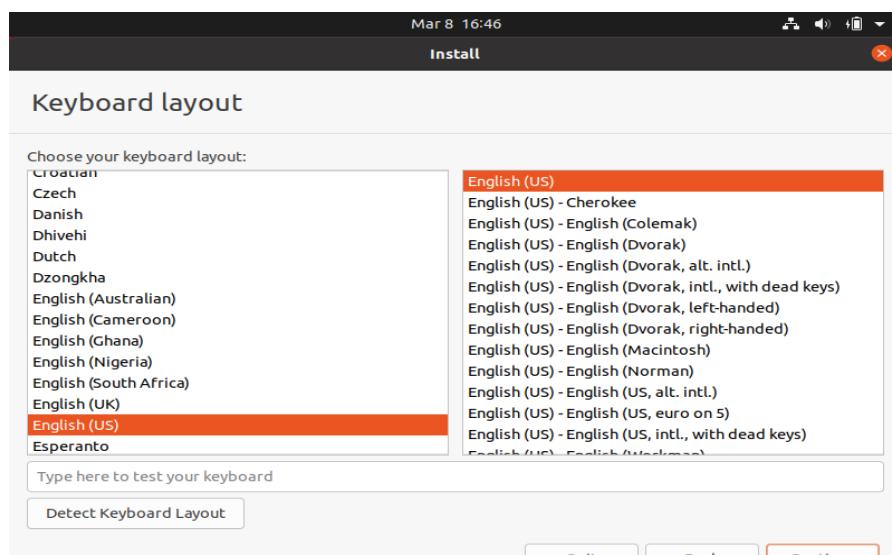
Step-15: Select Start.



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



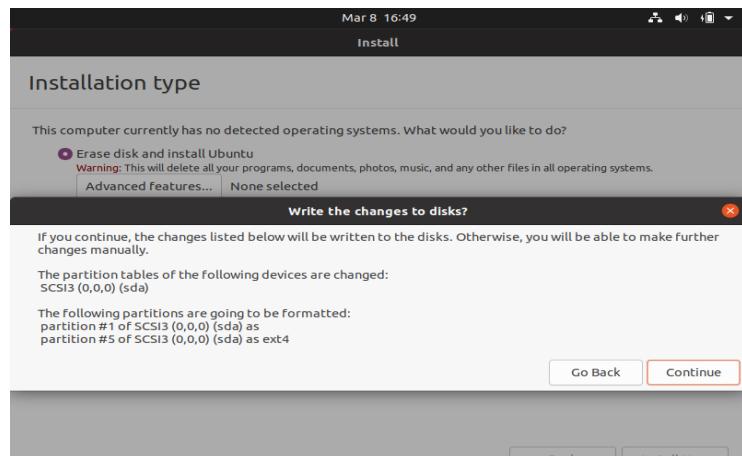
Step-17: Choose your keyboard layout and select Continue.



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

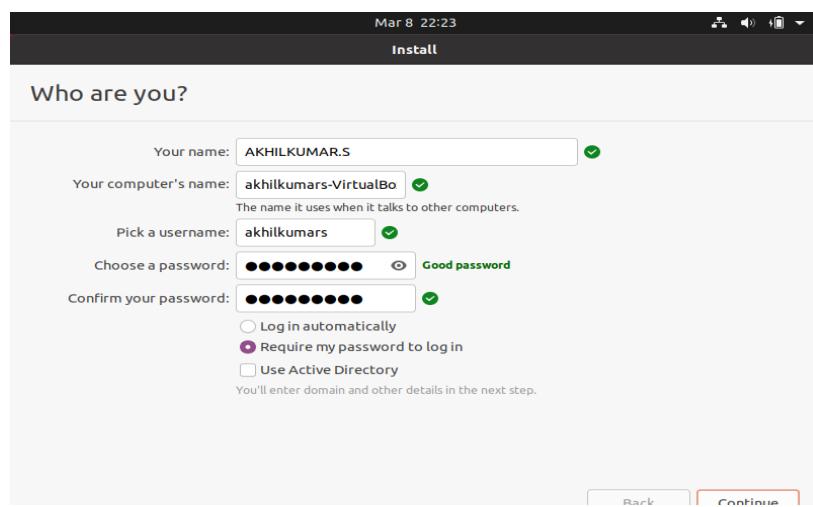
Step-19: Choose Erase disk and install Ubuntu and select Install Now, then select Continue to ignore the warning.

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

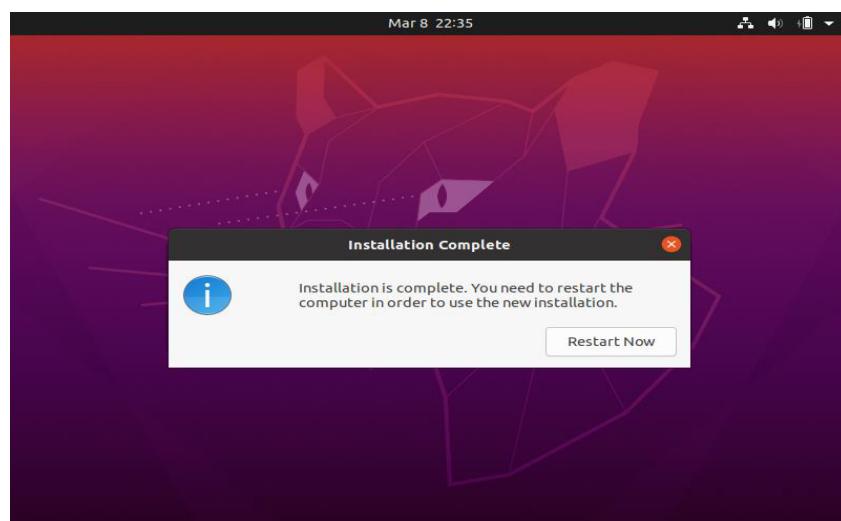


Step-20: - Choose your time zone on the map, then select Continue

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

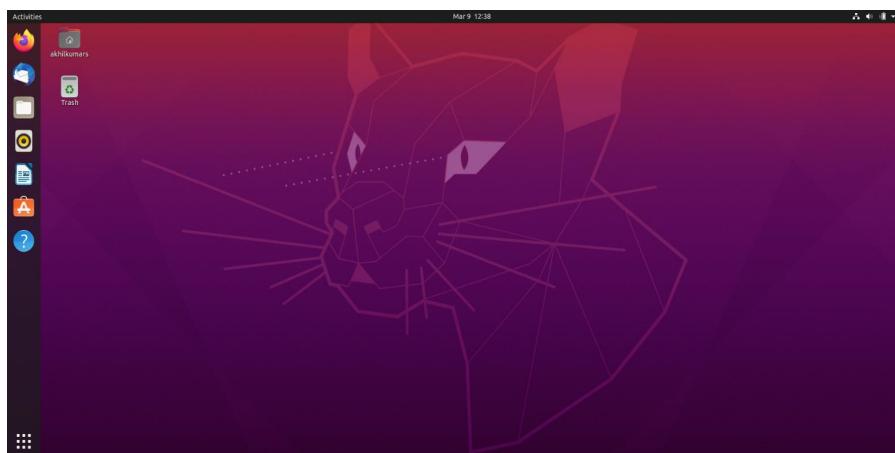


Step-22: - Select Restart Now.

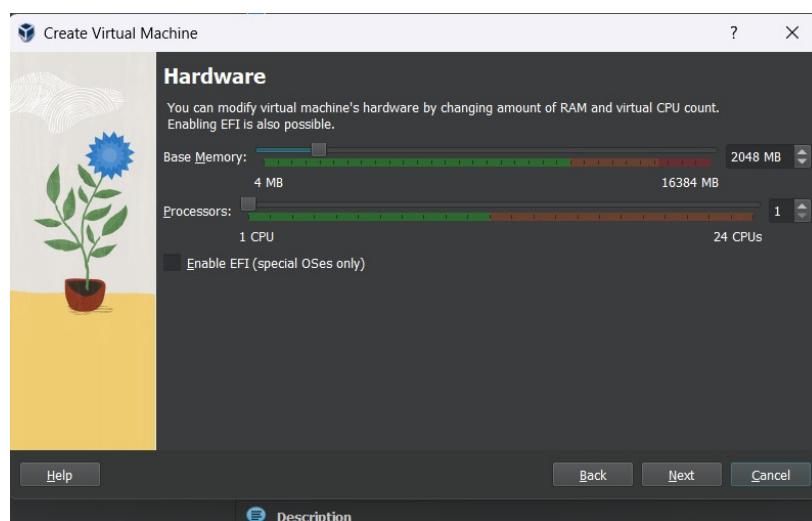
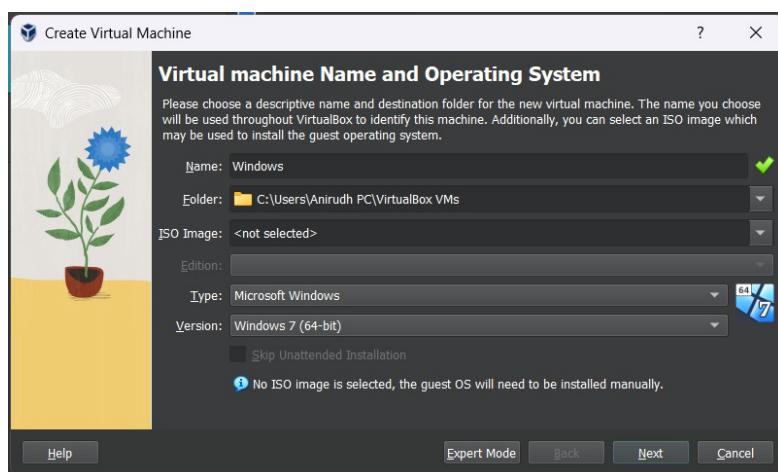


Step-23: - After restarting your VM and booting into Ubuntu, you may notice that the desktop doesn't scale correctly if you choose to view it in full-screen mode. You can fix this problem by selecting the VBox_Gas icon to install VirtualBox Guest Additions.

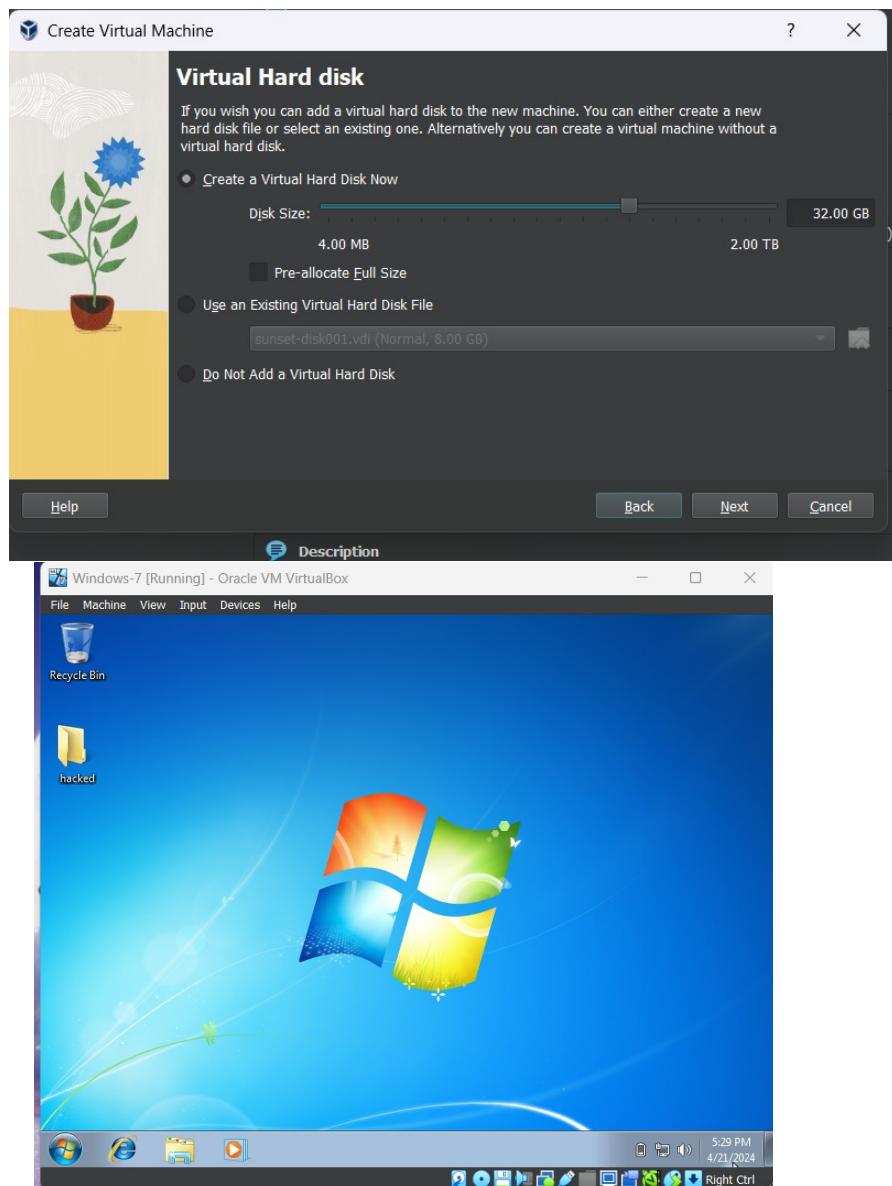
Output:



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

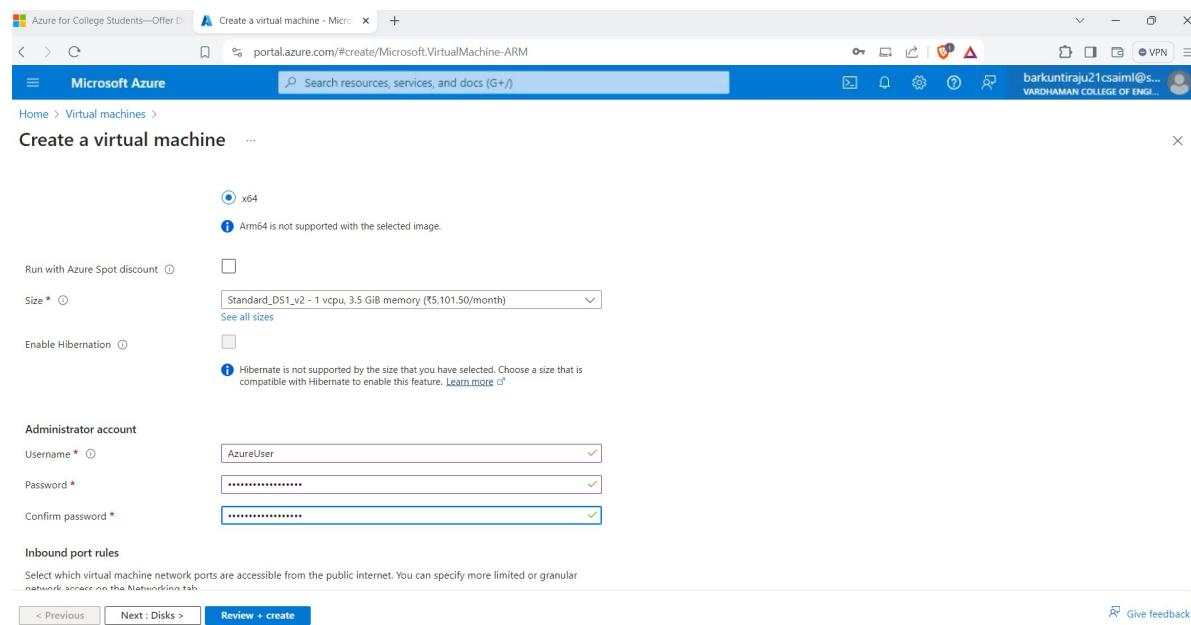
Step-1: Sign in to your Microsoft Azure account.

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

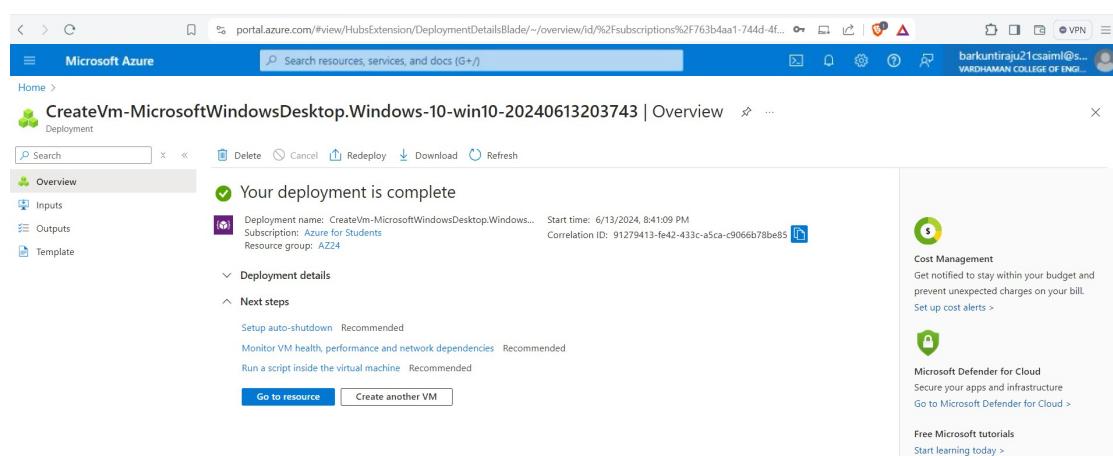
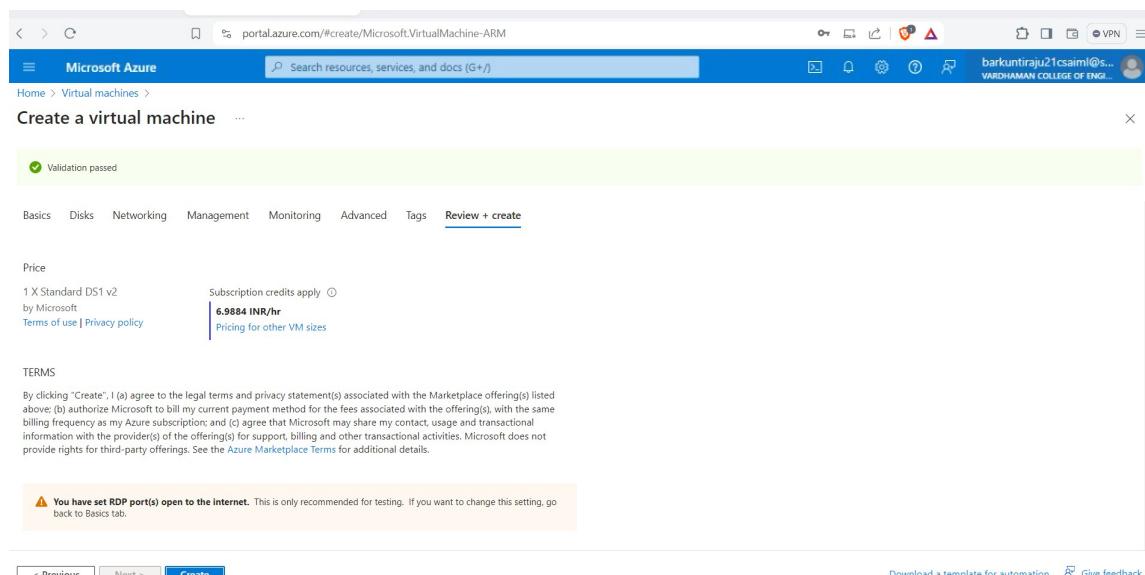
The screenshot shows the Microsoft Azure portal's 'Virtual machines' section. At the top, there are various filters like 'Subscription equals all', 'Type equals all', etc. Below the filters, there is a table header with columns: Name, Type, Subscription, Resource group, Location, Status, Operating system, Size, Public IP address, and Disks. Under the 'No virtual' heading, there is a sub-section titled 'Create a virtual machine that runs Linux or Windows'. It contains three main options: 'Azure virtual machine' (selected), 'Azure virtual machine with preset configuration', and 'More VMs and related solutions'. Below these options is a 'Create' button. A context menu is open over the 'Create' button, listing three additional options: 'Azure virtual machine', 'Azure virtual machine with preset configuration', and 'More VMs and related solutions'. At the bottom of the page, there are links to 'Learn more about Windows virtual machines' and 'Learn more about Linux virtual machines', along with a 'Give feedback' link.

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”

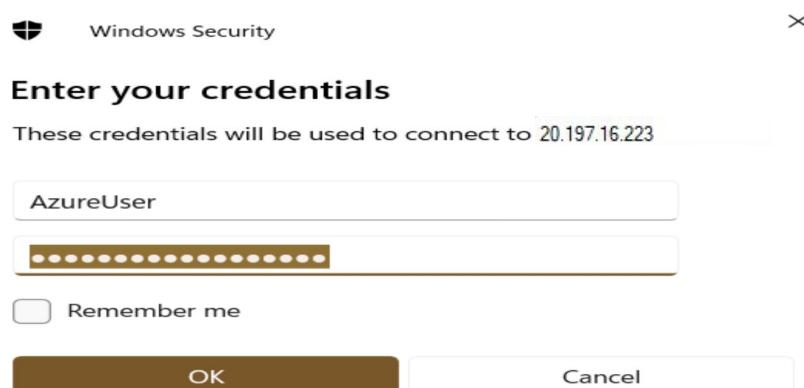
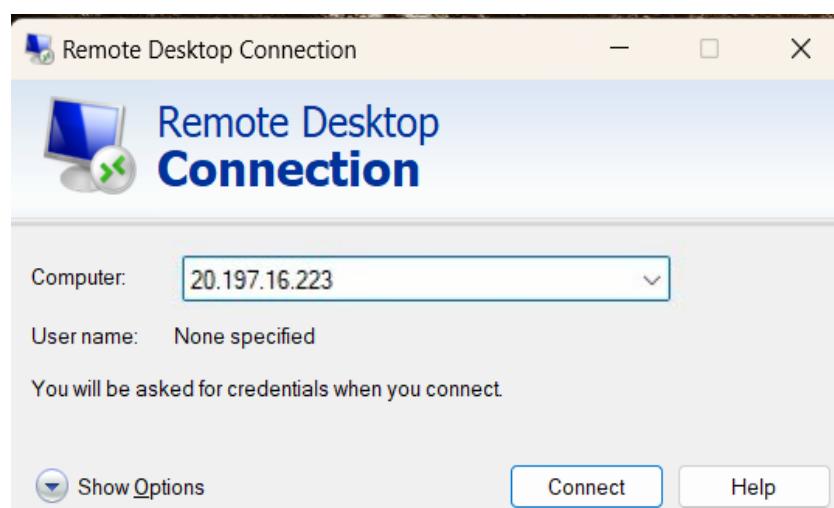
The screenshot shows the 'Create a virtual machine' wizard. The first step, 'Project details', shows the subscription 'Azure for Students' and the resource group '(New) AZ24'. The second step, 'Instance details', shows the virtual machine name 'VM24', region '(Asia Pacific) Central India', availability options 'Availability zone', and availability zone 'Zone 1'. A note at the bottom of this step says 'You can now select multiple zones. Selecting multiple zones will create one VM per zone.' The third step, 'Security type', shows the security type 'Trusted launch virtual machines'. At the bottom of the wizard, there are buttons for '< Previous', 'Next: Disks >', and 'Review + create'.



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

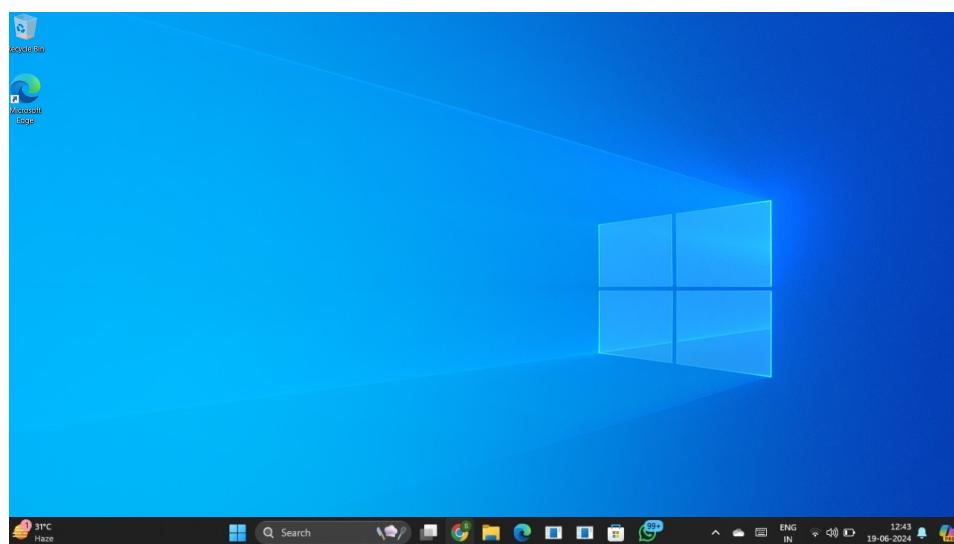


Step-5: Firstly, copy the public IP Address of that created virtual machine.



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

Output:

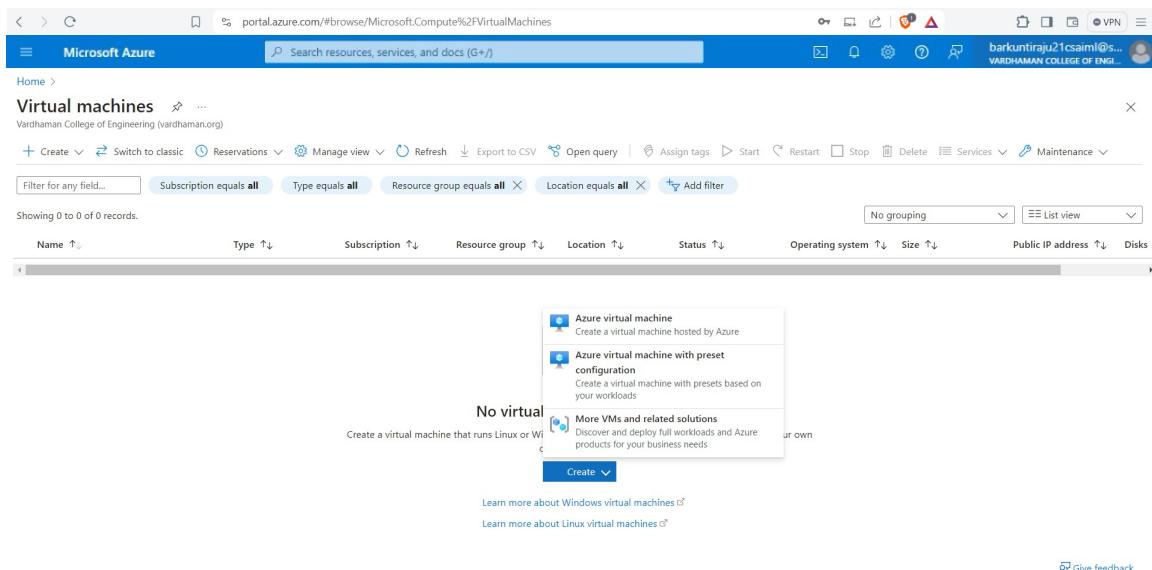


Result: Above experiment is successful executed And verified.

Q3) Create an Ubuntu Virtual Machine in Microsoft Azure

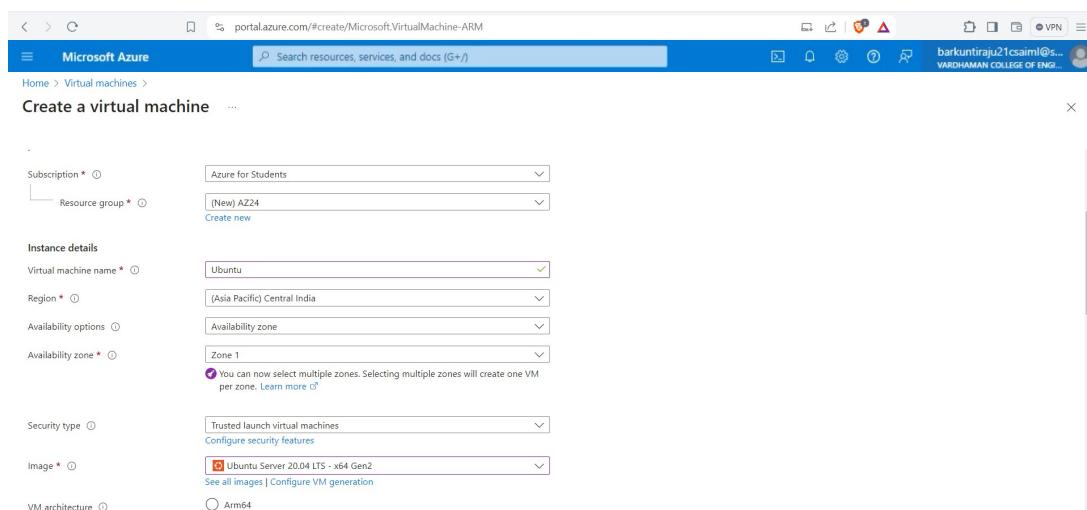
Step-1: Sign in to your Microsoft Azure account.

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



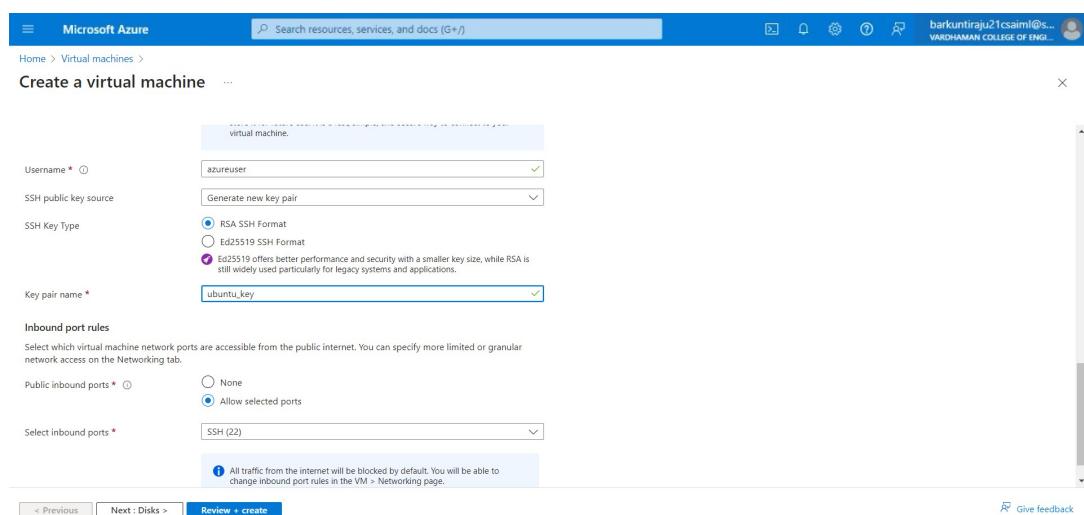
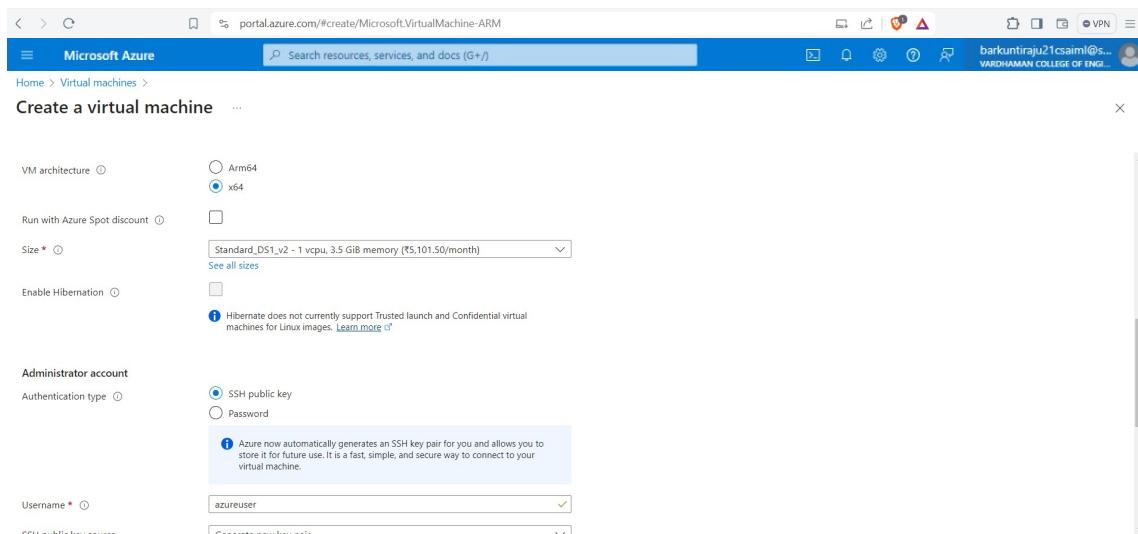
The screenshot shows the Microsoft Azure portal's 'Virtual machines' blade. At the top, there are various navigation and search tools. Below that, a search bar and a 'Create' button are visible. A context menu is open over the 'Create' button, listing three options: 'Azure virtual machine', 'Azure virtual machine with preset configuration', and 'More VMs and related solutions'. The 'Create' button itself is highlighted in blue. The main area below shows a message 'No virtual' with a sub-instruction 'Create a virtual machine that runs Linux or Windows'. There are also links to '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”.

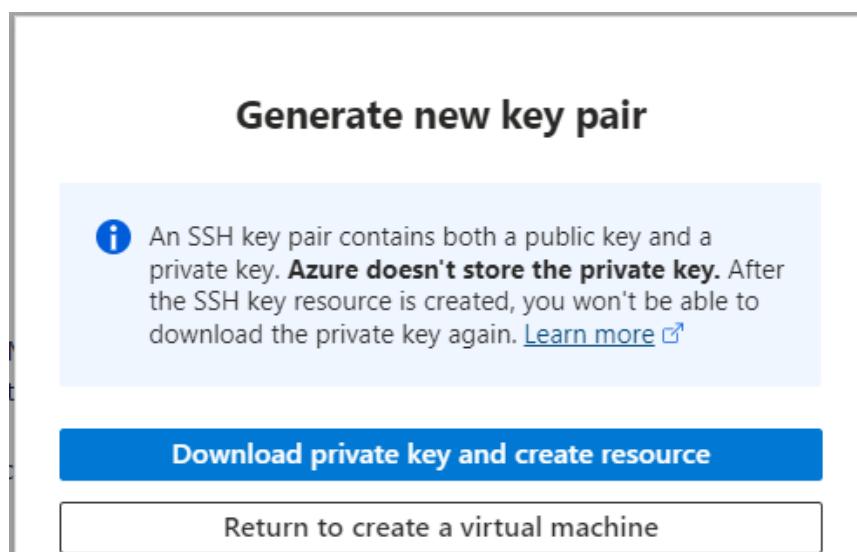


The screenshot shows the 'Create a virtual machine' wizard, step 1: Set instance details. The form includes the following fields:

- Subscription: Azure for Students
- Resource group: (New) AZ24
- Instance details:
 - Virtual machine name: Ubuntu
 - Region: (Asia Pacific) Central India
 - Availability options:
 - Availability zone: Zone 1
 - A note states: "You can now select multiple zones. Selecting multiple zones will create one VM per zone. Learn more"
- Security type: Trusted launch virtual machines
- Image: Ubuntu Server 20.04 LTS - x64 Gen2
- VM architecture: Arm64



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 portal interface. The top navigation bar includes 'Microsoft Azure', a search bar, and user information ('barkuntraju21csaiml@s... VARDHAMAN COLLEGE OF ENGI...'). Below the navigation is a breadcrumb trail: 'Home > Virtual machines >'. The main area is titled 'Virtual machines' and shows a list with one item: 'Ubuntu' (Virtual machine). To the right of the list is a detailed view for the selected 'Ubuntu' machine. The details include:

- Essentials**: Resource group (move) AZ24, Status Running, Location Central India (Zone 1), Subscription (move) Azure for Students, Subscription ID 763b4aa1-744d-4fa4-9b3a-815e4bcd0be8, Availability zone 1.
- Operating system: Linux (ubuntu 20.04)
- Size: Standard_b1msv2, vcpus, 3.5 GiB 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

Below the details are sections for 'Tags' and 'Add tags'.

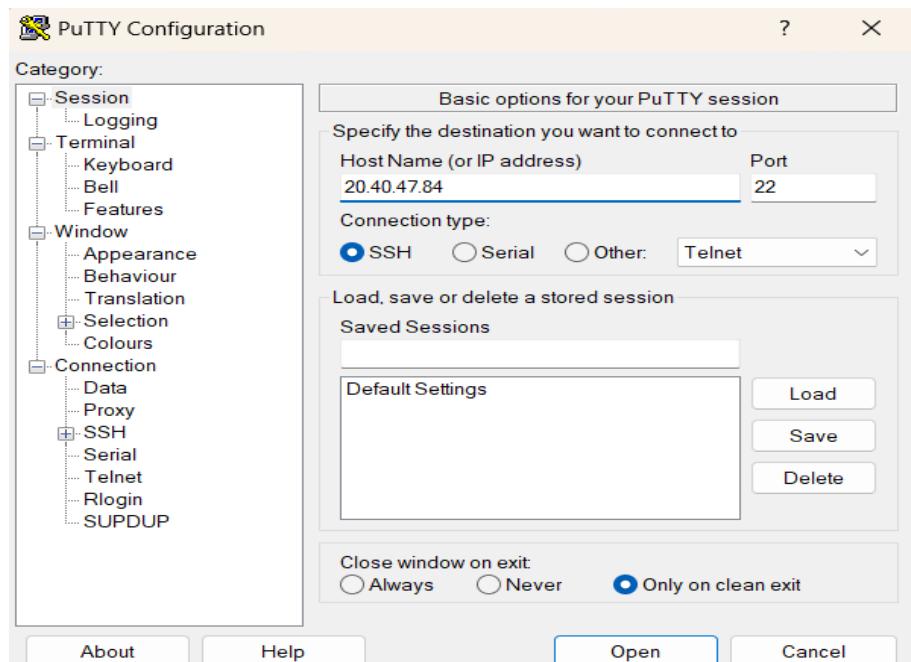
Step-6: Go to putty gen and click on load the key generator that you have downloaded.

The screenshot shows the PuTTY Key Generator application window. The interface has tabs for 'File', 'Key', 'Conversions', and 'Help'. The 'Key' tab is active, displaying a large text area containing a public SSH key:

```
ssh-rsa AAAAB3NzaC1yc2EAAAQABAAQgQC93M45VQ0rKXc0eCGASew0xk/clxzmiCDDzTQN1XPxCwpZiWkm+KggXAwqmMOecVfJmrJWrAS8YaxqMA1tCvz8HmEBtklmYqDkQm2F4TM900TsHw+IGF/ThQzdXyym4oGj91JatGEOC375EKOkHfk6x1xnYD3xMNnmI7JGave1XT7j+O+KqGJoM4eSAx3w2JIRRoeUfkFPfiuTdDI27Qt9HW2scDuvKw0qCq0zoCvPI/91lio5OrR7t/hUGb1hrccp7S+q4bqC2NTTjCGNoYutVehO81y+hPYbg9QChgy2J5HKD
```

Below the key text are fields for 'Key fingerprint' (ssh-rsa 3072 SHA256:KakGDPCnAoZi7mwAo0+l/FA/YqYytkwHOqdgww5iRHw), 'Key comment' (importedOpenssh-key), 'Key passphrase', and 'Confirm passphrase'. In the 'Actions' section, there are buttons for 'Generate' (disabled), 'Load' (highlighted in blue), 'Save public key', and 'Save private key'. At the bottom, under 'Parameters', there are options for 'Type of key to generate': RSA, DSA, ECDSA, EdDSA, and SSH-1 (RSA), with a 'Number of bits in a generated key:' input field 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.

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 interface. On the left, there's a navigation sidebar for 'Virtual machines' under 'Vardhaman College of Engineering'. The main panel displays the details of a running Ubuntu virtual machine. The 'Essentials' section includes information like Resource group (AZ24), Status (Running), Location (Central India (Zone 1)), and Public IP address (20.40.47.84). The 'Virtual machine' tab shows the 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). A 'Tags' section is also present.

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

This screenshot shows the Microsoft Azure portal with a modal dialog box asking 'Do you want to stop 'Ubuntu'?'. Below the dialog, the virtual machine details are visible, including its subscription ID, availability zone, and creation time. The 'Virtual machine' tab shows the 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-3: On the left side there will be settings and click on disks.

Microsoft Azure

Home > Virtual machines > Ubuntu

Ubuntu | Disks

Virtual machine

disk

Refresh Additional settings Feedback Troubleshoot

OS disk

Swap OS disk

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

Home > Virtual machines > Ubuntu

Ubuntu | Disks

Virtual machine

disk

Refresh Additional settings Feedback Troubleshoot

OS disk

Swap OS disk

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

Apply Discard changes

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

Microsoft Azure

Home > Ubuntu | Disks > Ubuntu_disk1_a8c7bb2ef74d4bbdae4312c4683c2c8b

Ubuntu_disk1_a8c7bb2ef74d4bbdae4312c4683c2c8b | Size + performance

Storage type: Premium SSD (locally-redundant storage)

Size	Disk tier	Provisioned IOPS	Provisioned through...	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	-	-

Save Discard Give feedback

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

The screenshot shows the Microsoft Azure portal interface for managing disks. On the left, there's a navigation sidebar with options like Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Connect, Networking, Application security groups, Network manager, Settings, and Disks (which is currently selected). The main content area is titled "Ubuntu | Disks" and shows an "OS disk". The table lists one entry: "Ubuntu_disk1_a8c7bb2ef74d4bbdae431" with "Premium SSD LRS" storage type, 30 GB size, 120 Max IOPS, 25 Max throughput, SSE with PMK encryption, and Read/write host caching. Below this, there's a section for "Data disks" with a button to "Create and attach a new disk".

The screenshot shows the Microsoft Azure portal interface for selecting VM sizes. The left sidebar has "Availability + scale" and "Size" selected. The main content area is titled "Ubuntu | Size" and displays a table of 416 VM sizes. The columns include VM Size, Type, vCPUs, RAM (GiB), Data disks, Max IOPS, and Local storage (GiB). The table is sorted by VM Size. A tooltip at the top of the table 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." At the bottom, there's a note about prices being estimates in INR and a "Resize" button.

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).

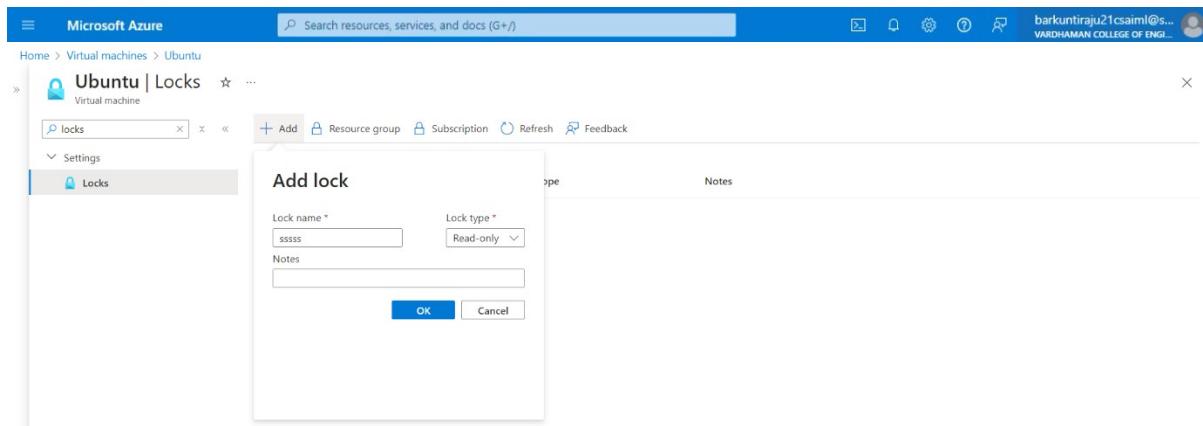
The screenshot shows the Azure portal interface for a virtual machine named 'Ubuntu'. The left sidebar shows navigation options like Home, Virtual machines, and a list of resources. The main panel displays the 'Essentials' section with details such as Resource group (AZ22), Status (Running), Location (Central India (Zone 1)), Subscription (Azure for Students), and Public IP address (20.40.47.84). It also shows network information like Virtual network/subnet (Ubuntu-vnet/default) and DNS name (Not configured). The 'Properties' tab is selected, showing the virtual machine configuration (Computer name: Ubuntu, Operating system: Linux (ubuntu 20.04), VM generation: V2, VM architecture: x64, Agent status: Ready, Agent version: 2.11.1.4, Hibernation: Disabled) and networking details (Public IP address: 20.40.47.84, Private IP address: 10.0.0.4, Virtual network/subnet: Ubuntu-vnet/default, DNS name: Configure).

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 'Locks' blade for the 'Ubuntu' virtual machine. The left sidebar has a 'Locks' icon. The main area shows an 'Add lock' dialog box with fields for 'Lock name' (sssss) and 'Lock type' (Read-only). There is also a 'Notes' text area and 'OK' and 'Cancel' buttons.

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.

Failed to stop virtual machine
Failed to stop the virtual machine 'Ubuntu'. Error: The scope 'Ubuntu' cannot perform write operation because following scope(s) are locked:
A224/subscriptions/763b4aa1-744d-4fa4-9b3a-815e4bd0be8/resourceGroups/A224/providers/Micro...
Please remove the lock and try again.

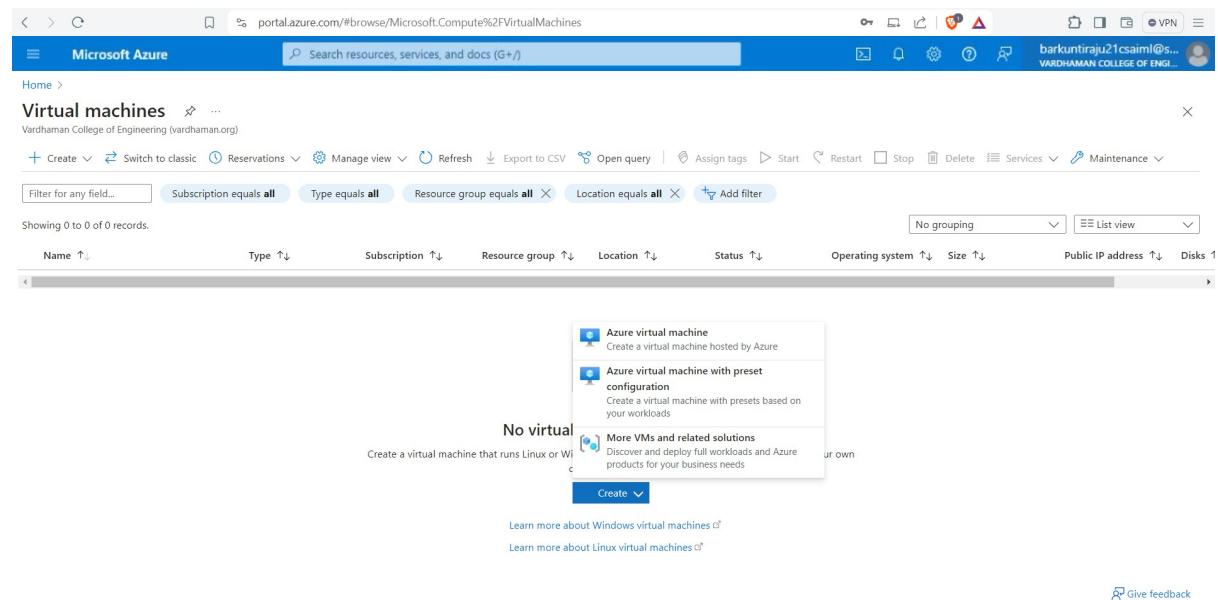
Lock name	Lock type	Scope	Notes
sssss	Read-only	Ubuntu	This resource has no locks.

Result: Above experiment is successful executed And verified.

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

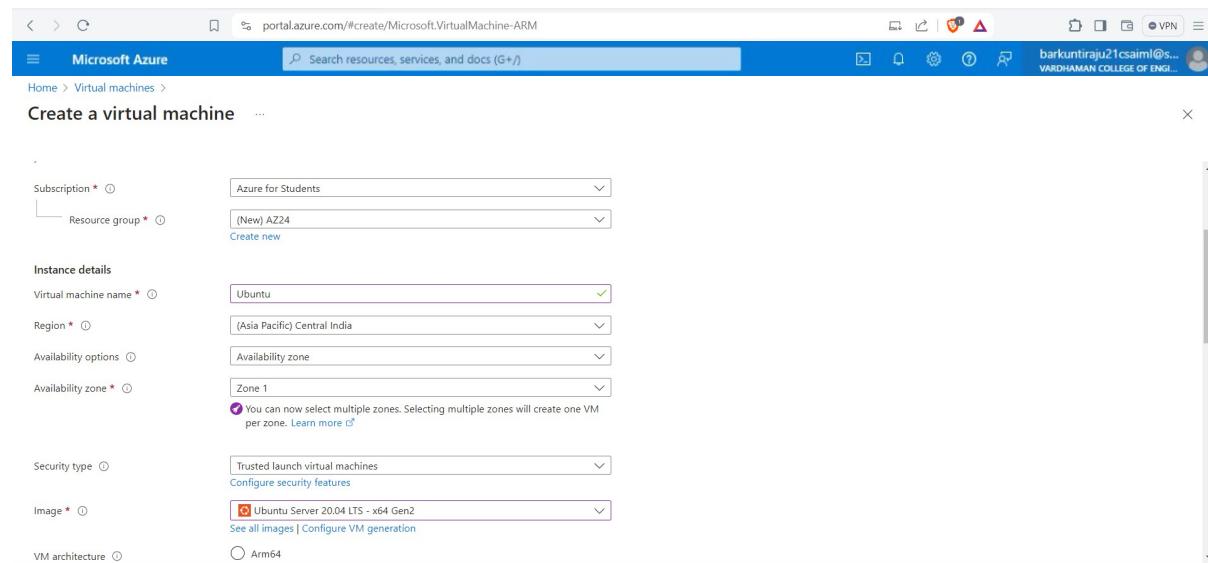
Step-1: Sign in to your Microsoft Azure account.

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

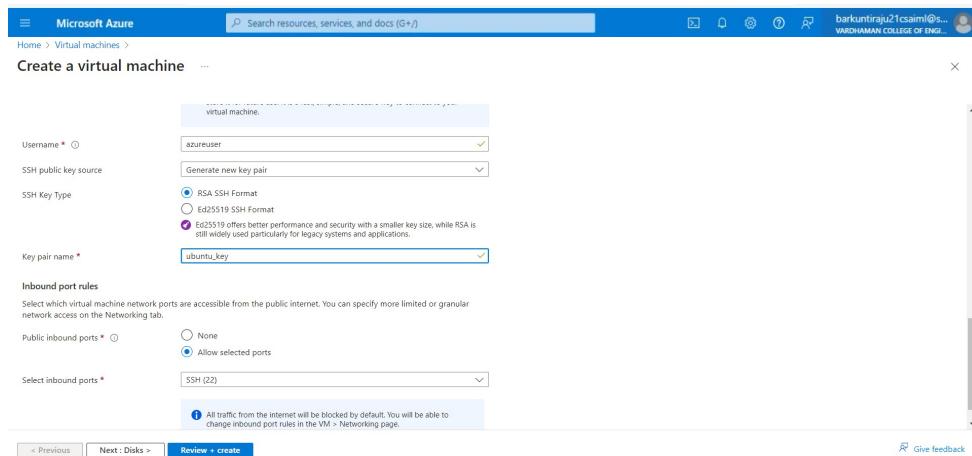
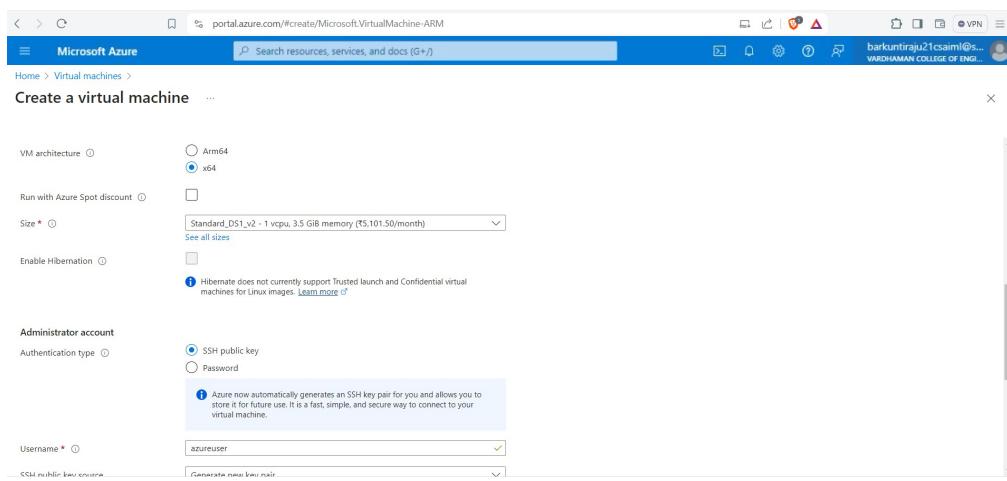


The screenshot shows the Microsoft Azure portal interface. The top navigation bar includes 'Microsoft Azure', a search bar, and user information. Below the navigation is a toolbar with various icons. The main content area is titled 'Virtual machines' and shows a list of filters and sorting options. A prominent modal window is centered, titled 'Create a virtual machine'. It contains two main options: 'Azure virtual machine' (selected) and 'Azure virtual machine with preset configuration'. Below these are links for 'More VMs and related solutions', 'Create', 'Learn more about Windows virtual machines', and 'Learn more about Linux virtual machines'. At the bottom right of the modal is a 'Give feedback' link.

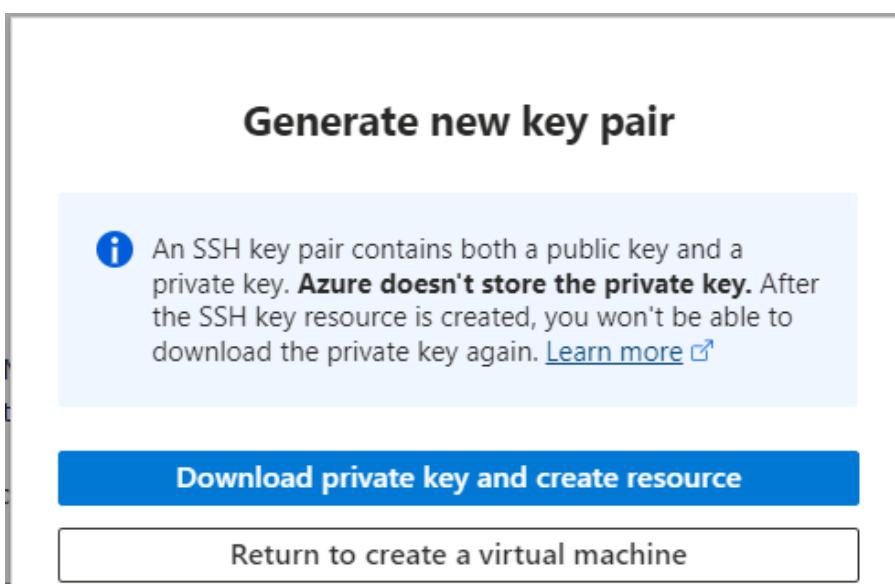
Step-3: Fill the details in that ubuntu by creating a “Resource Group”, Zone: Asia, Image: ubuntu, select “SSH”, Select the disk storage and so on. After that click on “Create + Review”. And finally click on “Create”.



The screenshot shows the 'Create a virtual machine' wizard. Step 1: Set location. The 'Subscription' dropdown is set to 'Azure for Students' and 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 'Image' is 'Ubuntu Server 20.04 LTS - x64 Gen2'. Other settings like 'Security type' and 'VM architecture' are also visible.



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.

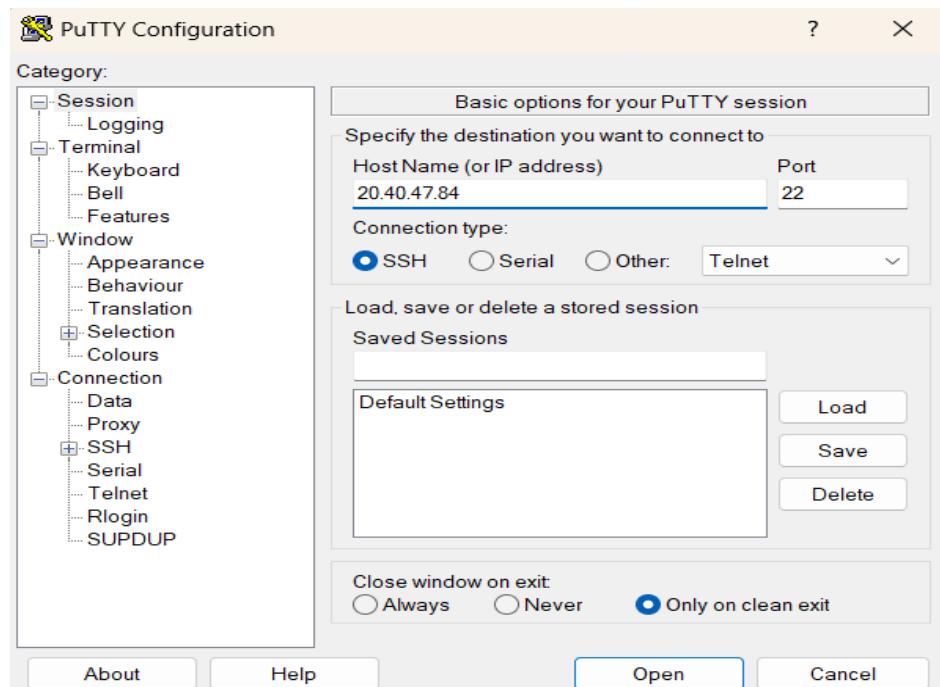
The screenshot shows the Microsoft Azure portal interface. The top navigation bar includes 'Microsoft Azure', 'Search resources, services, and docs (G+)', and a user account icon. Below the navigation bar, the 'Virtual machines' section is selected. A search bar and a 'Create' button are visible. On the left, a sidebar lists options like 'Create', 'Switch to classic', 'Filter for any field...', 'Name ↑', and 'Ubuntu'. The main content area displays a single virtual machine named 'Ubuntu'. The machine's details are shown in a card: Resource group (move2), Status (Running), Location (Control India (Zone 1)), Subscription (move2), Azure for Students, Subscription ID (763b4aa1-744d-4fa4-9b3a-015e4bdcbef8), Availability zone (1), Operating system (Linux (Ubuntu 20.04)), Size (Standard_B1s), Public IP address (20.80.128.125), and DNS name (Nat.configured). The 'Tags (edit)' section shows 'Add tags'. At the bottom right, there are 'JSON View' and 'Open in mobile' buttons.

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

The first screenshot shows the 'PuTTY Key Generator' window. The 'Key' tab is active. The 'Public key for pasting into OpenSSH authorized_keys file:' field contains a long string of characters starting with 'ssh-rsa AAAAB3NzaC1yc2EAAAQABAA...'. Below it, the 'Key fingerprint' is listed as 'ssh-rsa 3072 SHA256:KakGDPCnAoZi7mwAo0+l/FA/YqYtkwH0qdgww5iRHw'. The 'Actions' section includes 'Generate a public/private key pair' (with a 'Generate' button), 'Load an existing private key file' (with a 'Load' button), and 'Save the generated key' (with 'Save public key' and 'Save private key' buttons). The 'Parameters' section shows 'Type of key to generate:' set to 'RSA' (radio button selected), 'DSA', 'ECDSA', or 'EdDSA' (radio buttons unselected), and 'Number of bits in a generated key:' set to '2048'. A 'Key comment' field is also present.

The second screenshot shows the same 'PuTTY Key Generator' window after a key has been imported. A modal dialog titled 'PutTYgen Notice' is displayed, stating 'Successfully imported foreign key (OpenSSH SSH-2 private key (old PEM format)). To use this key with PuTTY, you need to use the "Save private key" command to save it in PuTTY's own format.' An 'OK' button is at the bottom of the dialog. The rest of the interface is identical to the first screenshot.

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] 1: login as: azureuser
[2] 2: Authenticating with public key "imported-openssh-key"
[3] 3: 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.

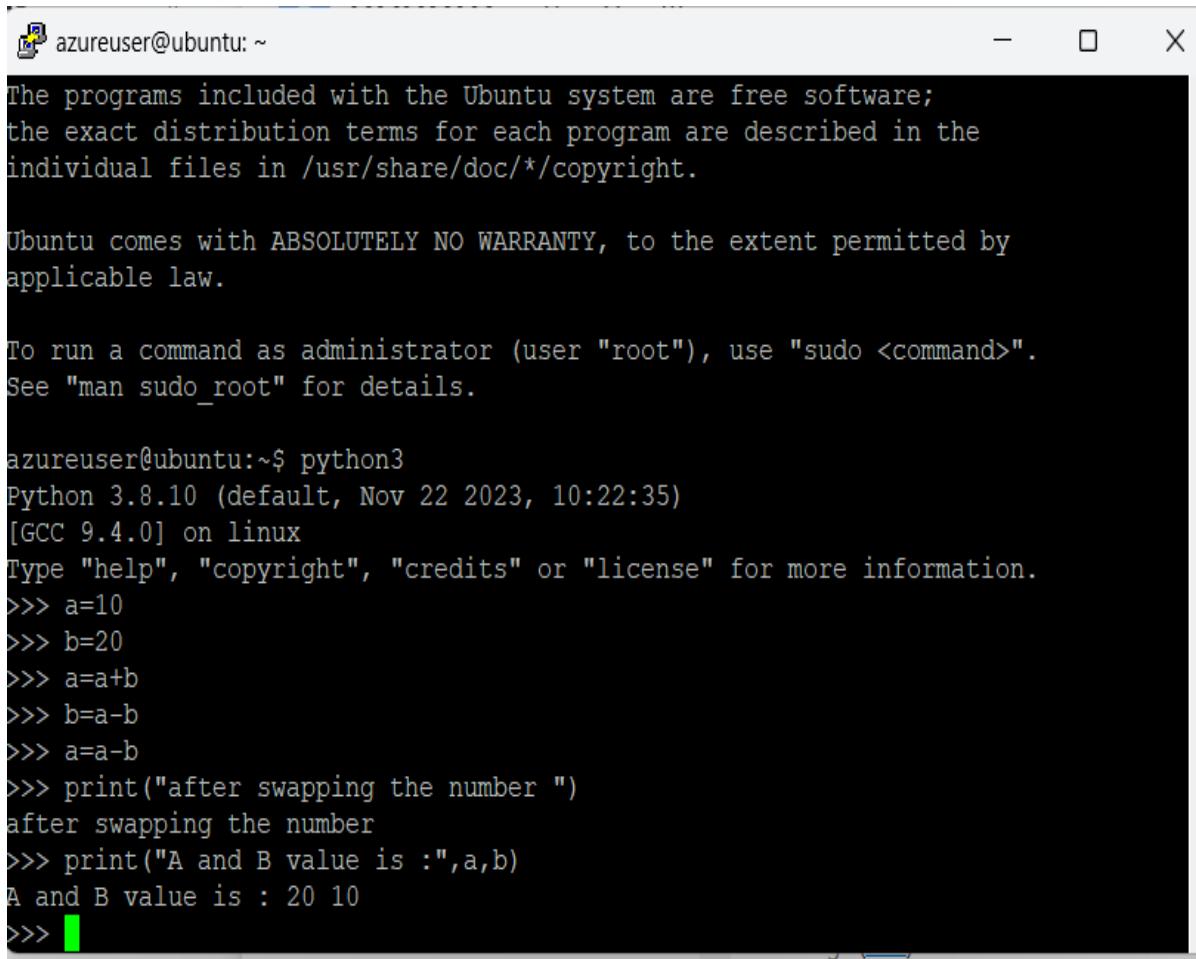
Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

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 displays the standard Ubuntu license text, followed by a note about sudo rights, and then a Python session. In the Python session, variables 'a' and 'b' are swapped, and the result is printed. The terminal has a light gray background with black text and standard window controls at the top.

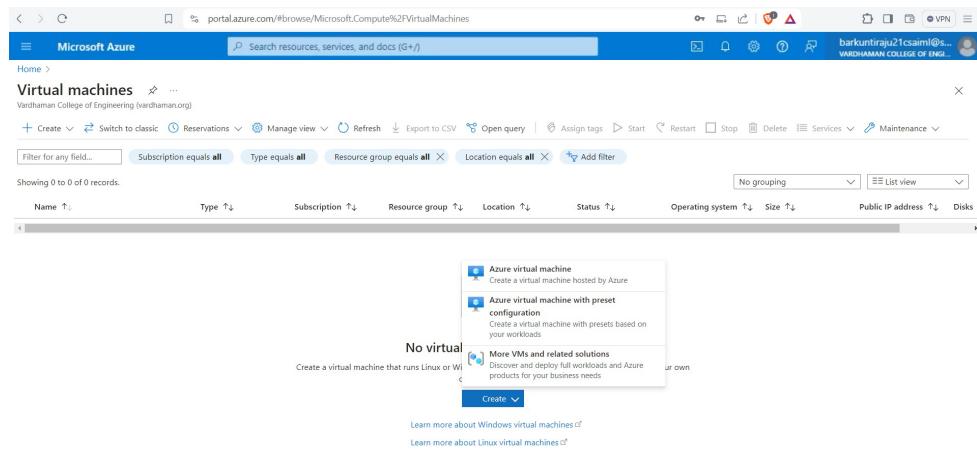
```
azureuser@ubuntu:~$ python3
Python 3.8.10 (default, Nov 22 2023, 10:22:35)
[GCC 9.4.0] on linux
Type "help", "copyright", "credits" or "license" for more information.
>>> a=10
>>> b=20
>>> a=a+b
>>> b=a-b
>>> a=a-b
>>> print("after swapping the number ")
after swapping the number
>>> print("A and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

At the bottom, there are buttons for '< Previous', 'Next: Disks >', 'Review + create', and 'Give feedback'.

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

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

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](#)

Below this is a large blue button labeled 'Download private key and create resource'.

At the bottom, there is a link 'Return to create a virtual machine'.

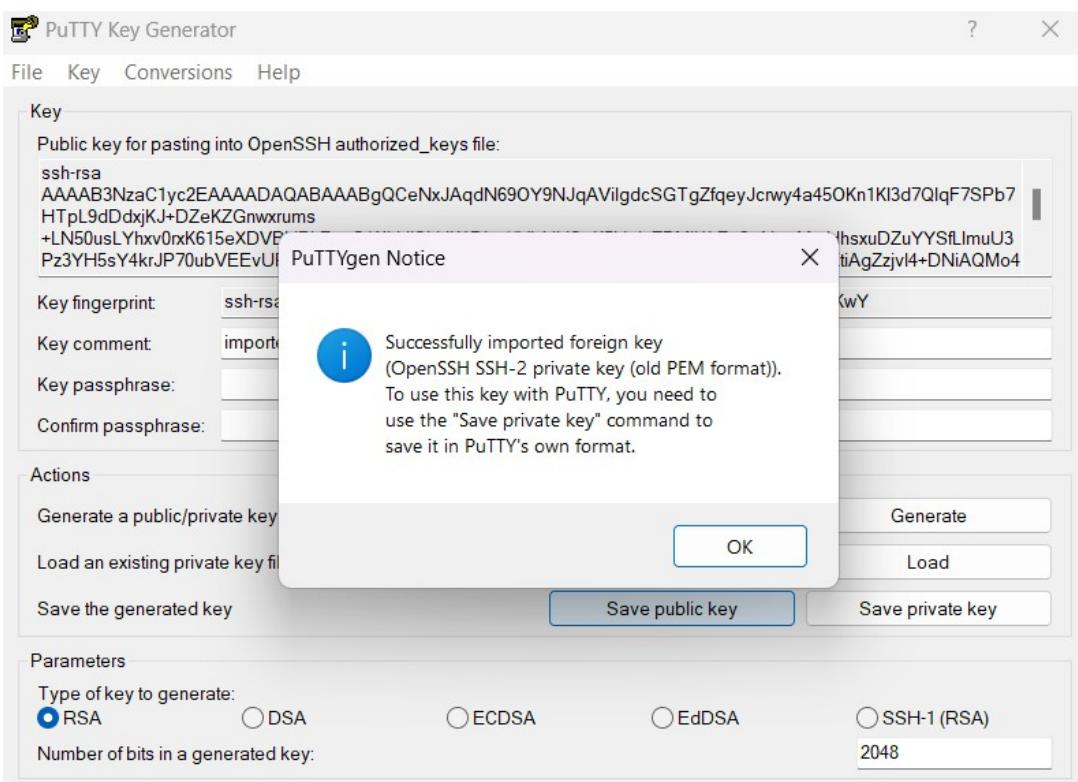
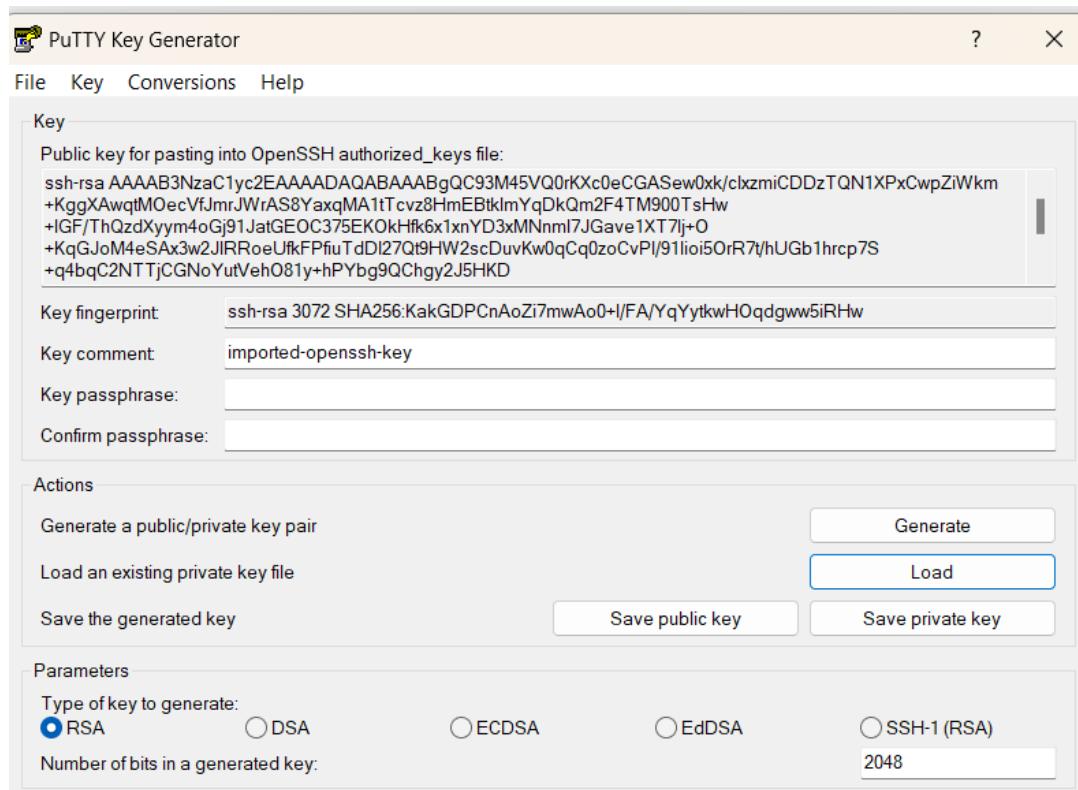
Step-5: Firstly, copy the public IP Address of that created virtual machine.

The screenshot shows the 'Virtual machines' blade in Microsoft Azure. A specific virtual machine named 'Ubuntu' is selected. The 'Essentials' section displays the following details:

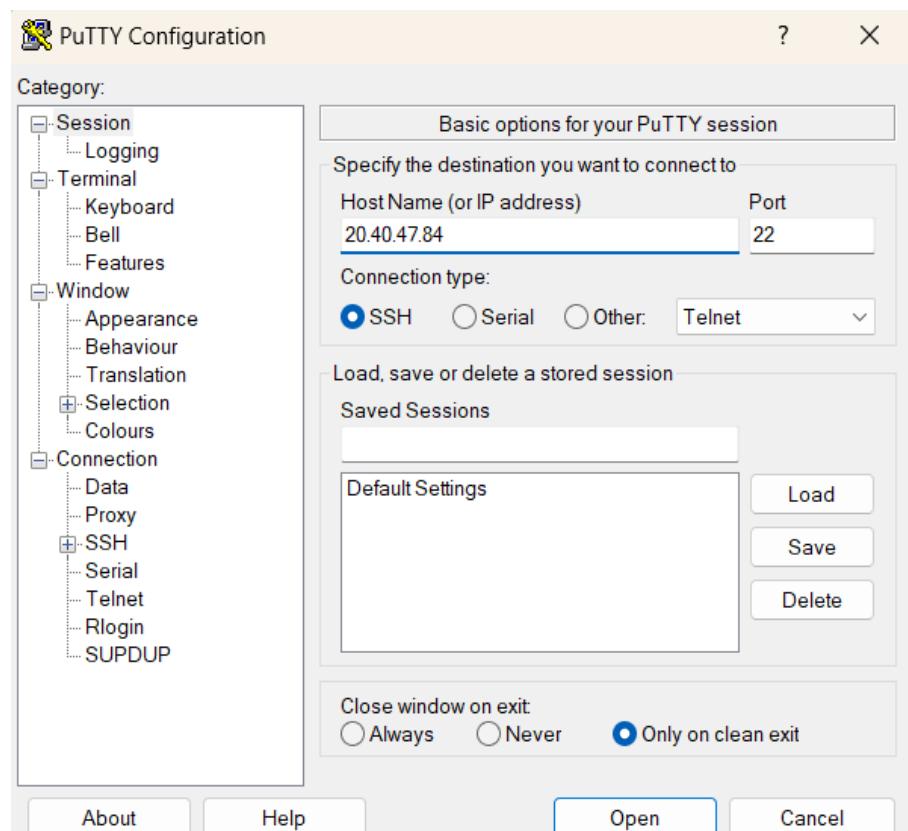
- Resource group: AZ24
- Status: Running
- Location: Central India (Zone 1)
- Subscription: Azure for Students
- Operating system: Linux (ubuntu 20.04)
- Size: Standard_b1ms (1 vCPU, 3.5 GiB memory)
- Public IP address: 20.40.47.34
- Virtual network/subnet: Ubuntu-net/default
- DNS name: Not configured
- Health state: -
- Time created: 6/13/2024, 4:15 PM UTC

The 'Public IP address' field is highlighted with a yellow box.

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: ~
[1] login as: azureuser
[1] 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.

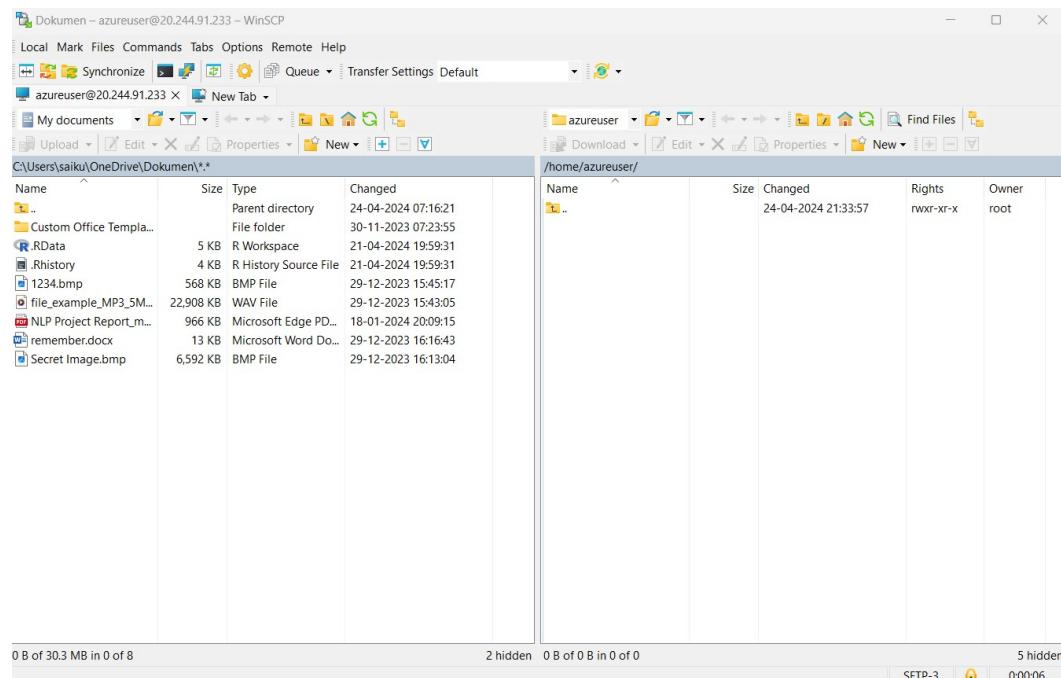
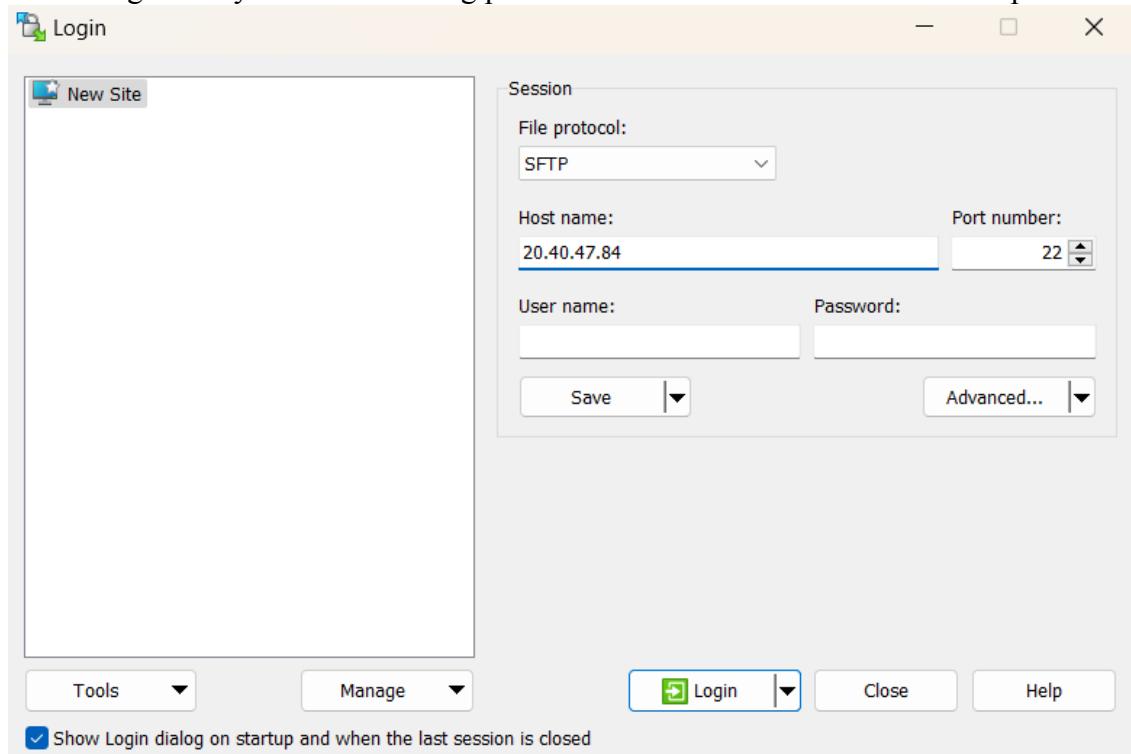
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

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

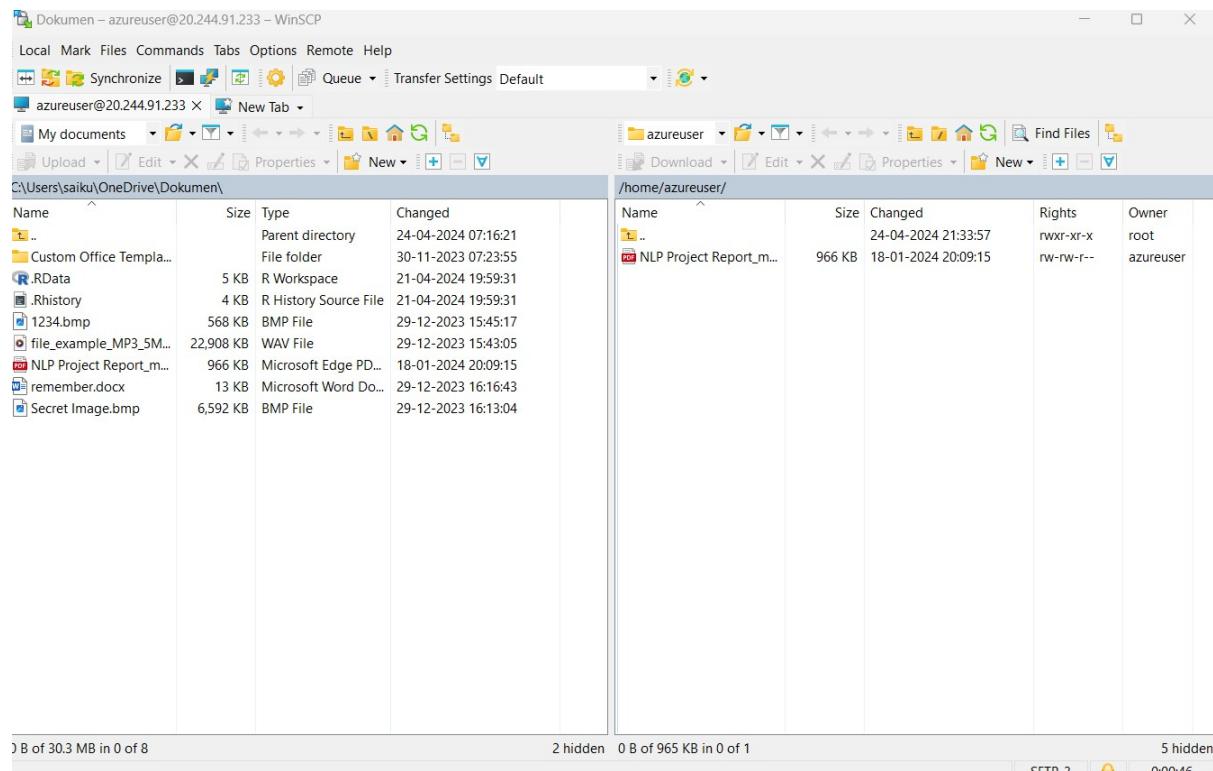
azureuser@Ubuntu: ~$
```

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. At the top, there are various filters and sorting options. In the center, a large 'Create' button is highlighted with a tooltip: 'Azure virtual machine' (Create a virtual machine hosted by Azure) and 'Azure virtual machine with preset configuration' (Create a virtual machine with presets based on your workloads). Below the button, there's a section titled 'No virtual' with a sub-section 'More VMs and related solutions' (Discover and deploy full workloads and Azure products for your business needs). At the bottom right of the main area, there's a 'Create' button and a 'Give feedback' link.

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

The screenshot shows the 'Create a virtual machine' wizard, step 1: Set instance details. The user has selected 'Ubuntu' as the virtual machine name, '(Asia Pacific) Central India' as the region, and 'Zone 1' as the availability zone. Other settings include 'Trusted launch virtual machines' for security type and 'Ubuntu Server 20.04 LTS - x64 Gen2' as the image. The 'VM architecture' is set to 'Arm64'. The 'Subscription' is 'Azure for Students' and the 'Resource group' is '(New) AZ24'. A note at the bottom says: 'You can now select multiple zones. Selecting multiple zones will create one VM per zone. 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 *:

SSH public key source:

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.

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. On the left, there's a sidebar with 'Virtual machines' selected. In the main area, a card for an 'Ubuntu' virtual machine is displayed. The card includes the following details:

- 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_b1ms (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:** -
- 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.

The screenshot shows the PuTTY Key Generator application window. The 'Key' tab is active, displaying a large block of text representing an RSA public key:

```
ssh-rsa AAAAB3NzaC1yc2EAAAQABAAQBgQC93M45VQ0rKXc0eCGASew0xk/clxmiCDDzTQN1XPxCwpZiWkm+KggXAwqIMoecVFJmrJWrAS8YaxqMA1Tcvz8HmEBtklmYqDkQm2F4TM900TsHw+IGF/ThQzdXyym4oGj91JatGEOC375EKOlkHfk6x1xnYD3xMNnmI7JGave1XT7lj+O+KqGJoM4eSAx3w2JIRRoeUfkFPfiuTdDI27Qt9HW2scDuvKw0qCq0zoCvPl/91lio5OrR7/hUGb1hrcp7S+q4bqC2NTTjCGNoYutVehO81y+hPYbg9QChgy2J5HKD
```

Below the key text, several fields are visible:

- Key fingerprint:** ssh-rsa 3072 SHA256:KakGDPCnAoZi7mwAo0+l/FA/YqYytkwHOqdgww5iRHw
- Key comment:** imported-openssh-key
- Key passphrase:** (empty)
- Confirm passphrase:** (empty)

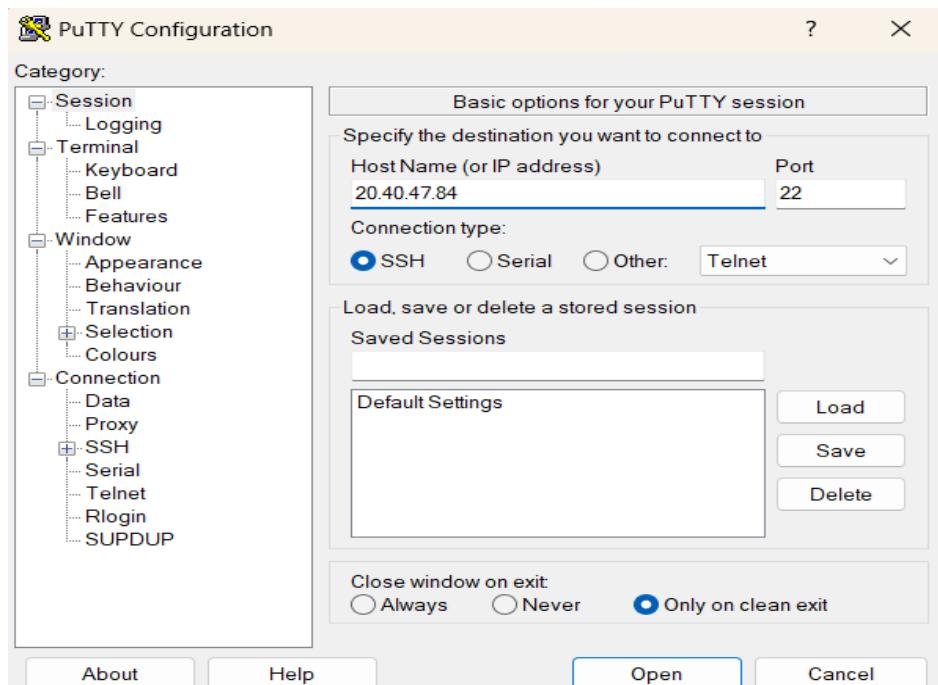
The 'Actions' section contains buttons for generating keys and loading existing files:

- Generate a public/private key pair** (button)
- Load an existing private key file** (button)
- Save the generated key** (button) with sub-options for **Save public key** and **Save private key**

The 'Parameters' section allows selecting the type of key to generate:

- Type of key to generate:** RSA DSA ECDSA EdDSA SSH-1 (RSA)
- Number of bits in a generated key:** 2048

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.

```
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

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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.

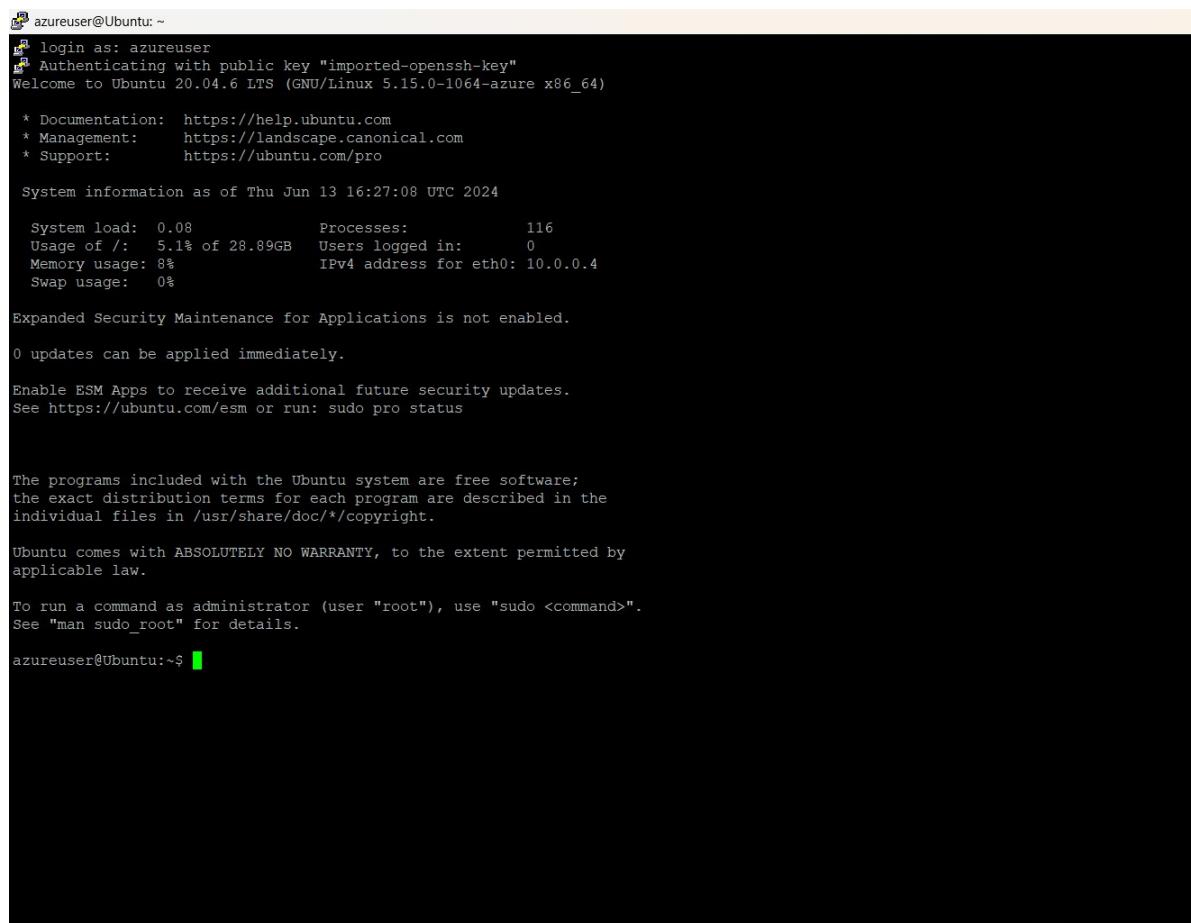
\$sudo su

\$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.



The screenshot shows a terminal window with the following text 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.

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applicable law.

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

azureuser@Ubuntu:~$
```

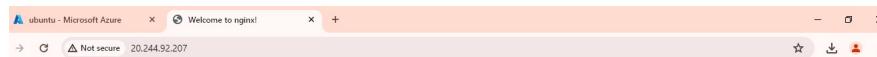
Step-10: To remove following information and keep new information in that page type the following command and refresh the browser page.

\$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>
<h1>Welcome to CSM</h1>" > index.html
root@ubuntu:/var/www/html# echo "<h1>Welcome to CSM</h1>" > index.htm
root@ubuntu:/var/www/html# echo "Welcome to CSM">index.htm
root@ubuntu:/var/www/html#
```



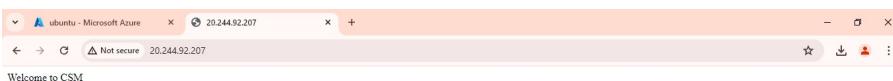
Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to nginx.org.

Commercial support is available at nginx.com.

Thank you for using nginx.

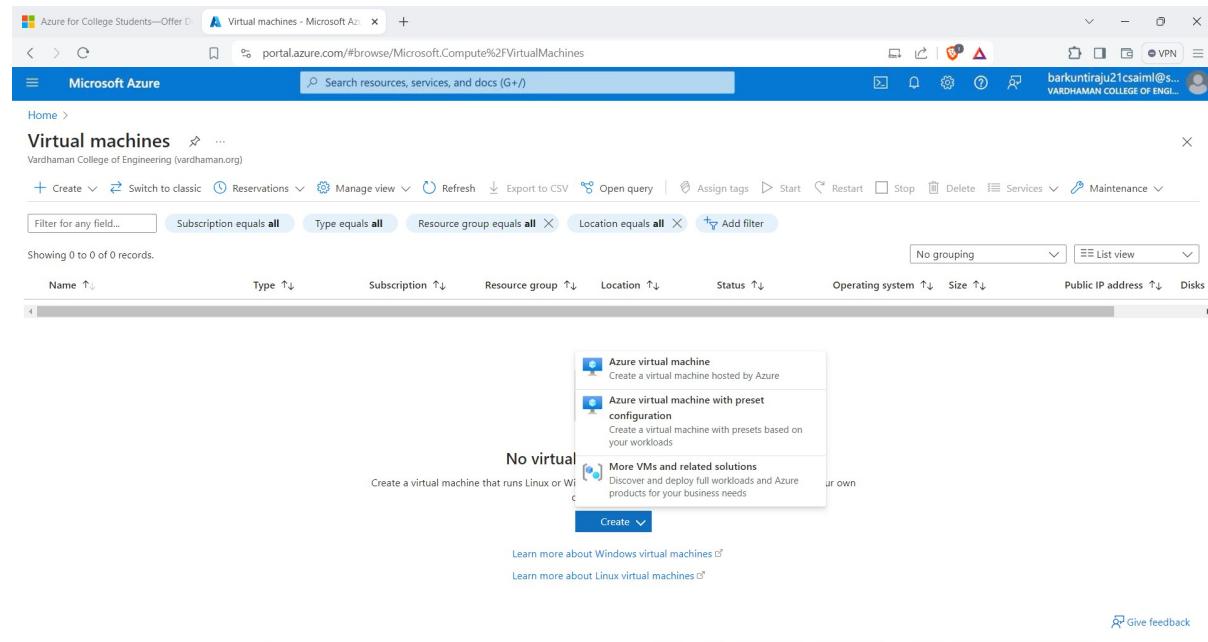


Result: Above experiment is successful executed And verified.

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”

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)

Virtual machine name * (VM24)

Region * ((Asia Pacific) Central India)

Availability options (Availability zone)

Availability zone * (Zone 1)

Security type (Trusted launch virtual machines)

< Previous Next : Disks > Review + create Give feedback

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 page.
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

Review + create

Basics Disks Networking Management Monitoring Advanced Tags

Price
1 X Standard DS1 v2
by Microsoft
Terms of use | Privacy policy
Subscription credits apply
6.9884 INR/hr/hour
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

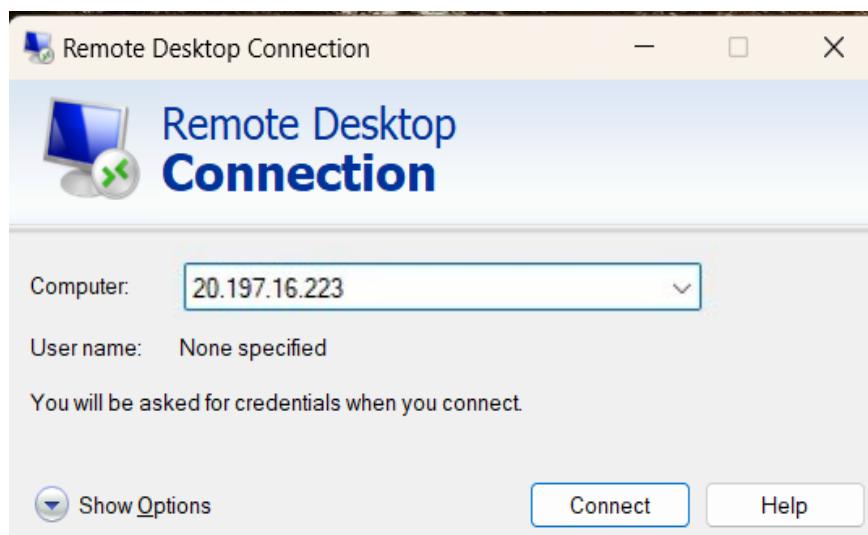
Step-4: After Deployment is over, Go to the remote desktop connection.

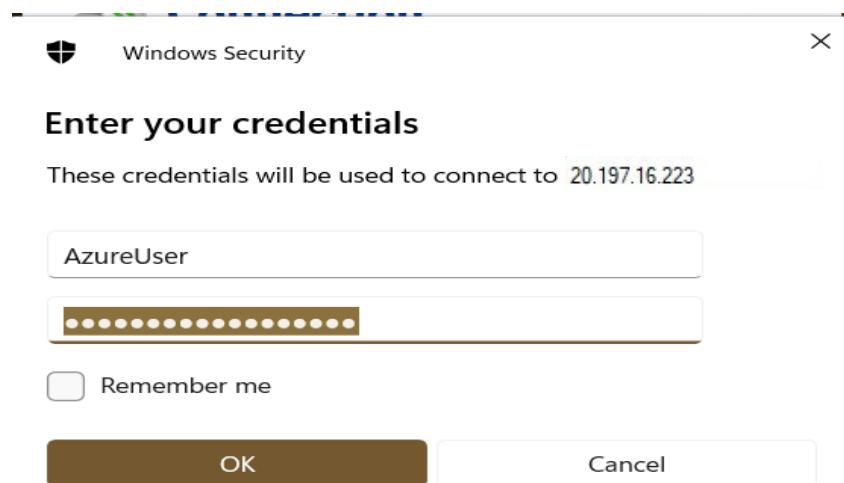
Step-5: Firstly, copy the public IP Address of that created virtual machine.

The screenshot shows the Microsoft Azure portal interface. The top navigation bar includes 'Microsoft Azure', a search bar, and user information. Below it, a specific deployment blade titled 'CreateVm-MicrosoftWindowsDesktop.Windows-10-win10-20240613203743 | Overview' is displayed. The blade shows a green checkmark indicating the deployment is complete. It provides details like the deployment name, start time (6/13/2024, 8:41:09 PM), subscription (Azure for Students), and resource group (AZ24). A 'Deployment details' section lists setup auto-shutdown (Recommended), monitor VM health (Recommended), and run a script inside the virtual machine (Recommended). Buttons for 'Go to resource' and 'Create another VM' are at the bottom. To the right, there are promotional cards for 'Cost Management', 'Microsoft Defender for Cloud', and 'Free Microsoft tutorials'.

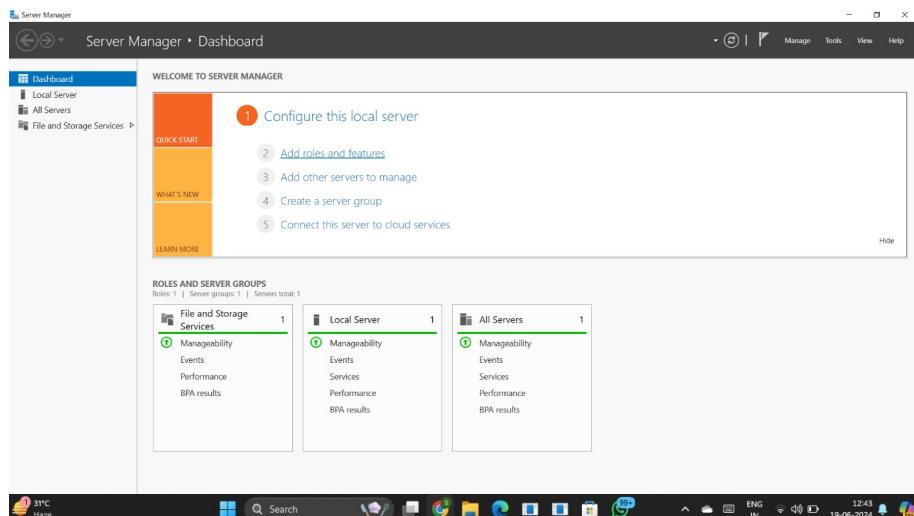
This screenshot shows the 'Virtual machines' blade in the Microsoft Azure portal. The left sidebar lists 'Virtual machines' under 'Vardhaman College of Engineering (vardhaman.org)'. A search bar and filter options are available. The main area shows a list of VMs, with 'VM24' selected. The 'Overview' tab is active, displaying detailed information about VM24, including its status (Running), location (Central India (Zone 1)), and configuration (Standard DS1 v2, 1 vCPU, 3.5 GiB memory). A note indicates the VM24 virtual machine agent status is not ready. The 'Essentials' section provides a summary of the VM's properties. Other tabs include 'Properties', 'Monitoring', 'Capabilities (8)', 'Recommendations', and 'Tutorials'.

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

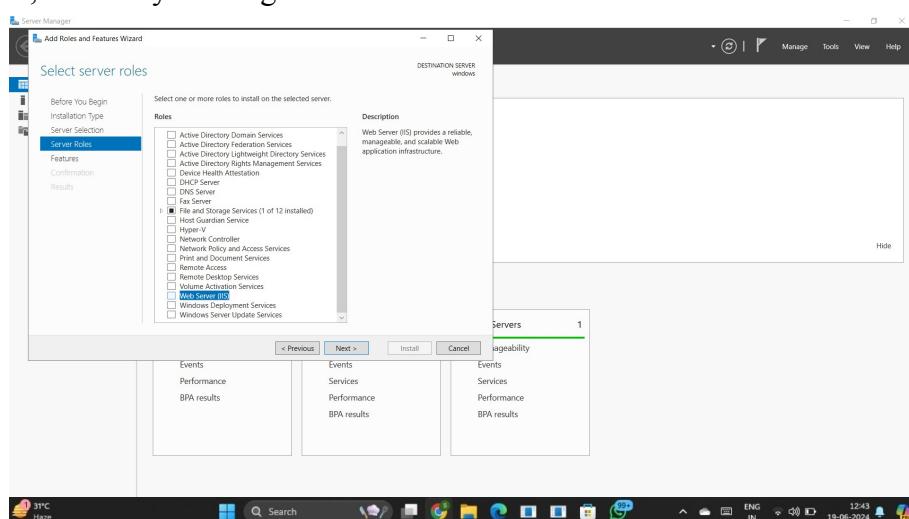


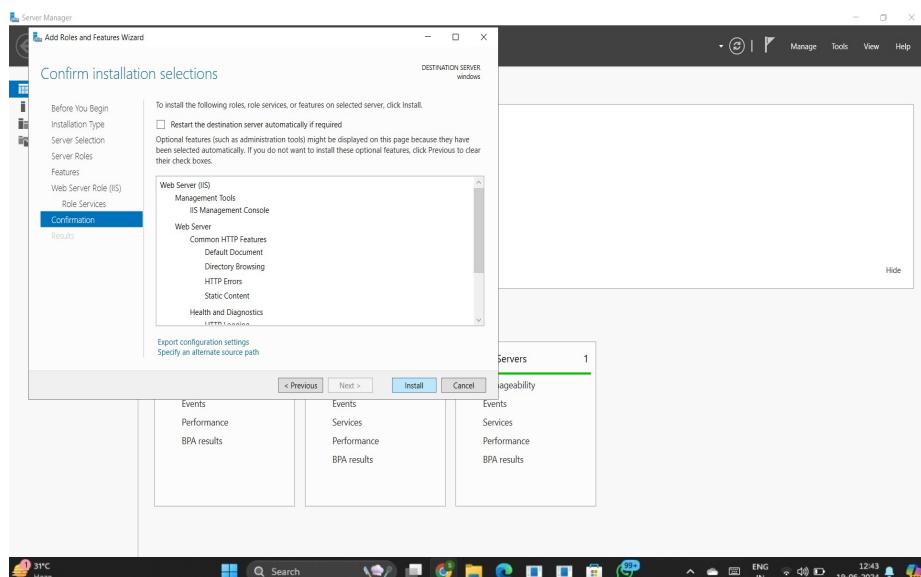
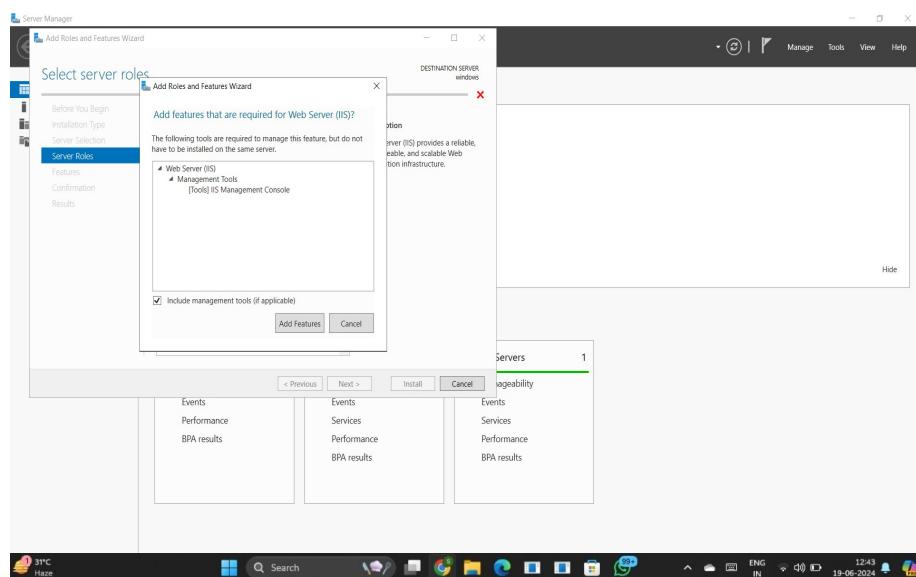


Step-7: When remote desktop will start (windows VM) you can see there will be Server Manager will be opened and in that you can see Configure this local server, click on “Add roles and features”.

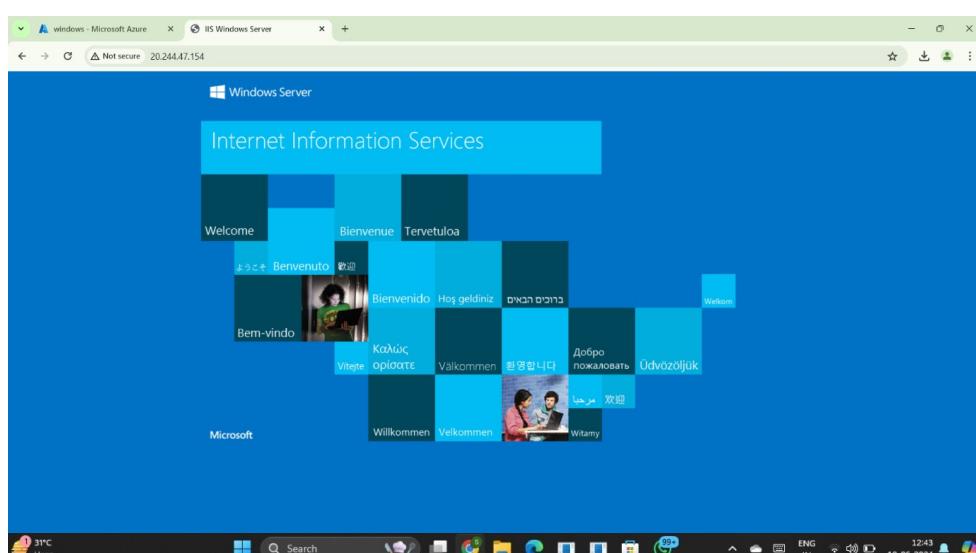


Step-8: Click on next, next and in Server Roles select Web Server (IIS) click on add feature, click on next, next till you can get install button and click on install.

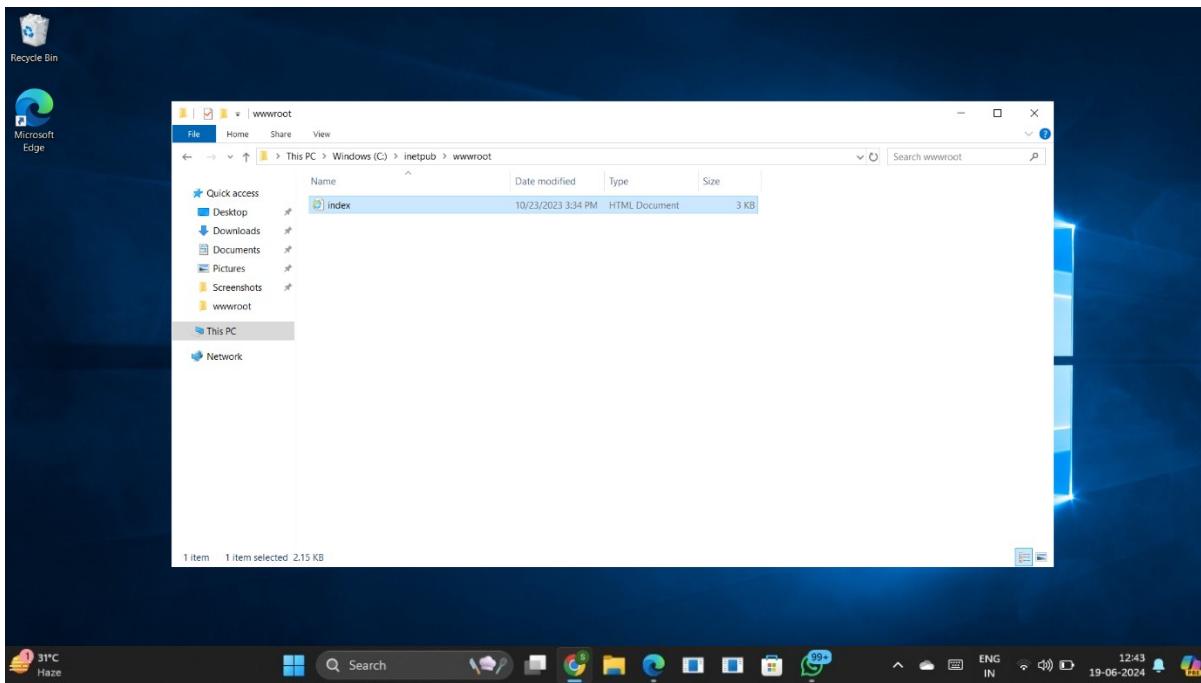




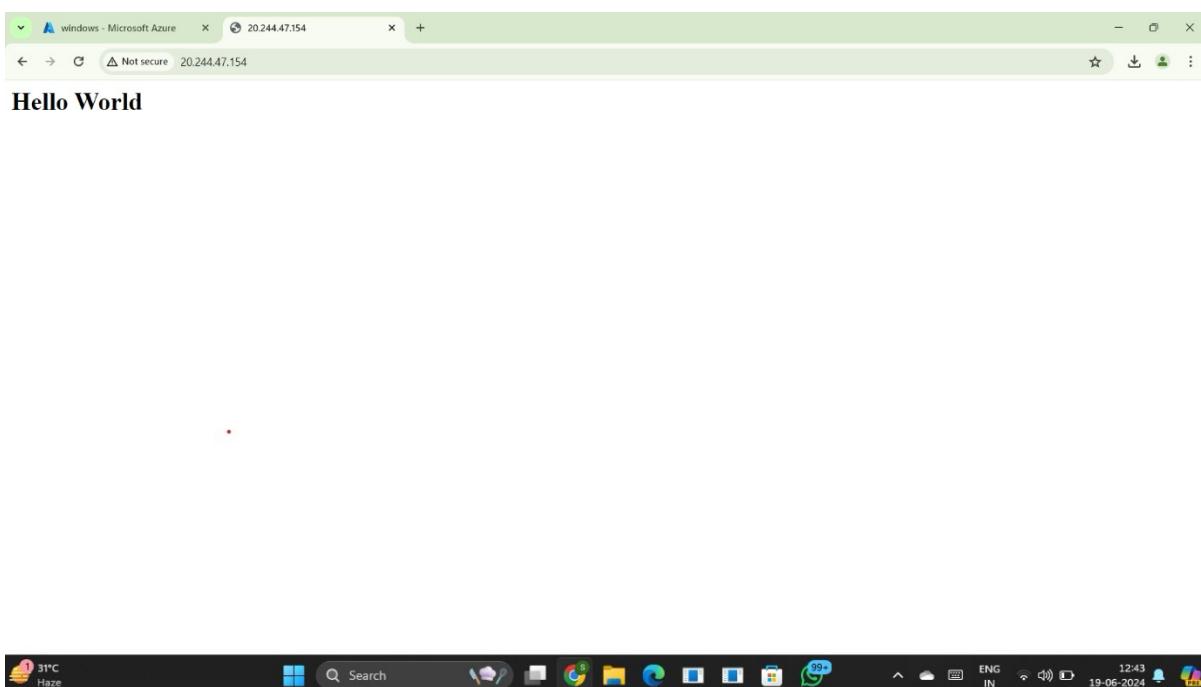
Step- 9: paste the public ip address in desktop browser and you can see.



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.

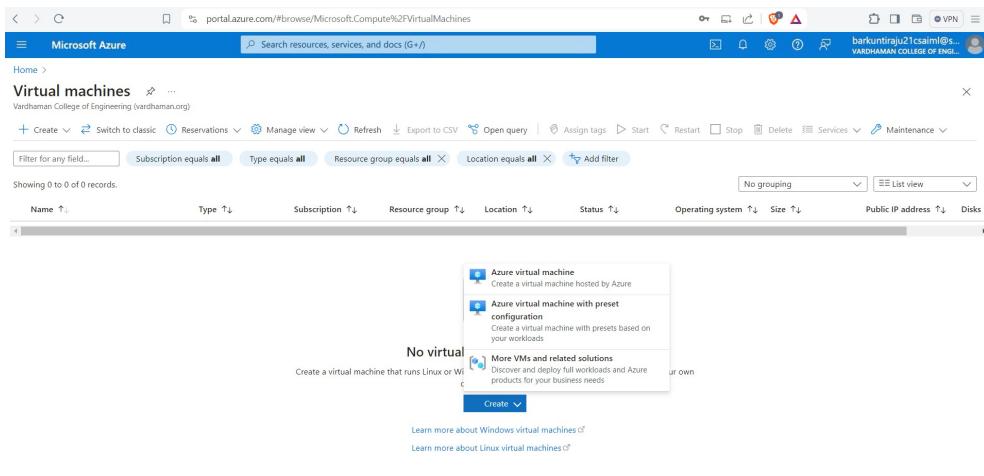


Result: Above experiment is successful executed And verified.

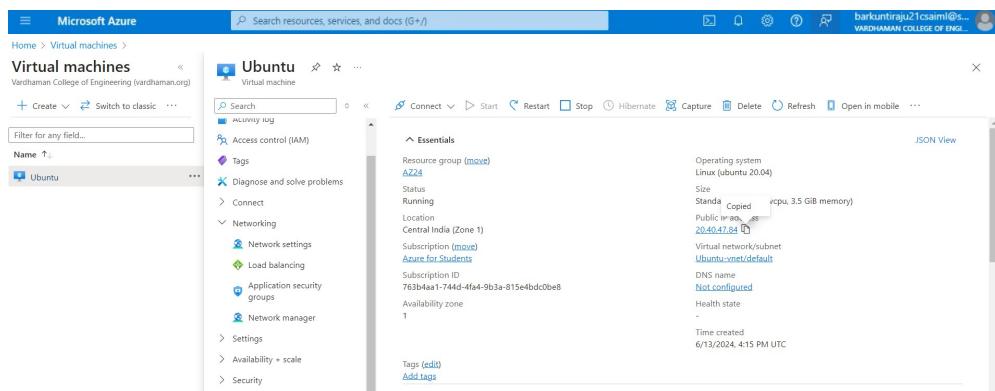
Q10) How we are adding new users, login credentials, changing owner, create authorized key files.

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

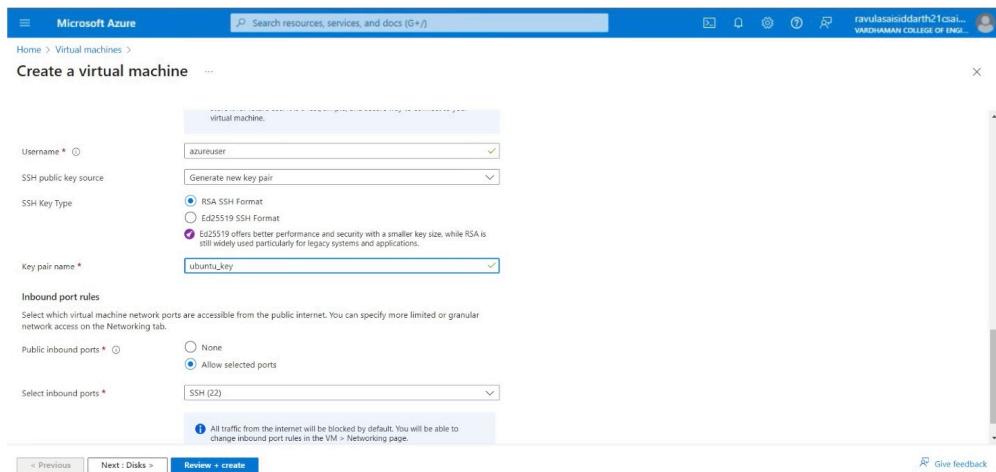
Step-2: Go To Virtual machine, and click on “Create” to create a window virtual machine.



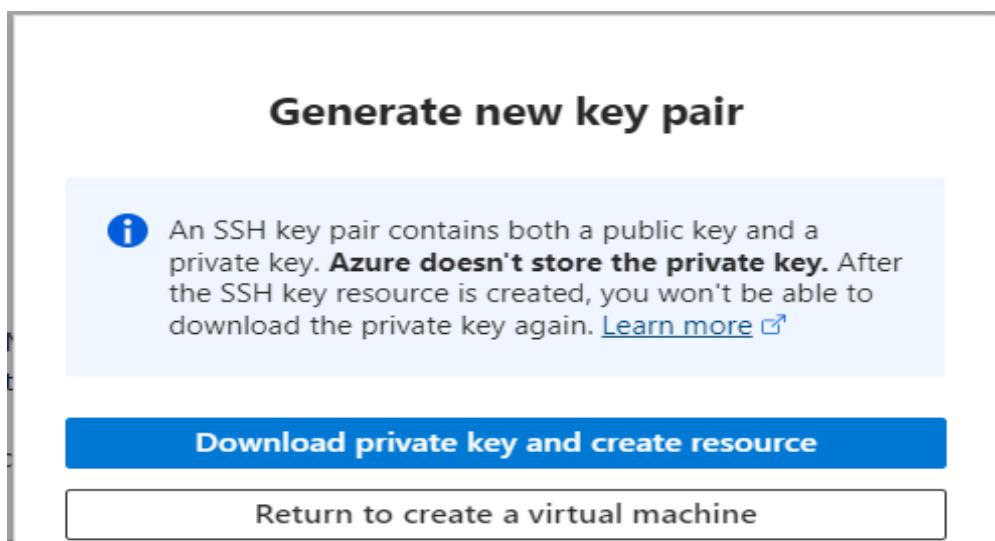
Step-3: Fill the details in that ubuntu by creating a “Resource Group”, Zone: Asia, Image: ubuntu, select “SSH”, Select the disk storage and so on. After that click on “Create + Review”. And finally click on “Create”.



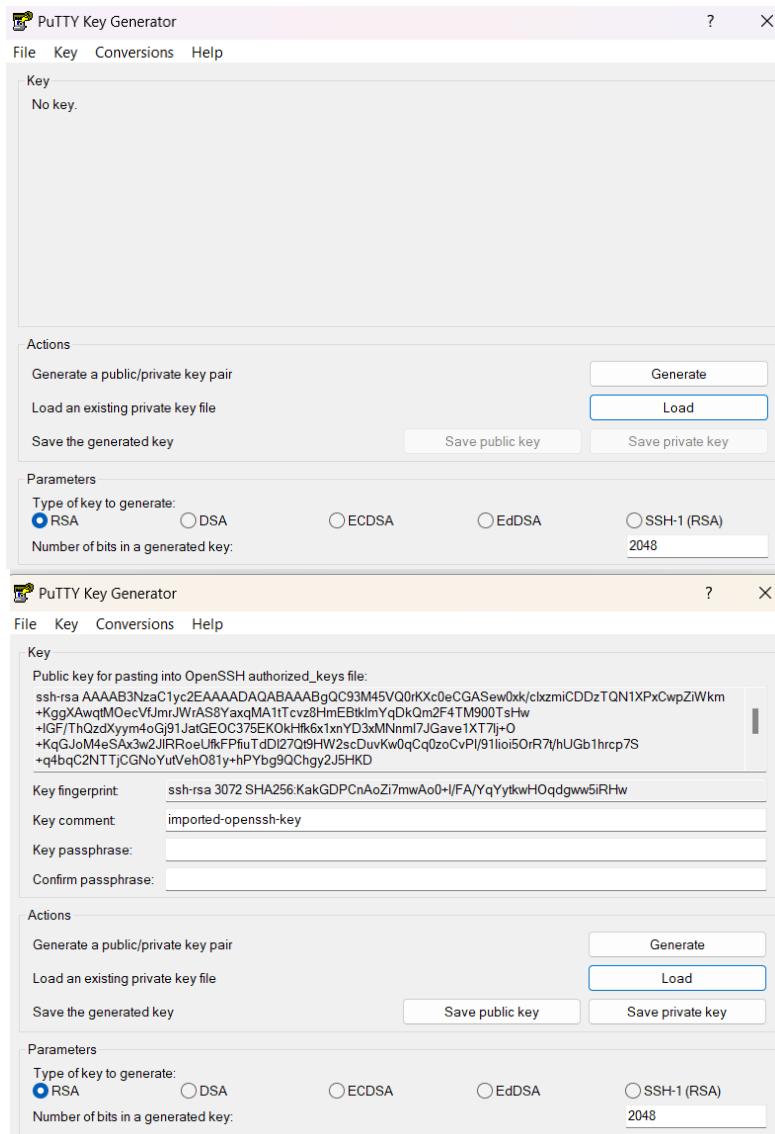
Step-4: After Deployment is over, Go to the remote desktop connection.



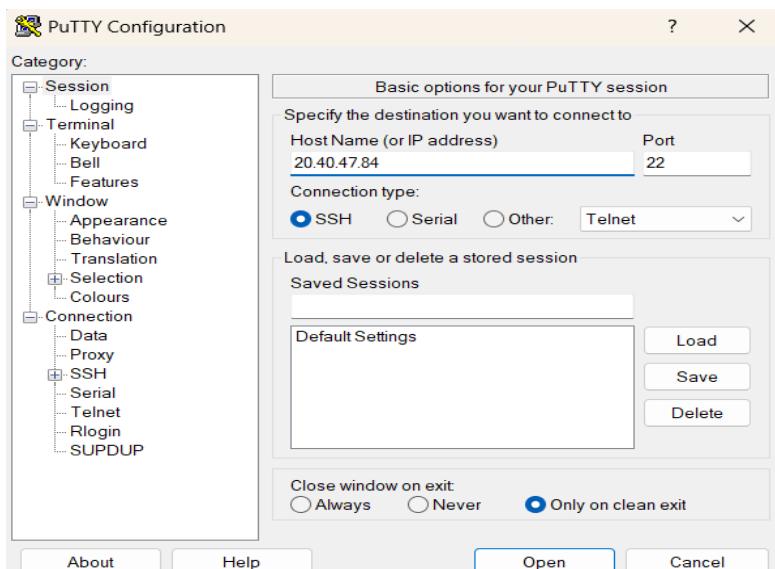
Step-5: Firstly, copy the public IP Address of that created virtual machine.



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

To add new user in Linux server:

```
$sudo useradd -m rajubarkunti
```

To set new password:

```
$sudo password rajubarkunti
```

Enter new password and Retype password.

To modify login credentials:

```
$sudo usermod -aG sudo rajubarkunti
```

To switch the user:

```
$sudo su rajubarkunti
```

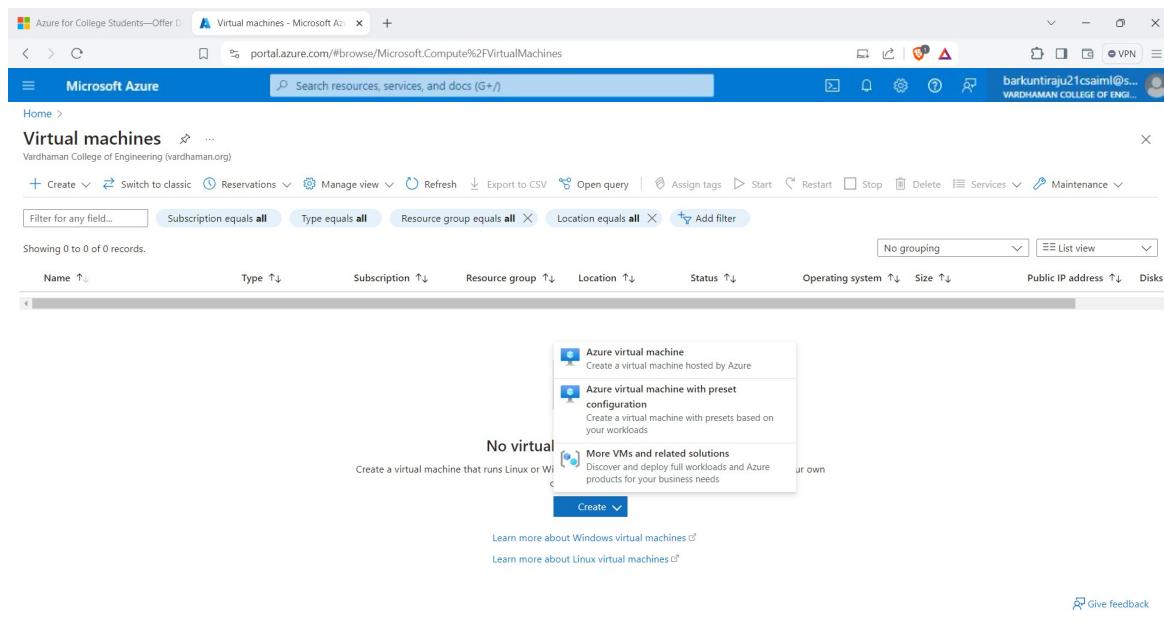
The screenshot shows a terminal window titled 'raju@Ubuntu: /home/azureuser'. The session starts with the user's last login information. The user then runs the command '\$sudo useradd -m rajubarkunti', which adds a new user account. Following this, the user runs '\$sudo passwd rajubarkunti' to set a password for the new user. The terminal prompts for a new password and then asks to retype it. Finally, the user runs '\$sudo usermod -aG sudo rajubarkunti' to add the new user to the sudo group. The session concludes with the user switching back to their original account using '\$sudo su raju'.

Result: Above experiment is successful executed And verified.

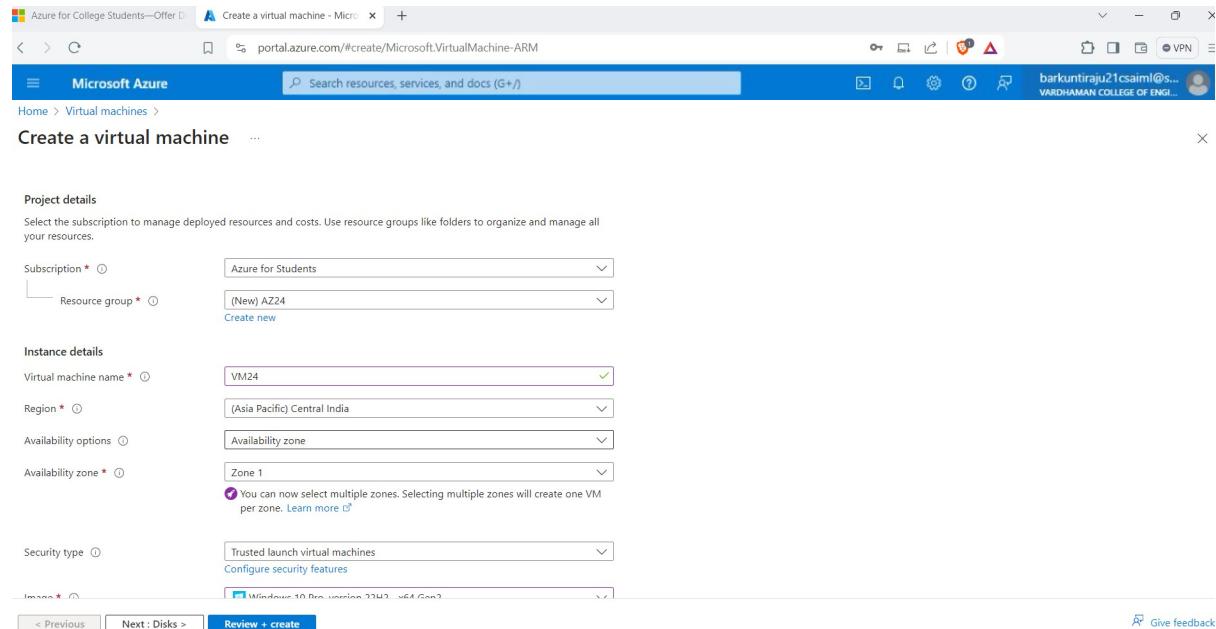
Q11) Create a Windows VM and transfer files from desktop to remote desktop VM.

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.



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

Architecture x64 Arm64 is not supported with the selected image.

Run with Azure Spot discount

Size * Standard_DS1_v2 - 1 vcpu, 3.5 GB memory (\$5.101.50/month) See all sizes

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

Administrator account

Username * ✓

Password * ✓

Confirm password * ✓

Inbound port rules

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

< Previous Next : Disks > Review + create Give feedback

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

Deployment

Overview

Your deployment is complete

Deployment name: CreateVm-MicrosoftWindowsDesktop.Windows... Start time: 6/13/2024, 8:41:09 PM

Subscription: Azure for Students Correlation ID: 91279413-fe42-433c-a5ca-c9066b78be85

Resource group: A224

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

Cost Management

Get notified to stay within your budget and prevent unexpected charges on your bill. Set up cost alerts >

Microsoft Defender for Cloud

Secure your apps and infrastructure. Go to Microsoft Defender for Cloud >

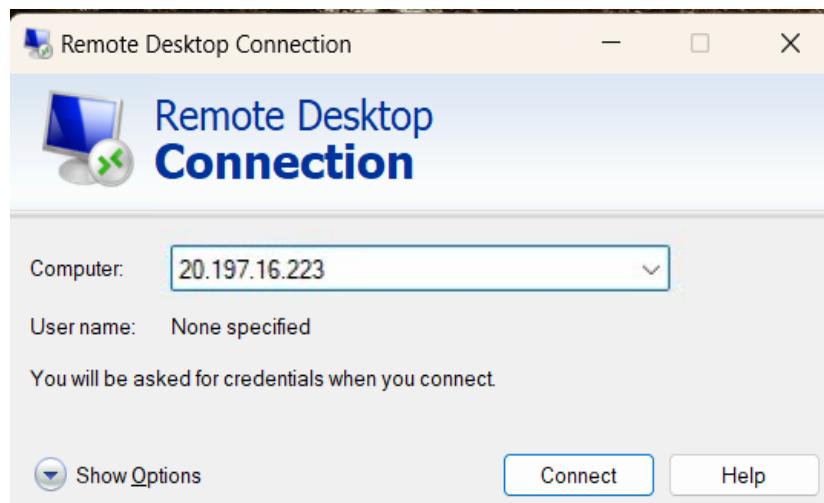
Free Microsoft tutorials

Start learning today >

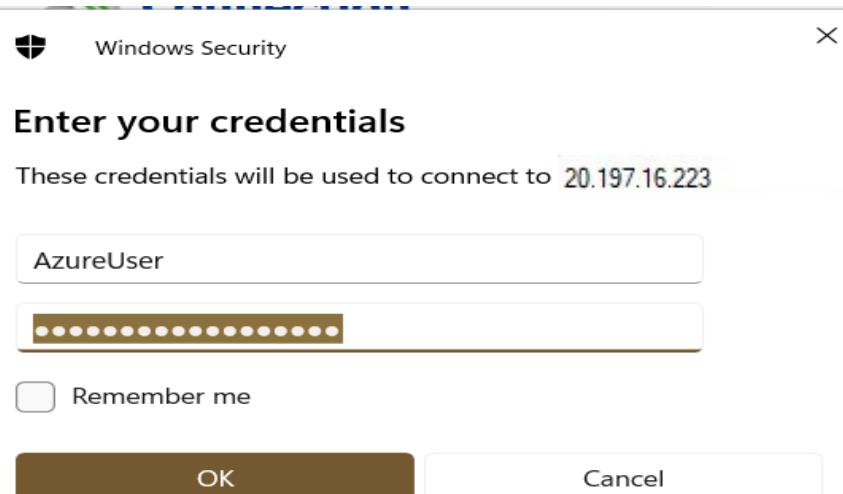
The screenshot shows the Microsoft Azure portal interface for a virtual machine named 'VM24'. The left sidebar lists various management options like Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Connect, Networking, Load balancing, Application security groups, Network manager, Settings, Availability + scale, Security, and Backup + disaster recovery. The main panel displays the 'Essentials' section for VM24, which includes the following details:

Resource group	Operating system
AZ24	Windows
Status	Size
Running	Standard DS1 v2 (1 vcpu, 3.5 GiB memory)
Location	Public IP address
Central India (Zone 1)	20.40.44.213
Subscription	Virtual network/subnet
Azure for Students	VM24-vnet/default
Subscription ID	DNS name
763b4aa1-744d-4fa4-9b3a-815e4bcd0be8	Not configured
Availability zone	Health state
1	-
Tags (edit)	Time created
Add tags	6/13/2024, 3:11 PM UTC

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



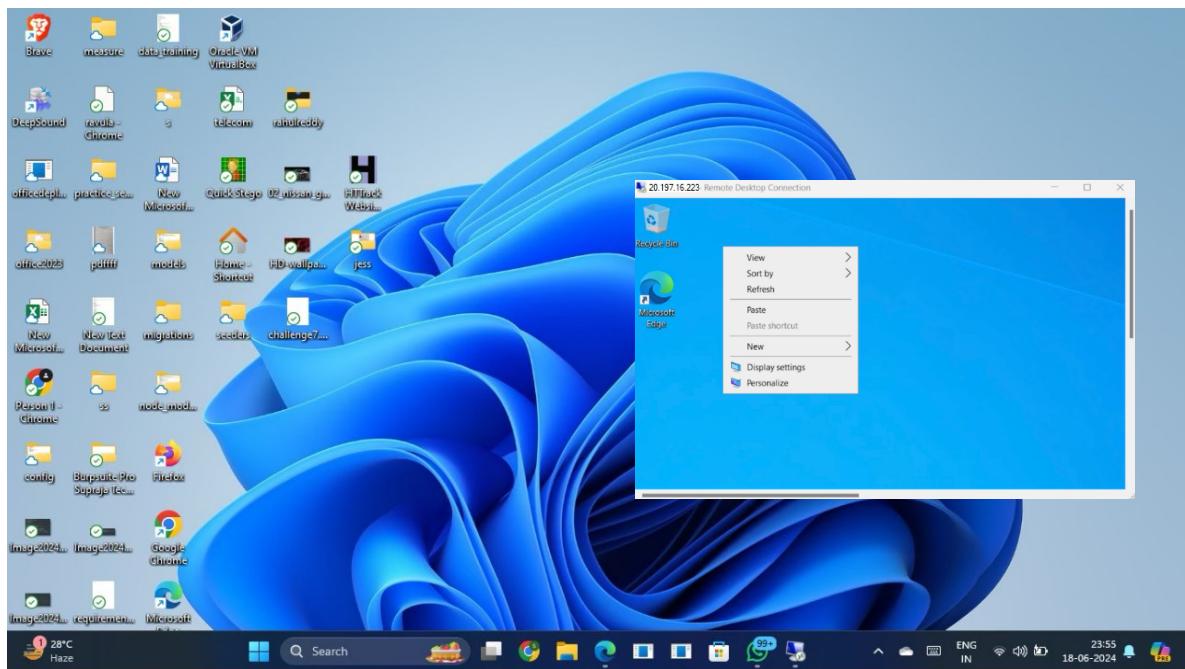
Step-6: By using that copied IP Address open the window virtual machine through remote desktop connection.



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 name with VM name as "UbuntU" 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', 'Switch to classic', '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 filters, there are sorting options: 'Name ↑', 'Type ↑↓', 'Subscription ↑↓', 'Resource group ↑↓', 'Location ↑↓', 'Status ↑↓', 'Operating system ↑↓', 'Size ↑↓', 'Public IP address ↑↓', and 'Disks ↑↓'. A message 'Showing 0 to 0 of 0 records.' is displayed. In the center, there is a large icon of a computer monitor with a cube on it, and the text 'No virtual machines to display'. Below this, instructions say '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 highlighted in blue. To the right of the 'Create' button, there are three 'Learn more at' links: 'Azure virtual machine', 'Azure virtual machine with preset configuration', and 'More VMs and related solutions'. At the bottom right, there is a 'Give feedback' link.

The screenshot shows the 'Create a virtual machine' wizard in the 'Basics' step. The top navigation bar and user information are visible. The main area has tabs for 'Basics', 'Disks', 'Networking', 'Management', 'Monitoring', 'Advanced', 'Tags', and 'Review + create'. A note says 'Create a virtual machine that runs Linux or Windows. Select an image from Azure marketplace or use your own customized image. Complete the Basics tab then Review + create to provision a virtual machine with default parameters or review each tab for full customization. Learn more.' A warning message 'This subscription may not be eligible to deploy VMs of certain sizes in certain regions.' is shown. The 'Project details' section includes 'Subscription' (set to 'Azure for Students') and 'Resource group' (set to '(New) RG24'). The 'Instance details' section includes 'Virtual machine name' (set to 'vm'), 'Region' (set to '(Asia Pacific) Central India'), 'Availability options' (set to 'Availability zone'), and 'Availability zone' (set to 'Zone 1'). A note says 'You can now select multiple zones. Selecting multiple zones will create one VM.' At the bottom, there are buttons for '< Previous', 'Next: Disks >', and 'Review + create'.

The screenshot shows the 'Create a virtual machine' wizard in the 'Configuration' step. The top navigation bar and user information are visible. The main area includes sections for 'Security type' (set to 'Trusted launch virtual machines'), 'Image' (set to 'Ubuntu Server 20.04 LTS - x64 Gen2'), 'VM architecture' (set to 'x64'), 'Run with Azure Spot discount' (unchecked), 'Size' (set to 'Standard_DS1_v2 - 1 vcpu, 3.5 GB memory (₹5.10/50/month)'), 'Enable Hibernation' (unchecked), 'Administrator account' (set to 'Authentication type: Password'), 'Username' (set to 'azureuser'), and 'Password' (set to '*****'). A note says 'Hibernate does not currently support Trusted launch and Confidential virtual machines for Linux images. Learn more.' At the bottom, there are buttons for '< Previous', 'Next: Disks >', and 'Review + create'.

2) click on "Next:Disks>"

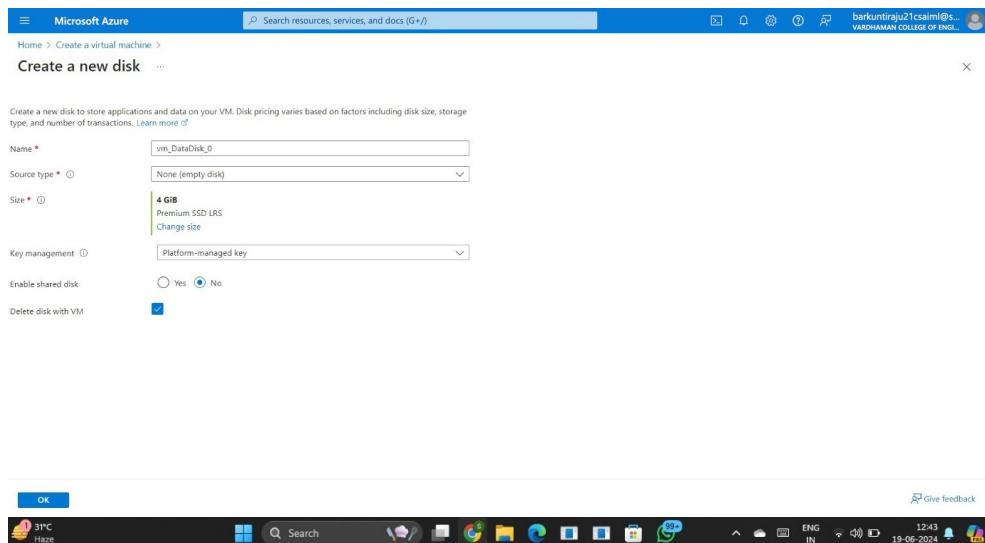
3) Click on "Create & attach a new disk"

4) Click on “change size”

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	18000	750	10	-	-
32767 GiB	P80	20000	900	10	-	-

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

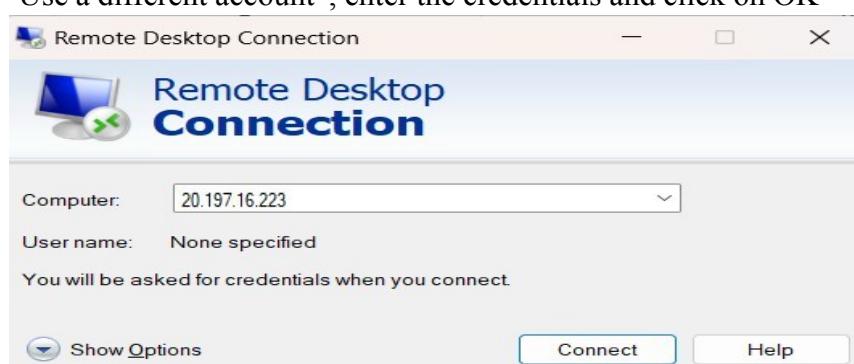
8) Click on "Go to resource group"

9) Copy public IP Address

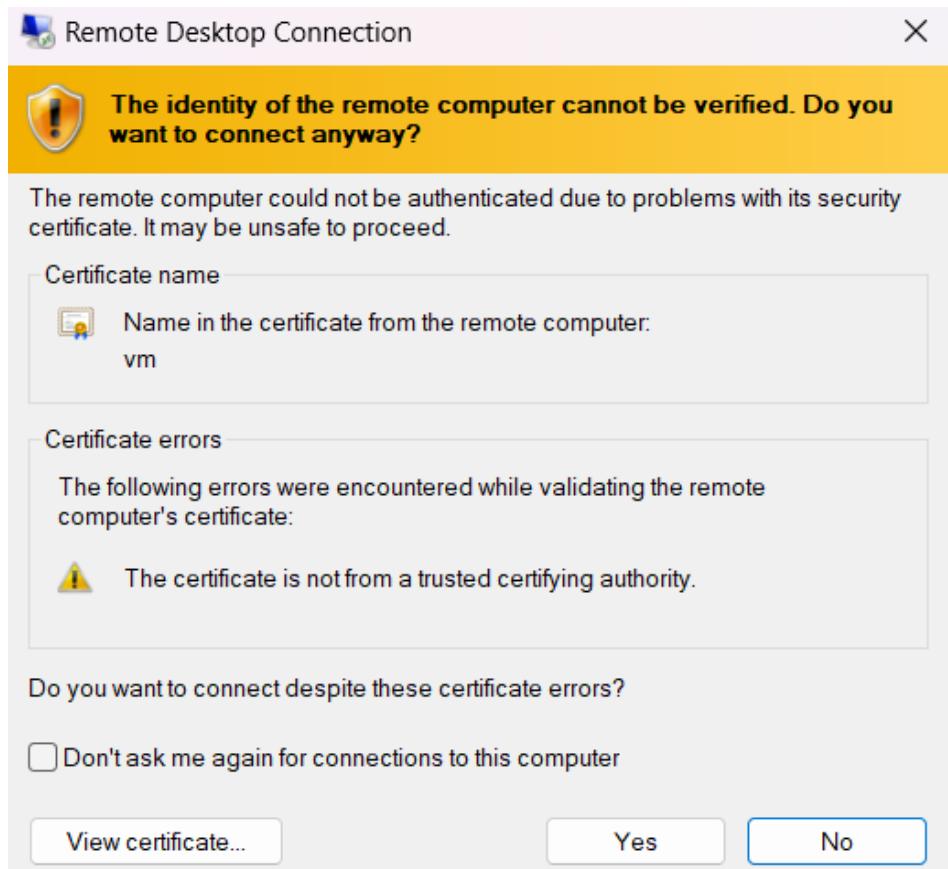
10) Open Remote Desktop Connection in your windows/system and paste the public IP Address

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 'Disks' tab is selected under the 'Settings' menu. A warning message 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. Learn more?' Below this, the 'OS disk' section shows a table with one entry: 'vm_OsDisk_1_8b113cab1fb84c90b0fc' (Premium SSD LRS, 128 GB, 500 IOPS, 100 throughput, SSE with PMK, Read/write). The 'Data disks' section shows a table with one entry: 'vm_DataDisk_0' (Premium SSD LRS, 4 GB, 120 IOPS, 25 throughput, SSE with PMK, Read-only). At the bottom, there are 'Apply' and 'Discard changes' buttons, and a URL: 'https://go.microsoft.com/fwlink/?LinkId=2229841'.

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

The screenshot shows the Microsoft Azure portal interface for managing disks of a virtual machine named 'vm'. The 'OS disk' section displays a single disk entry: 'vm_OsDisk_1_8b113cab1f8b4c90b0fc' (Premium SSD LRS, 128 GB, 500 Max IOPS, 100 Max throughput, SSE with PMK, Read/write). The 'Data disks' section shows a table with one row: 'No data disks attached'. At the bottom, there are 'Apply' and 'Discard changes' buttons.

16) Click on “Apply”

The screenshot shows the Microsoft Azure portal interface for managing disks of a virtual machine named 'vm'. A progress bar at the top indicates 'Updating virtual machine'. The 'OS disk' section displays a single disk entry: 'vm_OsDisk_1_8b113cab1f8b4c90b0fc' (Premium SSD LRS, 128 GB, 500 Max IOPS, 100 Max throughput, SSE with PMK, Read/write). The 'Data disks' section shows a table with one row: 'No data disks attached'. At the bottom, there are 'Apply' and 'Discard changes' buttons.

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

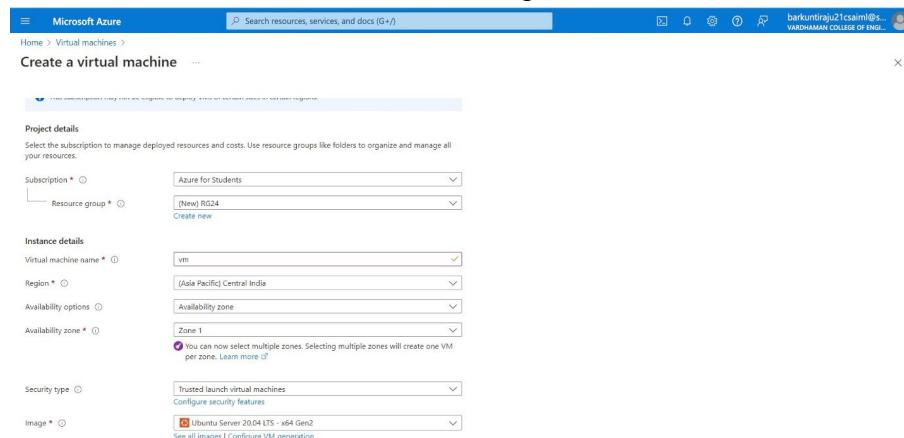
The screenshot shows the Microsoft Azure portal interface for managing disks of a virtual machine named 'vm'. The 'OS disk' section displays a single disk entry: 'vm_OsDisk_1_8b113cab1f8b4c90b0fc' (Premium SSD LRS, 128 GB, 500 Max IOPS, 100 Max throughput, SSE with PMK, Read/write). The 'Data disks' section shows a table with one row: 'No data disks attached'. At the bottom, there are 'Apply' and 'Discard changes' buttons.

Result: Above experiment is successful executed And verified.

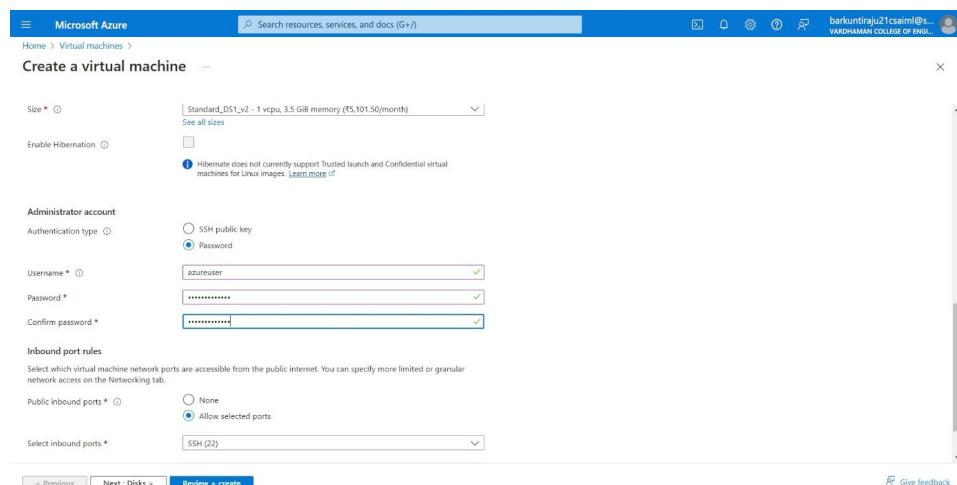
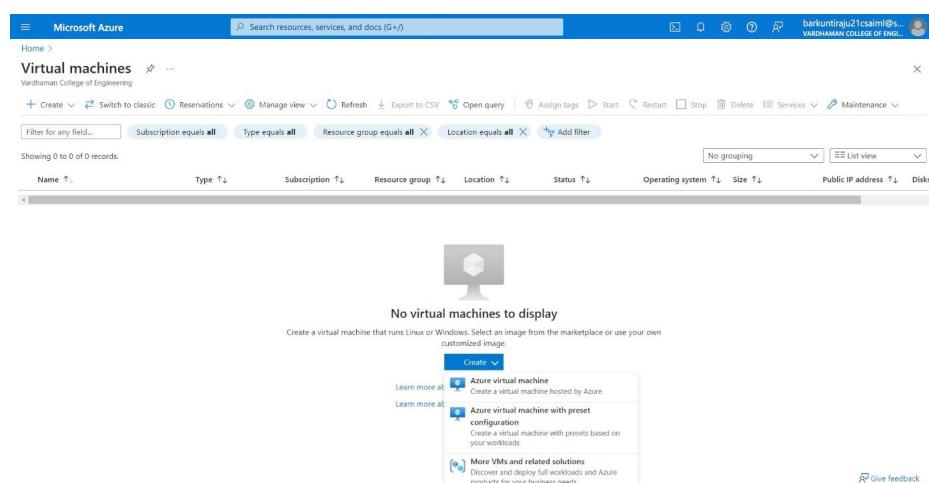
13Q) How to add data disks to linux server in azure data center

Steps:-

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



Step 2 : click on "Next:Disks>"



Step 3 : Select

OS disk size -----30GB

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

enable "Delete with VM"

The screenshot shows the 'Create a virtual machine' wizard in the Microsoft Azure portal. The 'Disks' tab is selected. Under 'OS disk', the 'OS disk size' dropdown is set to 'Image default (30 GB)'. The 'OS disk type' dropdown is set to 'Premium SSD (locally-redundant storage)'. The 'Delete with VM' checkbox is checked. A note below states: 'Encryption at host is not registered for the selected subscription. Learn more about enabling this feature.' The 'Key management' dropdown is set to 'Platform-managed key'. A note below says: 'Ultra disk is not supported for the selected VM size Standard_DS1_v2 in Central India.' At the bottom, there are navigation buttons: '< Previous', 'Next : Networking >', and 'Review + create'.

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

The screenshot shows the 'Create a new disk' dialog in the Microsoft Azure portal. The 'Name' field is filled with 'vm_dataDisk_0'. The 'Source type' dropdown is set to 'None (empty disk)'. The 'Size' dropdown is set to '1024 GiB'. The 'Key management' dropdown is set to 'Platform-managed key'. The 'Enable shared disk' section has two radio buttons: 'Yes' and 'No', with 'No' selected. A note below says: 'Delete disk with VM'. At the bottom, there is an 'OK' button and a link to 'https://msdn.microsoft.com/...', and a 'Give feedback' button.

Step 5 : Select

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

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

Create a new disk to store applications and data on your VM. Disk pricing varies based on factors including disk size, storage type, and number of transactions. Learn more [?](#)

Name *

Source type *

Size *
[Change size](#)

Key management

Enable shared disk Yes No

Delete disk with VM

OK [Give feedback](#)

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

Encryption at host is not registered for the selected subscription.
[Learn more about enabling this feature](#) [?](#)

OS disk

OS disk size Image default (30 GB) Premium SSD (locally-redundant storage)

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

Delete with VM

Key management

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.

LUN	Name	Size (GB)	Disk type	Host caching	Delete with VM
0	vm_DataDisk_0	1024	Premium SSD LRS	Read-only	<input type="checkbox"/>

Create and attach a new disk [Attach an existing disk](#)

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

Validation passed

Basics Disks Networking Management Monitoring Advanced Tags **Review + create**

Cost given below is an estimate and not the final price. For all your pricing needs, please use the pricing calculator. [?](#)

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.

Name

Preferred e-mail address

Preferred phone number

< Previous [Next >](#) **Create** [Download a template for automation](#) [Give feedback](#)

Step 8 : Click on "Go to resource group"

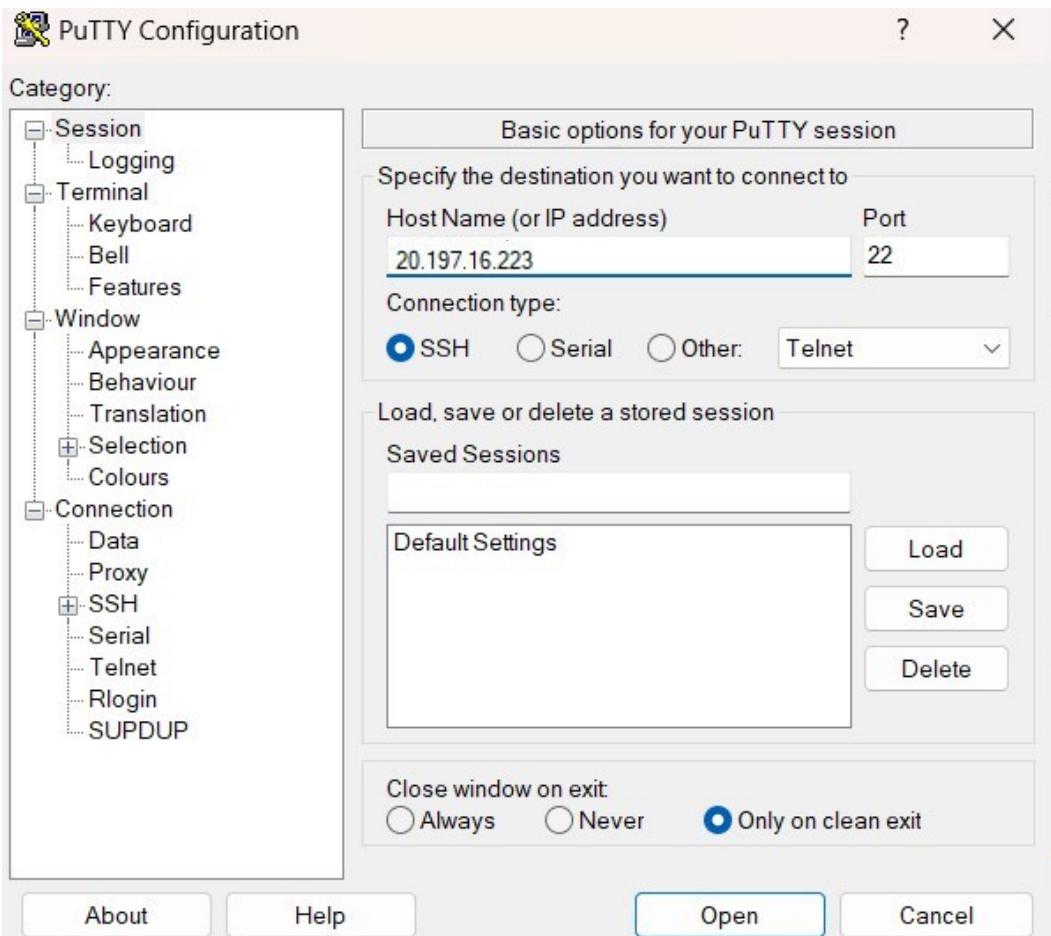
The screenshot shows the Microsoft Azure portal with the URL [CreateVm-canonical.0001-com-ubuntu-server-focal-2-20240614224205 | Overview](#). The main message is "Your deployment is complete". Deployment details show the name as "CreateVm-canonical.0001-com-ubuntu-server-focal-2-20240614224205", subscription as "Azure for Students", and resource group as "RG24". The start time is 6/14/2024, 10:45:33 PM. A "Go to resource" button is highlighted in blue.

Step 9 : Copy public IP Address

The screenshot shows the Microsoft Azure portal with the URL [Virtual machines > VM | Overview](#). The public IP address is listed as "20.40.46.16". The "Networking" section also lists the public IP address as "20.40.46.16 (Network interface vm45_z1)".

Networking	Value
Public IP address	20.40.46.16
Virtual network/subnet	vm-vnet/default
DNS name	Not configured

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



Step 11 : Login into it with username and password

```
azureuser@vm: ~
└─$ login as: azureuser
└─$ azureuser@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.

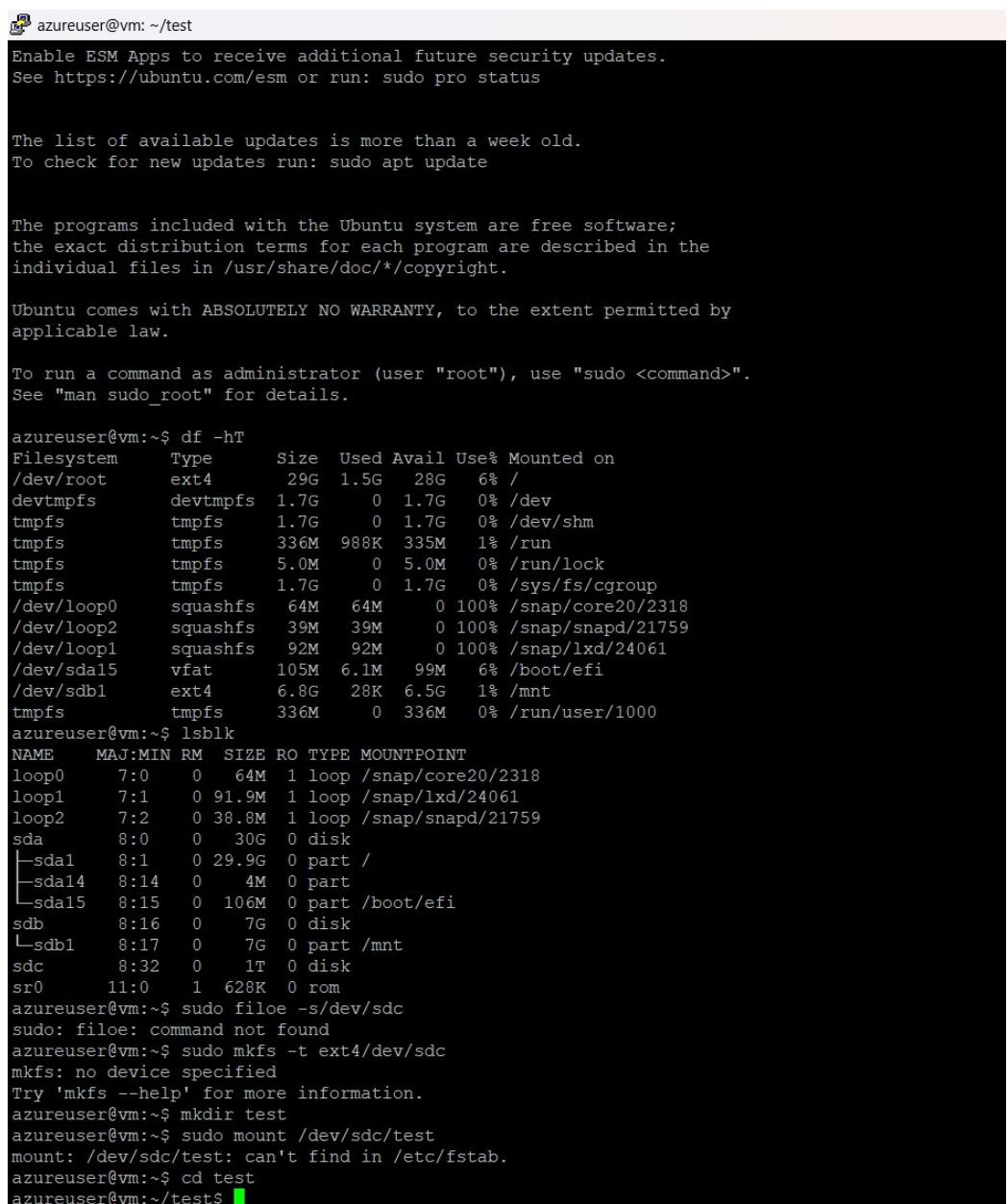
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

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/lxd/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/lxd/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

Refresh Additional settings Feedback Troubleshoot

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

Refresh Additional settings Feedback Troubleshoot

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.

Microsoft Azure

Create a resource group

Basics Tags Review + create

Resource group - A container that holds related resources for an Azure solution. The resource group can include all the resources for the solution, or only those resources that you want to manage as a group. You decide how you want to allocate resources to resource groups based on what makes the most sense for your organization. Learn more ↗

Project details

Subscription * Azure for Students

Resource group * RG1

Resource details

Region * (Asia Pacific) Central India

Review + create < Previous Next : Tags >

Microsoft Azure

Resource groups

Showing 1 to 2 of 2 records.

Name	Subscription	Location
RG1	Azure for Students	Central India
RG2	Azure for Students	Central India

No grouping List view

Microsoft Azure

VM Virtual machine

Overview Activity log Access control (IAM) Tags Diagnose and solve problems Connect Connect Bastion Windows Admin Center Networking Settings Availability + scale Security Backup + disaster recovery Operations Monitoring Automation Help

Tags (edit) : Add tags

Resource group (move) : RG1 Status : Running Location : Central India (Zone 1) Subscription (move) : 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 : 20.197.16.223 Virtual network/subnet : vm-vnet/default DNS name : Not configured Health state : - Time created : 6/14/2024, 5:36 PM UTC

Networking

Computer name : vm Operating system : Windows VM generation : V2 VM architecture : x64 Agent status : Not Ready Agent version : Unknown Hibernation : Disabled

Public IP address : 20.197.16.223 (Network interface vm748_z1) Public IP address (IPv6) : - Private IP address : 10.0.0.4 Private IP address (IPv6) : - Virtual network/subnet : vm-vnet/default DNS name : Configure

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

The screenshot shows the Microsoft Azure Resource Group Overview page for 'RG1'. In the top right corner, there is a 'Move' button with three options: 'Move to another resource group', 'Move to another subscription', and 'Move to another region'. The 'Move to another resource group' option is highlighted with a red box.

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 Resource Group Overview page for 'RG1'. The 'Move' button in the top right corner is again highlighted with a red box.

The screenshot shows the 'Move resources' wizard in Step 1: Source + target. It displays two sections: 'Source' and 'Target'. Under 'Source', it shows 'Subscription: Azure for Students' and 'Resource group: RG1'. Under 'Target', it shows 'Subscription: Azure for Students' and 'Resource group: RG2'. At the bottom, there are 'Previous' and 'Next' buttons.

The figure consists of three screenshots of the Microsoft Azure portal interface.

Screenshot 1: Move resources - RG1

This screenshot shows the "Move resources" wizard in progress. It displays a list of resources to be moved, including a virtual machine, network interfaces, security groups, and public IP addresses. Each resource has a status of "Pending validation" and a "Remove" option.

Name	Type	Resource type	Validation status	Action
vm_OsDisk_1_acf52507ebab4fad8260b65454ef155d	Disk	microsoft.compute/disks	Pending validation	Remove
vm748_x1	Network interface	microsoft.network/networkinterfaces	Pending validation	Remove
vm-vnet	Virtual network	microsoft.network/virtualnetworks	Pending validation	Remove
vm-msg	Network security group	microsoft.network/networksecuritygroups	Pending validation	Remove
vm-ip	Public IP address	microsoft.network/publicipaddresses	Pending validation	Remove
vm	Virtual machine	microsoft.compute/virtualmachines	Pending validation	Remove

Screenshot 2: Overview - RG1

This screenshot shows the "Overview" page for Resource Group RG1. It includes sections for Activity log, Access control (IAM), Tags, and Events. The "Resources" section is currently selected, showing no results found. It includes filters for Type (all) and Location (all). A large message indicates "No resources match your filters".

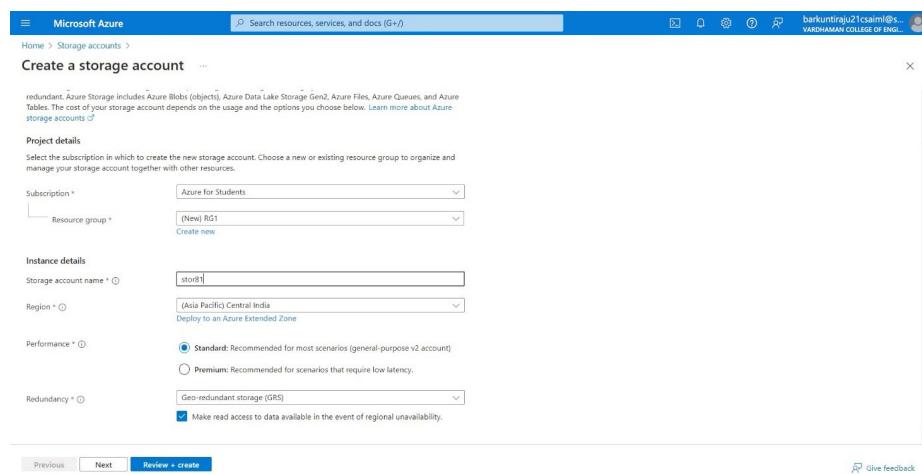
Screenshot 3: Overview - RG2

This screenshot shows the "Overview" page for Resource Group RG2. It includes sections for Activity log, Access control (IAM), Tags, and Events. The "Resources" section lists the same set of resources as RG1, including the virtual machine, network interfaces, security group, and public IP address. The resources are listed by Name, Type, and Location.

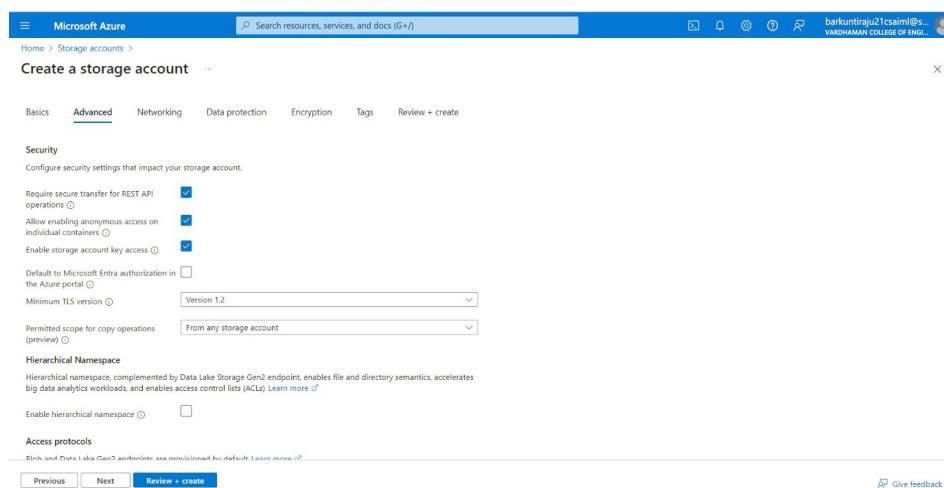
Result: Above experiment is successful executed And verified.

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

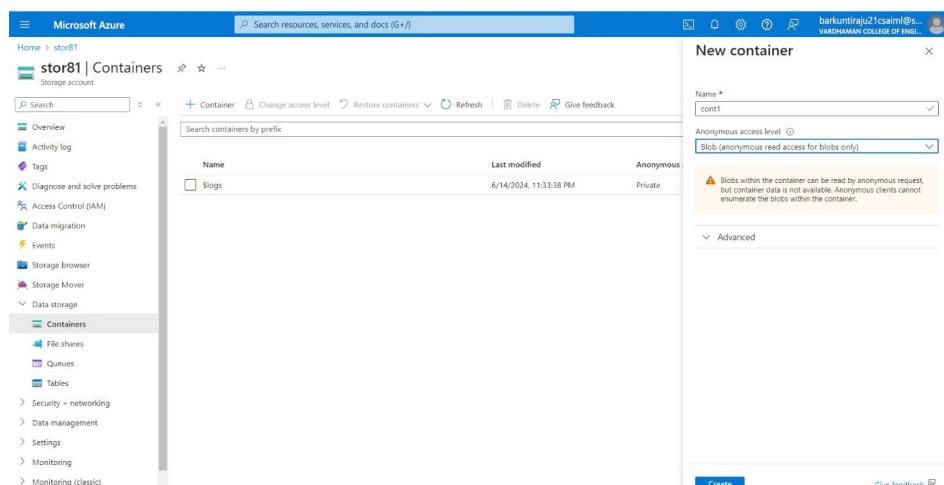
Step-1: Click On Storage Account and Create one and select redundancy as GRS/LRS.



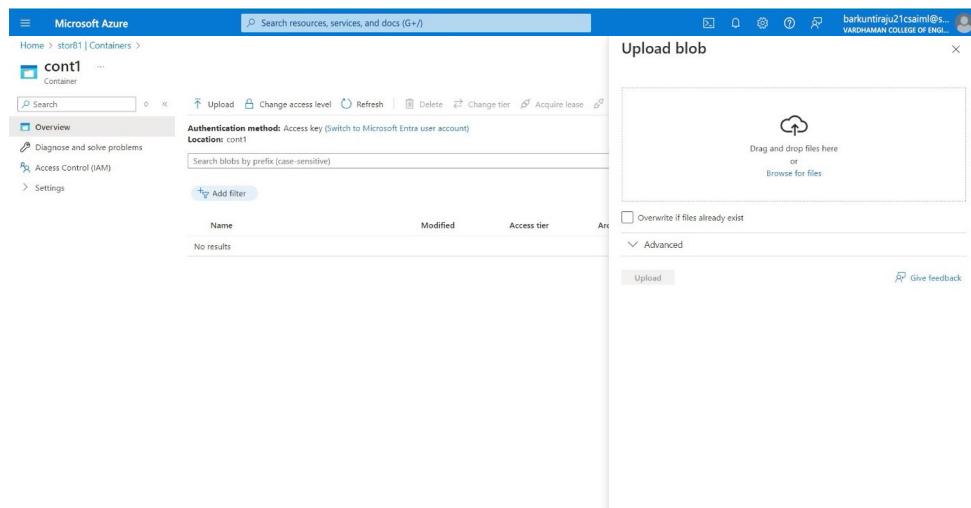
Step-2: Go to advance and Allow enabling anonymous access on individual containers.



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)

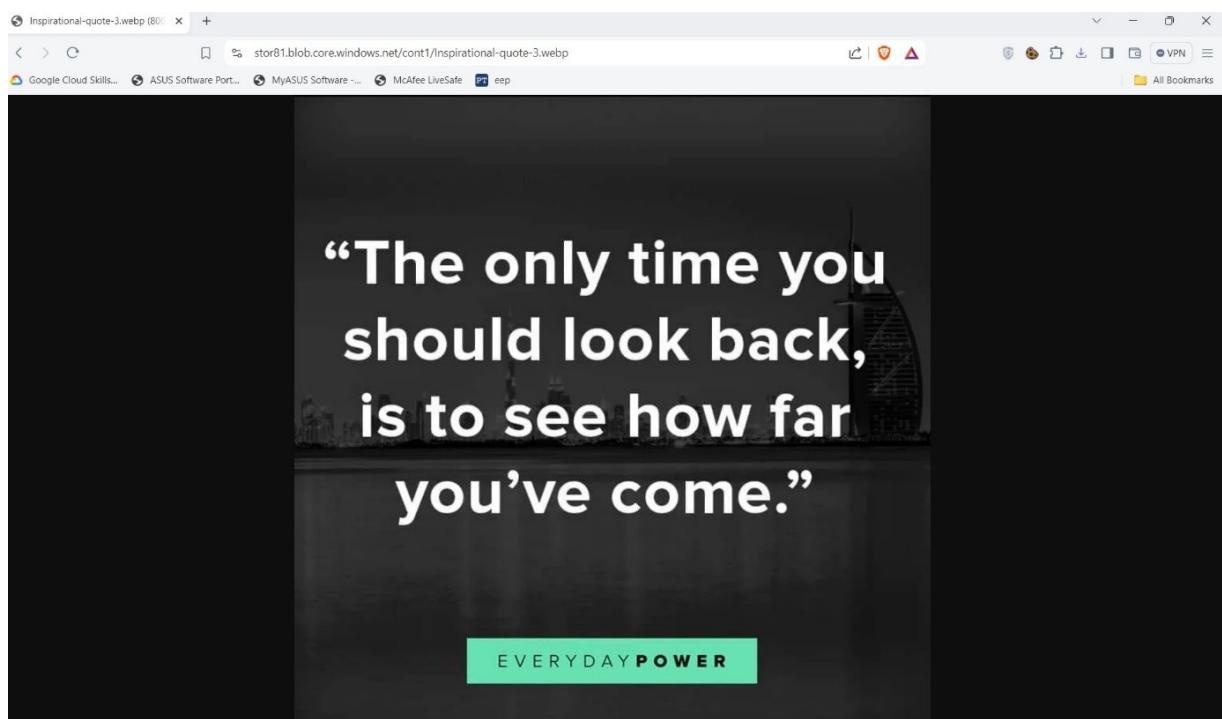


Step-4: Then open new container, click on upload and upload a file from desktop.



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 with a single file listed in the table. The file is named 'Inspirational-quote-3.webp', was modified on 6/14/2024, is in the 'Hot (inferred)' access tier, is a 'Block blob', and has a size of 26.76 KB. The 'Show deleted blobs' toggle switch is turned off.



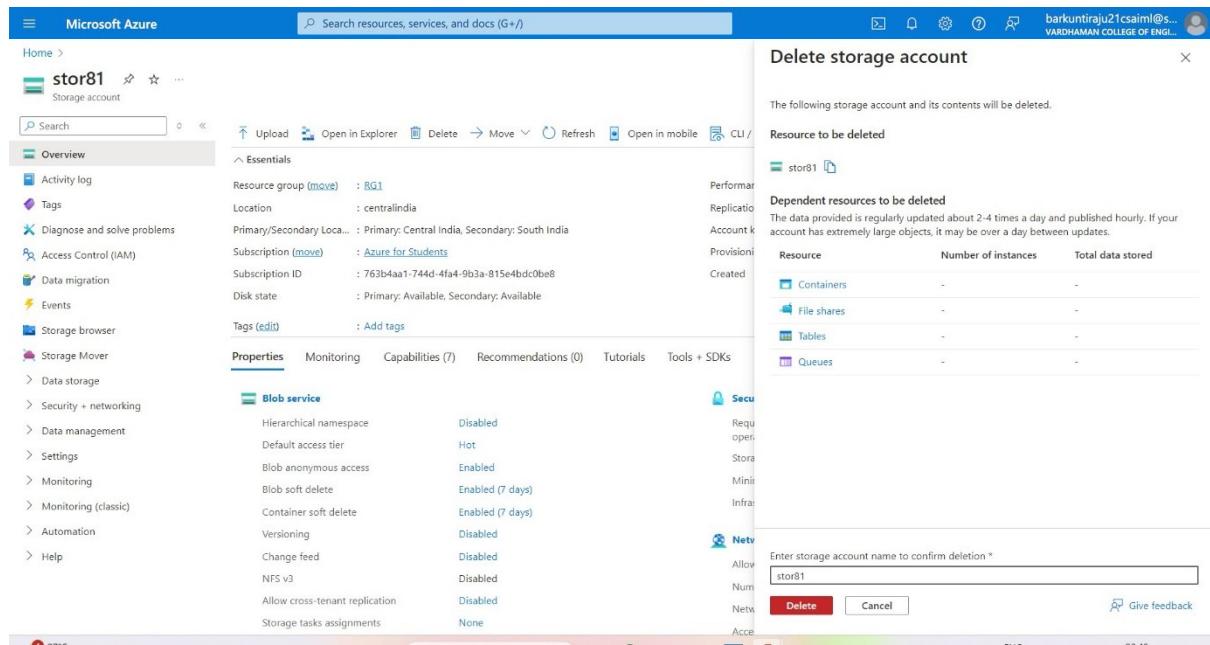
Step-6: On container click Change access level to Private (no anonymous access) and try to open the file in new tab it will show error.

The screenshot shows the Microsoft Azure portal interface. A modal dialog box is open over a list of blobs in a container named 'cont1'. The dialog is titled 'Change access level' and contains a dropdown menu where 'Private (no anonymous access)' is selected. Below the dropdown are 'OK' and 'Cancel' buttons. To the right of the dialog, a table lists a single blob named 'Inspirational-quote-3.webp' with details: Blob type: Block blob, Size: 26.76 KiB, Lease state: Available. At the bottom of the page, a browser window is shown displaying an XML error message indicating a 'ResourceNotFound' exception because the specified resource does not exist.

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

The screenshot shows the Microsoft Azure portal interface. A modal dialog box is open over a list of blobs in a container named 'cont1'. The dialog is titled 'Delete blob(s)' and asks if the user is sure they want 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. 3. If an immutable policy is applied to a blob, the blob will not be deleted. There is also a checkbox for 'Also delete blob snapshots'. Below the dialog are 'OK' and 'Cancel' buttons. To the right, a table shows the blob details again.

The screenshot shows the Microsoft Azure portal interface. A modal dialog box is open over a list of containers in a storage account named 'stor81'. The dialog is titled 'Delete container(s)' and provides information about the action: it will move the container(s) and its contents to a soft deleted state, which can be recovered within 7 days. It lists the container(s) to be deleted: 'cont1'. There is a 'Delete' button at the bottom of the dialog.



The screenshot shows the Microsoft Azure portal interface. On the left, the 'stor81' storage account is selected in the navigation pane. The main area displays the storage account's properties, including its location (centralIndia), subscription (Azure for Students), and blob service settings like hierarchical namespace and default access tier. To the right, a modal dialog titled 'Delete storage account' is open. It informs the user that the storage account and its contents will be deleted. A table lists the dependent resources to be deleted, including containers, file shares, tables, and queues. At the bottom of the dialog, there is a text input field with 'stor81' typed into it, and two buttons: 'Delete' (highlighted in red) and 'Cancel'.

Result: Above experiment is successful executed And verified.

GITHUB LINK: <https://github.com/Raju-Barkunti/Cloud-Computing-.git>