

**VARDHAMAN COLLEGE OF ENGINEERING**  
**(AUTONOMOUS)**

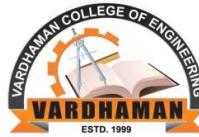
Affiliated to **JNTUH**, Approved by **AICTE**, Accredited by **NAAC** with **A++** Grade, **ISO 9001:2015** Certified  
 Kacharam, Shamshabad, Hyderabad - 501218, Telangana, India

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

**LABORATORY RECORD**

Registration Number	:	21881A6691
Student Name	:	Kalam Sujith Reddy
Class / Semester	:	III B. TECH II
Course Name	:	Cloud Computing & Virtualization
Course Code	:	A7514
Academic Year	:	2023-24
Regulation	:	VCE-R21



## VARDHAMAN COLLEGE OF ENGINEERING (AUTONOMOUS)

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

## CERTIFICATE

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

*Date:*

*HOD*

*Staff Incharge*

*Internal Examiner*

*External Examiner*

**1. Course Description:****Course Overview**

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

**2. Course Outcomes (COs)**

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

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

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

A7514.3 Make use of virtualization concepts in cloud.

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

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

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S.No	Date	Title of the Experiment	Page	Signature
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8		Implementing locks in Azure Portal.		
9		Perform scaling in Azure Portal.		
10		Perform attach and detach of data disk to Linux Server in Azure data center.		
11		Perform attach and detach of data disk to Windows Server in Azure data center.		
12		Create Azure Storage Account, Container and upload and delete objects in it.		
13		Implement static web hosting in Azure portal.		
14		Implement object replication through Azure portal.		
15		How we are adding new users, login credentials, changing owner, create authorized key files.		

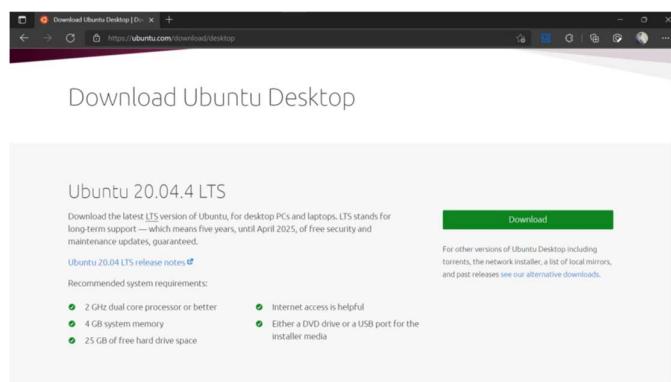
## Q1. Install the Virtual Box (or) a Malware work station and launch Linux Server.

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



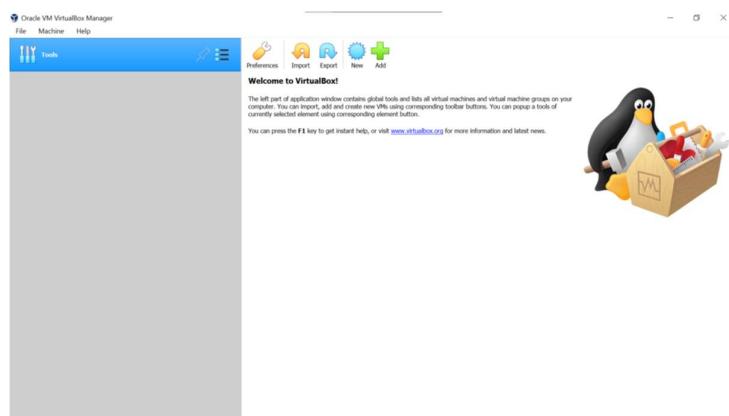
<https://www.virtualbox.org/wiki/Downloads>

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

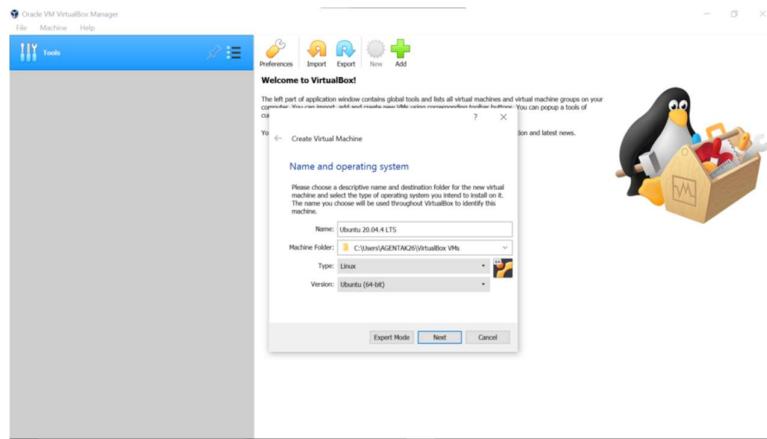


Note: The current version of Ubuntu only works on 64-bit machines.

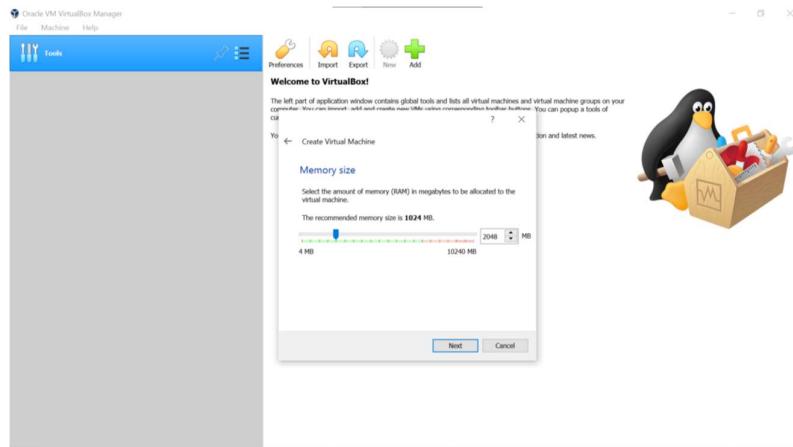
**Step-3:** Open VirtualBox and select New in the top toolbar.



**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.

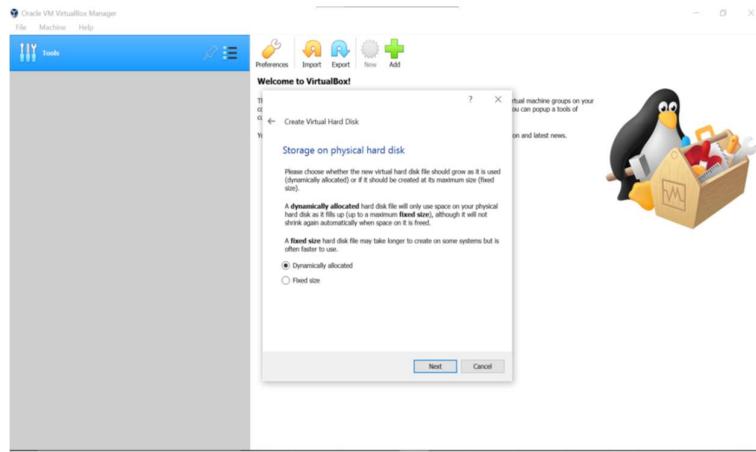


**Step-6:** Choose Create a virtual hard disk now and select Create.

**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.

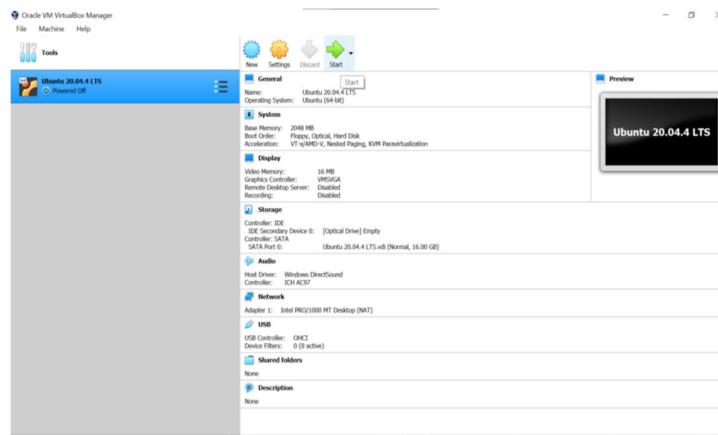


**Tip:** A fixed size disk performs better because the virtual machine doesn't have to increase the file size as you install software.

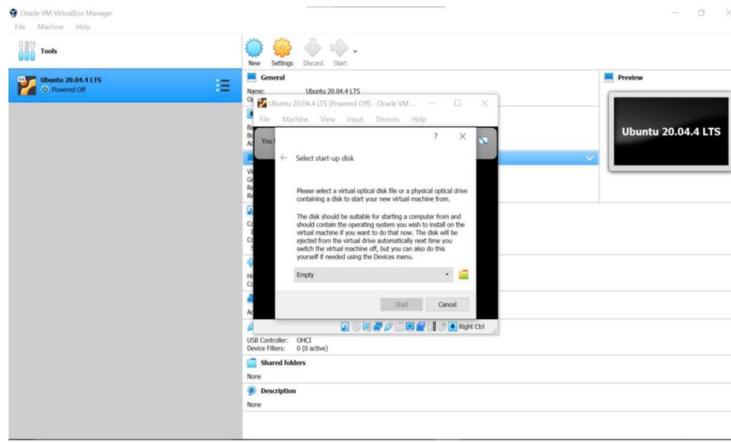
**Step-9:** Choose how much space you wish to set aside for Ubuntu and select Create.

**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.

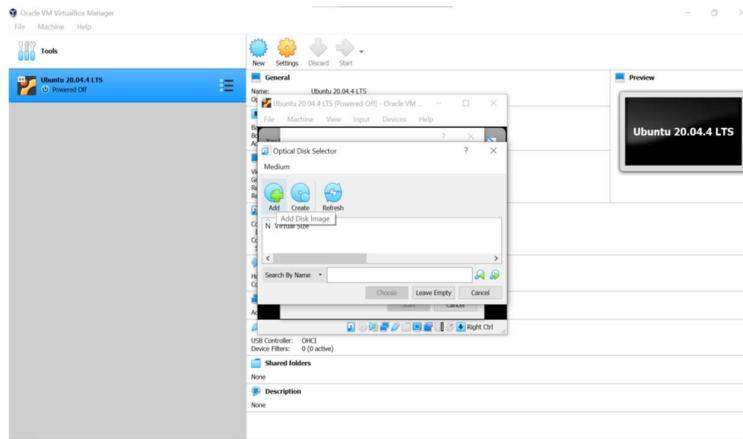
**Step-10:** The name of your virtual machine will now appear on the left side of the VirtualBox manager. Select Start in the toolbar to launch your VM.



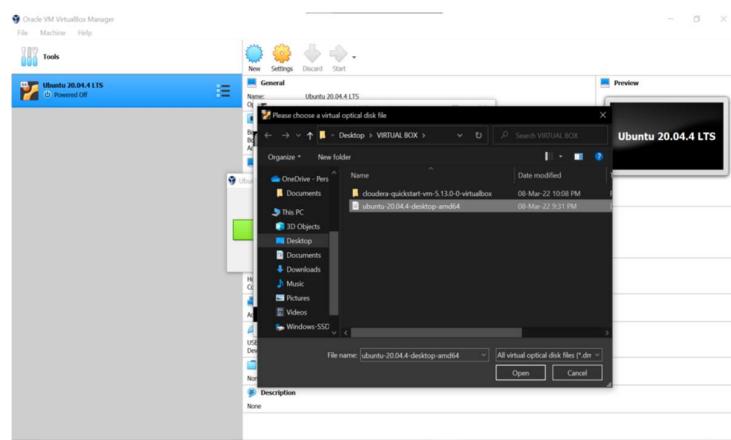
**Step-11:** This is the point where you need to choose the Ubuntu ISO file you downloaded earlier. If the VM doesn't automatically detect it, select the folder next to the Empty field.

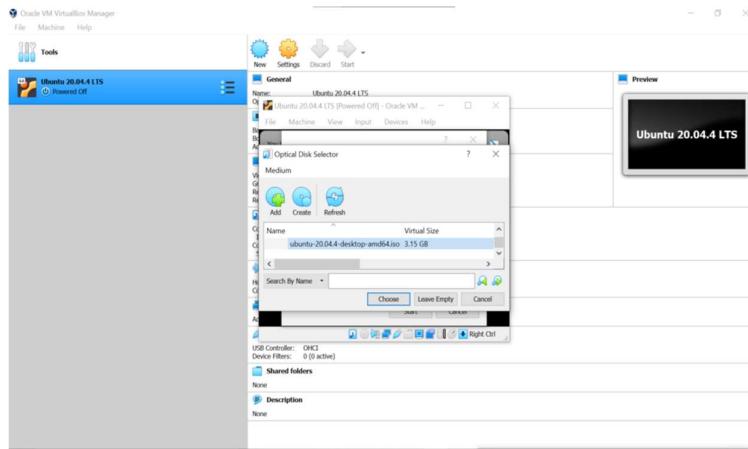
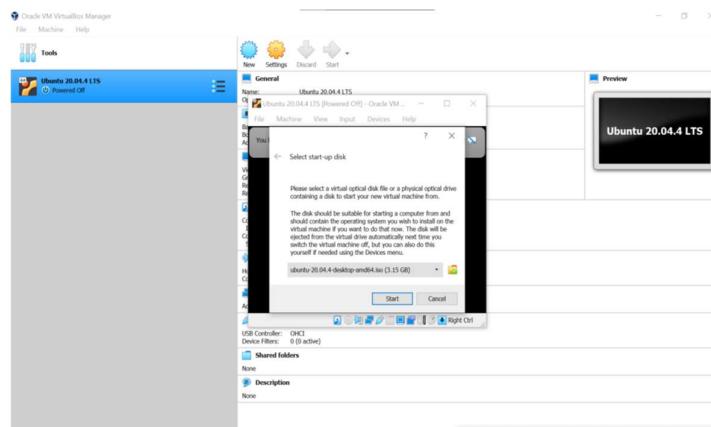


**Step-12:** Select Add in the window that pops up.

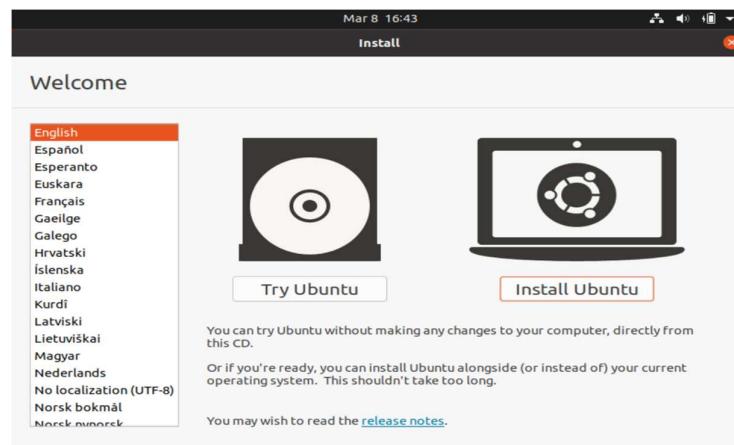


**Step-13:** Choose your Ubuntu disk image and select Open.



**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



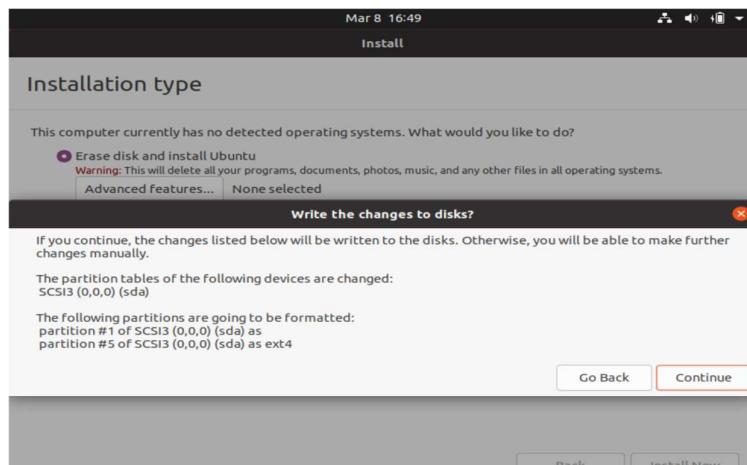
u.

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

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

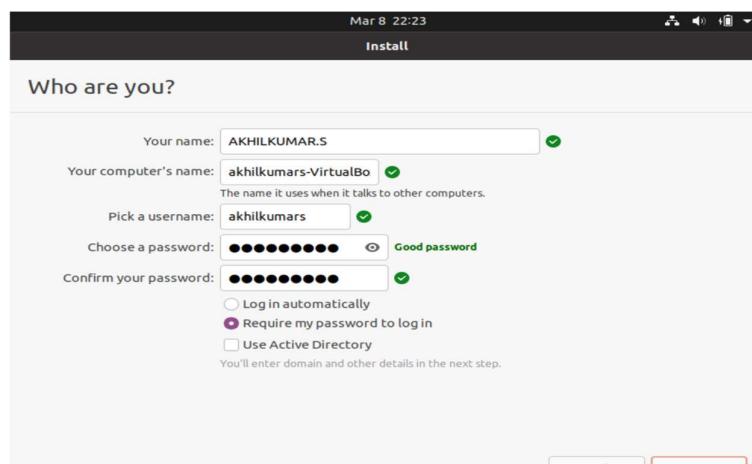
**Step-19:** Choose Erase disk and install Ubuntu and select Install Now, then select Continue to ignore the warning.

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

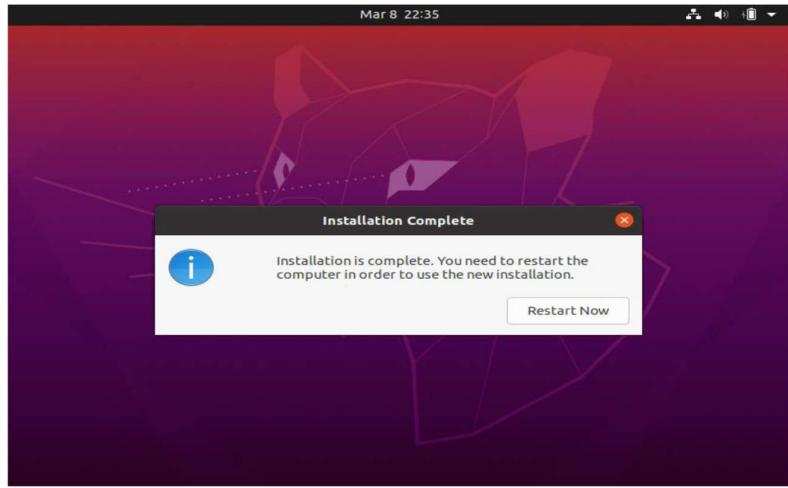


**Step-20:** - Choose your time zone on the map, then select Continue.

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

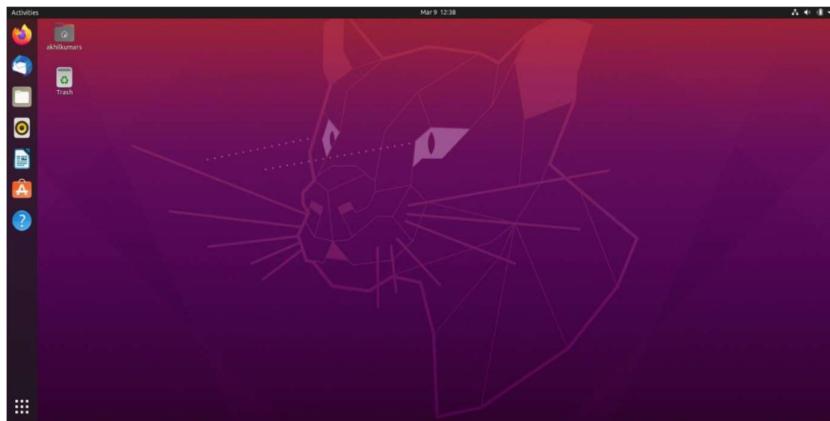


**Step-22:** - Select Restart Now.



**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:

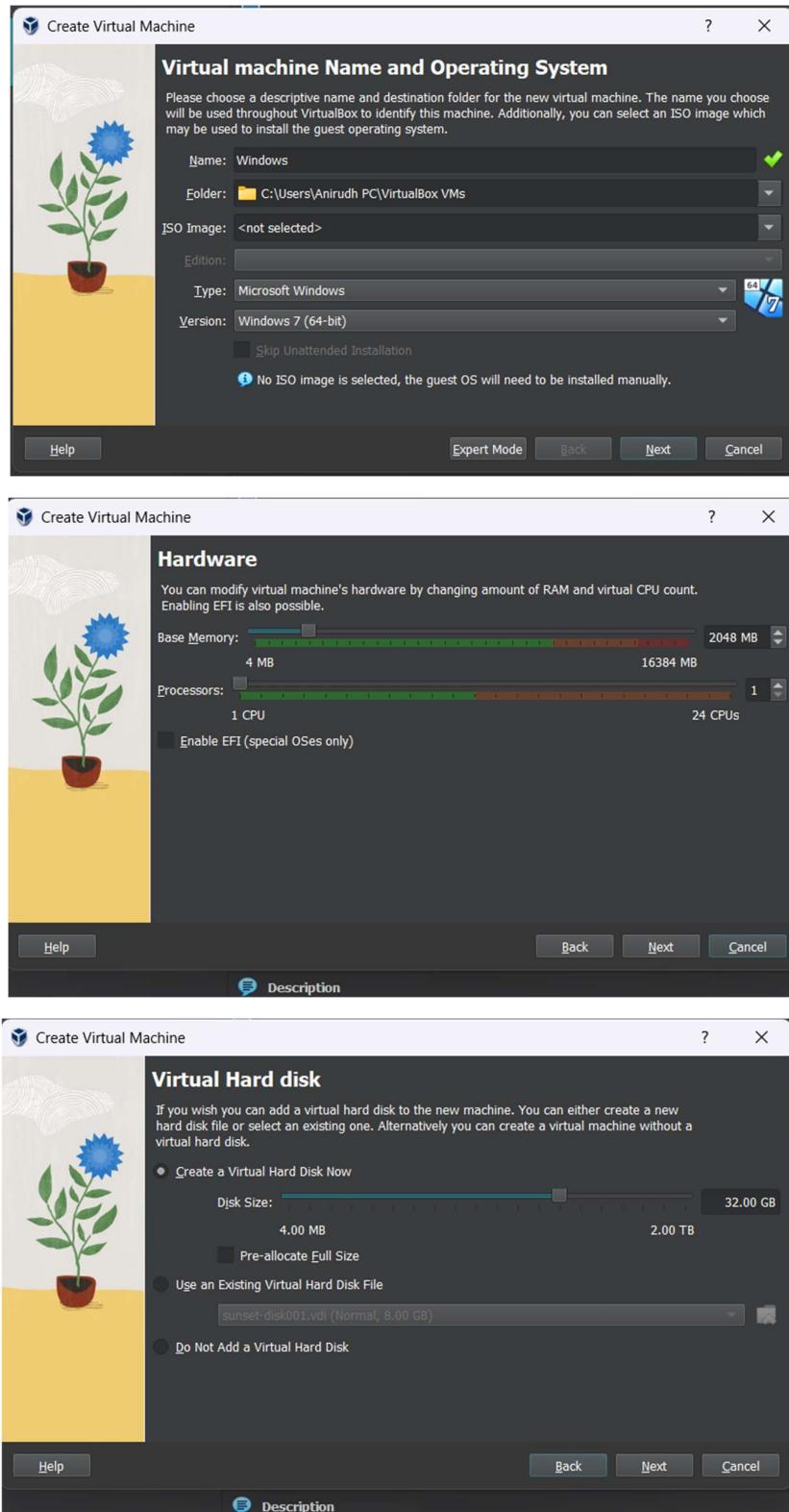


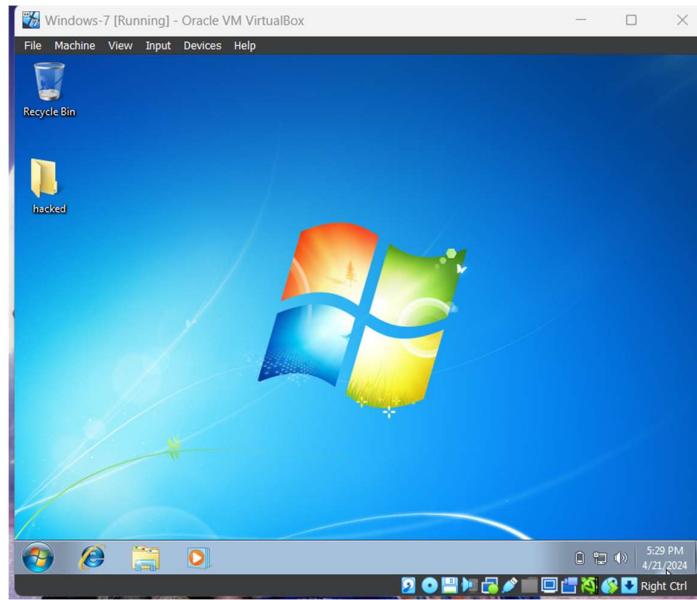
#### Result:

Successfully installed VirtualBox and launched a Linux server. The server was responsive, and basic operations were verified to ensure proper installation and functionality.

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

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



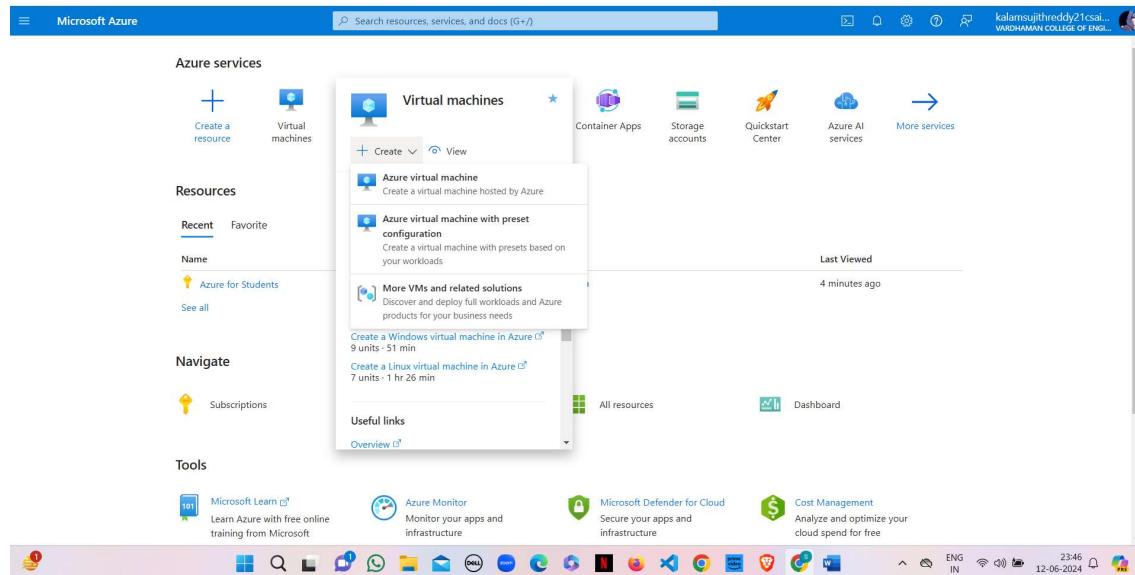
**Output:****Result:**

VirtualBox installation was followed by launching a Windows server. The server ran smoothly, with all core services operational, confirming the successful setup of the Windows environment.

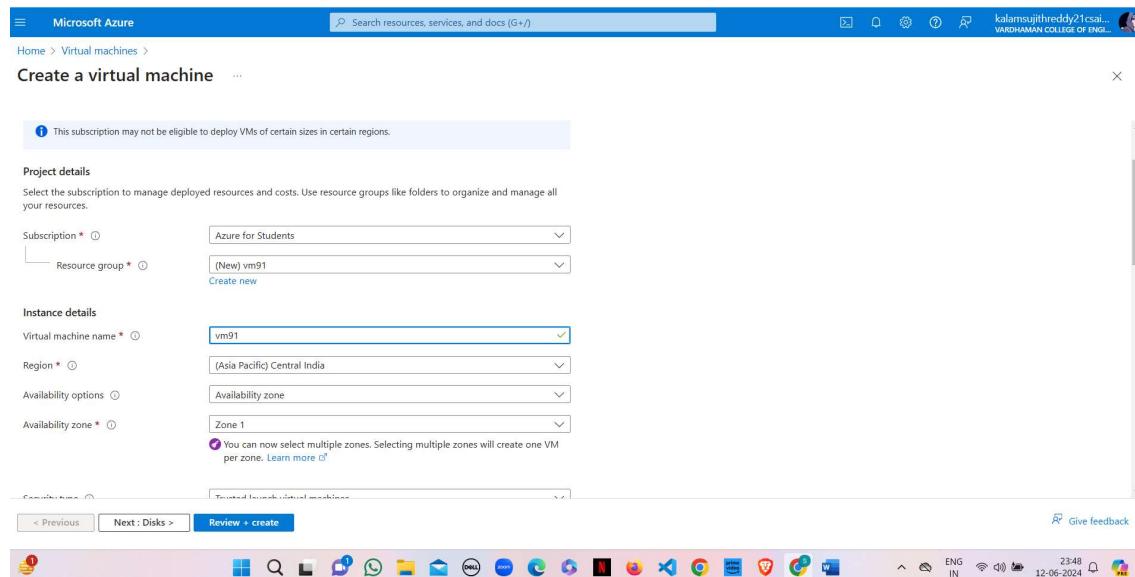
**Q3) Create an instance in Virtual Machine & Launch Windows Server through Azure Portal.**

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

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



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



**Administrator account**

Username \*

Password \*

Confirm password \*

**Inbound port rules**

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

Public inbound ports \*  Allow selected ports

Select inbound ports \*

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

< Previous Next : Disks > Review + create

**Validation passed**

**Price**

1 X Standard DS1 v2 by Microsoft  **10.8153 INR/hr**

Subscription credits apply

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.

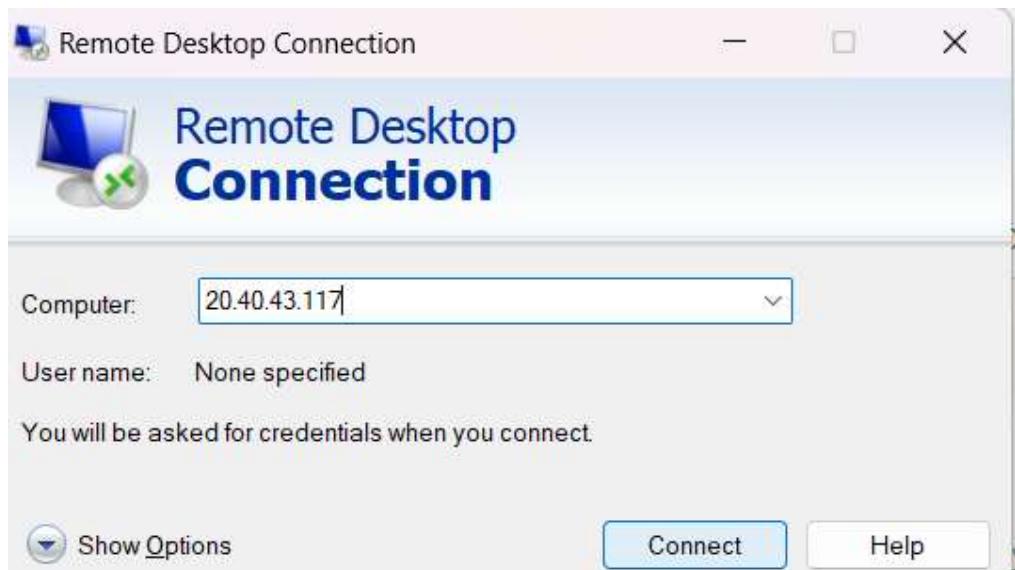
**⚠️ You have set RDP port(s) open to the internet.** This is only recommended for testing. If you want to change this setting, go back to Basics tab.

< Previous Next > Create

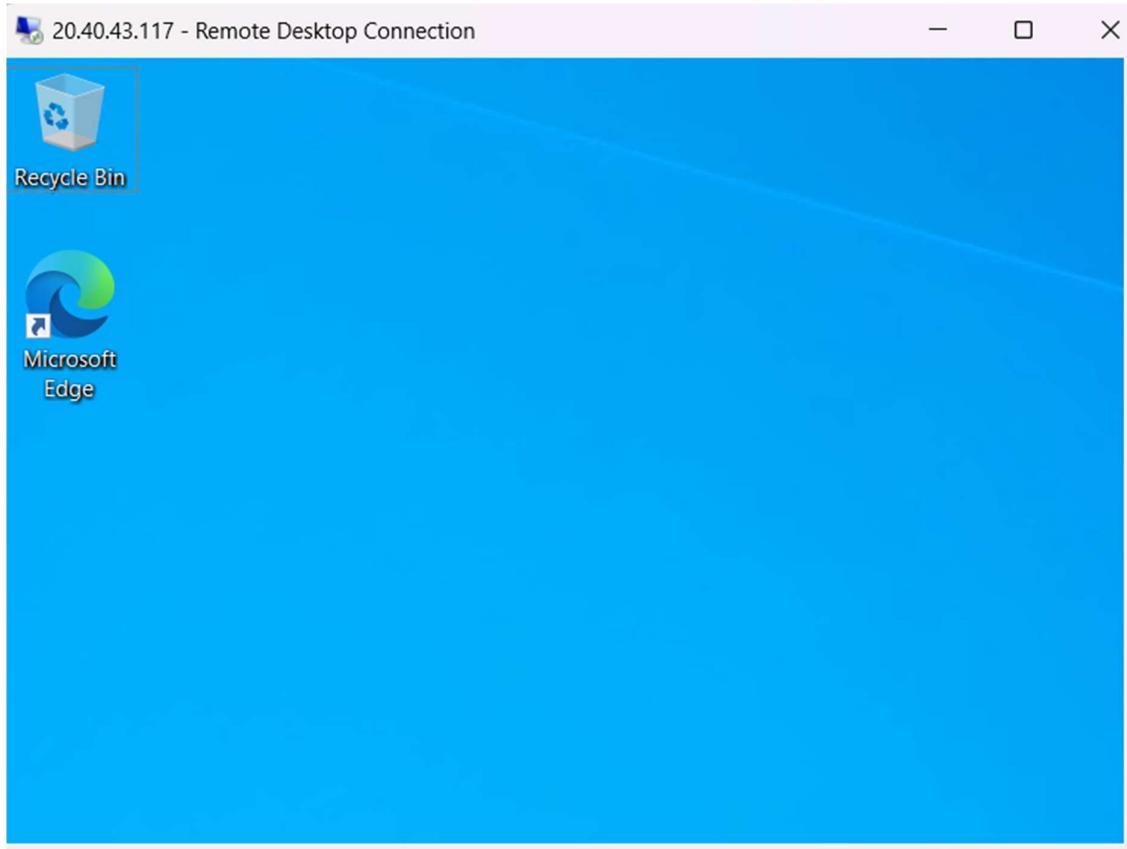
**Step-4:** After Deployment is over, Go to the remote desktop connection.

The screenshot shows two windows side-by-side. The left window is titled 'CreateVm-MicrosoftWindowsServer.WindowsServer-201-20240612234848 | Overview' and displays a message: 'Your deployment is complete'. It includes deployment details like name, start time, and subscription information. The right window is titled 'vm91' and shows the 'Essentials' tab for a running Windows VM. It provides details such as operating system, size, public IP address (20.40.43.117), and network settings. Both windows have a standard Windows taskbar at the bottom.

**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.

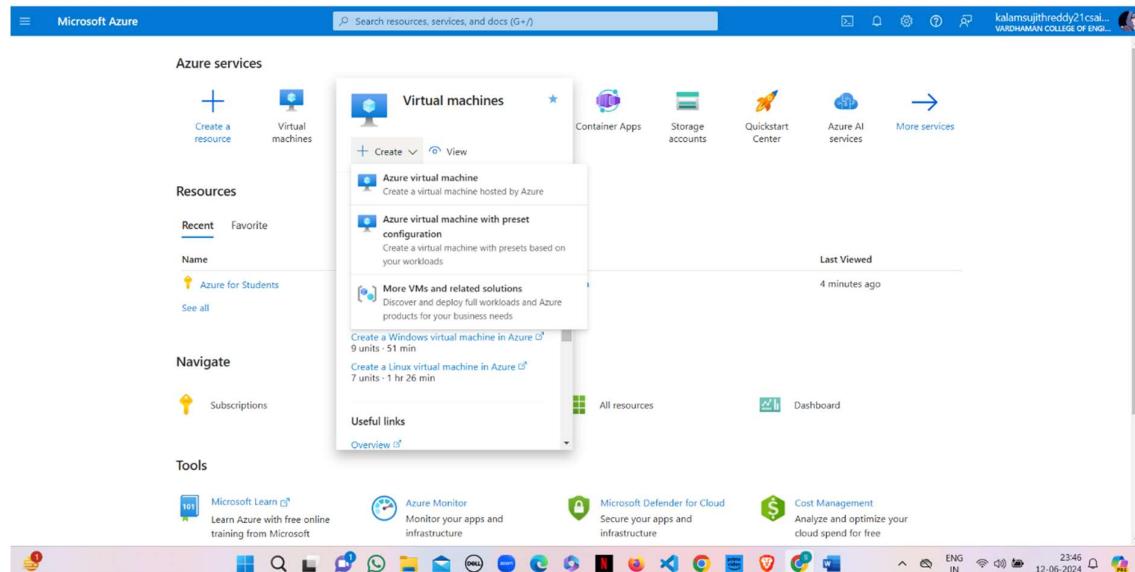
**Output:****Result:**

Created a new virtual machine instance on the Azure portal and launched a Windows server. The server instance was up and running with no issues, and connectivity was confirmed through remote desktop access.

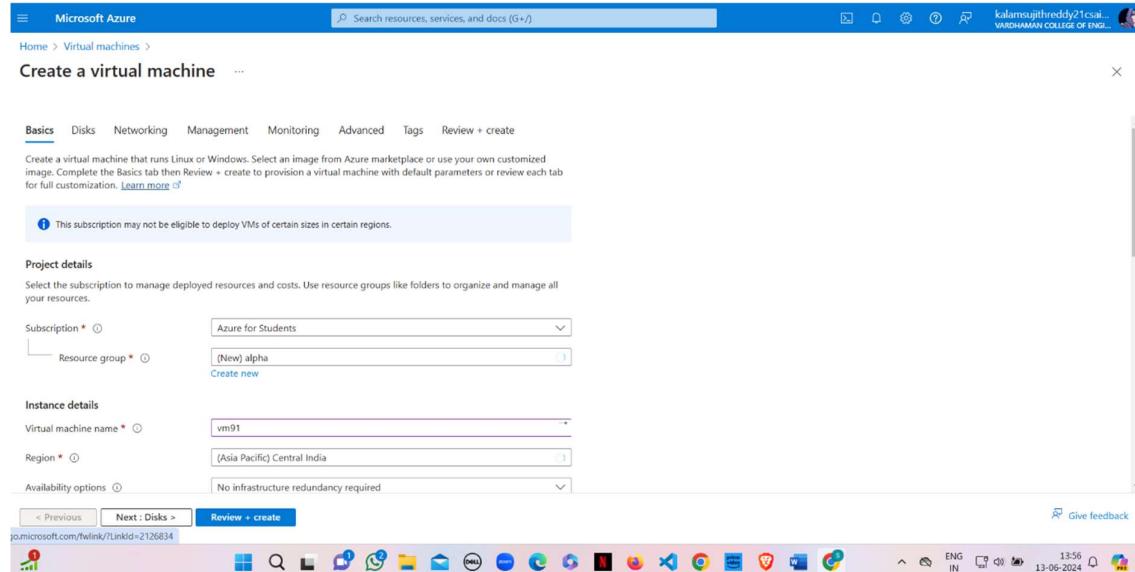
#### **Q4) Launch Linux Server through Azure Portal.**

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

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



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  [New] vm1  Create new

Instance details

Virtual machine name \*  vm9  [New] vm1

Region \*  [Asia Pacific] Central India  East Asia  West Europe

Availability options  No infrastructure redundancy required  Infrastructure redundancy required

Security type  Trusted launch virtual machines  Configure security features

Image \*  Ubuntu Server 20.04 LTS - x64 Gen2  See all images | Configure VM generation

VM architecture  Arm64  x64

< Previous Next : Disks > Review + create Give feedback

Authentication type  SSH public key  Password

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

Username \*  azureuser  [New] vm1

SSH public key source  Generate new key pair  Existing 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 \*  alpha  [New] vm1

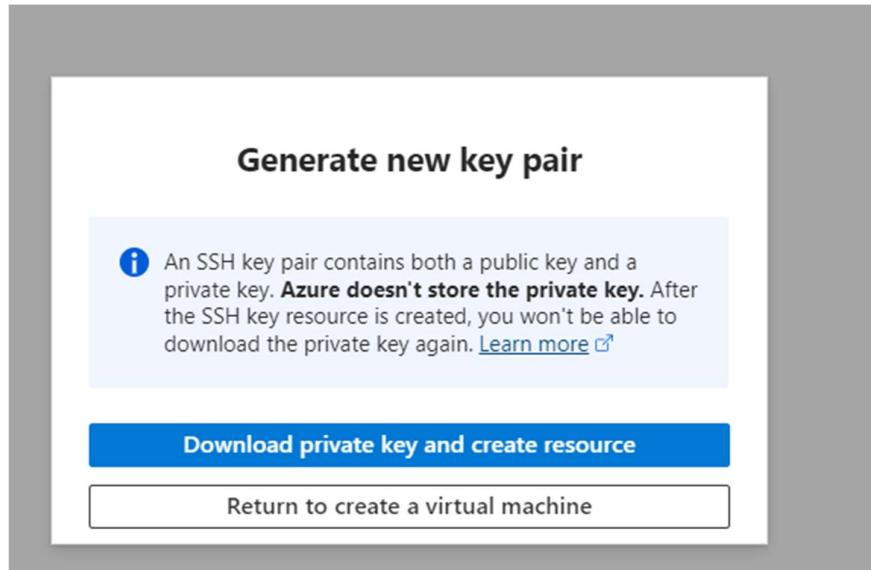
Inbound port rules

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

< Previous Next : Disks > Review + create Give feedback

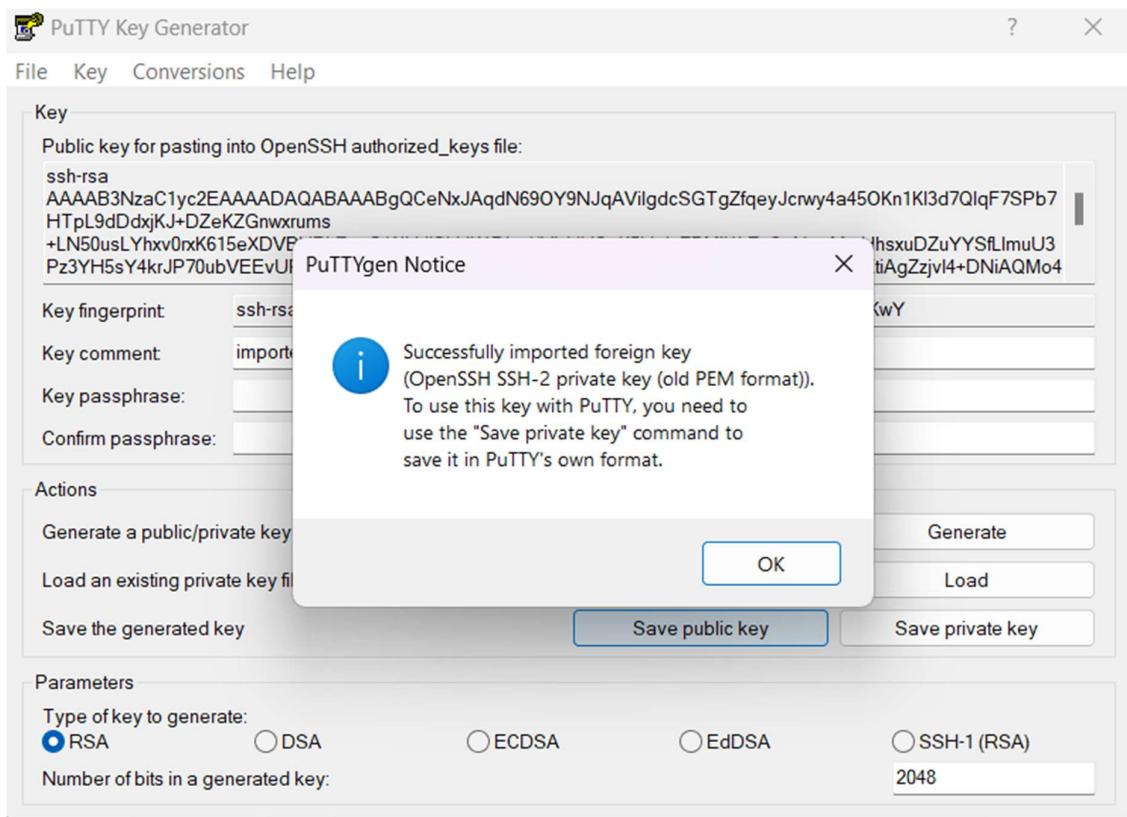
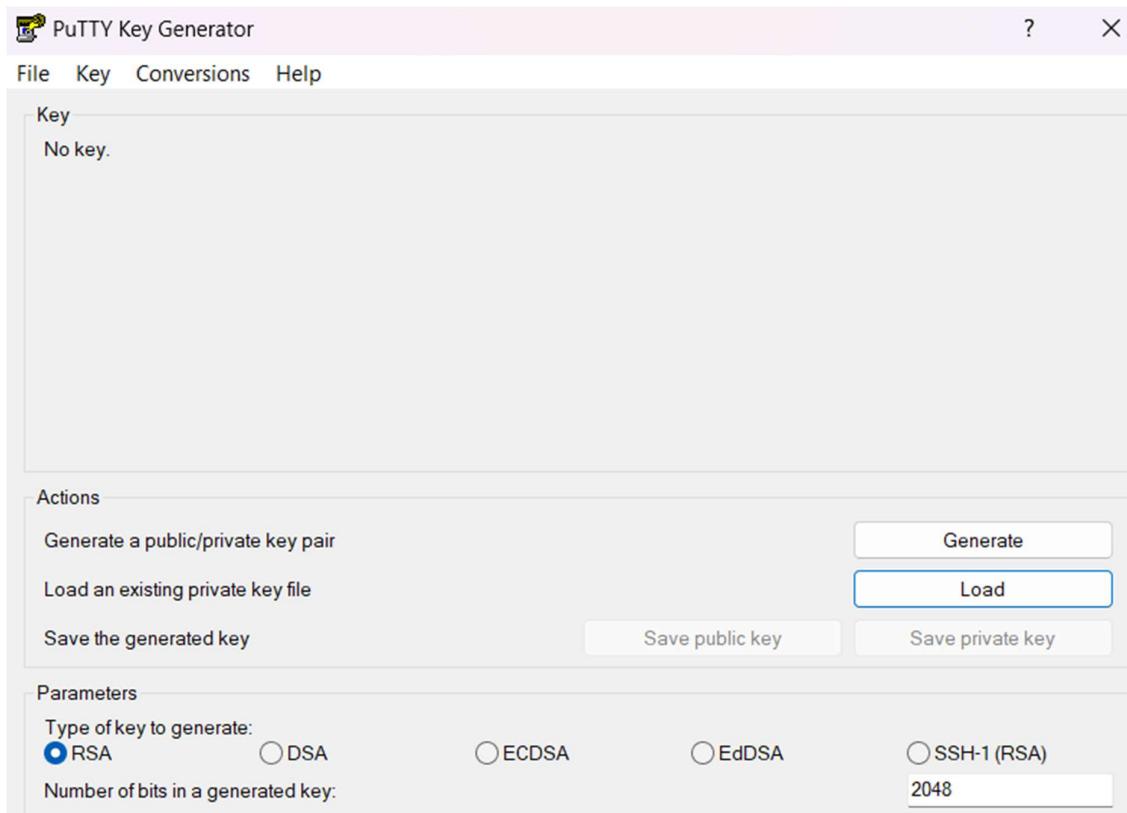
**Step-4:** After Deployment is over, download the private key pair.



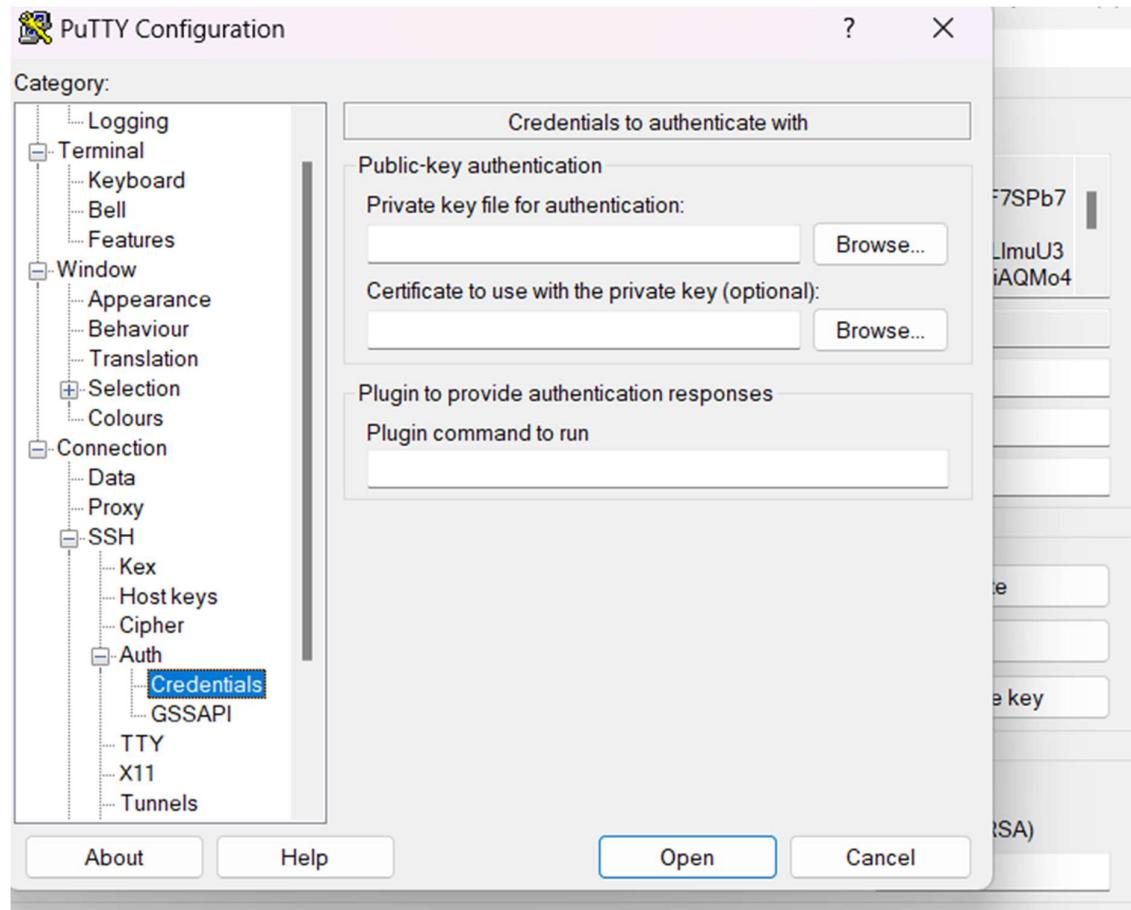
**Step-5:** Firstly, copy the public IP Address of that created virtual machine.

The screenshot shows the Azure portal interface for a virtual machine named "vm91". The "Networking" section of the "Essentials" tab is highlighted, showing the Public IP address as 20.193.141.116. Other details include Resource group: "vm91\_group", Status: "Running", Location: "Central India (Zone 1)", Subscription: "Azure for Students", and Tags: "Add tags". The "Properties" tab is also visible at the bottom.

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

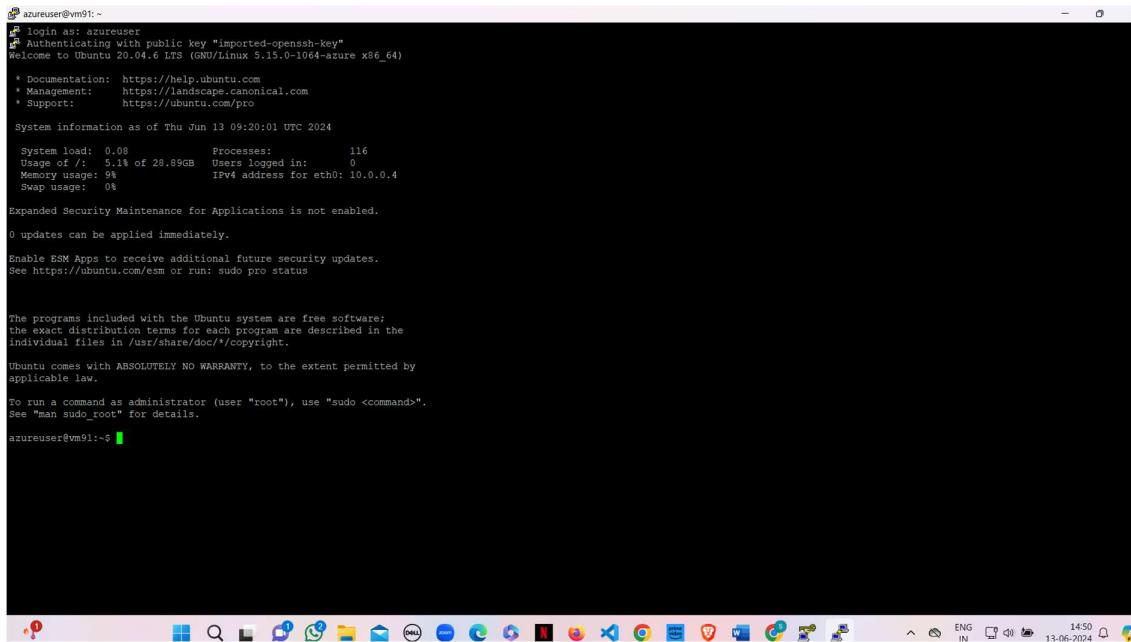


**Step-7:** In putty, put the Copied IP Adress into it, and then go to ssh->auth->credentials and the put the generated private key.



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

## Output:



The screenshot shows a terminal window titled "azureuser@vm91:~". The window displays the following text:

```
azuser@vm91:~  
login as: azureuser  
Authenticating with public key "imported-openssh-key"  
Welcome to Ubuntu 20.04.6 LTS (GNOME/Ubuntu 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 09:20:01 UTC 2024  
System load: 0.08 Processes: 116  
Usage of /: 5.1% of 28.89GB Users logged in: 0  
Memory usage: 9% IPv4 address for eth0: 10.0.0.4  
Swap usage: 0%  
Expanded Security Maintenance for Applications is not enabled.  
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.  
azuser@vm91:~$
```

## Result:

Launched a Linux server instance via the Azure portal. The server started without any hitches, and SSH access was established to perform basic system checks and updates.

**Q5) Create SSH tunnel between the host system and guest system and transfer files from local machine to Linux server (WinSCP).**

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

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

The screenshot shows the Microsoft Azure portal interface. In the top navigation bar, there is a search bar labeled 'Search resources, services, and docs (G+/-)' and several icons for account management. Below the search bar, the 'Azure services' section is visible, featuring a 'Virtual machines' icon with a plus sign. A dropdown menu is open over this icon, listing options: 'Create a virtual machine' (selected), 'Create a virtual machine with preset configuration', and 'More VMs and related solutions'. To the right of the dropdown, there are links for 'Container Apps', 'Storage accounts', 'Quickstart Center', 'Azure AI services', and 'More services'. On the left side of the main content area, there's a sidebar with sections for 'Resources' (Recent and Favorite), 'Navigate' (Subscriptions), and 'Tools' (Microsoft Learn, Azure Monitor, Microsoft Defender for Cloud, Cost Management). At the bottom of the screen, the Windows taskbar is visible with various pinned icons and the date/time (12-06-2024, 23:46).

**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 on the 'Basics' tab. The URL in the address bar is 'https://microsoft.com/fwlink/?LinkId=2126824'. The page title is 'Create a virtual machine ...'. The 'Basics' tab is selected, with other tabs like 'Disks', 'Networking', 'Management', 'Monitoring', 'Advanced', 'Tags', and 'Review + create' available. A note at the top 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](#)'.

**Project details:** Subscription is set to 'Azure for Students' and the Resource group is '(New) alpha'. There is a note: 'This subscription may not be eligible to deploy VMs of certain sizes in certain regions.'

**Instance details:** Virtual machine name is 'vm91', Region is '(Asia Pacific) Central India', and Availability options is 'No infrastructure redundancy required'.

At the bottom, there are buttons for '< Previous', 'Next : Disks >', 'Review + create', and 'Give feedback'. The status bar at the bottom shows the date (13-06-2024) and time (13:56).

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) vm1) [Create new](#)

**Instance details**

Virtual machine name \* (vm9)

Region \* (Asia Pacific Central India)

Availability options (No infrastructure redundancy required)

Security type (Trusted launch virtual machines) [Configure security features](#)

Image \* (Ubuntu Server 20.04 LTS - x64 Gen2) [See all images](#) | [Configure VM generation](#)

VM architecture (x64)

< Previous Next : Disks > Review + create Give feedback

Authentication type (SSH public key)

Username \* (azureuser)

SSH public key source (Generate new key pair)

SSH Key Type (RSA SSH Format)

Key pair name \* (alpha)

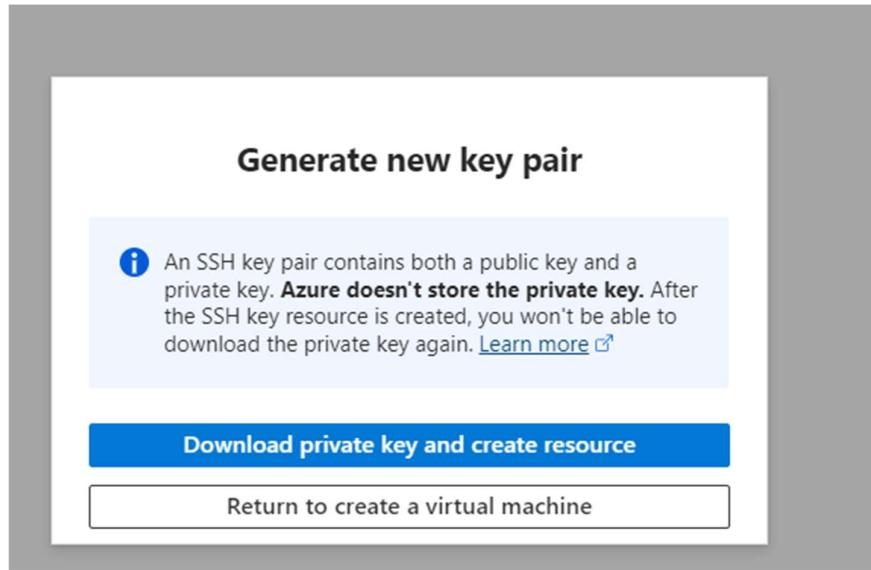
Inbound port rules

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

Public inbound ports \* (Allow selected ports)

< Previous Next : Disks > Review + create Give feedback

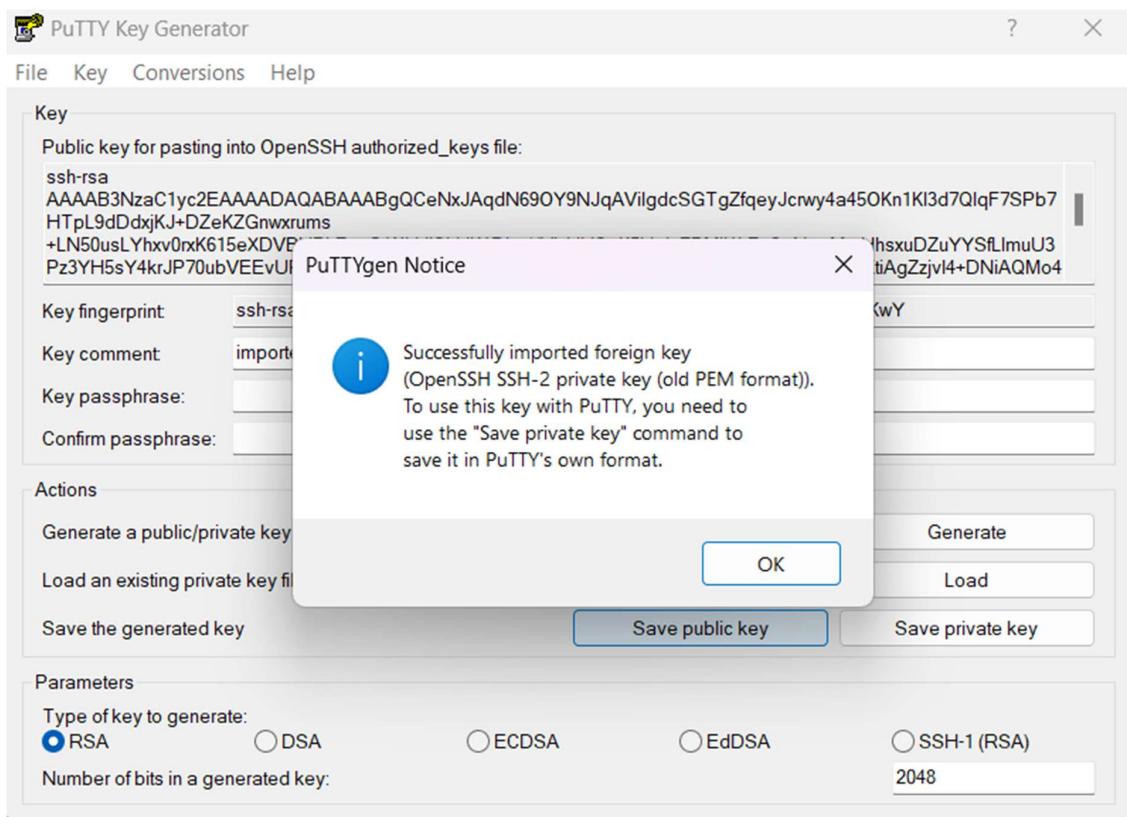
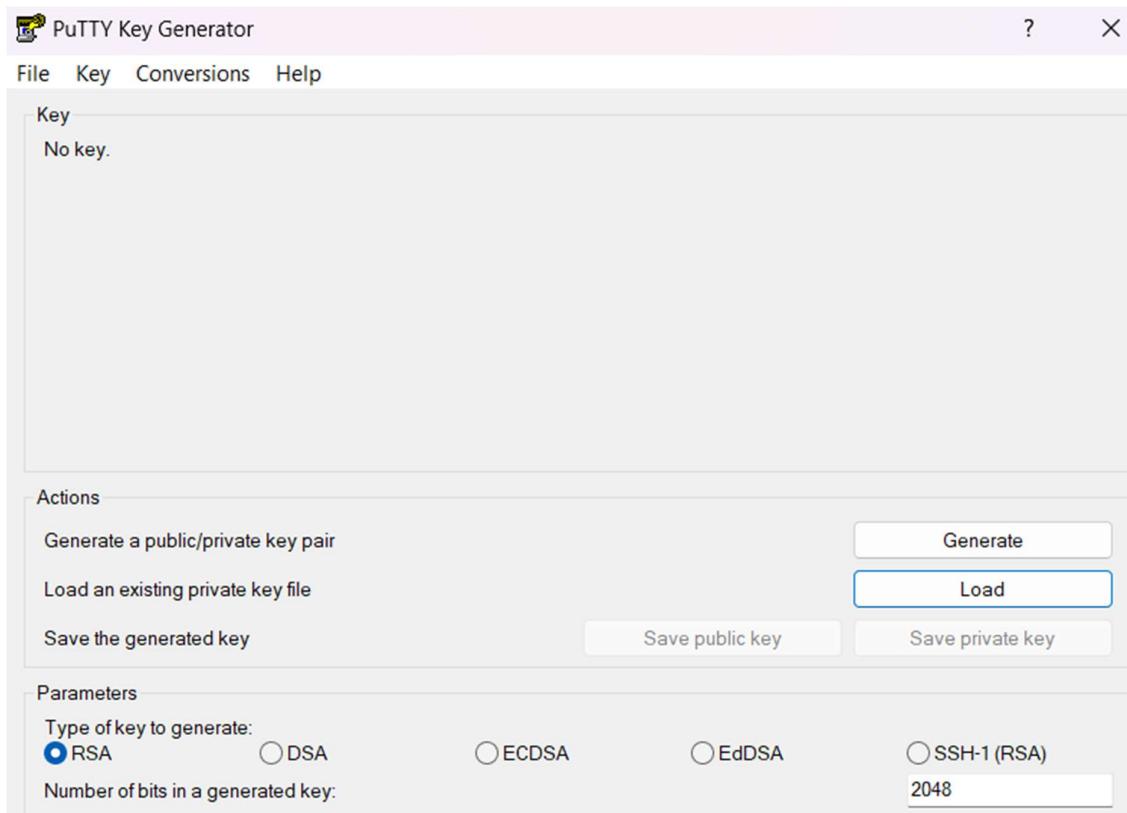
**Step-4:** Download the private key pair and create new resource.



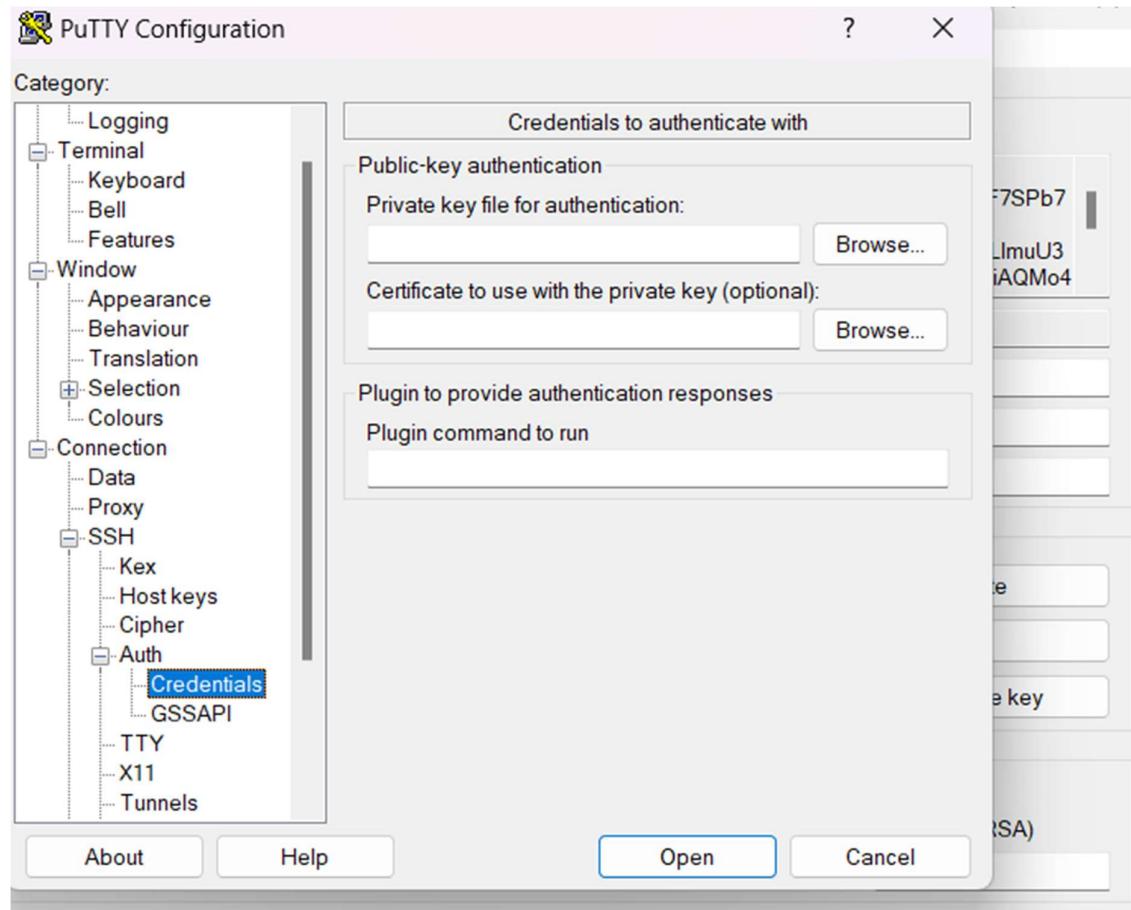
**Step-5:** Firstly, copy the public IP Address of that created virtual machine.

Essentials	Properties	Networking
Resource group: <a href="#">(move)</a> : <a href="#">vm91_group</a>	Operating system: Linux (ubuntu 20.04)	Public IP address: <a href="#">20.193.141.116</a>
Status: Running	Size: Standard DS1 v2 (1 vcpu, 3.5 GB memory)	Private IP address: -
Location: Central India (Zone 1)	Subscription: <a href="#">Azure for Students</a>	Virtual network/subnet: <a href="#">vm91-vnet/default</a>
Subscription ID: 9ec5c3db-0387-4df7-8429-12954dbd32cb	DNS name: Not configured	DNS name: Configure
Availability zone: 1	Health state: -	Time created: 6/13/2024, 9:09 AM UTC
Tags: <a href="#">(edit)</a> : <a href="#">Add tags</a>		
	Properties	
	Virtual machine	Networking
Computer name: vm91	Public IP address: 20.193.141.116 ( Network interface <a href="#">vm9157_x1</a> )	
Operating system: Linux (ubuntu 20.04)	Public IP address (IPv6): -	
VM generation: V2	Private IP address: 10.0.0.4	
VM architecture: x64	Private IP address (IPv6): -	
Agent status: Ready	Virtual network/subnet: <a href="#">vm91-vnet/default</a>	
Agent version: 2.11.1.4	DNS name: Configure	

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

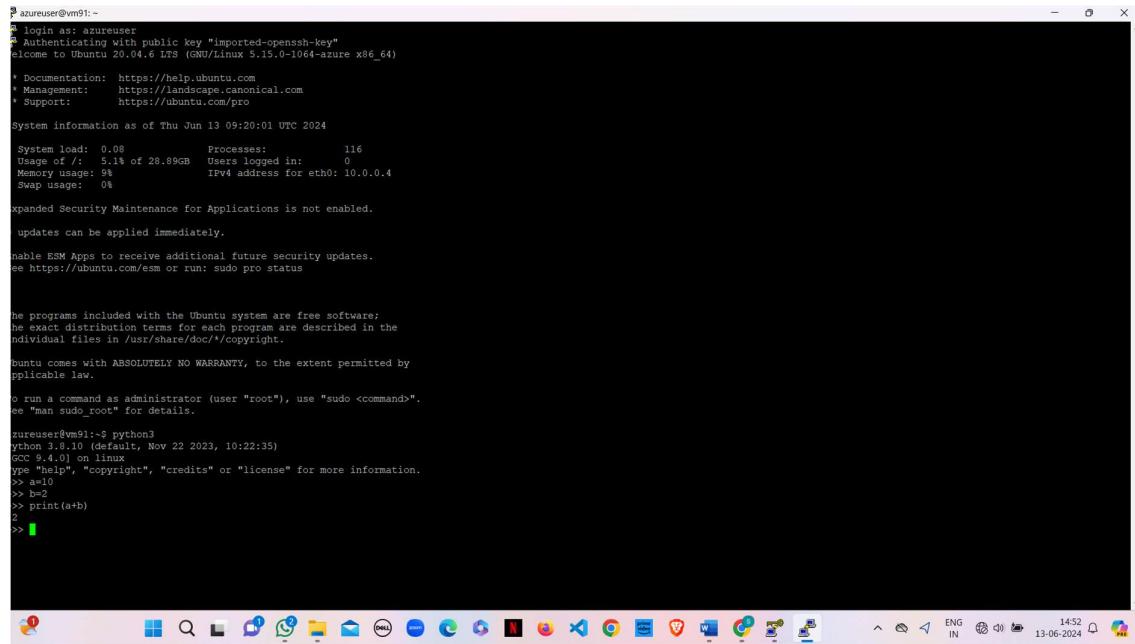


**Step-7:** In putty, put the Copied IP Adress into it, and then go to ssh->auth->credentials and the put the generated private key.



**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@vm91:~$ 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 09:20:01 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: 0B

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

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

No 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.

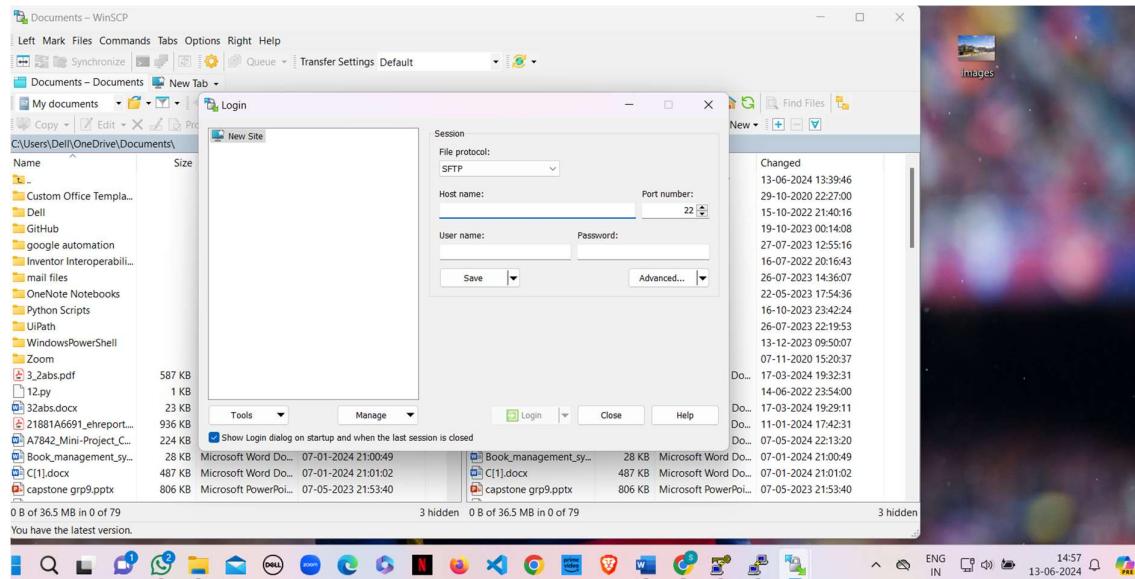
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

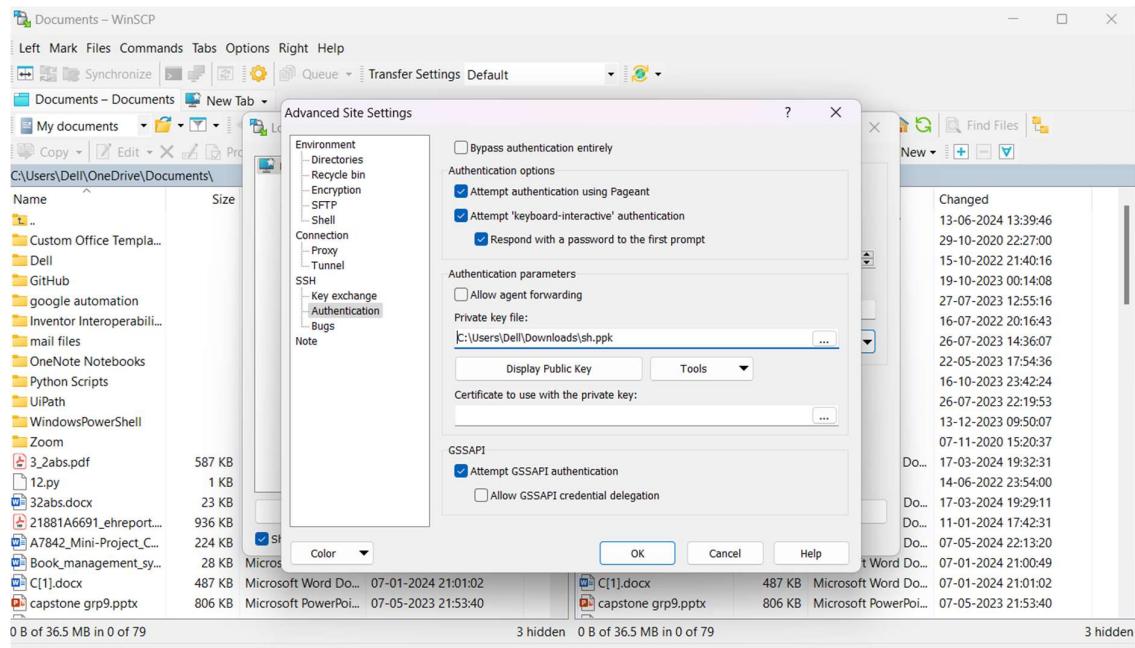
azureuser@vm91:~$ python3
python 3.8.10 (default, Nov 22 2023, 10:22:35)
GCC 9.4.0) on linux
Type "help", "copyright", "credits" or "license" for more information.
>>> a=2
>>> b=2
>>> print(a+b)
4
>>>

```

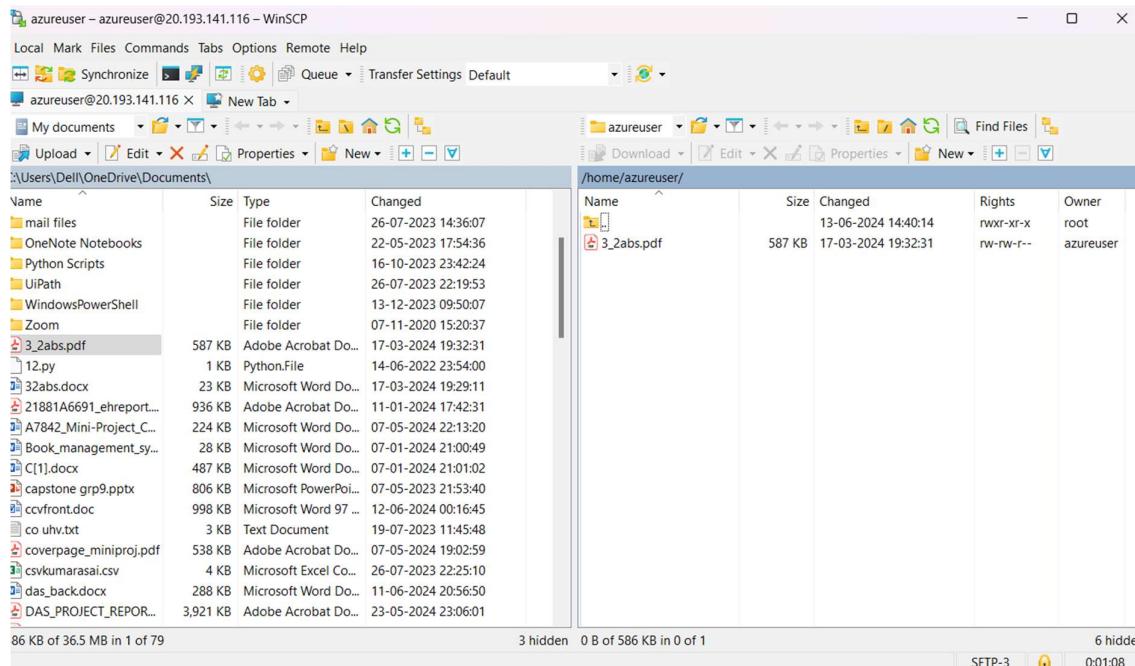
**Step-10:** Open WinScp at right bottom you can see Advanced option->SSH->Authentication->In that drag private key file and click on ok.

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.

```

azuser@vm91:~ 
System load: 0.08      Processes:          116
Usage of /: 5.1% of 28.89GB   Users logged in: 0
Memory usage: 9%           IPv4 address for eth0: 10.0.0.4
Swap usage: 0% 

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

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

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

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applicable law.

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

azuser@vm91:~$ 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=2
>>> print(a+b)
12
>>> ls
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
NameError: name 'ls' is not defined
>>> ls
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
NameError: name 'ls' is not defined
>>> exit()
Use exit() or Ctrl-D (i.e. EOF) to exit
>>>
azuser@vm91:~$ ls
azuser@vm91:~$ ls
azuser@vm91:~$ ls
3_zabs.pdf
azuser@vm91:~$ 

```

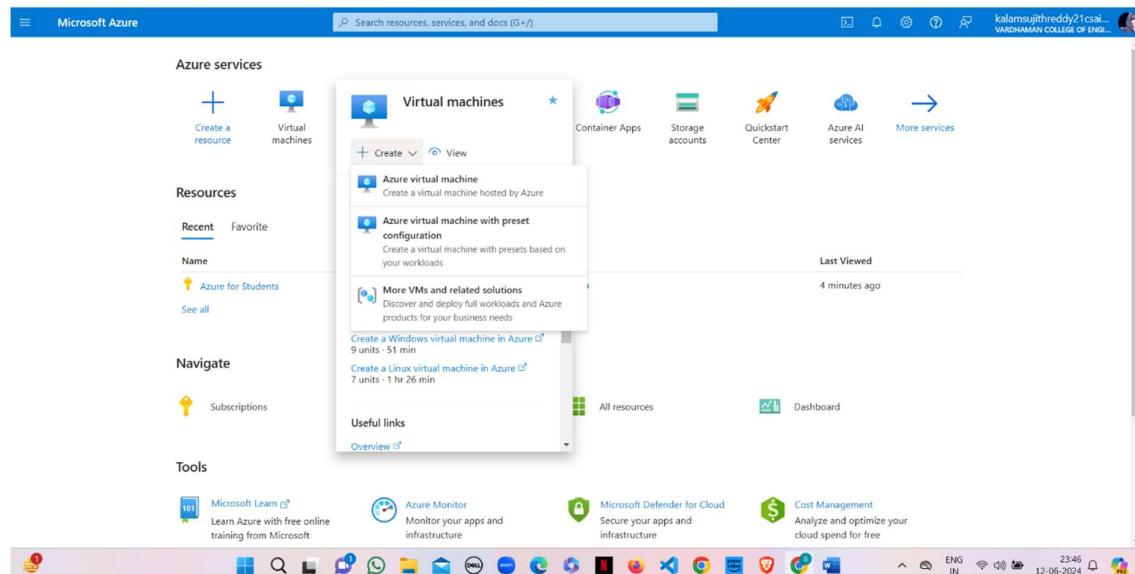
### Result:

Established an SSH tunnel between the host and guest systems and successfully transferred files using WinSCP. The file transfer was smooth and error-free, confirming a secure and functional connection.

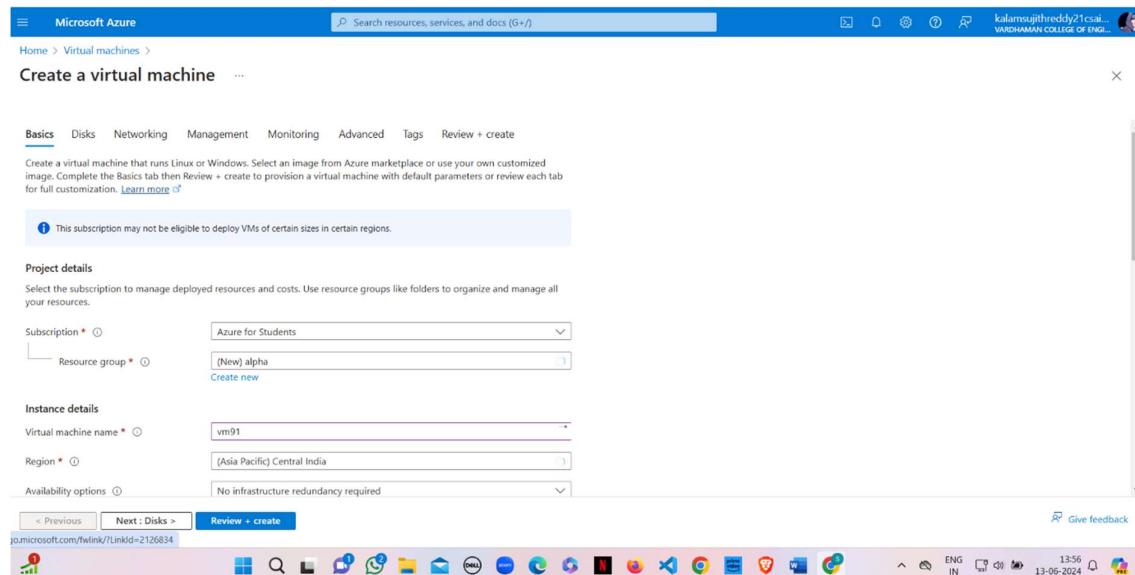
## Q6) Setup and Configure Linux Server as Web Server in Azure Portal. (nginx web server)

**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”.



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] vm1) Create new

Instance details

Virtual machine name \* (vm9)

Region \* (Asia Pacific) Central India

Availability options (No infrastructure redundancy required)

Security type (Trusted launch virtual machines) Configure security features

Image \* (Ubuntu Server 20.04 LTS - x64 Gen2) See all images | Configure VM generation

VM architecture (x64)

< Previous Next : Disks > Review + create Give feedback

Authentication type (SSH public key)

Username \* (azureuser)

SSH public key source (Generate new key pair)

SSH Key Type (RSA SSH Format)

Key pair name \* (alpha)

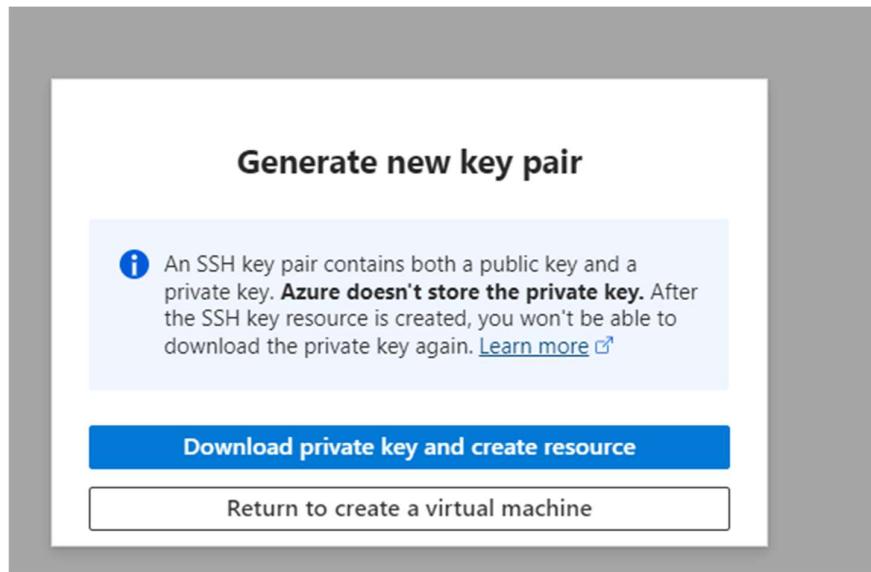
Inbound port rules

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

Public inbound ports \* (Allow selected ports)

< Previous Next : Disks > Review + create Give feedback

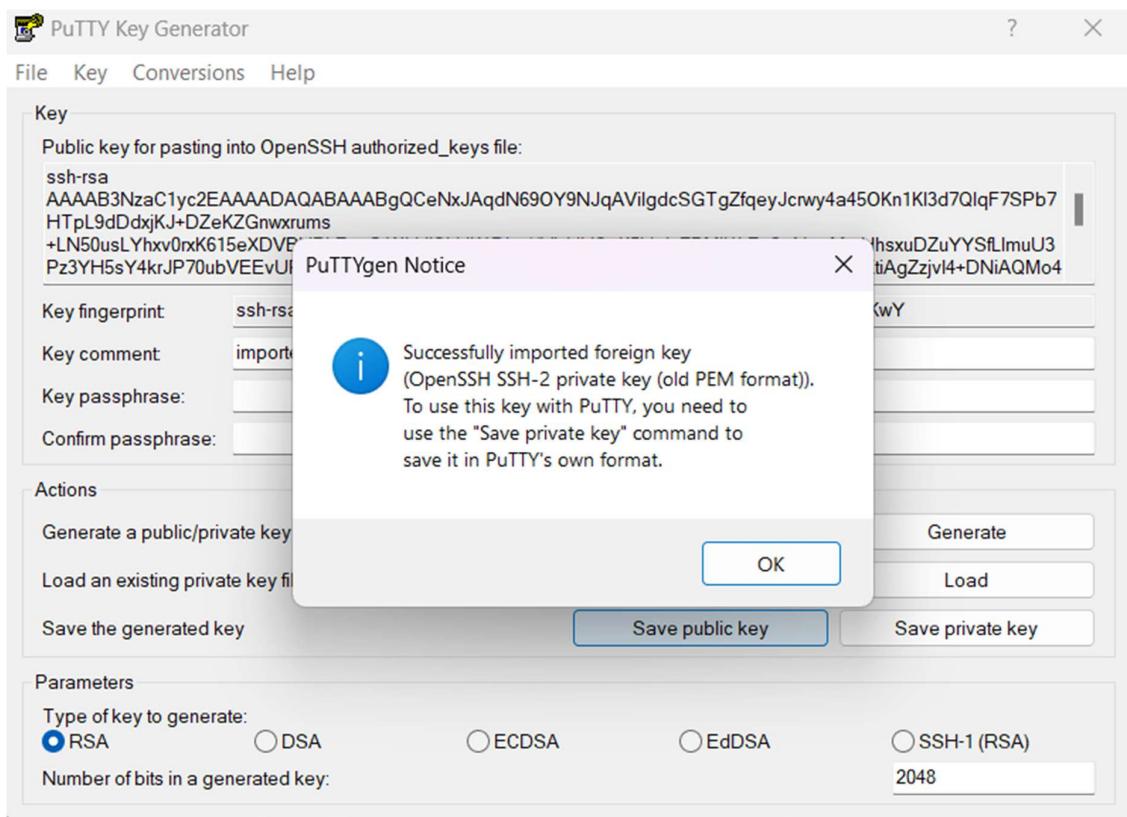
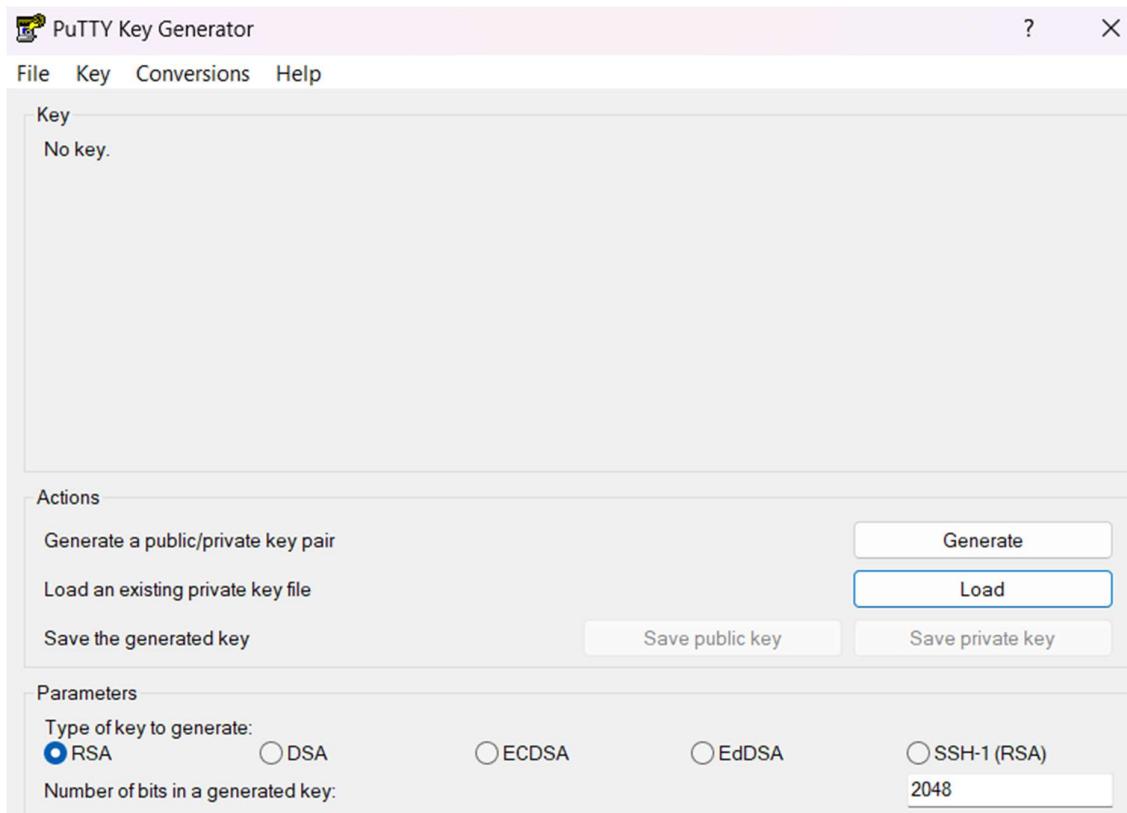
**Step-4:** Download private key pair and create resource.



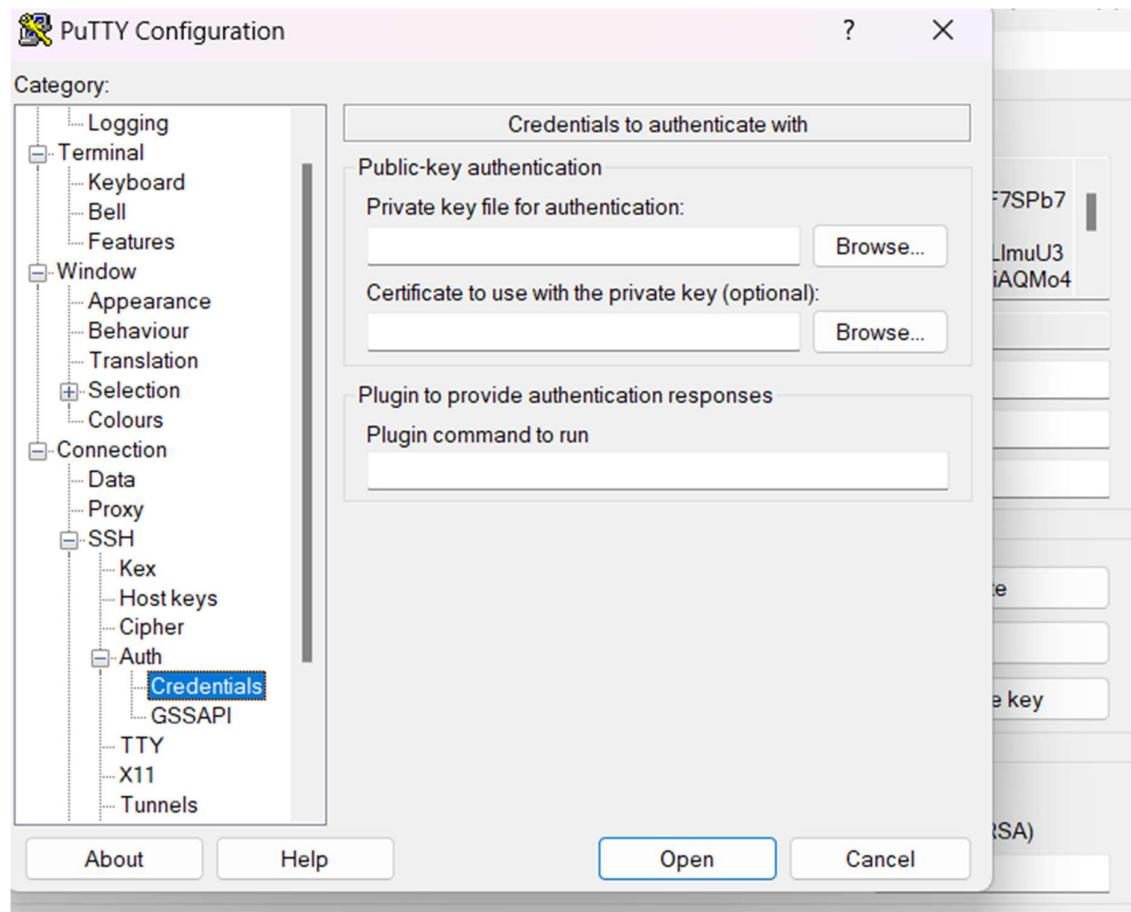
**Step-5:** Firstly, copy the public IP Address of that created virtual machine.

Essentials		Properties	
Resource group (move)	: vm91_group	Operating system	: Linux (ubuntu 20.04)
Status	: Running	Size	: Standard DS1 v2 (1 vcpu, 3.5 GB memory)
Location	: Central India (Zone 1)	Public IP address	: 20.193.141.116
Subscription (move)	: Azure for Students	Virtual network/subnet	: vm91-vnet/default
Subscription ID	: 9ec5c3db-0387-4df7-8429-12954dbd32cb	DNS name	: Not configured
Availability zone	: 1	Health state	: -
Tags (edit)	: Add tags	Time created	: 6/13/2024, 9:09 AM UTC

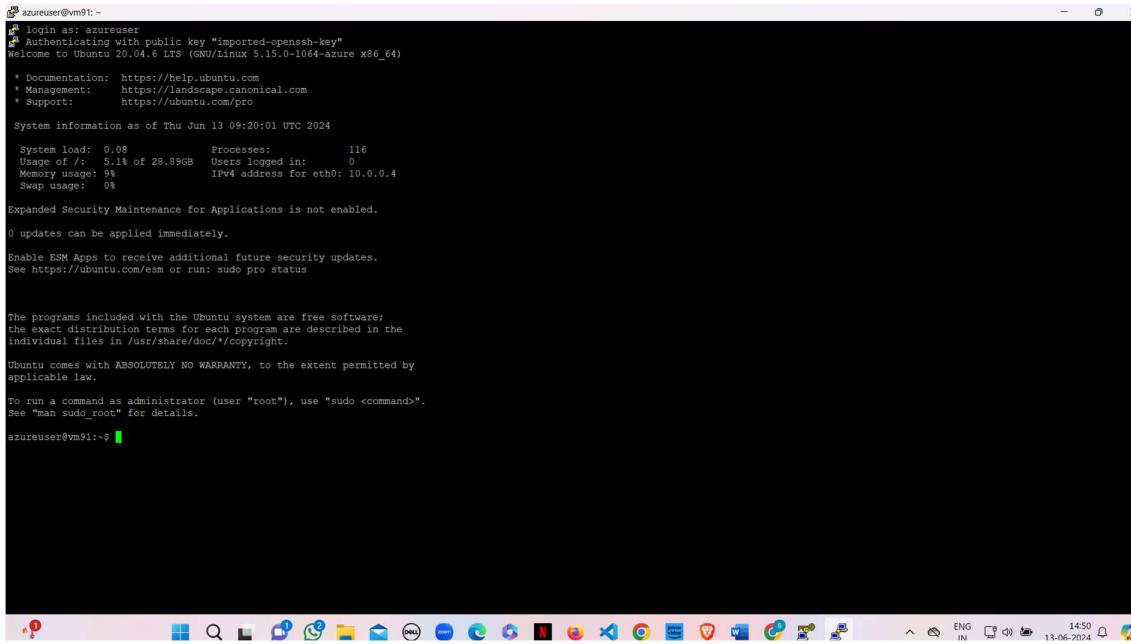
**Step-6:** Go to putty gen and click on load the key generator that you have downloaded.



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



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



```
azureuser@vm91:~$ 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 09:20:01 UTC 2024

System load: 0.08 Processes: 116
Usage of /: 5.1% of 28.89GB Users logged in: 0
Memory usage: 9% IPv4 address for eth0: 10.0.0.4
Swap usage: 0%

Expanded Security Maintenance for Applications is not enabled.

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@vm91:~$
```

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

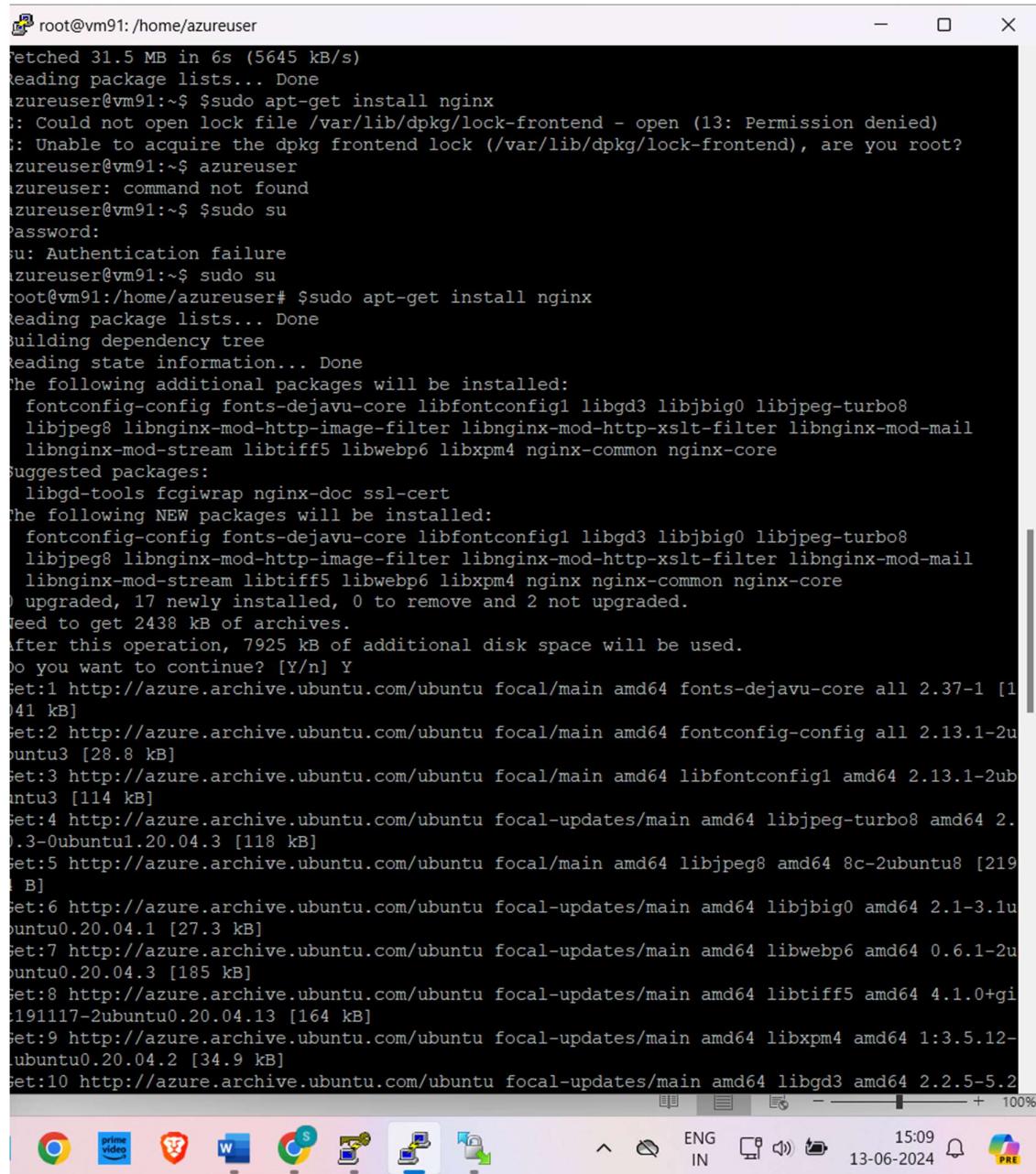
\$sudo su

\$sudo apt-get update

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

\$sudo apt-get install nginx

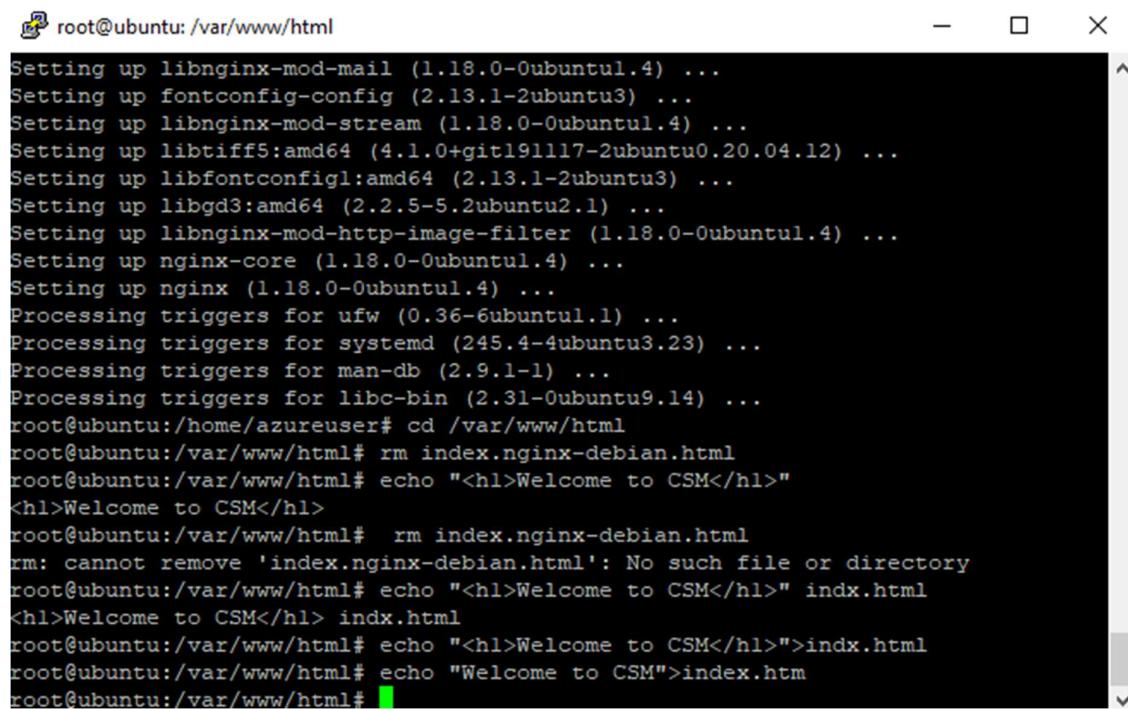
After installing in VM, paste the public ip address in desktop browser and you can see.



```
root@vm91:/home/azureuser
  fetched 31.5 MB in 6s (5645 kB/s)
  reading package lists... Done
  azureuser@vm91:~$ $sudo apt-get install nginx
  E: Could not open lock file /var/lib/dpkg/lock-frontend - open (13: Permission denied)
  E: Unable to acquire the dpkg frontend lock (/var/lib/dpkg/lock-frontend), are you root?
  azureuser@vm91:~$ azureuser
  azureuser: command not found
  azureuser@vm91:~$ $sudo su
  Password:
  su: Authentication failure
  azureuser@vm91:~$ sudo su
  root@vm91:/home/azureuser# $sudo apt-get install nginx
  reading package lists... Done
  Building dependency tree
  reading state information... Done
  The following additional packages will be installed:
    fontconfig-config fonts-dejavu-core libfontconfig1 libgd3 libjbig0 libjpeg-turbo8
    libjpeg8 libnginx-mod-http-image-filter libnginx-mod-http-xslt-filter libnginx-mod-mail
    libnginx-mod-stream libtiff5 libwebp6 libxpm4 nginx-common nginx-core
  Suggested packages:
    libgd-tools fcgiwrap nginx-doc ssl-cert
  The following NEW packages will be installed:
    fontconfig-config fonts-dejavu-core libfontconfig1 libgd3 libjbig0 libjpeg-turbo8
    libjpeg8 libnginx-mod-http-image-filter libnginx-mod-http-xslt-filter libnginx-mod-mail
    libnginx-mod-stream libtiff5 libwebp6 libxpm4 nginx nginx-common nginx-core
  0 upgraded, 17 newly installed, 0 to remove and 2 not upgraded.
  Need to get 2438 kB of archives.
  After this operation, 7925 kB of additional disk space will be used.
  Do you want to continue? [Y/n] Y
  Get:1 http://azure.archive.ubuntu.com/ubuntu focal/main amd64 fonts-dejavu-core all 2.37-1 [141 kB]
  Get:2 http://azure.archive.ubuntu.com/ubuntu focal/main amd64 fontconfig-config all 2.13.1-2ubuntu3 [28.8 kB]
  Get:3 http://azure.archive.ubuntu.com/ubuntu focal/main amd64 libfontconfig1 amd64 2.13.1-2ubuntu3 [114 kB]
  Get:4 http://azure.archive.ubuntu.com/ubuntu focal-updates/main amd64 libjpeg-turbo8 amd64 2.0.3-0ubuntu1.20.04.3 [118 kB]
  Get:5 http://azure.archive.ubuntu.com/ubuntu focal/main amd64 libjpeg8 amd64 8c-2ubuntu8 [219 kB]
  Get:6 http://azure.archive.ubuntu.com/ubuntu focal-updates/main amd64 libjbig0 amd64 2.1-3.1ubuntu0.20.04.1 [27.3 kB]
  Get:7 http://azure.archive.ubuntu.com/ubuntu focal-updates/main amd64 libwebp6 amd64 0.6.1-2ubuntu0.20.04.3 [185 kB]
  Get:8 http://azure.archive.ubuntu.com/ubuntu focal-updates/main amd64 libtiff5 amd64 4.1.0+git191117-2ubuntu0.20.04.13 [164 kB]
  Get:9 http://azure.archive.ubuntu.com/ubuntu focal-updates/main amd64 libxpm4 amd64 1:3.5.12-ubuntu0.20.04.2 [34.9 kB]
  Get:10 http://azure.archive.ubuntu.com/ubuntu focal-updates/main amd64 libgd3 amd64 2.2.5-5.2 [100%]
```

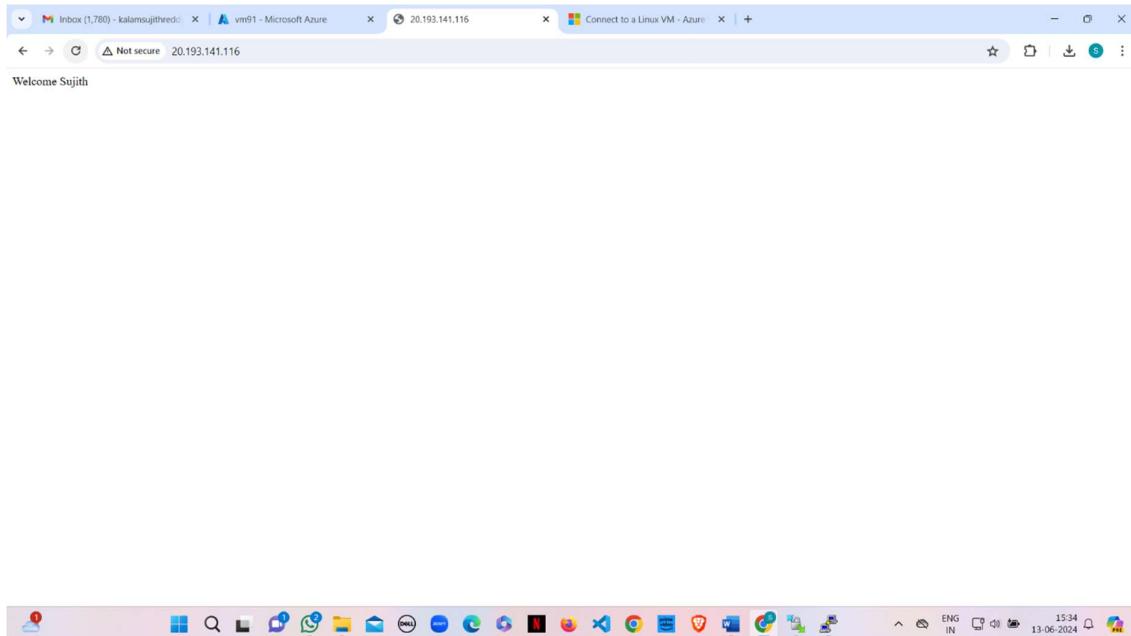
**Step-10:** To remove following information and keep new information in that page type the following command and refresh the browser page.

```
$cd /var/www/html  
$rm index.nginx-debian.html  
$echo "Welcome to CSM ">index.html
```



```
root@ubuntu:/var/www/html
Setting up libnginx-mod-mail (1.18.0-0ubuntu1.4) ...
Setting up fontconfig-config (2.13.1-2ubuntu3) ...
Setting up libnginx-mod-stream (1.18.0-0ubuntu1.4) ...
Setting up libtiff5:amd64 (4.1.0+git191117-2ubuntu0.20.04.12) ...
Setting up libfontconfig1:amd64 (2.13.1-2ubuntu3) ...
Setting up libgd3:amd64 (2.2.5-5.2ubuntu2.1) ...
Setting up libnginx-mod-http-image-filter (1.18.0-0ubuntu1.4) ...
Setting up nginx-core (1.18.0-0ubuntu1.4) ...
Setting up nginx (1.18.0-0ubuntu1.4) ...
Processing triggers for ufw (0.36-6ubuntu1.1) ...
Processing triggers for systemd (245.4-4ubuntu3.23) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for libc-bin (2.31-0ubuntu9.14) ...
root@ubuntu:/home/azureuser# cd /var/www/html
root@ubuntu:/var/www/html# rm index.nginx-debian.html
root@ubuntu:/var/www/html# echo "<h1>Welcome to CSM</h1>" > index.html
<h1>Welcome to CSM</h1>
root@ubuntu:/var/www/html# rm index.nginx-debian.html
rm: cannot remove 'index.nginx-debian.html': No such file or directory
root@ubuntu:/var/www/html# echo "<h1>Welcome to CSM</h1>" > index.html
<h1>Welcome to CSM</h1>
root@ubuntu:/var/www/html# echo "<h1>Welcome to CSM</h1>" > index.html
root@ubuntu:/var/www/html# echo "Welcome to CSM" > index.html
root@ubuntu:/var/www/html#
```





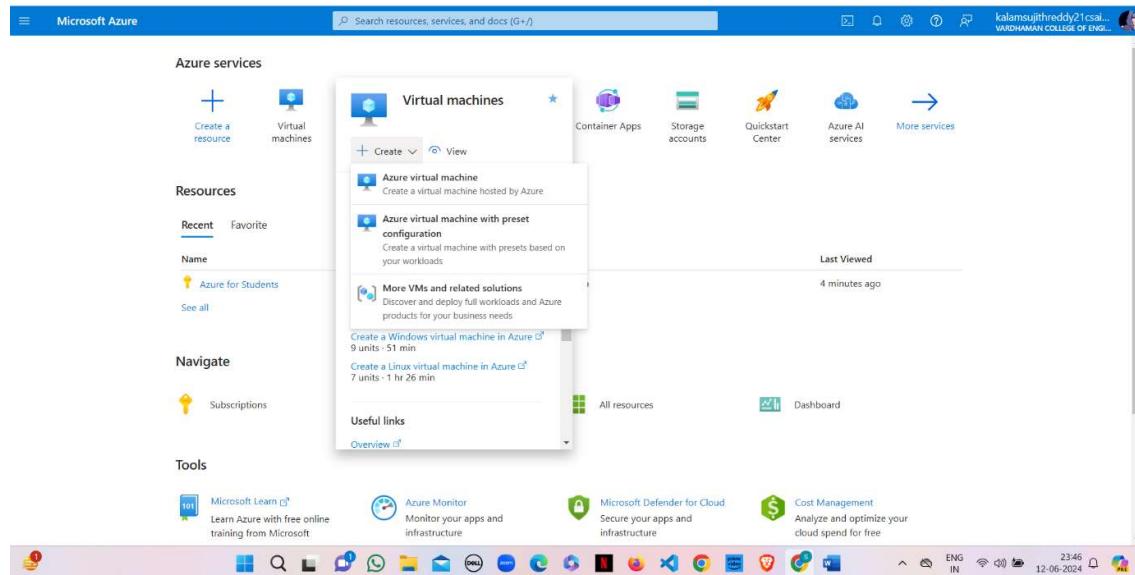
### Result:

Configured a nginx web server on a Linux server in Azure. The web server was tested and found to be serving web pages correctly, confirming successful setup and configuration.

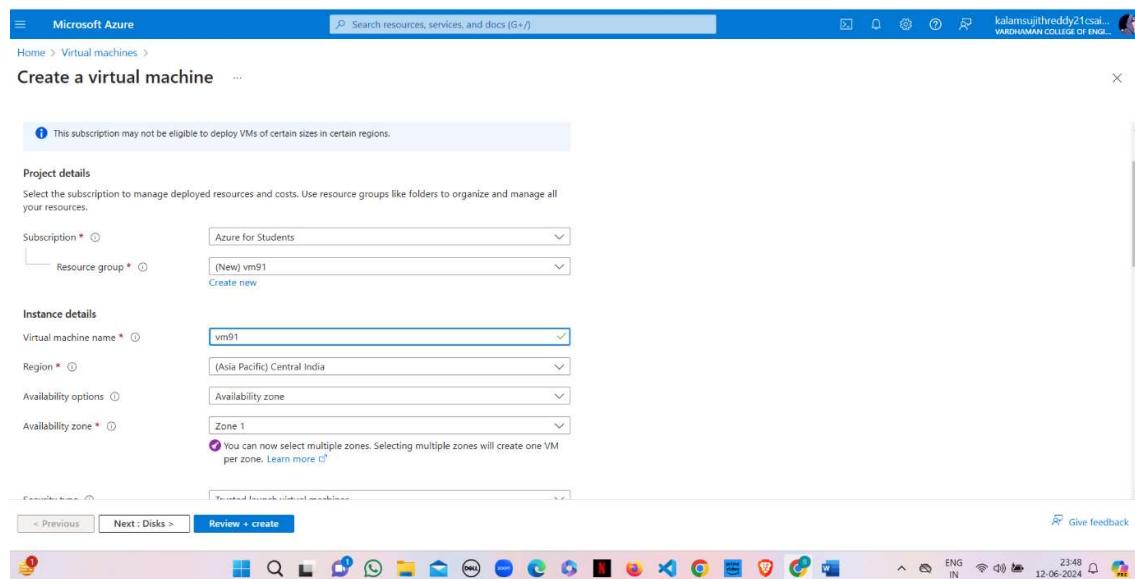
### Q7) Setup and Configure Windows Server as Web Server in Azure Portal. (nginx web server)

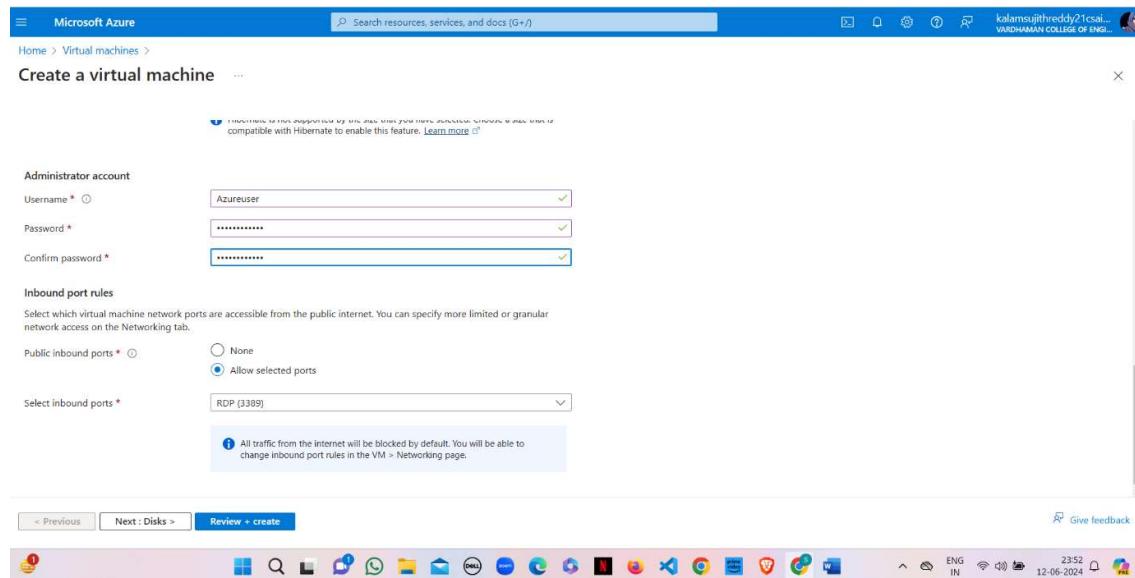
**Step-1:** Sign in to your Microsoft Azure account.

**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”



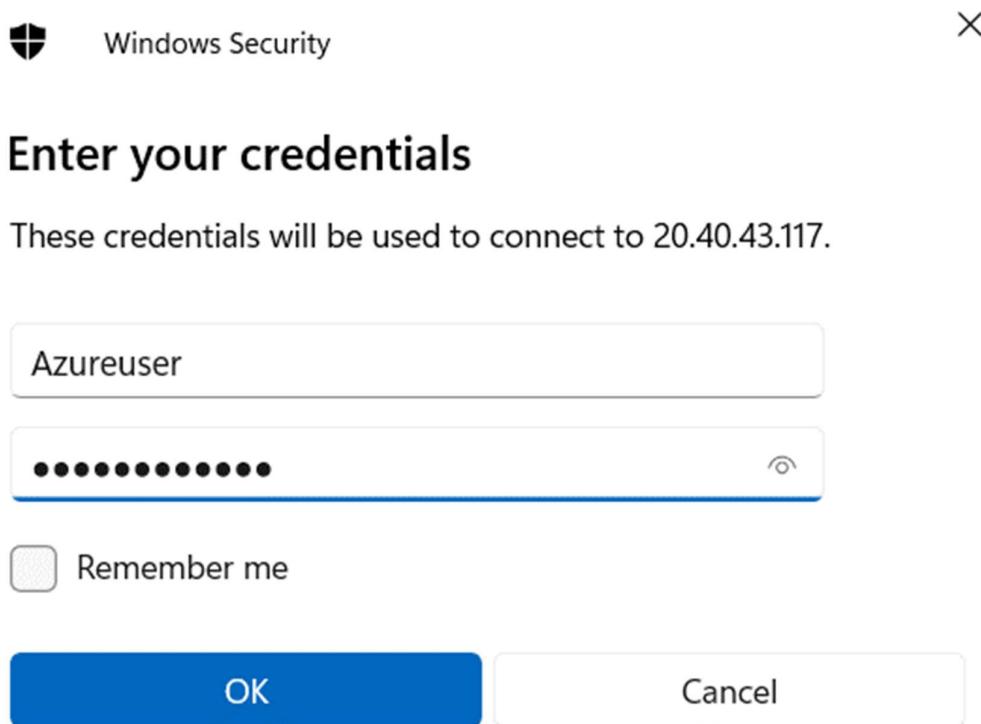


**Step-4:** After Deployment is over, Go to the remote desktop connection.

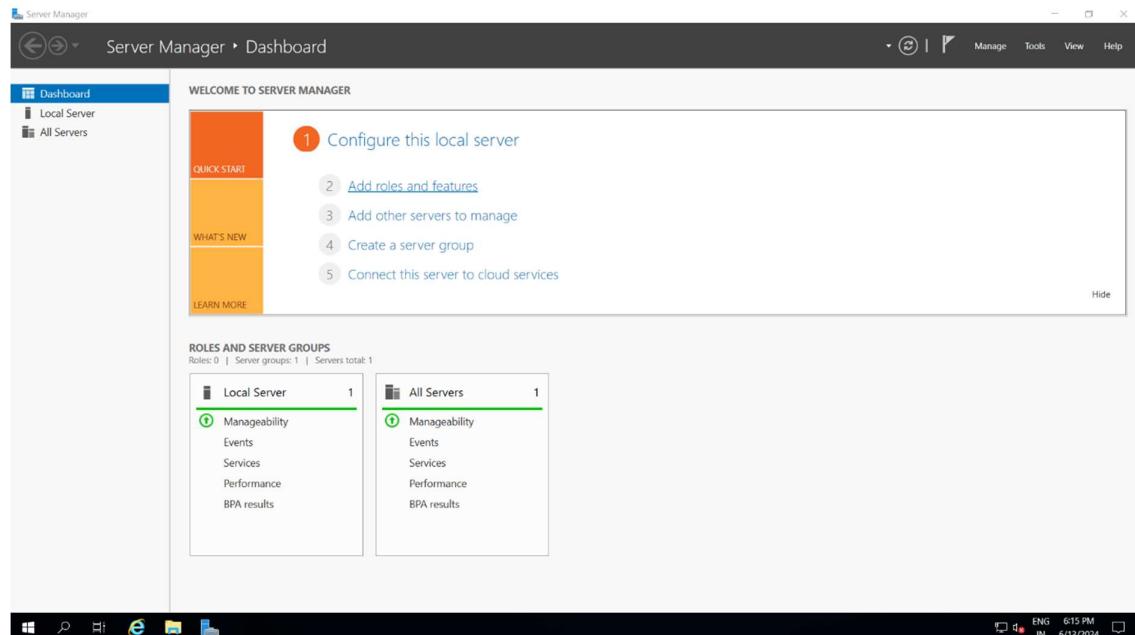
**Step-5:** Firstly, copy the public IP Address of that created virtual machine.

Essentials	Networking
Resource group: (move) : vm91	Operating system: Windows
Status: Running	Size: Standard DS1 v2 (1 vCPU, 3.5 GB memory)
Location: Central India (Zone 1)	Public IP address: 20.40.43.117
Subscription (move): Azure for Students	Virtual network/subnet: vm91-vnet/default
Subscription ID: 9ec5c3db-0387-4df7-8429-12954dbd32cb	DNS name: Not configured
Availability zone: 1	Health state: -
Tags (edit): Add tags	Time created: 6/12/2024, 6:49 PM UTC

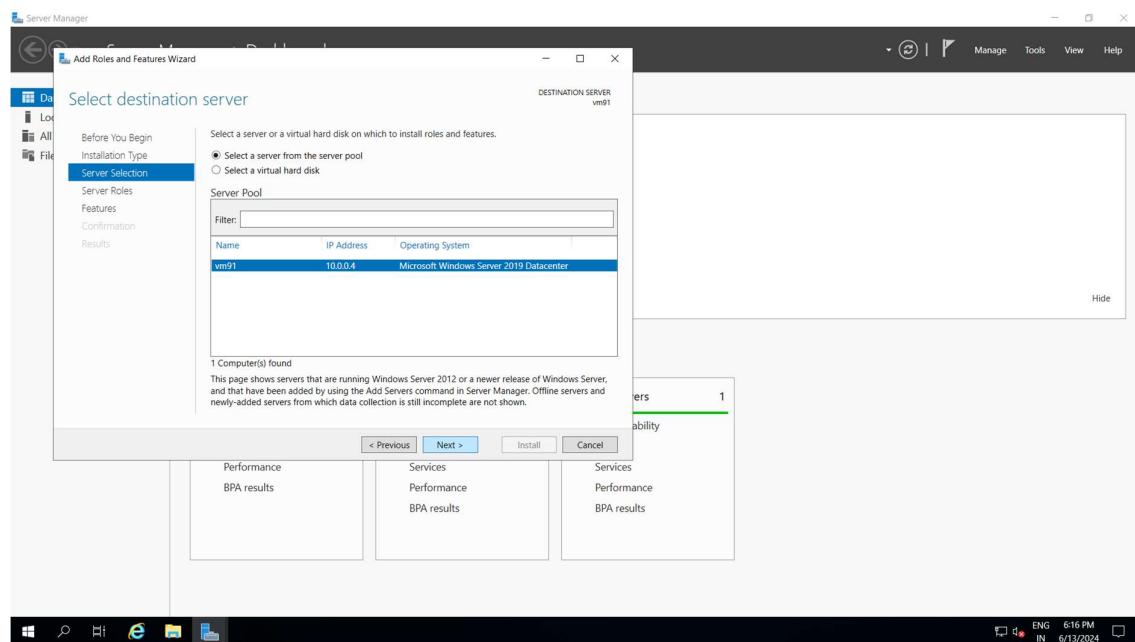
**Step-6:** By using that copied IP Address open the window virtual machine through remote desktop connection.

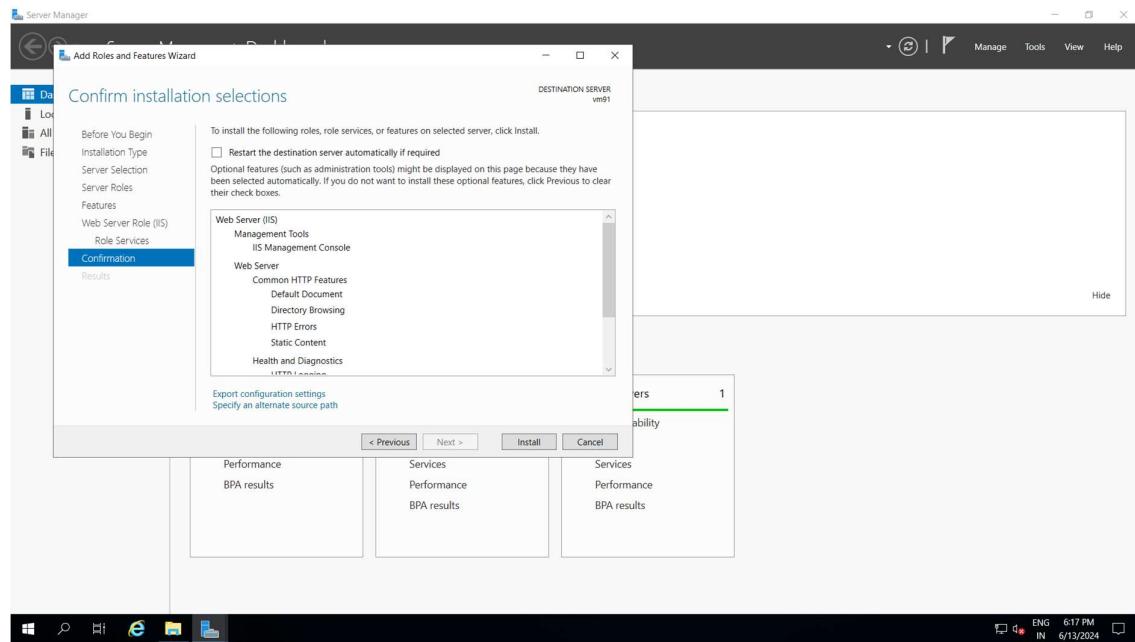


**Step-7:** When remote desktop will start (windows VM) you can see there will be Server Manager will be opened and in that you can see Configure this local server, click on “Add roles and features”.

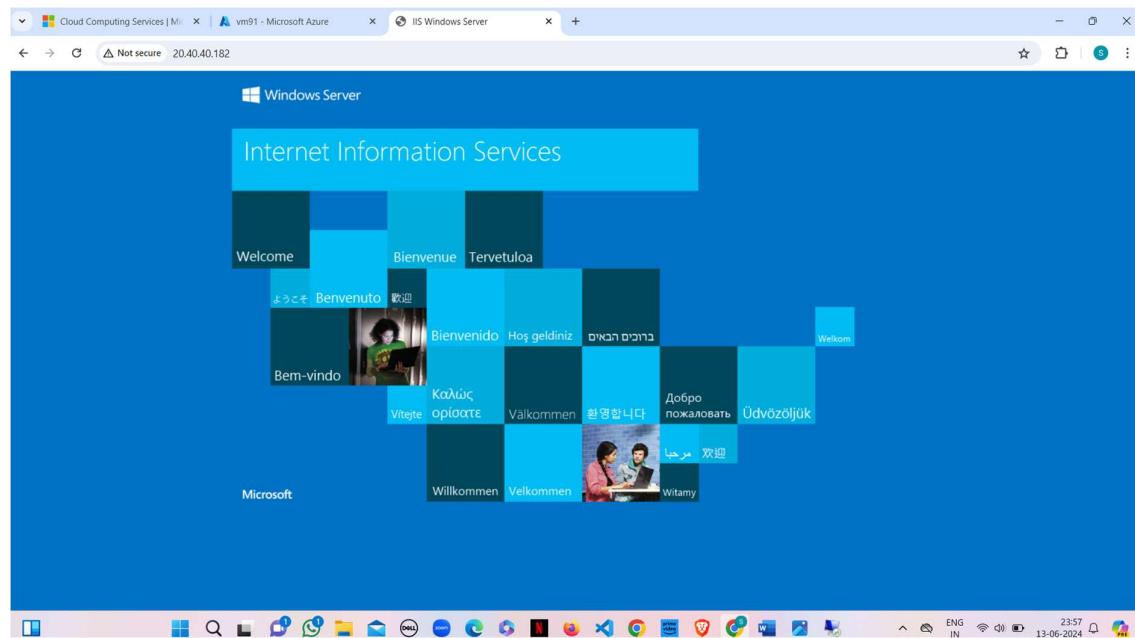


**Step-8:** Click on next, next and in Server Roles select Web Server (IIS) click on add feature, click on next, next till you can get install button and click on install.

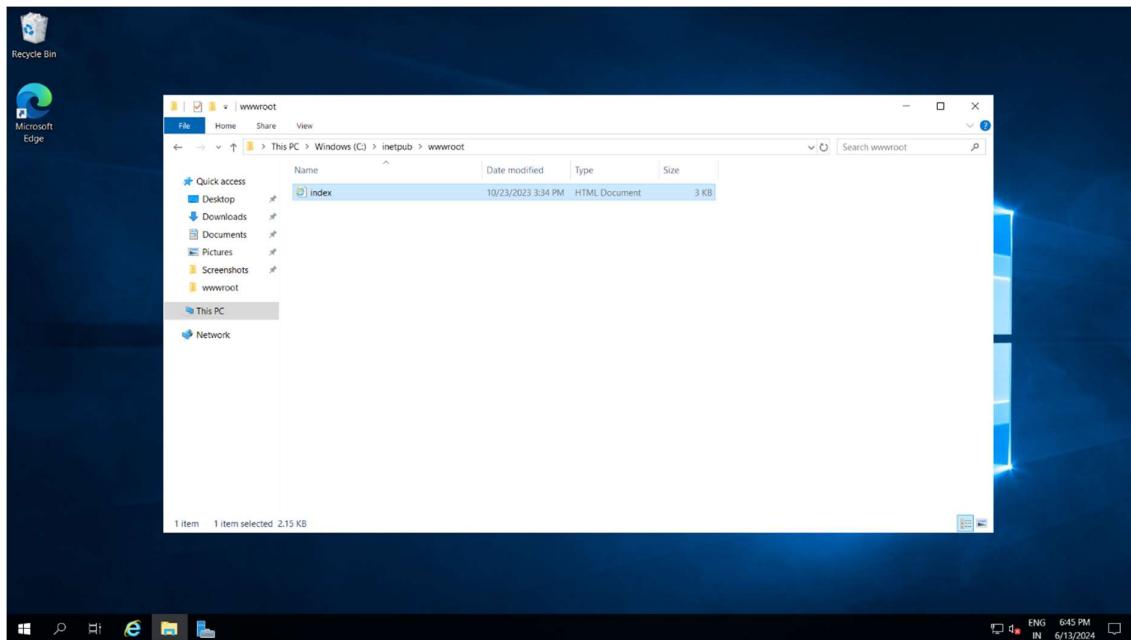




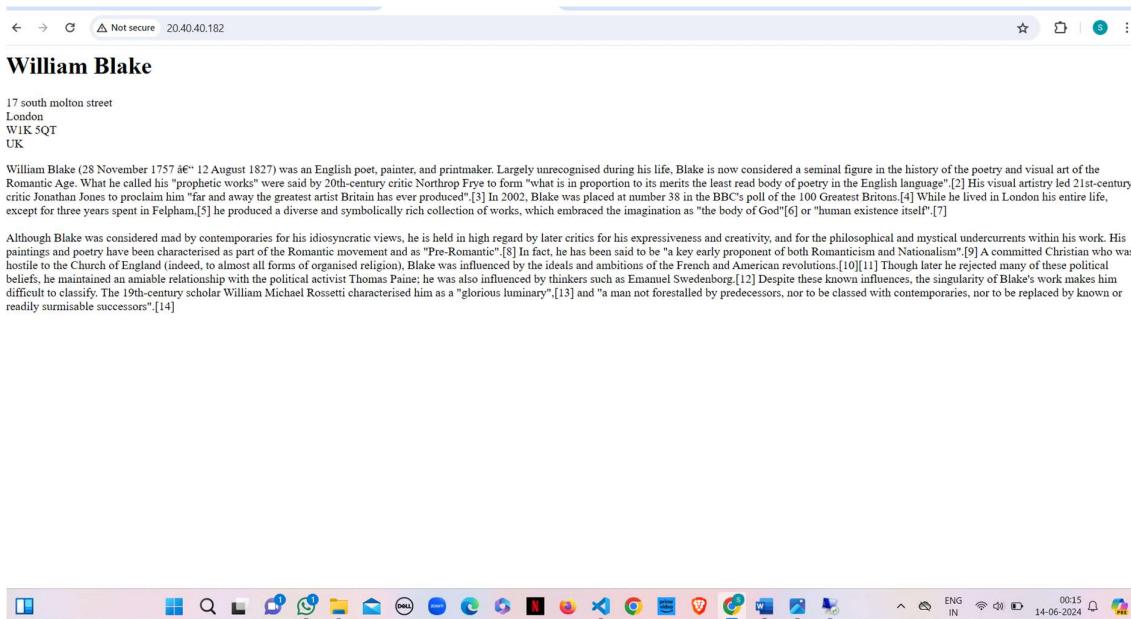
**Step- 9:** paste the public IP address in desktop browser and you can see.



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:

Set up and configured an web server on a Windows server in Azure. The server was operational, and web pages were accessible, indicating a successful configuration.

## Q8) Implementing locks in Azure Portal.

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

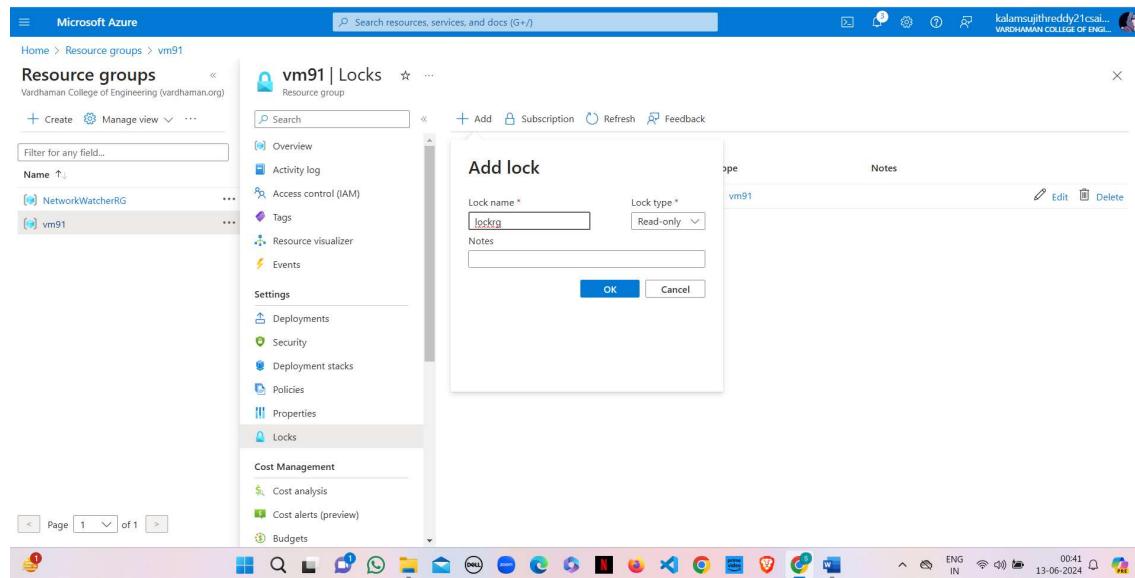
The screenshot shows the Microsoft Azure portal interface. On the left, there's a sidebar with various navigation options like Home, Connect, Diagnose and solve problems, Networking, Settings, and Extensions + applications. Under the 'Locks' section, it says 'vm91 virtual machine agent status is not ready. Troubleshoot the issue →'. The main content area displays details for 'vm91', including its resource group (move), status (Running), location (Central India (Zone 1)), subscription (Azure for Students), and various network and security settings. The bottom of the screen shows the Windows taskbar with icons for file explorer, search, start, and other system tools.

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

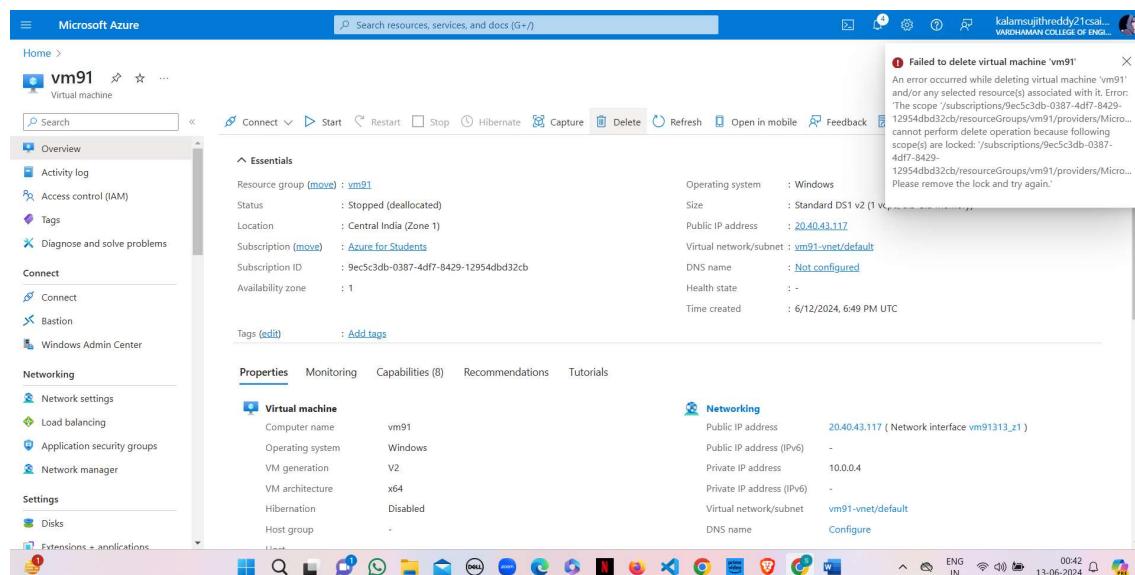
This screenshot shows the 'Add lock' dialog box overlaid on the Azure portal. The dialog has fields for 'Lock name' (containing 'lock1') and 'Lock type' (set to 'Delete'). There are also 'Notes' and 'OK' / 'Cancel' buttons. The background shows the same Azure portal interface as the previous screenshot, with the 'Locks' option selected in the sidebar.

**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.



The screenshot shows the Microsoft Azure portal interface. The top navigation bar includes 'Microsoft Azure', a search bar, and account information for 'kalamsujithreddy21csai... VARDHAMAN COLLEGE OF ENGI...'. The main title is 'vm91 | Locks' under the 'Virtual machine' category. The left sidebar has a 'Locks' section selected, along with other options like 'Extensions + applications', 'Operating system', 'Configuration', 'Advisor recommendations', 'Properties', 'Availability + scale', 'Size', 'Availability + scaling', 'Security', 'Identity', 'Microsoft Defender for Cloud', 'Backup + disaster recovery', 'Backup', 'Disaster recovery', and 'Restore point'. The main content area displays a table of locks:

Lock name	Lock type	Scope	Notes
lock1	Delete	vm91	

Actions for the lock include 'Edit' and 'Delete'. The bottom of the screen shows the Windows taskbar with various pinned icons and system status indicators.

### Result:

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

## Q9) Perform scaling in Azure Portal.

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

**vm91** Virtual machine

**Essentials**

- Resource group (move) : vm91
- Status : Running
- Location : Central India (Zone 1)
- Subscription (move) : Azure for Students
- Subscription ID : 9ec5c3db-0387-4df7-8429-12954dbd32cb
- Availability zone : 1
- Operating system : Windows
- Size : Standard DS1 v2 (1 vcpu, 3.5 GB memory)
- Public IP address : 20.40.43.117
- Virtual network/subnet : vm91-vnet/default
- DNS name : Not configured
- Health state : -
- Time created : 6/12/2024, 6:49 PM UTC

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

**Virtual machine**

- Computer name : vm91
- Operating system : Windows
- VM generation : V2
- VM architecture : x64
- Agent status : Not Ready

**Networking**

- Public IP address : 20.40.43.117 ( Network interface vm91313\_z1 )
- Public IP address (IPv6) : -
- Private IP address : 10.0.0.4
- Private IP address (IPv6) : -
- Virtual network/subnet : vm91-vnet/default

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

**vm91** Virtual machine

**Stop this virtual machine**

Do you want to stop 'vm91'?

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

**Yes** **No**

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

**Virtual machine**

- Subscription ID : 9ec5c3db-0387-4df7-8429-12954dbd32cb
- Availability zone : 1
- Computer name : vm91
- Operating system : Windows
- VM generation : V2
- VM architecture : x64
- Agent status : Not Ready

**Networking**

- Public IP address : 20.40.43.117 ( Network interface vm91313\_z1 )
- Public IP address (IPv6) : -
- Private IP address : 10.0.0.4
- Private IP address (IPv6) : -
- Virtual network/subnet : vm91-vnet/default

**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.

The screenshot shows the Microsoft Azure Storage blade for a disk named 'vm91\_OsDisk\_1'. The left sidebar has 'Size + performance' selected under 'Configuration'. The main area displays a table of storage types and their properties. A row for '256 GiB' is highlighted. At the bottom are 'Save' and 'Discard' buttons.

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	-	-

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

The screenshot shows the Microsoft Azure VM Size blade for a virtual machine named 'vm91'. The left sidebar has 'Size' selected under 'Availability + scale'. The main area displays a table of VM sizes. A row for 'D2s\_v3' is highlighted. At the bottom are 'Save' and 'Discard' buttons.

VM Size	Type	vCPUs	RAM (GiB)	Data disks	Max IOPS	Local storage (GiB)
DS1_v2	General purpose	1	3.5	4	3200	7 (SCSI)
D2s_v3	General purpose	2	8	4	3200	16 (SCSI)
DS2_v2	General purpose	2	7	8	6400	14 (SCSI)
D4s_v3	General purpose	4	16	8	6400	32 (SCSI)
DS3_v2	General purpose	4	14	16	12800	28 (SCSI)
The 4th generation D family sizes for your general purpose needs						
The 4th generation E family sizes for your high memory needs						
Up to 2X performance boost for vector processing workloads						
The 3rd generation D family sizes for your general purpose needs						

Step-7: Viewing VM after resizing the disk (Scale up).

vm91\_OsDisk\_1\_32e6ef8f6bf741aba583f1f46c8a1561

Resource group (move) : vm91

Disk state : Reserved

Last ownership update ti... : 6/13/2024, 12:27:00 AM

Location : Central India

Subscription (moved) : Azure for Students

Subscription ID : 9ec53db-0387-4df7-8429-12954dbd32cb

Time created : 6/13/2024, 12:19:37 AM

Disk size : 256 GB

Storage type : Premium SSD LRS

Managed by : vm91

Operating system : Windows

Max shares : 0

Availability zone : 1

Performance tier : P15 - 1100 IOPS, 125 MB/s

Security type : Trusted launch

## Result:

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

## Q10) Perform attach and detach of data disk to Linux Server in Azure.

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

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

Administrator account

Authentication type:  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 granular network access on the Networking tab.

Public inbound ports \*:  Allow selected ports

Select inbound ports \*:

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

< Previous | Next : Disks > | Review + create | Give feedback

### Step 3 : Select

OS disk size -----30GB

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

enable "Delete with VM"

Basics Disks 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

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

**OS disk**

OS disk size:

OS disk type \*:

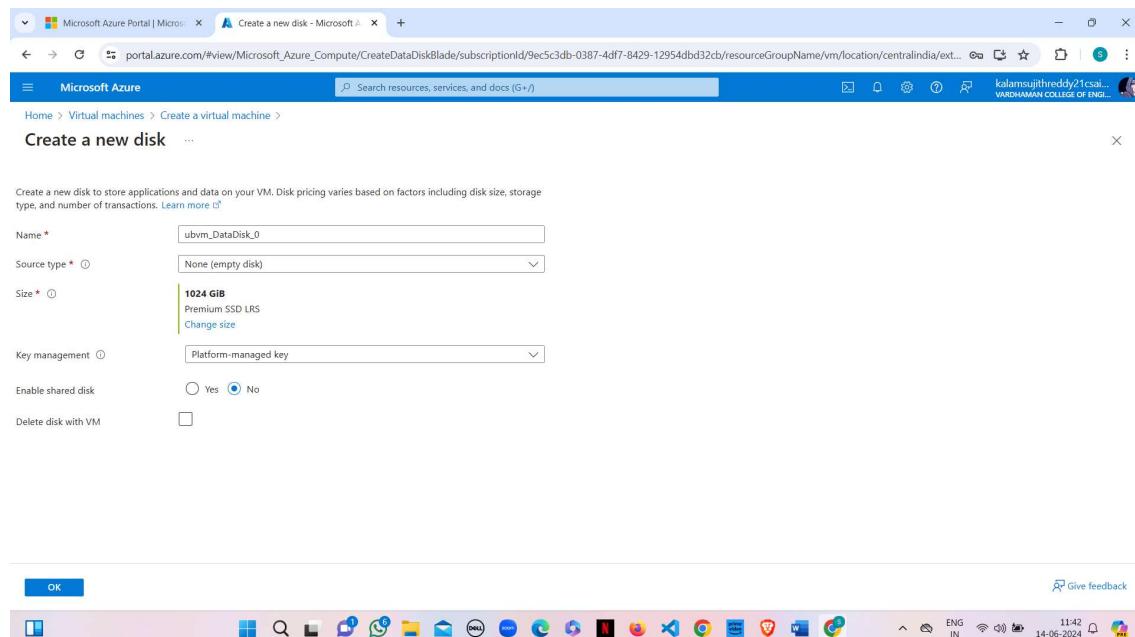
Delete with VM:

Key management:

Enable Ultra Disk compatibility:

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

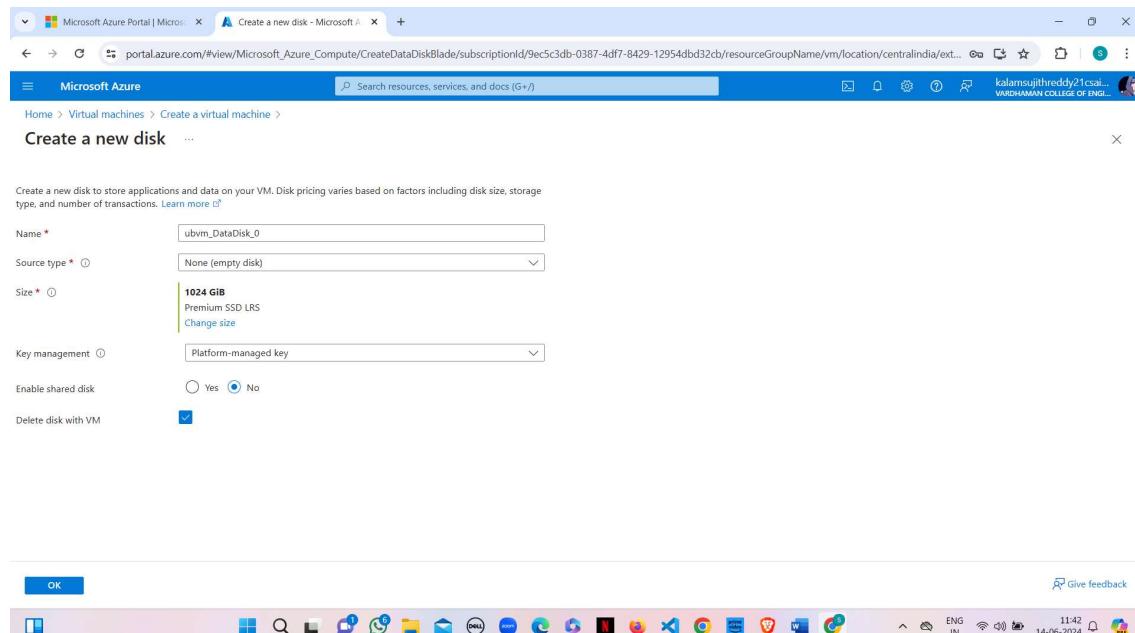
### Step 4 : Click on "Create & attach a new disk"



### Step 5 : Select

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

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



### Step 6 : Select

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

click on OK

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

Microsoft Azure

Search resources, services, and docs (G+)

kalamsujithreddy21csa... VARDHAMAN COLLEGE OF ENGI...

Create a virtual machine

Basics Disks 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

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

OS disk

OS disk size  Image default (30 GiB)

OS disk type  Premium SSD (locally-redundant storage)

Delete with VM

Key management  Platform-managed key

Enable Ultra Disk compatibility

< Previous Next : Networking > Review + create Give feedback

Microsoft Azure

Search resources, services, and docs (G+)

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Create a virtual machine

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 D2s v3 by Microsoft **8.7354 INR/hr** Subscription credits apply

[Terms of use](#) | [Privacy policy](#) 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

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

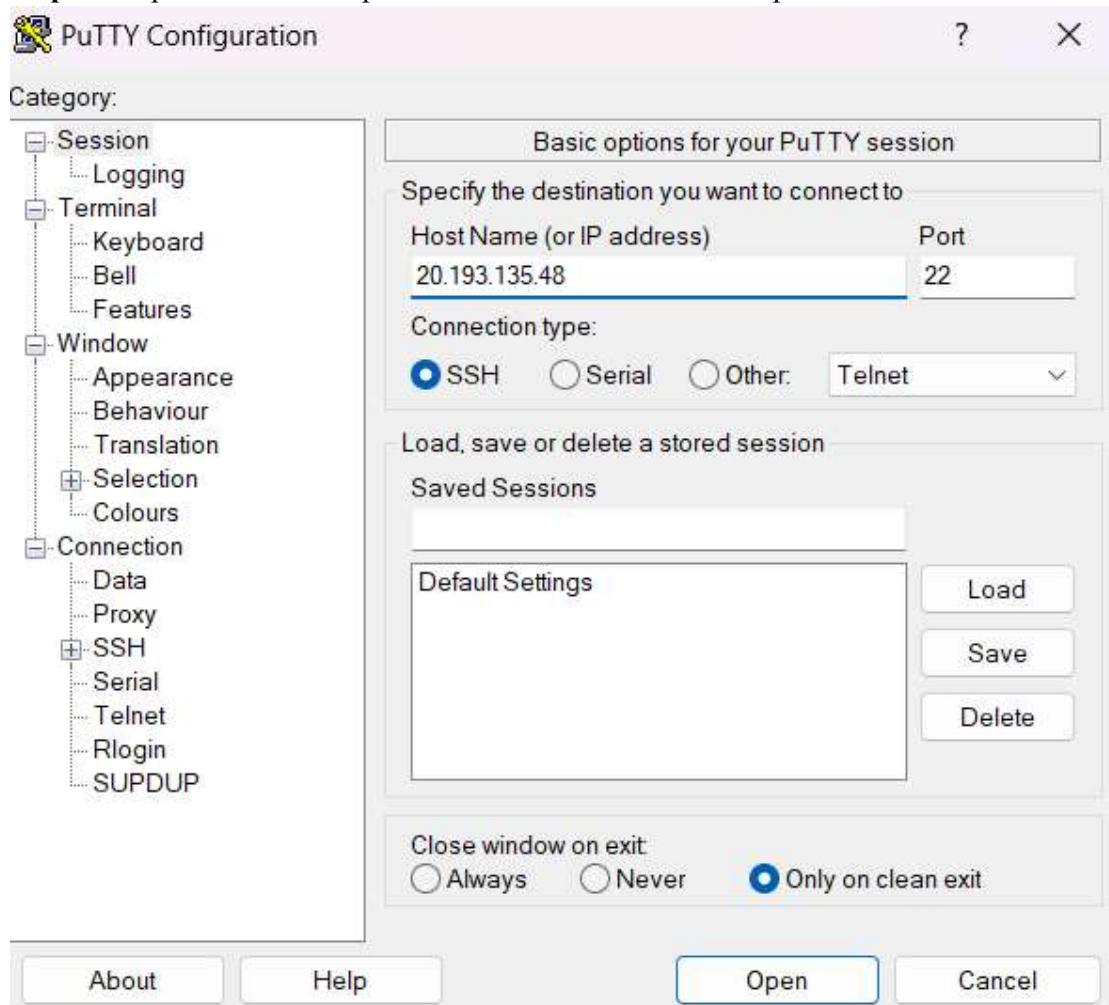
**Step 8 : Click on "Go to resource group"**

The screenshot shows the Microsoft Azure Cloud Shell interface. At the top, it displays the deployment name: 'CreateVm-canonical.0001-com-ubuntu-server-focal-2-20240614113800'. Below this, a green checkmark icon indicates that the deployment is complete. The deployment details show the start time as 6/14/2024, 11:46:13 AM. On the right side of the interface, there are several promotional cards: '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 >), and 'Work with an expert' (Azure experts are service provider partners who can help manage your assets on Azure and be your first line of support. Find an Azure expert >). The bottom of the screen shows the Windows taskbar with various pinned icons.

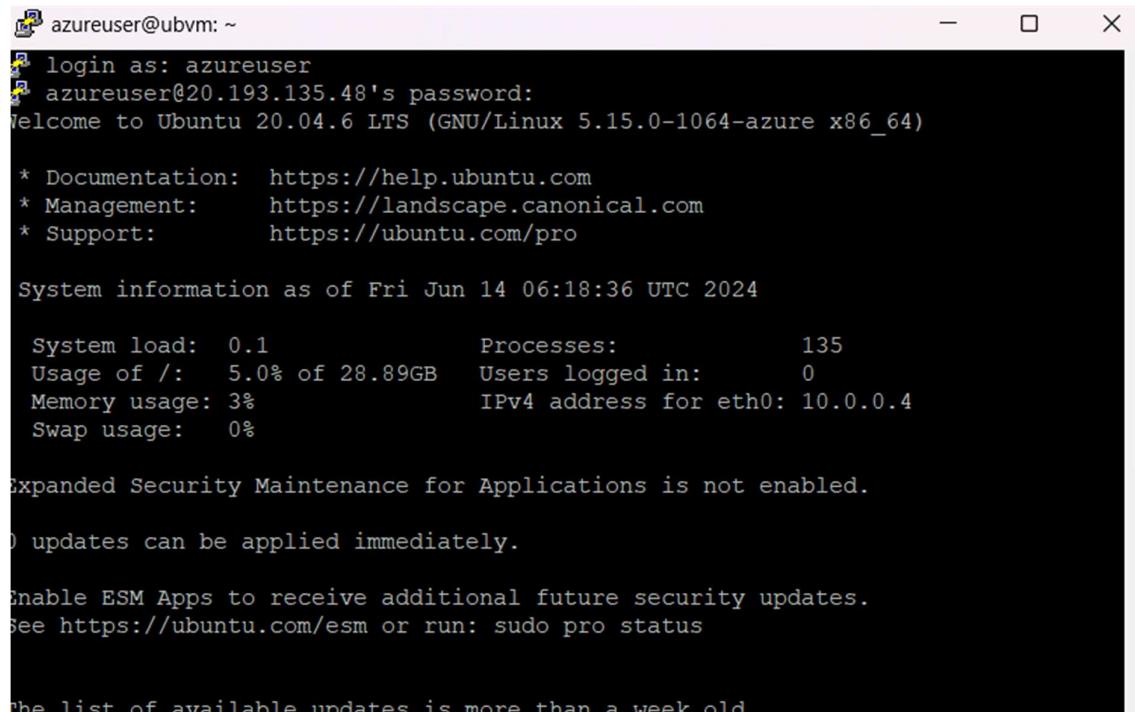
### Step 9 : Copy public IP Address

The screenshot shows the Azure portal interface for the 'ubvm' virtual machine. In the left sidebar, under the 'Virtual machines' section, the 'ubvm' machine is selected. The main content area displays the 'Essentials' tab, which includes information such as Resource group (move) : vm, Status : Running, Location : Central India (Zone 1), Subscription (move) : Azure for Students, Subscription ID : 9ec5c3db-0387-4df7-8429-12954dbd32cb, Availability zone : 1, Operating system : Linux (Ubuntu 20.04), Size : Standard\_D2s\_v3 (2 vCPUs, 8 GiB memory), Public IP address : 20.193.135.48, Virtual network/subnet : ubvm-vnet/default, DNS name : Not configured, Health state : 1, and Time created : 6/14/2024, 6:16 AM UTC. Below this, the 'Properties' tab is selected, showing details like Computer name : ubvm, Operating system : Linux (Ubuntu 20.04), VM generation : V2, VM architecture : x64, Agent status : Ready, Agent version : 2.11.1.4, and Networking settings. The 'Networking' section specifically highlights the Public IP address as 20.193.135.48. The bottom of the screen shows the Windows taskbar with various pinned icons.

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



**Step 11 :** Login into it with username and password



```
azureuser@ubvm: ~
login as: azureuser
azureuser@20.193.135.48'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 06:18:36 UTC 2024

System load: 0.1              Processes: 135
Usage of /: 5.0% of 28.89GB   Users logged in: 0
Memory usage: 3%               IPv4 address for eth0: 10.0.0.4
Swap usage: 0%

Expanded Security Maintenance for Applications is not enabled.

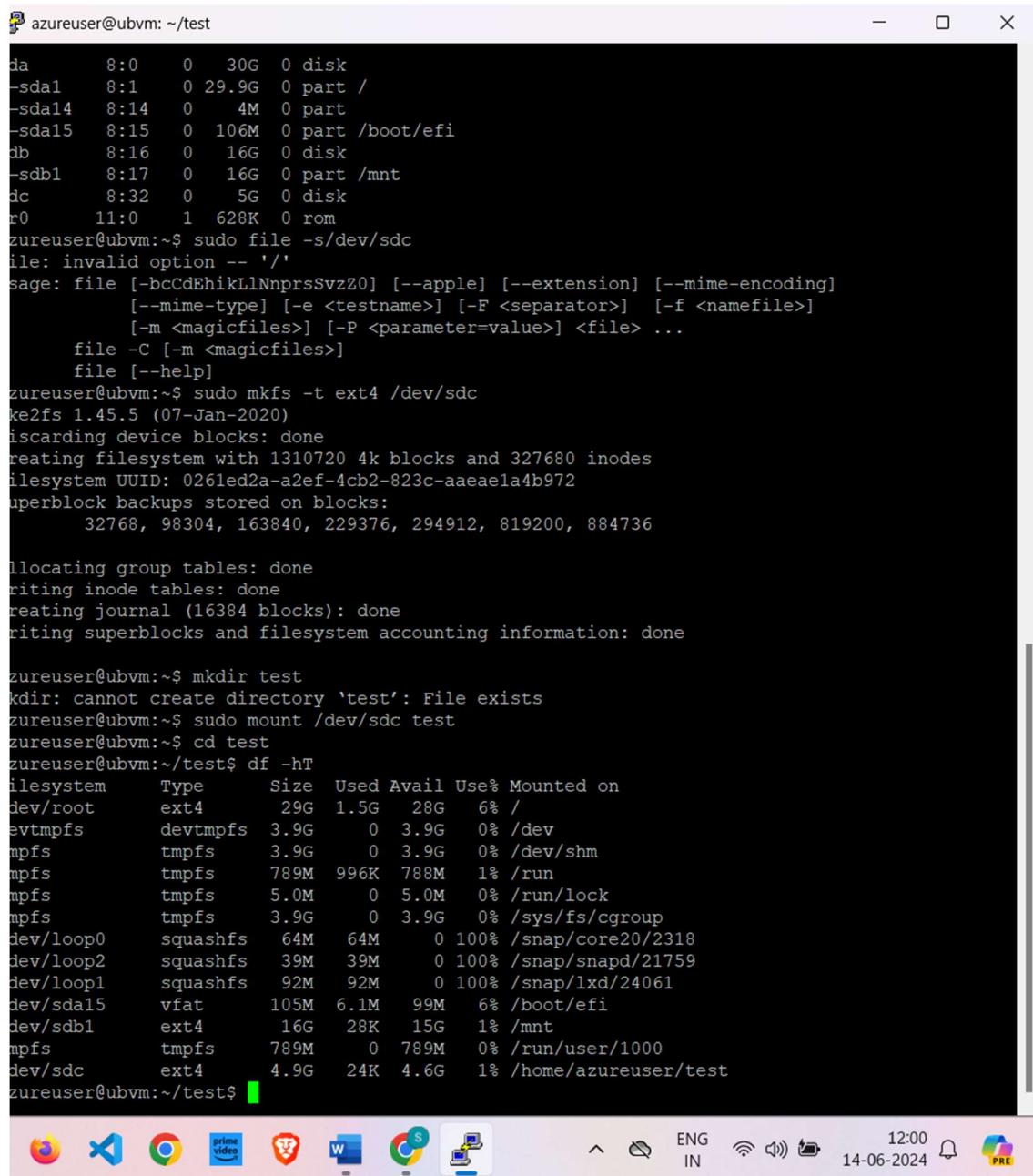
0 updates can be applied immediately.

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

The list of available updates is more than a week old.
```

**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@ubvm: ~/test
da      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
db      8:16   0   16G  0 disk
└-sdb1   8:17   0   16G  0 part /mnt
dc      8:32   0     5G  0 disk
r0      11:0   1  628K  0 rom
zureuser@ubvm:~$ sudo file -s /dev/sdc
file: invalid option -- '/'
usage: file [-bcCdEhikLlNnprsSvzzZ0] [--apple] [--extension] [--mime-encoding]
            [--mime-type] [-e <testname>] [-F <separator>] [-f <namefile>]
            [-m <magicfiles>] [-P <parameter=value>] <file> ...
        file -C [-m <magicfiles>]
        file [--help]
zureuser@ubvm:~$ sudo mkfs -t ext4 /dev/sdc
Filesystem 1.45.5 (07-Jan-2020)
iscarding device blocks: done
Creating filesystem with 1310720 4k blocks and 327680 inodes
Filesystem UUID: 0261ed2a-a2ef-4cb2-823c-aaeae1a4b972
superblock backups stored on blocks:
      32768, 98304, 163840, 229376, 294912, 819200, 884736

Allocating group tables: done
Writing inode tables: done
Creating journal (16384 blocks): done
Writing superblocks and filesystem accounting information: done

zureuser@ubvm:~$ mkdir test
mkdir: cannot create directory 'test': File exists
zureuser@ubvm:~$ sudo mount /dev/sdc test
zureuser@ubvm:~$ cd test
zureuser@ubvm:~/test$ df -hT
Filesystem      Type      Size  Used Avail Use% Mounted on
dev/root        ext4     29G  1.5G  28G  6% /
devtmpfs        devtmpfs  3.9G   0  3.9G  0% /dev/shm
tmpfs          tmpfs    789M 996K 788M  1% /run
tmpfs          tmpfs    5.0M   0  5.0M  0% /run/lock
tmpfs          tmpfs    3.9G   0  3.9G  0% /sys/fs/cgroup
dev/loop0       squashfs 64M   64M   0 100% /snap/core20/2318
dev/loop2       squashfs 39M   39M   0 100% /snap/snappyd/21759
dev/loop1       squashfs 92M   92M   0 100% /snap/lxd/24061
dev/sda15       vfat     105M  6.1M  99M  6% /boot/efi
dev/sdb1        ext4     16G  28K  15G  1% /mnt
tmpfs          tmpfs    789M   0  789M  0% /run/user/1000
dev/sdc        ext4     4.9G  24K  4.6G  1% /home/azureuser/test
zureuser@ubvm:~/test$
```

The screenshot shows the Microsoft Azure Disks blade for a virtual machine named 'ubvm'. The left sidebar includes options like Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Connect (with Connect and Bastion), Networking (with Network settings, Load balancing, Application security groups, and Network manager), and Settings (with Disks, Extensions + applications, and Operation system). The main content area displays two sections: 'OS disk' and 'Data disks'. The 'OS disk' section lists 'ubvm\_disk1\_747bc113ba684ddba1ee07' with details: Storage type - Premium SSD LRS, Size (GiB) - 30, Max IOPS - 120, Max throughput - 25, Encryption - SSE with PMK, and Host caching - Read/write. The 'Data disks' section shows one attached disk, 'sdc', with details: LUN - 0, Disk name - 'sdc', Storage type - Premium SSD LRS, Size (GiB) - 5, Max IOPS - 120, Max throughput - 25, Encryption - SSE with PMK, and Host caching - Read-only. At the bottom, there are 'Apply' and 'Discard changes' buttons.

### Step 13 : Click on Apply

This screenshot is identical to the previous one, showing the Microsoft Azure Disks blade for the 'ubvm' virtual machine. The 'Data disks' section now displays the message 'No data disks attached', indicating that the changes made in Step 13 have been applied successfully.

### Result:

Attached and detached a data disk to a Linux server in Azure. The operations were performed without downtime, and the disk was recognized and accessible after attachment, then safely removed.

### Q11) Perform attach and detach of data disk to Windows Server in Azure.

#### Steps:-

- 1) Create a Virtual name with username &password

This subscription may not be eligible to deploy VMs of certain sizes in certain regions.

**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) vm\_group    Create new

**Instance details**

Virtual machine name \*  vm

Region \*  (Asia Pacific) Central India

Availability options  Availability zone

Availability zone \*  Zone 1

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

< Previous Next : Disks > Review + create Give feedback

OS disk size \*  128 GiB (P10)

Some images are, by default, smaller than the selected OS disk size. [Click here to learn how to expand your disk partition size after you create your VM](#)

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

Delete with VM

Key management  Platform-managed key

Enable Ultra Disk compatibility

**Data disks for vm**

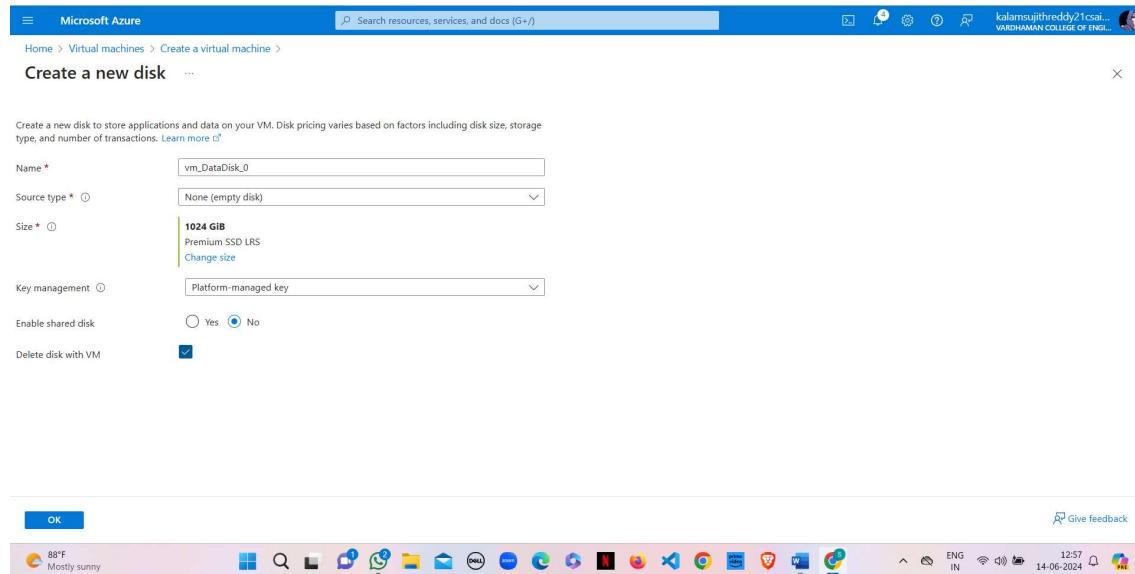
You can add and configure additional data disks for your virtual machine or attach existing disks. This VM also comes with a temporary disk.

LUN	Name	Size (GiB)	Disk type	Host caching	Delete with VM
					<input type="checkbox"/>

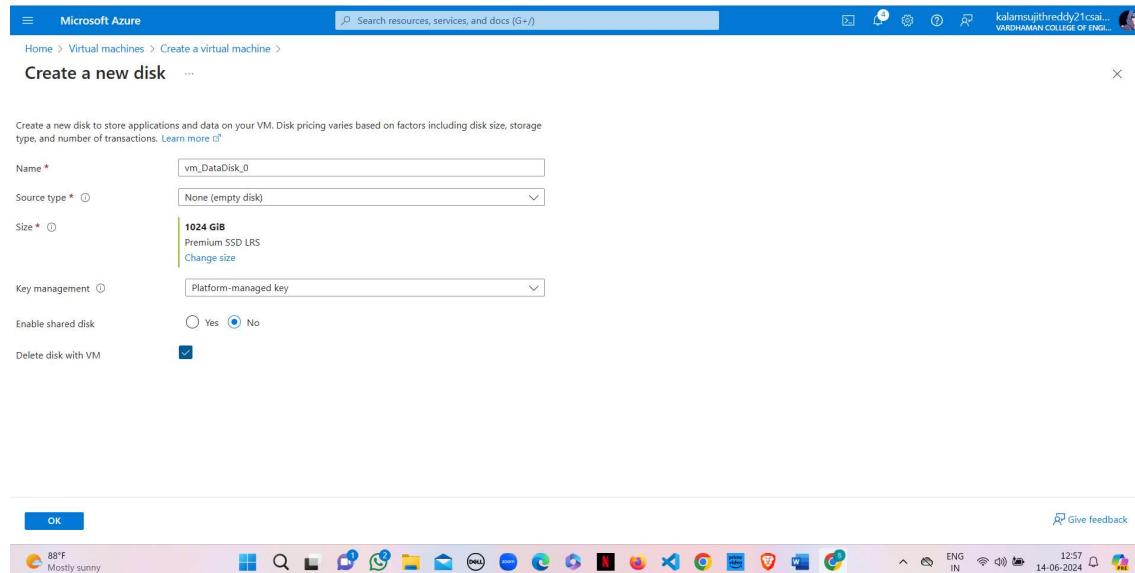
Create and attach a new disk  Attach an existing disk

< Previous Next : Networking > Review + create Give feedback

2) Click on "Next:Disks>"



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

The screenshot shows the Microsoft Azure portal interface. On the left, there's a sidebar with 'VM' selected. The main area is titled 'Overview' for a virtual machine named 'vm'. It shows the public IP address as 20.197.5.152. The status is 'Running' and the location is 'Central India (Zone 1)'. The properties tab is selected, showing details like operating system (Windows), size (Standard D2s v3 (2 vcpus, 8 GiB memory)), and network information (Public IP address: 20.197.5.152, Virtual network/subnet: vm-vnet/default). A 'Networking' section also displays the public IP address.

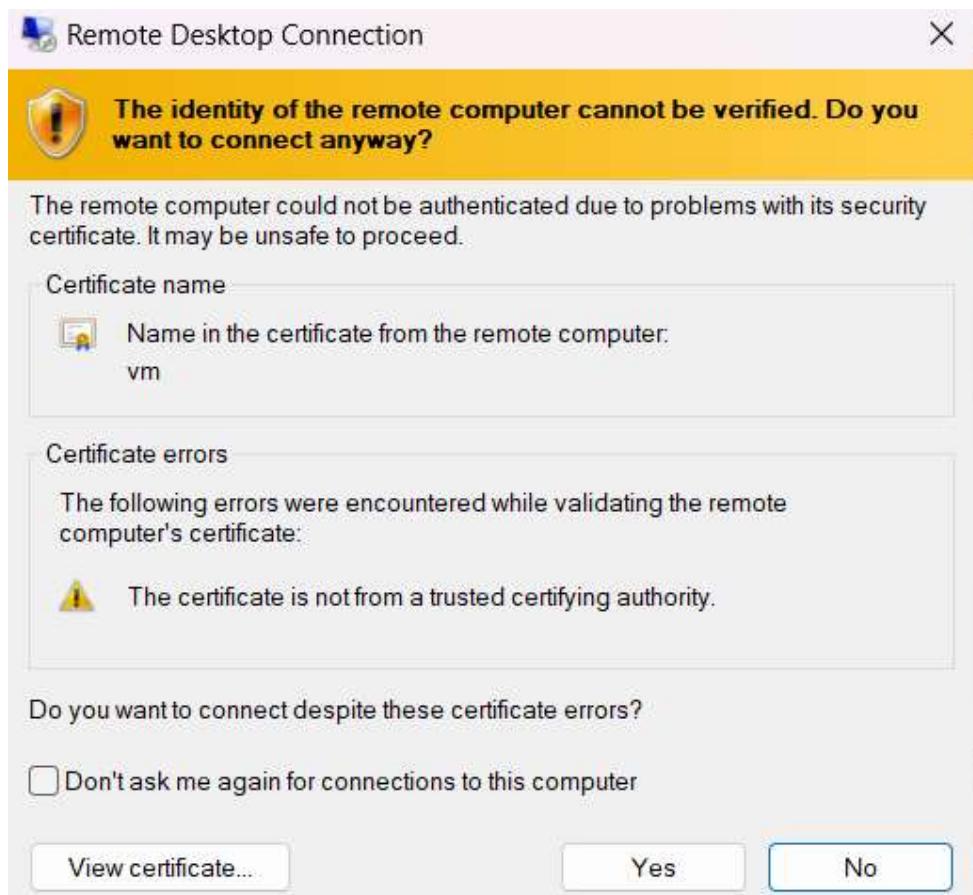
10) Open Remote Desktop Connection in your windows/system and paste the public IP Address

11) Click on “More choices”

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

This screenshot shows the same Azure VM overview page as before, but with a 'Remote Desktop' connection dialog box overlaid. The dialog is titled 'Enter your credentials' and says 'These credentials will be used to connect to 20.197.5.152.' It has fields for 'azureuser' and 'Password', and a 'Remember me' checkbox. Below these are buttons for 'OK' and 'Cancel'. The background shows the same VM details and networking information as the previous screenshot.

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's Disks blade for a virtual machine named 'vm'. The left sidebar includes options like Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Connect (Connect, Bastion, Windows Admin Center), Networking (Network settings, Load balancing, Application security groups, Network manager), and Settings (Disks, Extensions + Applications). The main area displays two sections: 'OS disk' and 'Data disks'. The 'OS disk' section lists one disk: 'vm\_OsDisk\_1\_10cdecc...'. The 'Data disks' section lists one disk: 'vm\_DataDisk\_0'. Both sections provide detailed information such as storage type (Premium SSD LRS), size, performance metrics (Max IOPS, Max throughput), encryption (SSE with PMK), and host caching (Read/write for OS disk, Read-only for data disk).

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

This screenshot shows the Microsoft Azure portal's Disks blade for the same virtual machine 'vm'. The left sidebar is identical to the previous screenshot. The main area shows the 'OS disk' section with one disk listed and the 'Data disks' section which now shows 'Showing 0 of 0 attached data disks'. A message 'No data disks attached' is displayed below the table header. The taskbar at the bottom shows various application icons.

16) Click on “Apply”

The screenshot shows the Microsoft Azure portal interface for managing disks of a virtual machine named 'vm'. The left sidebar includes options like Overview, Activity log, Tags, Diagnose and solve problems, Connect, Networking, and Settings (with 'Disks' selected). The main content area displays disk details under 'OS disk' and 'Data disks'. Under 'OS disk', there is one entry: 'vm\_OsDisk\_1\_10cdecc325434bbff3fde' (Premium SSD LRS, 128 GB, Max IOPS 500, Max throughput 100, SSE with PMK, Host caching Read/write). Under 'Data disks', it says 'Showing 0 of 0 attached data disks'. At the bottom, there are 'Apply' and 'Discard changes' buttons, along with a toolbar.

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

This screenshot is identical to the previous one, showing the Microsoft Azure VM Disks settings page. The 'Data disks' section now clearly states 'No data disks attached'. The rest of the interface, including the sidebar and bottom buttons, remains the same.

### Result:

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

**Q12) Create Azure Storage Account, Container and upload and delete objects in it.****Step-1:** Click On Storage Account and Create one and select redundancy as GRS/LRS.

The screenshot shows the 'Create a storage account' wizard in the Microsoft Azure portal. The top navigation bar includes links for Home, Storage accounts, and a search bar. The main form is titled 'Create a storage account' and contains the following fields:

- Subscription \***: Azure for Students
- Resource group \***: NetworkWatcherRG (with a 'Create new' link)
- Instance details**
  - Storage account name \***: stor91
  - Region \***: (Asia Pacific) Central India (with a 'Deploy to an Azure Extended Zone' link)
  - Performance \***: Standard (selected radio button). Description: Recommended for most scenarios (general-purpose v2 account). Premium option is also available.
  - Redundancy \***: Geo-redundant storage (GRS) (selected dropdown option). A checkbox for 'Make read access to data available in the event of regional unavailability' is checked.
- Buttons at the bottom**: Previous, Next, Review + create (highlighted in blue), and Give feedback.
- Taskbar at the bottom**: Shows various pinned icons (Edge, File Explorer, Google Chrome, Prime Video, Microsoft Store, Word, Google Sheets, Microsoft Teams) and system status indicators (Wi-Fi, battery, volume, date/time: 14-06-2024).

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

Microsoft Azure

Search resources, services, and docs (G+)

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 authorization in the Azure portal

Minimum TLS version

Permitted scope for copy operations (preview)

**Hierarchical Namespace**

Hierarchical namespace, complemented by Data Lake Storage Gen2 endpoint, enables file and directory semantics, accelerates big data analytics workloads, and enables access control lists (ACLs) [Learn more](#)

Enable hierarchical namespace

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)

Microsoft Azure

Search resources, services, and docs (G+)

Home > stor91

stor91 | Containers Storage account

+ Container Change access level Restore containers Refresh Delete Give feedback

Search containers by prefix

Name	Last modified	Anonymous
Slogs	6/14/2024, 2:08:18 PM	Private

New container

Name \* container1

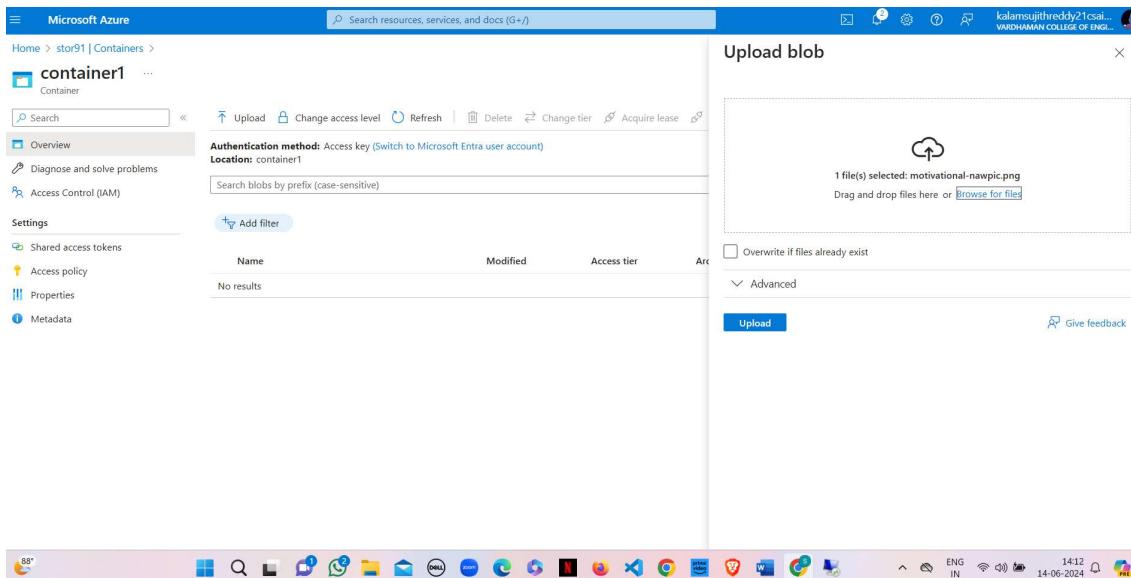
Anonymous access level Blob (anonymous read access for blobs only)

Blob within the container can be read by anonymous request, but container data is not available. Anonymous clients cannot enumerate the blobs within the container.

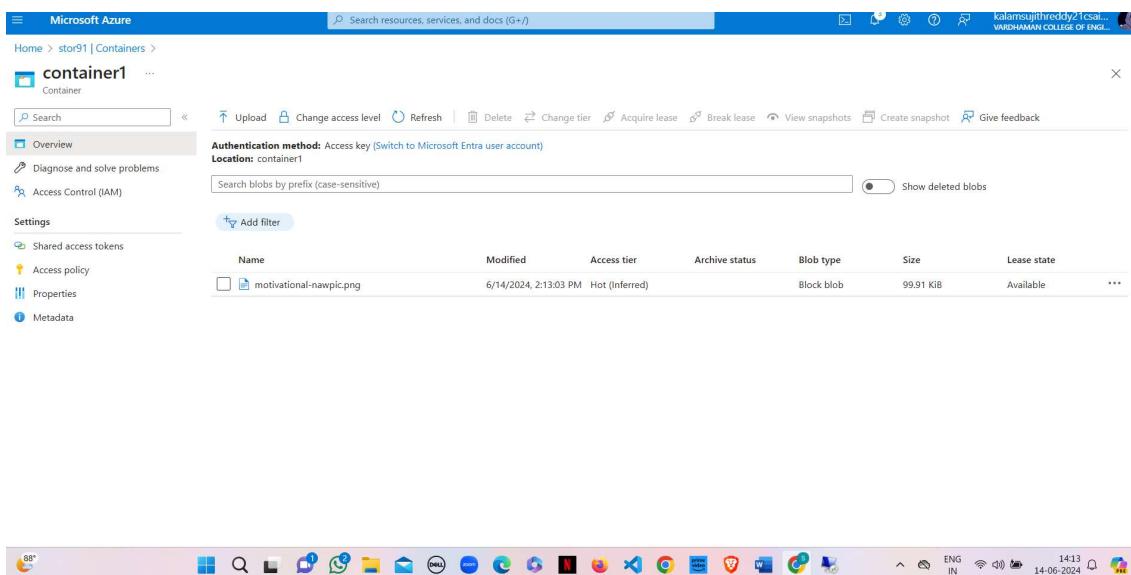
Advanced

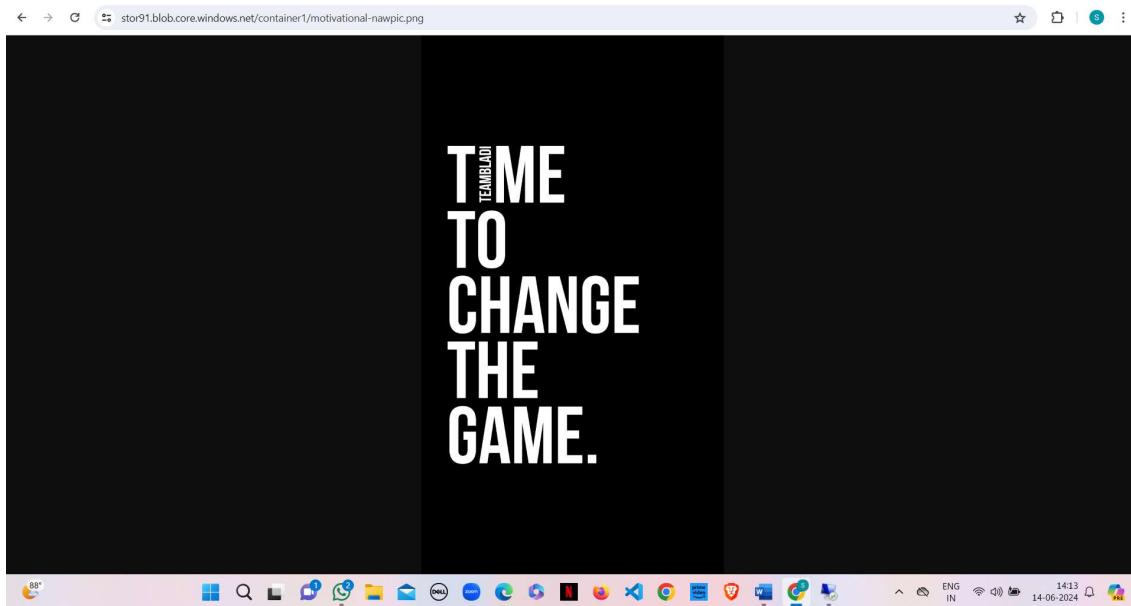
Create Give feedback

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



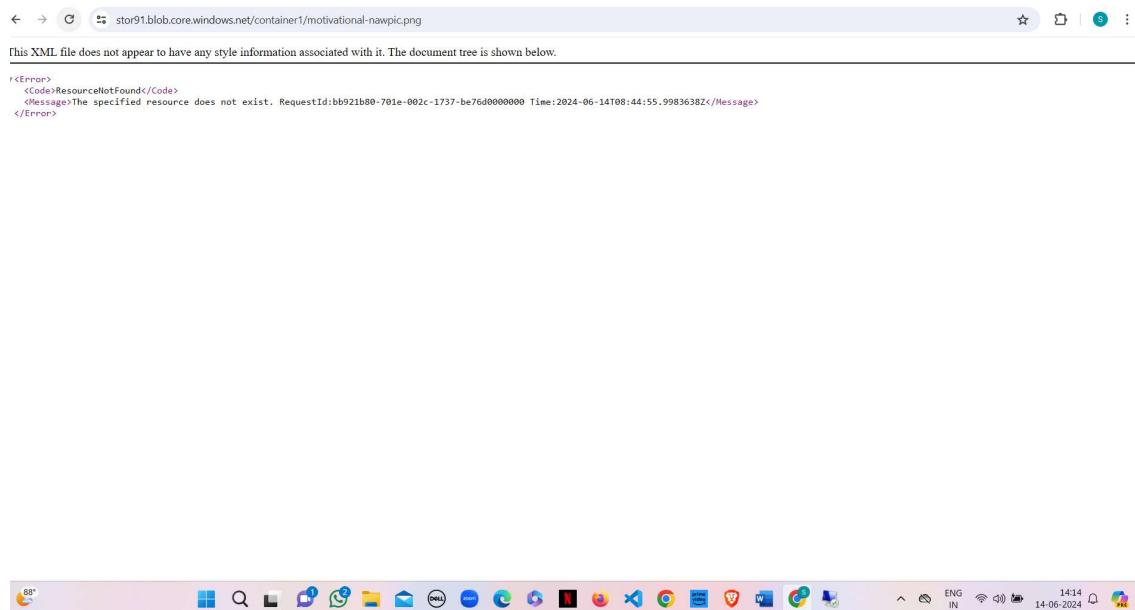
**Step-5:** Select the file and click on provided URL to open the file.





**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.

A screenshot of the Microsoft Azure portal. The user is in the 'Containers' section of a storage account named 'stor91'. A modal dialog box is open under the 'Settings' tab, specifically the 'Access Control (IAM)' section. The dialog title is 'Change access level' and it says 'Change the access level of container 'container1''. The 'Anonymous access level' dropdown is set to 'Private (no anonymous access)'. At the bottom of the dialog are 'OK' and 'Cancel' buttons. In the background, there is a table showing blob details: 'motivational-nawpic.png', '6/14/2024, 2:13:03 PM', 'Hot (Inferred)', 'Block blob', '99.91 KB', 'Available'. The status bar at the bottom shows the date and time as '14-06-2024 14:14'.



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

The screenshot shows the Microsoft Azure portal interface. The user is in the 'Container' view of a storage account named 'stor91'. A modal dialog box titled 'Delete blob(s)' is open, asking if they are sure they want to delete the selected blobs. The dialog includes a list of notes about blob deletion rules and a checkbox for 'Also delete blob snapshots'. At the bottom are 'OK' and 'Cancel' buttons. The main pane shows a table with one row of data:

Blob type	Size	Lease state
Block blob	99.91 KB	Available



The screenshot shows the Microsoft Azure portal interface for a storage account named 'stor91'. On the left, the navigation menu includes 'Overview', 'Activity log', 'Tags', 'Diagnose and solve problems', 'Access Control (IAM)', 'Data migration', 'Events', 'Storage browser', and 'Storage Mover'. Under 'Data storage', 'Containers' is selected. The main content area displays a table of containers:

Name	Last modified
\$logs	6/14/2024, 2:08:18 PM
<b>container1</b>	6/14/2024, 2:14:52 PM

A modal dialog titled 'Delete container(s)' is open on the right, containing the message: 'Containers which are in a leased state are locked for deletion and will be skipped. This action will move the following container(s) and its contents to a soft deleted state. The container(s) will remain recoverable for the retention period of 7 days.' It lists 'Container(s) to be soft deleted' with 'container1' checked. Buttons for 'Delete' and 'Cancel' are at the bottom.

The screenshot shows the Microsoft Azure portal interface for the same storage account 'stor91'. The left sidebar shows the same navigation options as the previous screenshot. The main content area displays the properties of the storage account, including resource group, location, subscription, disk state, and tags. A 'Properties' tab is selected.

A modal dialog titled 'Delete storage account' is open on the right, stating: 'The following storage account and its contents will be deleted.' It lists 'Resource to be deleted' as 'stor91' and 'Dependent resources to be deleted' as 'Containers', 'File shares', 'Tables', and 'Queues'. It also notes: 'The data provided is regularly updated about 2-4 times a day and published hourly. If your account has extremely large objects, it may be over a day between updates.' A text input field asks 'Enter storage account name to confirm deletion \*' with 'stor91' typed in. Buttons for 'Delete' and 'Cancel' are at the bottom.

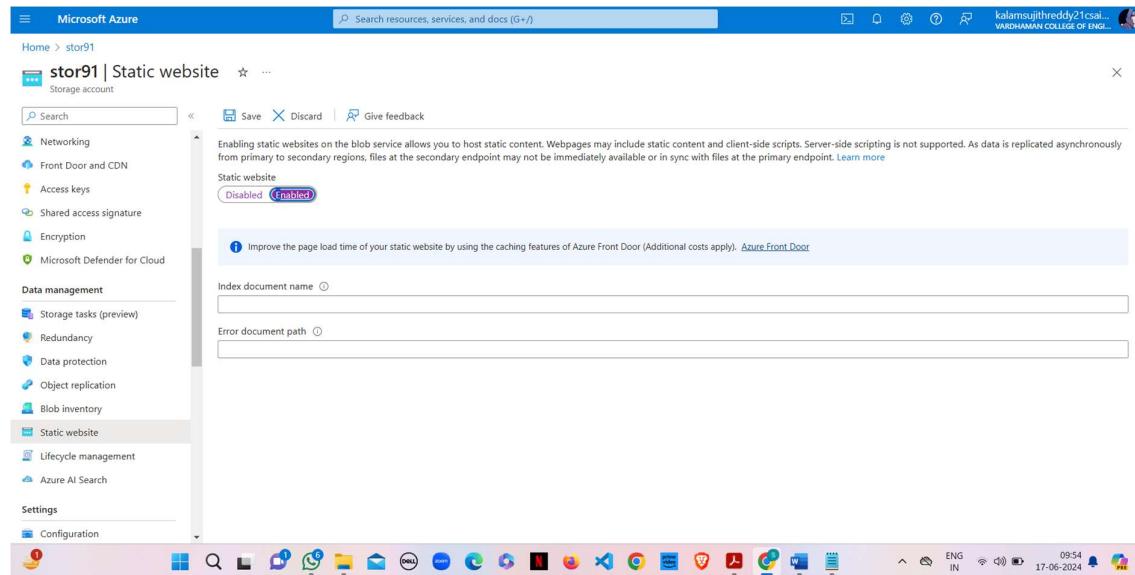
## Result:

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

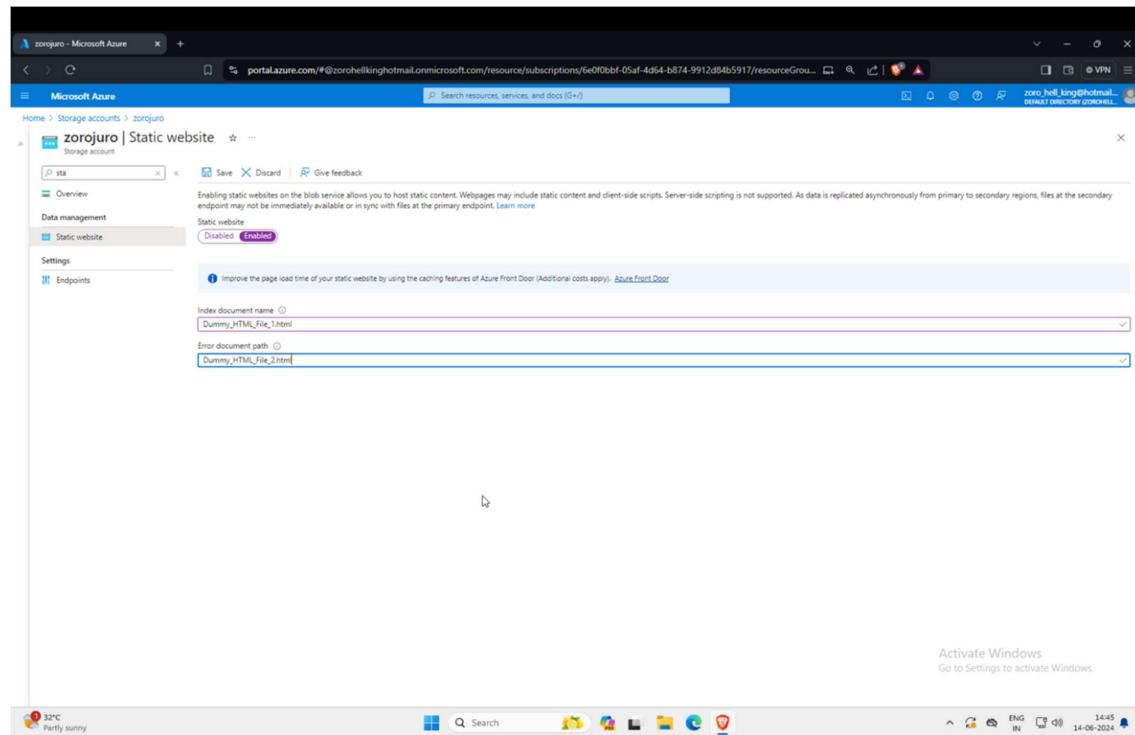
### Q13) Implement static web hosting in Azure portal.

**Step-1:** As demonstrated in previous programs create a 'Storage Account' and then create a 'Container' with the required configurations.

**Step-2:** Navigate to the 'Static website' section under 'Settings' in the left-hand menu of your storage account. Click 'Enabled' to turn on static website hosting.



**Step-3:** Enter the name of your index document (e.g., index.html) in the 'Index document name' field. Optionally, enter the name of your error document (e.g., 404.html) in the 'Error document path' field. Click 'Save' to apply the settings.



**Step-4:** Click on the name of the container you just created to open it and go to '\$web' blob.

**Step-5:** Click on 'Upload' to open the upload pane. Click 'Browse' to choose the files you wish to upload from your local device (e.g., index.html, style.css, etc.). Click 'Upload' to start uploading the files to the container.

**Step-6:** After enabling static website hosting, you will see the primary endpoint URL for your static website at the top of the 'Static website' page. Copy this URL.

The screenshot shows the Microsoft Azure Storage account overview for the container '\$web'. The left sidebar includes options like Overview, Diagnose and solve problems, Access Control (IAM), Settings, Shared access tokens, Access policy, Properties, Metadata, and Editor (preview). The main area displays a table with one row for 'index.html'. The table columns are Name, Modified, Access tier, Archive status, Blob type, Size, and Lease state. The blob 'index.html' was modified on 6/17/2024, 9:59:15 AM, is in the Hot (Inferred) tier, is a Block blob, has a size of 578 B, and is available. A search bar at the top allows searching by prefix (case-sensitive) and a checkbox for 'Show deleted blobs' is present. The top navigation bar shows the URL 'Home > Storage accounts > stor91 | Containers > \$web' and various Azure service icons.

**Step-7:** Paste the copied URL into your web browser to access your static website.

The screenshot shows a web browser window with the URL 'stor91.z29.web.core.windows.net' in the address bar. On the left side of the browser, there is a sidebar displaying a hierarchical file structure: A → B → B1 → B2 → B2a → B2aa, B2ab, B2b, B2c → B3 → B31, B32 → C. The rest of the browser window is blank, indicating the website has not fully loaded or is loading slowly.

**Step-8:** Copy the URL listed under 'Secondary endpoint' and paste it in the browser.

The screenshot shows the Microsoft Azure portal interface. The user is in the 'Storage accounts' section, specifically viewing the configuration for 'stor91'. Under the 'Static website' settings, the 'Enabled' status is shown as 'Enabled'. The 'Primary endpoint' is set to <https://stor91.z29.web.core.windows.net/>. The 'Secondary endpoint' is set to <https://stor91-secondary.z29.web.core.windows.net/>. The 'Index document name' is set to 'index.html' and the 'Error document path' is set to 'file2.html'. A note at the bottom suggests improving page load time using Azure Front Door.

The screenshot shows a web browser window displaying the content of the static website. The page content is a hierarchical menu structure:

- A
  - B
    - 1. B1
    - 2. B2
      - B2a
        - B2aa
        - B2ab
      - B2b
      - B2c
    - 3. B3
      - 1. B31
      - 2. B32
  - C

### Result:

As you can observe both webpages accessed from primary and secondary endpoints are same. Seeing the same pages on both the primary and secondary endpoints is expected behaviour due to Azure's replication mechanisms. This setup ensures high availability and data redundancy, providing seamless access to your content even if one region goes down.

### **Q14) Implement object replication through Azure portal.**

**Step-1:** As demonstrated in the previous program. Please create a Container each in two different Storage Accounts.

**Step-2:** Go to the resource page of the source storage account.

**Step-3:** Under the 'Data management' section, click on 'Object replication'. Click on 'Add replication policy'.

**Step-4:** Enter the destination storage account name or select it from the list. You might need to provide the destination storage account key. Obtain the key from the destination storage account under 'Access keys'.

**Step-5:** Define the source and destination containers. Specify the replication rules, such as prefixes for which objects to replicate.

When you create object replication rules, blob change feed and blob versioning are automatically enabled for the source and destination storage accounts. Enabling these features may increase costs.

To begin replicating objects, specify the source storage account and the destination storage account.

Learn more about copying objects in object replication

Destination subscription \* Azure for Students

Destination storage account \* stor91

Container pair details

A container pair consists of a container in the source account and a container in the destination account. Objects in the source container are copied over to the destination container according to the replication rule. You can optionally filter which objects are copied by specifying a prefix match and by copying objects created only after a specified date and time.

Source container	Destination container	Filters	Copy over
container2	container1	0 (add)	Only new objects (change)
Select a source container	Select a destination container		

To configure more than 10 container pairs (up to 1000), see [Configure object replication using a JSON file](#).

**Create** **Cancel**

**Step-6:** Review the replication settings. Click 'Save' or 'Enable' to activate the replication policy.

Your accounts Other accounts

Objects copied from this account

Destination account	Source container	Destination container	Filters
stor91	container2	container1	0

Objects copied into this account

Source account	Source container	Destination container	Filters
No replication policies found			

**Step-7:** Navigate to the source container and upload objects using the 'Upload' button. Choose the files you want to upload from your local device and click 'Upload'.

Home > stor92\_1718597449148 | Overview > stor92 | Containers >

**container2** ...

Container

Search

Upload Change access level Refresh Delete Change tier Acquire lease Break lease View snapshots Create snapshot Give feedback

Authentication method: Access key (Switch to Microsoft Entra user account)

Locations: container2

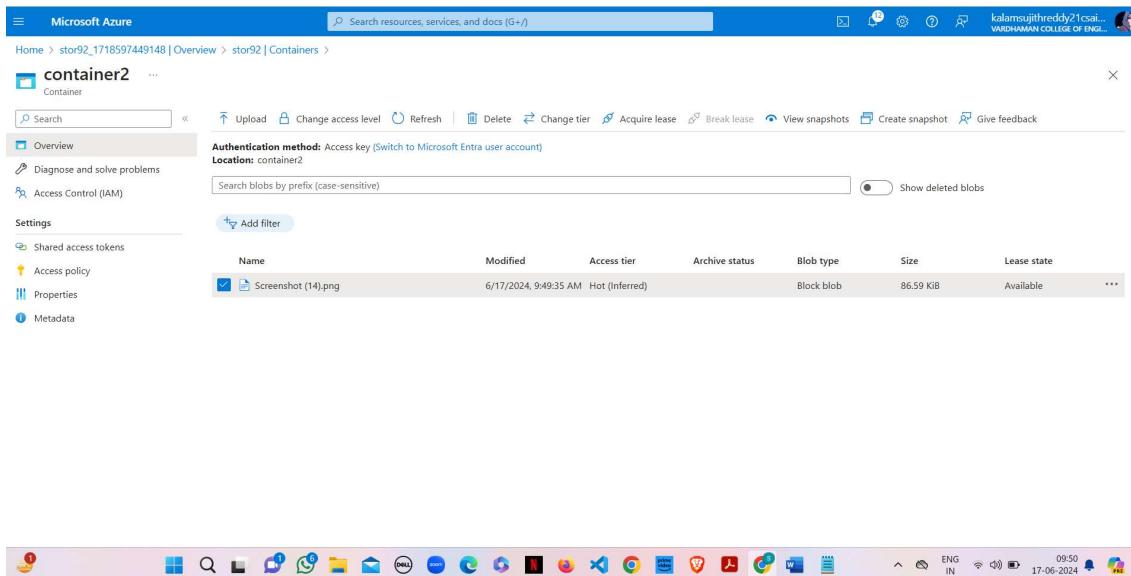
Search blobs by prefix (case-sensitive)

Show deleted blobs

Add filter

Name	Modified	Access tier	Archive status	Blob type	Size	Lease state
No results						

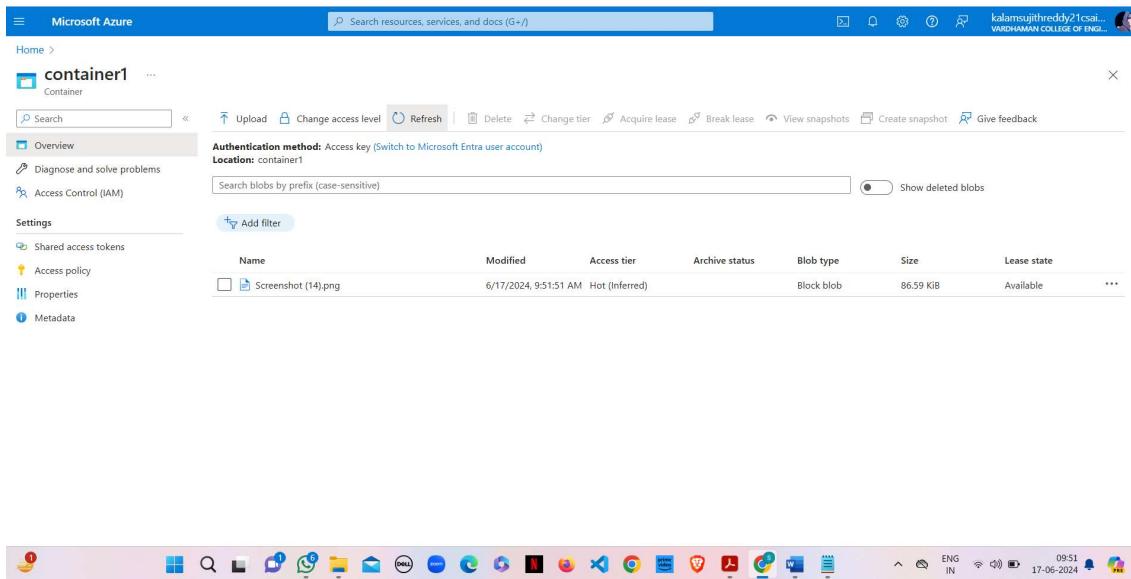
Shared access tokens  
Access policy  
Properties  
Metadata



The screenshot shows the Microsoft Azure Storage Explorer interface. The left sidebar lists 'Overview', 'Diagnose and solve problems', 'Access Control (IAM)', 'Properties', and 'Metadata' under 'Settings'. The main area displays a table of blobs:

Name	Modified	Access tier	Archive status	Blob type	Size	Lease state
Screenshot (14).png	6/17/2024, 9:49:35 AM	Hot (Inferred)		Block blob	86.59 KIB	Available

**Step-8:** After a short period, navigate to the destination container. Verify that the uploaded objects from the source container are replicated to the destination container.



The screenshot shows the Microsoft Azure Storage Explorer interface. The left sidebar lists 'Overview', 'Diagnose and solve problems', 'Access Control (IAM)', 'Properties', and 'Metadata' under 'Settings'. The main area displays a table of blobs:

Name	Modified	Access tier	Archive status	Blob type	Size	Lease state
Screenshot (14).png	6/17/2024, 9:51:51 AM	Hot (Inferred)		Block blob	86.59 KIB	Available

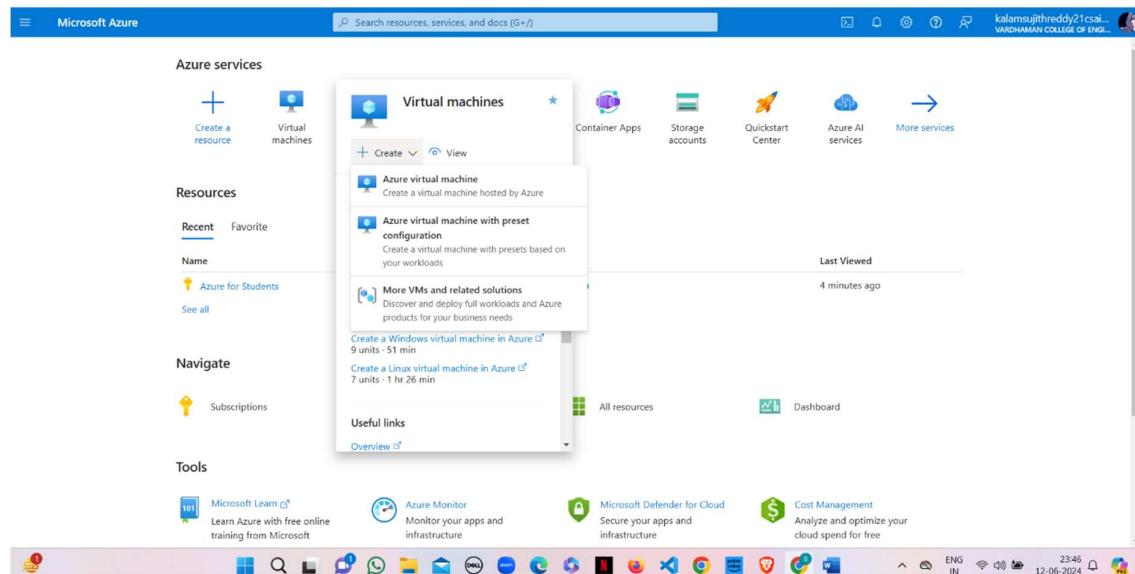
### Result:

Configured object replication between two storage accounts in Azure. The replication was tested, and objects were successfully replicated across the accounts, ensuring data redundancy.

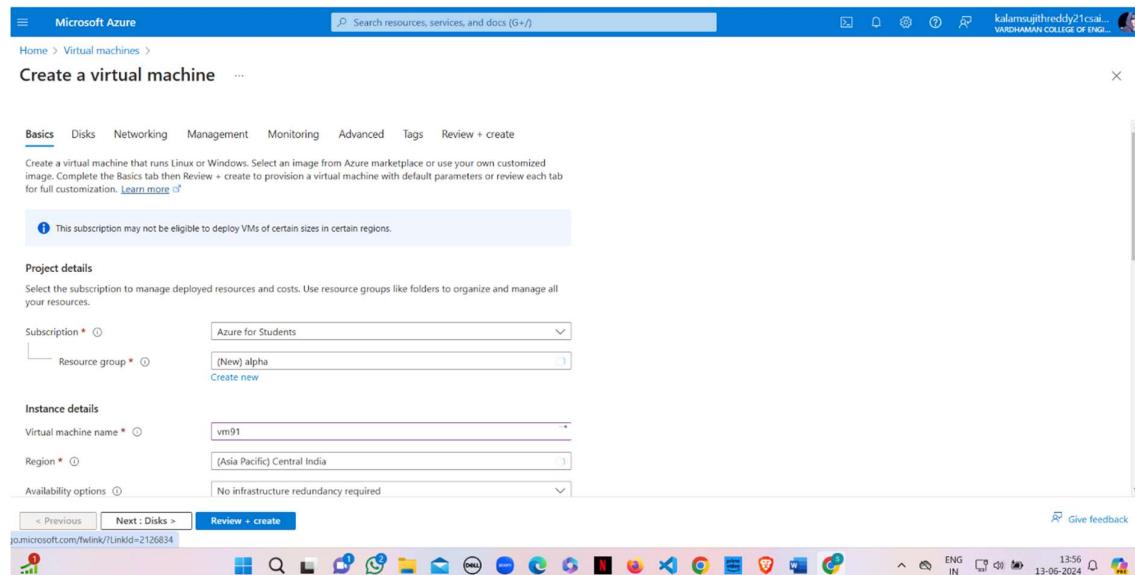
**Q15) How we are adding new users, login credentials, changing owner, create authorized key files.**

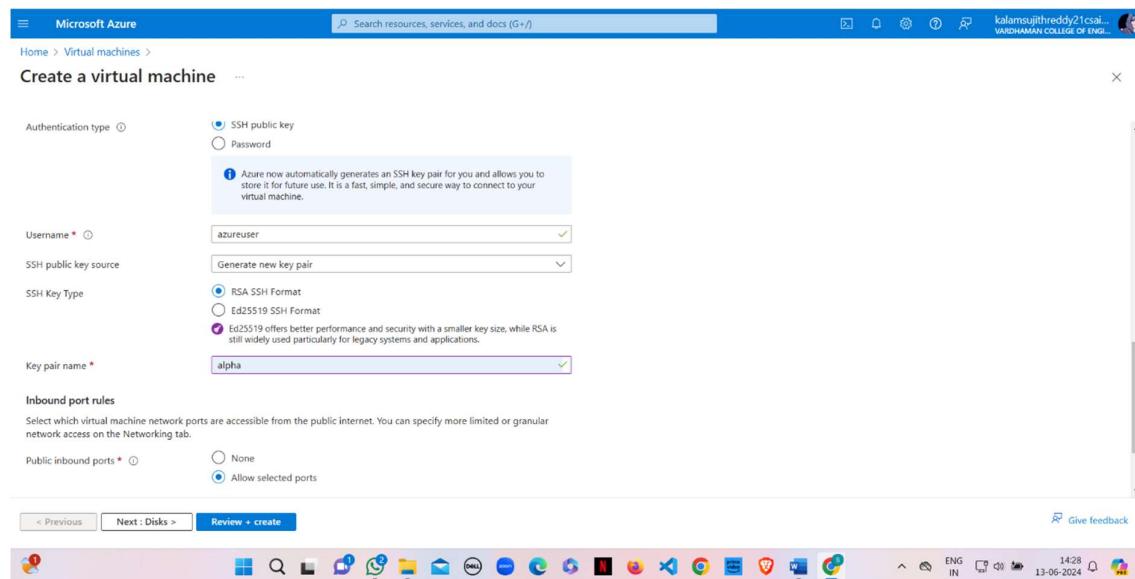
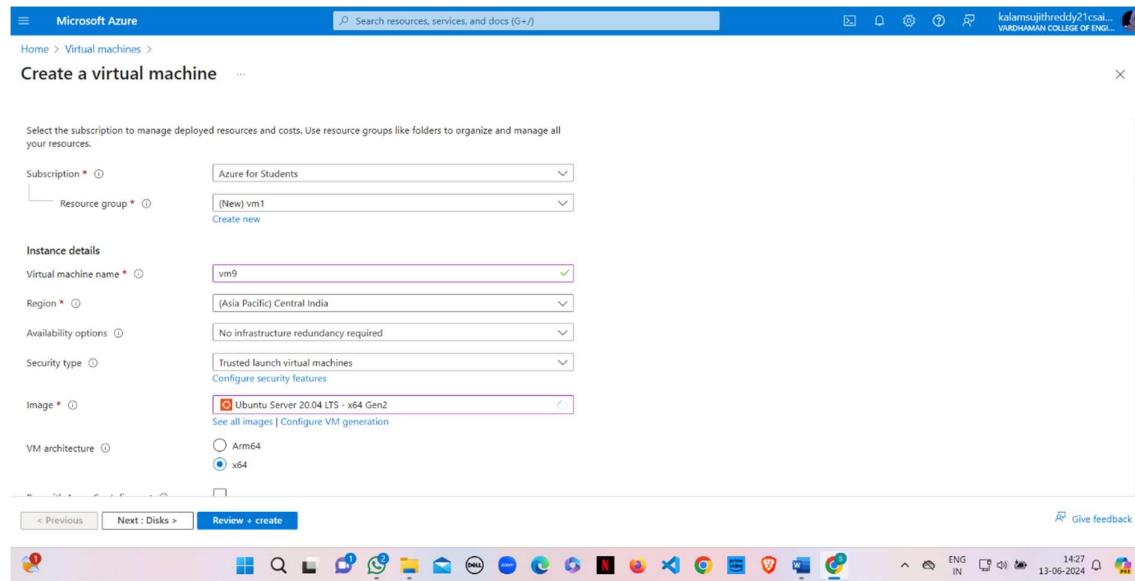
**Step-1:** Sign in to your Microsoft Azure account.

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

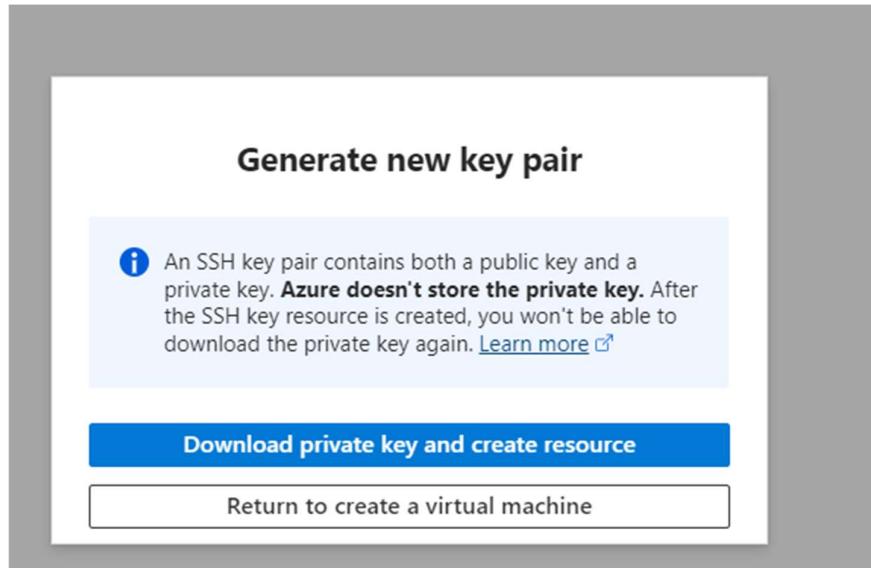


**Step-3:** Fill the details in that ubuntu by creating a “Resource Group”, Zone: Asia, Image: ubuntu, select “SSH”, Select the disk storage and so on. After that click on “Create + Review”. And finally click on “Create”.





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



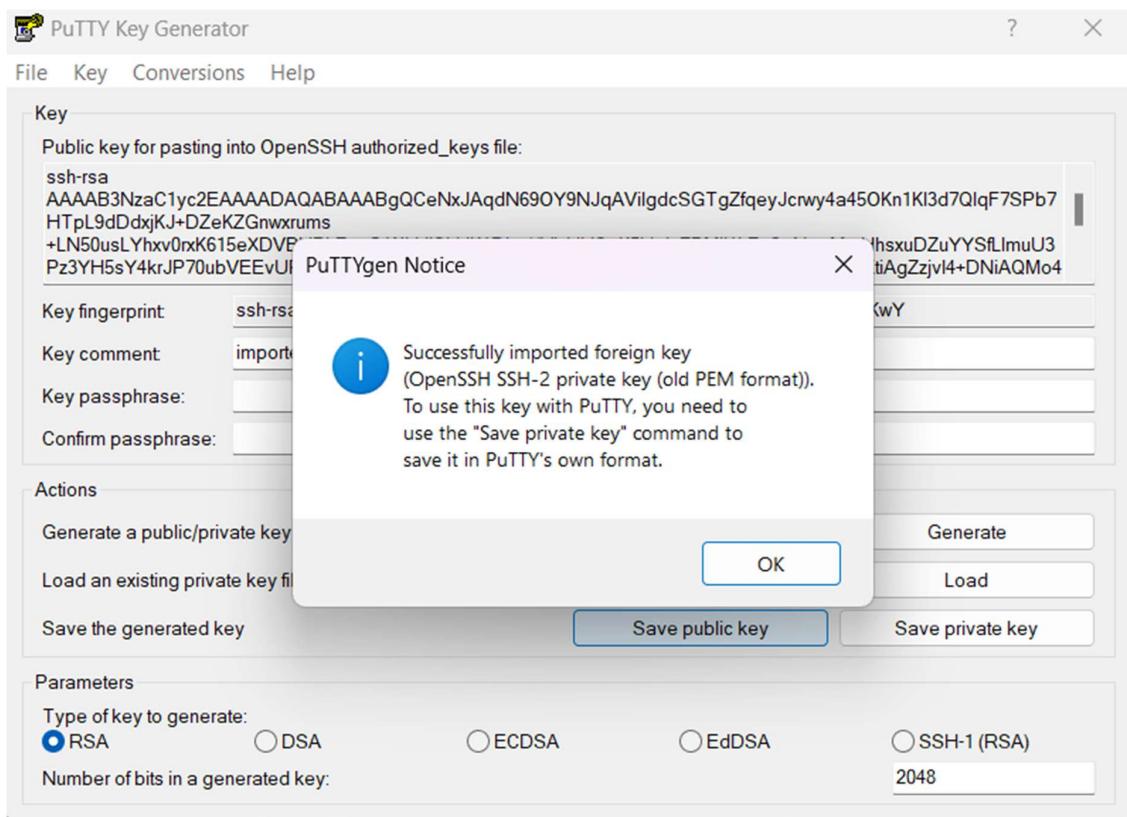
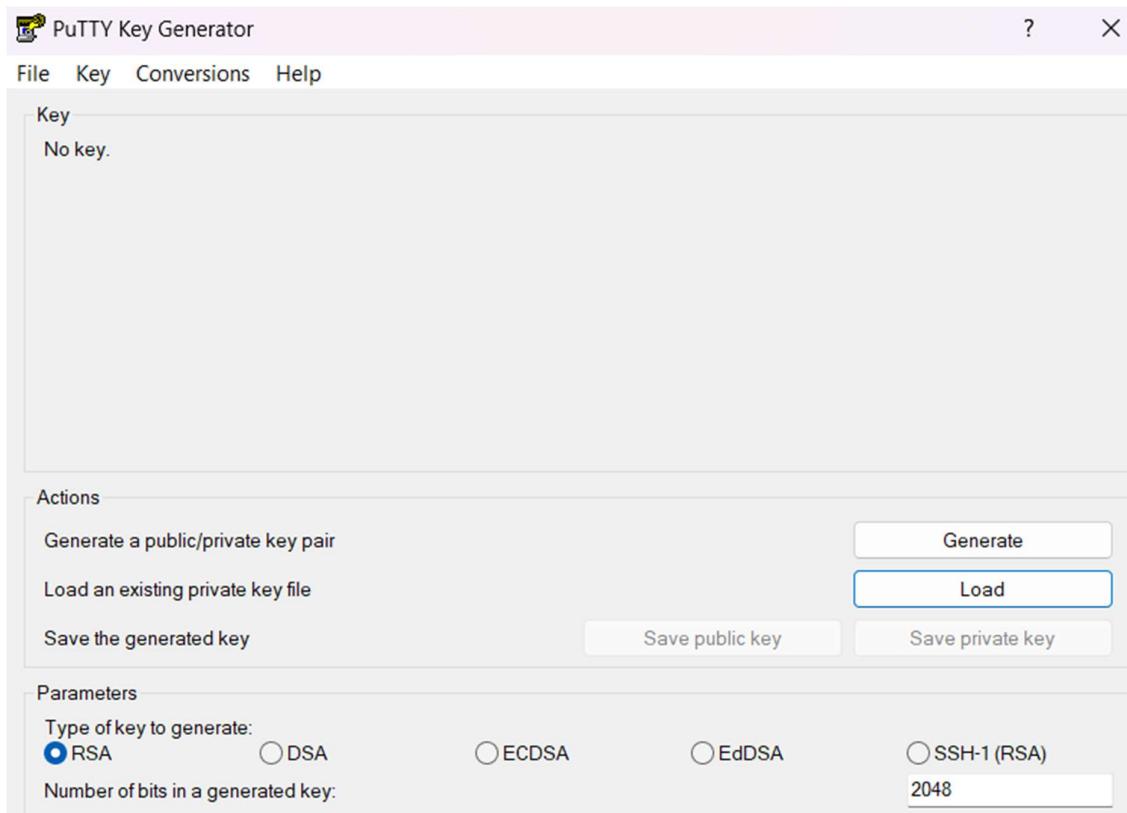
**Step-5:** Firstly, copy the public IP Address of that created virtual machine.

Essentials	
Resource group (move) : <a href="#">vm91_group</a>	Operating system : Linux (ubuntu 20.04)
Status : Running	Size : Standard DS1 v2 (1 vcpu, 3.5 GB memory)
Location : Central India (Zone 1)	Public IP address : <a href="#">20.193.141.116</a>
Subscription (move) : <a href="#">Azure for Students</a>	Virtual network/subnet : <a href="#">vm91-vnet/default</a>
Subscription ID : 9ec5c3db-0387-4d77-8429-12954dbd32cb	DNS name : Not configured
Availability zone : 1	Health state : -
Tags (edit) : <a href="#">Add tags</a>	Time created : 6/13/2024, 9:09 AM UTC

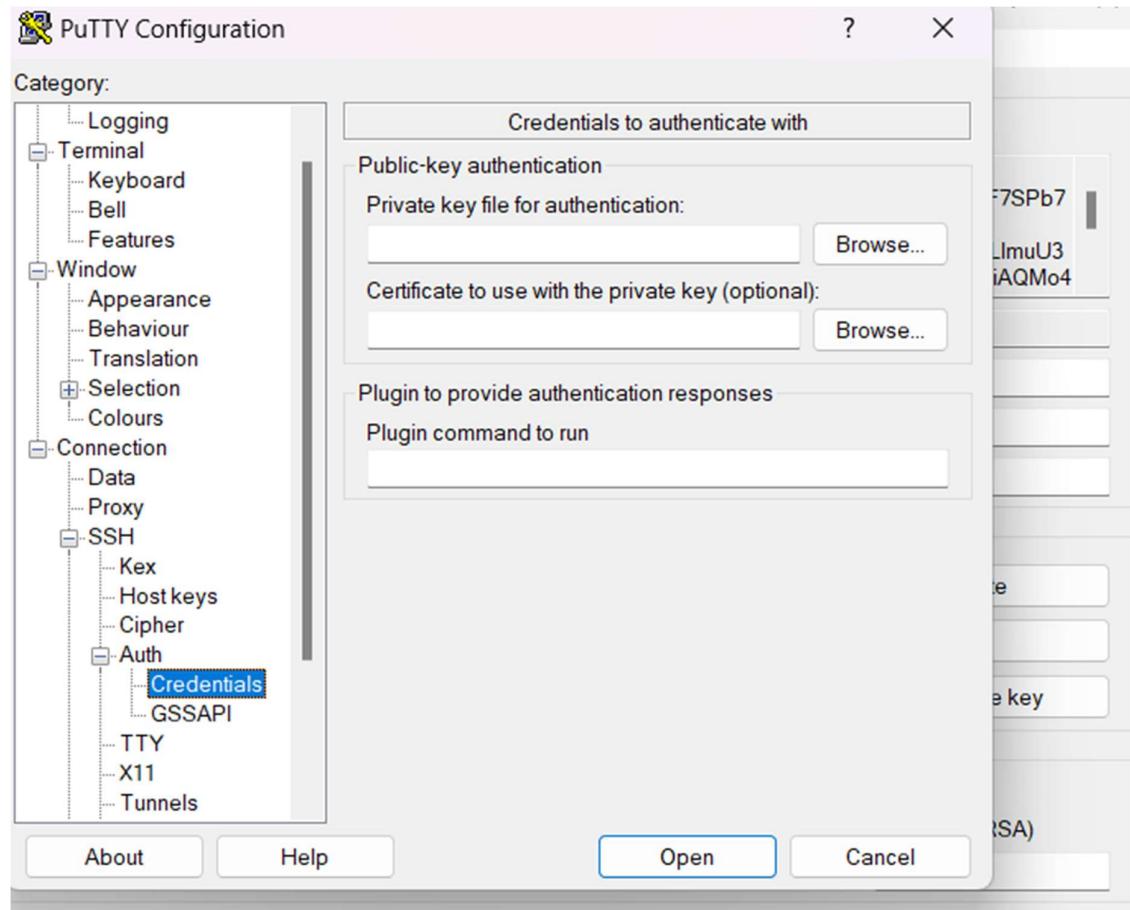
  

Properties	
<b>Virtual machine</b>	<b>Networking</b>
Computer name : vm91	Public IP address : <a href="#">20.193.141.116</a> ( Network interface <a href="#">vm9157_x1</a> )
Operating system : Linux (ubuntu 20.04)	Public IP address (IPv6) : -
VM generation : V2	Private IP address : 10.0.0.4
VM architecture : x64	Private IP address (IPv6) : -
Agent status : Ready	Virtual network/subnet : <a href="#">vm91-vnet/default</a>
Agent version : 2.11.1.4	DNS name : Configure

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



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



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

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

To add new user in Linux server:

```
$sudo useradd -m Sujith
```

To set new password:

```
$sudo passwd Sujith
```

Enter new password and Retype password.

To modify login credentials:

```
$sudo usermod -aG sudo Sujith
```

To switch the user:

```
$sudo su Sujith
```

The screenshot shows a terminal window titled 'Sujith@ubvm: /home/azureuser'. The session starts with a password prompt for 'azureuser'. It then displays system information, including memory usage and network details. A note about ESM Apps is shown, followed by a warning that the update list is old. The user then runs 'sudo useradd -m Sujith' and 'sudo passwd Sujith' to create a new user account and set its password. Finally, the user switches to the 'Sujith' account using 'sudo su Sujith'.

```
Sujith@ubvm: /home/azureuser
$ login as: azureuser
azureuser@20.193.135.48'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 06:39:48 UTC 2024

System load: 0.01           Processes:          131
Usage of /: 5.2% of 28.89GB Users logged in:      0
Memory usage: 4%           IPv4 address for eth0: 10.0.0.4
Swap usage: 0%

expanded Security Maintenance for Applications is not enabled.

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
A new release '22.04.3 LTS' is available.
Run 'do-release-upgrade' to upgrade to it.

Last login: Fri Jun 14 06:25:36 2024 from 122.164.34.56
azureuser@ubvm:~$ sudo useradd -m Sujith
azureuser@ubvm:~$ sudo passwd Sujith
New password:
Retype new password:
passwd: password updated successfully
azureuser@ubvm:~$ sudo usermod -aG sudo Sujith
azureuser@ubvm:~$ sudo su Sujith
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

Sujith@ubvm:/home/azureuser$
```

### Result:

The Linux server has been setup and configured successfully. The new users were added and the credentials were updated successfully.

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**Cloud Computing and  
Virtualization (A7514)**

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