

## 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.

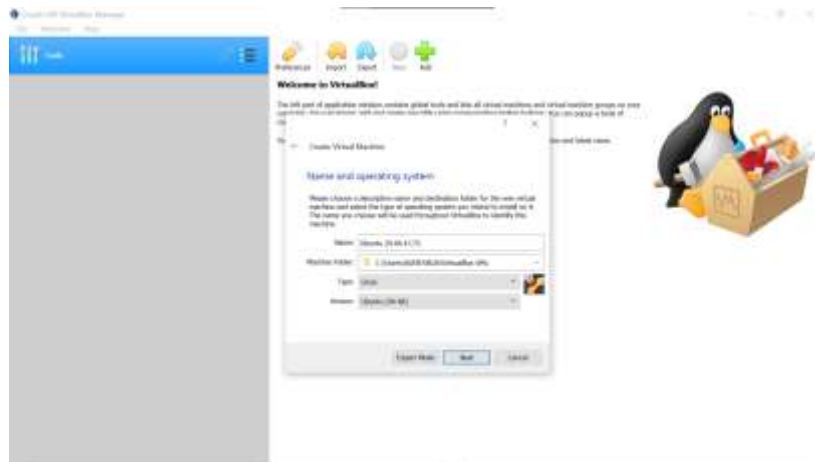


Note: The current version of Ubuntu only works on 64-bit machines.

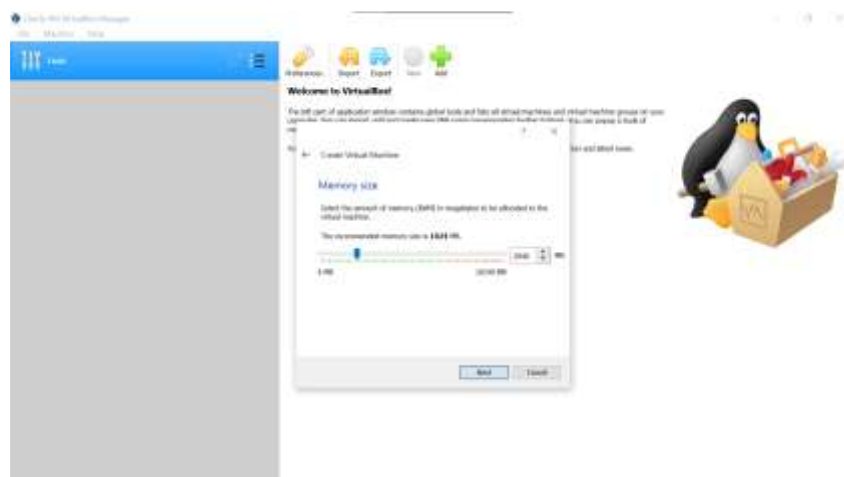
**Step-3:** Open VirtualBox and select New in the top taskbar.



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

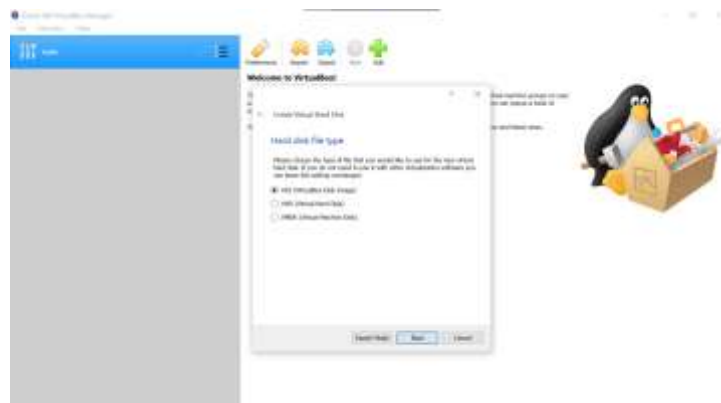


**Step-5:** Choose how much RAM you want to assign to the virtual machine and select Next. The recommended minimum is 1024 MB.



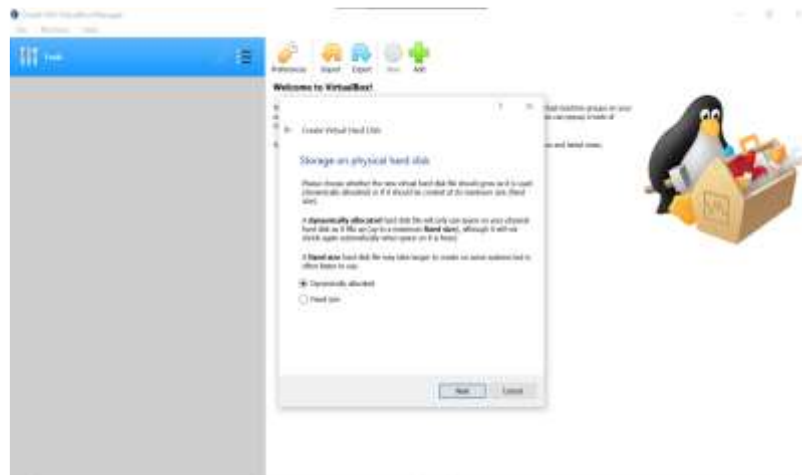
**Step-6:** Choose Create a virtual hard disk now and select Create.

**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.

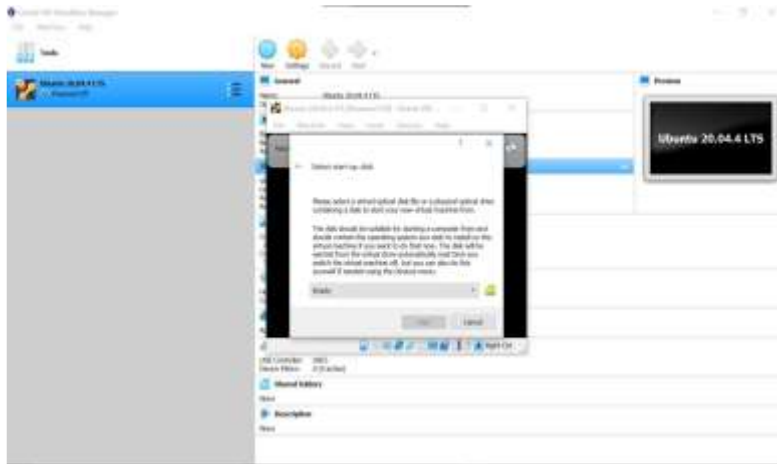
**Step-9:** Choose how much space you wish to set aside for Ubuntu and select Create.

**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.

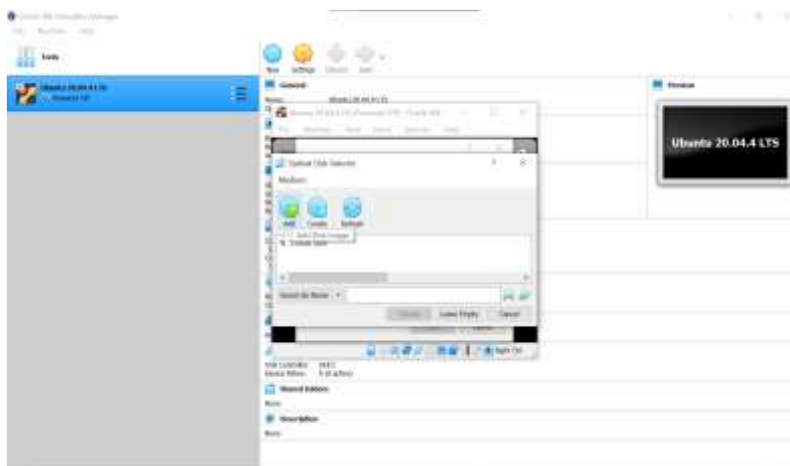
**Step-10:** The name of your virtual machine will now appear on the left side of the VirtualBox manager. Select Start in the toolbar to launch your VM.



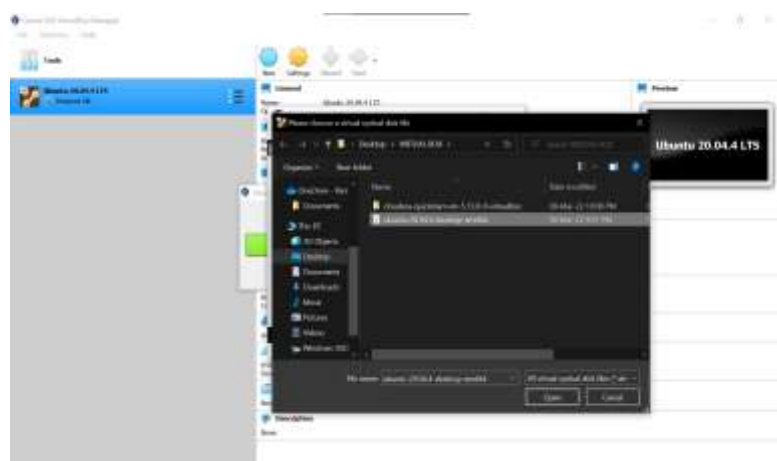
**Step-11:** This is the point where you need to choose the Ubuntu ISO file you downloaded earlier. If the VM doesn't automatically detect it, select the folder next to the Empty field.



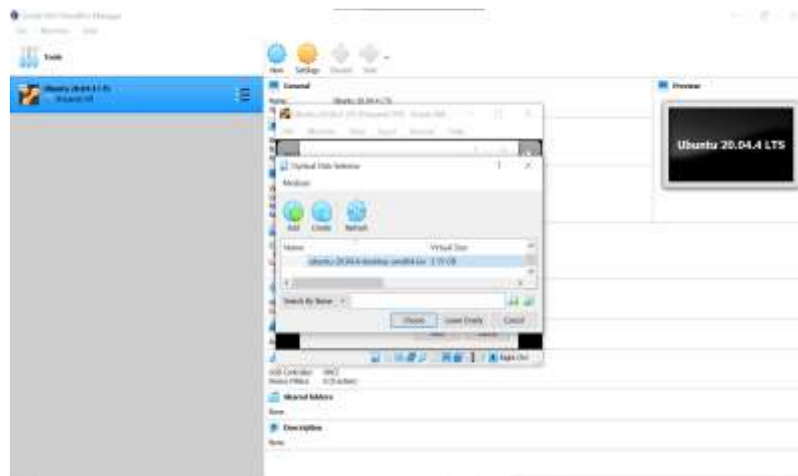
**Step-12:** Select Add in the window that pops up.



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



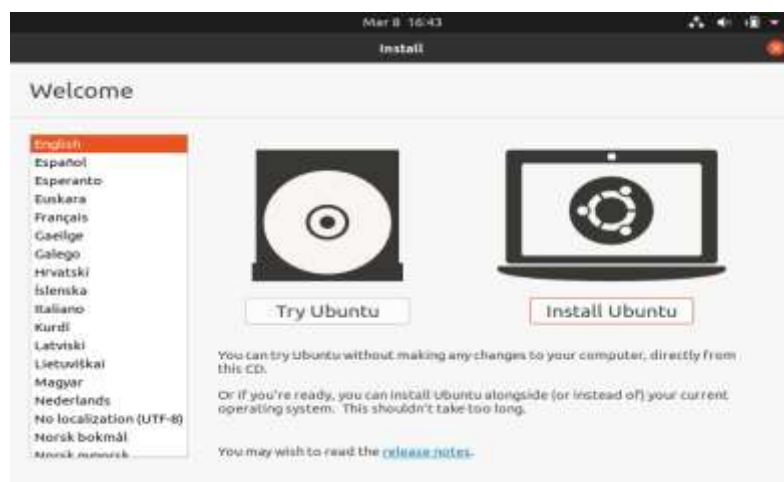
**Step-14:** - Select Choose



**Step-15:** Select Start.

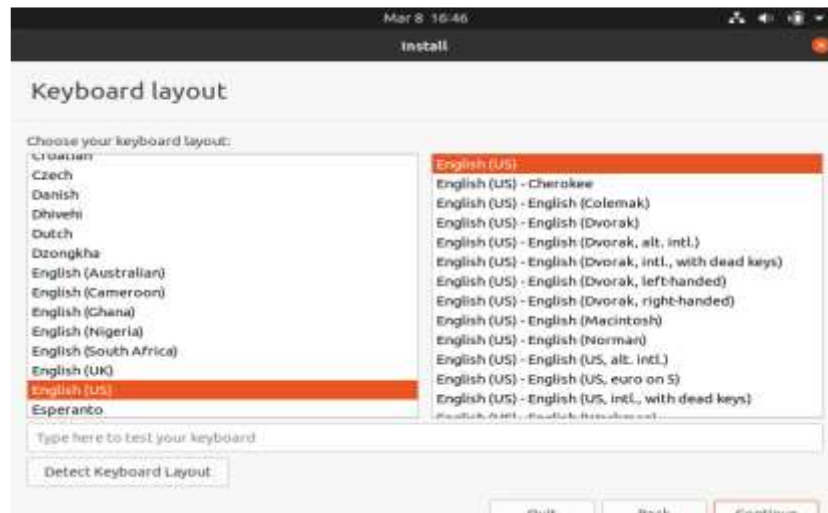


**Step-16:** Your VM will now boot into a live version of Ubuntu. Choose your language and select Install Ubuntu



u.

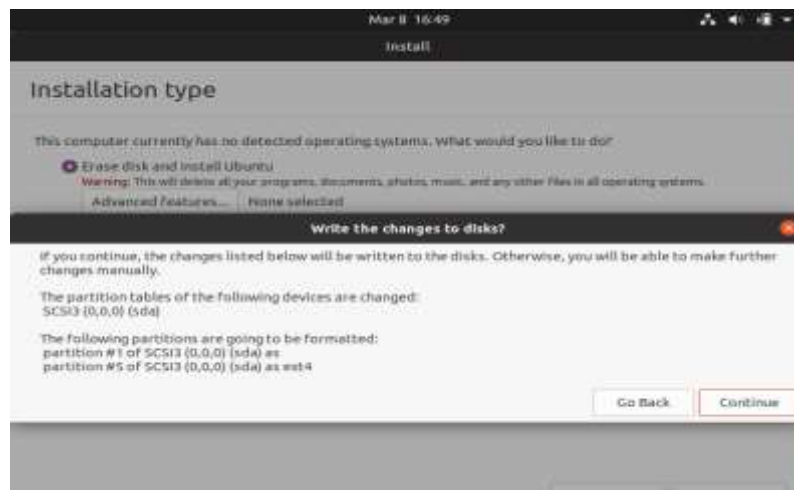
**Step-17:** Choose your keyboard layout and select Continue.



**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.

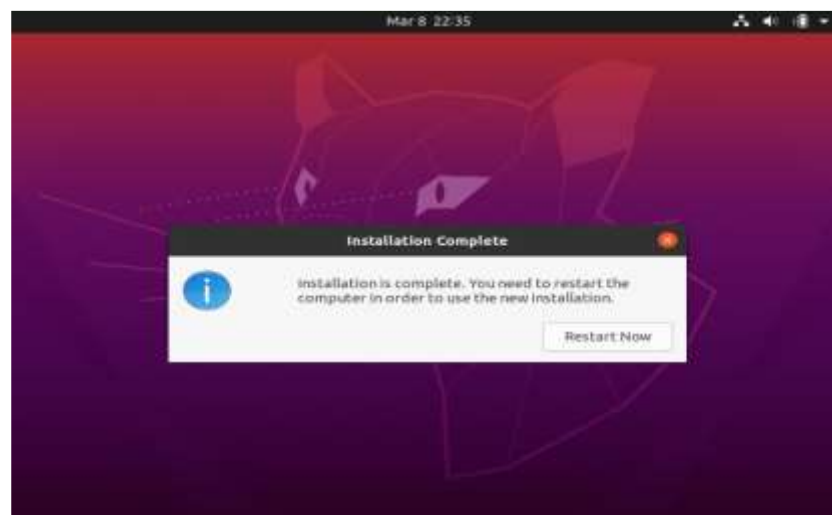


**Step-20:** - Choose your time zone on the map, then select Continue.

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



**Step-22:** - Select Restart Now.



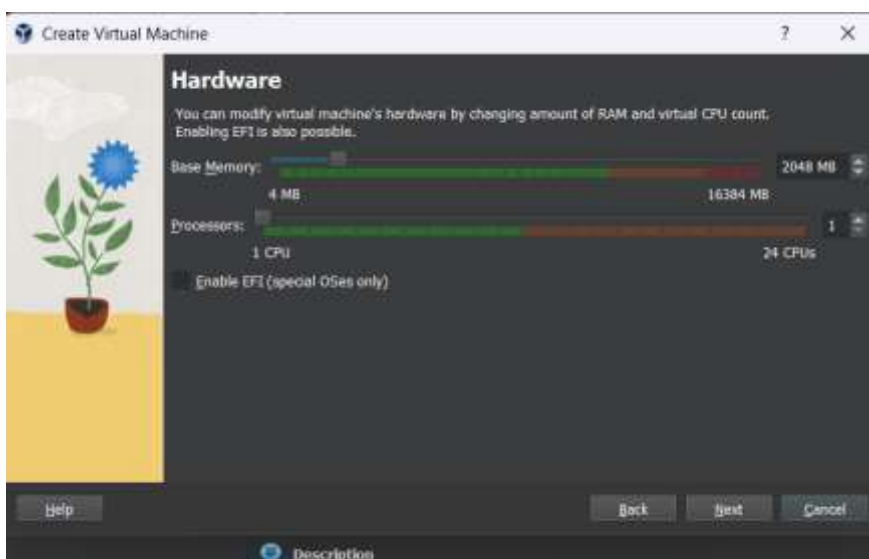
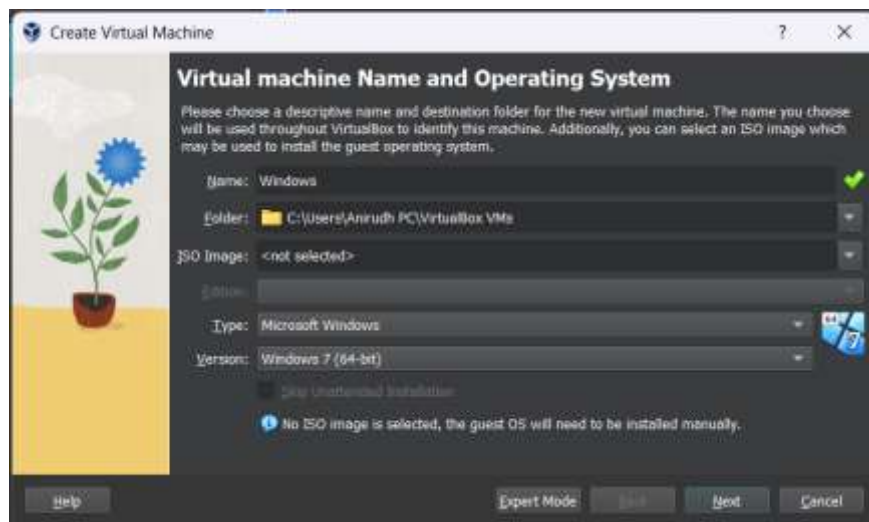
**Step-23:** - After restarting your VM and booting into Ubuntu, you may notice that the desktop doesn't scale correctly if you choose to view it in full-screen mode. You can fix this problem by selecting the VBox\_Gas icon to install VirtualBox Guest Additions.

## Output:



## Windows:

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







### Output:

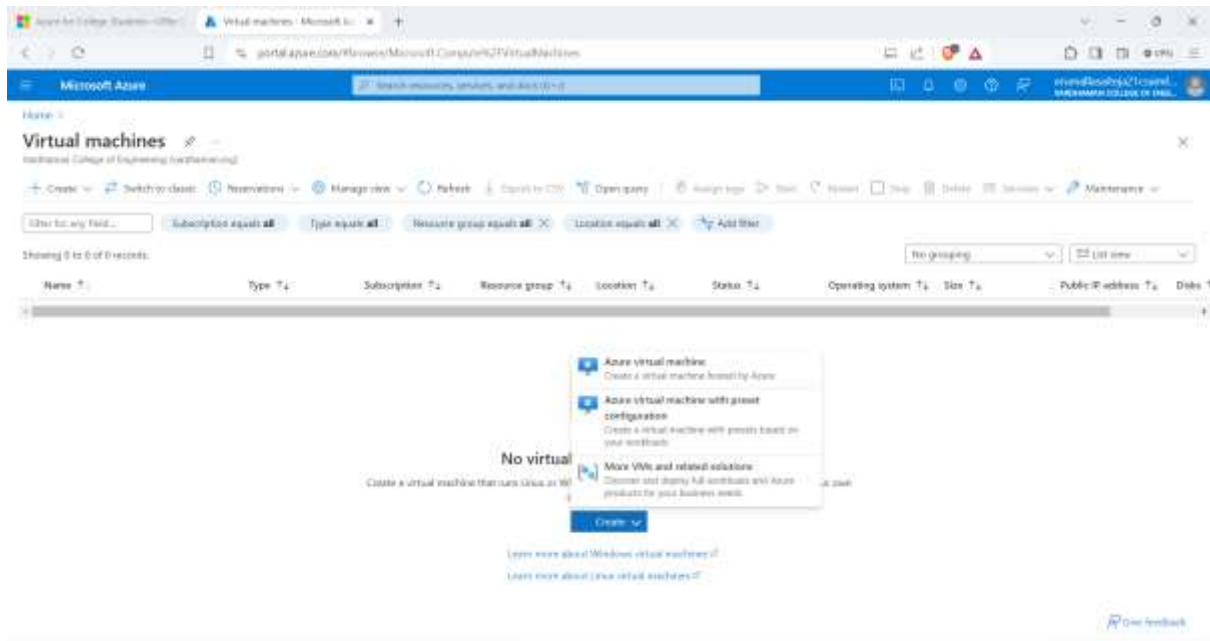


**Result:** Above experiment is successful executed And verified.

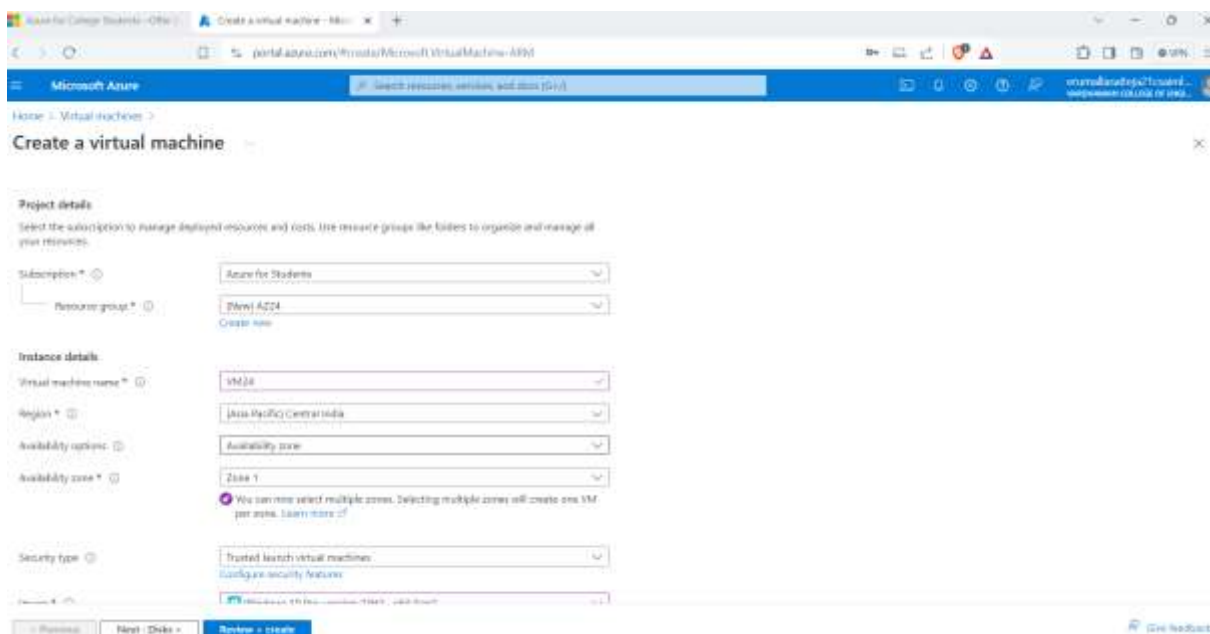
## Q2) Create a Windows Virtual Machine in Microsoft Azure

**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.



**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”



Microsoft Azure

Create a virtual machine

Basics

Image: **Ubuntu** (Warning: Ubuntu is not supported with the selected image)

Size: **Standard\_DS1\_v2** (1 vcpu, 2.5 GB memory (85.101 GB storage))

Enable Hyper-V: ☐

Administrator account:

Username: **AzureUser**

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 via the Marketplace page.

Navigation: < Previous, Next: Disks >, Review & create

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

Microsoft Azure

Create a virtual machine

Basics | Disks | Networking | Management | Monitoring | Advanced | Sign | **Review & create**

Price:

1 X Standard\_DS1\_v2 by Microsoft

Subscription credits apply

**6.9984 INR/hr**

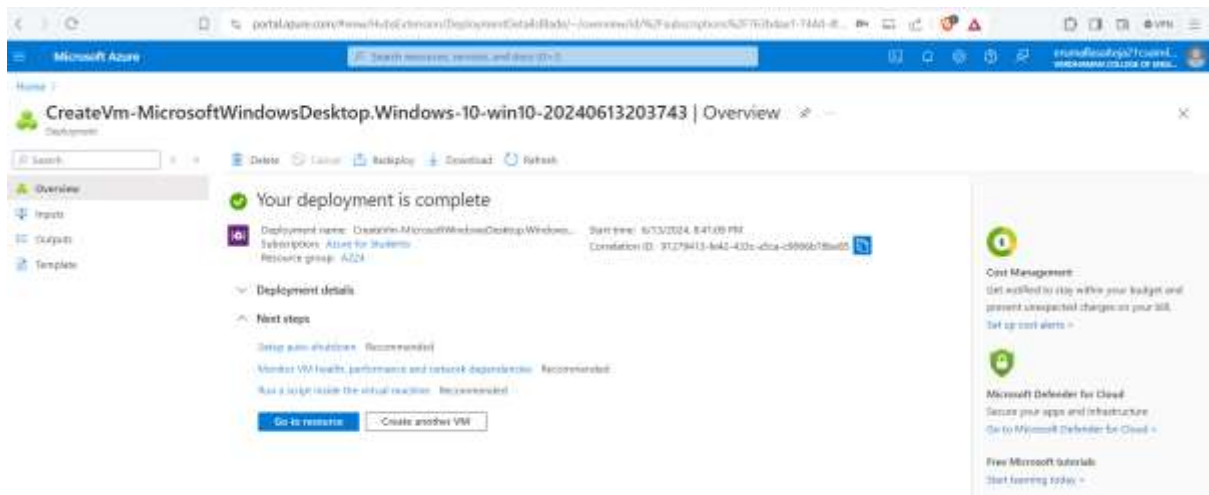
Terms of use | Privacy policy

Terms:

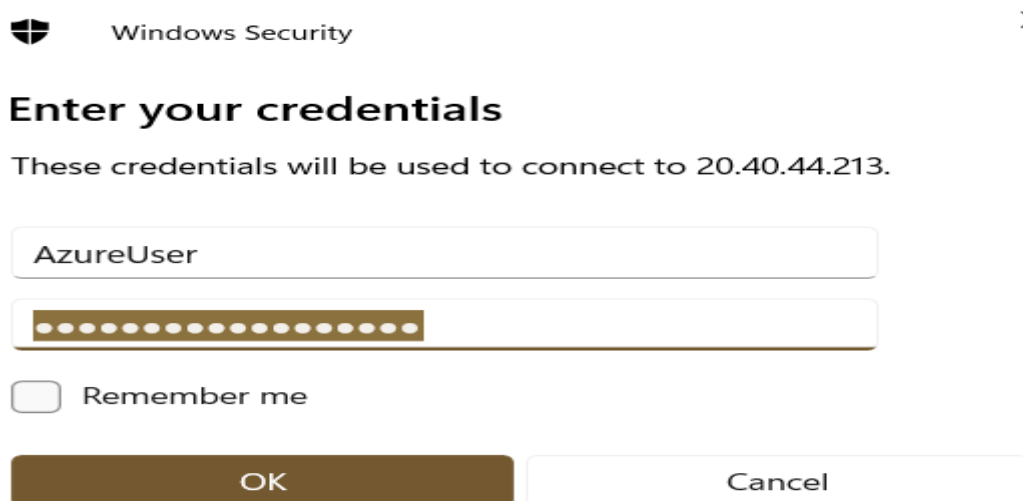
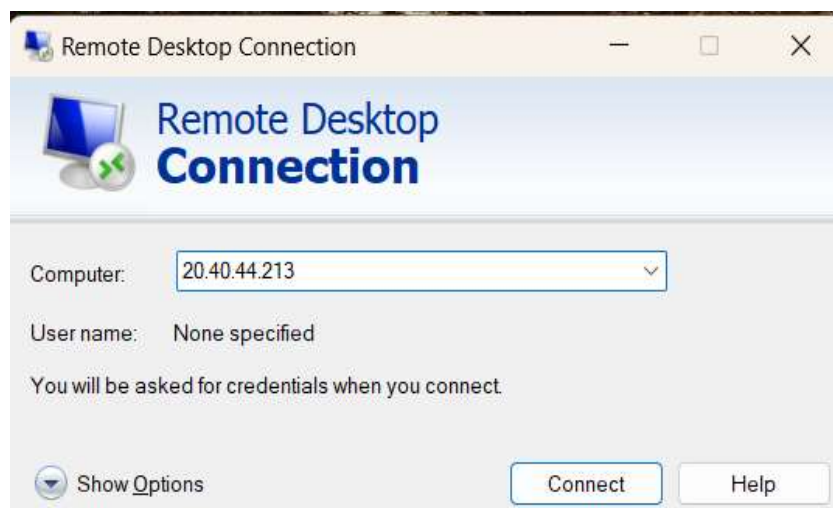
I agree to the legal terms and privacy statements associated with the Marketplace offerings listed above, (i) authorize Microsoft to bill my current payment method for the fees associated with the offering(s), with the same billing frequency as my Azure subscription; and (ii) agree that Microsoft may 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.

Warning: You have not RDP port(s) open to the Internet. This is only recommended for testing. If you want to change the setting, go back to Basics tab.

Navigation: < Previous, Next >, **Create**



**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:**

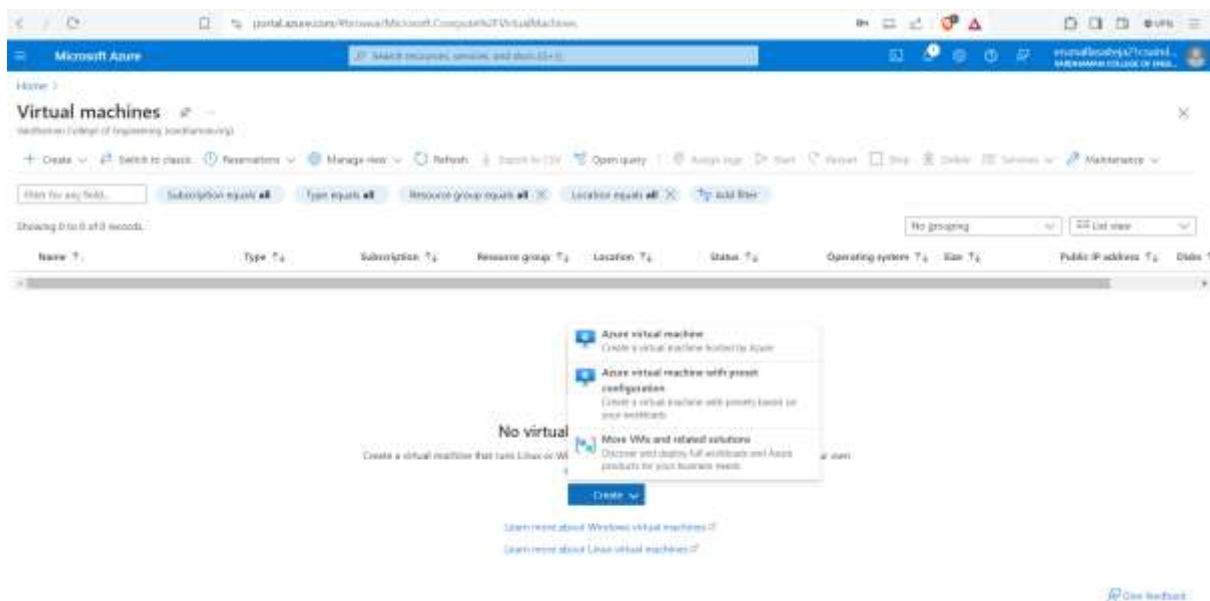


**Result:** Above experiment is successful executed And verified.

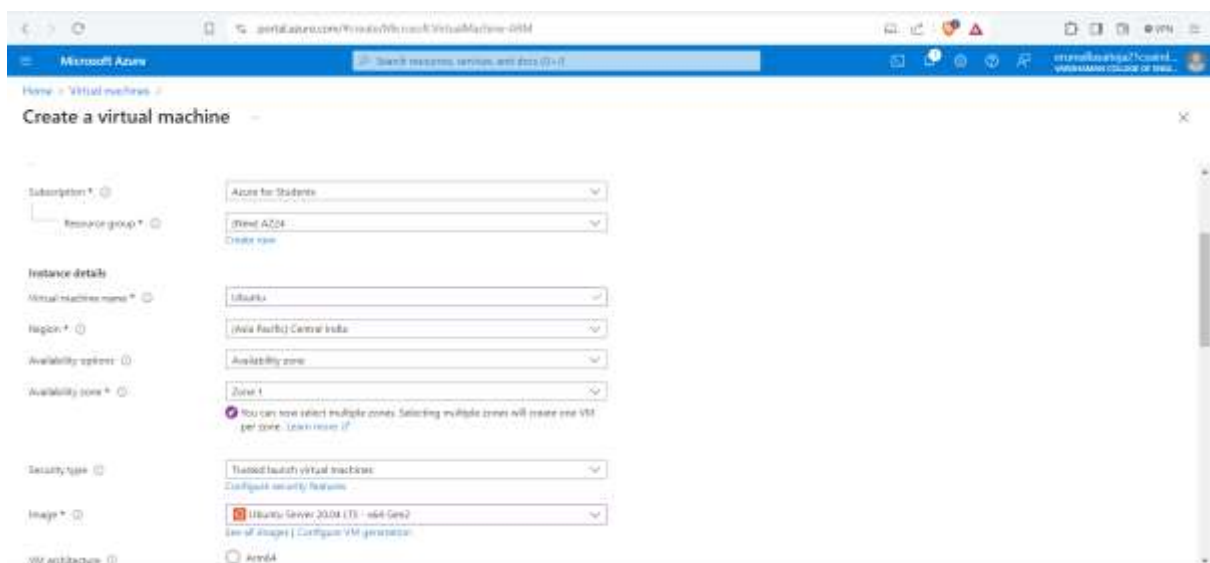
### Q3) Create an Ubuntu Virtual Machine in Microsoft Azure

**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.



**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”.



This screenshot shows the 'Create a virtual machine' page in the Microsoft Azure portal. The page is titled 'Create a virtual machine' and includes a search bar at the top. The main configuration area is divided into several sections:

- VM architecture:** A radio button selection between 'x64' (selected) and 'ARM64'.
- Run with Azure Spot Instance:** A checkbox that is currently unchecked.
- Size:** A dropdown menu showing 'Standard\_DS1\_v2 - 1 vcpu, 3.5 GB memory (PS,101.50/mo/8h)' with a link to 'See all sizes'.
- Enable Hyper-V:** A checkbox that is currently unchecked.
- Administrator account:** A section for 'Authentication type' with radio buttons for 'SSH (public key)' (selected) and 'Password'.
- Username:** A text input field containing 'adminuser'.
- SSH public key source:** A dropdown menu with the option 'Generate new key pair'.



There are also informational messages, such as one stating 'Hyper-V does not currently support Trusted Launch and Confidential virtual machines for Linux images. Learn more >>'.

This screenshot shows the 'Create a virtual machine' page in the Microsoft Azure portal, specifically the 'Inbound port rules' section. The page is titled 'Create a virtual machine' and includes a search bar at the top. The main configuration area is divided into several sections:

- Username:** A text input field containing 'adminuser'.
- SSH public key source:** A dropdown menu with the option 'Generate new key pair'.
- SSH key type:** A radio button selection between 'RSA-SHA Format' (selected) and 'ECDSA-SHA Format'.
- Key pair name:** A text input field containing 'sshkey'.
- Inbound port rules:** A section for 'Public inbound ports' with radio buttons for 'None' and 'Allow selected ports' (selected).
- Select inbound ports:** A dropdown menu showing 'SSH (22)'.

There is an informational message at the bottom stating 'All traffic from the internet will be blocked by default. You will be able to change inbound port rules in the VM > Networking page.'

## Generate new key pair

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

[Download private key and create resource](#)

[Return to create a virtual machine](#)

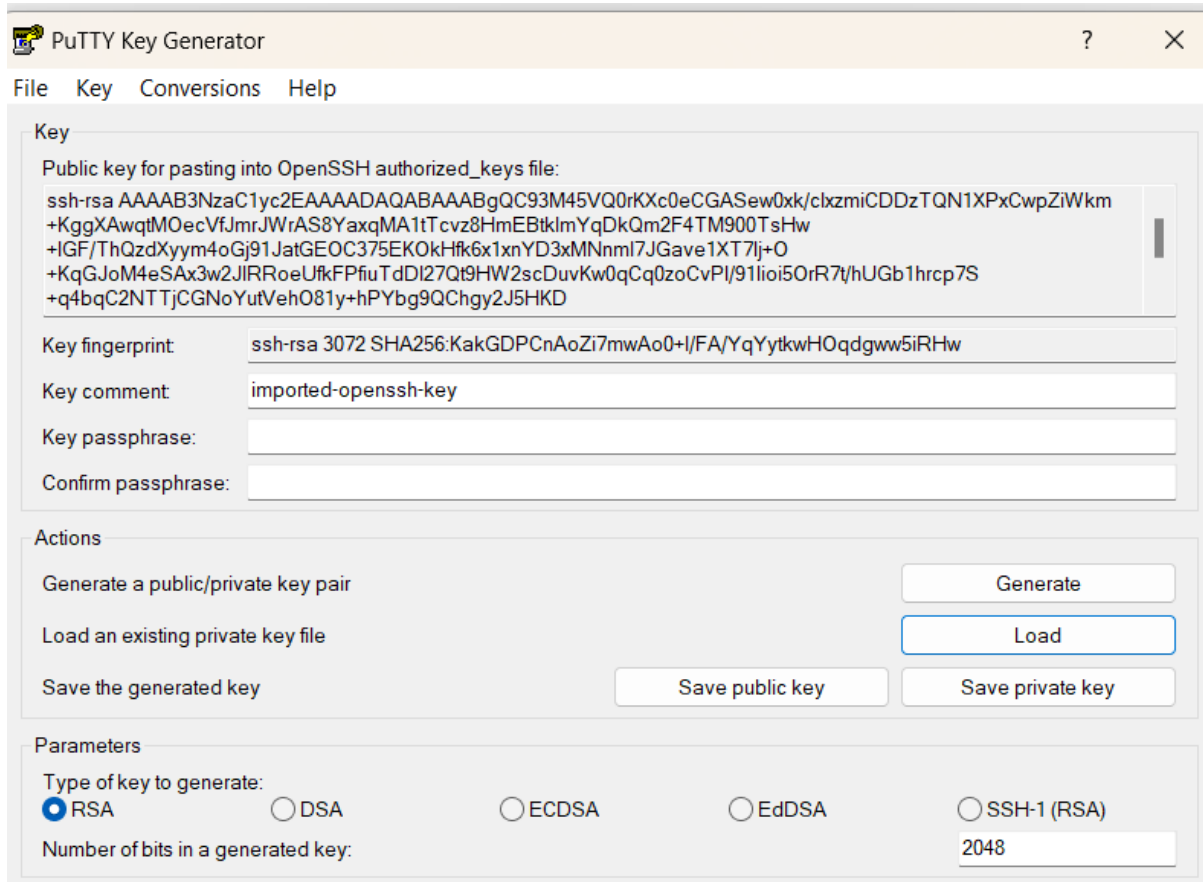
The screenshot shows the Microsoft Azure portal interface for creating a new virtual machine. The 'Basics' tab is active, displaying the following configuration details:

- Name:** Ubuntu
- Region:** Central India (Zone 1)
- Subscription:** Azure for Students
- Availability zone:** 1
- Operating system:** Ubuntu 20.04
- Size:** Standard D4s v3
- Public IP address:** 20.48.47.24
- Virtual network:** Ubuntu-vnet-default
- URI name:** f0d1c0d1c0d1c0d1
- Health state:** -
- Time created:** 6/12/2024, 4:15 PM UTC

The 'Networking' section on the left includes links for Network settings, Load balancing, Application security groups, and Network manager. The 'Settings' section includes links for Availability + scale and Security.



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



The image shows the PuTTY Key Generator window. The 'Key' section displays a public key for pasting into the OpenSSH authorized\_keys file. The 'Key fingerprint' is shown as 'ssh-rsa 3072 SHA256:KakGDPCnAoZi7mwAo0+/FA/YqYytkwHOqdgww5iRHw'. The 'Key comment' is 'imported-openssh-key'. The 'Key passphrase' and 'Confirm passphrase' fields are empty. The 'Actions' section has buttons for 'Generate', 'Load', 'Save public key', and 'Save private key'. The 'Parameters' section shows 'Type of key to generate' set to 'RSA' and 'Number of bits in a generated key' set to '2048'.

Public key for pasting into OpenSSH authorized\_keys file:

```
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQgQC93M45VQ0rKXc0eCGASew0xk/clxzmCDDzTQN1XPxCwpZiWkm
+KggXAwqtMOecVfJmrJWrAS8YaxqMA1tTcvz8HmEBtklmYqDkQm2F4TM900TsHw
+IGF/ThQzdXyym4oGj91JatGEOC375EKOkHfk6x1xnYD3xMnNmI7JGave1XT7j+O
+KqGJoM4eSAx3w2JlRRoeUfkFPfiuTdDI27Q9HW2scDuvKw0qCq0zoCvPI/91ioi5OrR7t/hUGb1hrpc7S
+q4bqC2NTTjCGNoYutVehO81y+hPYbg9QChgy2J5HKD
```

Key fingerprint: ssh-rsa 3072 SHA256:KakGDPCnAoZi7mwAo0+/FA/YqYytkwHOqdgww5iRHw

Key comment: imported-openssh-key

Key passphrase:

Confirm passphrase:

Actions

Generate a public/private key pair Generate

Load an existing private key file Load

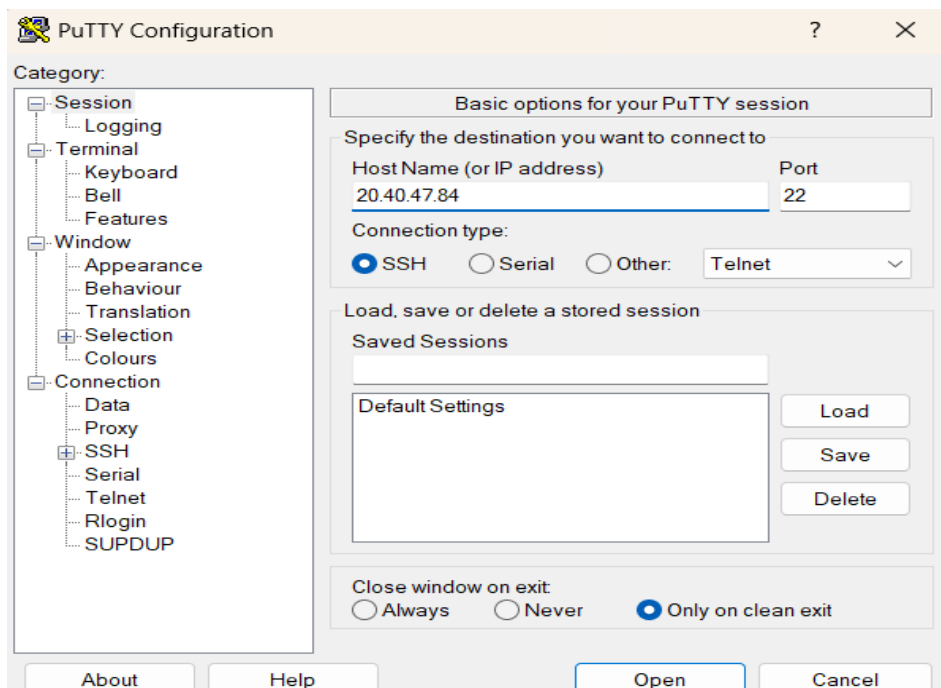
Save the generated key Save public key Save private key

Parameters

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.



The image shows the PuTTY Configuration window. The 'Category' list on the left includes Session, Logging, Terminal, Keyboard, Bell, Features, Window, Appearance, Behaviour, Translation, Selection, Colours, Connection, Data, Proxy, SSH, Serial, Telnet, Rlogin, and SUPDUP. The 'Basic options for your PuTTY session' section shows 'Host Name (or IP address)' set to '20.40.47.84' and 'Port' set to '22'. The 'Connection type' is set to 'SSH'. The 'Load, save or delete a stored session' section shows 'Saved Sessions' with 'Default Settings' listed. The 'Close window on exit' section has 'Only on clean exit' selected. The 'Open' button is highlighted.

Category:

- Session
- Logging
- Terminal
- Keyboard
- Bell
- Features
- Window
- Appearance
- Behaviour
- Translation
- Selection
- Colours
- Connection
- Data
- Proxy
- SSH
- Serial
- Telnet
- Rlogin
- SUPDUP

Basic options for your PuTTY session

Specify the destination you want to connect to

Host Name (or IP address) 20.40.47.84 Port 22

Connection type: ☒ SSH ☐ Serial ☐ Other: Telnet

Load, save or delete a stored session

Saved Sessions

Default Settings Load Save Delete

Close window on exit: ☐ Always ☐ Never ☒ Only on clean exit

About Help Open Cancel

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

**Output:**

```
azureuser@Ubuntu:~$ ssh -i /home/azureuser/.ssh/authorized_keys azureuser@10.0.0.4
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: 0.00      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.

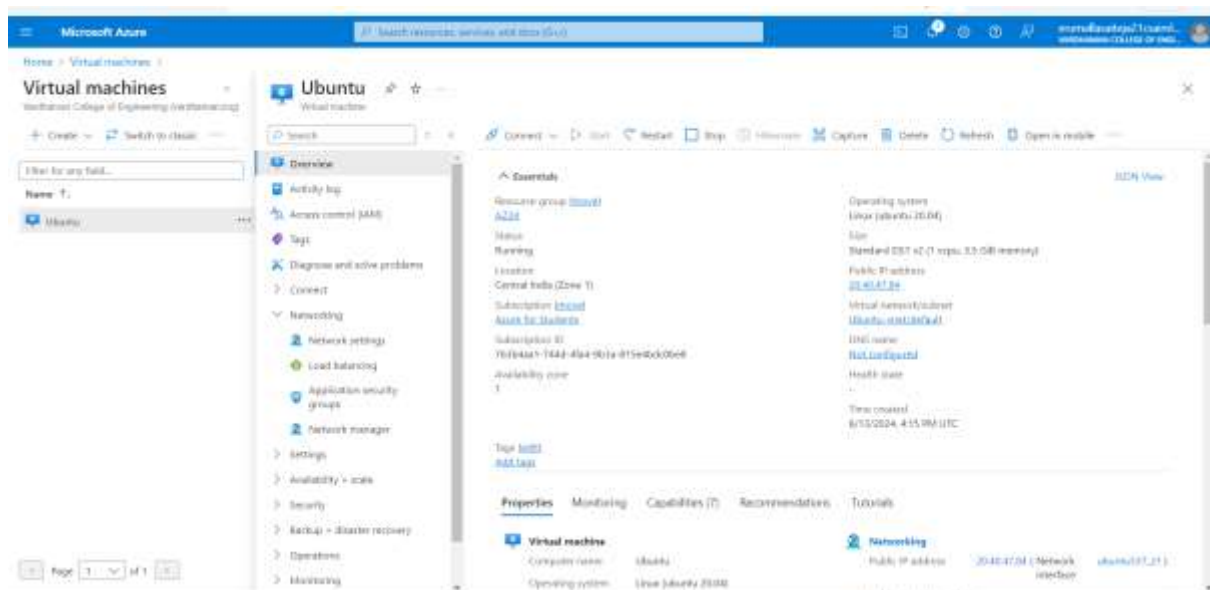
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

azureuser@Ubuntu:~$
```

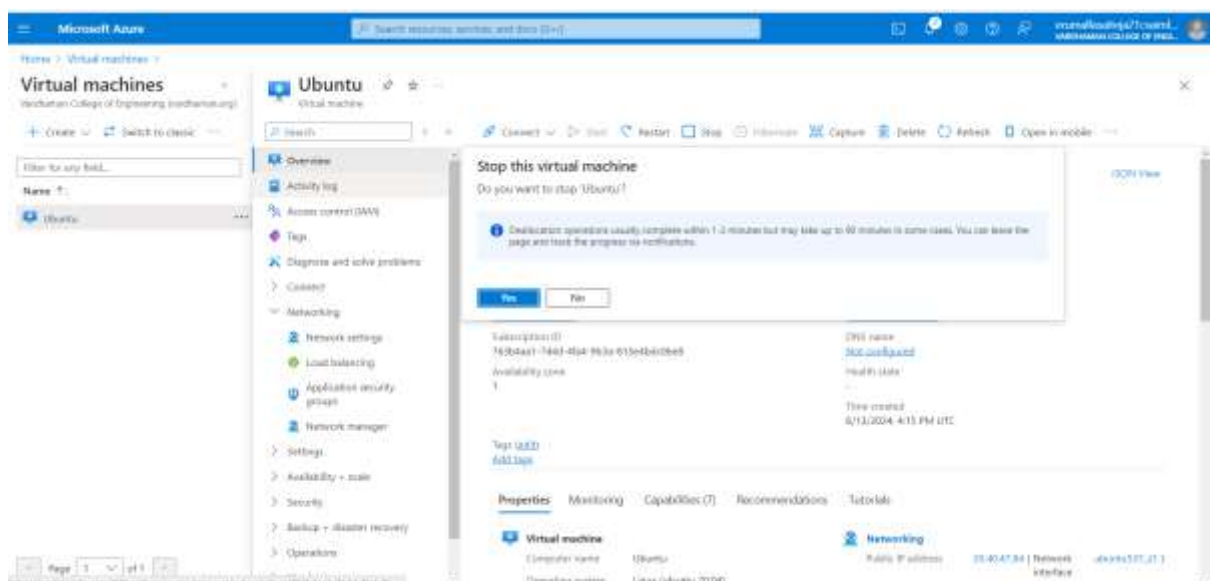
**Result:** Above experiment is successful executed And verified.

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

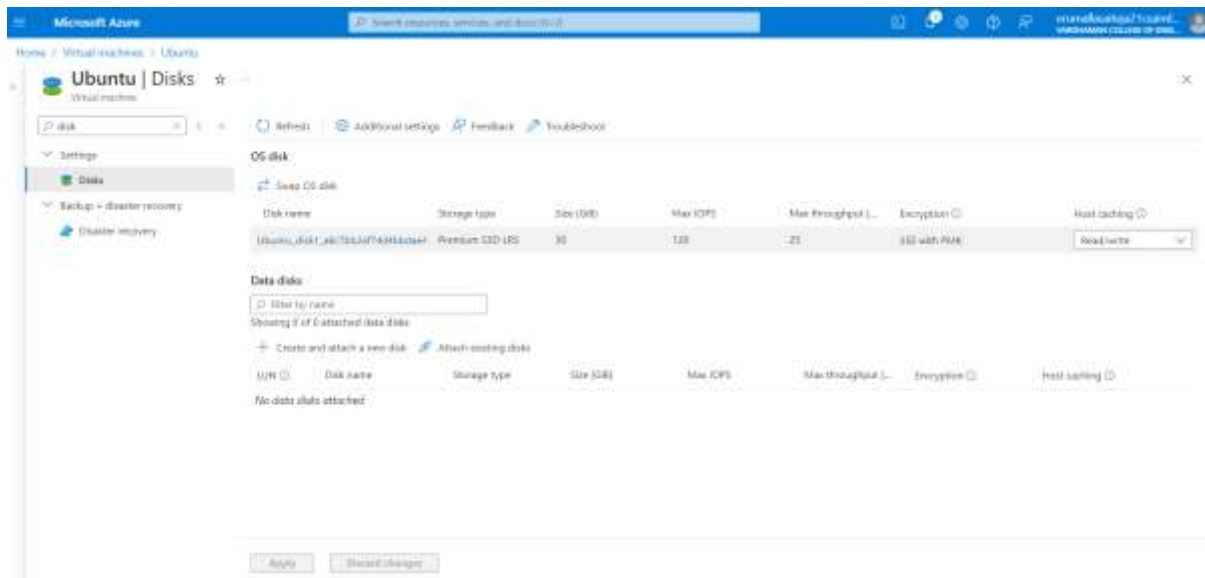
##### Step-1: Create a virtual machine (ubuntu or windows).



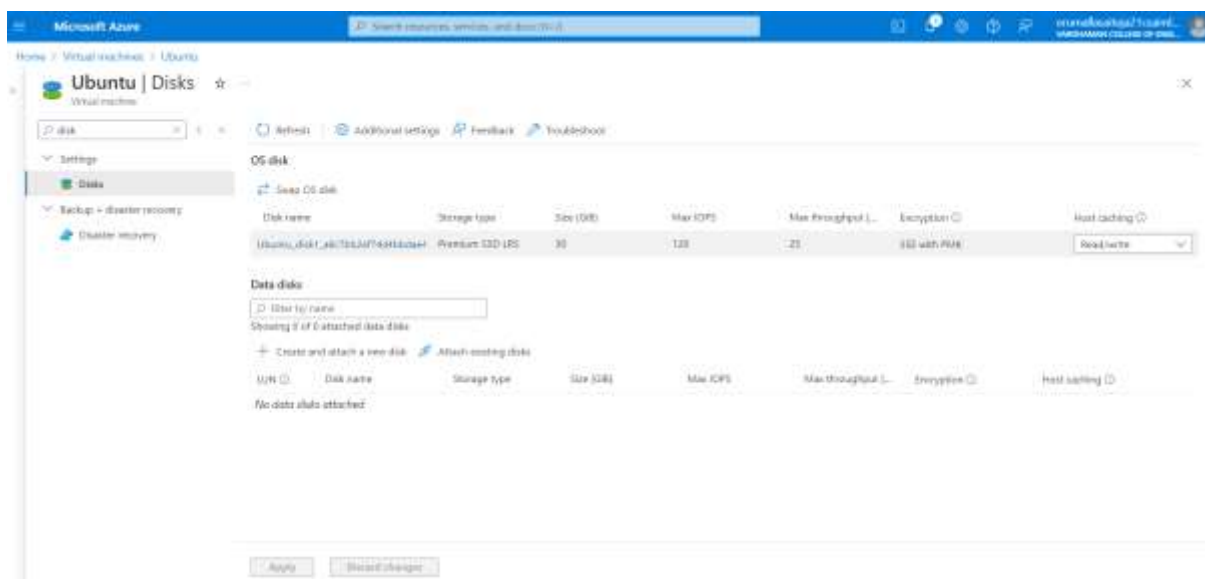
##### Step-2: After deployment of VM stop VM for scaling.



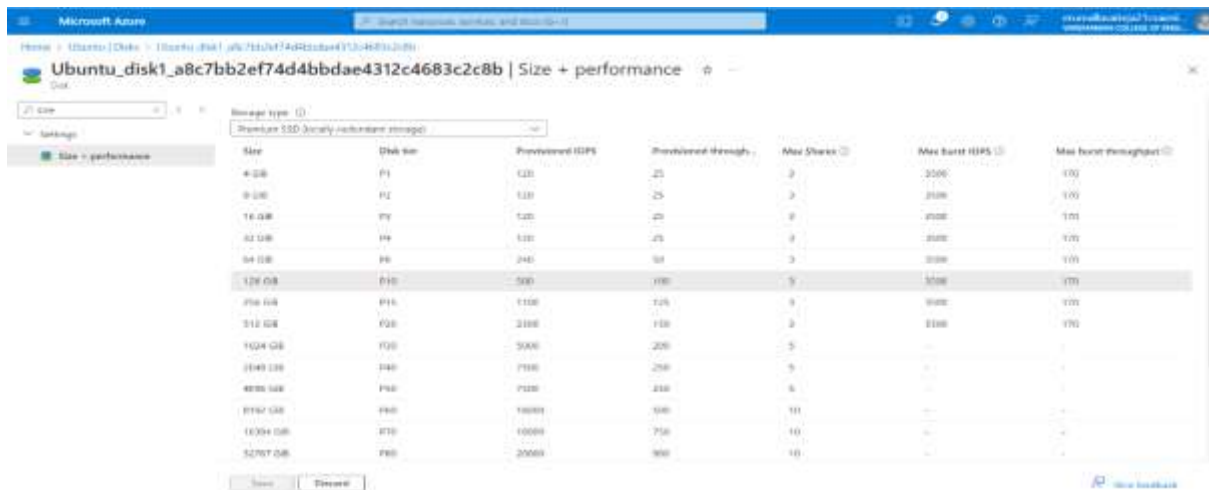
**Step-3: On the left side there will be settings and click on disks.**



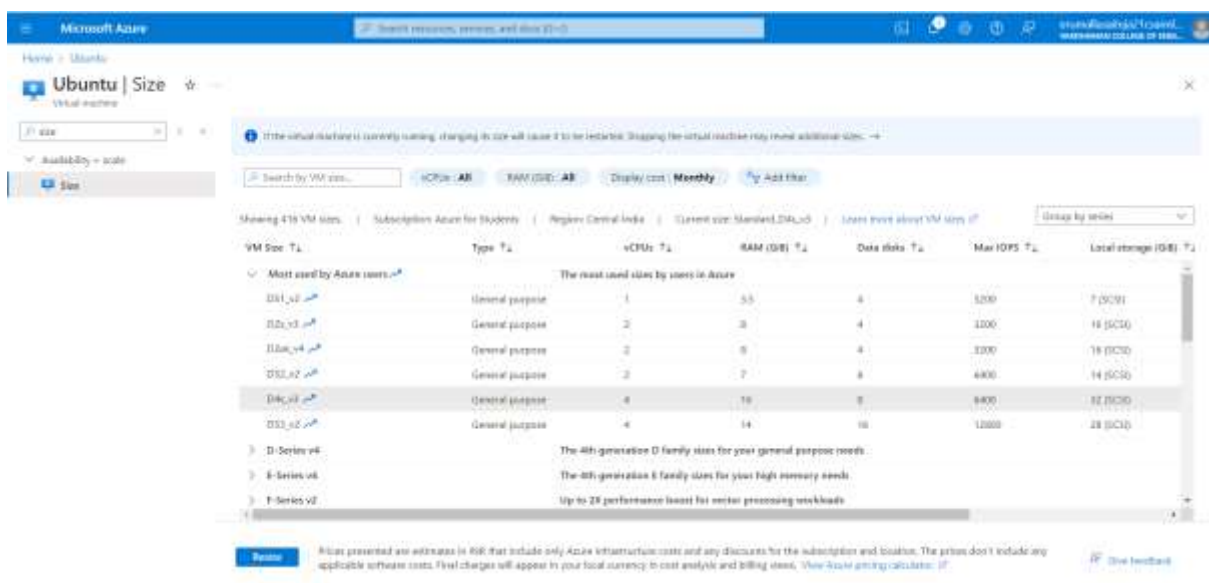
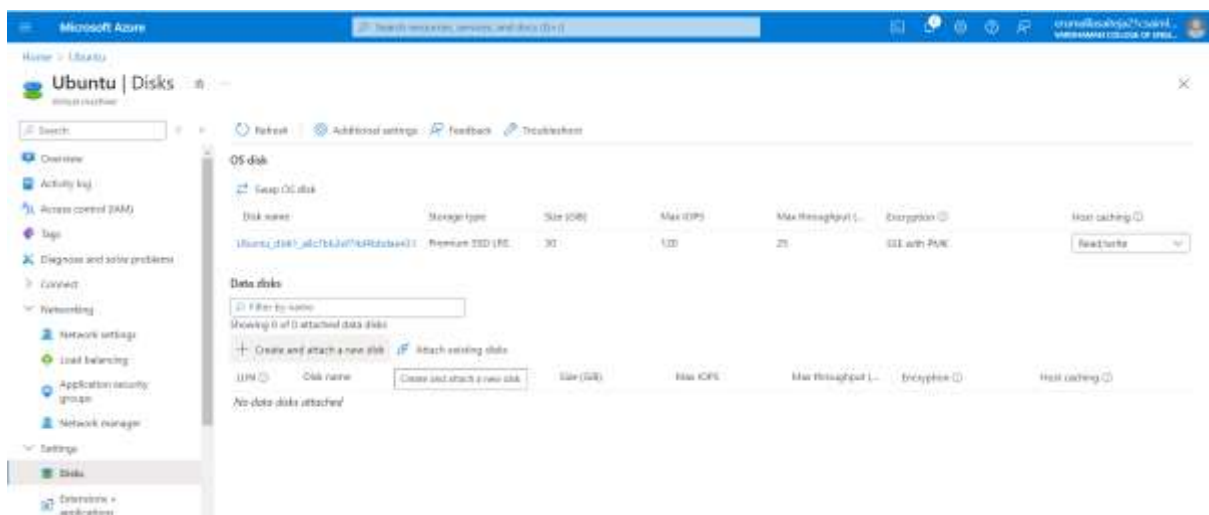
**Step-4: click on disk name and select your preferred size, save it.**



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



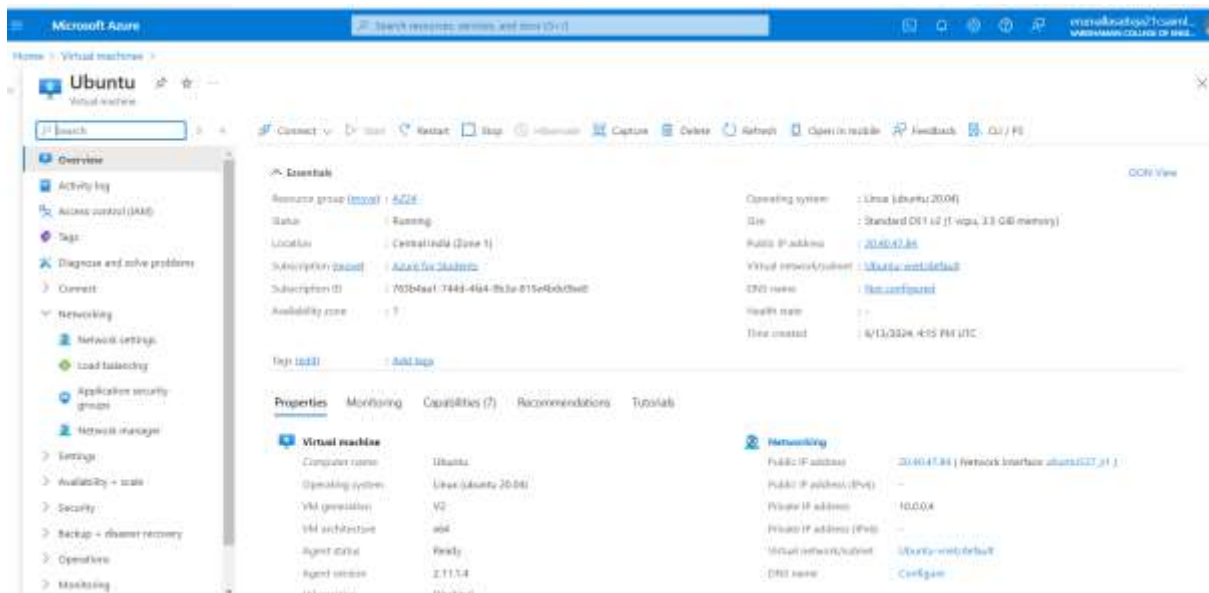
**Step-6:** click on disk name and select your preferred ram size, save it.



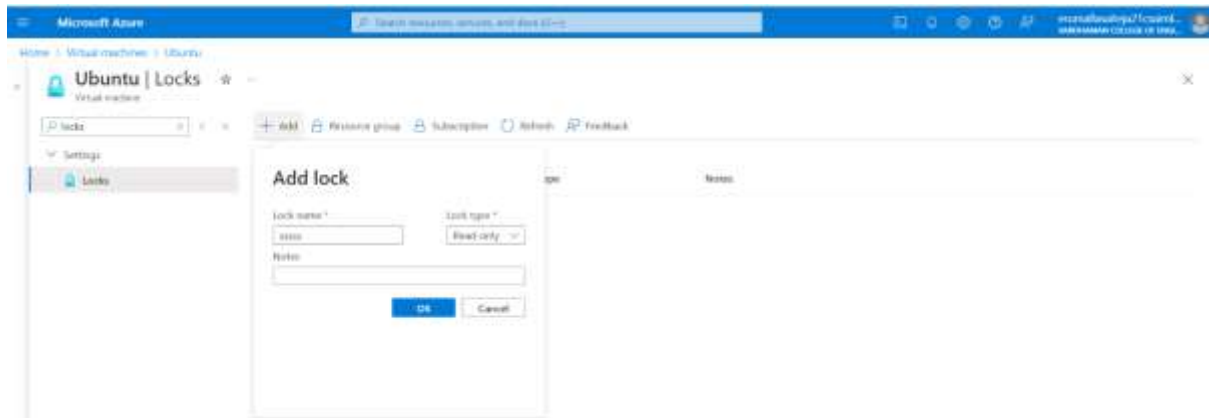
**Result:** Above experiment is successful executed And verified.

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

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

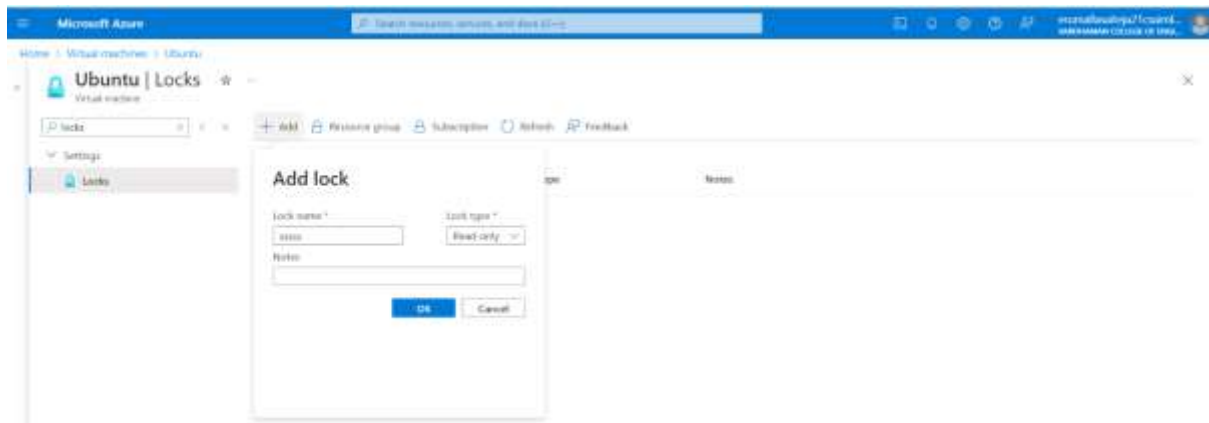


### Step-2: On the left side there will be settings and click on locks, give lock name and select lock type.

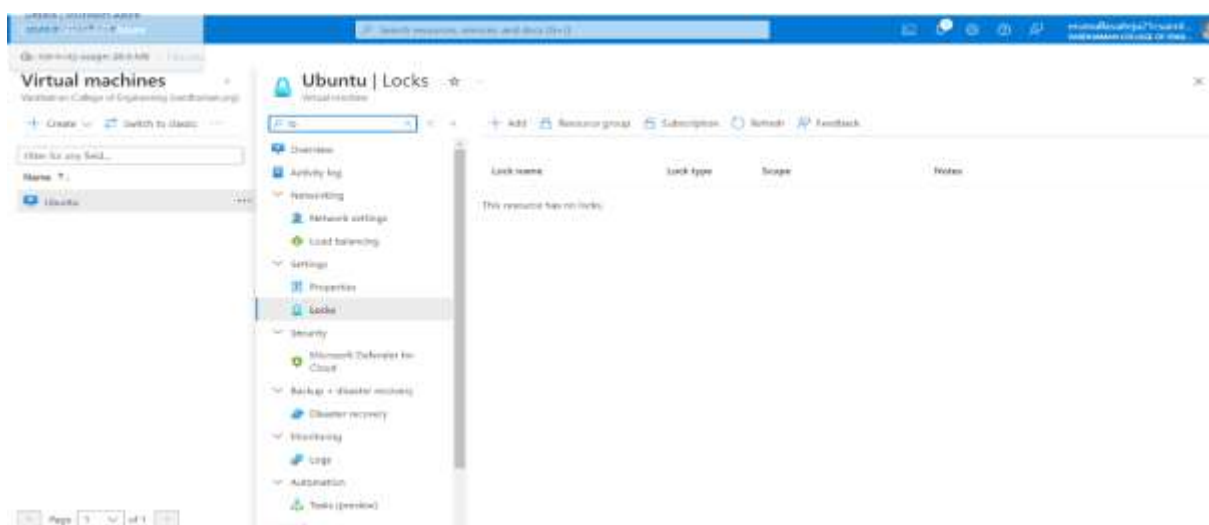
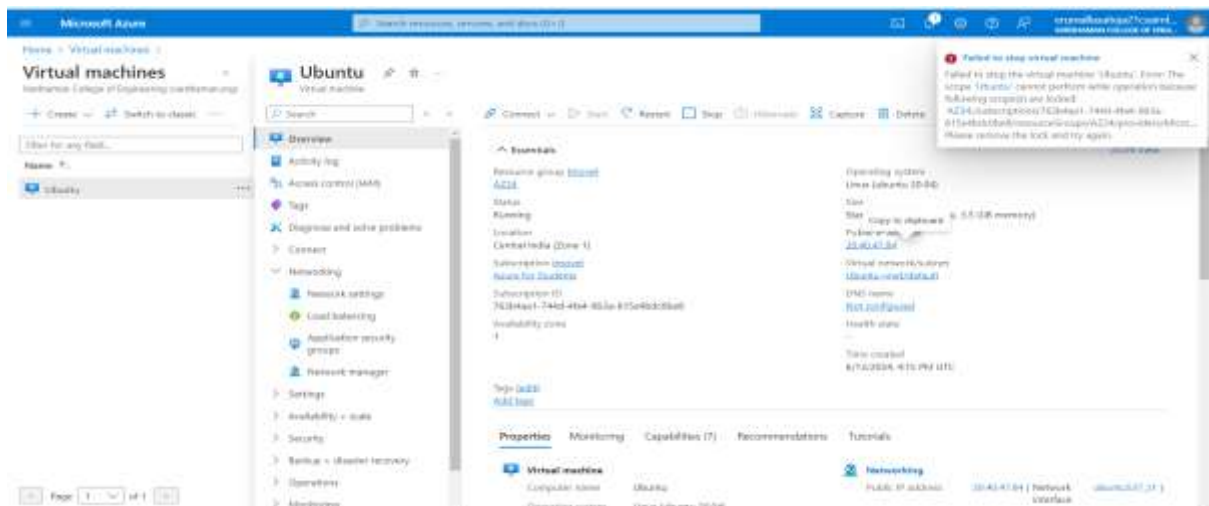


### Step-3: click on ok.

Similarly, you can do for Resource group and subscriptions.



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

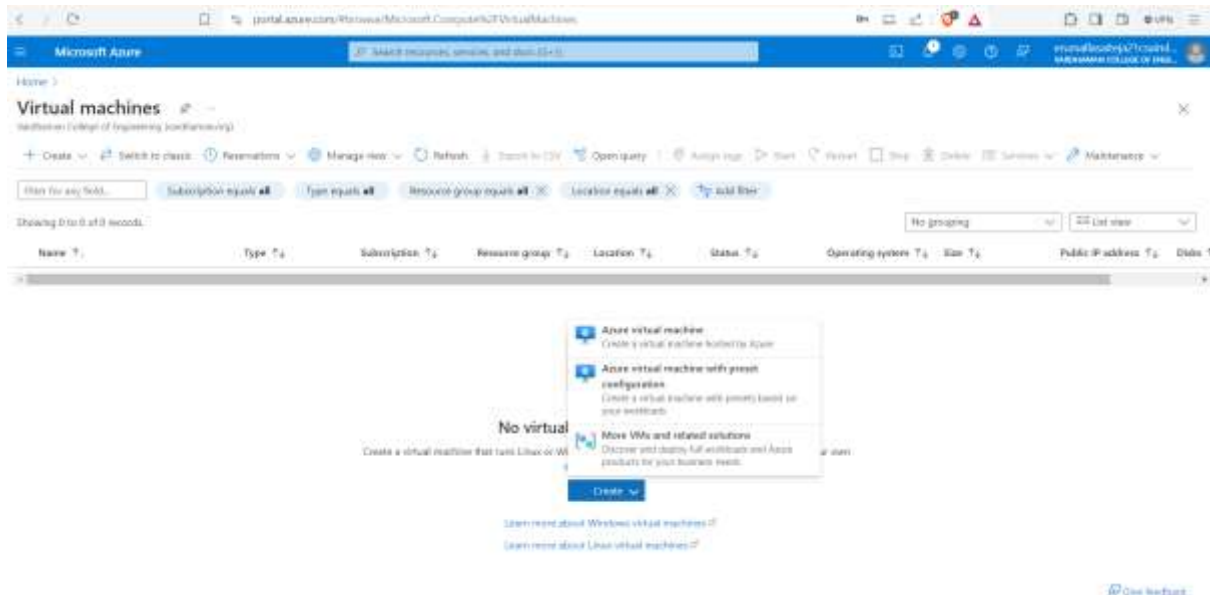


**Result:** Above experiment is successful executed And verified.

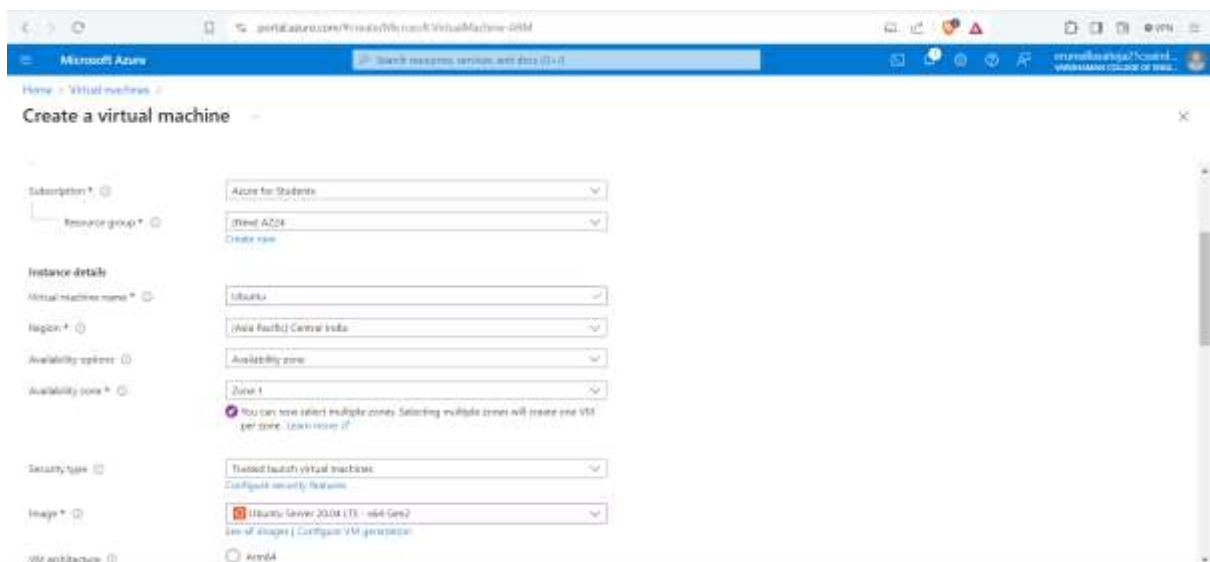
## Q6) Create Ubuntu VM and run a python program in it.

**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.



**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”.





Microsoft Azure portal: portal.azure.com/ResourceMicrosoft.VirtualMachines-RM

Home > Virtual machines >

### Create a virtual machine

VM architecture: ☐ ARM64 ☒ x64

Run with Azure Spot Instance: ☐

Size: Standard\_D8t\_v4 - 1 vcpu, 3.5 GiB memory (PS,101.50/month) [View all sizes](#)

Enable information: ☐

Administrator account

Authentication type: ☒ SSH public key ☐ Password

Username: adminuser

OS disk: Create a new disk

Click to go forward, hold to see history

Home > Virtual machines >

### Create a virtual machine

Username: adminuser

SSH public key source: Generate new key pair

SSH key type: ☒ RSA-SSH Format ☐ Ed25519 SSH Format

Key pair name: sshkey1234

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: SSH (22)

Navigation: < Previous Next: > > Review > create

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

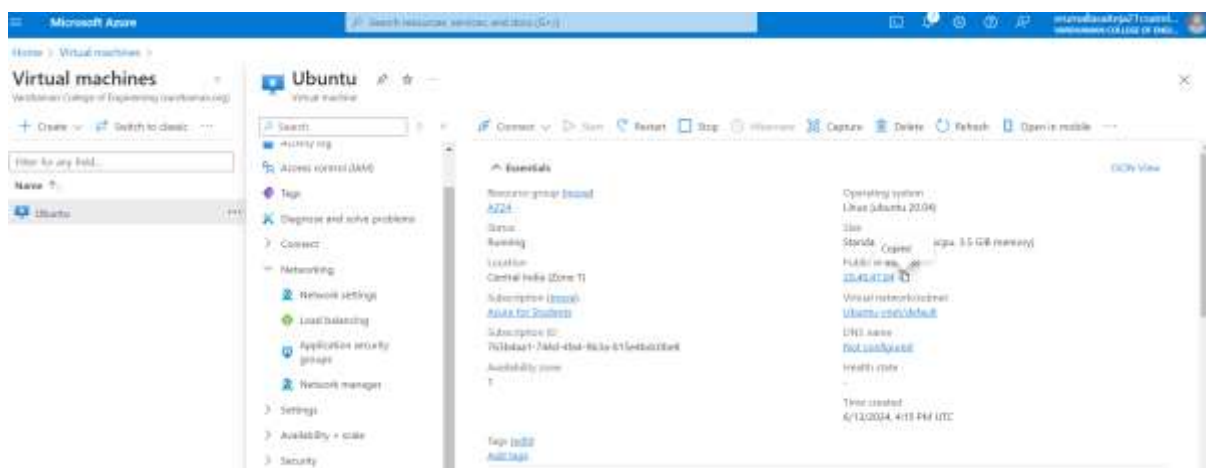
## Generate new key pair

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

**Download private key and create resource**

**Return to create a virtual machine**

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



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

**PutTY Key Generator** ? X

File Key Conversions Help

**Key**

Public key for pasting into OpenSSH authorized\_keys file:

```
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQGC93M45VQ0rKXc0eCGASew0xk/clxzmCDDzTQN1XPxCwpZiWkm
+KggXAwqtMOecVfJmrJWtAS8YaxqMA1tTcvz8HmEBtkmYqDkQm2F4TM900TsHw
+IGF/ThQzdXyym4oGj91JatGEOC375EKOkHfk6x1xnYD3xMNnml7JGave1XT7lj+O
+KqGJoM4eSAX3w2JIRRoeUfkFPfiuTdDI27Q9HW2scDuvKw0qCq0zoCvPI/91ioi5OrR7t/hUGb1hrpc7S
+q4bqC2NTTJCGNoYutVehO81y+hPYbg9QChgy2J5HKD
```

Key fingerprint: ssh-rsa 3072 SHA256:KakGDPCnAoZi7mwAo0+I/FA/YqYtkwHOqdgww5iRHw

Key comment: imported-openssh-key

Key passphrase:

Confirm passphrase:

**Actions**

Generate a public/private key pair Generate

Load an existing private key file Load

Save the generated key Save public key Save private key

**Parameters**

Type of key to generate:  
☒ RSA ☐ DSA ☐ ECDSA ☐ EdDSA ☐ SSH-1 (RSA)

Number of bits in a generated key: 2048

**PutTY Key Generator** ? X

File Key Conversions Help

**Key**

Public key for pasting into OpenSSH authorized\_keys file:

```
ssh-rsa
AAAAB3NzaC1yc2EAAAADAQABAAQGCeNxJAqdN69OY9NjQAVilgdcSGTgZfqeyJcrwy4a450Kn1KI3d7QlqF7SPb7
HTpL9dDdxjKJ+DZeKZGnwrxums
+LN50usLYhvx0rxK615eXDVP
Pz3YH5sY4krJP70ubVEEvUI
```

Key fingerprint: ssh-rsa 3072 SHA256:KakGDPCnAoZi7mwAo0+I/FA/YqYtkwHOqdgww5iRHw

Key comment: imported-openssh-key

Key passphrase:

Confirm passphrase:

**Actions**

Generate a public/private key pair Generate

Load an existing private key file Load

Save the generated key Save public key Save private key

**Parameters**

Type of key to generate:  
☒ RSA ☐ DSA ☐ ECDSA ☐ EdDSA ☐ SSH-1 (RSA)

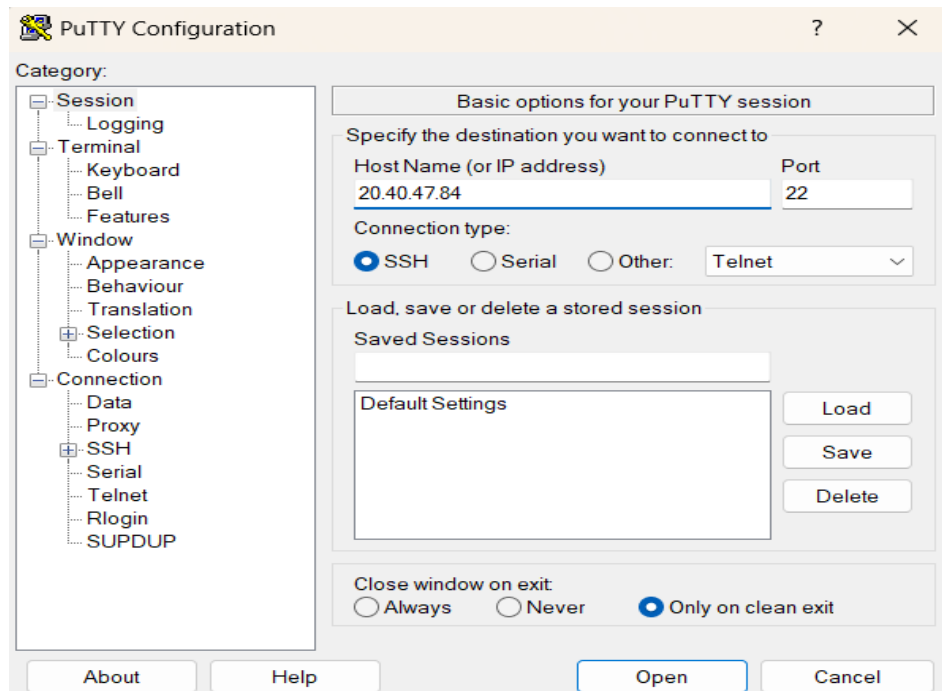
Number of bits in a generated key: 2048

**PutTYgen Notice** X

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.

OK

**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.

**Step-9:** Login with your username and type python3, write your python program and execute it.

```
azureuser@Ubuntu: ~$ ssh -i /home/azureuser/.ssh/imported-openssh-key 20.40.47.84
login as: azureuser
Authentication 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 /:  3.1% of 28.8GB Users logged in:   0
Memory usage: 8%          IPv4 address for eth0: 10.0.0.4
Swap usage:  0%

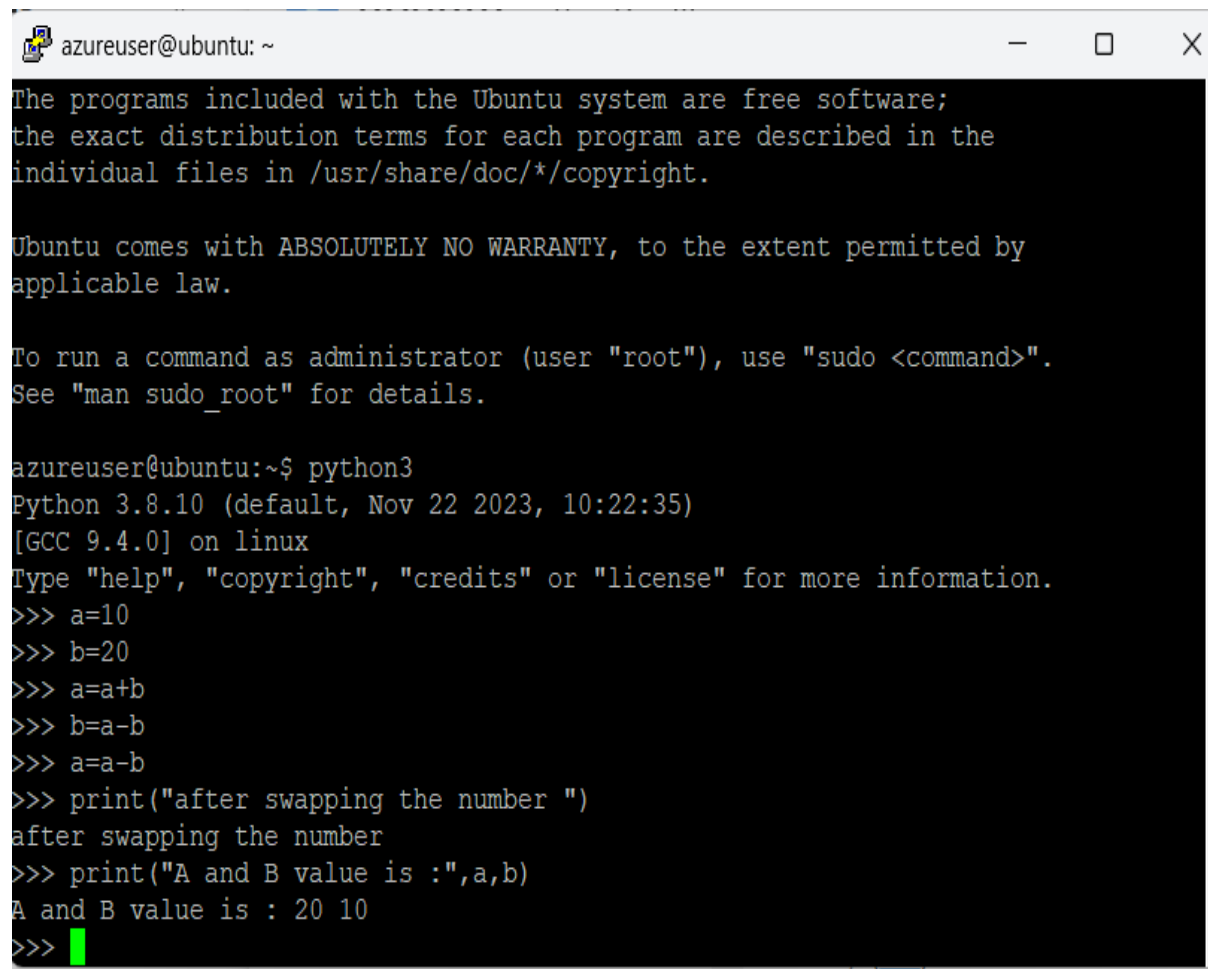
Expanded Security Maintenance for Applications is not enabled.
0 updates can be applied immediately.
Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

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:~$
```



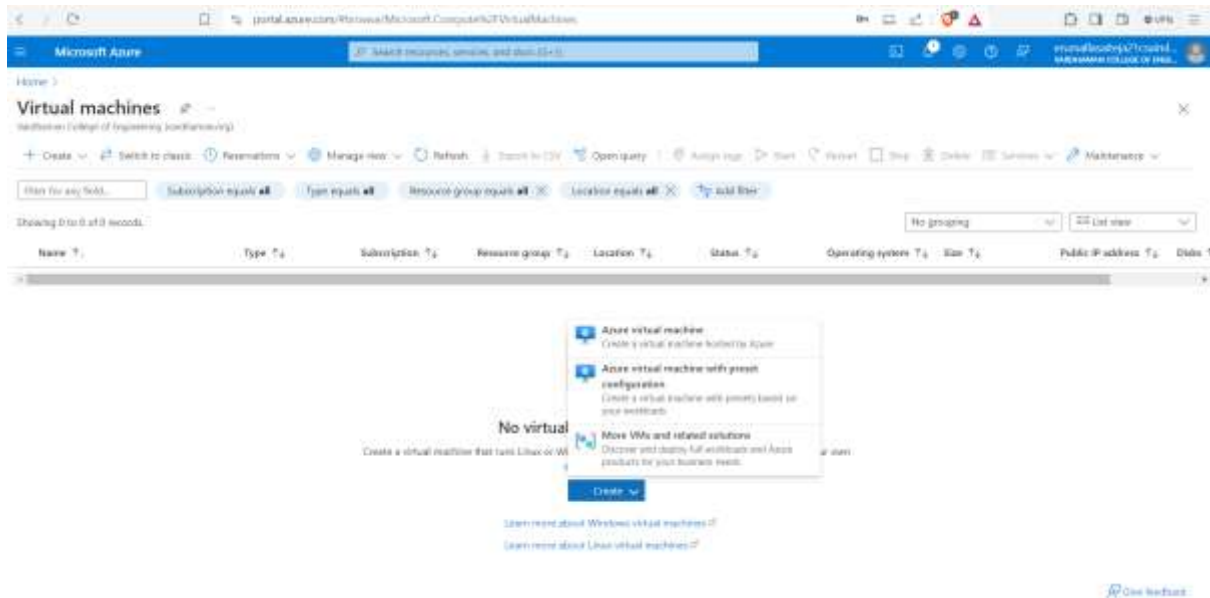
```
azureuser@ubuntu: ~  
The programs included with the Ubuntu system are free software;  
the exact distribution terms for each program are described in the  
individual files in /usr/share/doc/*/copyright.  
  
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by  
applicable law.  
  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
azureuser@ubuntu:~$ python3  
Python 3.8.10 (default, Nov 22 2023, 10:22:35)  
[GCC 9.4.0] on linux  
Type "help", "copyright", "credits" or "license" for more information.  
>>> a=10  
>>> b=20  
>>> a=a+b  
>>> b=a-b  
>>> a=a-b  
>>> print("after swapping the number ")  
after swapping the number  
>>> print("A and B value is :",a,b)  
A and B value is : 20 10  
>>>
```

**Result:** Above experiment is successful executed And verified.

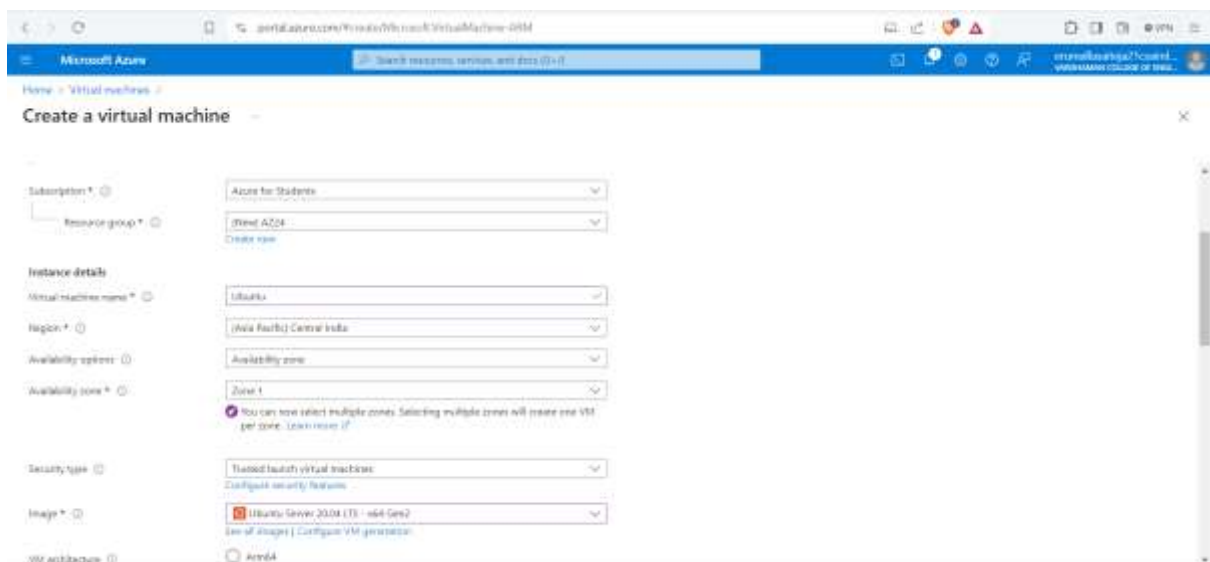
## Q7) Create a Ubuntu VM and transfer files using WinSep.

**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”.



Microsoft Azure

Home > Virtual machines

### Create a virtual machine

VM architecture

☐ ARM64

☒ x64

Run with Azure Spot Instance

☐

Size

Standard\_D8t\_v4 - 1 vcpu, 3.5 GB memory (PS,101.50/month)

See all sizes

Enable information

Microsoft does not currently support Trusted Launch and Confidential virtual machines for Linux images. Learn more

Administrator account

Authentication type

☒ SSH public key

☐ Password

Username

adminuser

OS disk

Create a new disk

Click to go forward, hold to see history

Search resources, services, and docs (Ctrl)

Home > Virtual machines

### Create a virtual machine

Username

adminuser

SSH public key source

Generate new key pair

SSH key type

☒ RSA-SSH Format

☐ Ed25519 SSH Format

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

Key pair name

sshkey

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

SSH (22)

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

Previous Next: 2/26 Review > create Give feedback

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

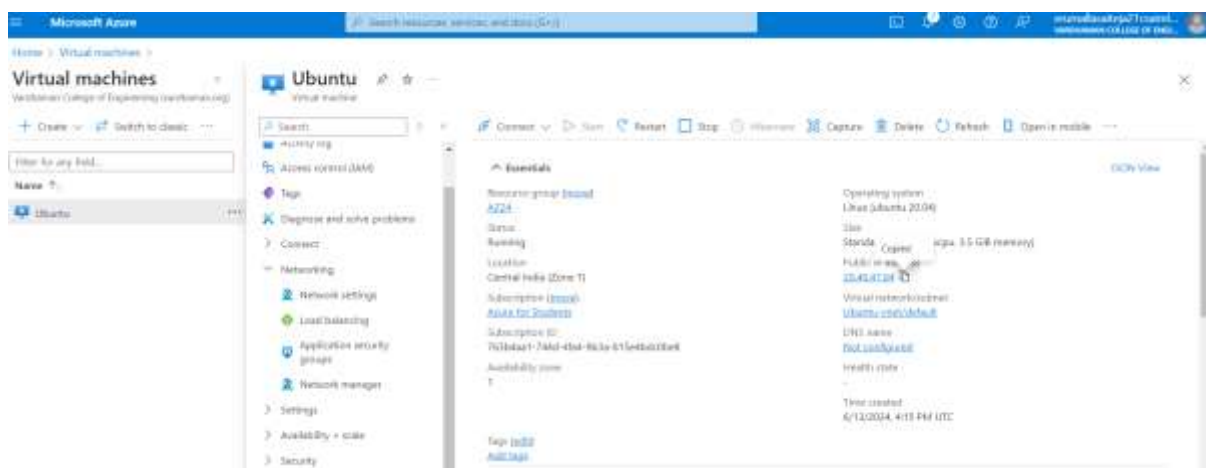
## Generate new key pair

**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.



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



**PuTTY Key Generator** ? X

File Key Conversions Help

**Key**

Public key for pasting into OpenSSH authorized\_keys file:

```
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQGC93M45VQ0rKXc0eCGASew0xk/clxzmCDDzTQN1XPxCwpZiWkm  
+KggXAwqtMOecVfJmrJWAS8YaxqMA1tTcvz8HmEBtkmYqDkQm2F4TM900TsHw  
+IGF/ThQzdXyym4oGj91JatGEOC375EKOkHfk6x1xnYD3xMNNml7JGave1XT7lj+O  
+KqGJoM4eSAX3w2JIRRoeUfkFPfiuTdDI27Qt9HW2scDuvKw0qCq0zoCvPI/91ioi5OrR7t/hUGb1hrpc7S  
+q4bqC2NTTJCGNoYutVehO81y+hPYbg9QChgy2J5HKD
```

Key fingerprint: ssh-rsa 3072 SHA256:KakGDPCnAoZi7mwAo0+I/FA/YqYtkwHOqdgww5iRHw

Key comment: imported-openssh-key

Key passphrase:

Confirm passphrase:

**Actions**

Generate a public/private key pair

Load an existing private key file

Save the generated key

**Parameters**

Type of key to generate:  
☒ RSA ☐ DSA ☐ ECDSA ☐ EdDSA ☐ SSH-1 (RSA)

Number of bits in a generated key:

**PuTTY Key Generator** ? X

File Key Conversions Help

**Key**

Public key for pasting into OpenSSH authorized\_keys file:

```
ssh-rsa  
AAAAB3NzaC1yc2EAAAADAQABAAQGCeNxJAqdN69OY9NJqAVilgdcSGTgZfqeyJcrwy4a450Kn1KI3d7QlqF7SPb7  
HTpL9dDdxjKJ+DZeKZGnwrxms  
+LN50usLYhvx0rxK615eXDVP  
Pz3YH5sY4krJP70ubVEEvUI
```

Key fingerprint: ssh-rsa 3072 SHA256:KakGDPCnAoZi7mwAo0+I/FA/YqYtkwHOqdgww5iRHw

Key comment: imported-openssh-key

Key passphrase:

Confirm passphrase:

**Actions**

Generate a public/private key pair

Load an existing private key file

Save the generated key

**Parameters**

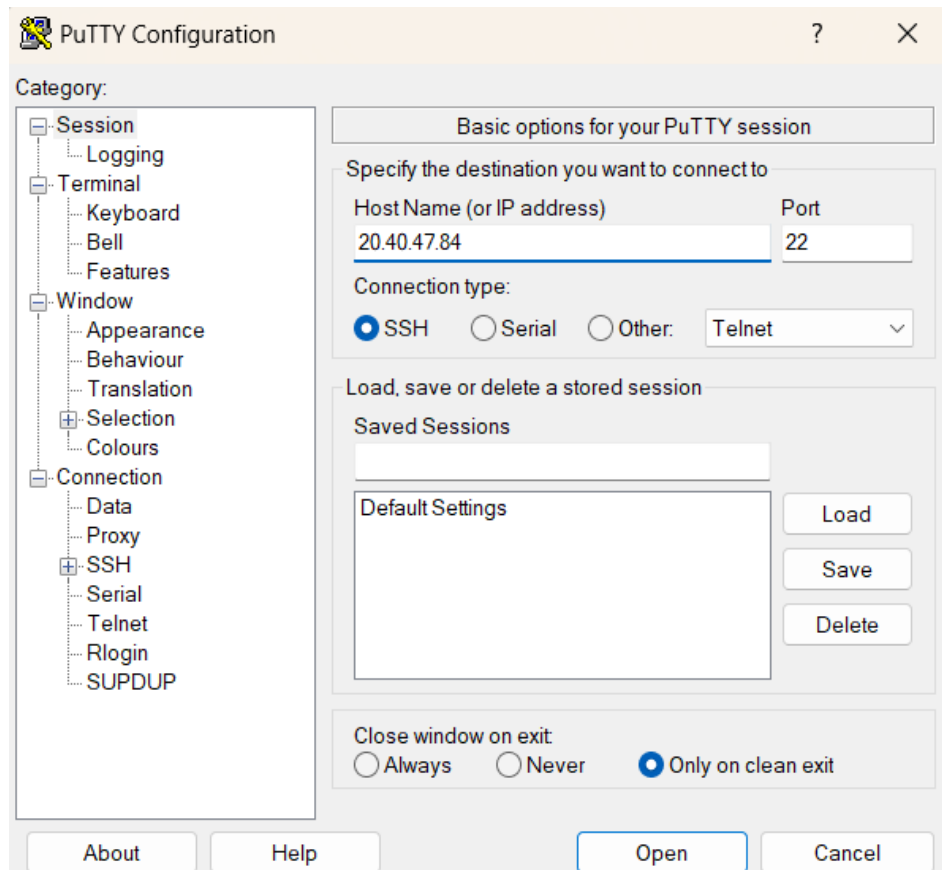
Type of key to generate:  
☒ RSA ☐ DSA ☐ ECDSA ☐ EdDSA ☐ SSH-1 (RSA)

Number of bits in a generated key:

**PuTTYgen Notice** X

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.

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



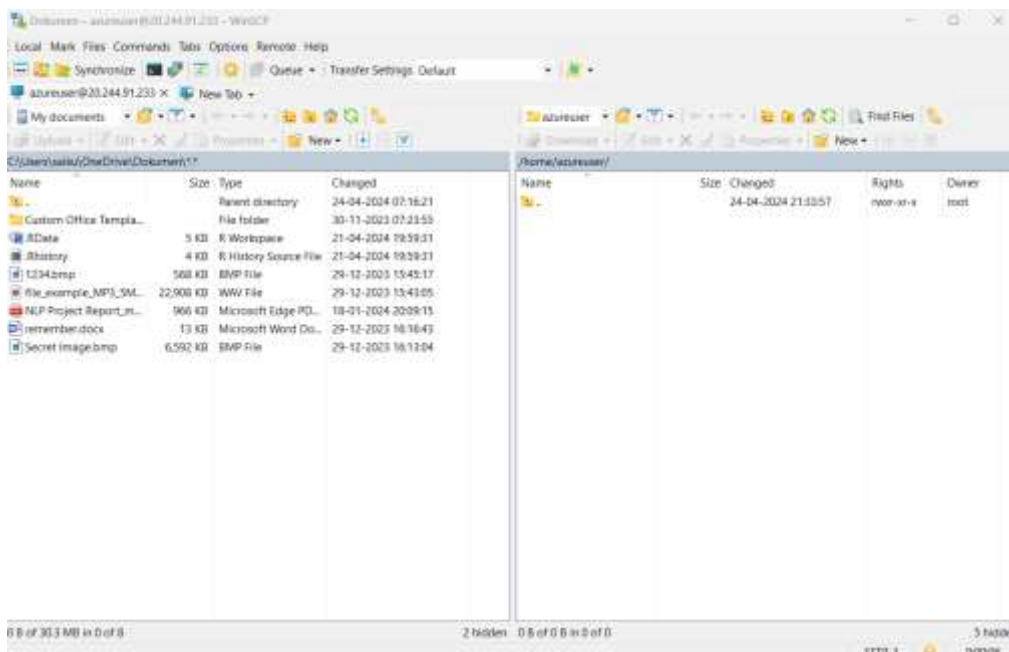
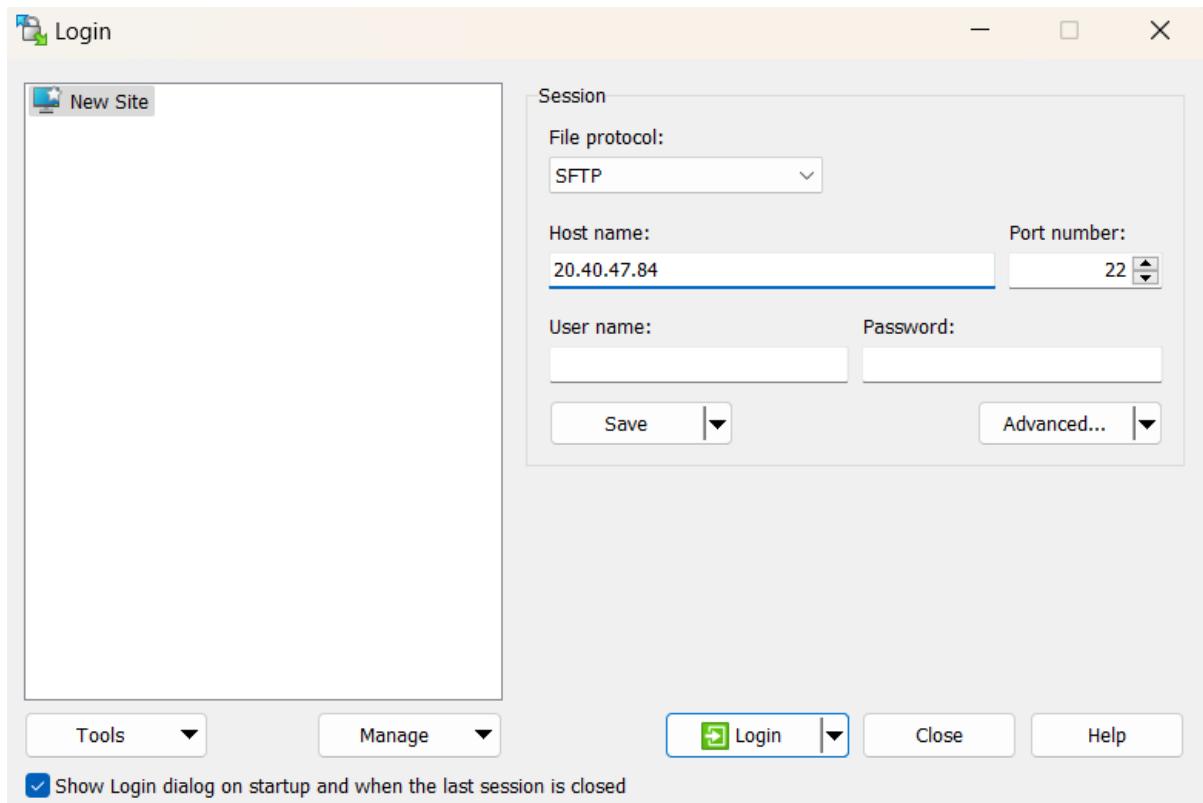
**Step-8:** A login page will be opened in that type your username and you will be into the ubuntu.

**Step-9:** Login into your ubuntu VM using PUTTY and type ls command as you can see nothing.

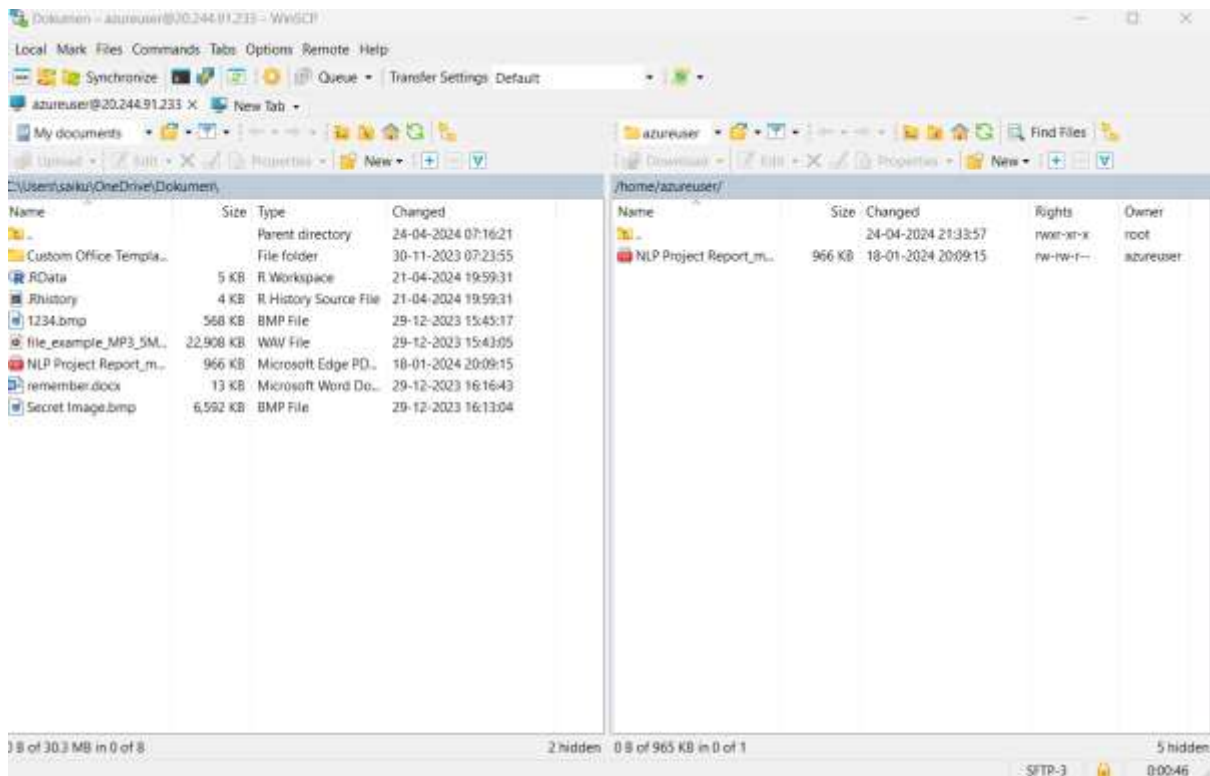
```
azureuser@Ubuntu: ~$  
login as: azureuser  
Authenticating with public key "imported-openssh-key"  
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-1064-azure x86_64)  
  
 * Documentation:  https://help.ubuntu.com  
 * Management:    https://landscape.canonical.com  
 * Support:       https://ubuntu.com/pro  
  
System information as of Thu Jun 13 16:27:08 UTC 2024  
  
System load: 0.00      Processes:      116  
Usage of /:  3.1% of 28.89GB   Users logged in: 0  
Memory usage: 8%      IPv4 address for eth0: 10.0.0.4  
Swap usage:  0%  
  
Expanded Security Maintenance for Applications is not enabled.  
  
0 updates can be applied immediately.  
  
Enable ESM Apps to receive additional future security updates.  
See https://ubuntu.com/esm or run: sudo pro status  
  
The programs included with the Ubuntu system are free software;  
the exact distribution terms for each program are described in the  
individual files in /usr/share/doc/*/copyright.  
  
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by  
applicable law.  
  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
azureuser@Ubuntu:~$
```

**Step-10:** Open WinScp at right bottom you can see Advanced option->SSH->Authentication->In that drag private key file and click on ok.

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



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



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

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

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

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

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

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

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

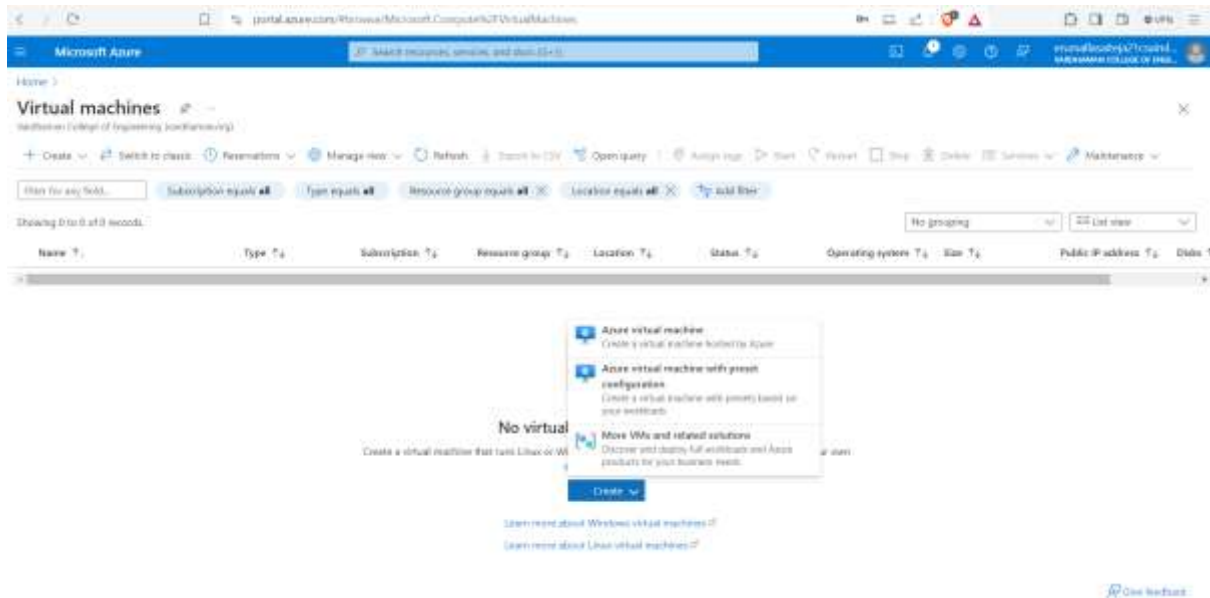
azureuser@ubuntu:~$ ls
azureuser@ubuntu:~$ ls
'NLP Project Report main.pdf'
azureuser@ubuntu:~$
```

**Result:** Above experiment is successful executed And verified.

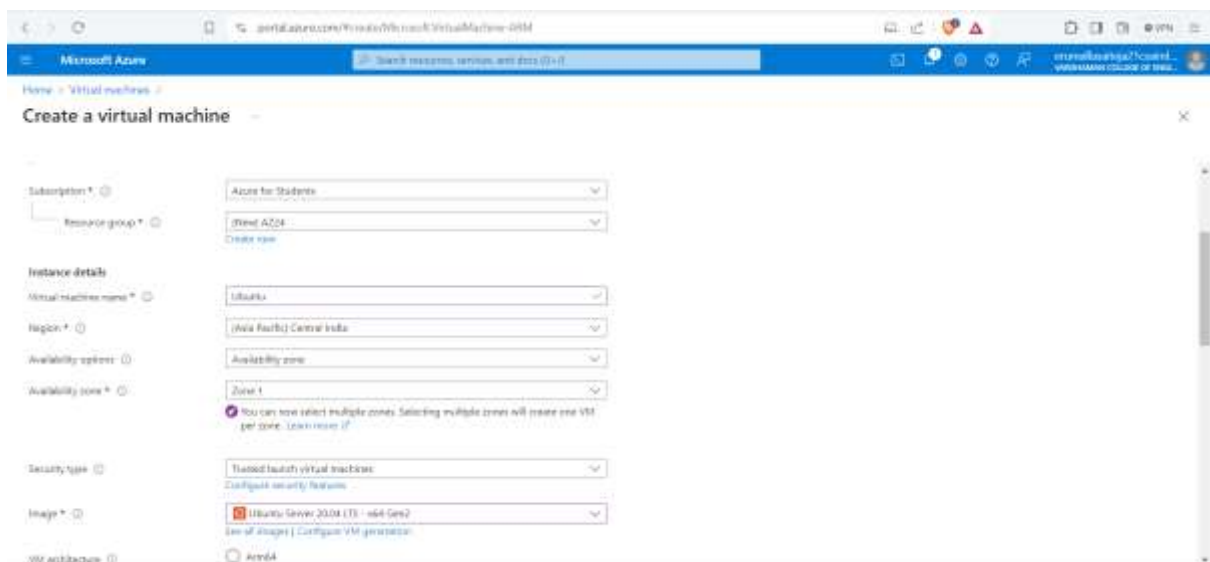
## Q8) How to make Linux server as web server in AZURE.

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

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



**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 image shows two screenshots of the Microsoft Azure portal's 'Create a virtual machine' wizard.

**Top Screenshot:** The 'Create a virtual machine' page. The 'VM architecture' is set to 'x64'. The 'Size' is 'Standard\_DS1\_v2 - 1 vcpu, 3.5 GB memory (PS,101.50/mo)'. The 'Authentication type' is 'SSH public key'. The 'Username' is 'adminuser'. The 'OS disk size in GB' is 'Generate new disk image'.

**Bottom Screenshot:** The 'Create a virtual machine' page, showing the 'SSH key type' and 'Inbound port rules' sections. The 'SSH key type' is 'RSA-SSH Format'. The 'Key pair name' is 'sshkey\_july'. The 'Inbound port rules' section shows 'Public inbound ports' set to 'Allow selected ports' and 'Select inbound ports' set to 'SSH (22)'. The 'Review + create' button is visible at the bottom.

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

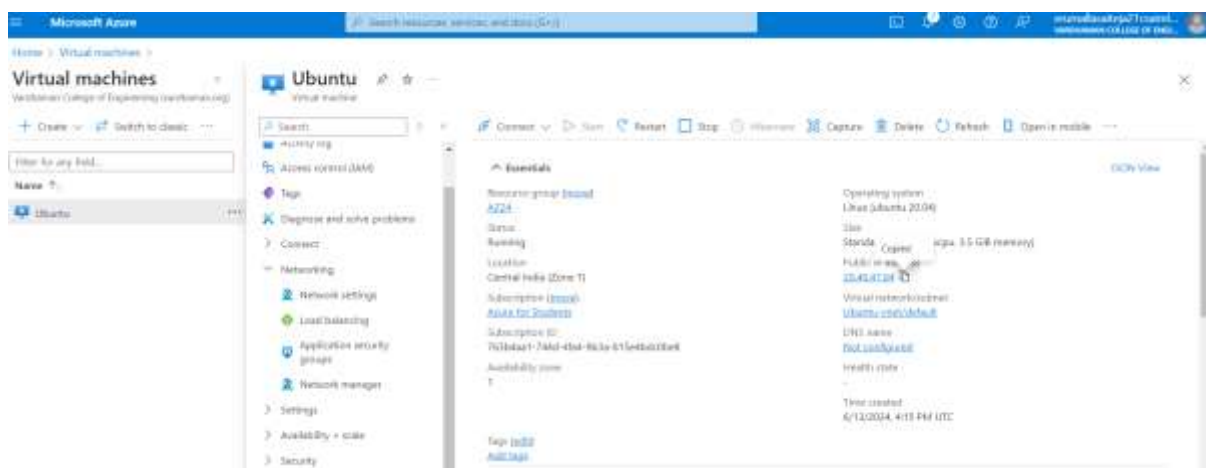
## Generate new key pair

**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.



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



The PuTTY Key Generator window displays the following information:

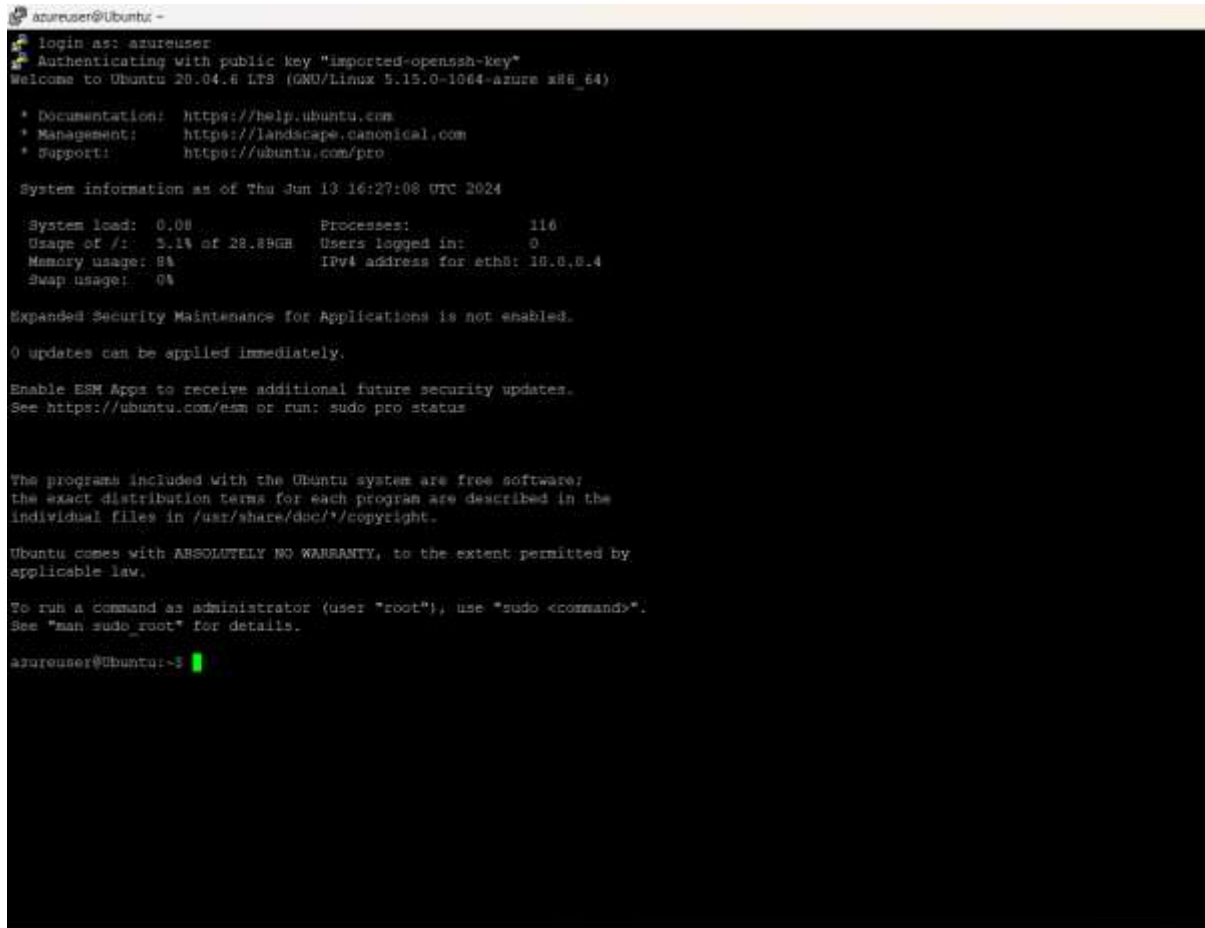
- Key:** Public key for pasting into OpenSSH authorized\_keys file:  
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQGC93M45VQ0rKXc0eCGASew0xk/clxzmCDDzTQN1XPxCwpZiWkm+KggXAwqtMOecVfJmrJWras8YaxqMA1tTcvz8HmEBtkmYqDkQm2F4TM900TsHw+IGF/ThQzdXyym4oGj91JatGEOC375EKOkHfk6x1xnYD3xMNnml7JGave1XT7lj+O+KqGJoM4eSAx3w2JIRRoEufkFPfiuTdDI27Qt9HW2scDuvKw0qCq0zoCvPI/91ioi5OrR7t/hUGb1hrpc7S+q4bqC2NTTjCGNoYutVehO81y+hPYbg9QChgy2J5HKD
- Key fingerprint:** ssh-rsa 3072 SHA256:KakGDPCnAoZi7mwAo0+I/FA/YqYytkwHOqdgww5iRHw
- Key comment:** imported-openssh-key
- Key passphrase:** (empty field)
- Confirm passphrase:** (empty field)
- Actions:**
  - Generate a public/private key pair (Generate button)
  - Load an existing private key file (Load button)
  - Save the generated key (Save public key, Save private key buttons)
- Parameters:**
  - 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.

The PuTTY Configuration window shows the following settings:

- Category:** Session, Logging, Terminal, Keyboard, Bell, Features, Window, Appearance, Behaviour, Translation, Selection, Colours, Connection, Data, Proxy, SSH, Serial, Telnet, Rlogin, SUPDUP
- Basic options for your PuTTY session:**
  - Specify the destination you want to connect to:
    - Host Name (or IP address): 20.40.47.84
    - Port: 22
  - Connection type: ☒ SSH, ☐ Serial, ☐ Other: Telnet
- Load, save or delete a stored session:**
  - Saved Sessions: Default Settings
  - Buttons: Load, Save, Delete
- Close window on exit:** ☐ Always, ☐ Never, ☒ Only on clean exit
- Buttons:** About, Help, Open, Cancel

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

A terminal window titled 'azureuser@Ubuntu: ~' showing the login process for 'azureuser'. It displays authentication with a public key, system information for Ubuntu 20.04.6 LTS, and system status including load, processes, and memory usage. The prompt 'azureuser@Ubuntu:~\$' is visible at the bottom.

```
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:  0.00      Processes:    116  
Usage of /:   3.1% of 28.89GB   Users logged in:  0  
Memory usage: 8%      IPv4 address for eth0: 10.0.0.4  
Swap usage:   0%  
  
Expanded Security Maintenance for Applications is not enabled.  
  
0 updates can be applied immediately.  
  
Enable ESM Apps to receive additional future security updates.  
See https://ubuntu.com/esm or run: sudo pro status  
  
The programs included with the Ubuntu system are free software;  
the exact distribution terms for each program are described in the  
individual files in /usr/share/doc/*/copyright.  
  
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by  
applicable law.  
  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
azureuser@Ubuntu:~$
```

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

\$sudo su

\$sudo apt-get update

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

\$sudo apt-get install nginx

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

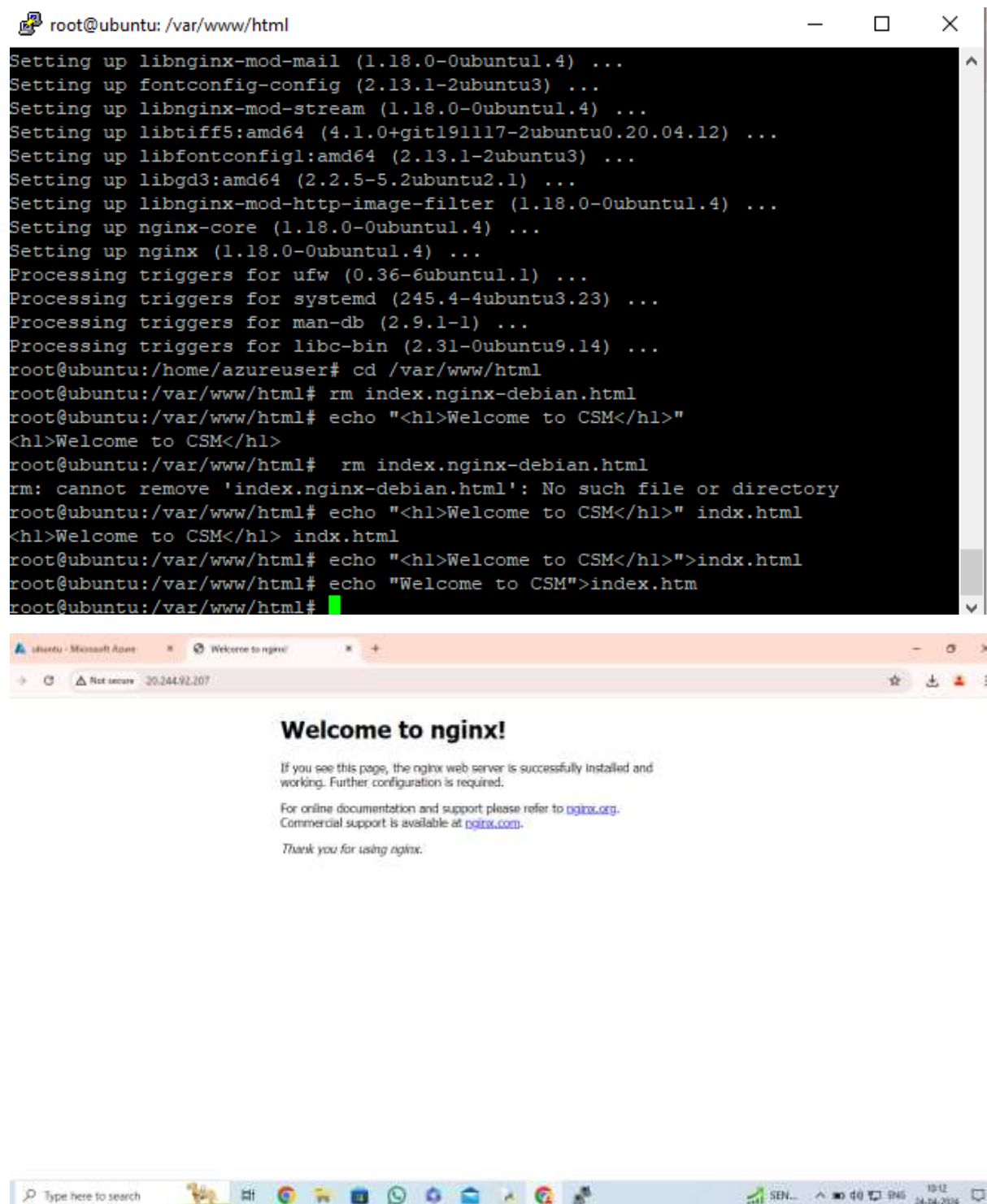
```
azureuser@Ubuntu: ~$  
login as: azureuser  
Authenticating with public key "imported-openssh-key"  
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-1064-azure x86_64)  
  
 * Documentation:  https://help.ubuntu.com  
 * Management:    https://landscape.canonical.com  
 * Support:        https://ubuntu.com/pro  
  
System information as of Thu Jun 13 16:27:08 UTC 2024  
  
System load:  0.00      Processes:      116  
Usage of /:   3.1% of 28.89GB   Users logged in:  0  
Memory usage: 8%          IPv4 address for eth0: 10.0.0.4  
Swap usage:   0%  
  
Expanded Security Maintenance for Applications is not enabled.  
  
0 updates can be applied immediately.  
  
Enable ESM Apps to receive additional future security updates.  
See https://ubuntu.com/esm or run: sudo pro status  
  
The programs included with the Ubuntu system are free software;  
the exact distribution terms for each program are described in the  
individual files in /usr/share/doc/*/*copyright.  
  
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by  
applicable law.  
  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
azureuser@Ubuntu:~$
```

**Step-10:** 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



The image displays a terminal window and a web browser window. The terminal window shows the installation of nginx and the creation of a custom welcome message. The browser window shows the resulting web page.

```
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>
root@ubuntu:/var/www/html# rm index.nginx-debian.html
rm: cannot remove 'index.nginx-debian.html': No such file or directory
root@ubuntu:/var/www/html# echo "<h1>Welcome to CSM</h1>" index.html
<h1>Welcome to CSM</h1> index.html
root@ubuntu:/var/www/html# echo "<h1>Welcome to CSM</h1>">index.html
root@ubuntu:/var/www/html# echo "Welcome to CSM">index.htm
root@ubuntu:/var/www/html#
```

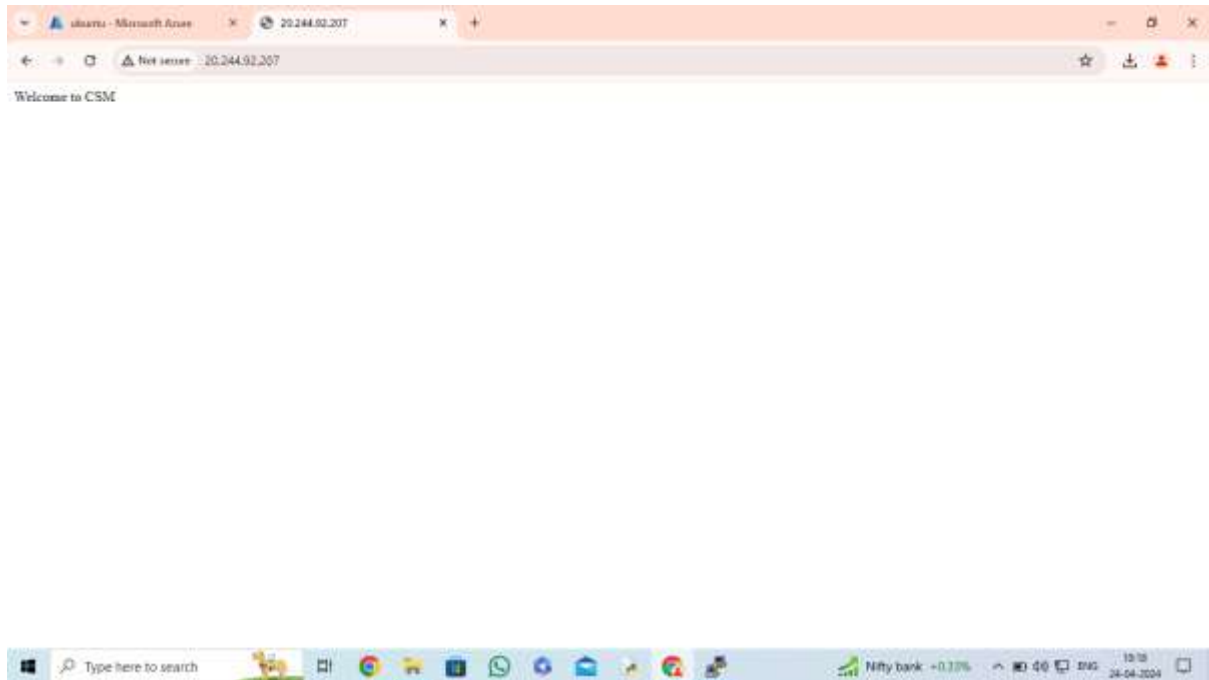
The browser window shows the following content:

## 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](http://nginx.org).  
Commercial support is available at [nginx.com](http://nginx.com).

Thank you for using nginx.

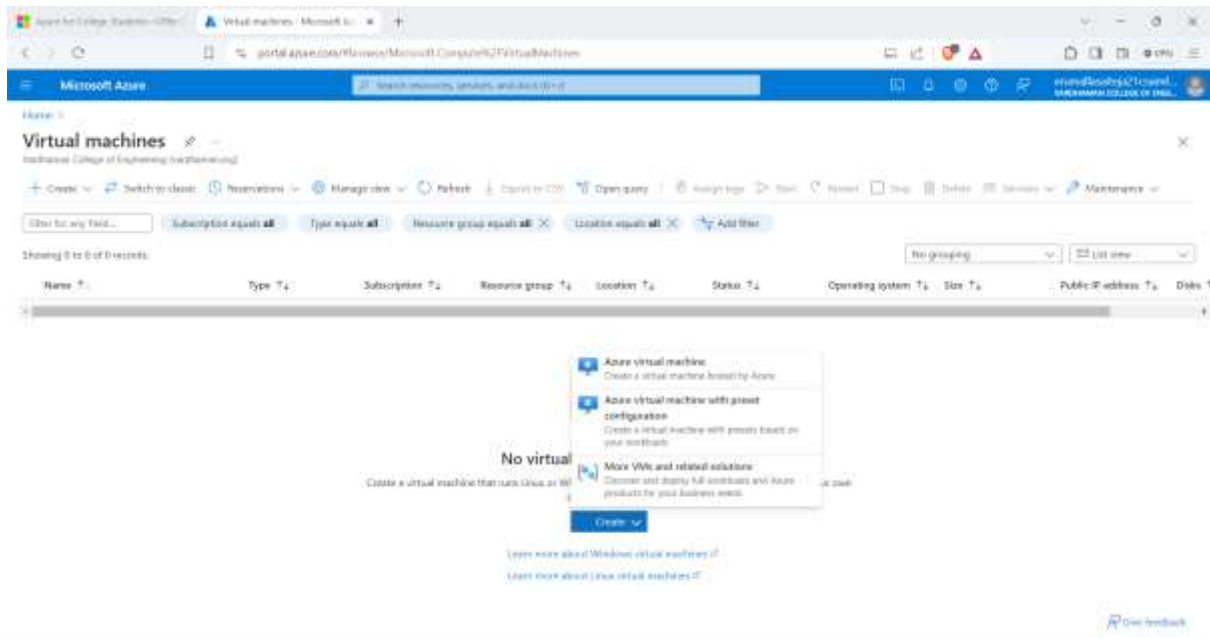


**Result:** Above experiment is successful executed And verified.

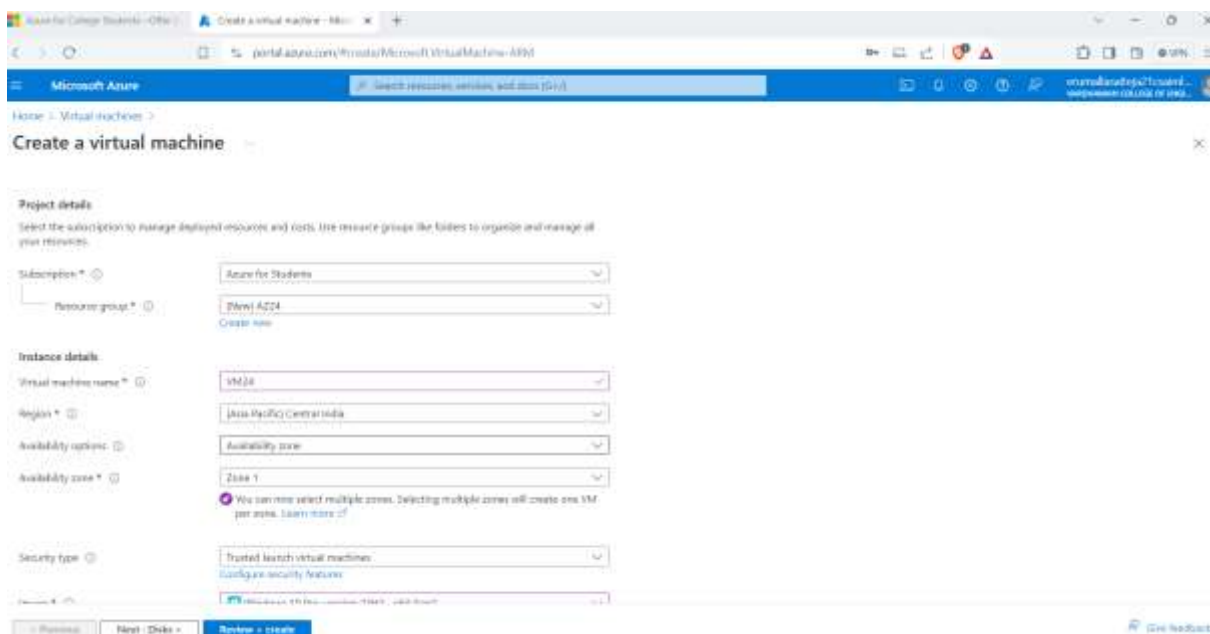
### Q9) Setup and configure AZURE web server for windows server (IIS).

**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”



The image displays two screenshots of the Microsoft Azure portal's 'Create a virtual machine' wizard.

**Top Screenshot (Basics tab):**

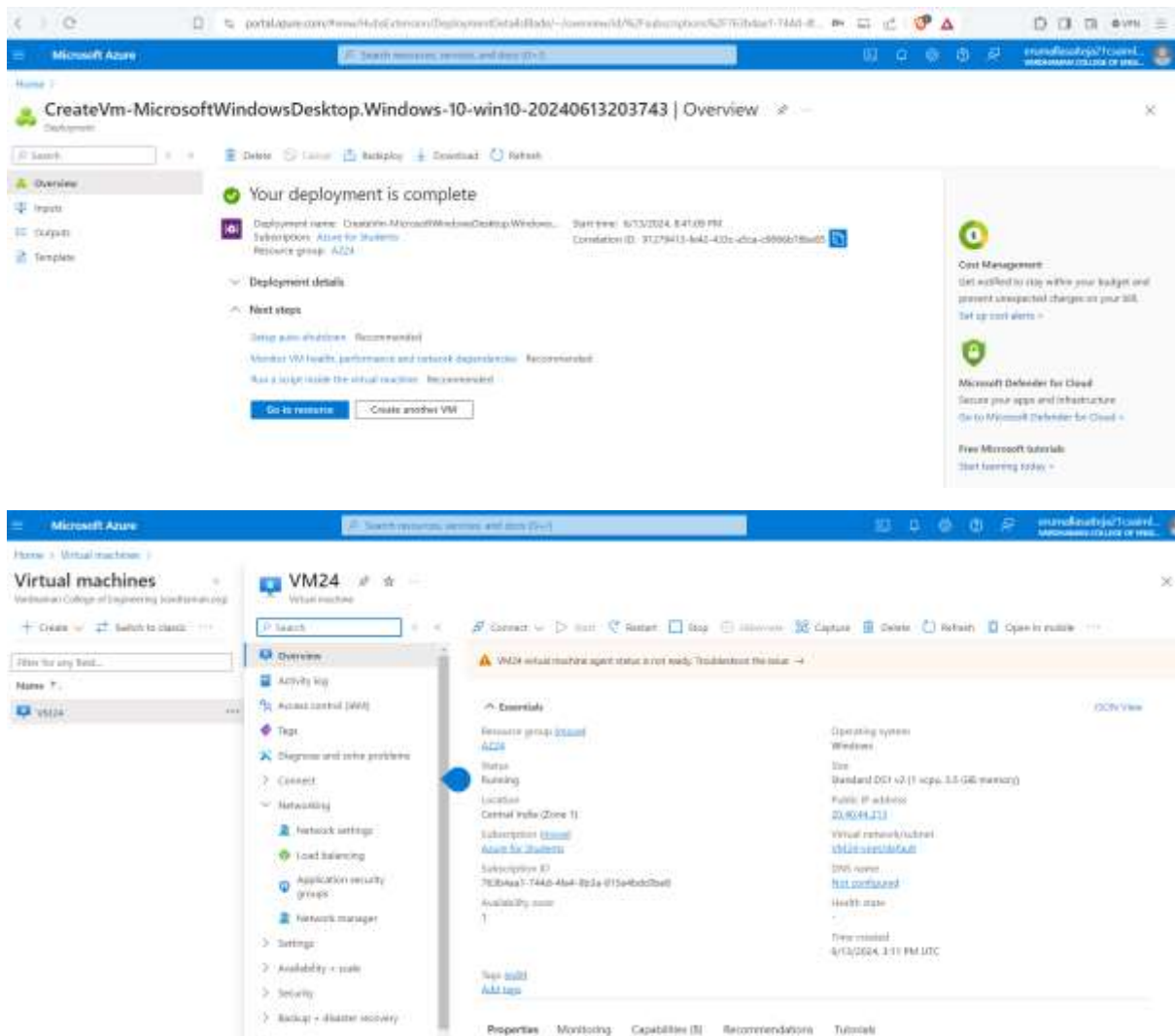
- Username:** Administrator
- Password:** [Redacted]
- Confirm password:** [Redacted]
- Inbound port rules:** Select which virtual machine network ports are accessible from the public internet. You can specify rules limited on granular network access on the Networking tab.
  - Public inbound ports:** ☐ None, ☒ Allow selected ports
  - Select inbound ports:** RDP (3389)
- Licensing:** ☐ Confirm I have an eligible Windows 10/11 license with multi-seat hosting rights.
- Navigation:** < Back, Next >, Review + create

**Bottom Screenshot (Review + create tab):**

- Verification passed:** [Green checkmark]
- Basics | Disks | Networking | Management | Monitoring | Advanced | Sign | Review + create**
- Price:** 1 X Standard D51 v2 by Microsoft. Subscription credits apply. **0.9984 INR/hr** (Rounding for other idd class).
- TERMS:** By clicking 'Create', I (we) agree to the legal terms and privacy statements associated with the Marketplace offerings listed above. (i) 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 (ii) 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.
- Warning:** You have not 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.
- Navigation:** < Back, Next >, Create

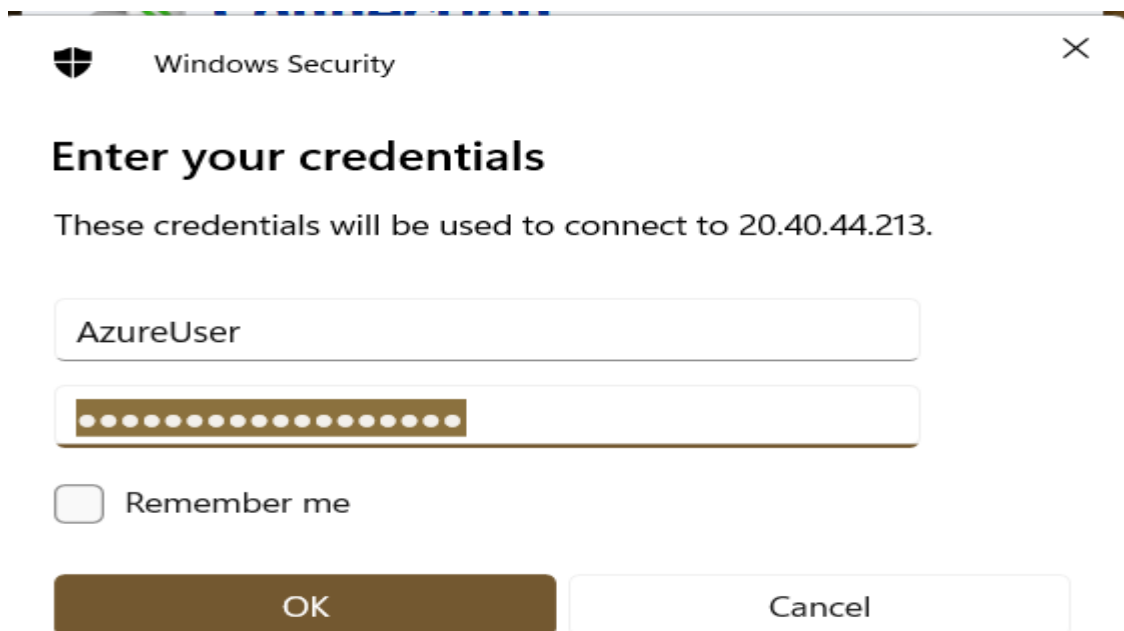
**Step-4:** After Deployment is over, Go to the remote desktop connection.

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

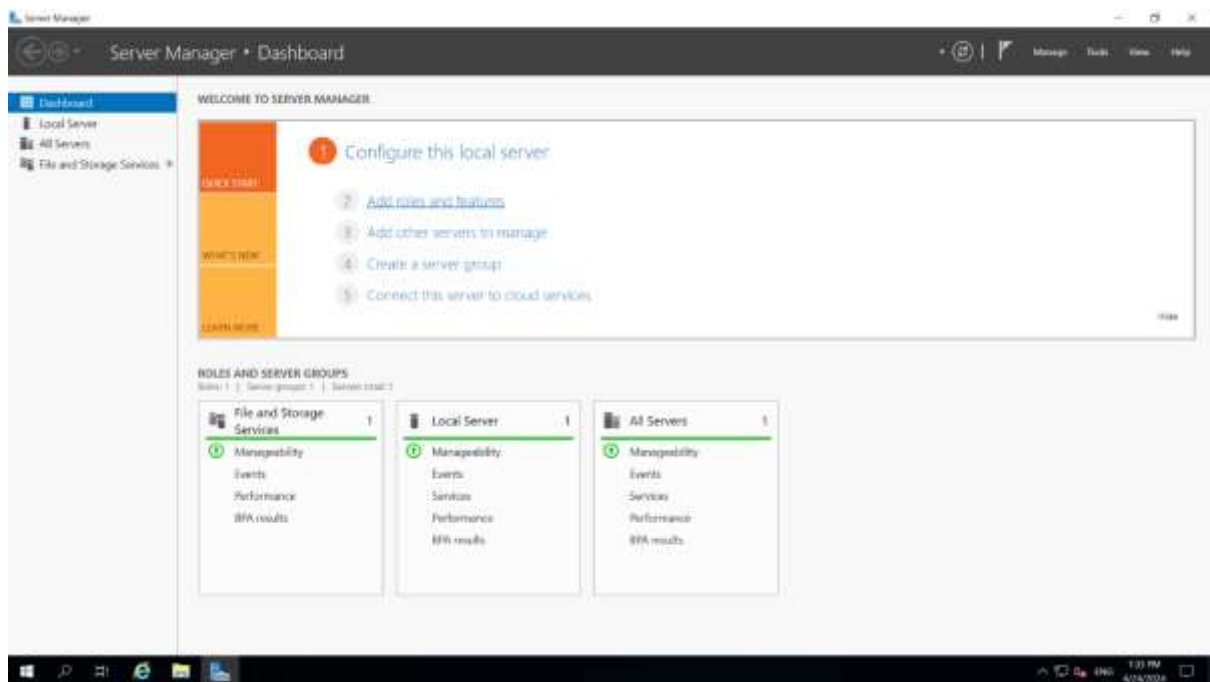


**Step-6:** By using that copied IP Address open the window virtual machine through remote desktop connection.

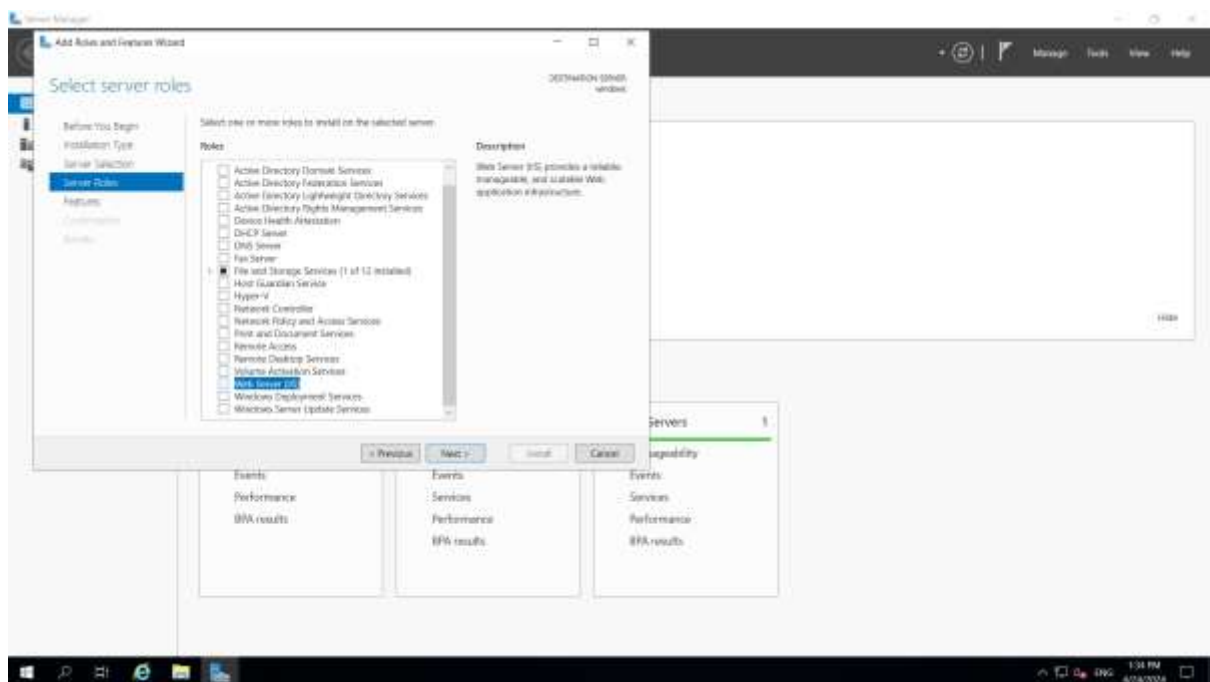


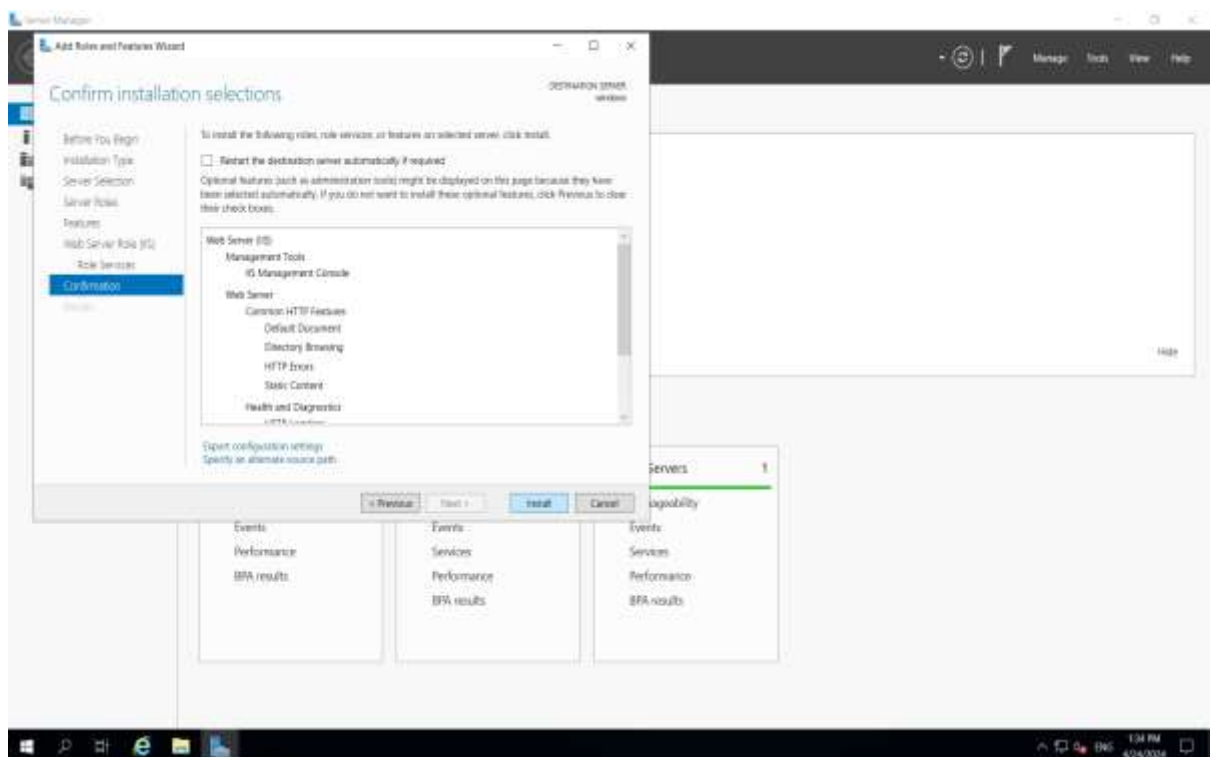
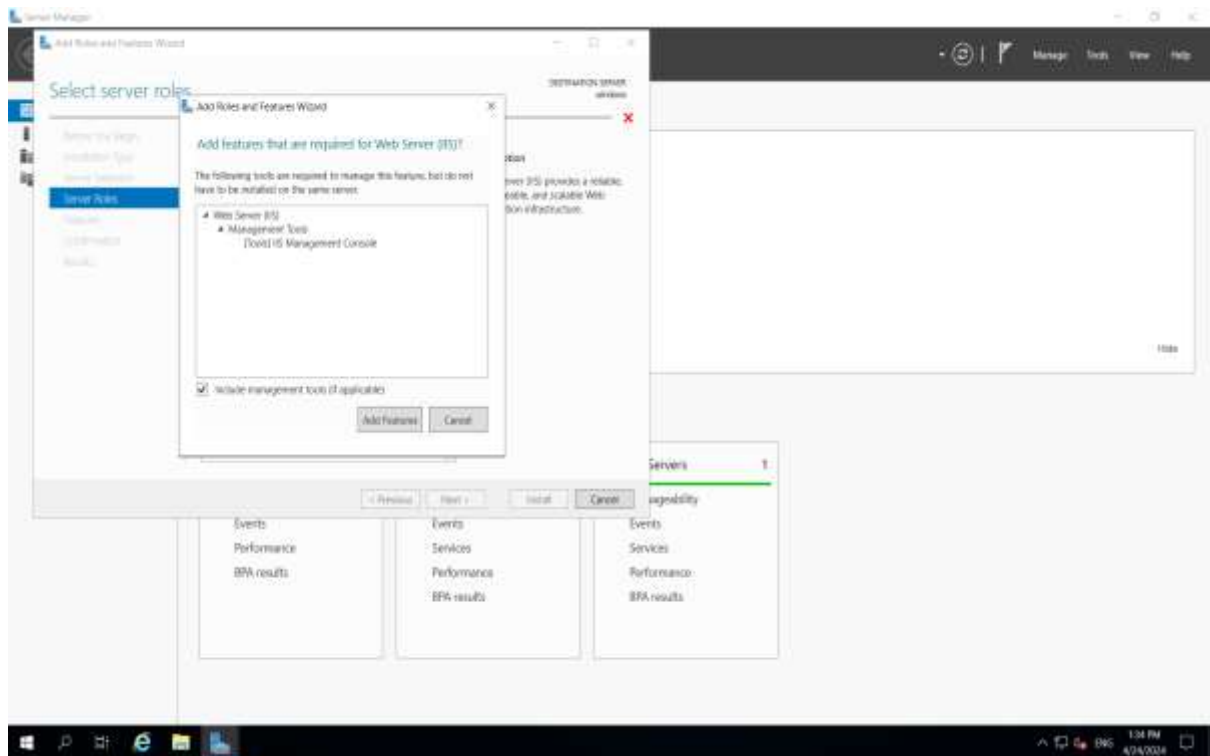


**Step-7:** When remote desktop will start (windows VM) you can see there will be Server Manager will be opened and in that you can see Configure this local server, click on “Add roles and features”.

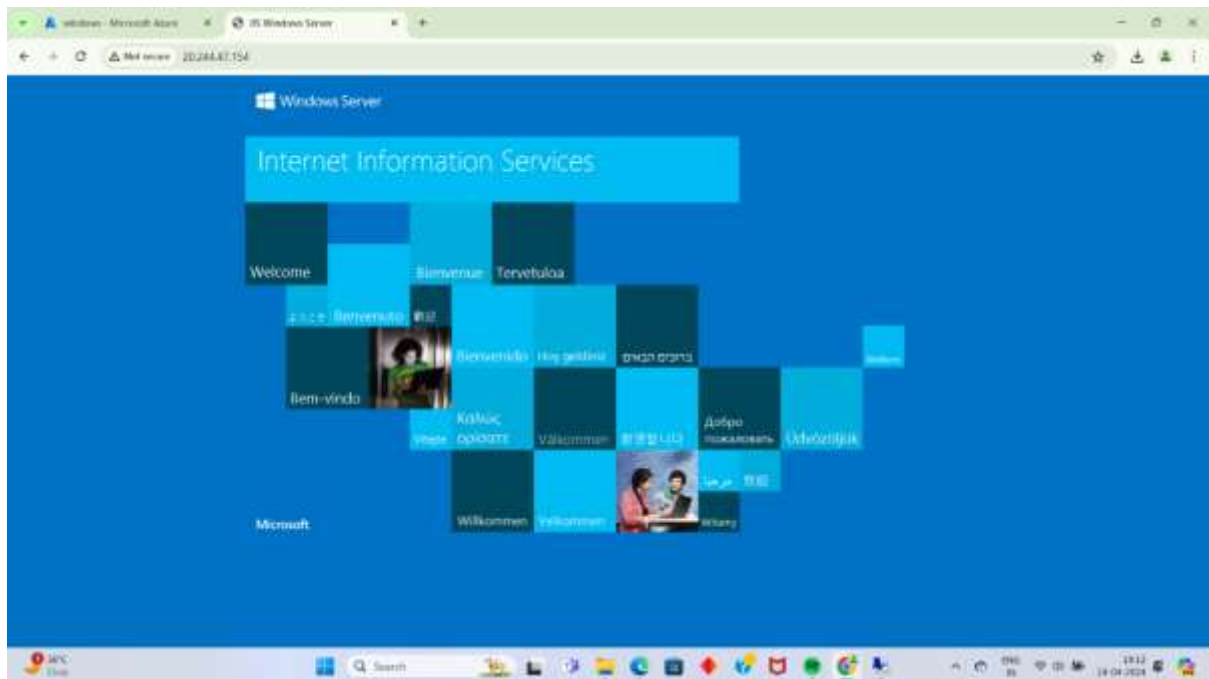


**Step-8:** Click on next, next and in Server Roles select Web Server (IIS) click on add feature, click on next, next till you can get install button and click on install.

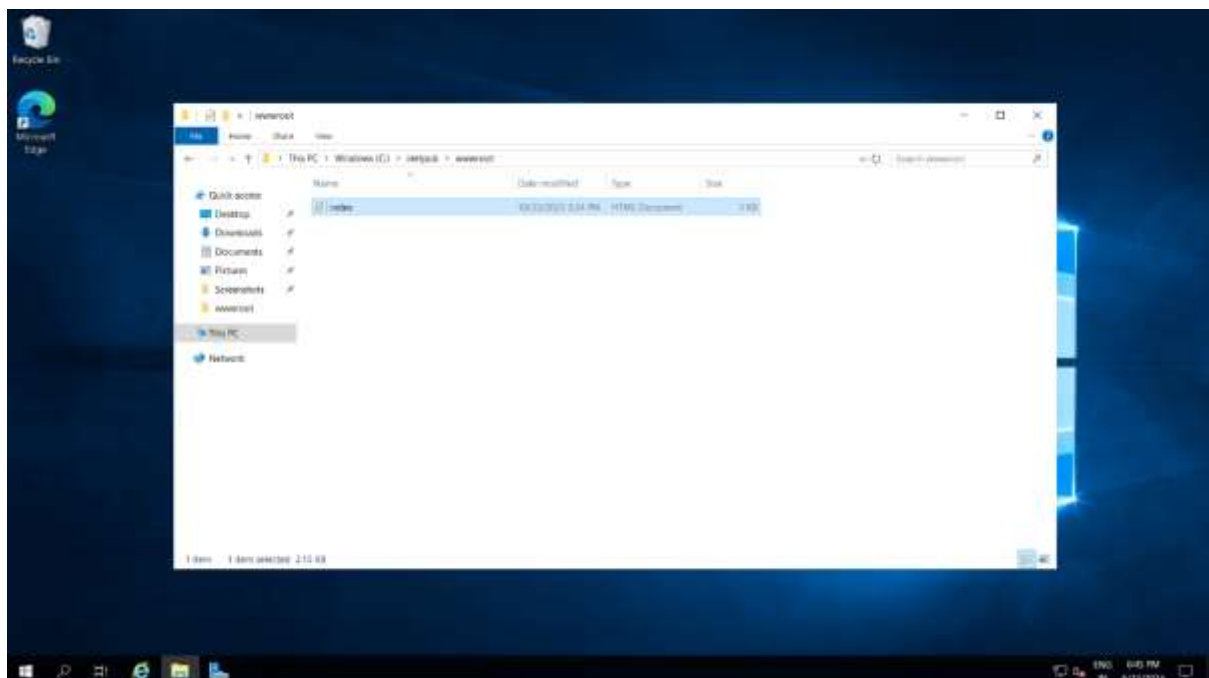




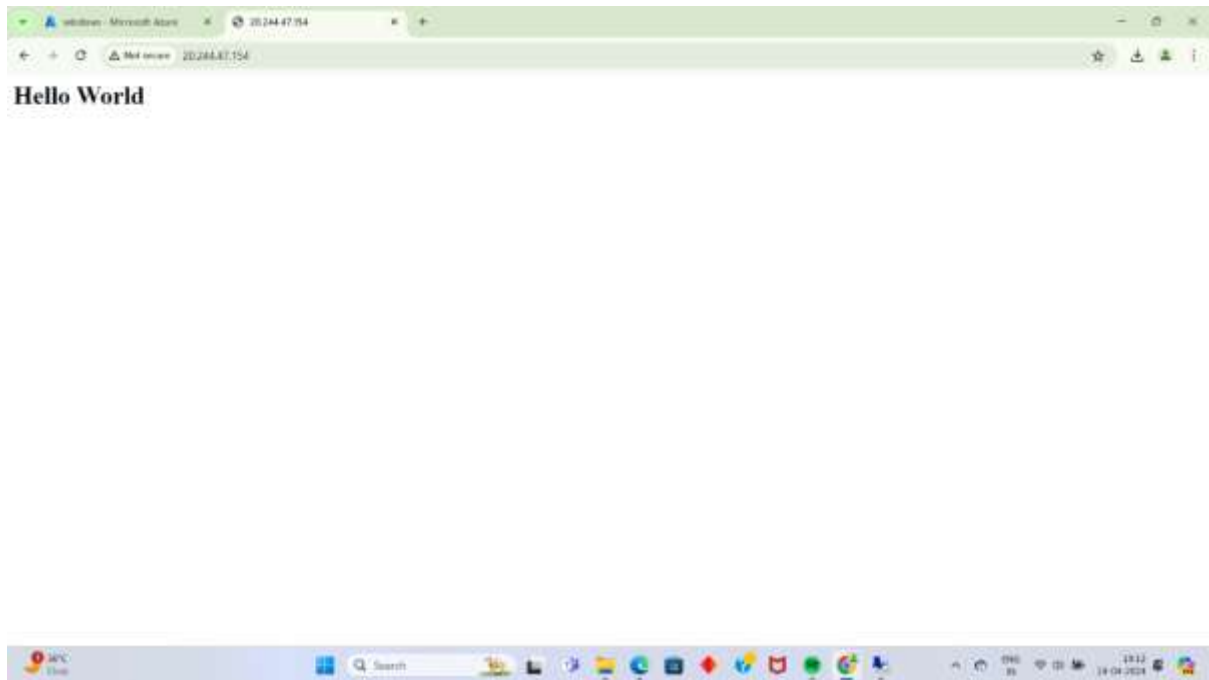
**Step- 9:** paste the public ip address in desktop browser and you can see.



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.

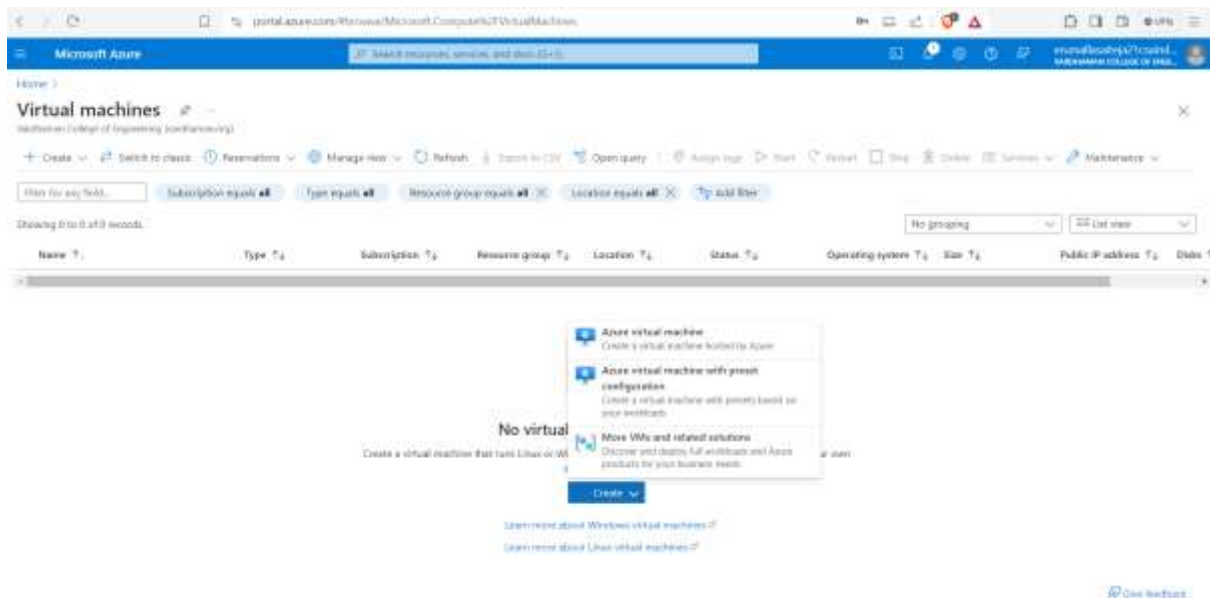


**Result:** Above experiment is successful executed And verified.

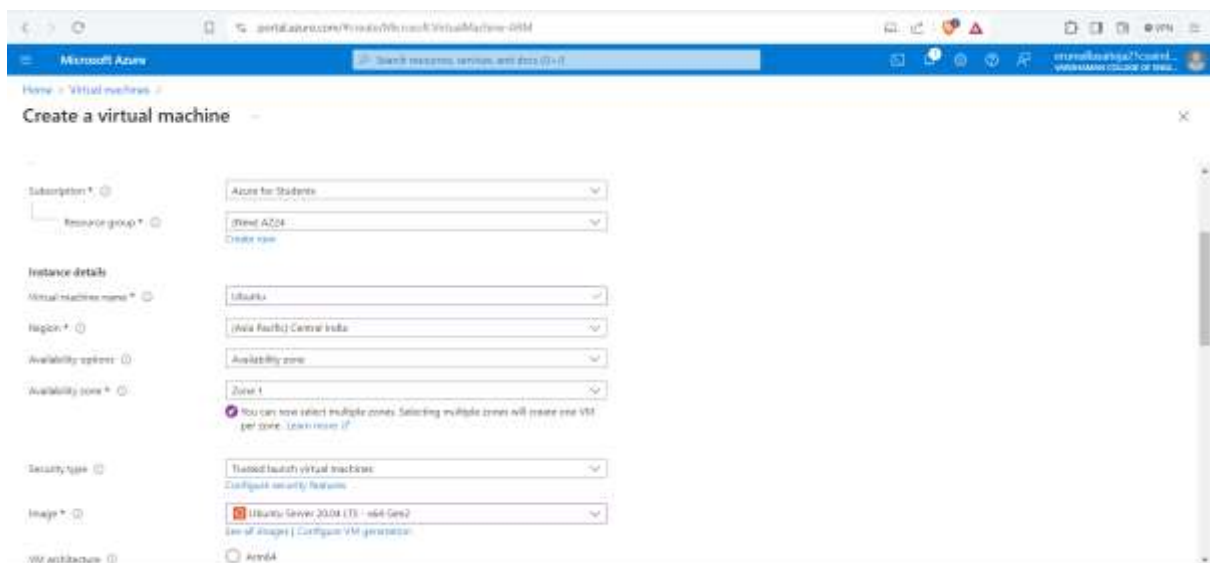
**Q10) How we are adding new users, login credentials, changing owner, create authorized key files.**

**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”.



Microsoft Azure

Home > Virtual machines >

### Create a virtual machine

VM architecture ☐ ARM64 ☒ x64

Run with Azure Spot-Instance ☐

Size  [View all sizes](#)

Enable information ☐

Administrator account

Authentication type ☒ SSH public key ☐ Password

**Info** 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

OS

Click to go to next, hold to see info

Home > Virtual machines >

### Create a virtual machine

Username

SSH public key source

SSH Key Type ☒ RSA-SSH Format ☐ ECDSA or SSH Format

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

Key pair name

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

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

< Previous Next: Disk > Review > create

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

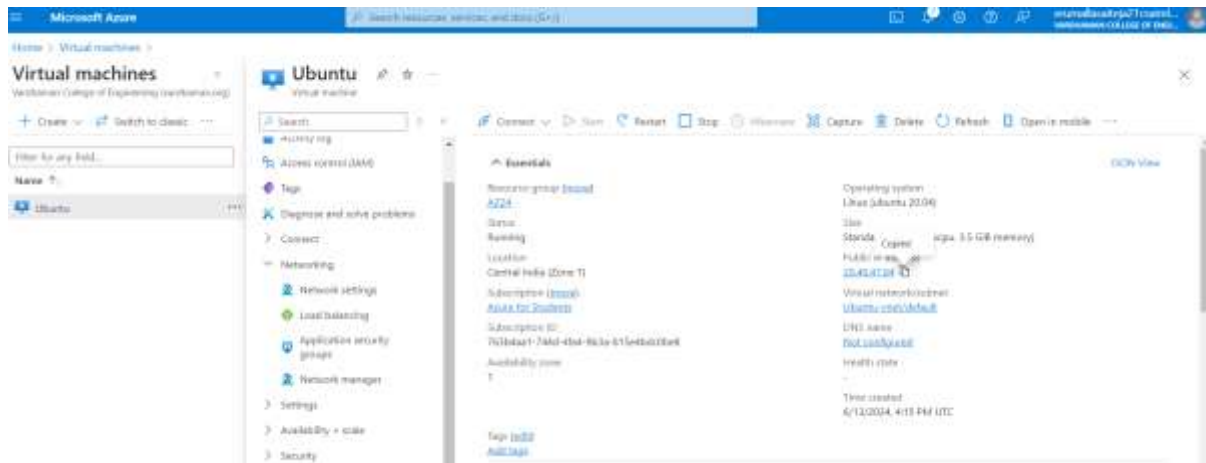
## Generate new key pair

**Info** 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](#)

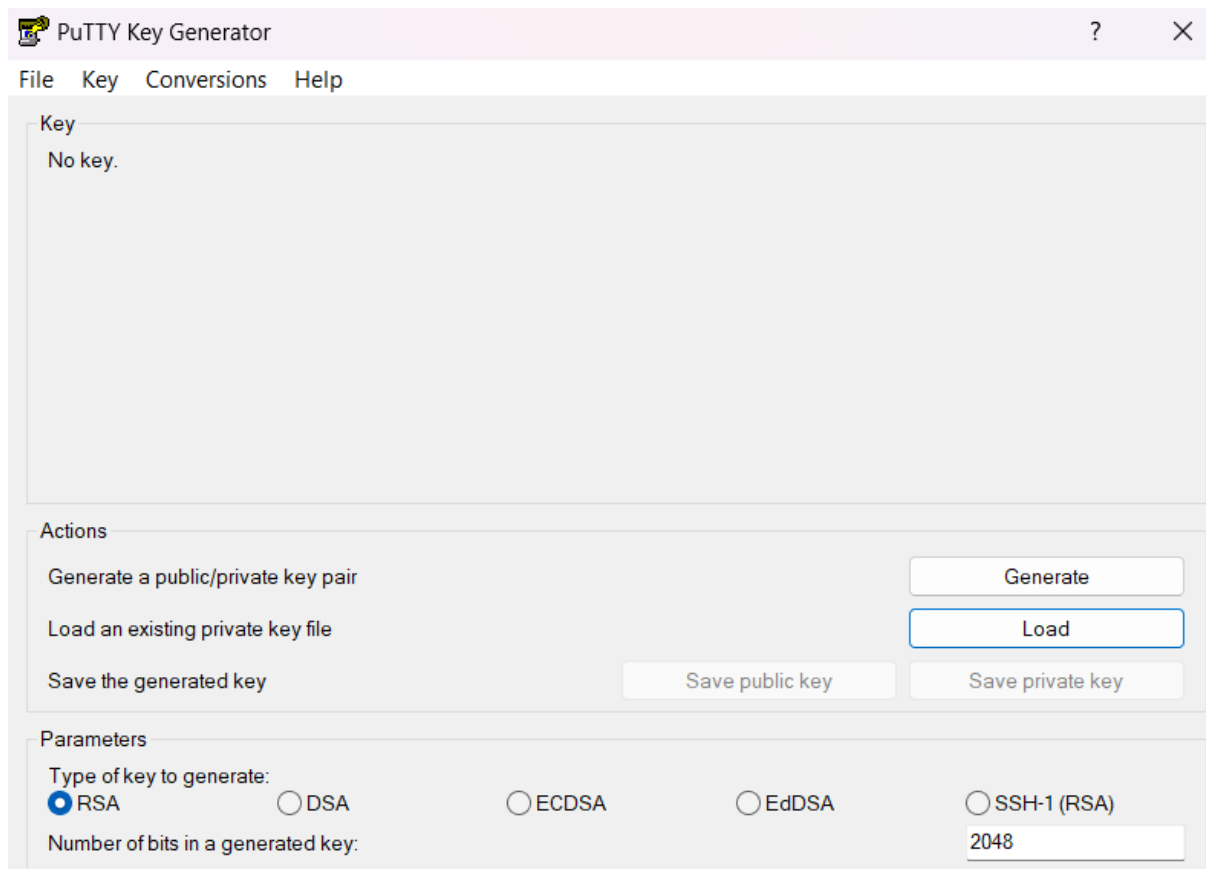
**Download private key and create resource**

**Return to create a virtual machine**

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



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





The PuTTY Key Generator window displays the following information:

- Key:** Public key for pasting into OpenSSH authorized\_keys file:  
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQGC93M45VQ0rKXc0eCGASew0xk/clxzmCDDzTQN1XPxCwpZiWkm+KggXAwqtMOecVfJmrJWtAS8YaxqMA1tTcvz8HmEBtkmYqDkQm2F4TM900TsHw+IGF/ThQzdXyym4oGj91JatGEOC375EKOkHfk6x1xnYD3xMNnml7JGave1XT7lj+O+KqGJoM4eSAx3w2JIRRoeUfkFPfiuTdDI27Q9HW2scDuvKw0qCq0zoCvPI/91ioi5OrR7t/hUGb1hrpc7S+q4bqC2NTTjCGNoYutVehO81y+hPYbg9QChgy2J5HKD
- Key fingerprint:** ssh-rsa 3072 SHA256:KakGDPCnAoZi7mwAo0+I/FA/YqYytkwHOqdgww5iRHw
- Key comment:** imported-openssh-key
- Key passphrase:** (empty field)
- Confirm passphrase:** (empty field)

**Actions:**

- Generate a public/private key pair (Generate button)
- Load an existing private key file (Load button)
- Save the generated key (Save public key, Save private key buttons)

**Parameters:**

- 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.

The PuTTY Configuration window shows the following settings:

- Category:** Session
- Basic options for your PuTTY session:**
  - Specify the destination you want to connect to:
    - Host Name (or IP address): 20.40.47.84
    - Port: 22
  - Connection type: ☒ SSH, ☐ Serial, ☐ Other: Telnet
- Load, save or delete a stored session:**
  - Saved Sessions: (empty list)
  - Default Settings: (empty text area)
  - Buttons: Load, Save, Delete
- Close window on exit:** ☐ Always, ☐ Never, ☒ Only on clean exit

Buttons at the bottom: About, Help, Open, Cancel

**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 Saiteja
```

To set new password:

```
$sudo password Saiteja
```

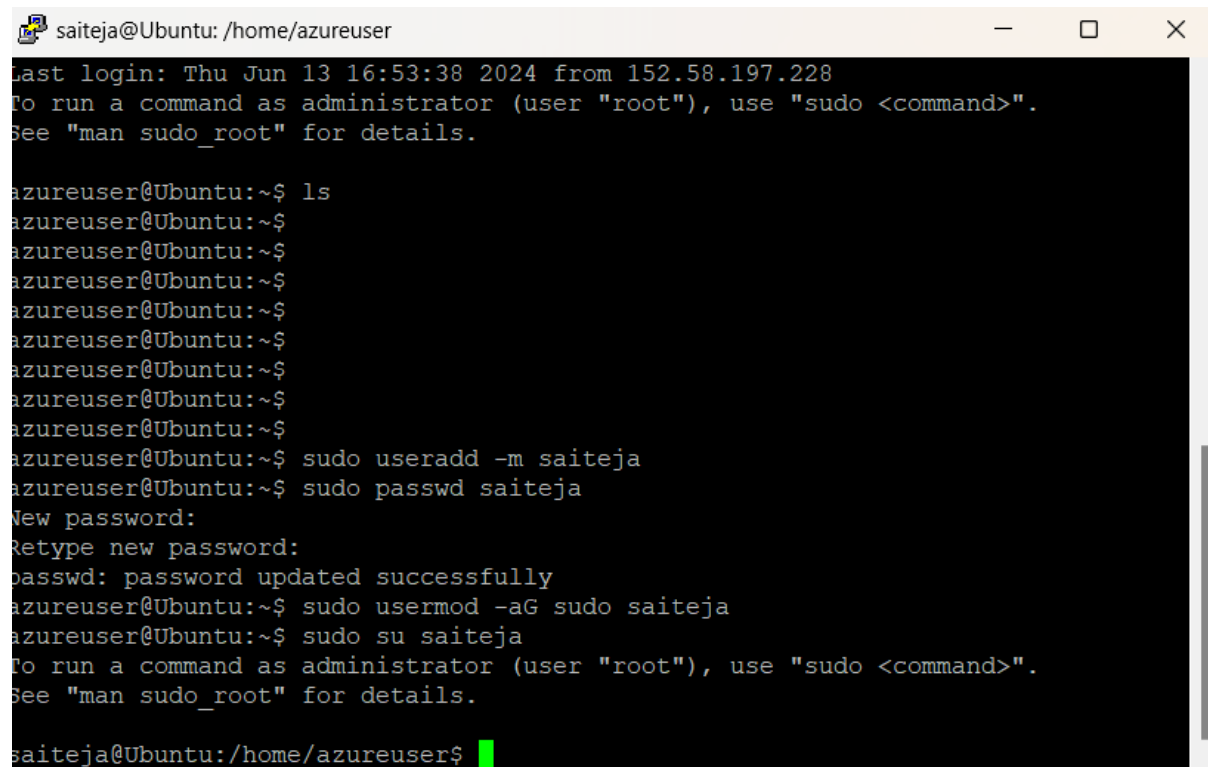
Enter new password and Retype password.

To modify login credentials:

```
$sudo usermod -aG sudo Saiteja
```

To switch the user:

```
$sudo su Saiteja
```



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

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

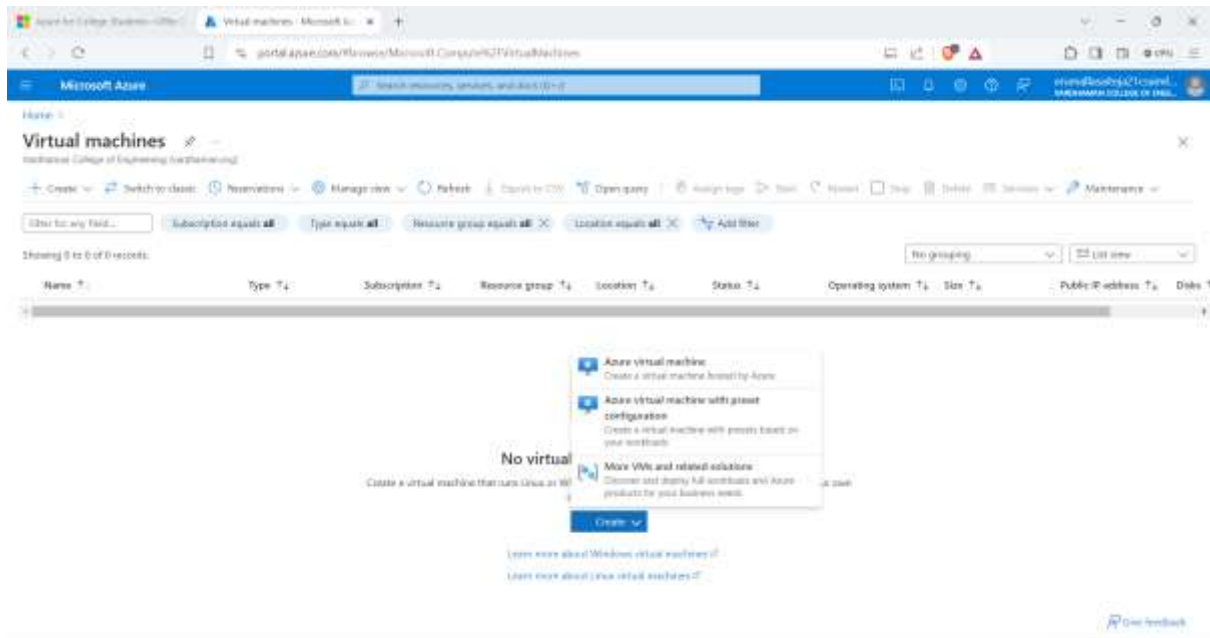
saiteja@Ubuntu: /home/azureuser$
```

**Result:** Above experiment is successful executed And verified.

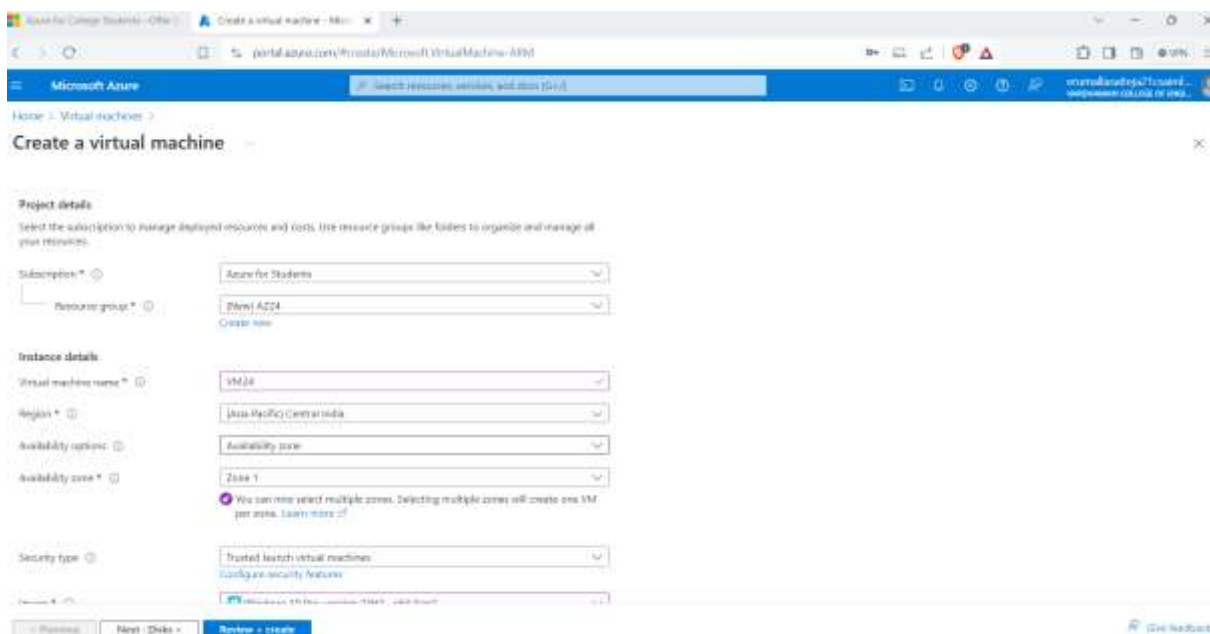
## Q11) Create a Windows VM and transfer files from desktop to remote desktop VM.

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

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

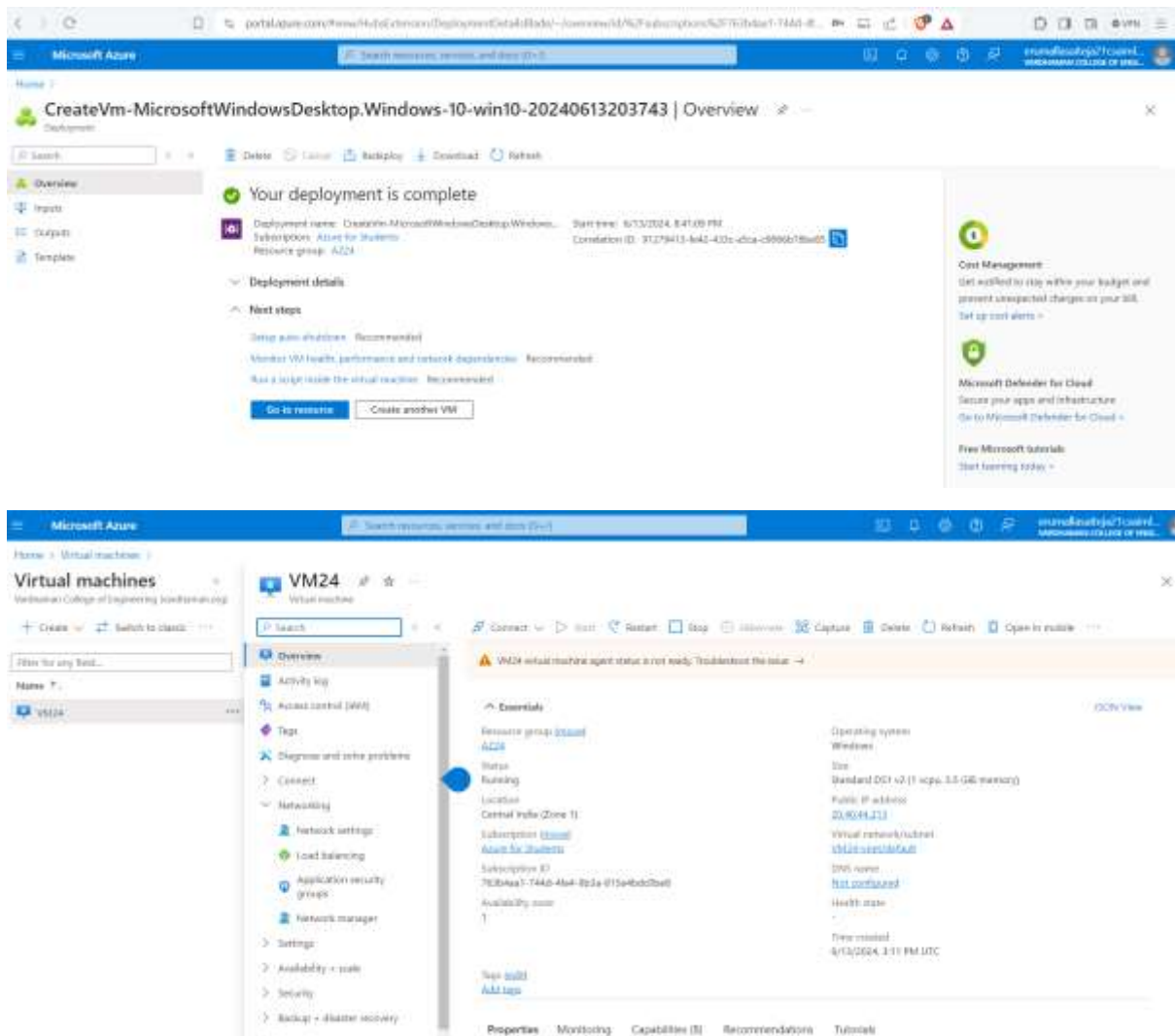


**Step-3:** Fill the details in that window by creating a “Resource Group”, Zone: Asia, Image: window, Select the disk storage and so on. After that click on “Create + Review”. And finally click on “Create”

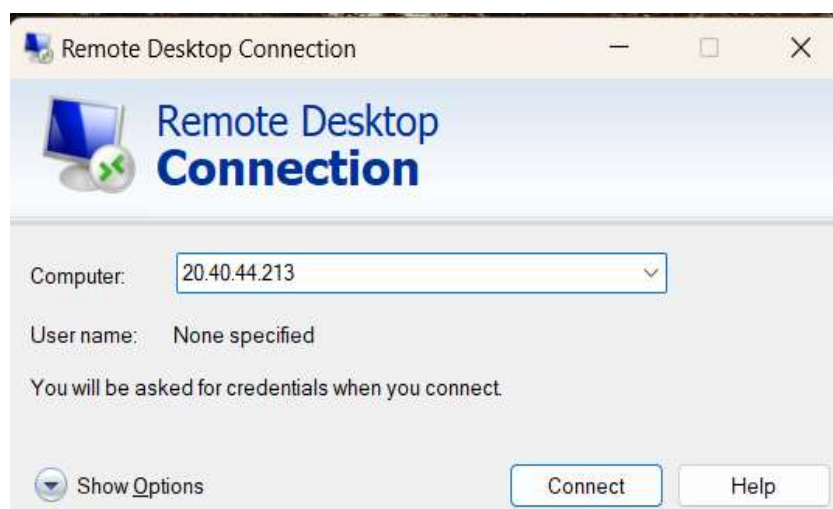


The image displays two sequential screenshots of the Microsoft Azure portal's 'Create a virtual machine' wizard. The top screenshot shows the initial configuration steps: selecting an image (Windows Server 2019), choosing a size (Standard\_D6s\_v2), and setting an administrator account (Username: Administrator, Password: [redacted]). The bottom screenshot shows the 'Inbound port rules' section where 'Public inbound ports' is set to 'Allow selected ports' and 'RDP (3389)' is selected. Both screenshots show the 'Review + create' button at the bottom.

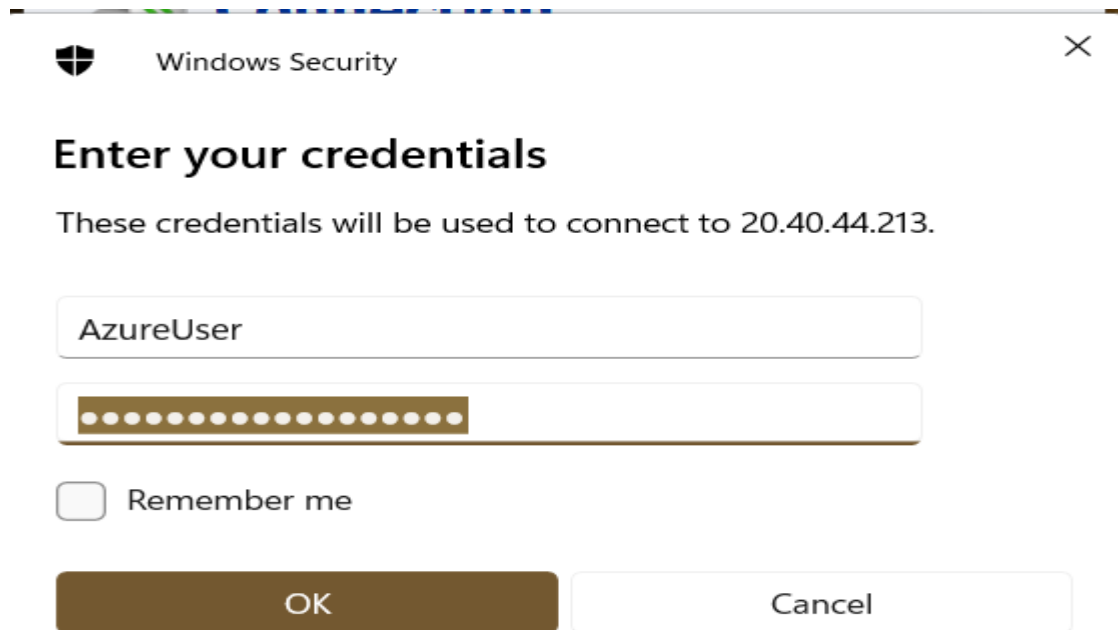
**Step-4:** After Deployment is over, Go to the remote desktop connection.



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

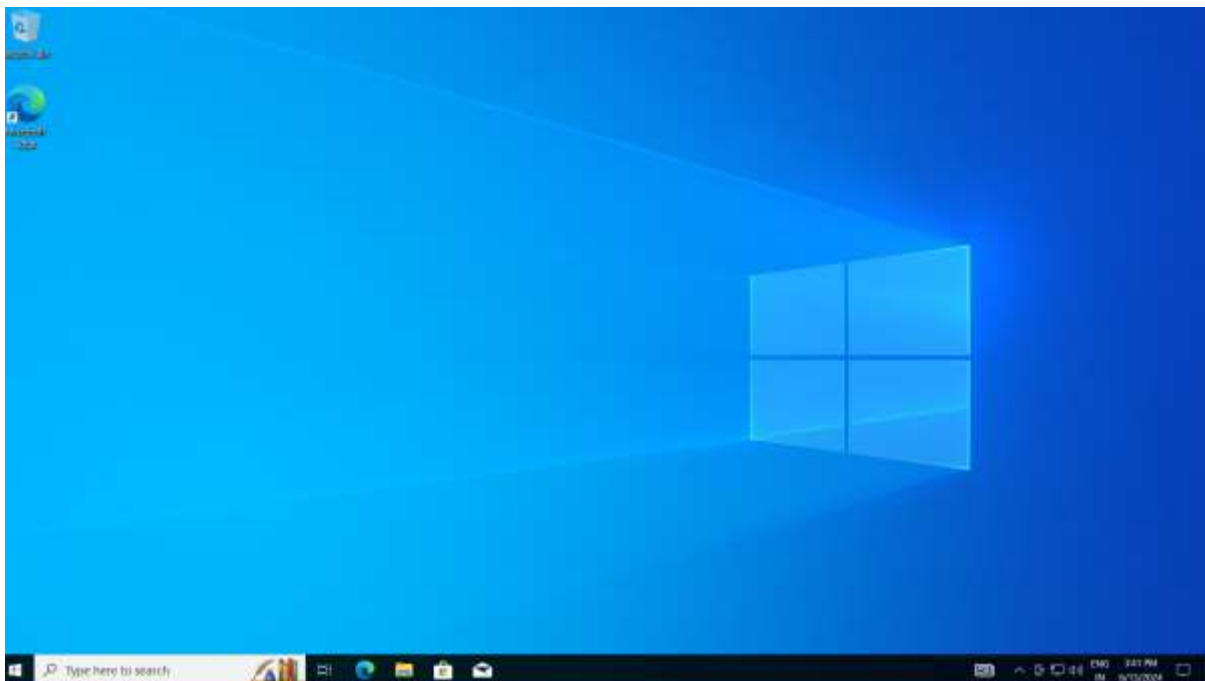


**Step-6:** By using that copied IP Address open the window virtual machine through remote desktop connection.

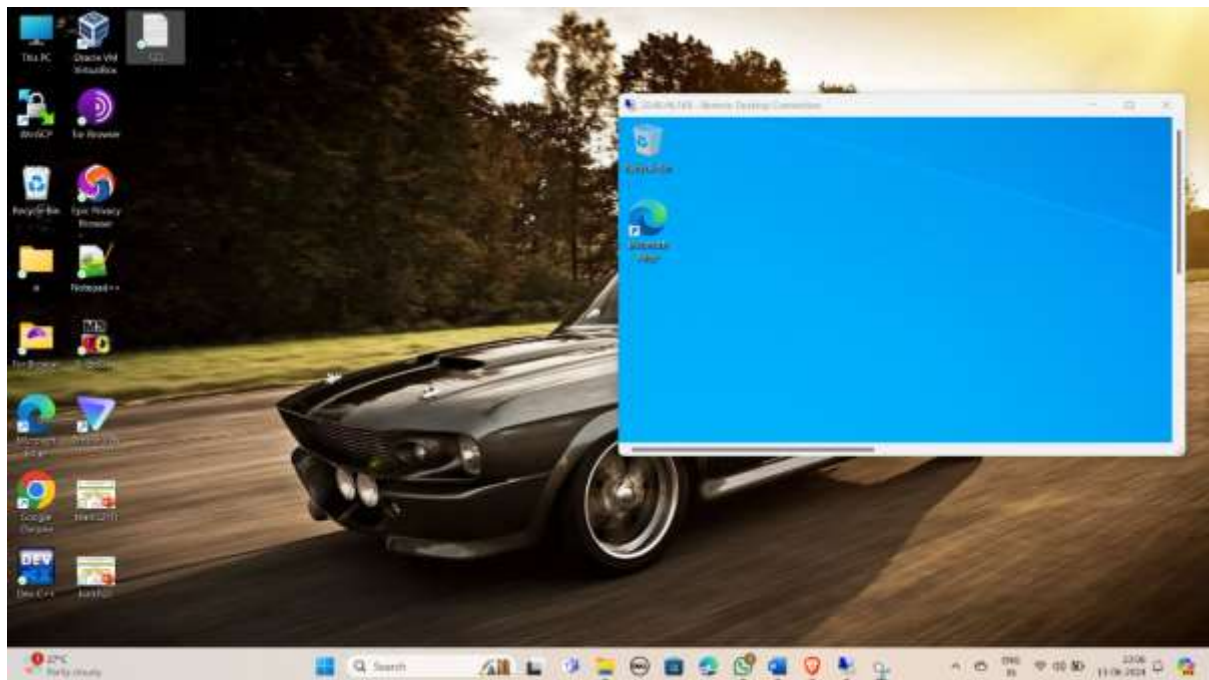


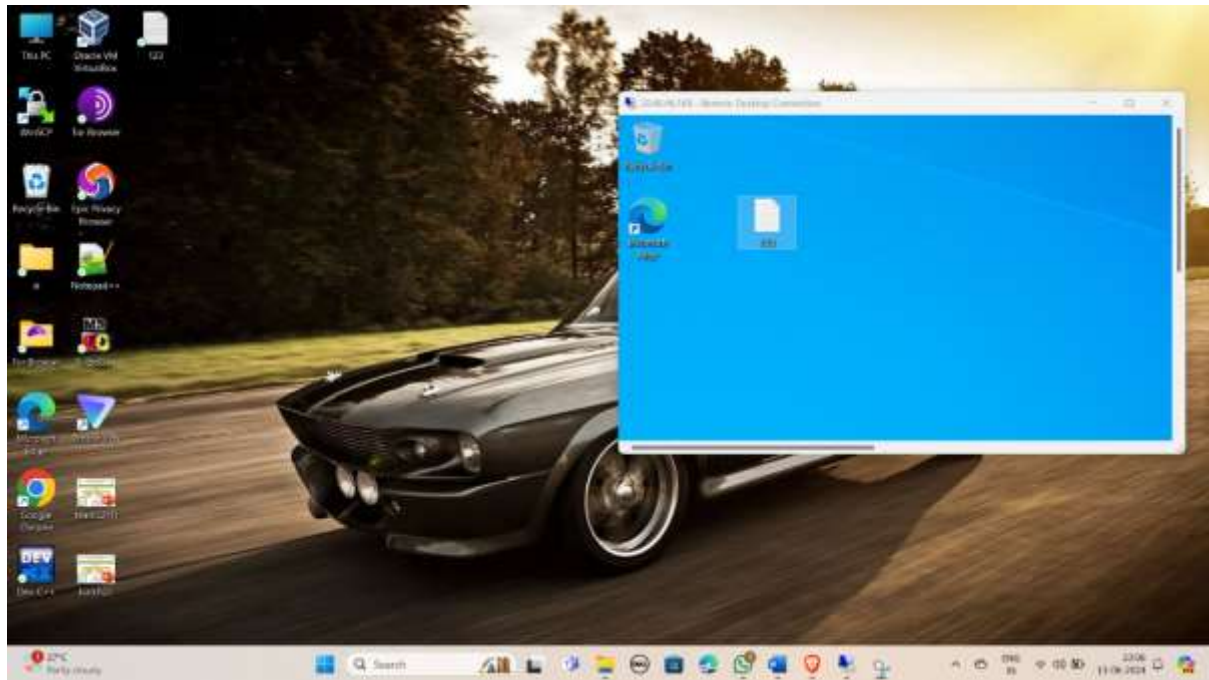
**Step-7: Minimize the Remote desktop and copy file from desktop.**

**Right click in remote desktop and click on paste.**







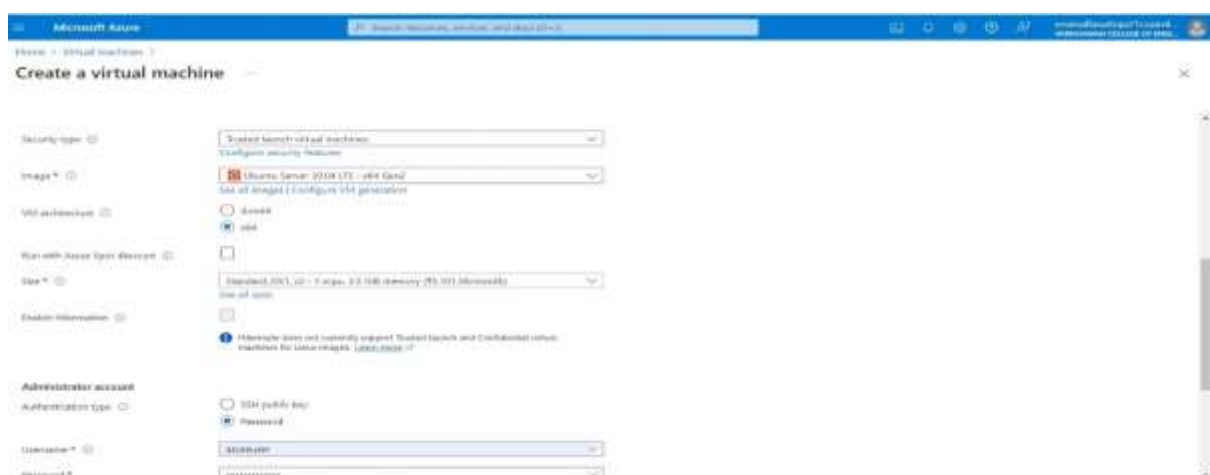
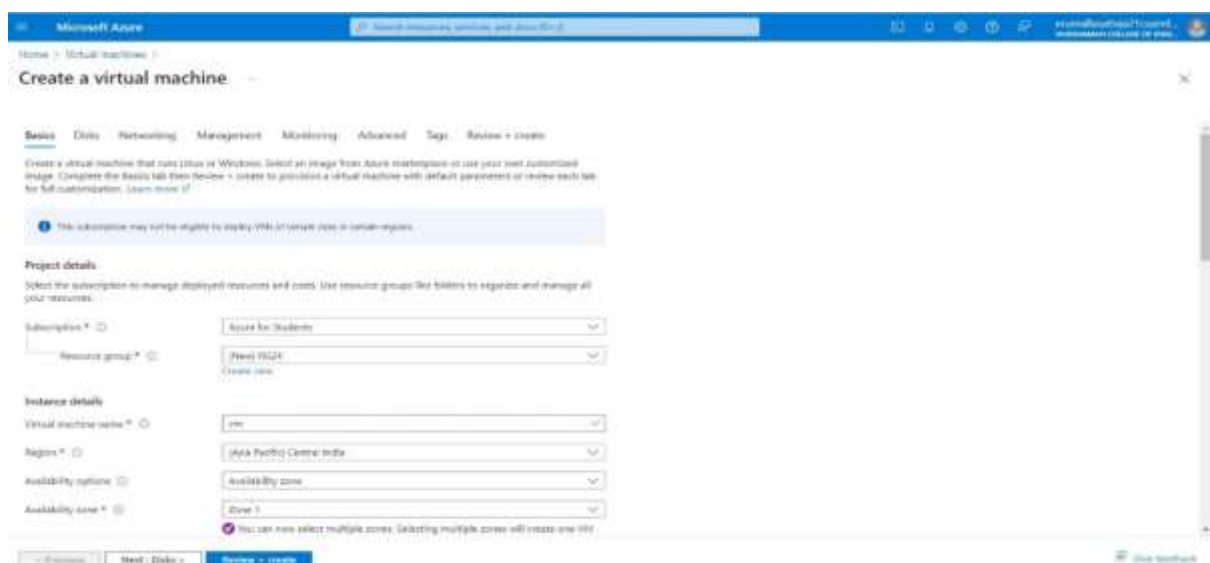
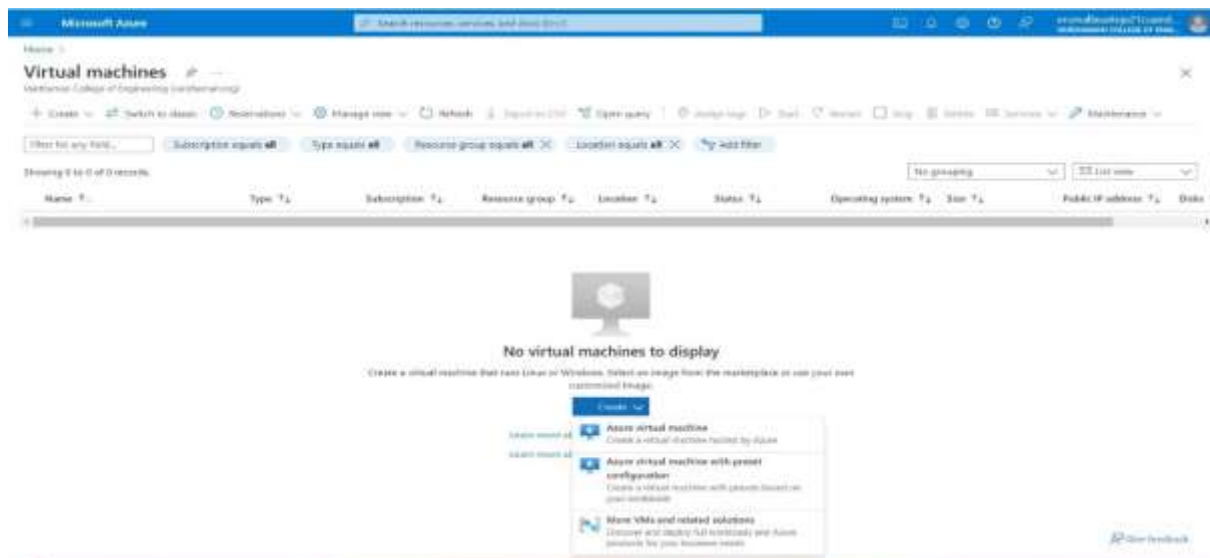


**Result:** Above experiment is successful executed And verified.



## 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



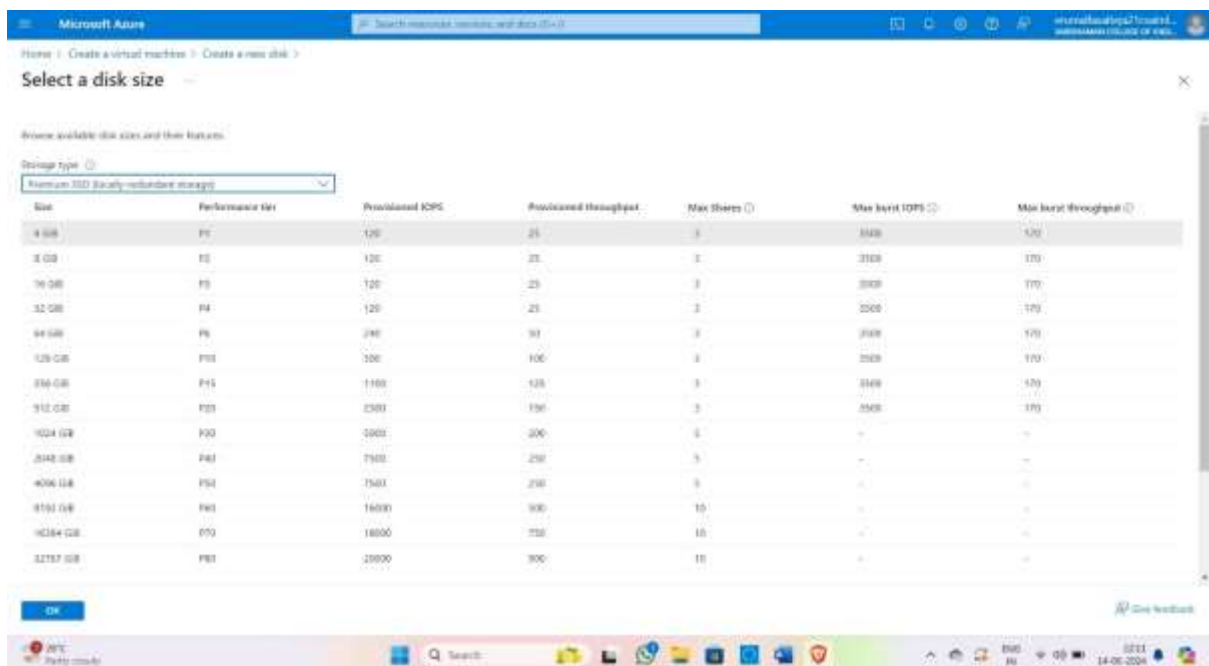
The screenshot shows the 'Create a virtual machine' page in the Microsoft Azure portal. The 'Disks' tab is selected, showing configuration options for the OS disk. The 'OS disk size' is set to 128 GB (P1BS). The 'OS disk type' is set to Premium SSD (locally-redundant storage). The 'Delete with VM' checkbox is checked. The 'Key management' dropdown is set to Platform-managed key. A warning message states: 'Ultra disk is not supported for the detected VM size Standard\_D51\_v2 in Central India.' At the bottom, there are buttons for '< Previous', 'Next: Networking >', and 'Review > Create'.

2) click on "Next:Disks>"

The screenshot shows the 'Create a new disk' page in the Microsoft Azure portal. The 'Name' field is 'vm-Disk1-3'. The 'Source type' is 'From (empty disk)'. The 'Size' is 1024 GiB, with 'Premium SSD LRS' and a 'Change size' link. The 'Key management' dropdown is set to Platform-managed key. The 'Enable shared disk' radio button is set to 'No'. The 'Delete disk with VM' checkbox is checked. At the bottom, there is a 'Create' button. The Windows taskbar is visible at the bottom of the screen.

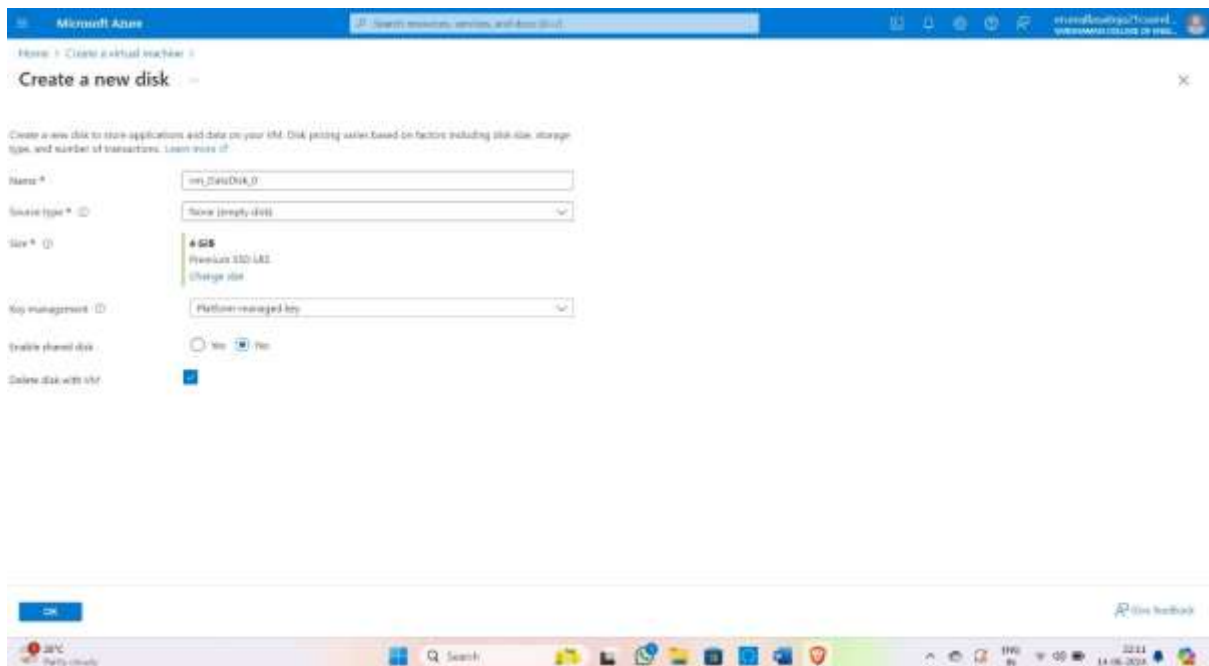
3) Click on "Create & attach a new disk"

4) Click on “change size”



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

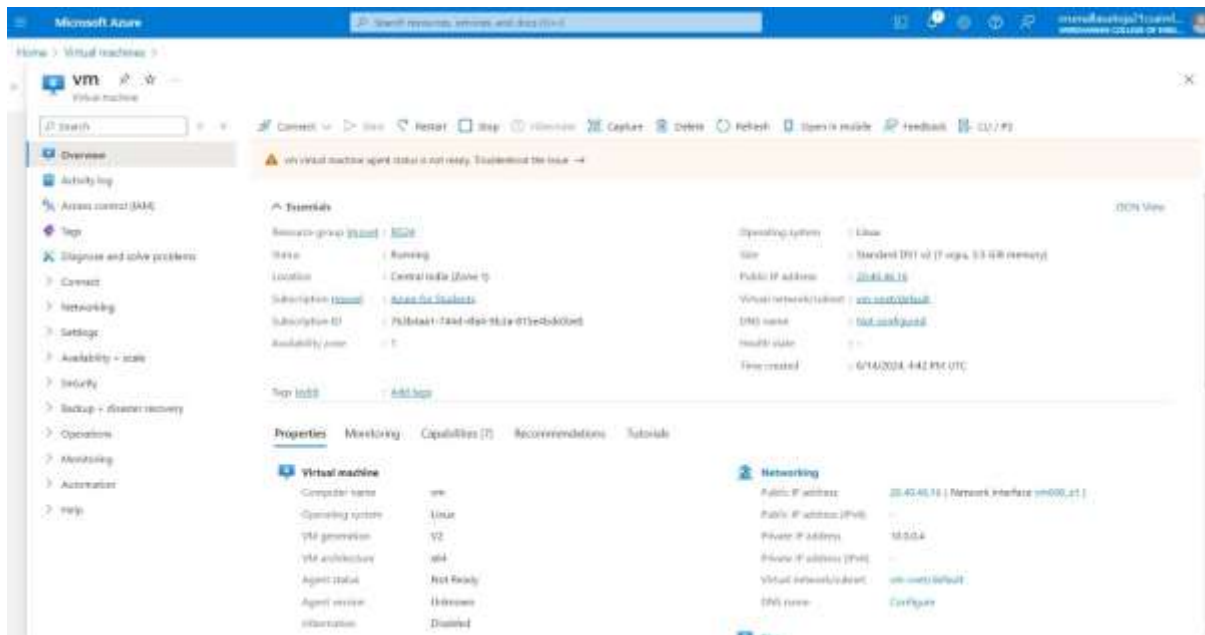
6) Enable delete with VM and click on OK



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

8) Click on "Go to resource group"

9) Copy public IP Address



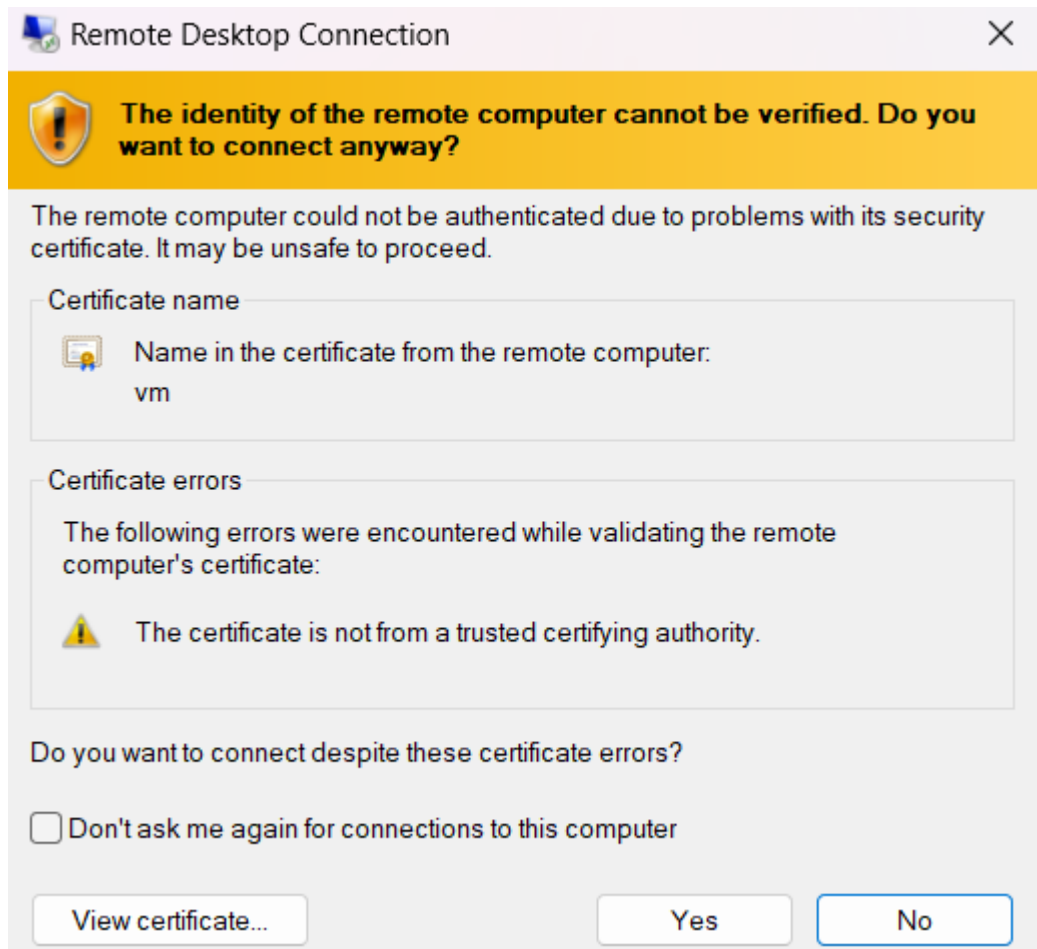
10) Open Remote Desktop Connection in your windows/system and paste the public IP Address

11) Click on “More choices”

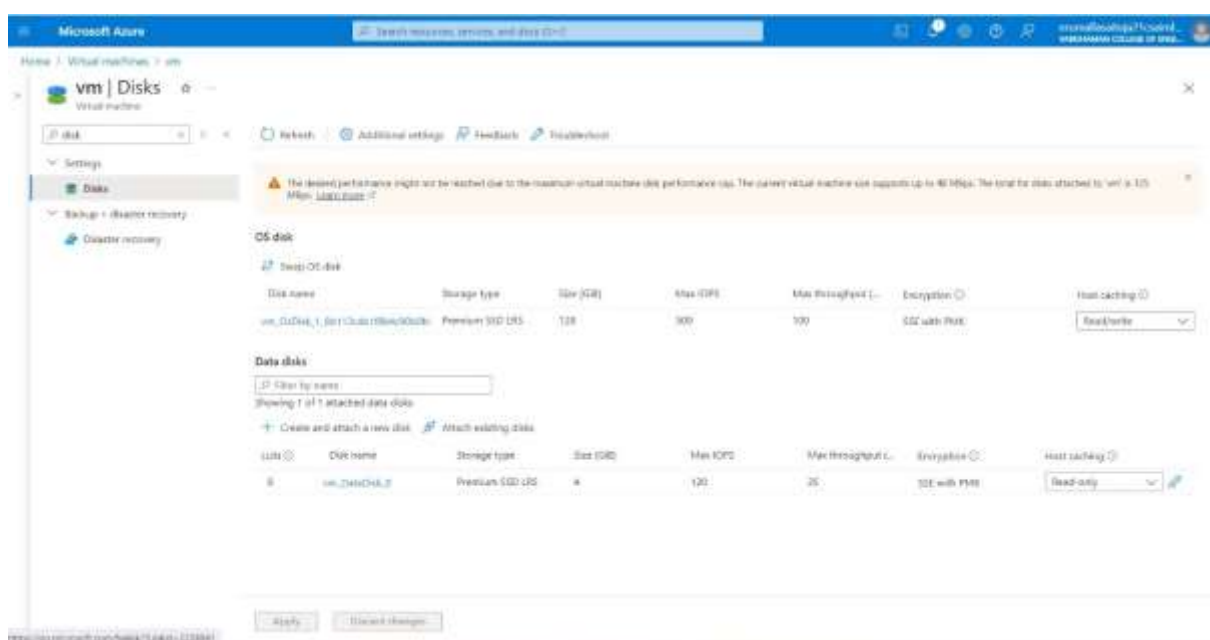
12) Click on “Use a different account”, enter the credentials and click on OK



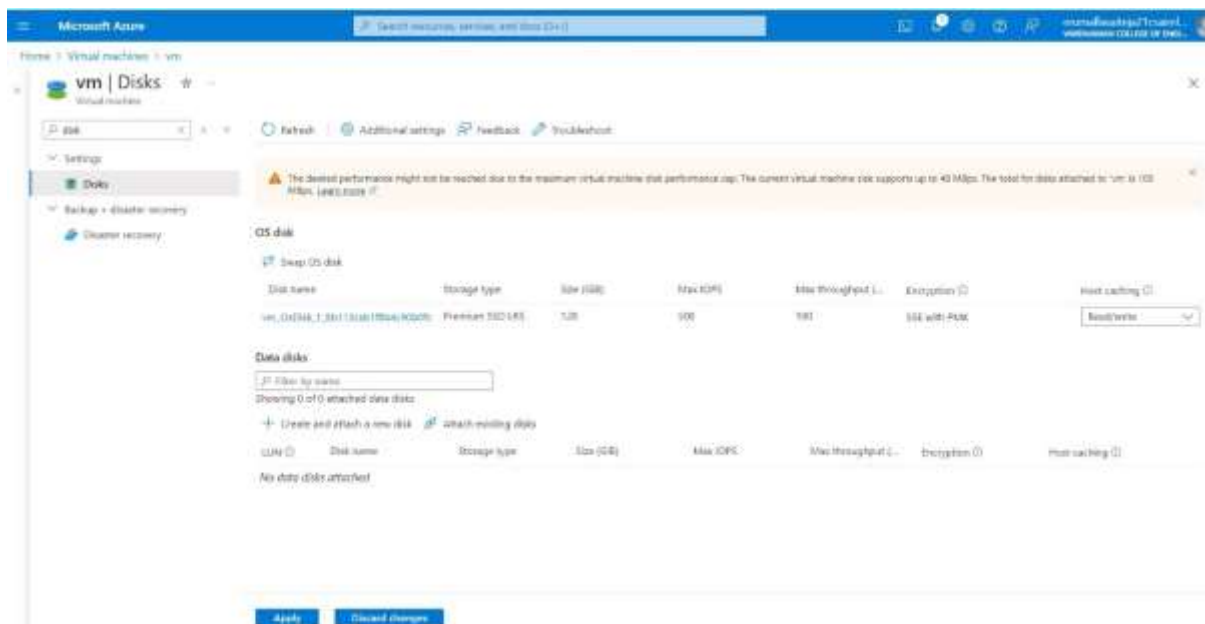
13) Click on yes and now the data disks are attached to the windows server



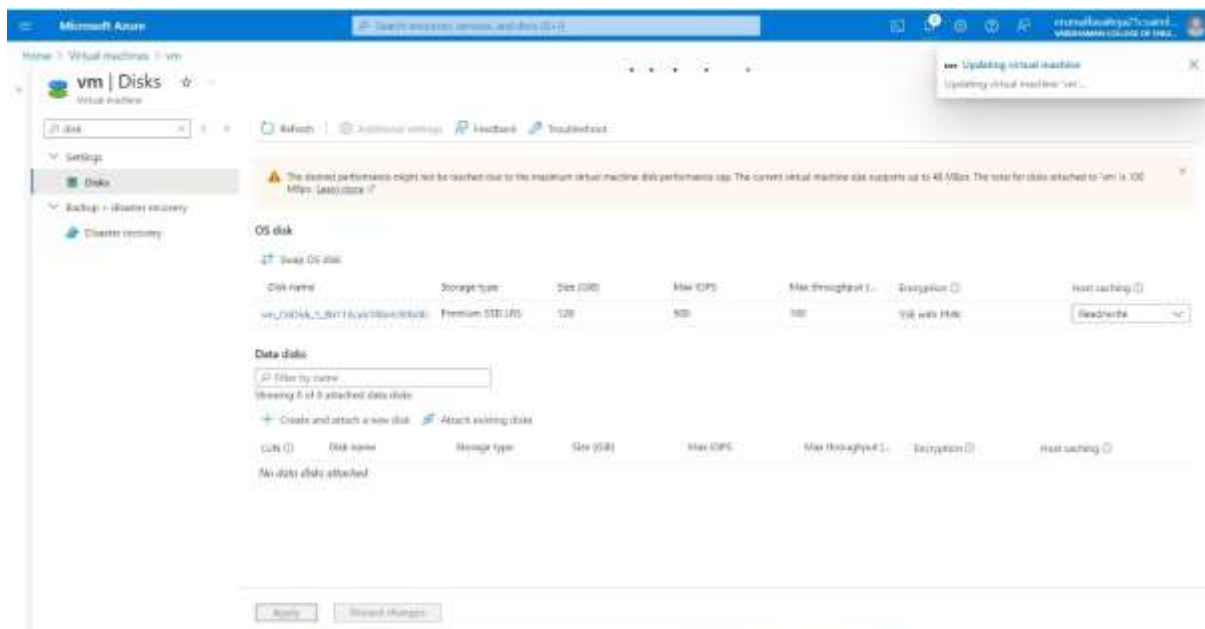
14) Click on “Disks” in your VM and you can see the attached data disks to the windows server



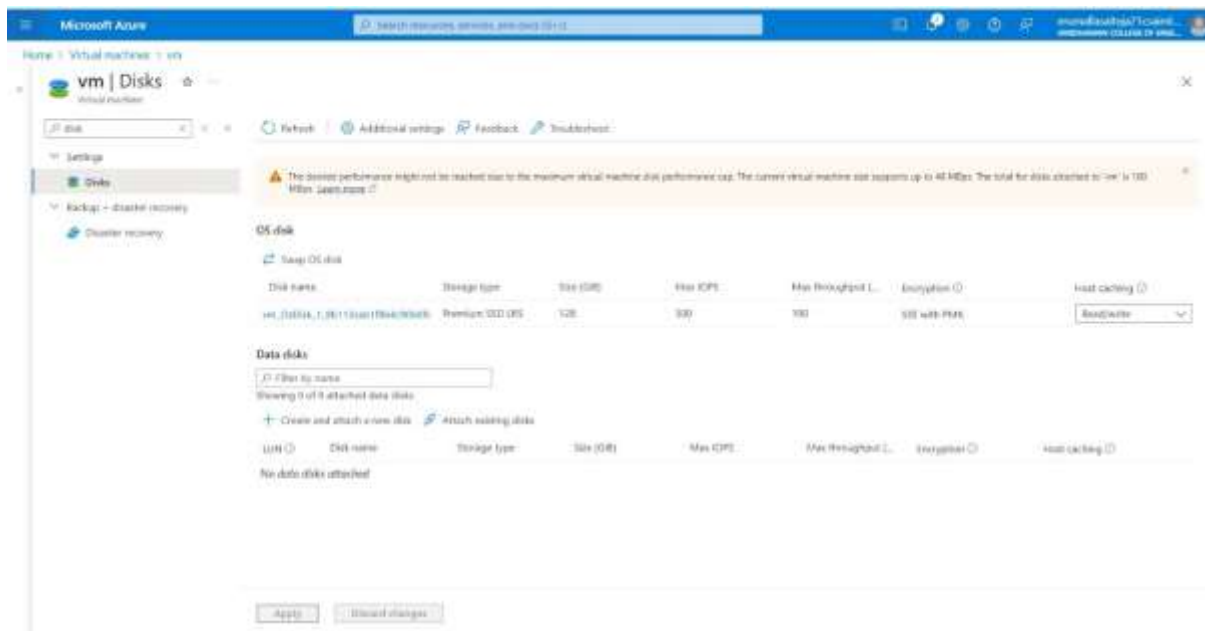
15) Detach the data disks from the windows server by clicking on the detach symbol



16) Click on “Apply”



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

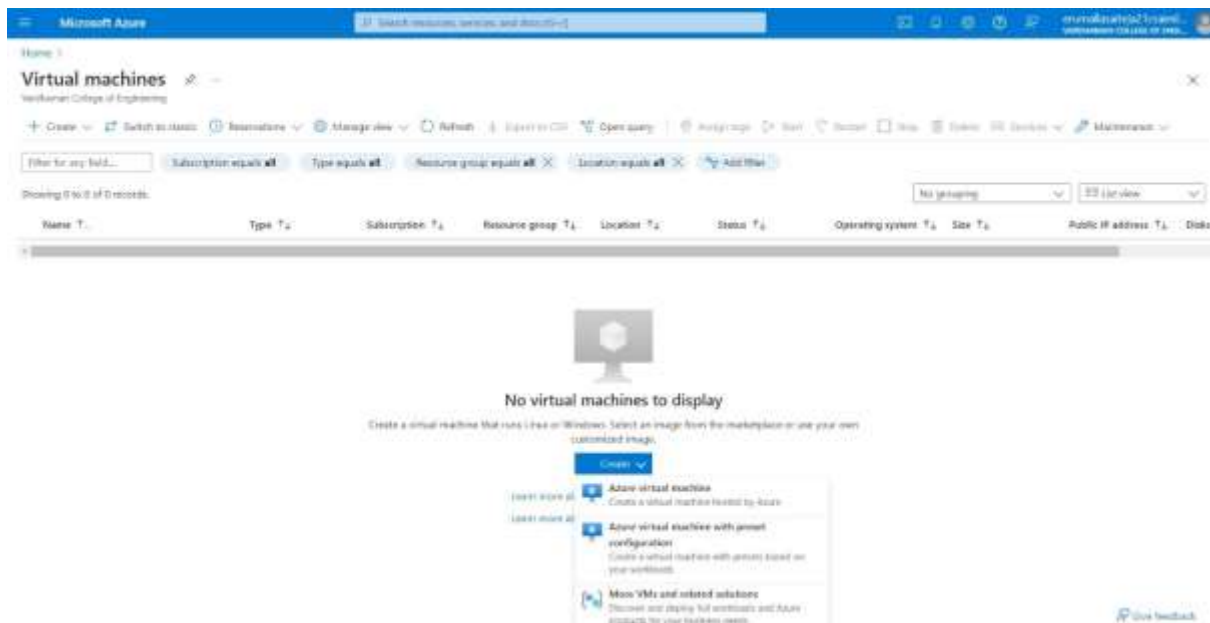


**Result:** Above experiment is successful executed And verified.

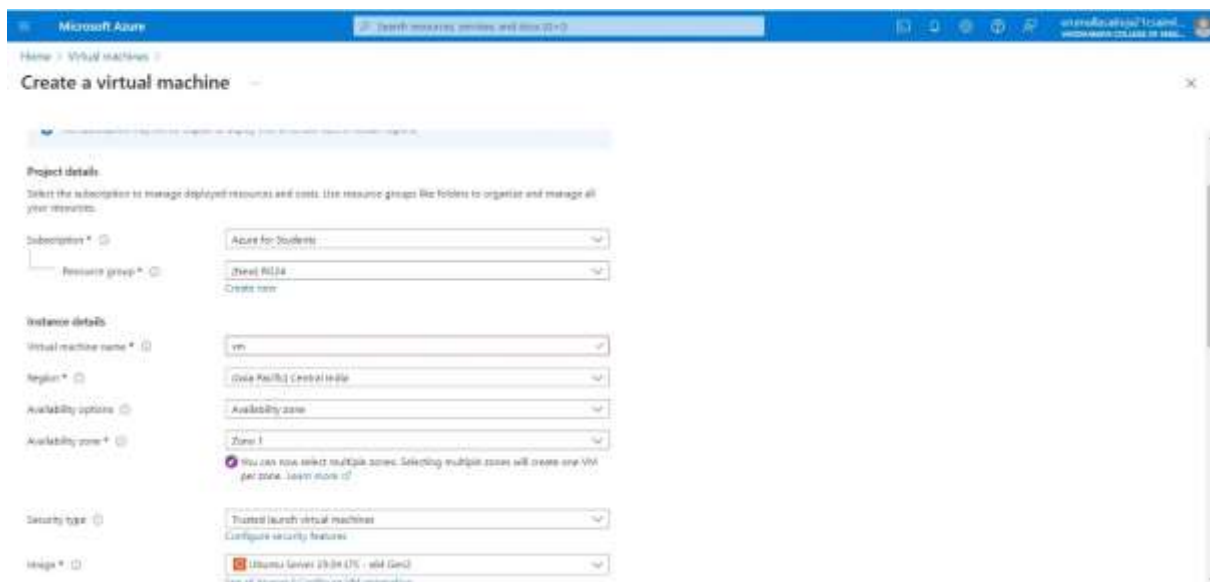
### 13Q) How to add data disks to linux server in azure data center

#### Steps:-

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



**Step 2 :** click on "Next:Disks>"





Microsoft Azure

Search resources, services, and docs (Ctrl+K)

Home > Virtual machines >

### Create a virtual machine

Size \*

Enable Hyper-V \* ☐

Administrator account

Authentication type \* ☐ SSH public key ☒ Password

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 greater network access on the Networking tab.

Public inbound ports \* ☐ None ☒ Allow selected ports

Select inbound ports \*

Previous Next: Disk Review + create

### Step 3 : Select

OS disk size -----30GB

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

enable "Delete with VM"

Microsoft Azure

Search resources, services, and docs (Ctrl+K)

Home > Virtual machines >

### Create a virtual machine

Basics Disk Networking Management Monitoring Advanced Tags Review + create

Azure VMs have one operating system disk and a temporary disk for short-term storage. You can attach additional data disks. The size of the VM determines the type of storage you can use and the number of data disks allowed. [Learn more >](#)

VM disk encryption

Azure disk storage encryption automatically encrypts your data stored on Azure managed disks (OS and data disks) at rest by default when persisting it to the cloud.

Encryption at host \* ☐

OS disk

OS disk size \*

OS disk type \*

Delete with VM \* ☒

Key management \*

Enable Ultra Disk compatibility \* ☐

Ultra disk is not supported for the selected VM size Standard\_D5s\_v2 in Central India.

Data disks for VM:

Previous Next: Networking Review + create

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

Microsoft Azure

Search resources, services, and docs (Ctrl)

Home > Virtual machines > Create a virtual machine >

### Create a new disk

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 \*   
Premium SSD LRS  
[Change size](#)

Key management

Enable shared disk ☐ Yes ☒ No

Delete disk with VM ☐

[Give feedback](#)

### Step 5 : Select

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

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

Microsoft Azure

Search resources, services, and docs (Ctrl)

Home > Virtual machines > Create a virtual machine >

### Create a new disk

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 \*   
Premium SSD LRS  
[Change size](#)

Key management

Enable shared disk ☐ Yes ☒ No

Delete disk with VM ☐

[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

Microsoft Azure

Search resources, services, and docs (Ctrl+K)

Home > Virtual machines >

### Create a virtual machine

Microsoft Azure is not registered for the selected subscription. Learn more about resolving this failure >

**OS disk**

OS disk size: Image default (32 GB)

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

Delete with VM: ☒

Key management: Platform-managed key

Enable Ultra Disk compatibility: ☐  
Ultra disk is not supported for the selected VM size Standard\_DS1\_v2 or Central v2.

**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	os_DataDisk_0	1024	Premium SSD (H)	Read-only	<input checked="" type="checkbox"/>

Create and attach a new disk Attach an existing disk

< Previous Next: Networking > **Review + create**

Give feedback

Microsoft Azure

Search resources, services, and docs (Ctrl+K)

Home > Virtual machines >

### Create a virtual machine

Written prompt

Basics Disk Networking Management Monitoring Advanced logs **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 D1s v2  
by Microsoft  
Terms of use | Privacy policy

Subscription credits apply >

**\$6.5884 /hr**  
Pricing for other VM sizes

**TERMS**

By clicking "Create", I (c) agree to the legal terms and privacy statement(s) associated with the Marketplace offering(s) listed above; (d) 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 (e) 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: CDRUMALLA SAITEJA

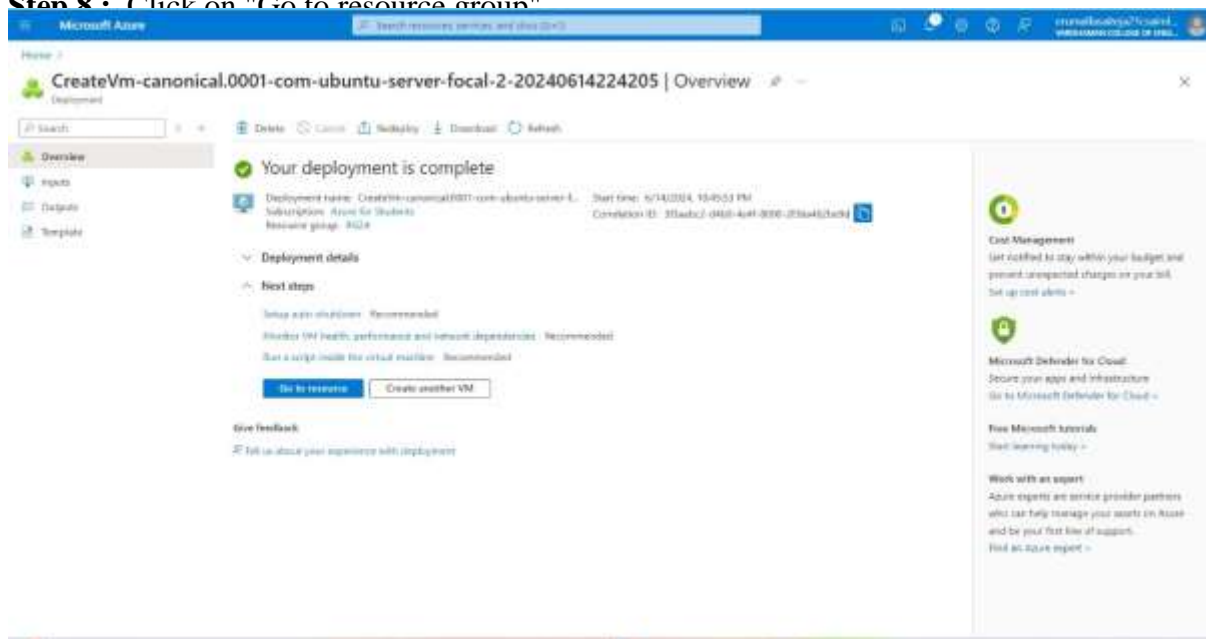
Preferred e-mail address: erumallasaija@satyam.net.in

Preferred phone number:

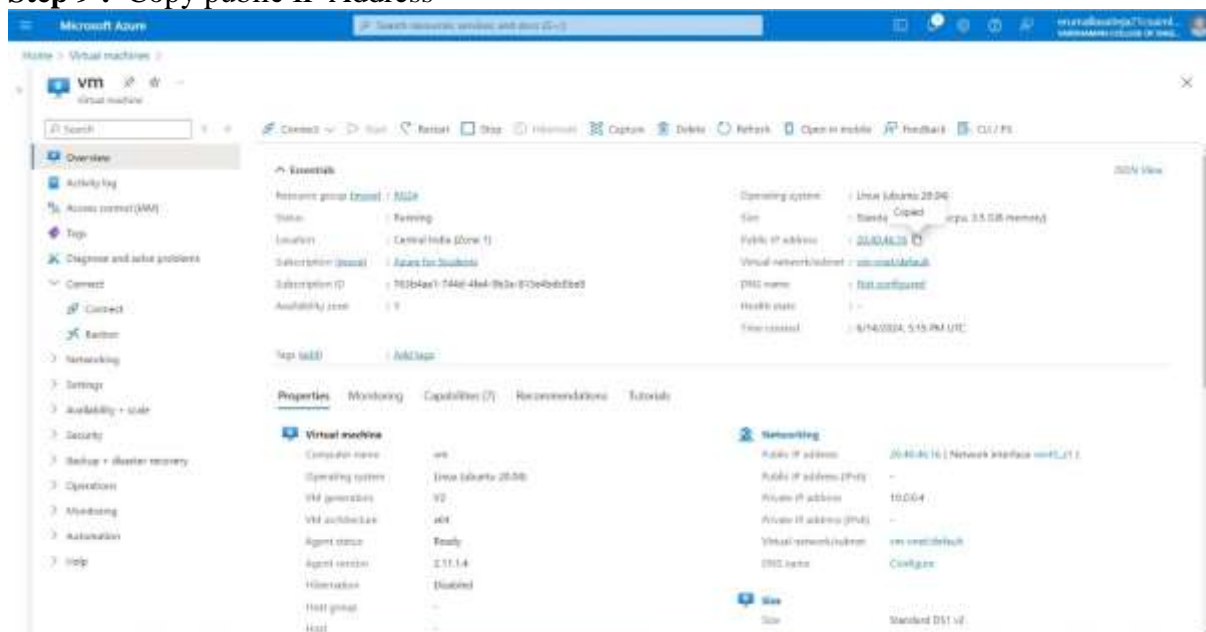
< Previous Next > **Create**

Download a template for automation > Give feedback

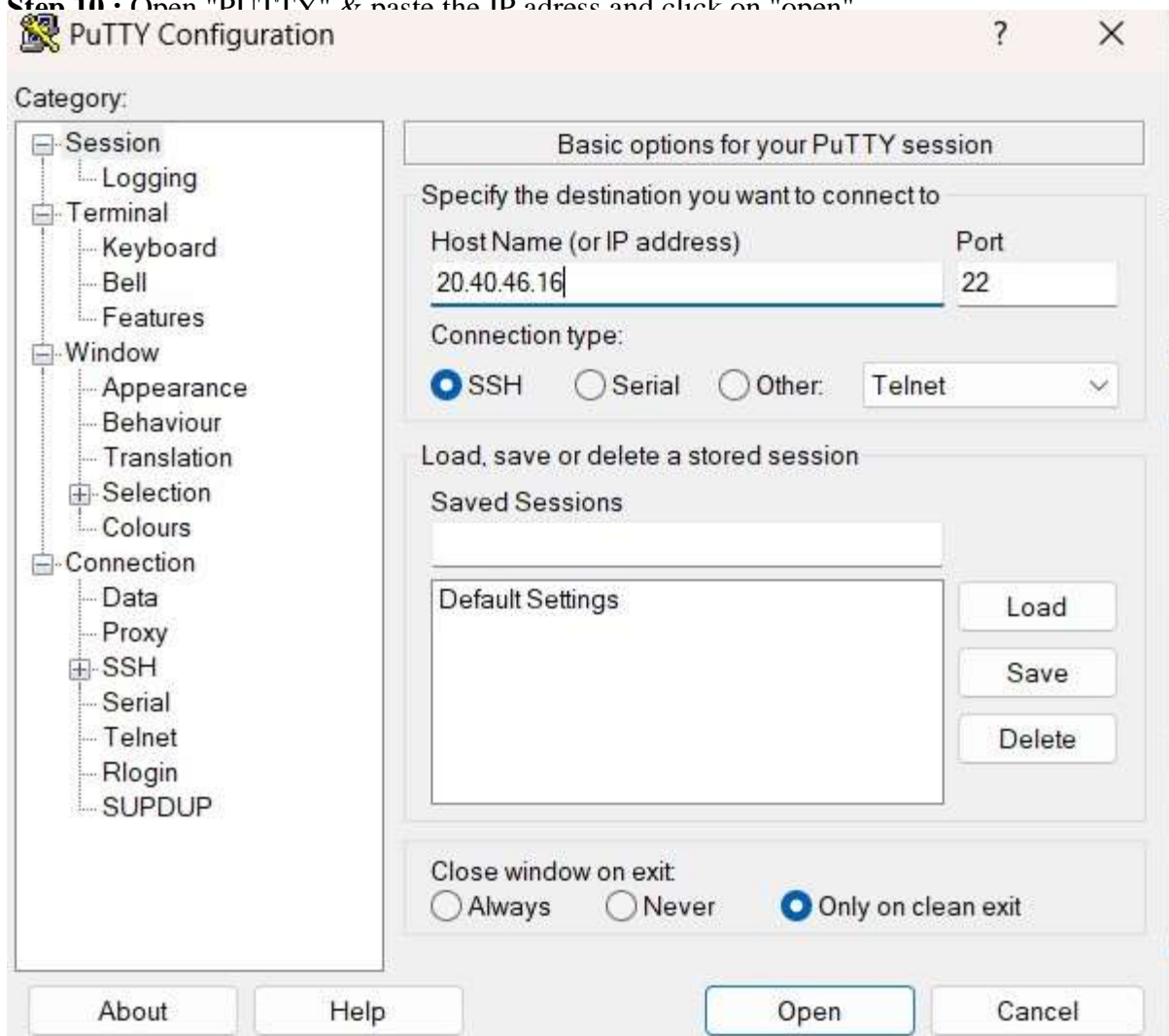
### Step 8 : Click on "Go to resource group"



### Step 9 : Copy public IP Address



**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 38.89GB   Users logged in: 0
Memory usage: 0%               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.

3 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 fioe -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

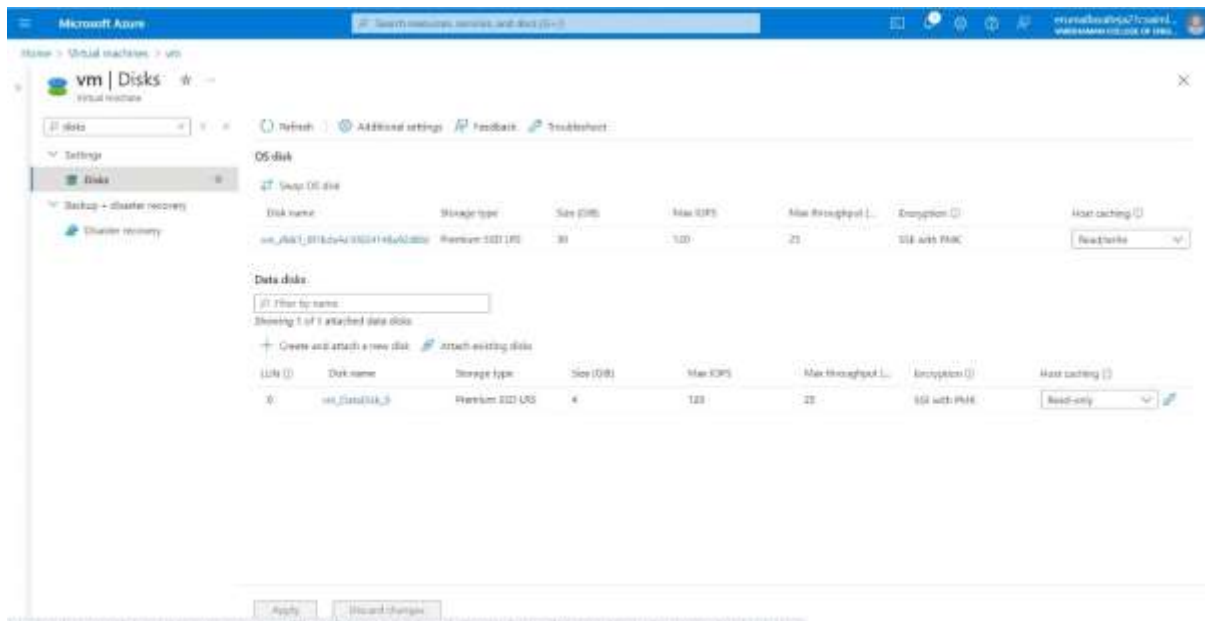
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individual files in /usr/share/doc/*/copyright.

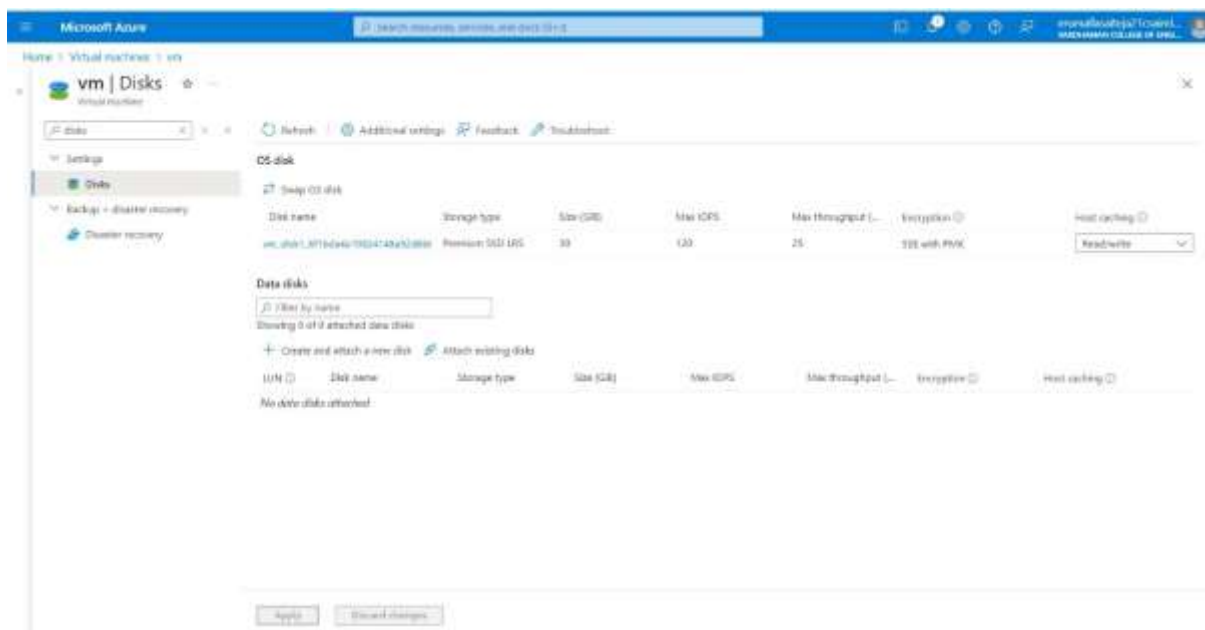
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

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    620K  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$
```



**Step 13 :** Click on Apply



**Result:** Above experiment is successful executed And verified.



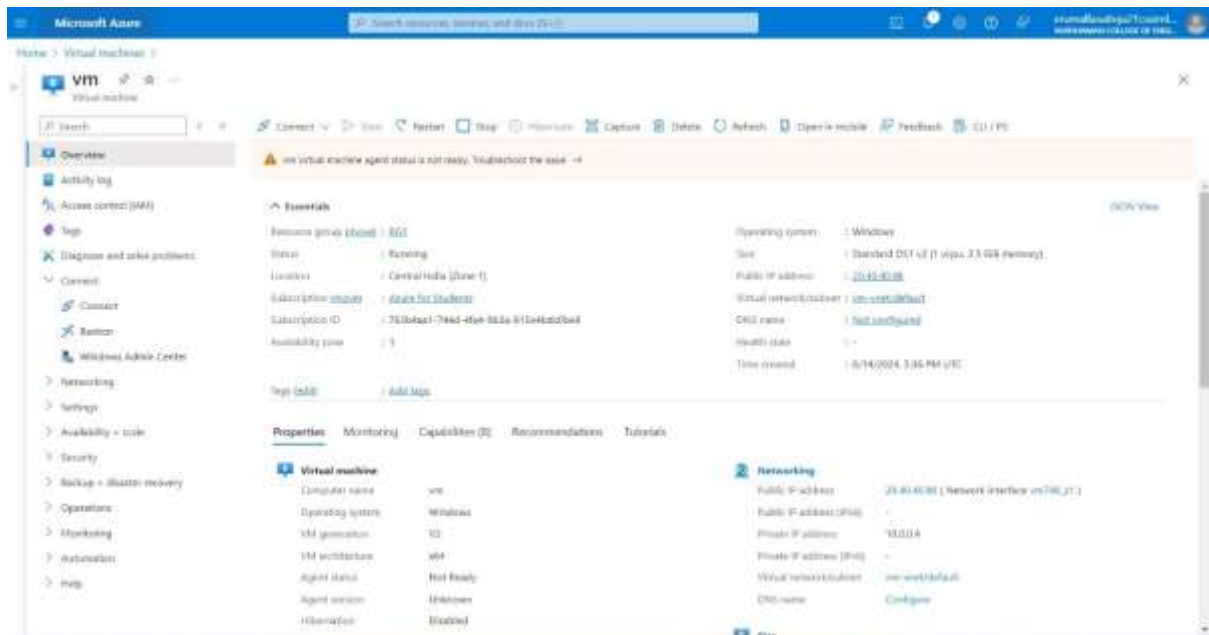
## Q14) Move Server Files from one Resource Group to another.

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

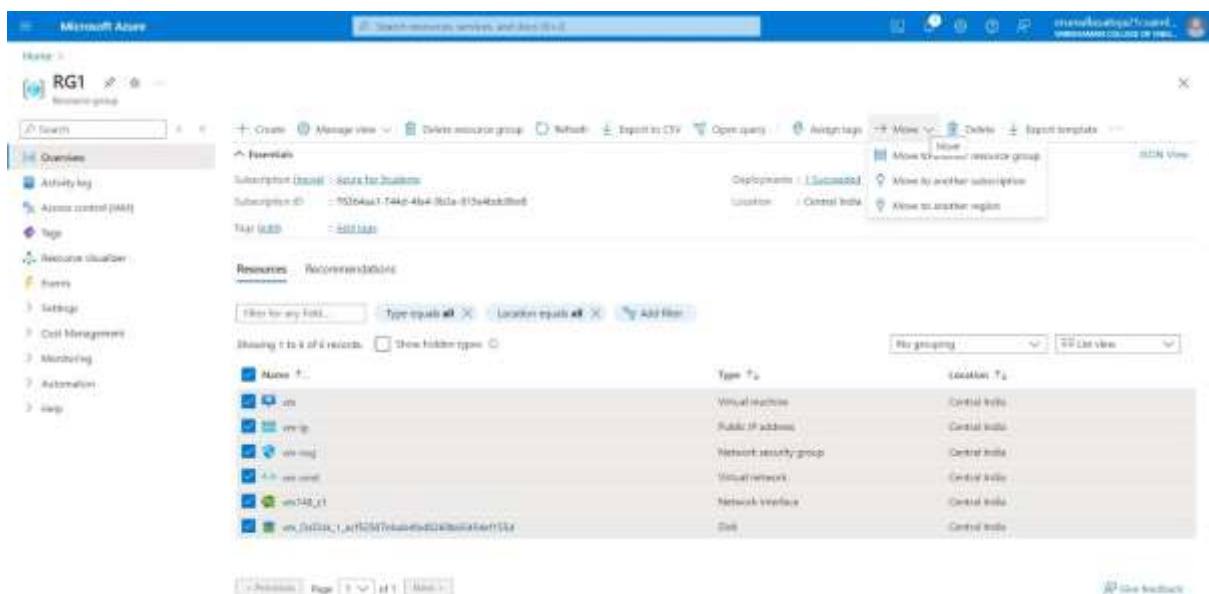
The screenshot shows the 'Create a resource group' page in the Microsoft Azure portal. The page has a blue header with the Microsoft Azure logo and a search bar. Below the header, there's a breadcrumb trail 'Home > Resource groups >'. The main heading is 'Create a resource group'. There are three tabs: 'Basics', 'Tags', and 'Review + create'. The 'Basics' tab is selected. Below the tabs, there's a description of a resource group. Under 'Project details', there are two dropdown menus: 'Subscription' (set to 'Azure for Students') and 'Resource group' (set to 'RG1'). Under 'Resource details', there is a 'Region' dropdown menu (set to '(Able Patti) Central India'). At the bottom, there are three buttons: 'Review + create', 'Cancel', and 'Next: Tags >'. The 'Review + create' button is highlighted.

The screenshot shows the 'Resource groups' page in the Microsoft Azure portal. The page has a blue header with the Microsoft Azure logo and a search bar. Below the header, there's a breadcrumb trail 'Home >'. The main heading is 'Resource groups'. There are several action buttons: '+ Create', 'Manage view', 'Refresh', 'Export to CSV', 'Open query', and 'Assign tags'. Below these buttons, there's a search bar and two filters: 'Subscription equals all' and 'Location equals all'. There are also buttons for 'Add filter' and 'Reset'. Below the filters, there's a table showing the resource groups. The table has three columns: 'Name', 'Subscription', and 'Location'. There are two rows of data: 'RG1' and 'RG2', both under the 'Azure for Students' subscription and in the 'Central India' location. The table is showing 1 of 2 records.

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



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



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

Microsoft Azure

Home > RG1

Overview

Activity log

Access control (IAM)

Tags

Resource advisor

Events

Settings

Cost Management

Monitoring

Automation

Help

Resources

Recommendations

Filter for any field...

Type equals all

Location equals all

Add filter

Showing 1 to 8 of 8 results

Show hidden types

No grouping

Full list view

Name	Type	Location
vm	Virtual machine	Central India
vm-tp	Public IP address	Central India
vm-nsg	Network security group	Central India
vm-vnet	Virtual network	Central India
vmNIC1	Network interface	Central India
vm-nic1_1	Disk	Central India

1/1 Pages Page 1 of 1

Give feedback

Microsoft Azure

Home > RG1

Move resources

1 Source > target 2 Resources to move 3 Review

To move a resource, select a source and a destination. The source and destination resource groups will both be locked during the move. Learn more

Source

Subscription: Azure for Students

Resource group: RG1

Target

Subscription: Azure for Students

Resource group: RG2

Create new

Previous Next

Microsoft Azure

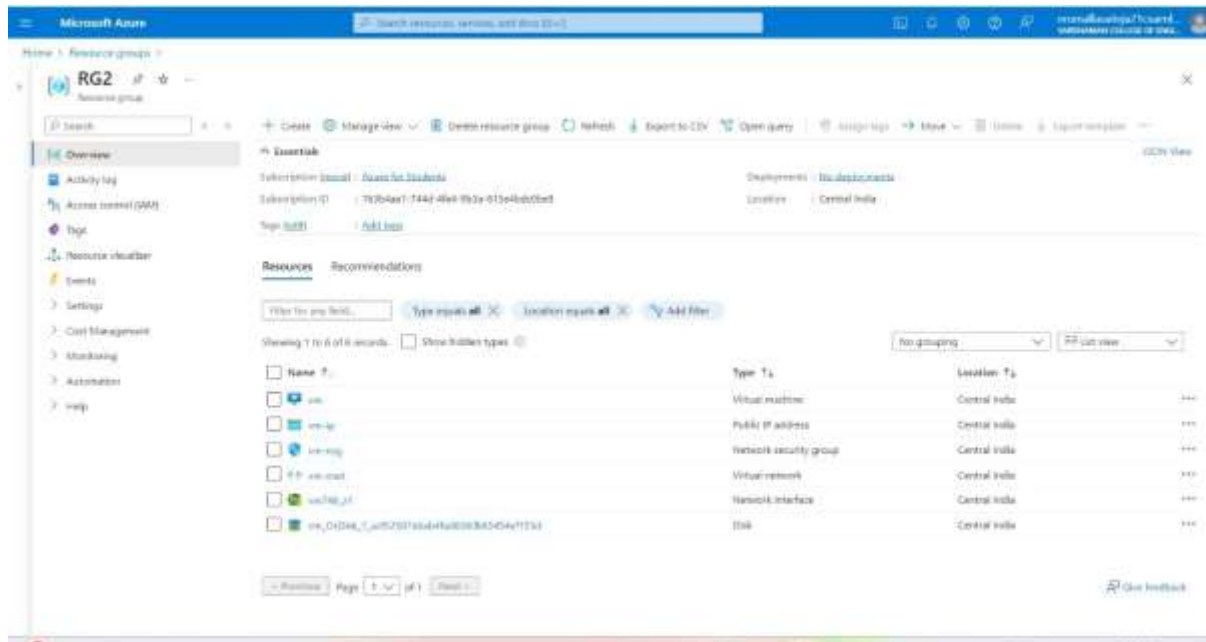
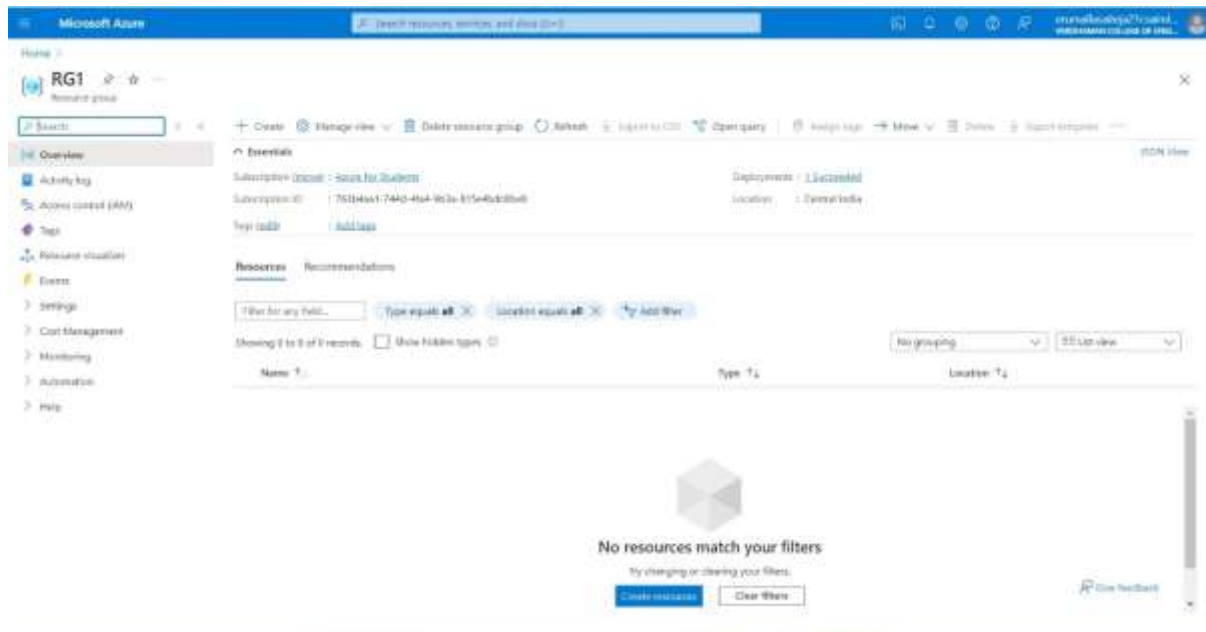
Home > RG1

Move resources

1 Source > target 2 Resources to move 3 Review

Checking whether these resources can be moved. This might take a few minutes.

Name	Type	Resource type	Validation status	Remove
vm-0sDisk_1_4d120776a6b4d026b0d44ef055a	Disk	microsoft.compute/disk	Pending validation	Remove
vmNIC1	Network interface	microsoft.network/networkinterface	Pending validation	Remove
vm-vnet	Virtual network	microsoft.network/virtualnetwork	Pending validation	Remove
vm-nsg	Network security group	microsoft.network/networksecuritygroup	Pending validation	Remove
vm-tp	Public IP address	microsoft.network/publicipaddress	Pending validation	Remove
vm	Virtual machine	microsoft.compute/virtualmachine	Pending validation	Remove



**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.

Microsoft Azure

Search resources, services, and docs (type)

Home > Storage accounts >

### Create a storage account

redundant Azure Storage includes Azure Blob (objects), Azure Data Lake Storage Gen2, Azure Files, Azure Storage, and Azure Tables. The cost of your storage account depends on the usage and the options you choose below. Learn more about Azure storage accounts >

**Project details**

Select the subscription in which to create the new storage account. Choose a new or existing resource group to organize and manage your storage account together with other resources.

Subscription\* Azure for Students

Resource group\* (HMSI R01)  
[Create new](#)

**Instance details**

Storage account name\* msc01

Region\* (Asia Pacific) Central India  
[Deploy to an Azure Sentinel Edge](#)

Performance\* ☒ Standard: Recommended for most scenarios (general purpose storage accounts)  
☐ Premium: Recommended for scenarios that require low latency

Redundancy\* Geo-redundant storage (GRS)  
☒ Make read access to data available in the event of regional unavailability

[Previous](#) [Next](#) [Review + create](#)

[Give feedback](#)

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

Microsoft Azure

Search resources, services, and docs (type)

Home > Storage accounts >

### Create a storage account

Basics **Advanced** Networking Data protection Encryption Tags [Review + create](#)

**Security**

Configure security settings that impact your storage account.

Require secure transfer for REST API operations ☒

Allow enabling anonymous access on individual containers ☒

Enable storage account key access ☒

Default to Microsoft Entra authentication on the Azure portal ☐

Minimum REST version

Permitted origins for copy operations (optional)

**Hierarchical Namespace**

Hierarchical namespace, implemented by Data Lake Storage Gen2 endpoints, enables file and directory semantics, accelerates big data analytics workflows, and enables access control lists (ACLs). Learn more >

Enable hierarchical namespace ☐

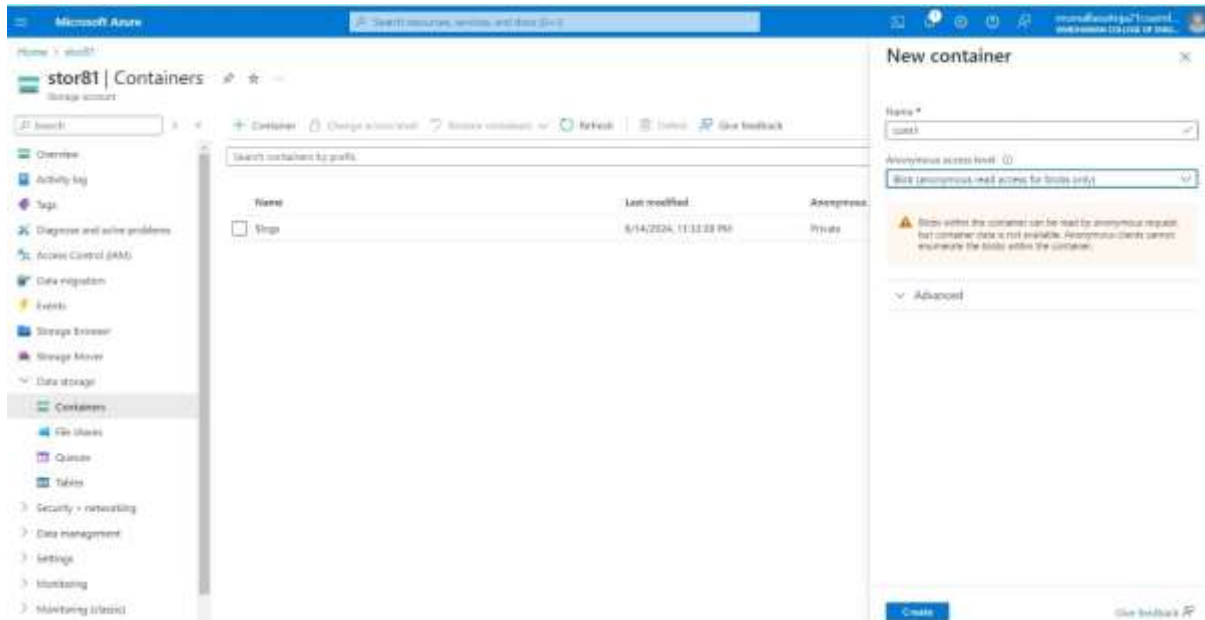
**Access protocols**

Allow web (HTML) and REST API access to data ☐

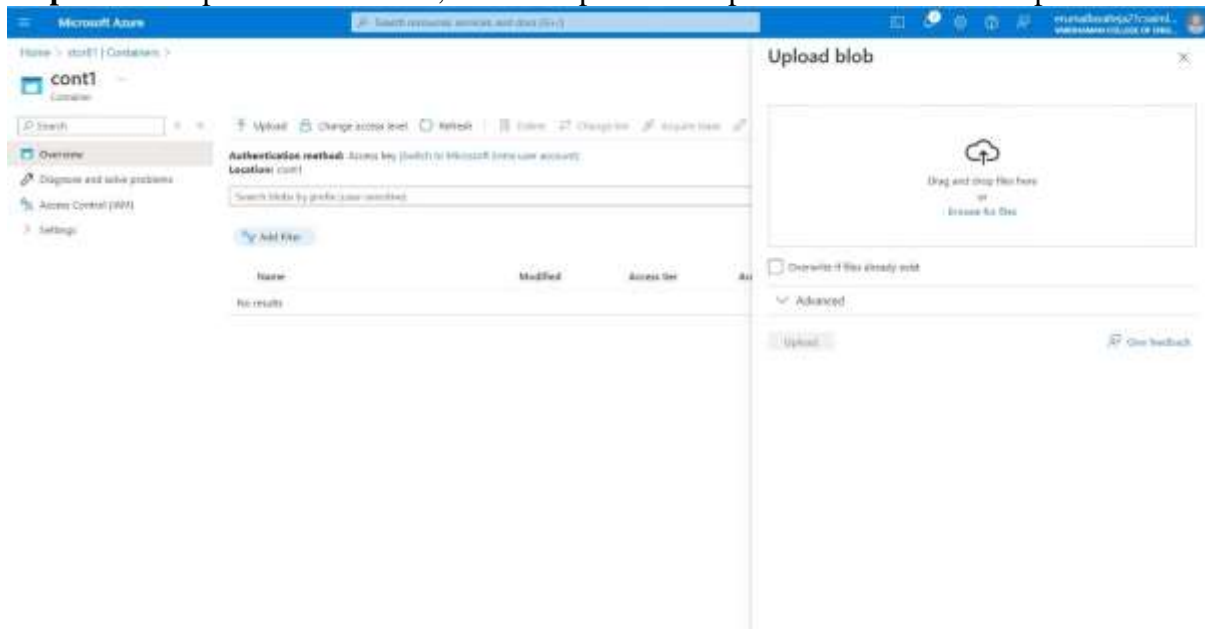
[Previous](#) [Next](#) [Review + create](#)

[Give feedback](#)

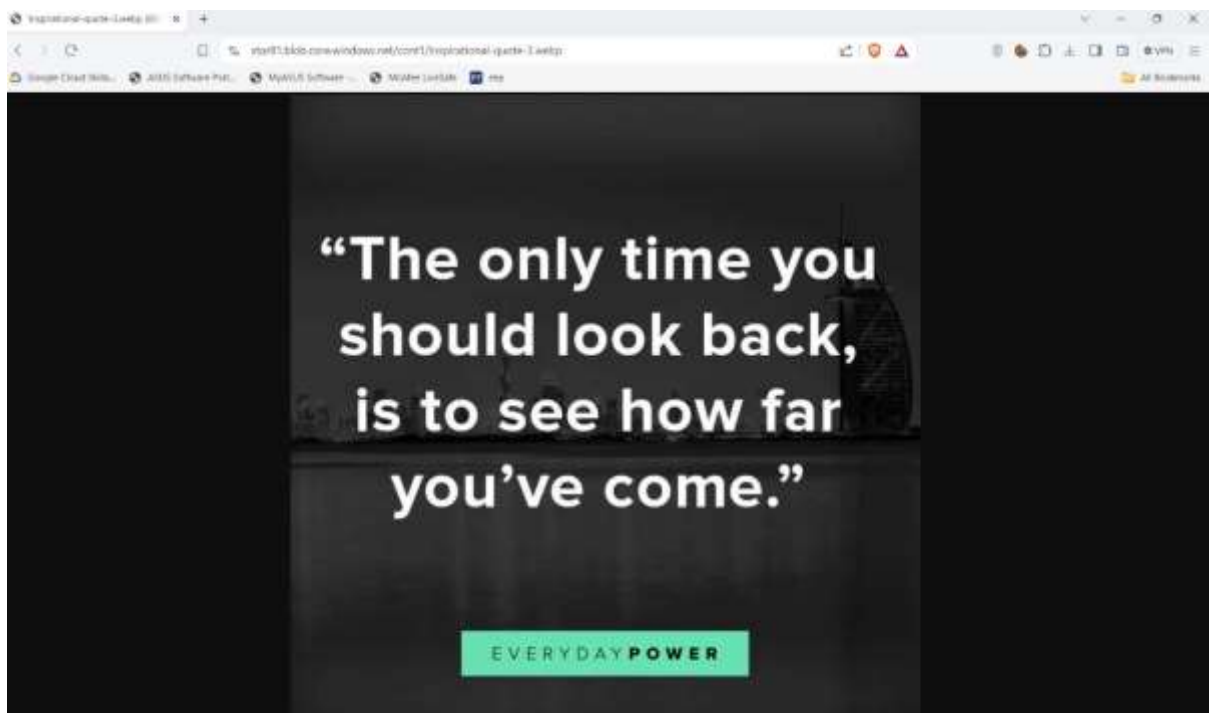
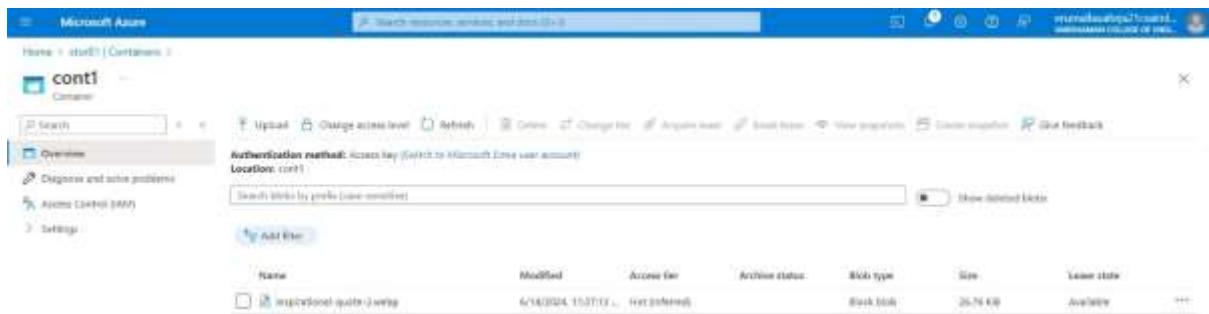
**Step-3:** After deployment Click on go to resource group and on Left Click on Containers and Create it with anonymous access level as blob (anonymous read access to blob only)



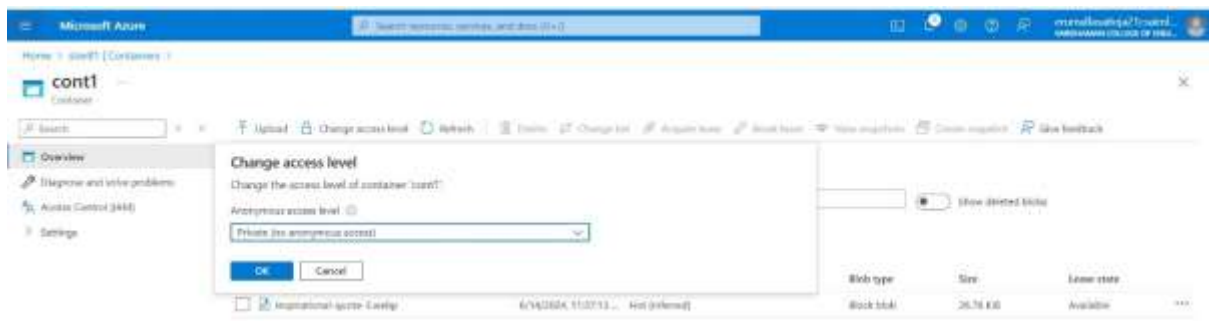
**Step-4:** Then open new container, click on upload and upload a file from desktop.



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

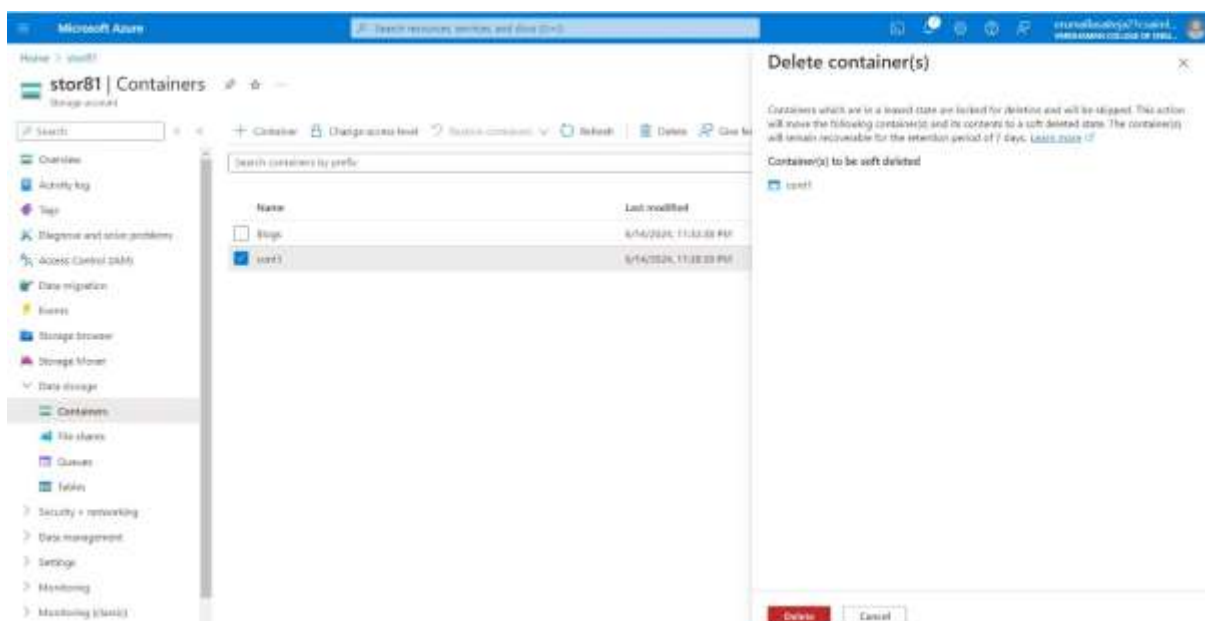
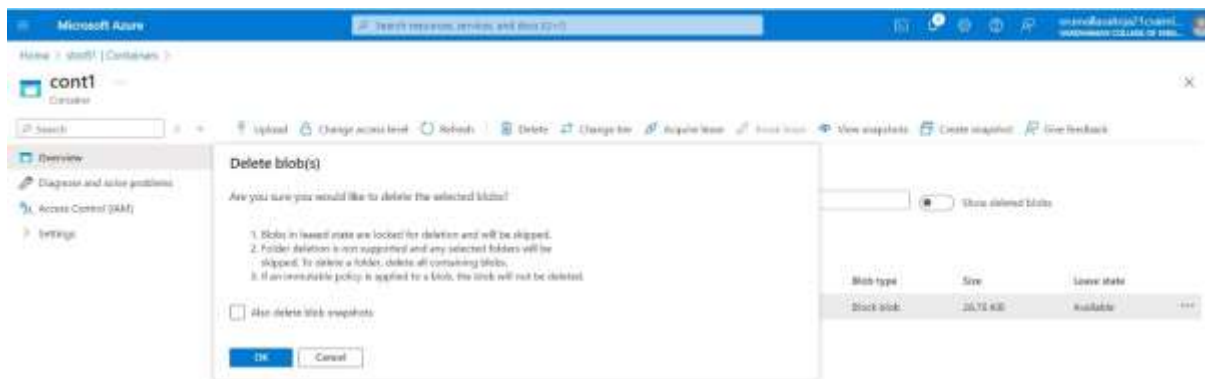


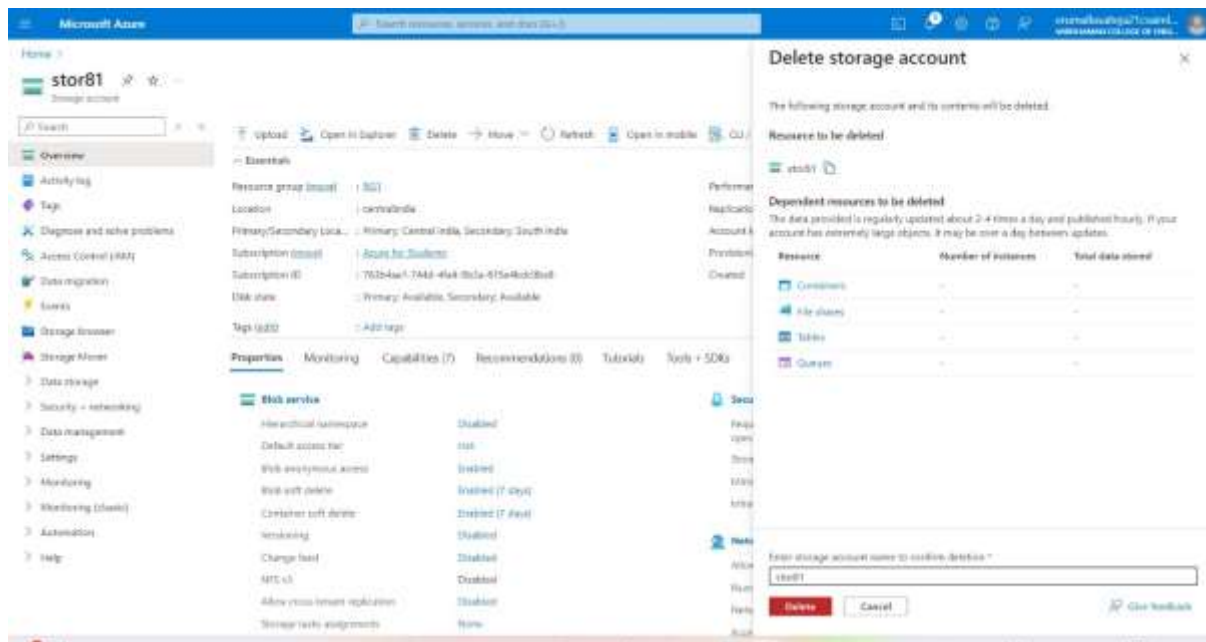
**Step-6:** On container click Change access level to Private (no anonymous access) and try to open the file in new tab it will show error.





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





**Result:** Above experiment is successful executed And verified.