

Cloud Computing and Virtualization

Submitted in partial fulfillment of the requirements for the
award of Degree of

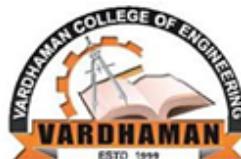
BACHELOR OF TECHNOLOGY

In

COMPUTER SCIENCE & ENGINEERING (AI&ML)

By

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**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
(AI&ML)**
VARDHAMAN COLLEGE OF ENGINEERING
(AUTONOMOUS)

(Affiliated to JNTUH, Approved by AICTE and Accredited by NBA)
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Q1. Install Virtual box and making Ubuntu and Window Virtual Machine.

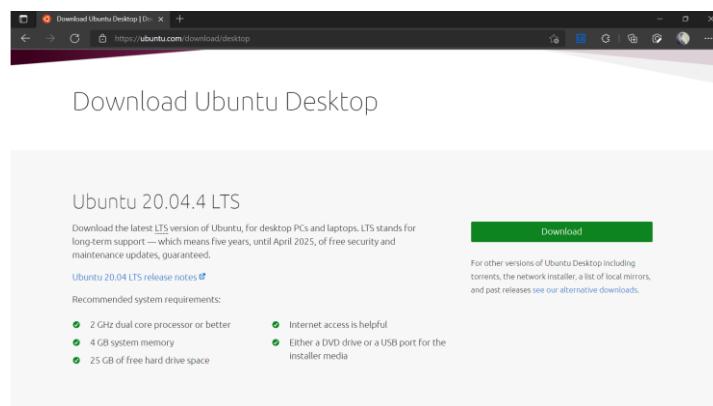
Ubuntu:

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



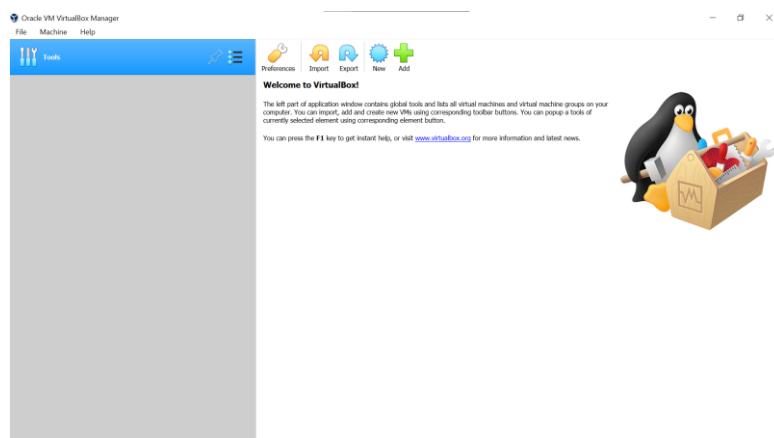
<https://www.virtualbox.org/wiki/Downloads>

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

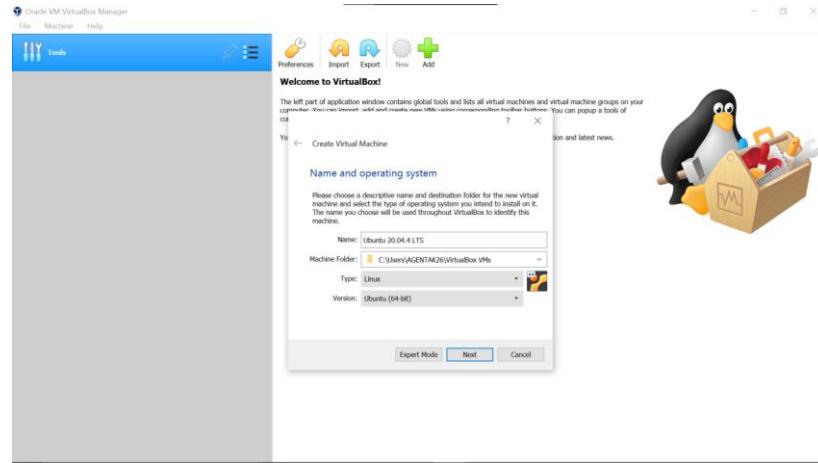


Note: The current version of Ubuntu only works on 64-bit machines.

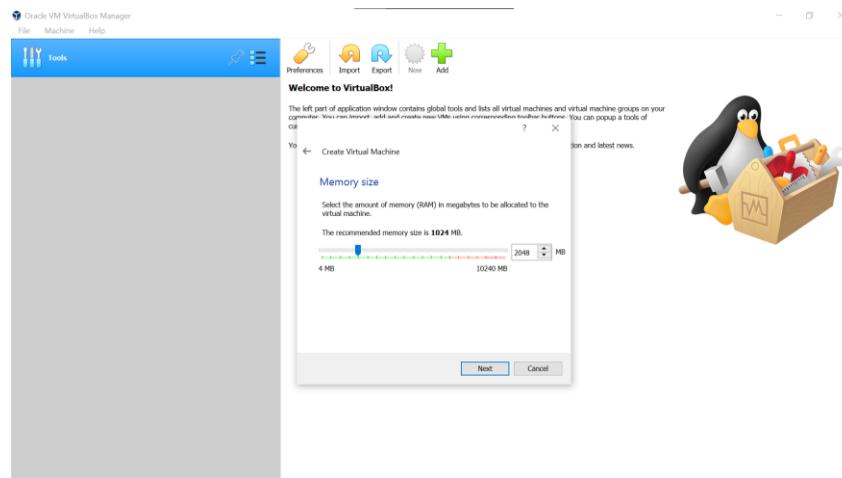
Step-3: Open VirtualBox and select New in the top taskbar.



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

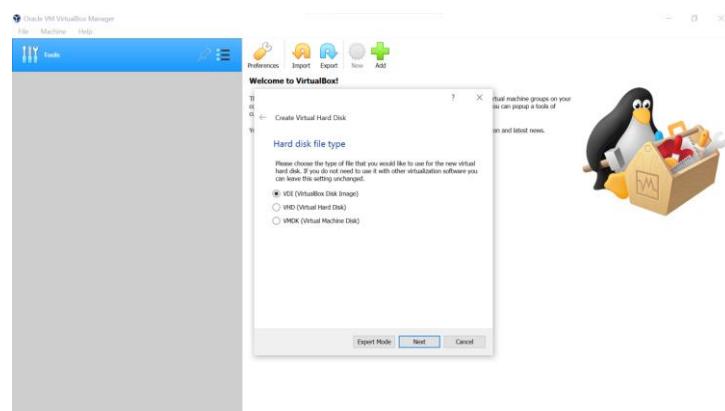


Step-5: Choose how much RAM you want to assign to the virtual machine and select Next. The recommended minimum is 1024 MB.



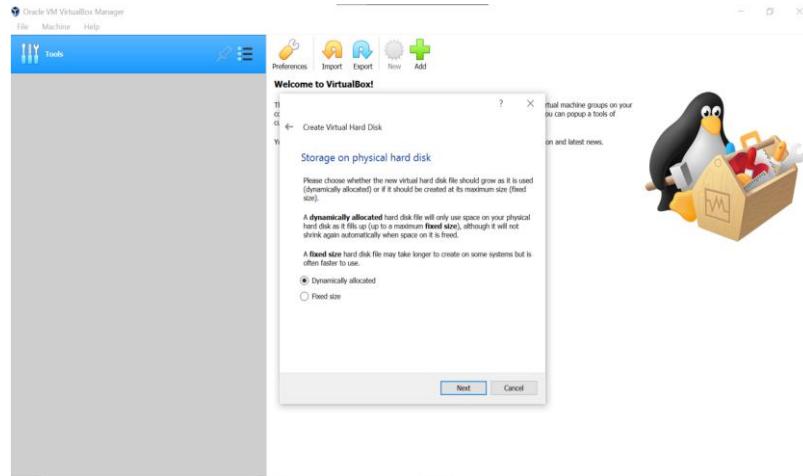
Step-6: Choose Create a virtual hard disk now and select Create.

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



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

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

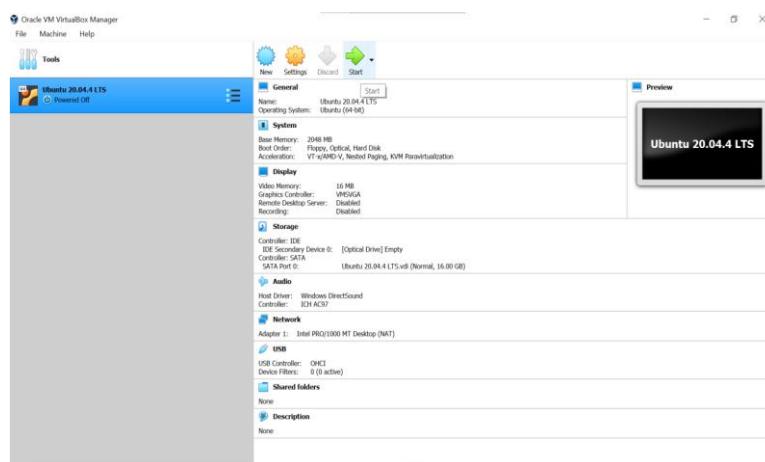


Tip: A fixed size disk performs better because the virtual machine doesn't have to increase the file size as you install software.

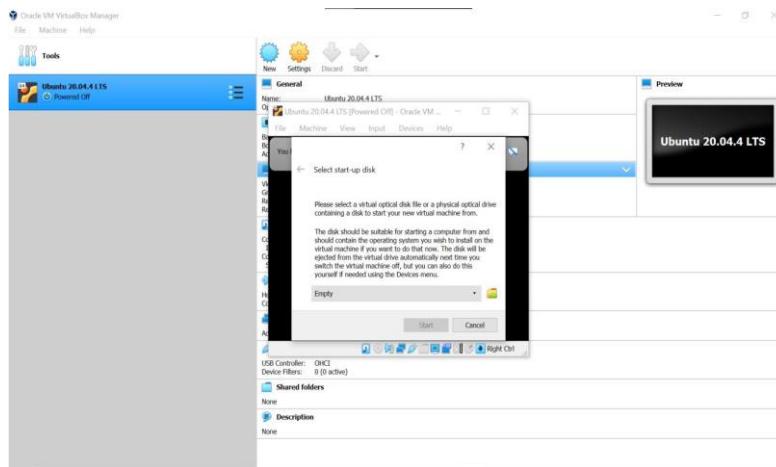
Step-9: Choose how much space you wish to set aside for Ubuntu and select Create.

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

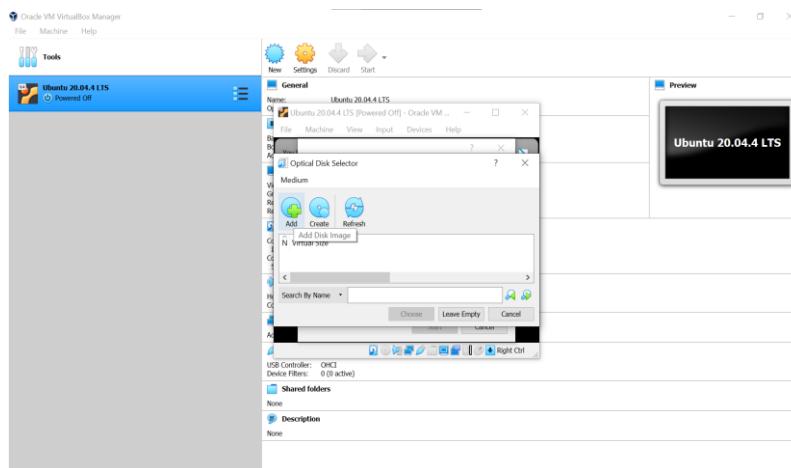
Step-10: The name of your virtual machine will now appear on the left side of the VirtualBox manager. Select Start in the toolbar to launch your VM.



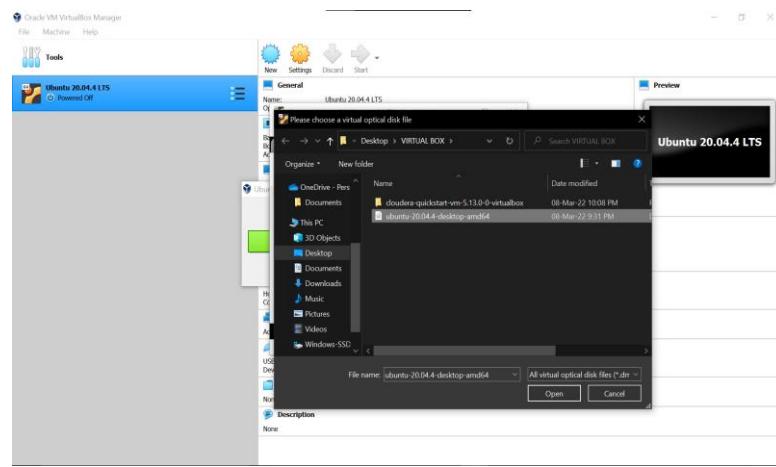
Step-11: This is the point where you need to choose the Ubuntu ISO file you downloaded earlier. If the VM doesn't automatically detect it, select the folder next to the Empty field.



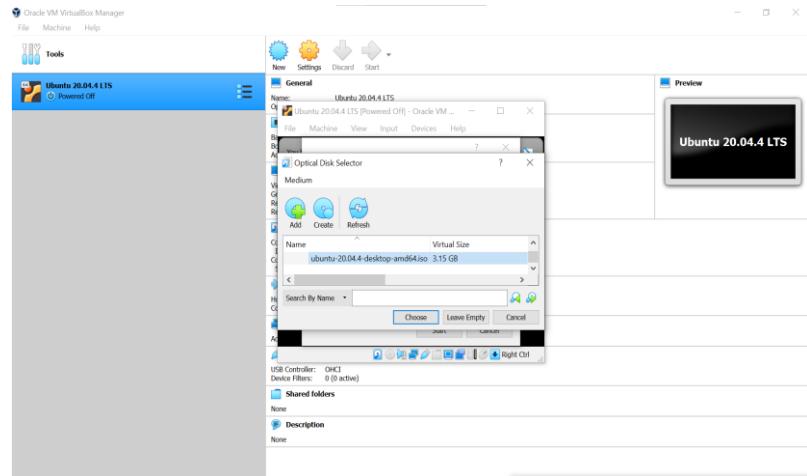
Step-12: Select Add in the window that pops up.



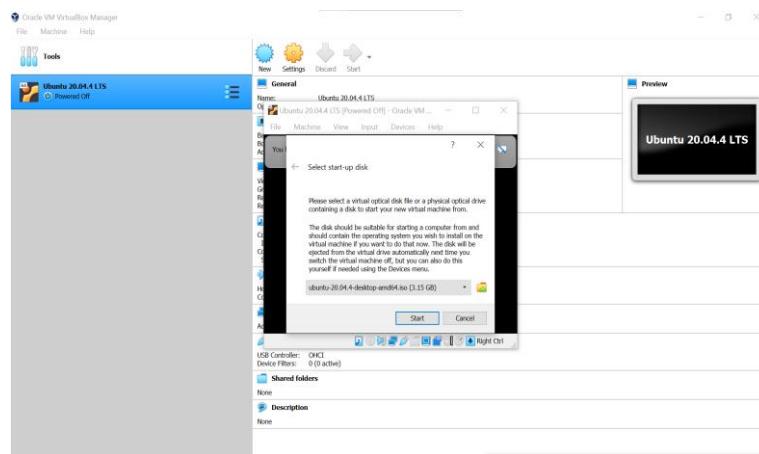
Step-13: Choose your Ubuntu disk image and select Open.



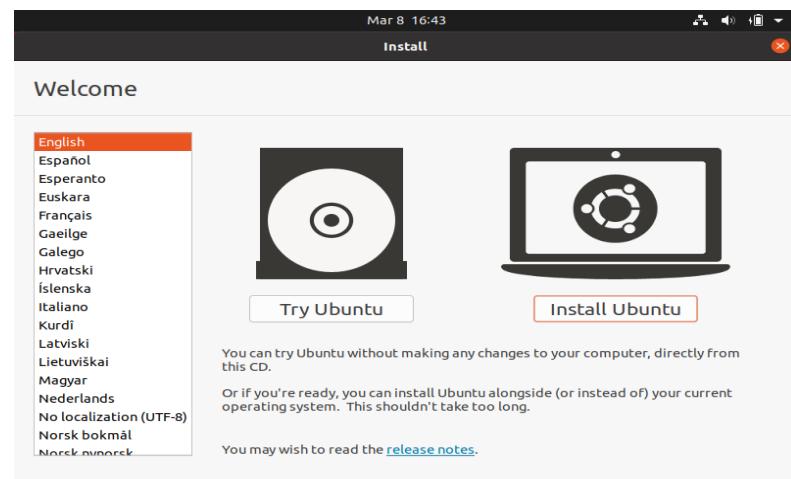
Step-14: - Select Choose



Step-15: Select Start.

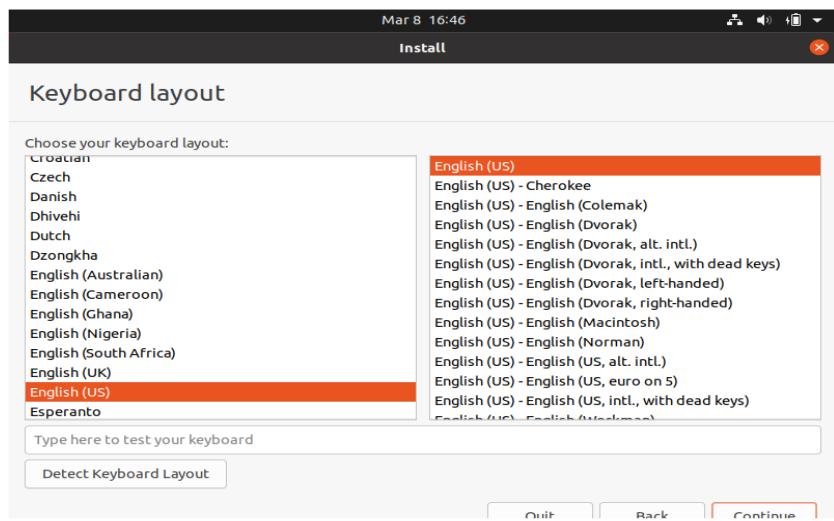


Step-16: Your VM will now boot into a live version of Ubuntu. Choose your language and select Install Ubuntu



u.

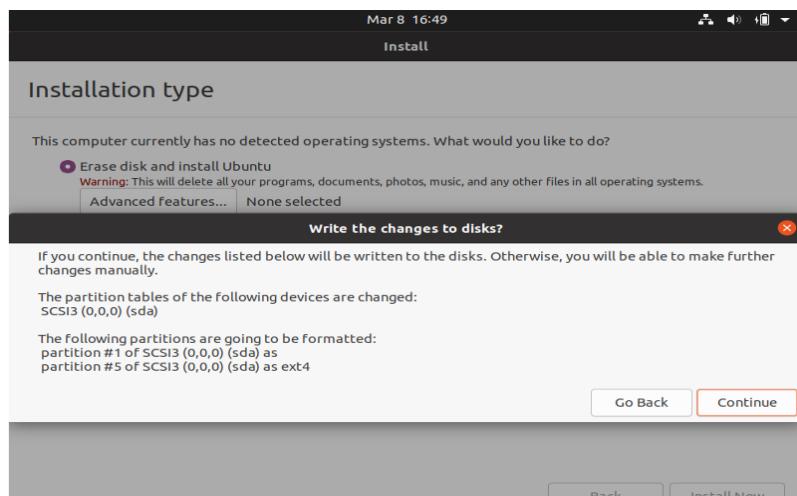
Step-17: Choose your keyboard layout and select Continue.



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

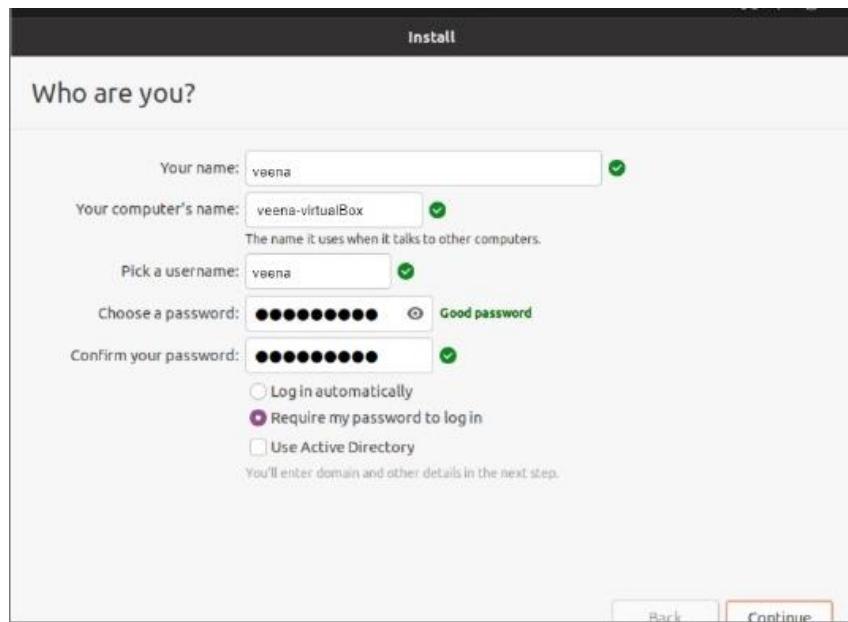
Step-19: Choose Erase disk and install Ubuntu and select Install Now, then select Continue to ignore the warning.

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

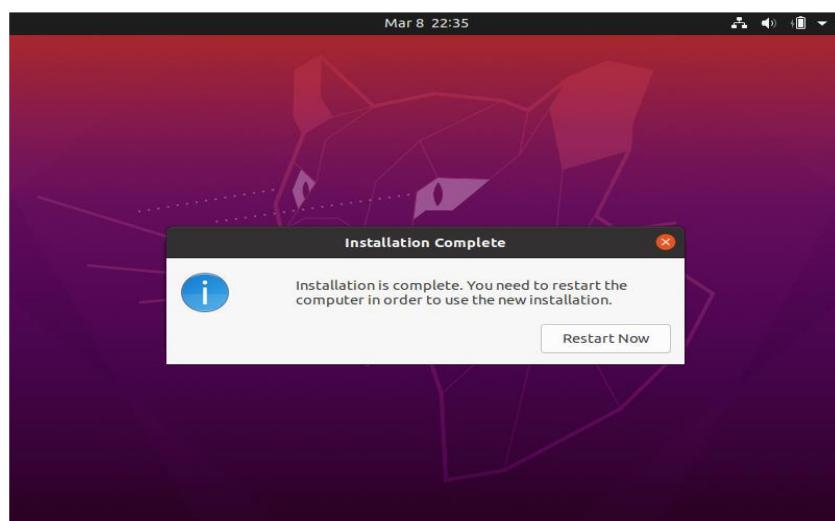


Step-20: - Choose your time zone on the map, then select Continue.

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

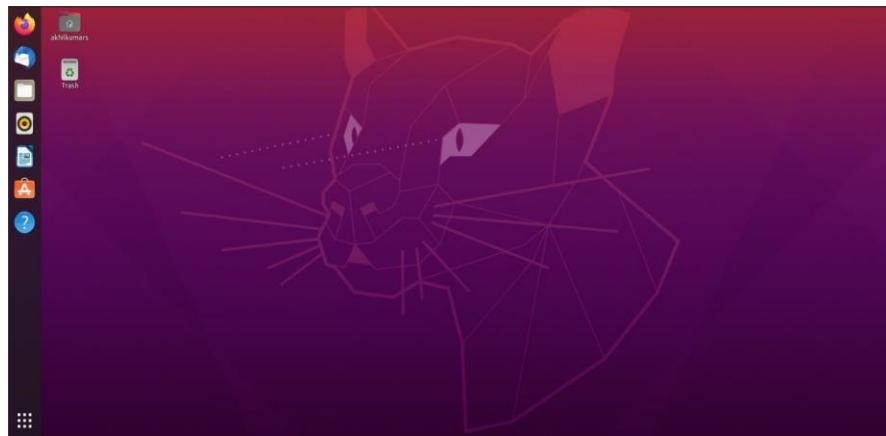


Step-22: - Select Restart Now.



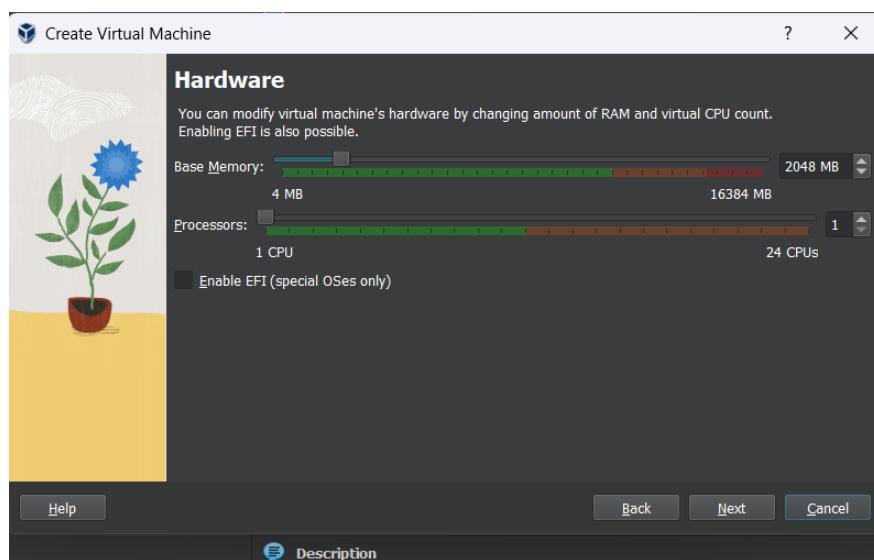
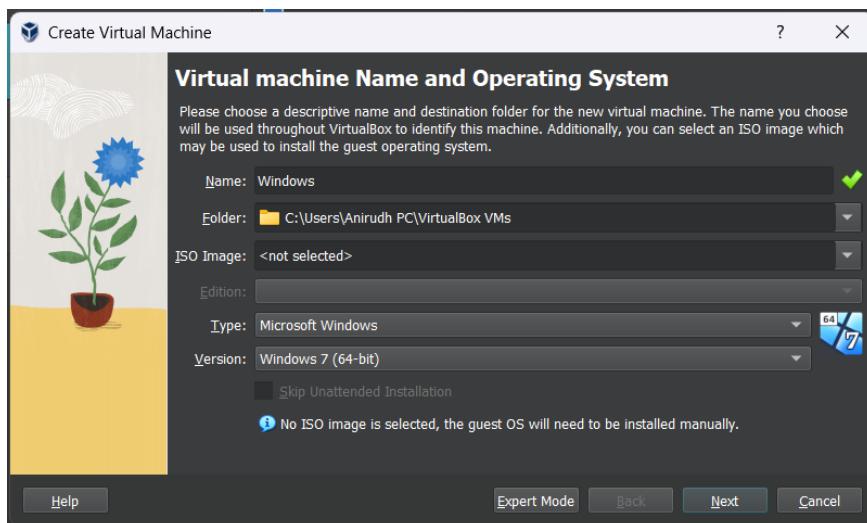
Step-23: - After restarting your VM and booting into Ubuntu, you may notice that the desktop doesn't scale correctly if you choose to view it in full-screen mode. You can fix this problem by selecting the VBox_Gas icon to install VirtualBox Guest Additions.

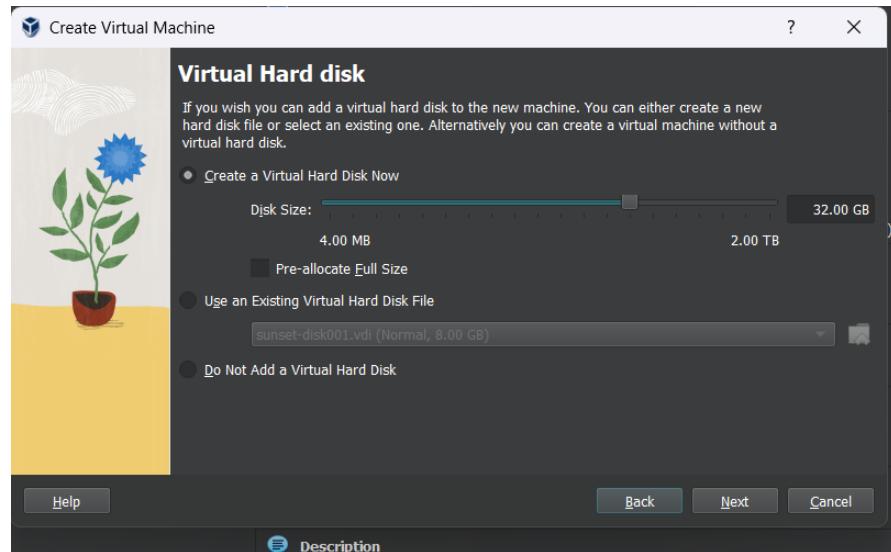
Output:



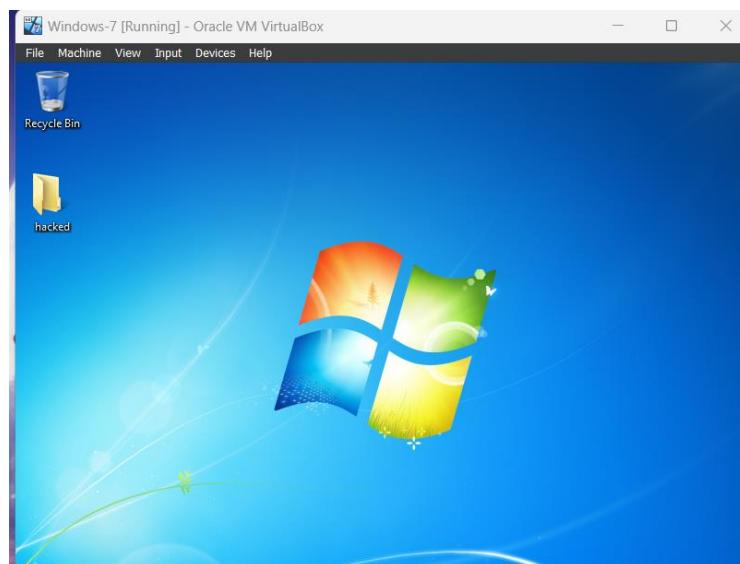
Windows:

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





Output:



Q2) Create a Windows Virtual Machine in Microsoft Azure

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

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

The screenshot shows the Microsoft Azure portal interface for managing virtual machines. At the top, there's a search bar and a navigation bar with various icons. Below that, the main title is "Virtual machines". A filter bar allows setting conditions like "Subscription equals all", "Type equals all", "Resource group equals all", and "Location equals all". The results section says "Showing 0 to 0 of 0 records". Below this, there are sorting columns for Name, Type, Subscription, Resource group, Location, Status, Operating system, Size, Public IP address, and Disks. A large callout box titled "No virtual" provides three options: "Azure virtual machine" (Create a virtual machine hosted by Azure), "Azure virtual machine with preset configuration" (Create a virtual machine with presets based on your workloads), and "More VMs and related solutions" (Discover and deploy full workloads and Azure products for your business needs). A "Create" button is at the bottom of the callout.

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

The screenshot shows the "Create a virtual machine" wizard in the Microsoft Azure portal. The current step is "Basics". The top navigation bar includes "Home", "Virtual machines", and "Create a virtual machine". Below the navigation is a breadcrumb trail: "Create a virtual machine". The main content area has tabs for "Basics", "Disks", "Networking", "Management", "Monitoring", "Advanced", "Tags", and "Review + create". The "Basics" tab is selected. It contains a note: "Create a virtual machine that runs Linux or Windows. Select an image from Azure marketplace or use your own customized image. Complete the Basics tab then Review + create to provision a virtual machine with default parameters or review each tab for full customization. [Learn more](#)". A warning message in a box says: "This subscription may not be eligible to deploy VMs of certain sizes in certain regions." Under "Project details", it asks to select a subscription and resource group. The "Subscription" dropdown is set to "Azure for Students" and the "Resource group" dropdown is set to "(New) Resource group". Under "Instance details", fields include "Virtual machine name" (with a placeholder box), "Region" (set to "Asia"), and "Availability options" (set to "No infrastructure redundancy required"). At the bottom are buttons for "< Previous", "Next : Disks >", and "Review + create". A "Give feedback" link is also present.

Create a virtual machine

Administrator account

Username * ✓

Password * ✓

Confirm password * ✓

Inbound port rules

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

Public inbound ports * None Allow selected ports

Select inbound ports * ✓

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

< Previous Next : Disks > Review + create Give feedback

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

Validation passed

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

Cost given below is an estimate and not the final price. For all your pricing needs, please use the pricing calculator.

Price

1 X Standard DS1 v2
by Microsoft
[Terms of use](#) | [Privacy policy](#)

Subscription credits apply
10.8153 INR/hr
[Pricing for other VM sizes](#)

TERMS

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

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

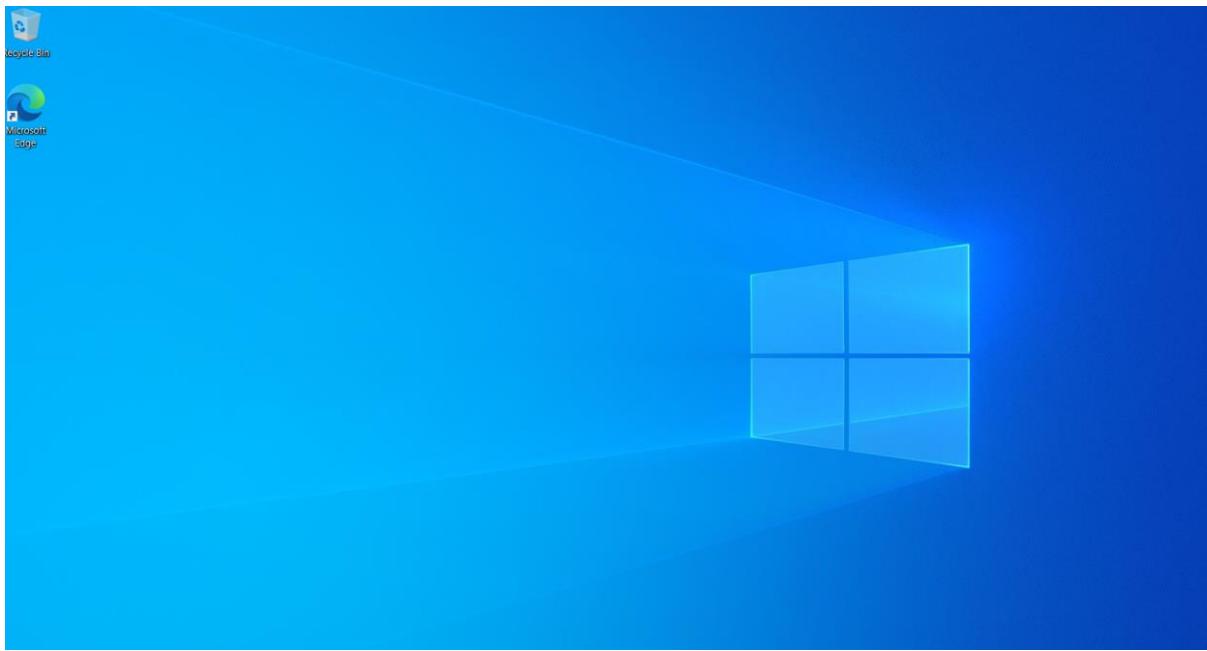
The screenshot shows the Microsoft Azure portal with the URL <https://portal.azure.com/#view/HubsExtension/DeploymentDetailsBlade/~/overview/id/%2fsubscriptions%2f00d7c037-0a12-480d-96ab-47e5cd363j>. The page displays the deployment status for "CreateVm-MicrosoftWindowsServer.WindowsServer-202-20240615193337". It shows a green checkmark indicating "Deployment succeeded". The deployment was started on 6/15/2024 at 7:36:17 PM. The public IP address listed is 52.172.101.140. The portal also includes a sidebar with links for Cost Management, Microsoft Defender for Cloud, Free Microsoft tutorials, and Work with an expert.

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

The first part of the image shows the "Remote Desktop Connection" window. It has a dropdown menu for "Computer" set to "52.172.101.140", a "User name" field containing "None specified", and a note stating "You will be asked for credentials when you connect". Below the fields are "Show Options" and "Connect" buttons. The second part shows a "Windows Security" dialog titled "Enter your credentials" with the message "These credentials will be used to connect to 20.40.44.213.". It contains a text input for "AzureUser", a password input field filled with dots, and a "Remember me" checkbox. At the bottom are "OK" and "Cancel" buttons.

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

Output:



Q3) Create an Ubuntu Virtual Machine in Microsoft Azure

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

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

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

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) Ubuntu_group [Create new](#)

Instance details

Virtual machine name * Ubuntu

Region * (Asia Pacific) South 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 Arm64 x64

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

Size * Standard_DS1_v2 - 1 vcpu, 3.5 GB memory (₹5,101.50/month) [See all sizes](#)

Enable Hibernation

Administrator account

Authentication type SSH public key Password

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

Username * azureuser

SSH public key source Generate new key pair

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

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

Username * azureuser

SSH public key source Generate new key pair

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

Key pair name * veena

Inbound port rules

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

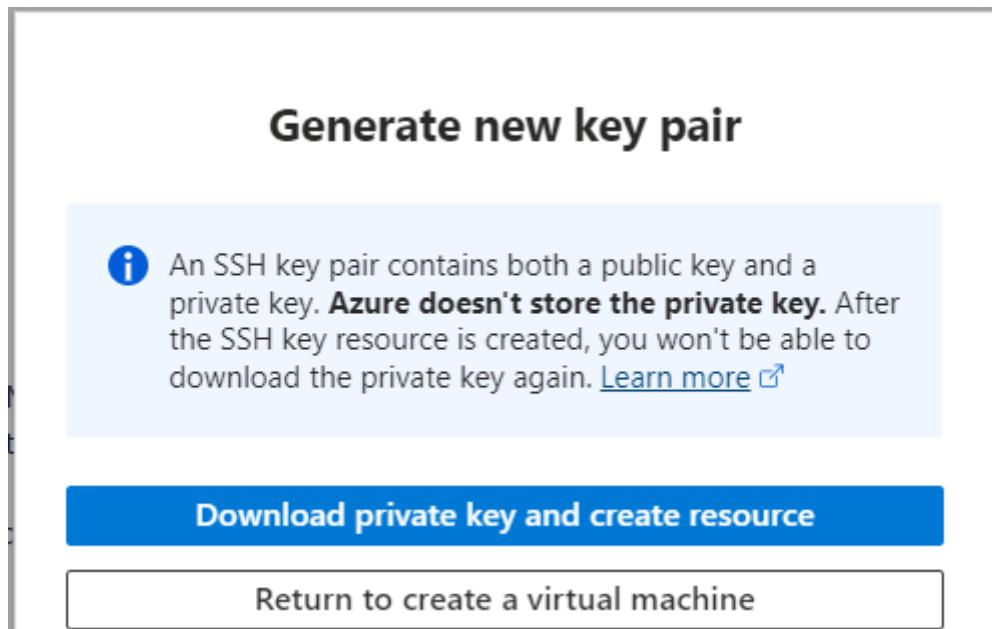
Public inbound ports * None Allow selected ports

Select inbound ports * SSH (22)

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

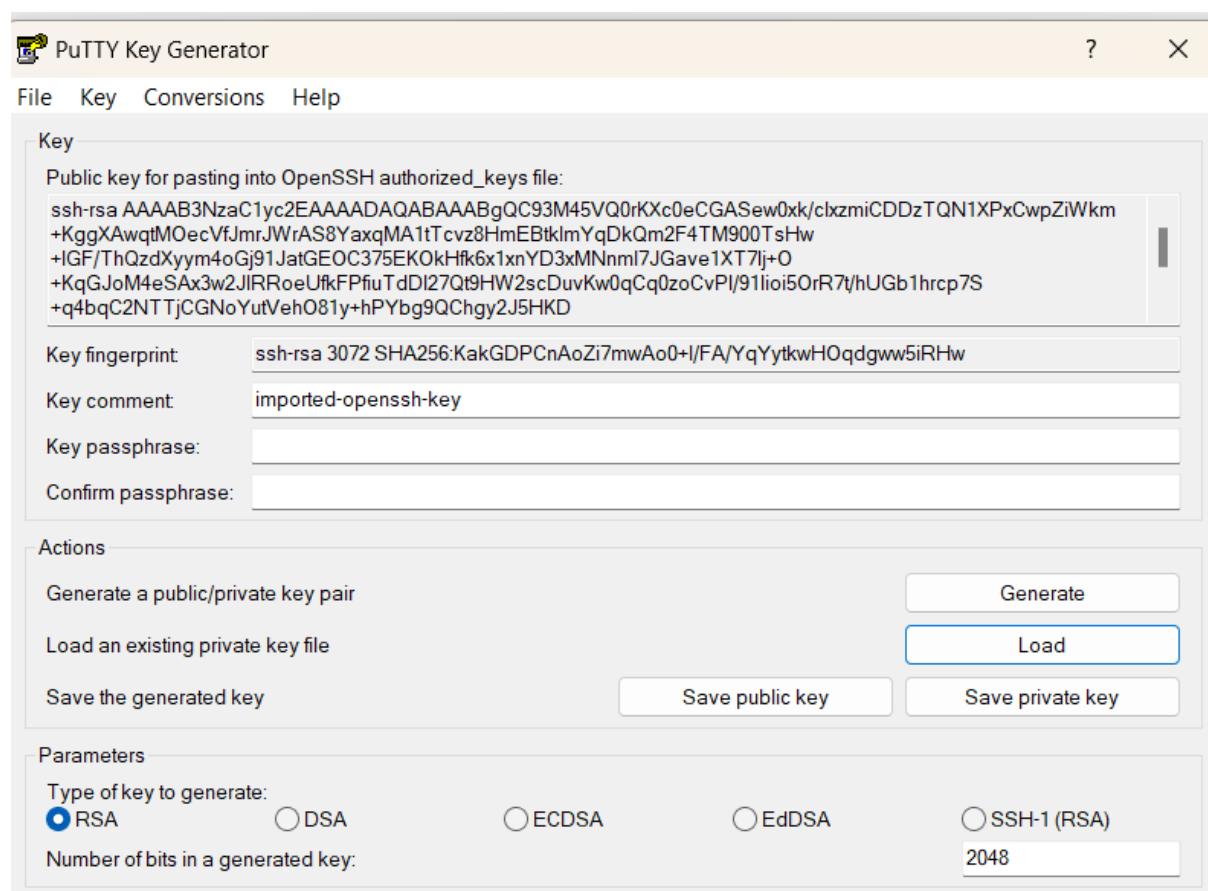
< Previous [Next : Disks >](#) [Review + create](#) [Give feedback](#)

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

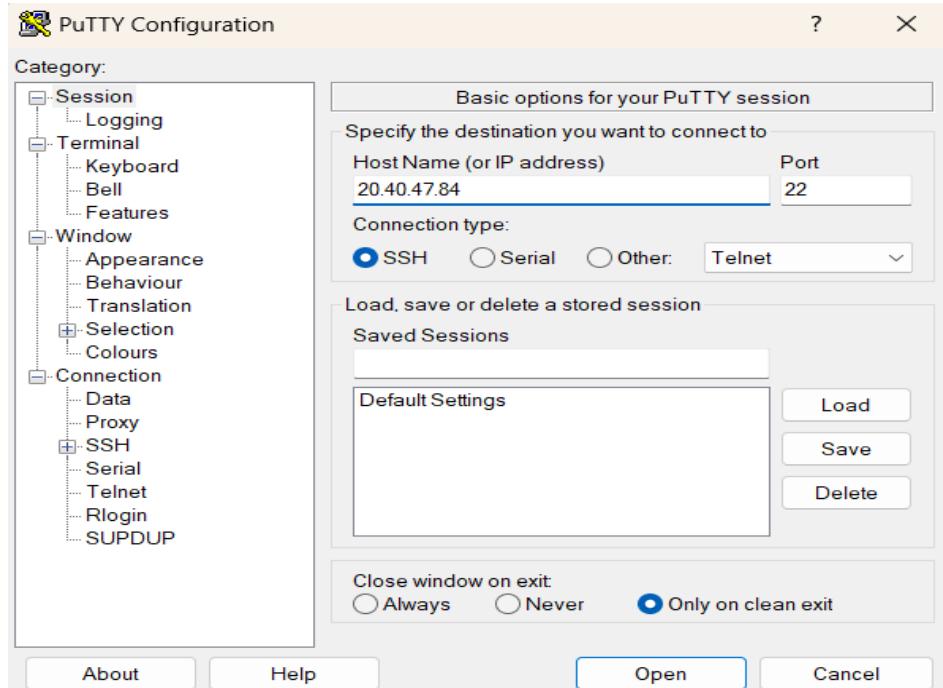


Step-5: Firstly, copy the public IP Address of that created virtual machine.

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:

```

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

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

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

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

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

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

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

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

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

azureuser@Ubuntu:~$ 

```

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

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

The screenshot shows the Azure portal interface for a virtual machine named 'Ubuntu'. The main pane displays the 'Essentials' section with details such as Resource group (Ubuntu_group), Status (Running), Location (South India), Subscription (Azure for Students), and Operating system (Linux (ubuntu 20.04)). The Networking section shows a public IP address of 13.71.102.151 and a private IP address of 10.1.0.4. The left sidebar includes sections for Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Connect (with options for Connect and Bastion), Networking (Network settings, Load balancing, Application security groups, Network manager), Settings (Disks, Extensions + applications, Operating system), and Properties (Virtual machine and Networking tabs). A JSON View link is also present in the top right.

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

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

The screenshot shows the Azure portal interface for the same 'Ubuntu' virtual machine. A modal dialog titled 'Stop this virtual machine' is open, asking 'Do you want to stop 'Ubuntu'?'. Below the dialog, a note states: '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.' At the bottom of the dialog are 'Yes' and 'No' buttons. The rest of the page shows the same detailed view of the virtual machine's configuration as in the previous screenshot, including the 'Properties' and 'Networking' tabs.

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.

Size	Disk tier	Provisioned IOPS	Provisioned throughput	Max Shares	Max burst IOPS	Max burst throughput
4 GiB	P1	120	25	3	3500	170
8 GiB	P2	120	25	3	3500	170
16 GiB	P3	120	25	3	3500	170
32 GiB	P4	120	25	3	3500	170
64 GiB	P6	240	50	3	3500	170
128 GiB	P10	500	100	3	3500	170
256 GiB	P15	1100	125	3	3500	170
512 GiB	P20	2300	150	3	3500	170
1024 GiB	P30	5000	200	5	-	-
2048 GiB	P40	7500	250	5	-	-
4096 GiB	P50	7500	250	5	-	-
8192 GiB	P60	16000	500	10	-	-
16384 GiB	P70	18000	750	10	-	-
32768 GiB	P80	75000	2000	10	-	-

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

Size	Disk tier	Provisioned IOPS	Provisioned throughput	Max Shares	Max burst IOPS	Max burst throughput
4 GiB	P1	120	25	3	3500	170
8 GiB	P2	120	25	3	3500	170
16 GiB	P3	120	25	3	3500	170
32 GiB	P6	120	25	3	3500	170
64 GiB	P10	240	50	3	3500	170
128 GiB	P15	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	-	-
32768 GiB	P80	30000	1000	10	-	-

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

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

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

The screenshot shows the Microsoft Azure portal interface. The user is navigating through the 'Virtual machines > Ubuntu' section. On the left, there's a sidebar with various settings like 'Disks', 'Extensions + applications', 'Operating system', 'Configuration', 'Advisor recommendations', 'Properties', and 'Locks'. The 'Locks' option is currently selected. A modal window titled 'Add lock' is open in the center. It contains fields for 'Lock name' (set to 'sharath'), 'Lock type' (set to 'Read-only'), and a 'Scope' dropdown which is set to 'Ubuntu'. Below these fields is a note that says 'Lock name is required.'. At the bottom of the modal are 'OK' and 'Cancel' buttons.

Step-3: click on ok.

Similarly, you can do for Resource group and subscriptions.

This screenshot shows the 'Locks' list page in the Microsoft Azure portal. The sidebar on the left is identical to the previous screenshot, showing the 'Locks' option is selected. The main area lists a single lock entry: 'sharath' (Lock type: Read-only, Scope: Ubuntu). To the right of the entry are 'Edit' and 'Delete' buttons. The URL in the browser bar is https://portal.azure.com/#@vardhaman.org/resource/subscriptions/00d7c037-0a12-480d-96ab-47e5cdc36326/resourceGroups/ubuntu_group/locks.

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

This screenshot shows the 'Virtual machines' list page in the Microsoft Azure portal. The sidebar on the left shows the 'Virtual machines' option is selected. The main area lists one virtual machine: 'Ubuntu' (Type: Virtual machine, Subscription: Azure for Students, Resource group: Ubuntu_group, Location: South India, Status: Stopped (deallocated), Operating system: Linux). In the top right corner, there's a 'Notifications' panel. It shows a log entry: 'Executed delete command on 1 selected items' with a note that 0 succeeded, 1 failed, and 0 canceled. The error details mention that the operation failed because the scope(s) are locked. The URL in the browser bar is https://portal.azure.com/#view/HubsExtension/BrowseResource/resourceType/Microsoft.Compute%2FVirtualMachines.

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

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

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

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

Create a virtual machine

Subscription * Resource group * Create new

Instance details

Virtual machine name * Region * Availability options Availability zone * You can now select multiple zones. Selecting multiple zones will create one VM per zone. [Learn more](#)

Security type Configure security features

Image * See all images | Configure VM generation

VM architecture Arm64

Create a virtual machine

VM architecture Arm64

Run with Azure Spot discount

Size * See all sizes

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

Administrator account

Authentication type Password

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

Username * SSH public key source

Create a virtual machine

virtual machine.

Username * SSH public key source

SSH Key Type 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 *

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.

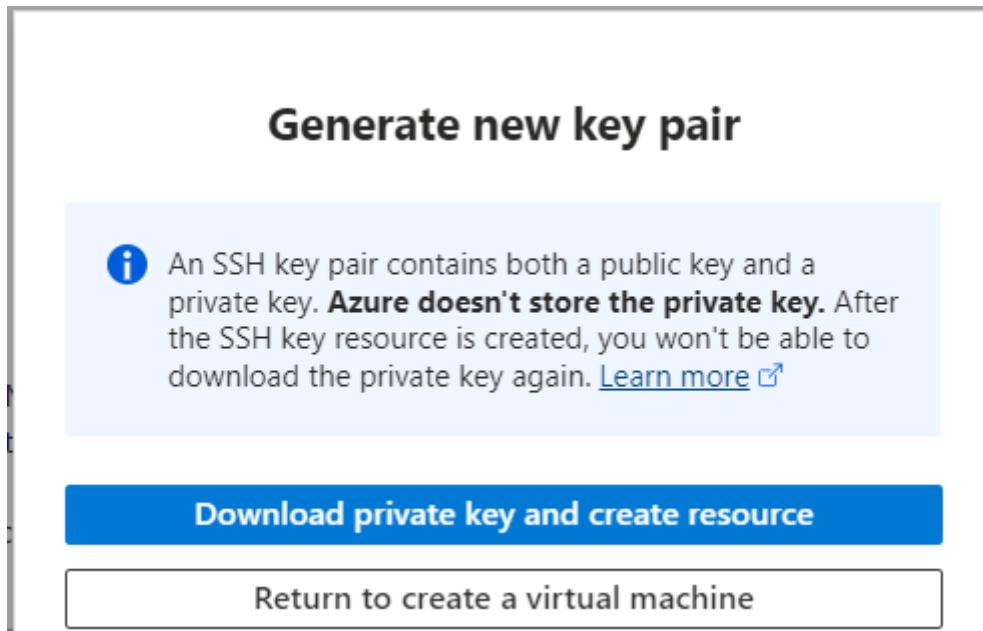
Public inbound ports * None

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



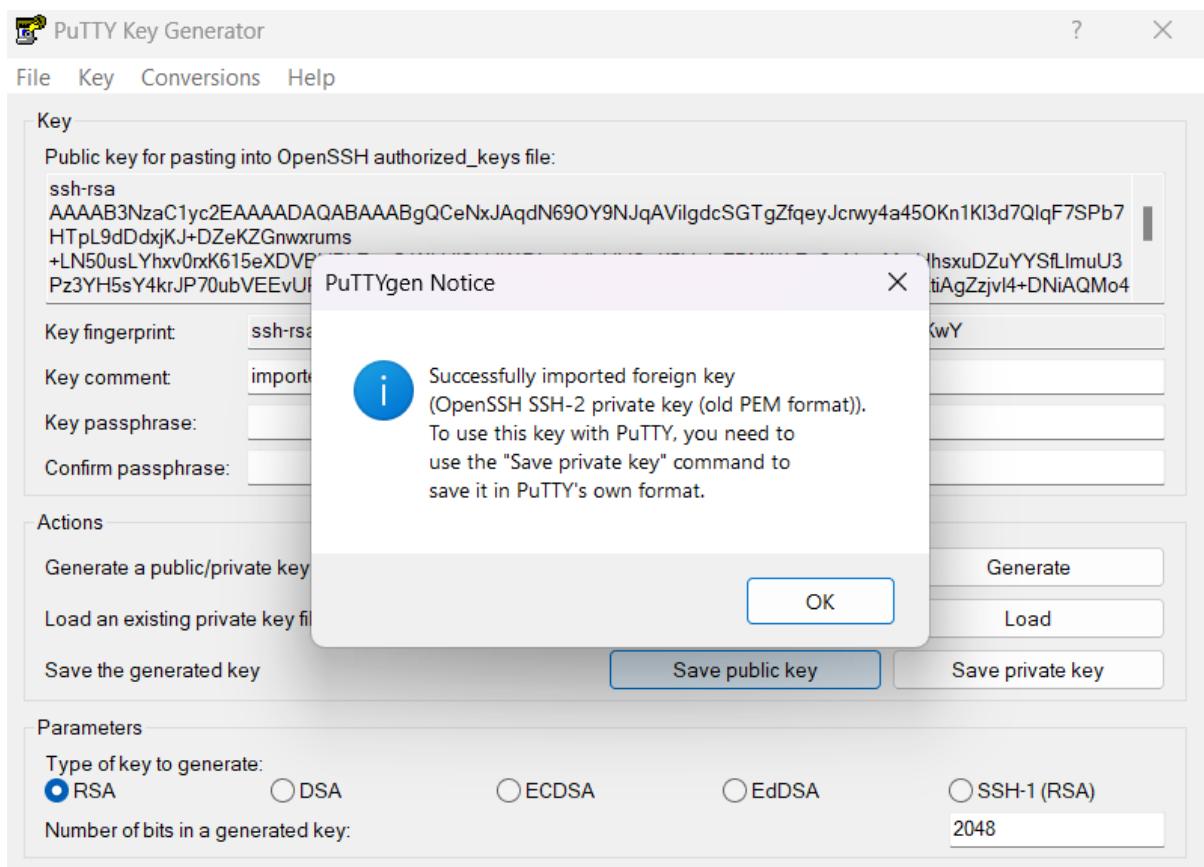
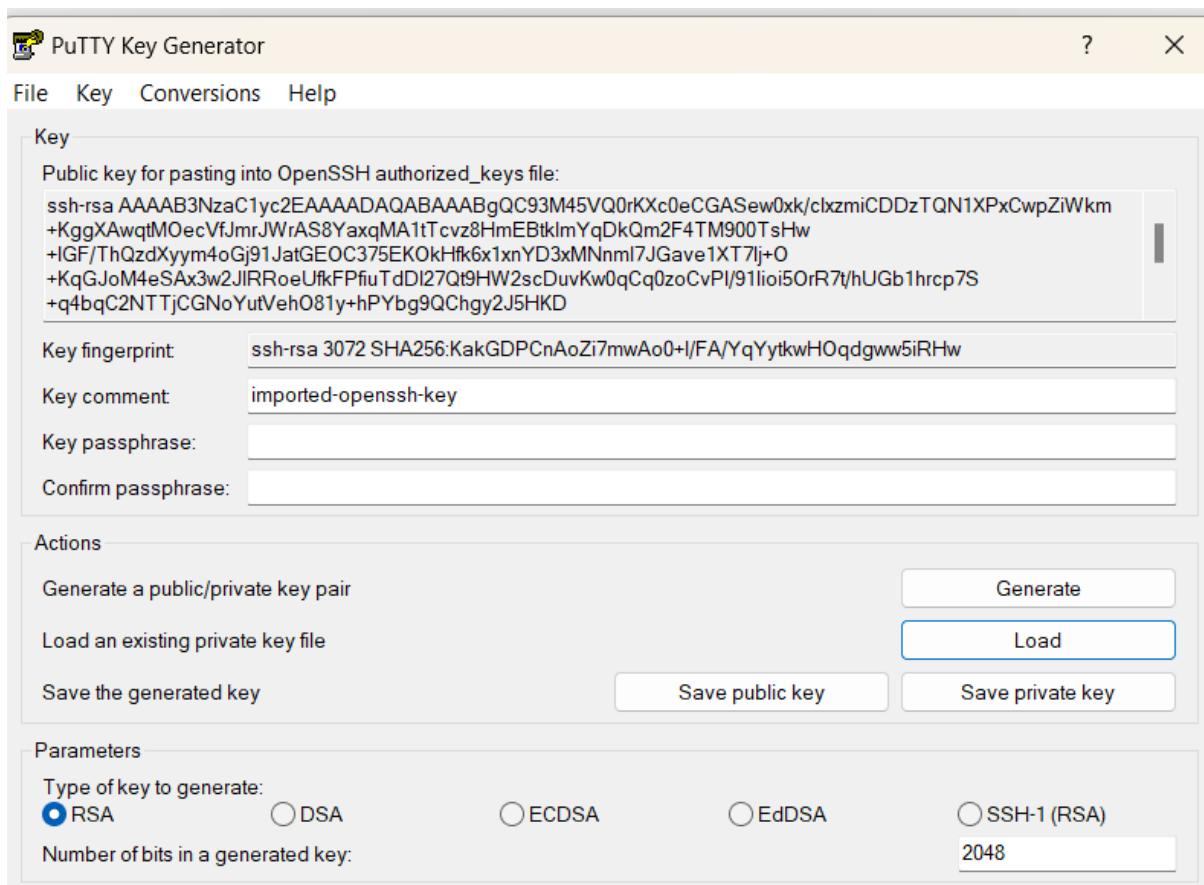
Step-5: Firstly, copy the public IP Address of that created virtual machine.

The screenshot shows the Azure portal's "Virtual machines" section for an "Ubuntu" VM. The "Overview" tab is selected. Key details shown include:

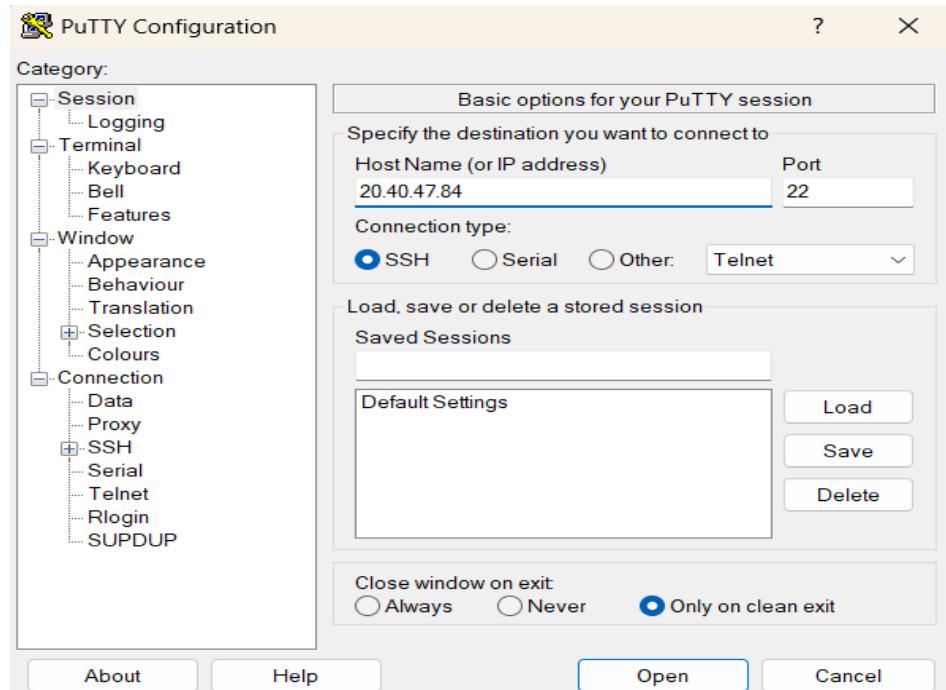
- Resource group: Ubuntu_group
- Status: Stopped (deallocated)
- Location: South India
- Subscription: Azure for Students
- Subscription ID: 00d7c037-0a12-480d-96ab-47e5cd36326
- Operating system: Linux
- Size: Standard DS1 v2 (1 vcpu, 3.5 GB memory)
- Public IP address: 18.71.102.151
- Virtual network/subnet: Ubuntu-vnet/default
- DNS name: Not configured
- Health state: -
- Time created: 6/15/2024 2:10 PM UTC

The "Networking" section also lists the Public IP address as 18.71.102.151 and the Network interface as ubuntu193.

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



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



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

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

```

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

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

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

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

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

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

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

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

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

azureuser@Ubuntu:~$ 

```

```

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

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

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

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

```

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

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

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

The screenshot shows the Microsoft Azure portal interface. The top navigation bar includes links for Home, Portal, Help, and Sign out. The main header says "Microsoft Azure" and "Vardhaman College of Engineering (vardhaman.org)". Below the header, there's a search bar and a user profile icon.

The main content area is titled "Virtual machines". It displays a table with columns: Name, Type, Subscription, Resource group, Location, Status, Operating system, Size, Public IP address, and Disks. A filter bar at the top of the table allows filtering by these fields. A message at the bottom of the table says "Showing 0 to 0 of 0 records."

A modal window is open in the center of the screen, titled "Create". It contains three options: "Azure virtual machine", "Azure virtual machine with preset configuration", and "More VMs and related solutions". The "Azure virtual machine" option is highlighted. Below the modal, there are two links: "Learn more about Windows virtual machines" and "Learn more about Linux virtual machines". At the bottom right of the modal, there's a "Create" button.

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”.

Subscription * Azure for Students

Resource group * (New) AZ24

Create new

Virtual machine name * Ubuntu

Region * (Asia Pacific) Central India

Availability options Availability zone Zone 1

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

Security type Trusted launch virtual machines

Configure security features

Image * Ubuntu Server 20.04 LTS - x64 Gen2

[See all images](#) | [Configure VM generation](#)

VM architecture Arm64 x64

VM architecture Arm64 x64

Run with Azure Spot discount

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

[See all sizes](#)

Enable Hibernation

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

Administrator account

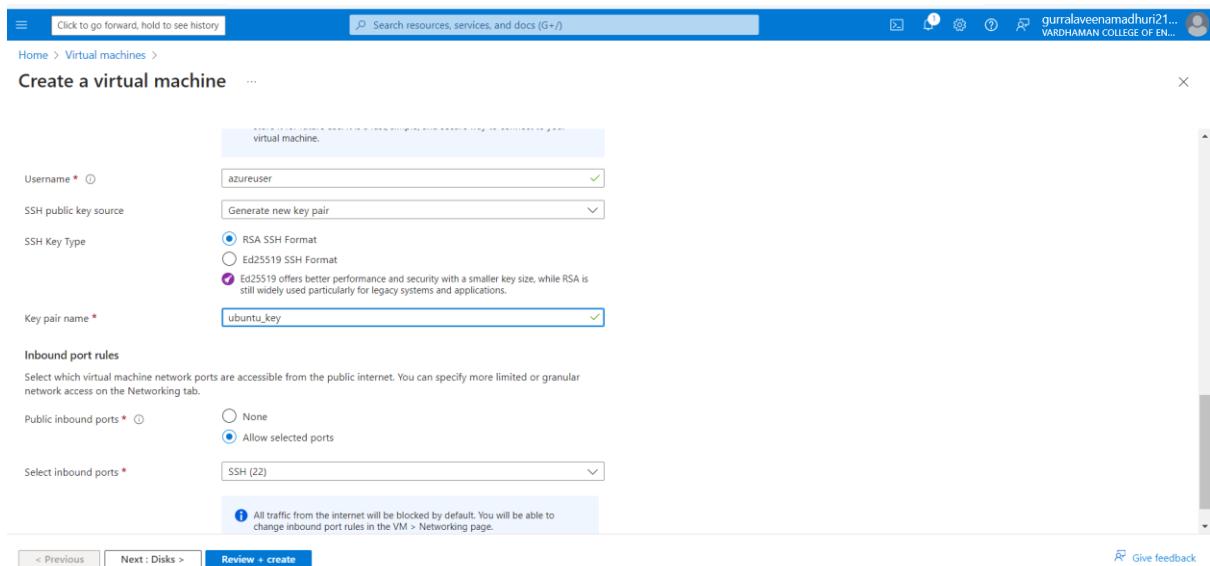
Authentication type SSH public key

Password

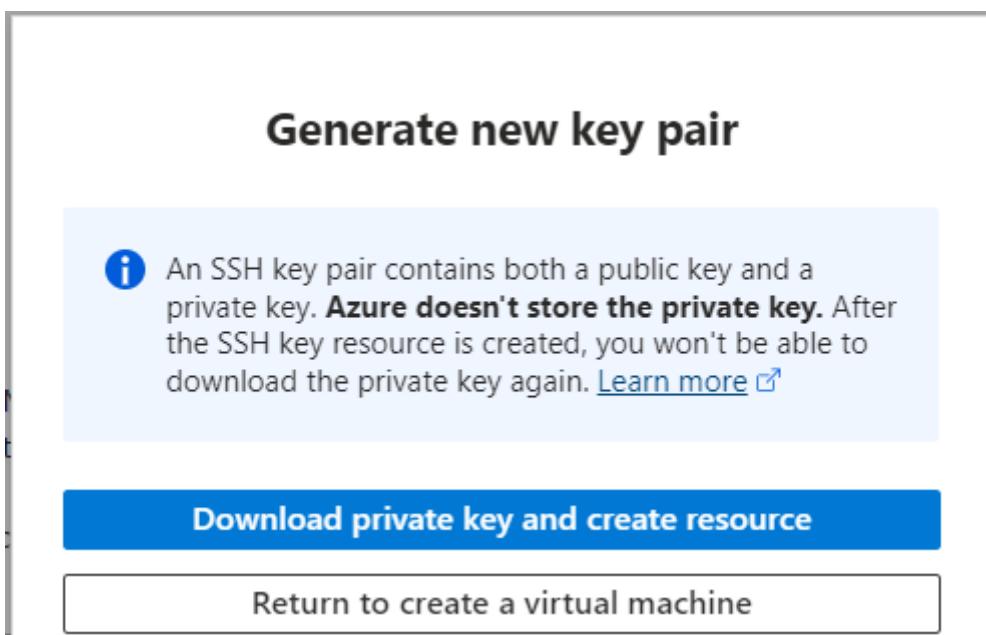
Azure now automatically generates an SSH key pair for you and allows you to store it for future use. It is a fast, simple, and secure way to connect to your virtual machine.

Username * azureuser

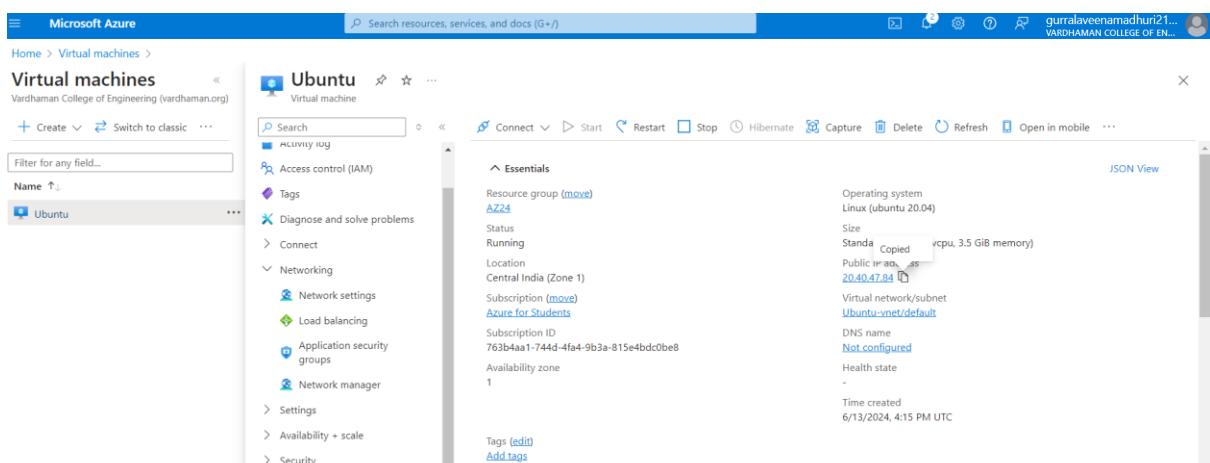
[Generate new key pair](#)



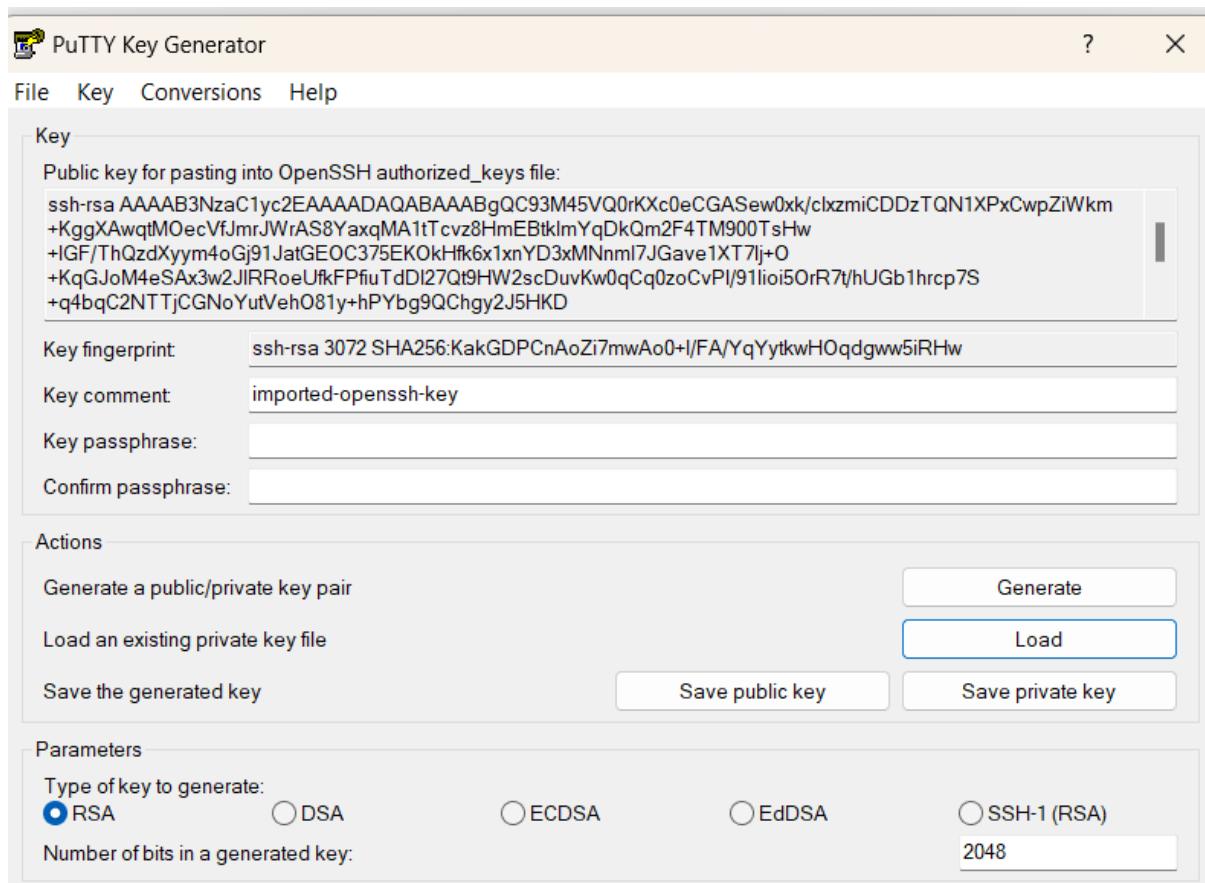
Step-4: After Deployment is over, Go to the remote desktop connection.

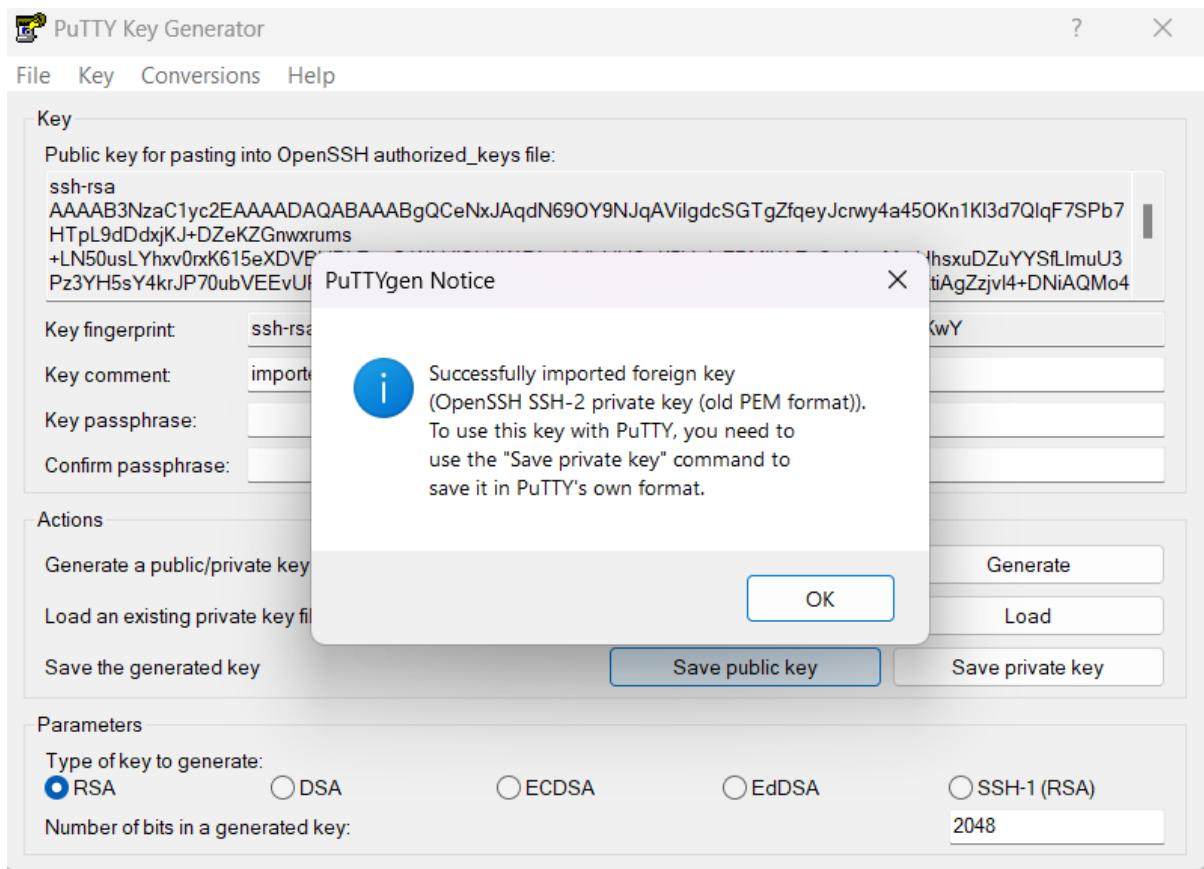


Step-5: Firstly, copy the public IP Address of that created virtual machine.

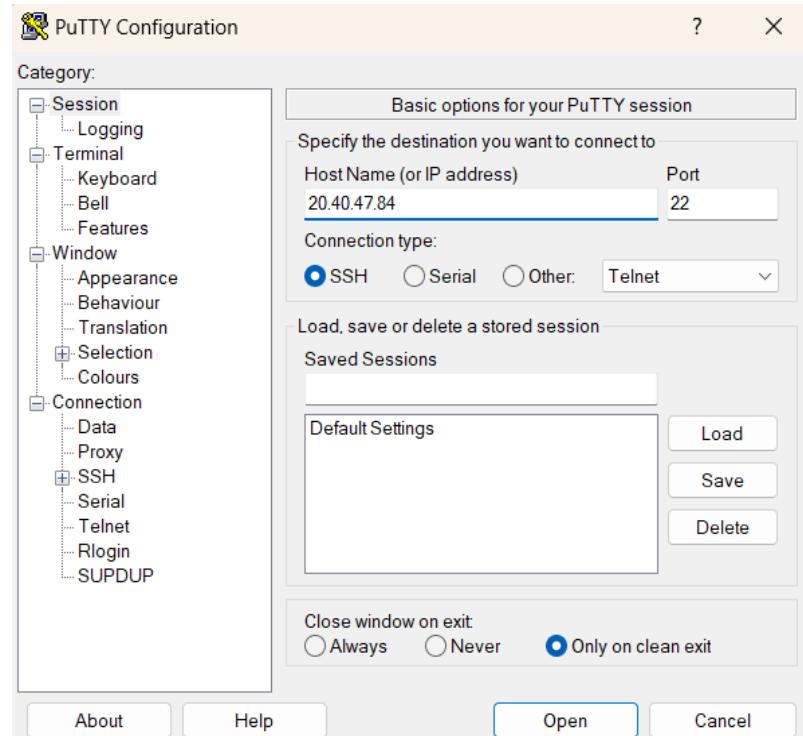


Step-6: Go to putty gen and click on load the key generator that you have downloaded.



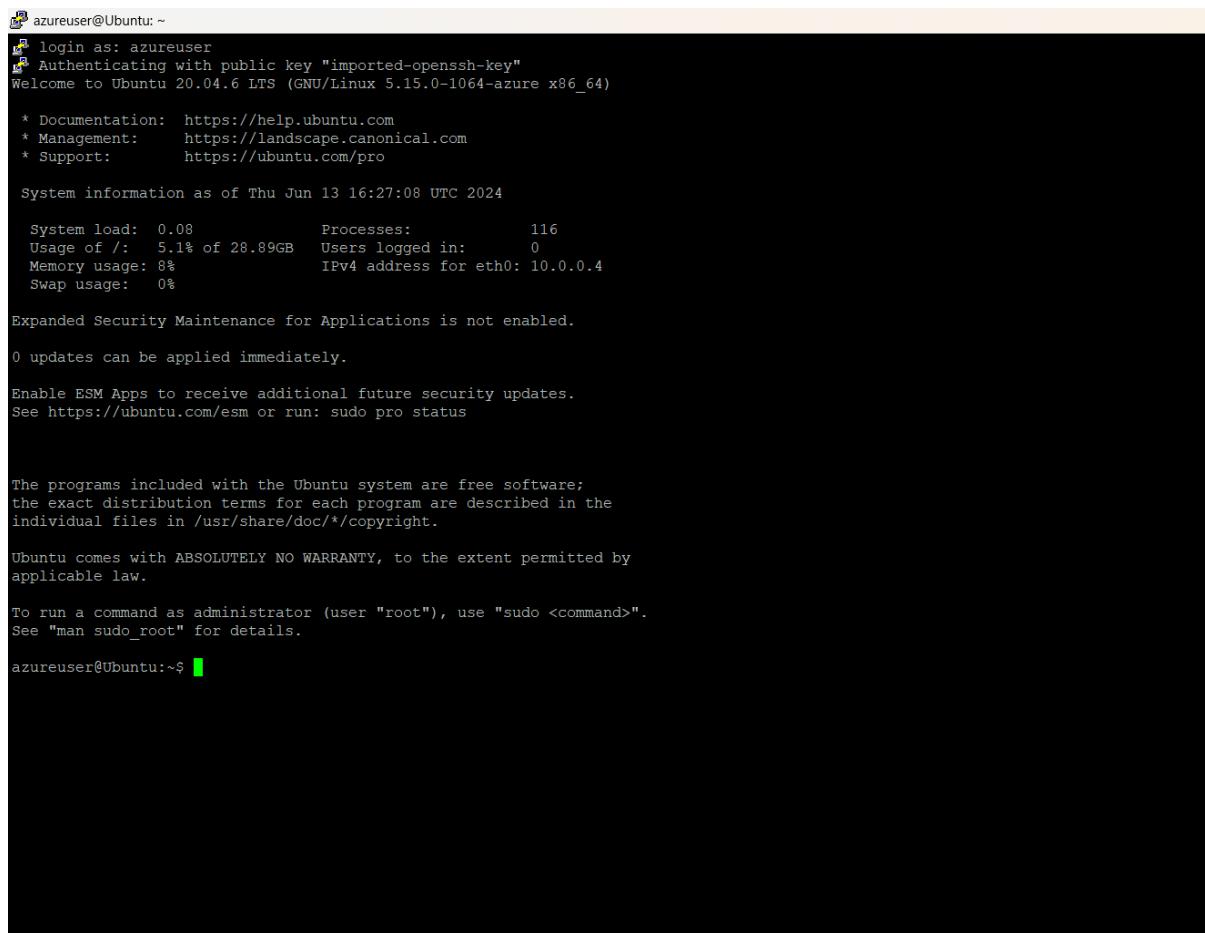


Step-7: In putty, put the Copied IP Adress into it, and then go to ssh->auth->credentials and the put the generated private key.



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

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



```

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

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

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

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

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

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

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the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/*copyright.

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

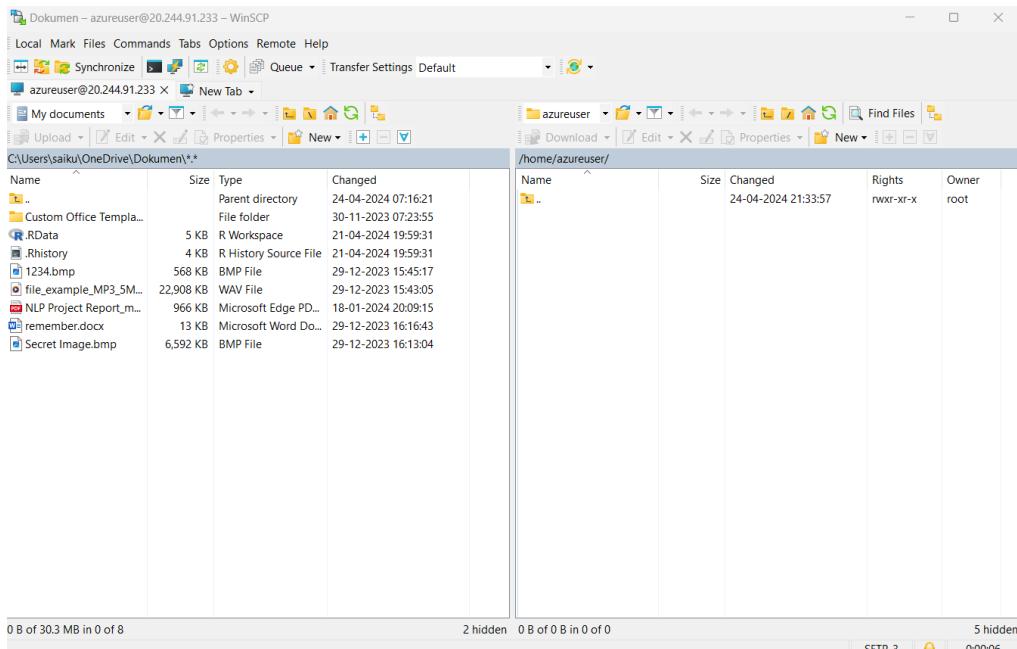
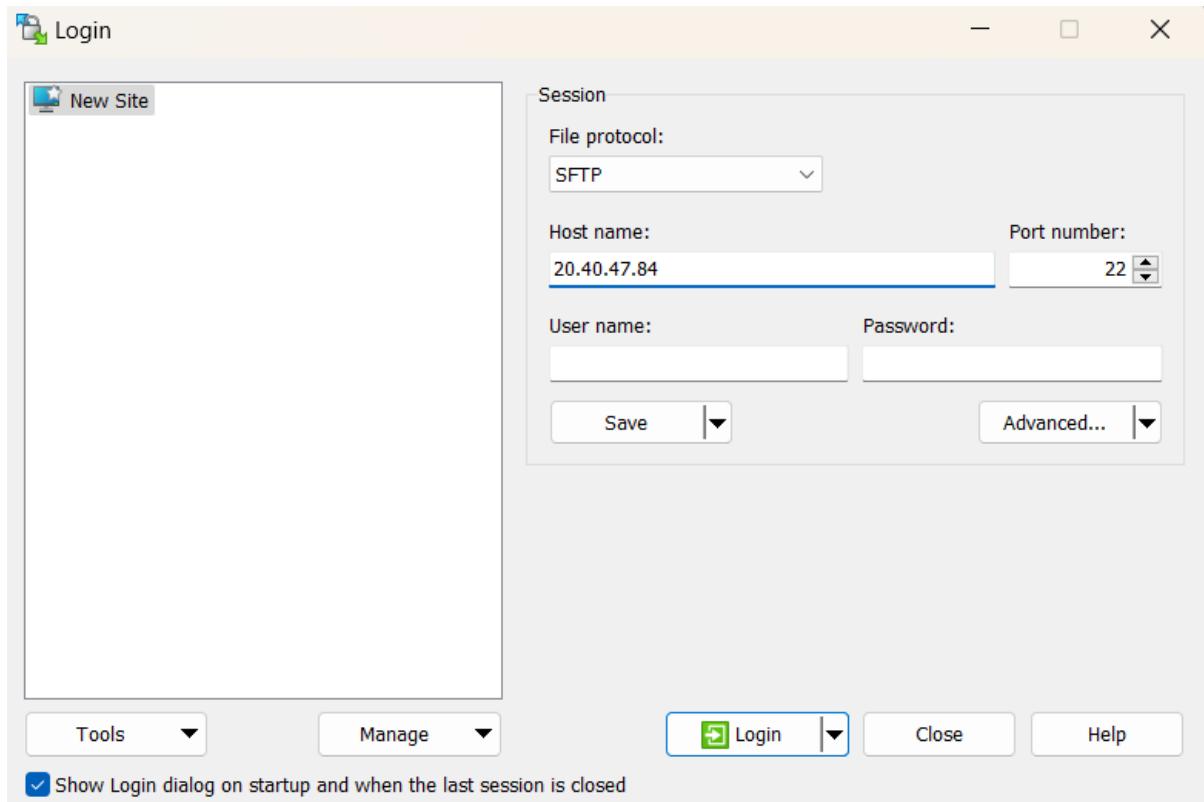
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

azureuser@Ubuntu:~$ 

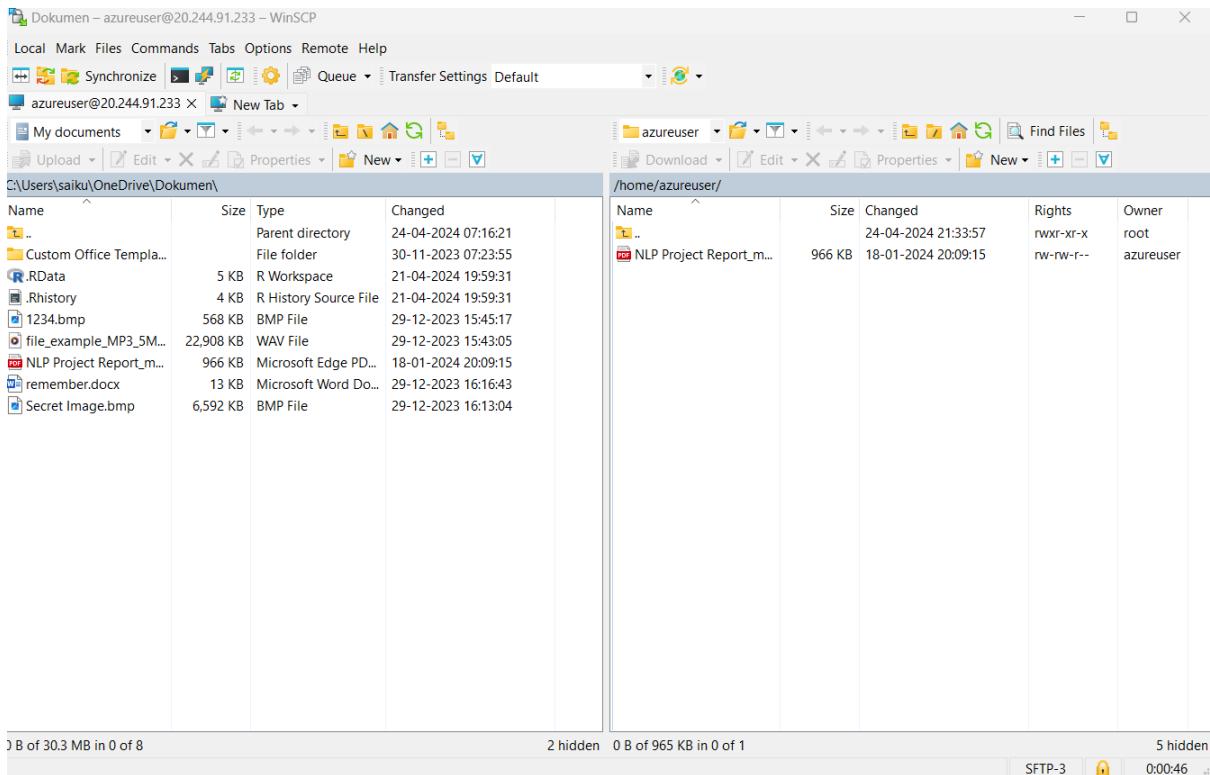
```

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

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



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



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

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

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

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

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

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

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

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

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

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

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

The screenshot shows the Azure portal's Virtual machines page. At the top, there are navigation links for 'Home', 'Virtual machines', and a search bar. Below the header is a sidebar with options: 'Create a virtual machine', 'Azure virtual machine with preset configuration', and 'More VMs and related solutions'. The main area contains a table of existing virtual machines. The table has the following columns: Subscription, Resource group, Location, Status, Operating system, Size, Public IP address, and Disks. One row is visible, showing 'Azure for Students' as the subscription, 'Ubuntu_group' as the resource group, 'South India' as the location, 'Stopped (deallocated)' as the status, 'Linux' as the operating system, 'Standard_DS1_v2' as the size, '13.71.102.151' as the public IP address, and '1' as the number of disks.

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

The screenshot shows the 'Create a virtual machine' wizard in the Azure portal. The 'Subscription' dropdown is set to 'Azure for Students'. The 'Resource group' dropdown shows '(New) AZ24' with a 'Create new' option. In the 'Instance details' section, the 'Virtual machine name' is 'Ubuntu', 'Region' is '(Asia Pacific) Central India', 'Availability zone' is 'Zone 1', and 'Security type' is 'Trusted launch virtual machines'. There is a note: 'You can now select multiple zones. Selecting multiple zones will create one VM per zone. Learn more'. The 'Image' dropdown is set to 'Ubuntu Server 20.04 LTS - x64 Gen2'. The 'VM architecture' dropdown is set to 'Arm64'.

The screenshot shows two consecutive steps of the Azure VM creation wizard:

Step 1: Administrator account

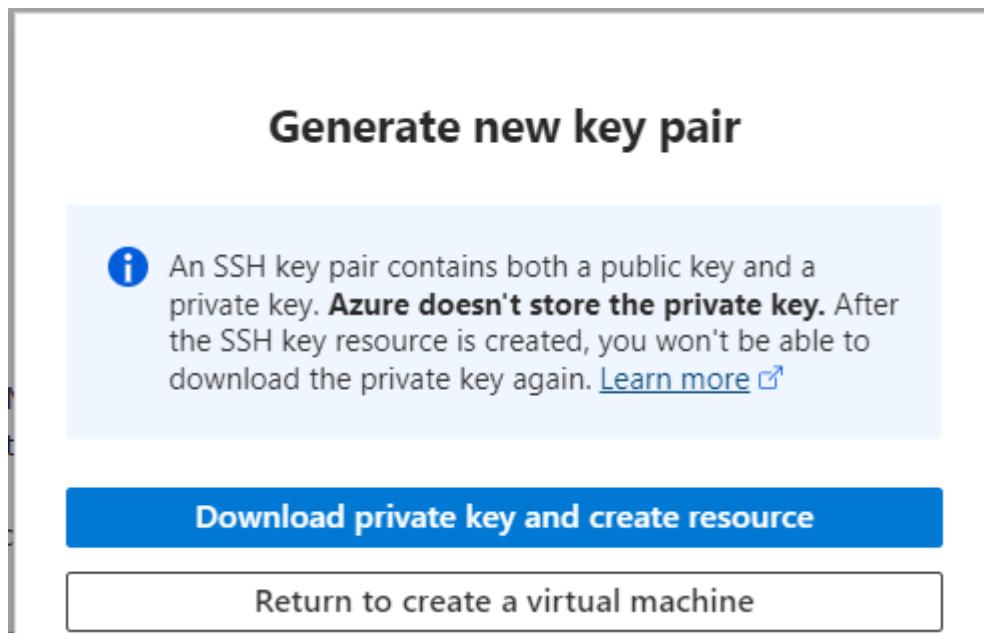
- VM architecture:** x64 selected.
- Run with Azure Spot discount:** Unchecked.
- Size:** Standard_DS1_v2 + 1 vcpu, 3.5 GiB memory (\$5.101.50/month).
- Enable Hibernation:** Unchecked. A note states: "Hibernates not currently support Trusted launch and Confidential virtual machines for Linux images. Learn more."
- Administrator account:**
 - Authentication type:** SSH public key selected.
 - SSH public key source:** "Generate new key pair" selected.
 - Username:** azureuser.
 - SSH public key name:** ubuntu.key.

Step 2: Inbound port rules

- Inbound port rules:** Select which virtual machine network ports are accessible from the public internet.
- Public inbound ports:** Allow selected ports selected.
- Select inbound ports:** SSH (22) selected.
- Note:** "All traffic from the internet will be blocked by default. You will be able to change inbound port rules in the VM > Networking page."

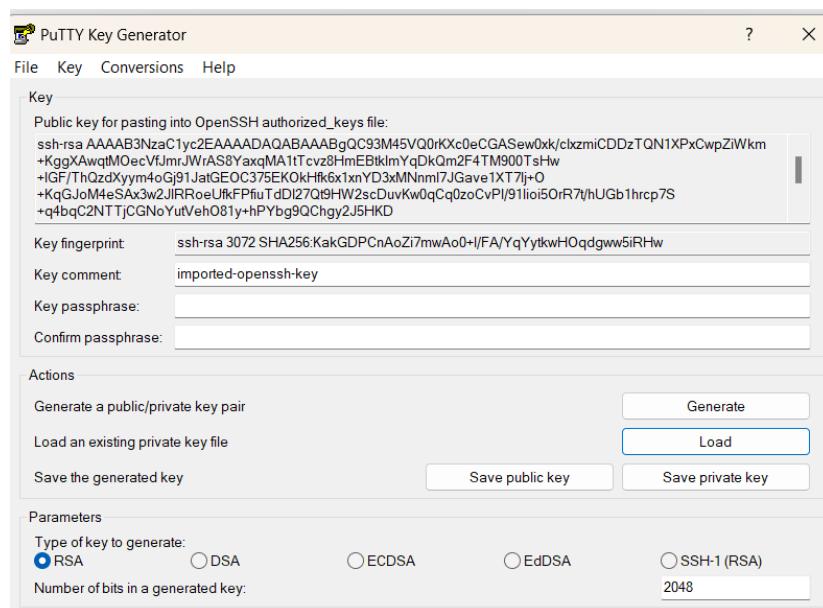
At the bottom, there are navigation buttons: < Previous, Next : Disks >, Review + create, and Give feedback.

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

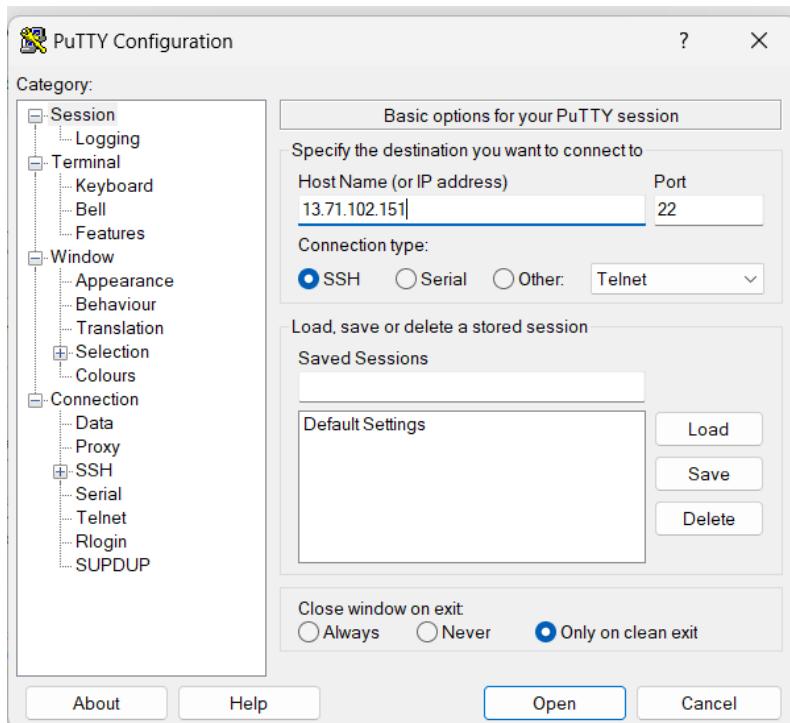


Step-5: Firstly, copy the public IP Address of that created virtual machine.

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@Ubuntu: ~
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 Sat Jun 15 15:12:31 UTC 2024

System load: 0.34          Processes:           125
Usage of /: 5.1% of 28.89GB Users logged in:      0
Memory usage: 8%            IPv4 address for eth0: 10.1.0.4
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.
To check for new updates run: sudo apt update

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

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

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

azureuser@Ubuntu:~$
```

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

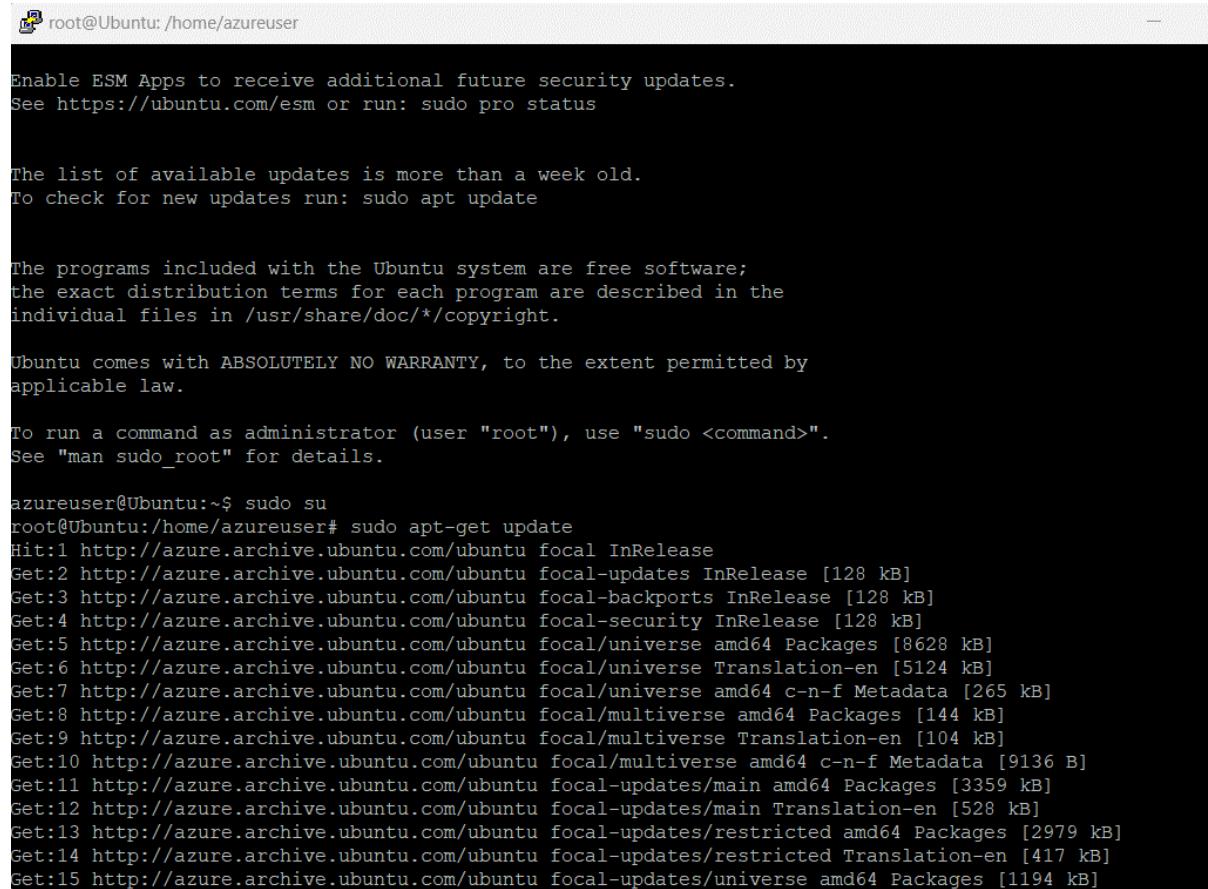
\$sudo su

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

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

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

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

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

azureuser@Ubuntu:~$ sudo su
root@Ubuntu:/home/azureuser# sudo apt-get update
Hit:1 http://azure.archive.ubuntu.com/ubuntu focal InRelease
Get:2 http://azure.archive.ubuntu.com/ubuntu focal-updates InRelease [128 kB]
Get:3 http://azure.archive.ubuntu.com/ubuntu focal-backports InRelease [128 kB]
Get:4 http://azure.archive.ubuntu.com/ubuntu focal-security InRelease [128 kB]
Get:5 http://azure.archive.ubuntu.com/ubuntu focal/universe amd64 Packages [8628 kB]
Get:6 http://azure.archive.ubuntu.com/ubuntu focal/universe Translation-en [5124 kB]
Get:7 http://azure.archive.ubuntu.com/ubuntu focal/universe amd64 c-n-f Metadata [265 kB]
Get:8 http://azure.archive.ubuntu.com/ubuntu focal/multiverse amd64 Packages [144 kB]
Get:9 http://azure.archive.ubuntu.com/ubuntu focal/multiverse Translation-en [104 kB]
Get:10 http://azure.archive.ubuntu.com/ubuntu focal/multiverse amd64 c-n-f Metadata [9136 B]
Get:11 http://azure.archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [3359 kB]
Get:12 http://azure.archive.ubuntu.com/ubuntu focal-updates/main Translation-en [528 kB]
Get:13 http://azure.archive.ubuntu.com/ubuntu focal-updates/restricted amd64 Packages [2979 kB]
Get:14 http://azure.archive.ubuntu.com/ubuntu focal-updates/restricted Translation-en [417 kB]
Get:15 http://azure.archive.ubuntu.com/ubuntu focal-updates/universe amd64 Packages [1194 kB]
```

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
```

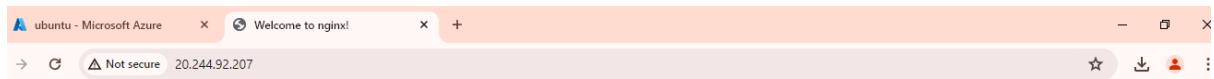
```
$rm index.nginx-debian.html
```

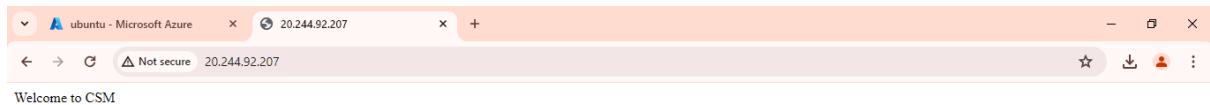
```
$echo "Welcome to CSM ">index.html
```

```

root@Ubuntu:/var/www/html
Selecting previously unselected package nginx-core.
Preparing to unpack .../15-nginx-core_1.18.0-0ubuntu1.4_amd64.deb ...
Unpacking nginx-core (1.18.0-0ubuntu1.4) ...
Selecting previously unselected package nginx.
Preparing to unpack .../16-nginx_1.18.0-0ubuntu1.4_all.deb ...
Unpacking nginx (1.18.0-0ubuntu1.4) ...
Setting up libxpm4:amd64 (1:3.5.12-1ubuntu0.20.04.2) ...
Setting up nginx-common (1.18.0-0ubuntu1.4) ...
Created symlink /etc/systemd/system/multi-user.target.wants/nginx.service → /lib/systemd/system/nginx.s
Setting up libjbig0:amd64 (2.1-3.1ubuntu0.20.04.1) ...
Setting up libnginx-mod-http-xslt-filter (1.18.0-0ubuntu1.4) ...
Setting up libwebp6:amd64 (0.6.1-2ubuntu0.20.04.3) ...
Setting up fonts-dejavu-core (2.37-1) ...
Setting up libjpeg-turbo8:amd64 (2.0.3-0ubuntu1.20.04.3) ...
Setting up libjpeg8:amd64 (8c-2ubuntu8) ...
Setting up libnginx-mod-mail (1.18.0-0ubuntu1.4) ...
Setting up fontconfig-config (2.13.1-2ubuntu3) ...
Setting up libnginx-mod-stream (1.18.0-0ubuntu1.4) ...
Setting up libtiff5:amd64 (4.1.0+git191117-2ubuntu0.20.04.13) ...
Setting up libfontconfig1:amd64 (2.13.1-2ubuntu3) ...
Setting up libgd3:amd64 (2.2.5-5.2ubuntu2.1) ...
Setting up libnginx-mod-http-image-filter (1.18.0-0ubuntu1.4) ...
Setting up nginx-core (1.18.0-0ubuntu1.4) ...
Setting up nginx (1.18.0-0ubuntu1.4) ...
Processing triggers for ufw (0.36-6ubuntu1.1) ...
Processing triggers for systemd (245.4-4ubuntu3.23) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for libc-bin (2.31-0ubuntu9.16) ...
root@Ubuntu:/home/azureuser# cd/var/www/html
bash: cd/var/www/html: No such file or directory
root@Ubuntu:/home/azureuser# cd /var/www/html
root@Ubuntu:/var/www/html# rm index.nginx-debian.html
root@Ubuntu:/var/www/html# echo "Welcome to CSM">index.html

```





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

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

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

Name	Type	Subscription	Resource group	Location	Status	Operating system	Size	Public IP address	Disks
Ubuntu	Virtual machine	Azure for Students	Ubuntu_group	South India	Running	Linux	Standard_DS1_v2	13.71.102.151	1

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

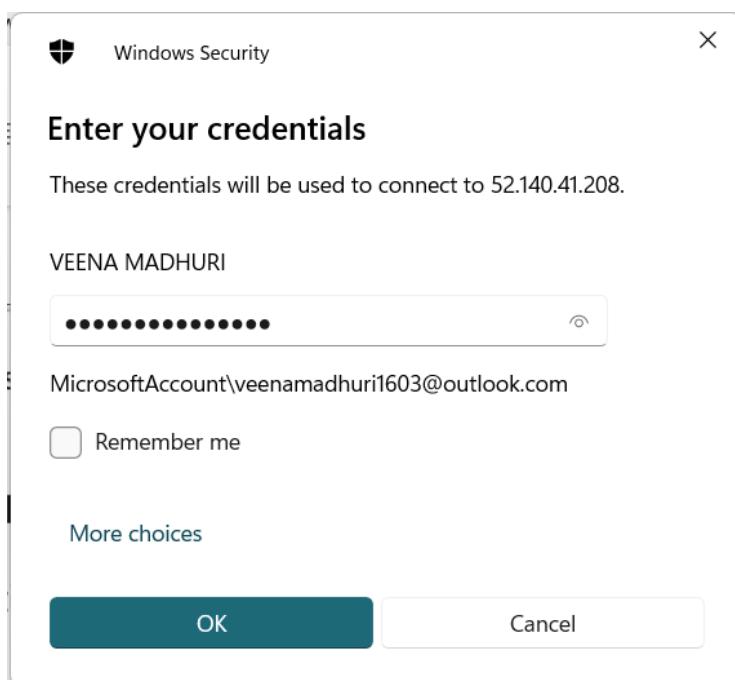
The screenshot shows the Azure portal interface for creating a virtual machine. The title bar reads "Azure for College Students— Create a virtual machine - Microsoft Azure". The URL in the address bar is "https://portal.azure.com/#create/Microsoft.VirtualMachine-ARM". The main content area is titled "Create a virtual machine" with a breadcrumb trail: "Home > Virtual machines > Create a virtual machine". Below the title, there are tabs for "Basics", "Disks", "Networking", "Management", "Monitoring", "Advanced", "Tags", and "Review + create". A note at the top states: "Create a virtual machine that runs Linux or Windows. Select an image from Azure marketplace or use your own customized image. Complete the Basics tab then Review + create to provision a virtual machine with default parameters or review each tab for full customization. [Learn more](#)". A warning message in a blue box says: "This subscription may not be eligible to deploy VMs of certain sizes in certain regions." The "Project details" section includes fields for "Subscription" (set to "Azure for Students") and "Resource group" (set to "(New) Resource group"). The "Instance details" section includes fields for "Virtual machine name" (empty), "Region" (set to "(Asia Pacific) South India"), and "Availability options" (set to "No infrastructure redundancy required"). At the bottom, there are buttons for "< Previous", "Next : Disks >", and "Review + create". On the right, there is a "Give feedback" link.

This screenshot shows the same "Create a virtual machine" wizard on the "Basics" tab, but with more detailed configurations. The "Size" dropdown is set to "Standard_DS1_v2 - 1 vcpu, 3.5 GB memory (\$7.895.17/month)". The "Administrator account" section shows a username "veena" and a password field filled with "*****". The "Inbound port rules" section has a note: "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." Under "Public inbound ports", the "Allow selected ports" option is selected. The navigation buttons at the bottom are "< Previous", "Next : Disks >", and "Review + create". A "Give feedback" link is also present on the right.

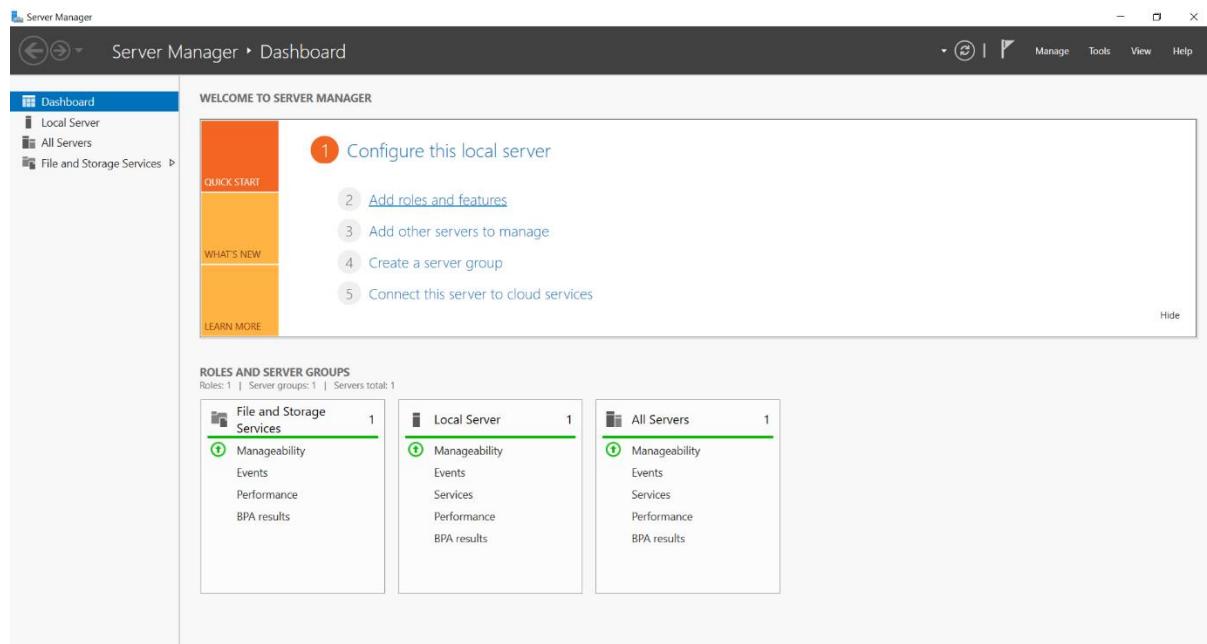
Step-4: After Deployment is over, Go to the remote desktop connection.

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

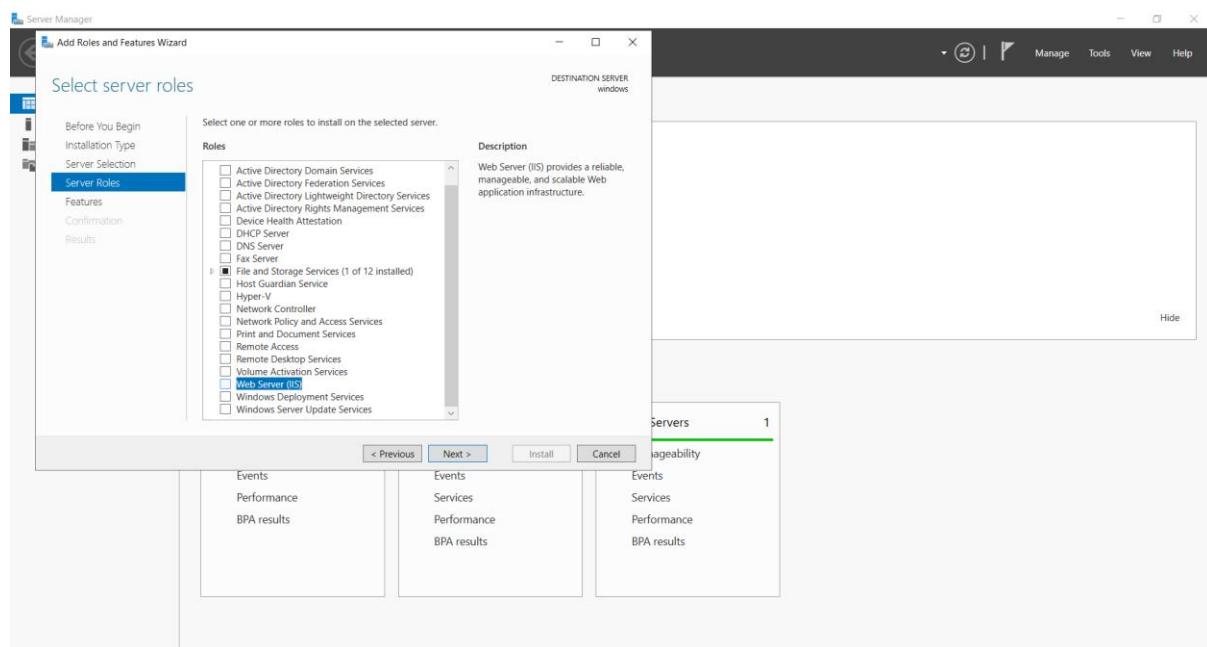
Step-6: By using that copied IP Address open the window virtual machine through remote desktop connection.

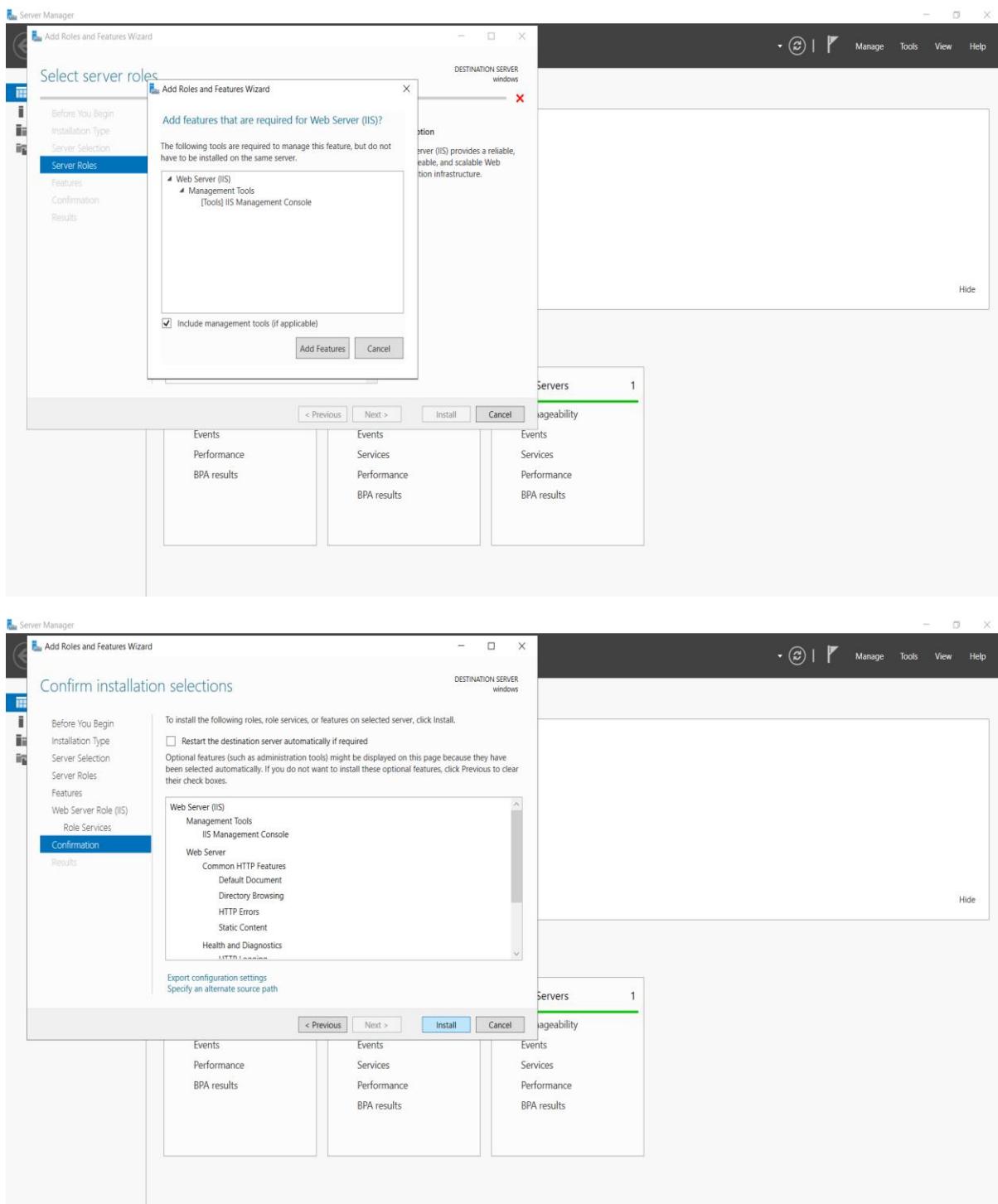


Step-7: When remote desktop will start (windows VM) you can see there will be Server Manager will be opened and in that you can see Configure this local server, click on “Add roles and features”.

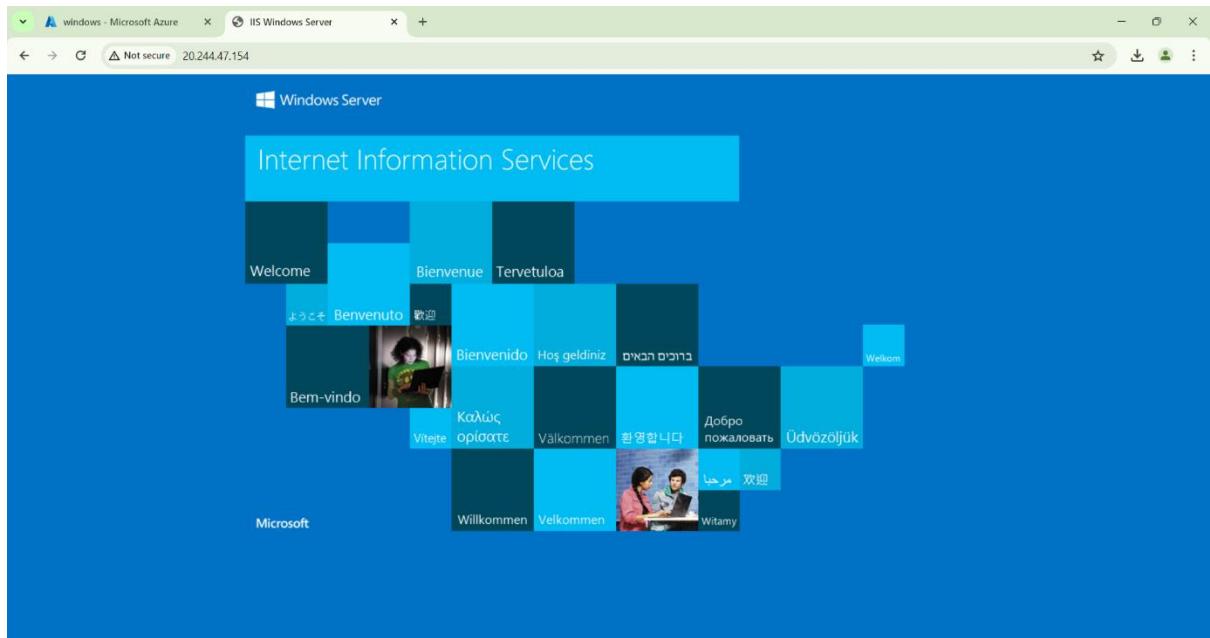


Step-8: Click on next, next and in Server Roles select Web Server (IIS) click on add feature, click on next, next till you can get install button and click on install.

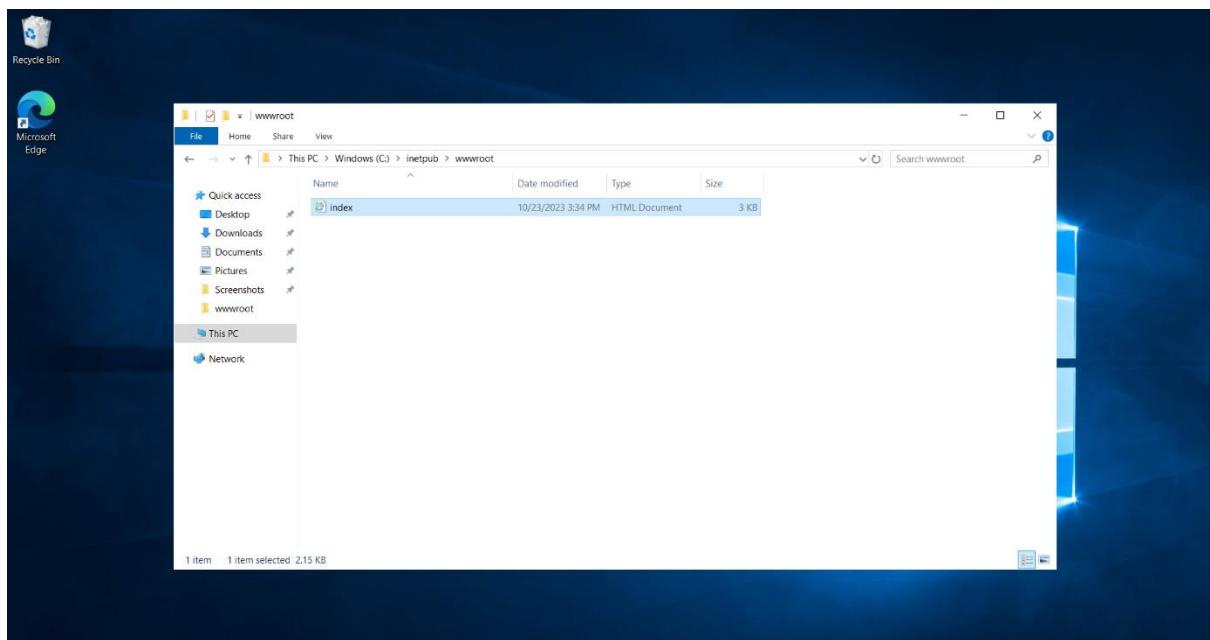




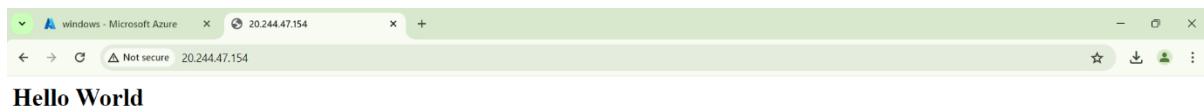
Step- 9: paste the public ip address in desktop browser and you can see.



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



Step-10: Refresh the browser page.



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

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

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

Subscription	Resource group	Location	Status	Operating system	Size	Public IP address	Disk(s)
Azure for Students	Ubuntu_group	South India	Stopped (deallocated)	Linux	Standard_DS1_v2	13.71.102.151	1

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) azure_group [Create new](#)

Instance details

Virtual machine name * azure

Region * (Asia Pacific) South 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](#)

VM architecture x64

Run with Azure Spot discount

Size * Standard_DS1_v2 - 1 vcpu, 3.5 GB memory (₹3,101.50/month) [See all sizes](#)

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

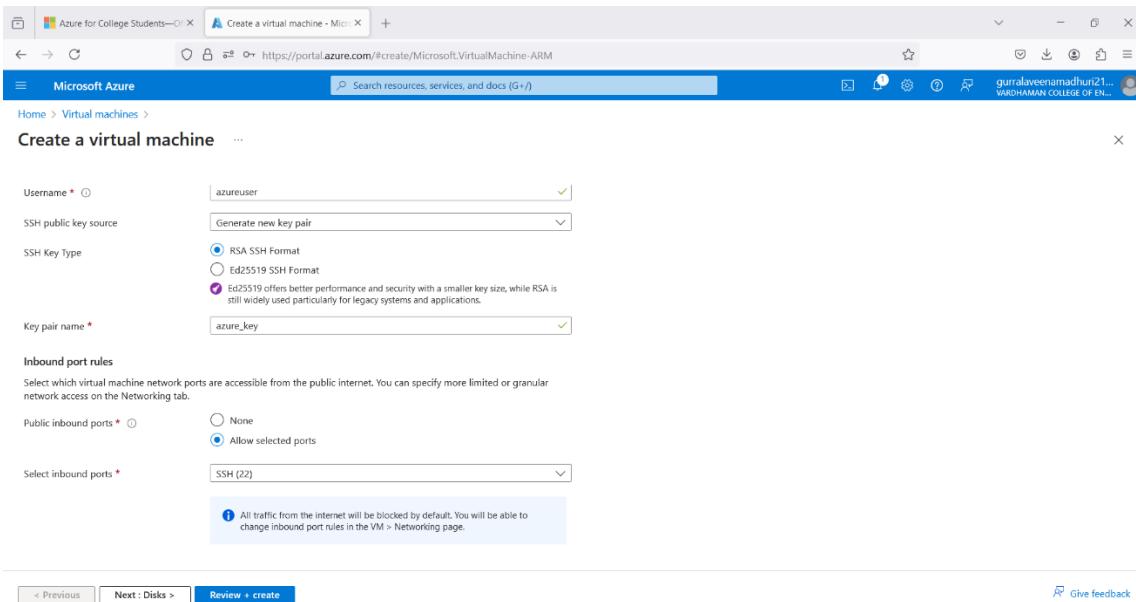
Administrator account

Authentication type SSH public key

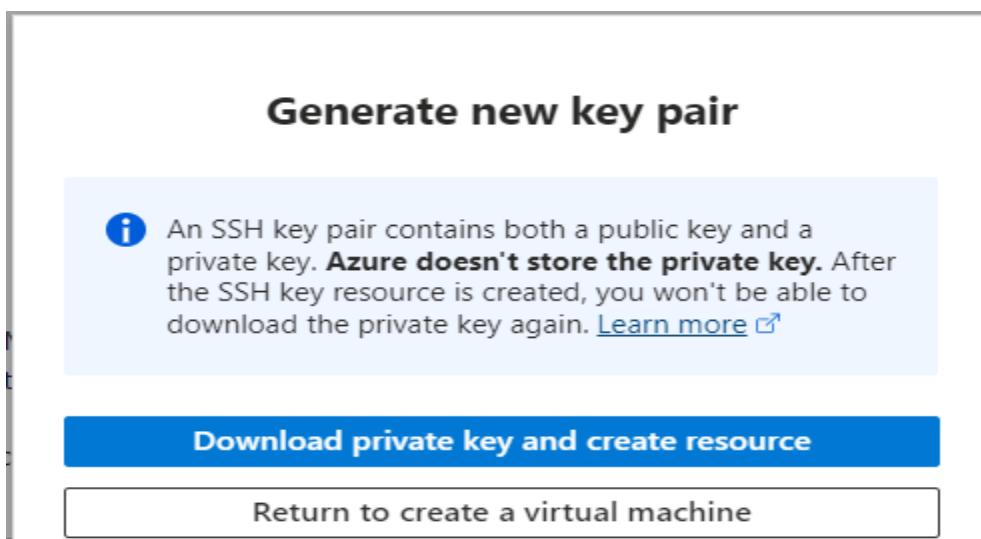
Username * azureuser

[Create a new key file](#)

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



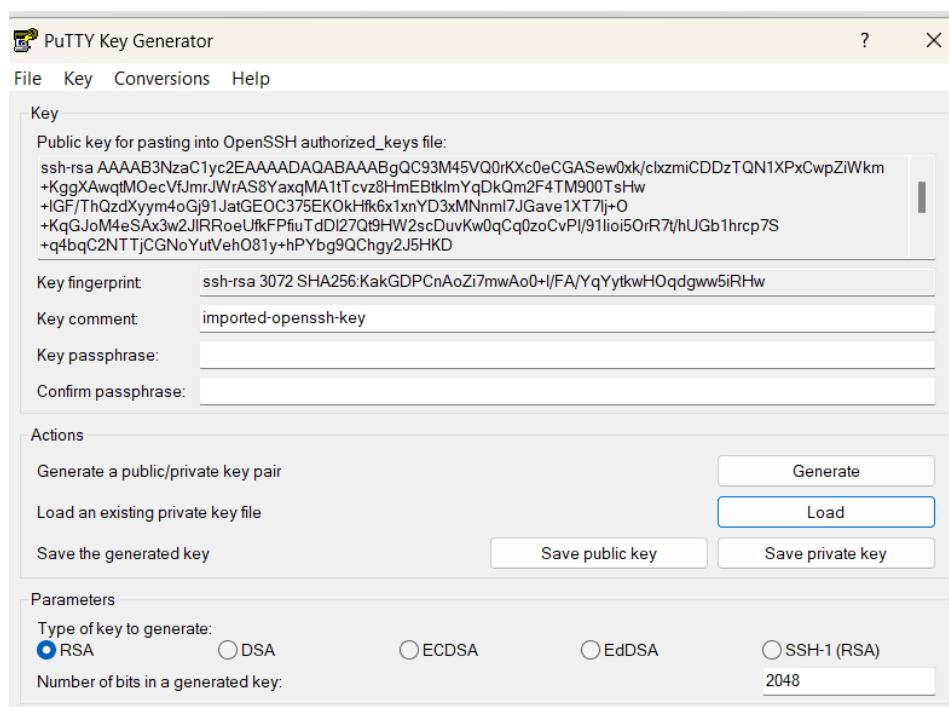
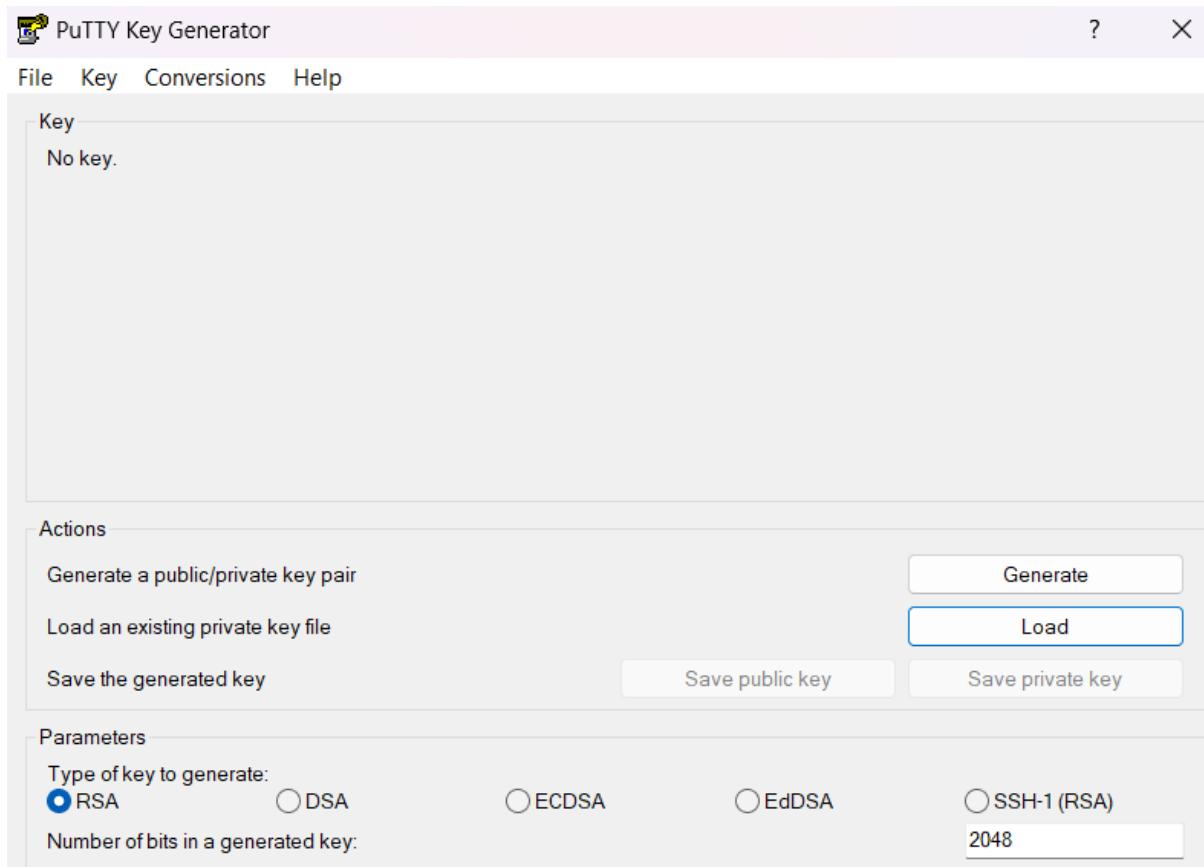
Step-4: After Deployment is over, Go to the remote desktop connection.



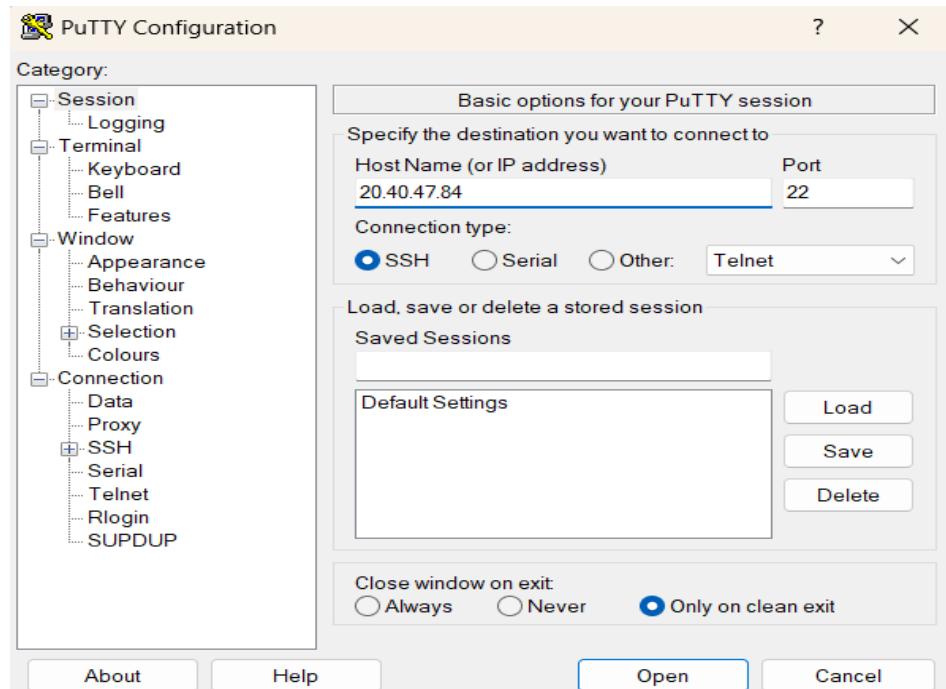
Step-5: Firstly, copy the public IP Address of that created virtual machine.

Property	Value
Computer name	Ubuntu
Operating system	Linux (ubuntu 20.04)
VM generation	V2

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 veena
```

To set new password:

```
$sudo passwd veena
```

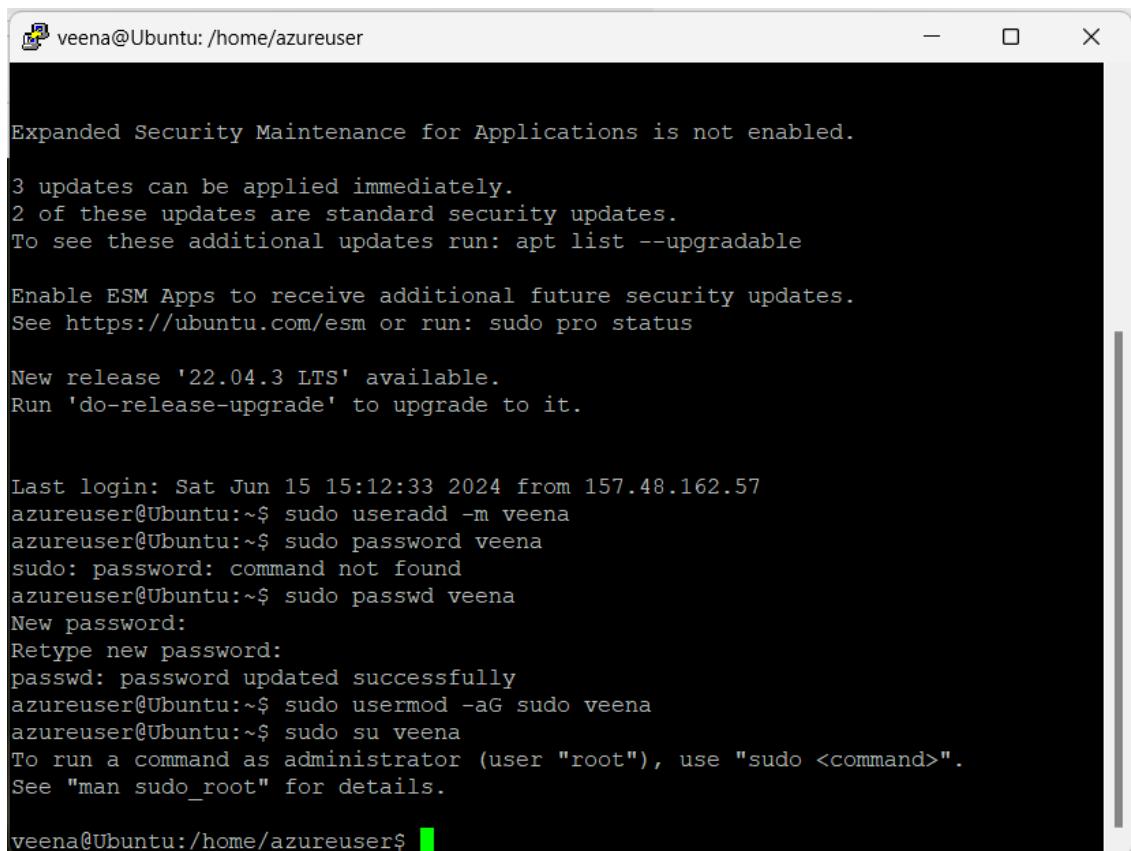
Enter new password and Retype password.

To modify login credentials:

```
$sudo usermod -aG sudo veena
```

To switch the user:

```
$sudo su veena
```



```

veena@Ubuntu: /home/azureuser
Expanded Security Maintenance for Applications is not enabled.

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

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

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

Last login: Sat Jun 15 15:12:33 2024 from 157.48.162.57
azureuser@Ubuntu:~$ sudo useradd -m veena
azureuser@Ubuntu:~$ sudo password veena
sudo: password: command not found
azureuser@Ubuntu:~$ sudo passwd veena
New password:
Retype new password:
passwd: password updated successfully
azureuser@Ubuntu:~$ sudo usermod -aG sudo veena
azureuser@Ubuntu:~$ sudo su veena
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

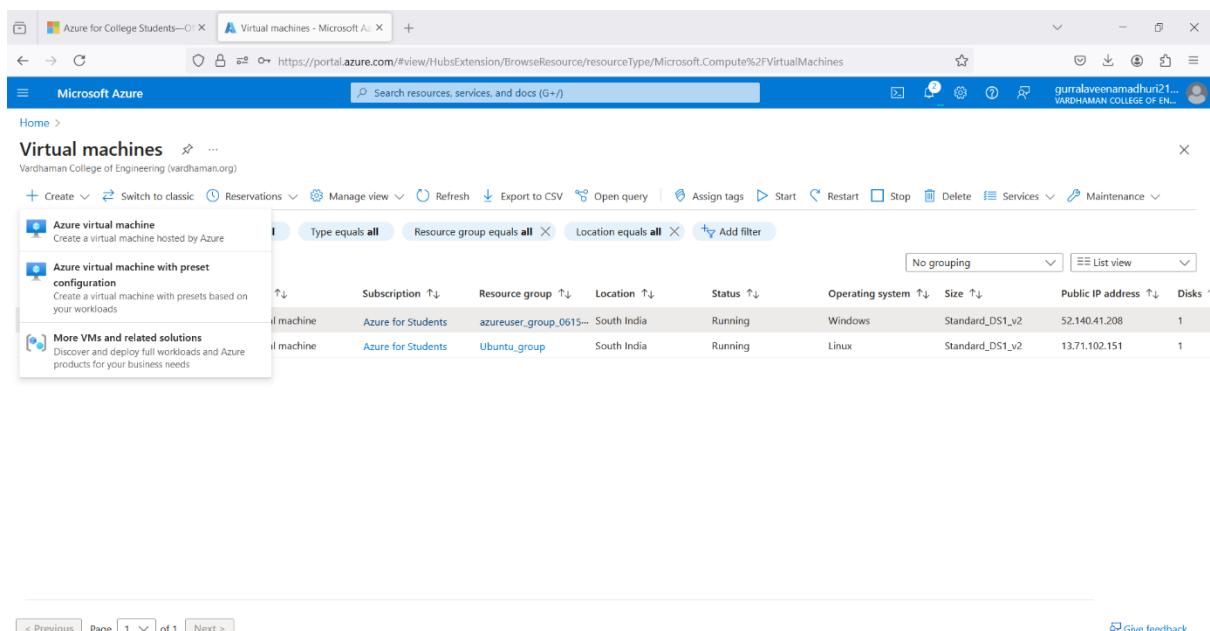
veena@Ubuntu:/home/azureuser$ 

```

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

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

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



The screenshot shows the Microsoft Azure portal interface. The top navigation bar includes tabs for 'Azure for College Students—C' and 'Virtual machines - Microsoft Azure'. The main content area is titled 'Virtual machines' and shows a list of existing virtual machines. The list includes columns for Name, Subscription, Resource group, Location, Status, Operating system, Size, Public IP address, and Disks. Two virtual machines are listed: one running Windows and one running Linux. On the left side, there are three cards: 'Azure virtual machine', 'Azure virtual machine with preset configuration', and 'More VMs and related solutions'. The bottom of the page shows pagination controls ('Page 1 of 1') and a 'Give feedback' link.

Name	Subscription	Resource group	Location	Status	Operating system	Size	Public IP address	Disks
Windows VM	Azure for Students	azureuser_group_0615...	South India	Running	Windows	Standard_DS1_v2	52.140.41.208	1
Linux VM	Azure for Students	Ubuntu_group	South India	Running	Linux	Standard_DS1_v2	13.71.102.151	1

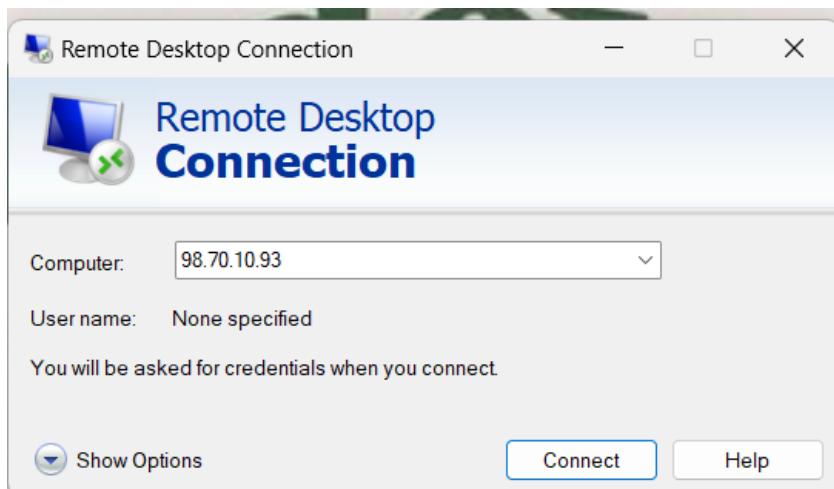
Step-3: Fill the details in that window by creating a “Resource Group”, Zone: Asia, Image: window, Select the disk storage and so on. After that click on “Create + Review”. And finally click on “Create”

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

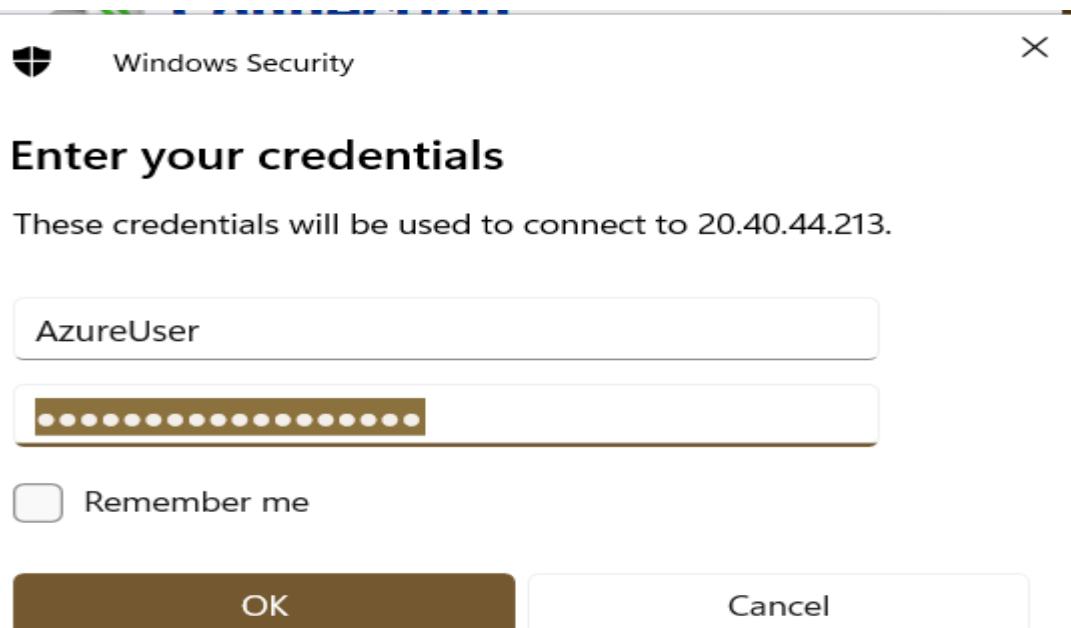
The screenshot shows the Microsoft Azure portal's deployment overview page. The deployment is labeled "Your deployment is complete" with a green checkmark. It provides details such as the deployment name ("CreateVm-MicrosoftWindowsServer.WindowsServer-202-20240615215353"), subscription ("Azure for Students"), and resource group ("azure_group"). A success message states: "Deployment 'CreateVm-MicrosoftWindowsServer.WindowsServer-202-20240615215353' to resource group 'azure_group' was successful." On the right side, there are promotional cards for "Cost Management", "Microsoft Defender for Cloud", and "Free Microsoft tutorials".

The screenshot shows the Microsoft Azure portal's Virtual machines blade. It lists two virtual machines: "azure" and "Ubuntu". The "azure" VM is selected, and its properties are displayed in the main pane. The properties include the resource group (AZURE_GROUP), status (Running), location (South India), and operating system (Windows). A warning message at the top right of the properties pane states: "azure virtual machine agent status is not ready. Troubleshoot the issue →". The portal interface includes a navigation bar, search bar, and various management options for the selected VM.

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

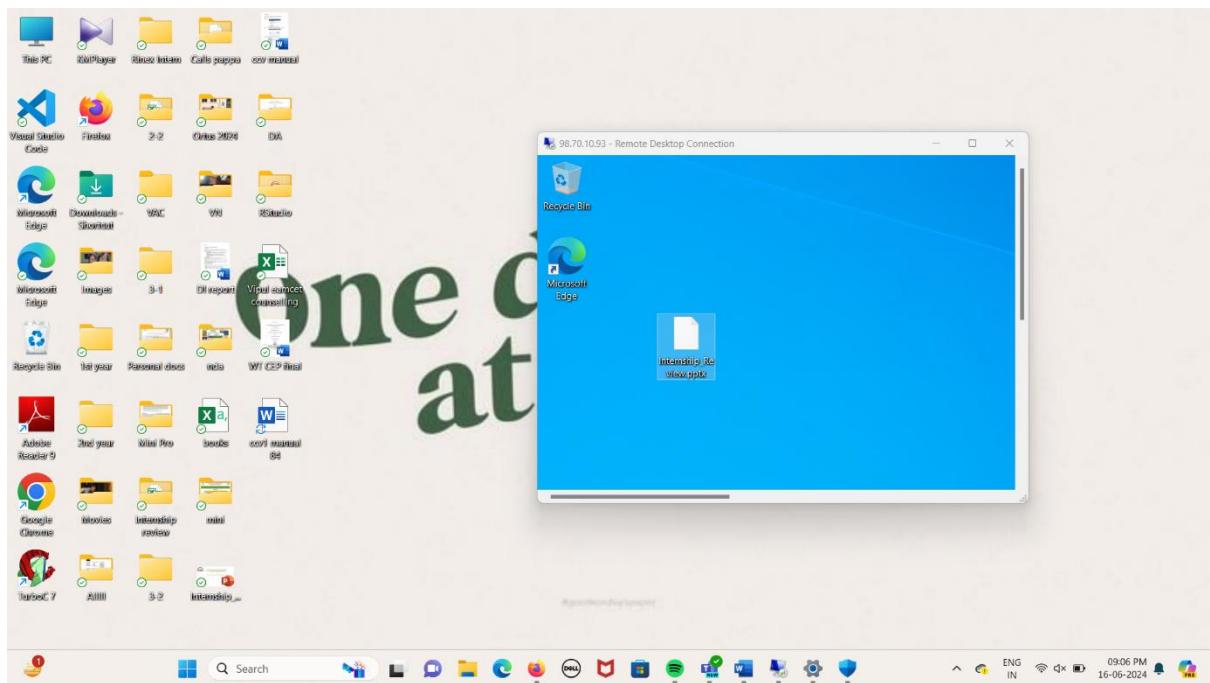
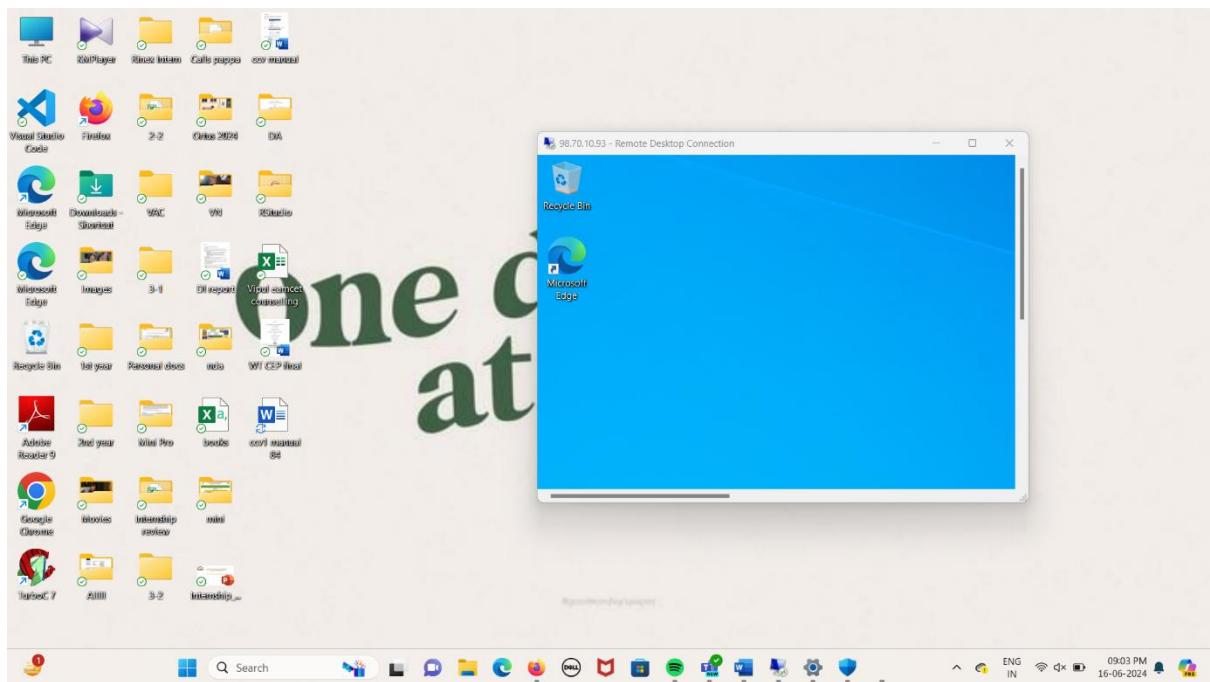


Step-6: By using that copied IP Address open the window virtual machine through remote desktop connection.



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

Right click in remote desktop and click on paste.



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

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

The screenshot shows the Microsoft Azure Virtual Machines dashboard. A single virtual machine, 'Standard_DS1_v2', is listed. The details are as follows:

	Value
Subscription	Azure for Students
Resource group	azure123_group
Location	Central India
Status	Running
Operating system	Windows
Public IP address	98.70.10.93
Disk(s)	1

The screenshot shows the 'Create a virtual machine' wizard on the 'Basics' tab. The steps are as follows:

- Subscription:** Azure for Students
- Resource group:** (New) Resource group
- Virtual machine name:** [empty]
- Region:** (Asia Pacific) Central India
- Availability options:** Availability zone

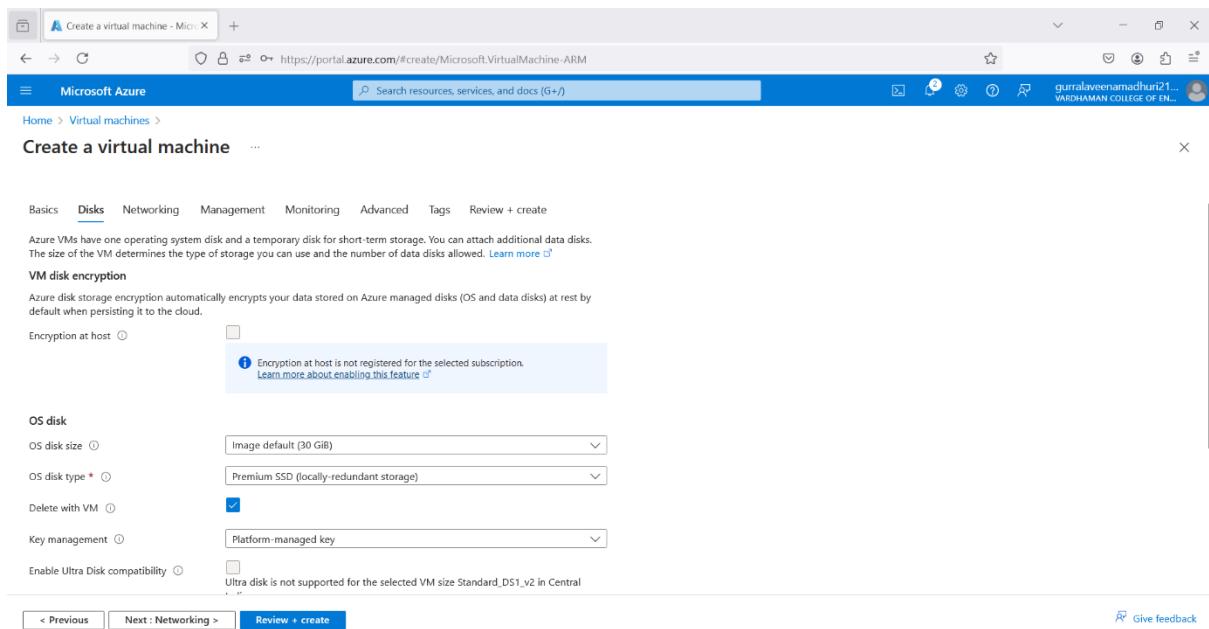
Buttons at the bottom: < Previous, Next : Disks >, Review + create.

The screenshot shows the 'Create a virtual machine' wizard on the 'Administrator account' step. The configuration is as follows:

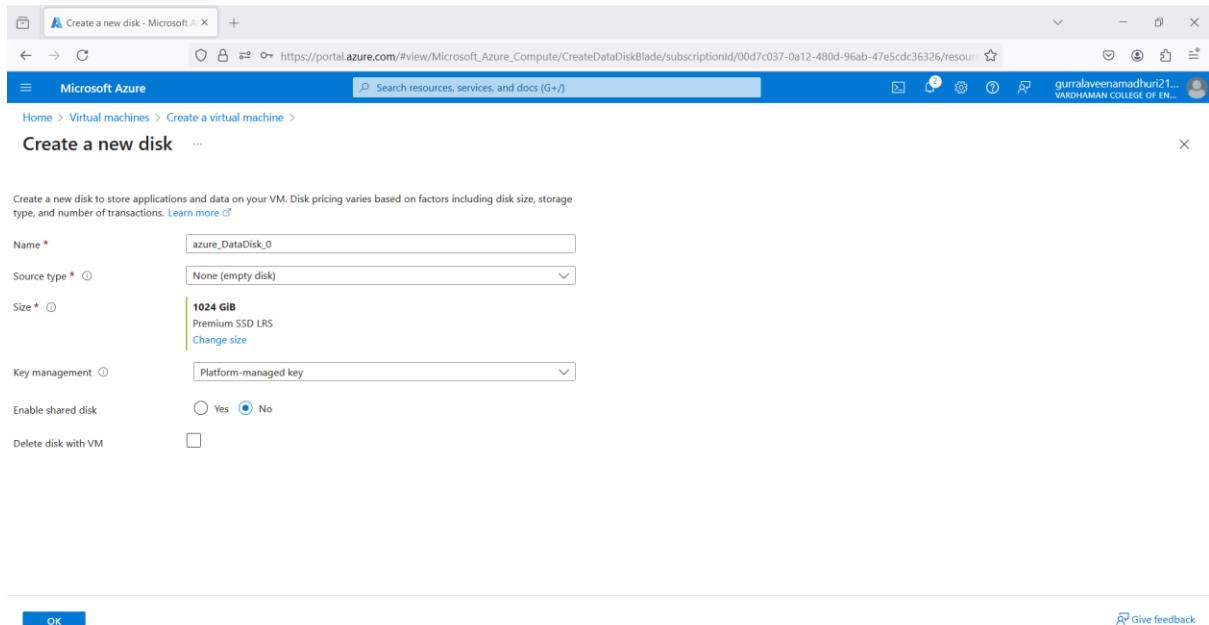
- Authentication type:** Password (selected)
- Username:** veenaa
- Password:** [REDACTED]
- Confirm password:** [REDACTED]

Below this, under 'Inbound port rules', it says: '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.' The 'Public inbound ports' section shows 'Allow selected ports' selected, and 'Select inbound ports' set to 'SSH (22)'. A note below states: 'All traffic from the internet will be blocked by default. You will be able to...'. Buttons at the bottom: < Previous, Next : Disks >, Review + create.

2) click on "Next:Disks>"



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



4) Click on “change size”

Browse available disk sizes and their features.

Storage type: Premium SSD (locally-redundant storage)

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

OK Give feedback

5) Customize data size to 4 GiB and click on OK

6) Enable delete with VM and click on OK

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

Name: azure_DataDisk_0

Source type: None (empty disk)

Size: 4 GiB
Premium SSD LRS
[Change size](#)

Key management: Platform-managed key

Enable shared disk: Yes No

Delete disk with VM:

OK Give feedback

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

8) Click on "Go to resource group"

9) Copy public IP Address

Essentials

Resource group (move)	: azure123_group	Operating system	: Linux
Status	: Running	Size	: Standard DS1 v2 (1 vcpu, 3.5 GiB memory)
Location	: Central india (Zone 1)	Public IP address	: 20.244.26.54
Subscription (move)	: Azure for Students	Virtual network/subnet	: azure123-vnet/default
Subscription ID	: 00d7c037-0a12-480d-96ab-47e5cdc36326	DNS name	: Not configured
Availability zone	: 1	Health state	: +
		Time created	: 6/16/2024, 3:50 PM UTC

Tags (edit) : Add tags

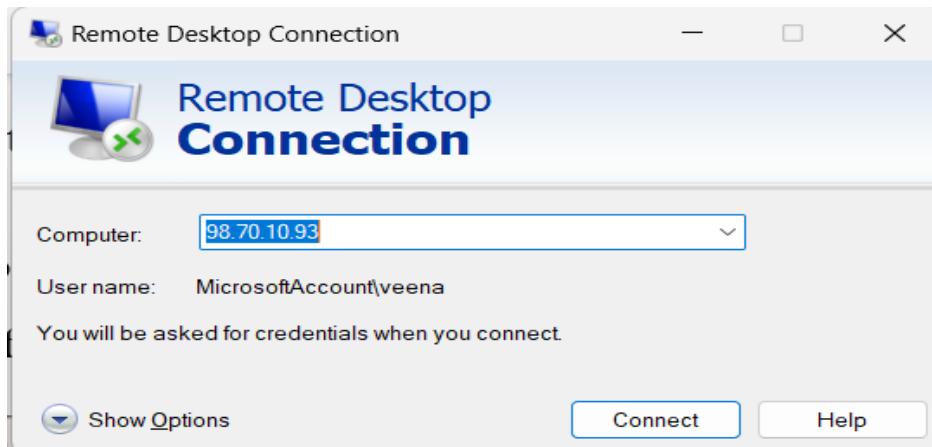
Properties **Monitoring** **Capabilities (7)** **Recommendations** **Tutorials**

Virtual machine		Networking	
Computer name	azure	Public IP address	20.244.26.54 (Network interface azure935_z1)
Operating system	Linux	Public IP address (IPv6)	-
VM generation	V2	Private IP address	10.1.0.5
VM architecture	x64	Private IP address (IPv6)	-
Agent status	Not Ready	Virtual network/subnet	azure123-vnet/default

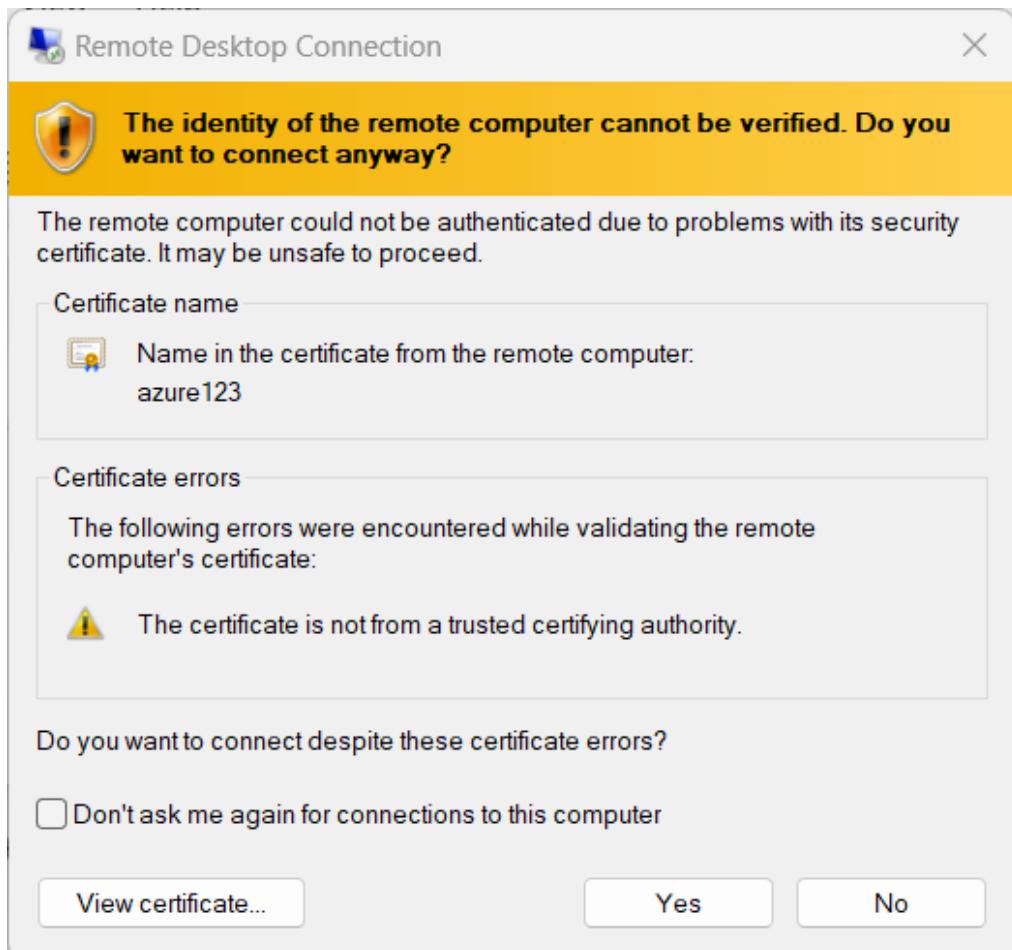
10) Open Remote Desktop Connection in your windows/system and paste the public IP Address

11) Click on “More choices”

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



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



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

Disk name	Storage type	Size (GiB)	Max IOPS	Max throughput (MBps)	Encryption
azure123_OsDisk_1_Sac0e490f2cf42b	Premium SSD LRS	127	500	100	SSE with PMK

LUN	Disk name	Storage type	Size (GiB)	Max IOPS	Max throughput (MBps)	Encryption
0	veena	Premium SSD LRS	4	120	25	SSE v

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

16) Click on “Apply”

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

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

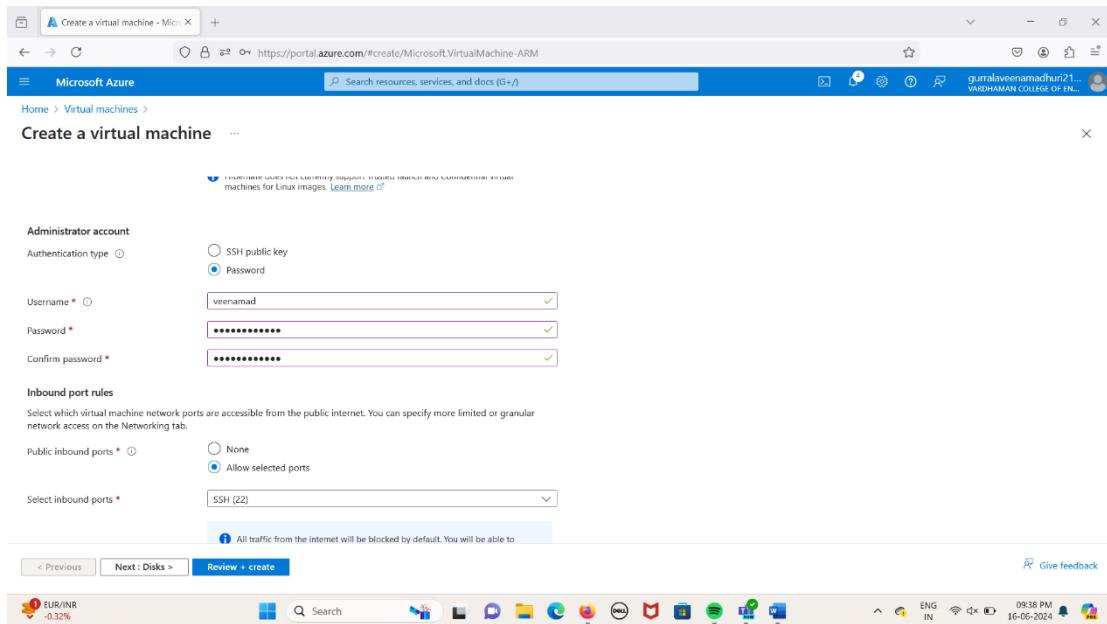
Steps:-

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

The screenshot shows the Microsoft Azure Virtual Machines dashboard. On the left, there's a sidebar with options like 'Create', 'Switch to classic', 'Reservations', 'Manage view', 'Refresh', 'Export to CSV', 'Open query', 'Assign tags', 'Start', 'Restart', 'Stop', 'Delete', 'Services', and 'Maintenance'. The main area displays a table of virtual machines. One row is selected, showing details: Type equals all, Resource group equals all, Location equals all. The VM listed is 'Standard_DS1_v2', which is running, located in Central India, has Windows operating system, and a public IP address of 98.70.10.93. The table includes columns for Subscription, Resource group, Location, Status, Operating system, Size, Public IP address, and Disks. At the bottom, there are navigation links for '< Previous', 'Page 1 of 1', and 'Next >'.

Step 2 : click on "Next:Disks>"

The screenshot shows the 'Create a virtual machine' wizard on the 'Basics' step. The top navigation bar includes 'Home', 'Virtual machines', 'Create a virtual machine', and 'Virtual machines'. The main content area is titled 'Create a virtual machine' with tabs for 'Basics', 'Disks', 'Networking', 'Management', 'Monitoring', 'Advanced', 'Tags', and 'Review + create'. The 'Basics' tab is active. It contains fields for 'Subscription' (set to 'Azure for Students') and 'Resource group' (set to '(New) Resource group'). Below these are sections for 'Project details', 'Instance details', and 'Availability options'. A note at the bottom of the page states: 'This subscription may not be eligible to deploy VMs of certain sizes in certain regions.' At the bottom of the wizard, there are buttons for '< Previous', 'Next : Disks >', and 'Review + create'. The status bar at the bottom right shows the date and time as '16-06-2024 09:37 PM'.



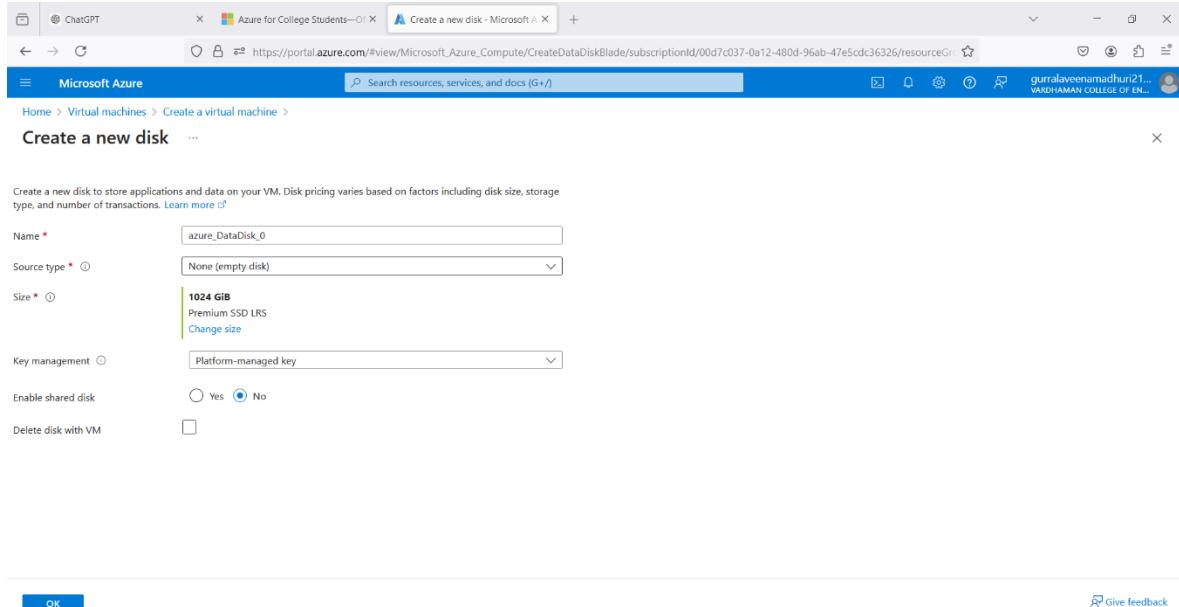
Step 3 : Select

OS disk size -----30GB

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

enable "Delete with VM"

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



Step 5 : Select Source type -----None (empty disk), Size -----1024GB, Key manager ----- - Platform managed key, Enable shared disk -----NO and finally click on OK

Step 6 : Select Storage type -----Premium SSD(LRS), Custom disk size (GB) -----5 click on OK

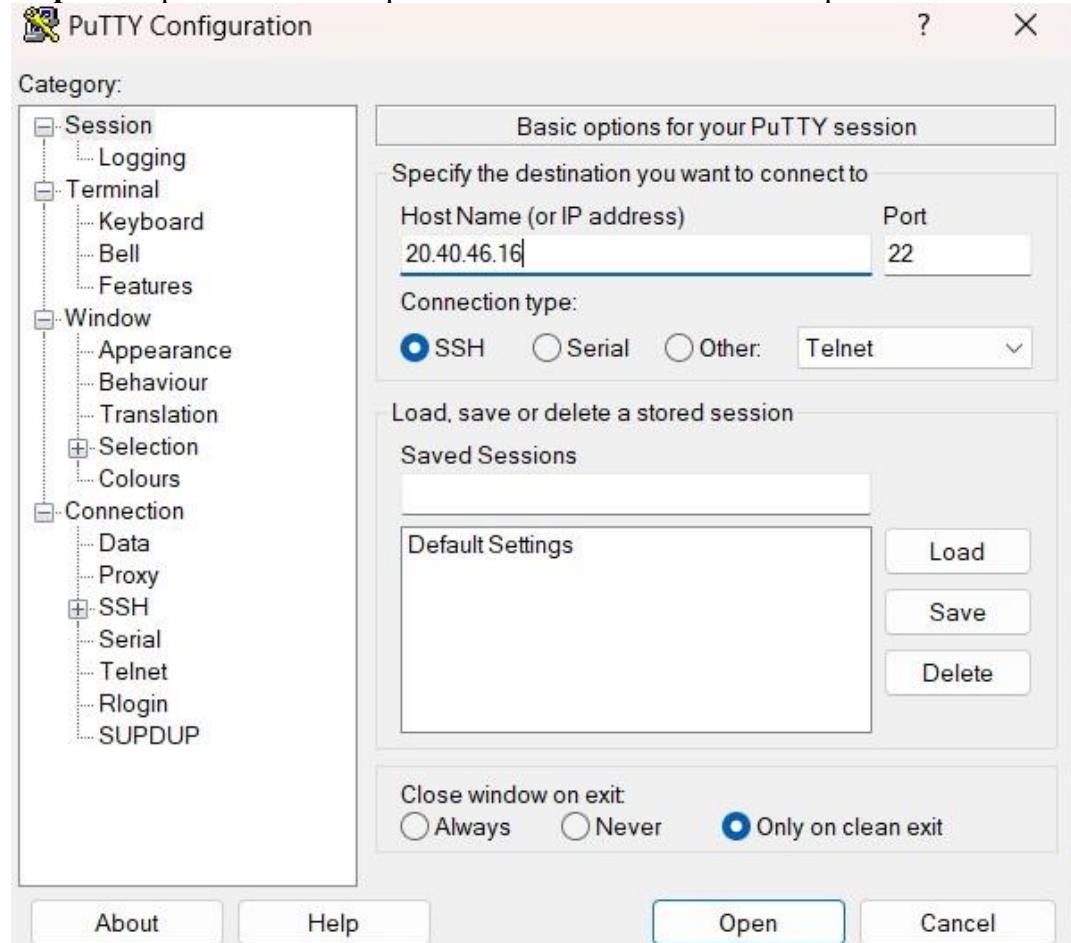
Step 7 : Click on "Review + create" & click on create

Step 8 : Click on "Go to resource group"

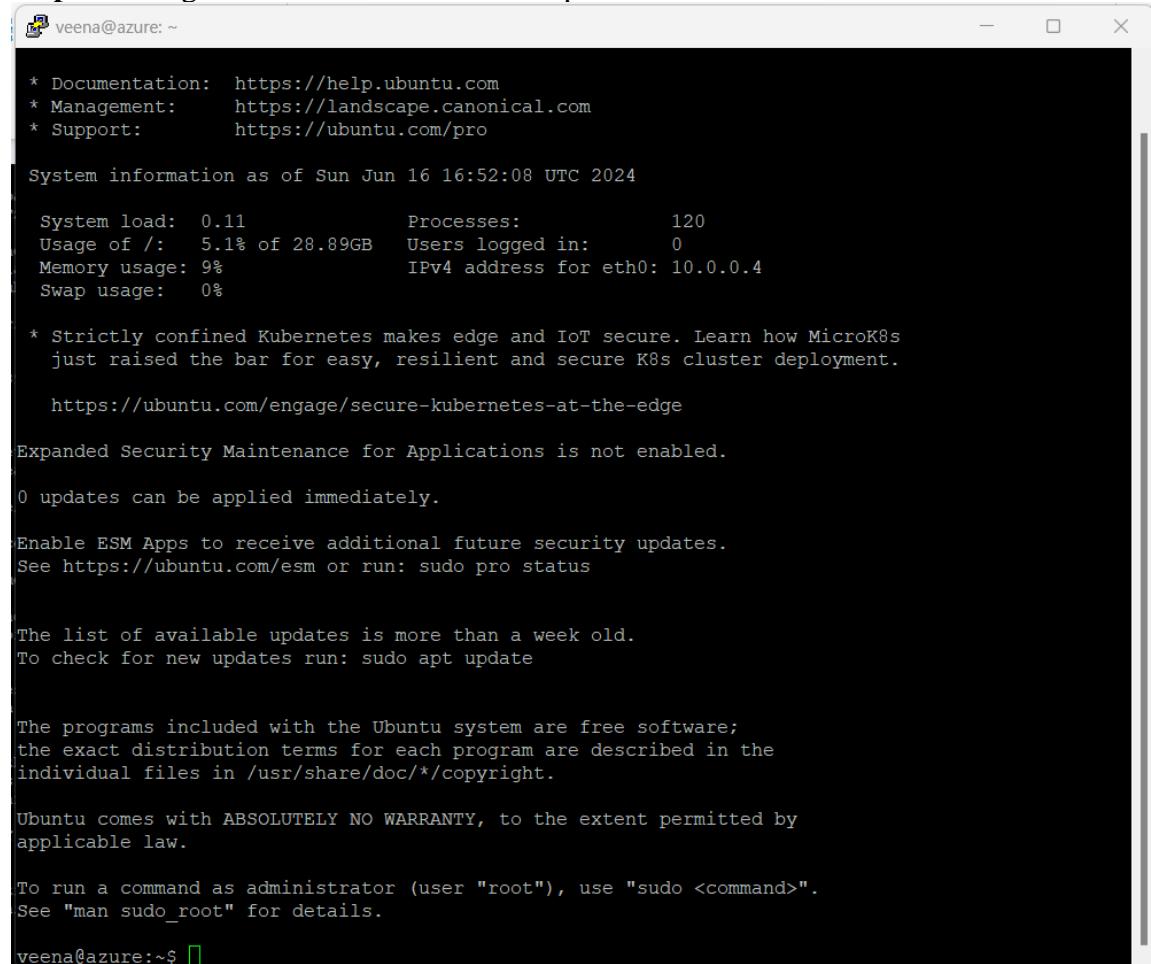
The screenshot shows the Microsoft Azure portal with a completed VM deployment named 'CreateVm-canonical.0001-com-ubuntu-server-focal-2-20240616213713'. The deployment status is 'Your deployment is complete'. Deployment details include a name, subscription ('Azure for Students'), and a resource group ('azure123_group'). The start time was 6/16/2024, 9:44:56 PM. A Correlation ID is also provided. Below the deployment details, there are sections for 'Deployment details' and 'Next steps'. Under 'Next steps', there are three options: 'Setup auto-shutdown' (Recommended), 'Monitor VM health, performance and network dependencies' (Recommended), and 'Run a script inside the virtual machine' (Recommended). At the bottom of the main panel, there are two buttons: 'Go to resource' (highlighted in blue) and 'Create another VM'. The right sidebar contains several promotional links: '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 >).

Step 9 : Copy public IP Address

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



Step 11 : Login into it with username and password



```

veena@azure: ~

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

System information as of Sun Jun 16 16:52:08 UTC 2024

System load: 0.11      Processes: 120
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%

* Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s just raised the bar for easy, resilient and secure K8s cluster deployment.

https://ubuntu.com/engage/secure-kubernetes-at-the-edge

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

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

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

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

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

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

veena@azure:~$ 

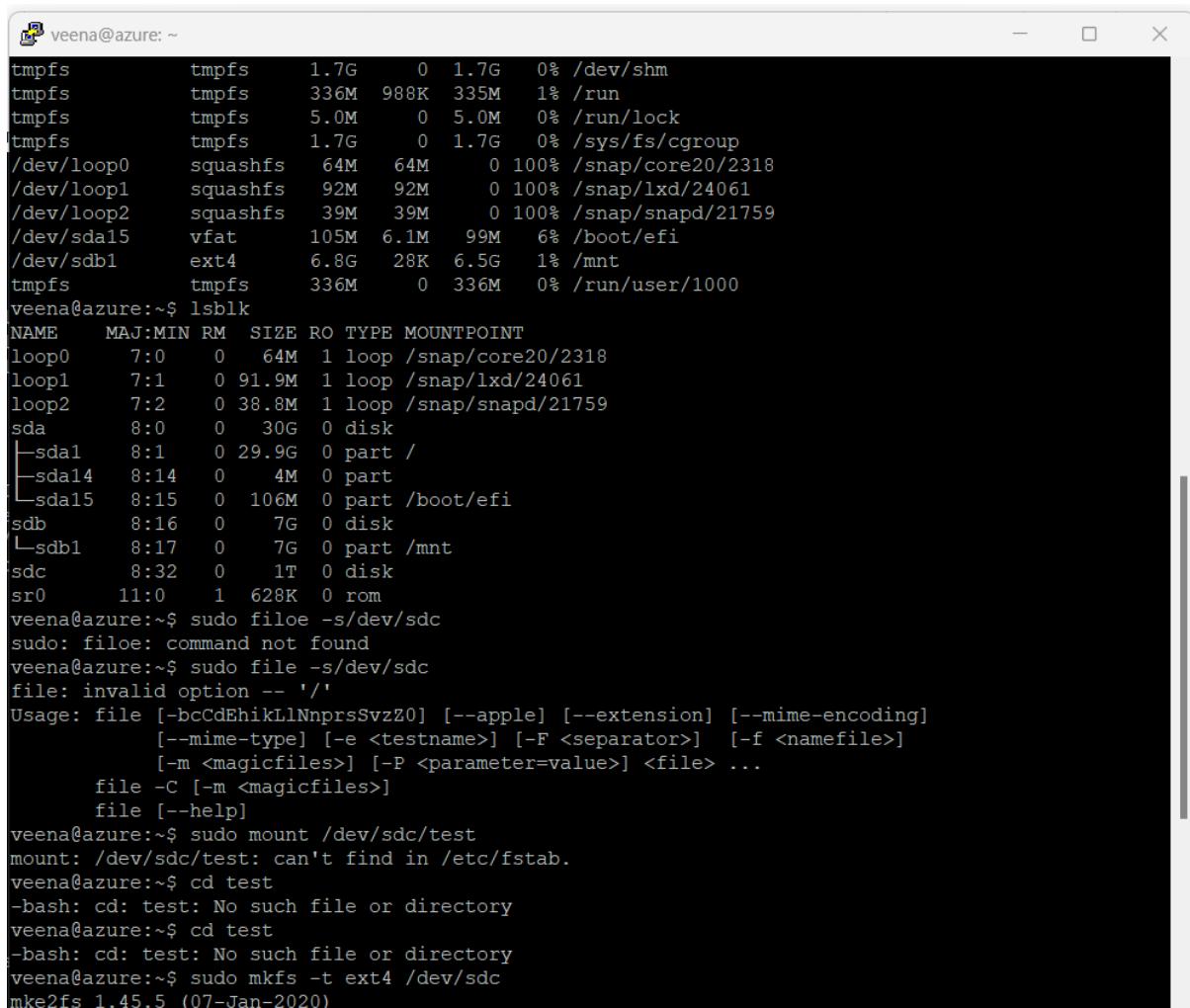
```

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

```

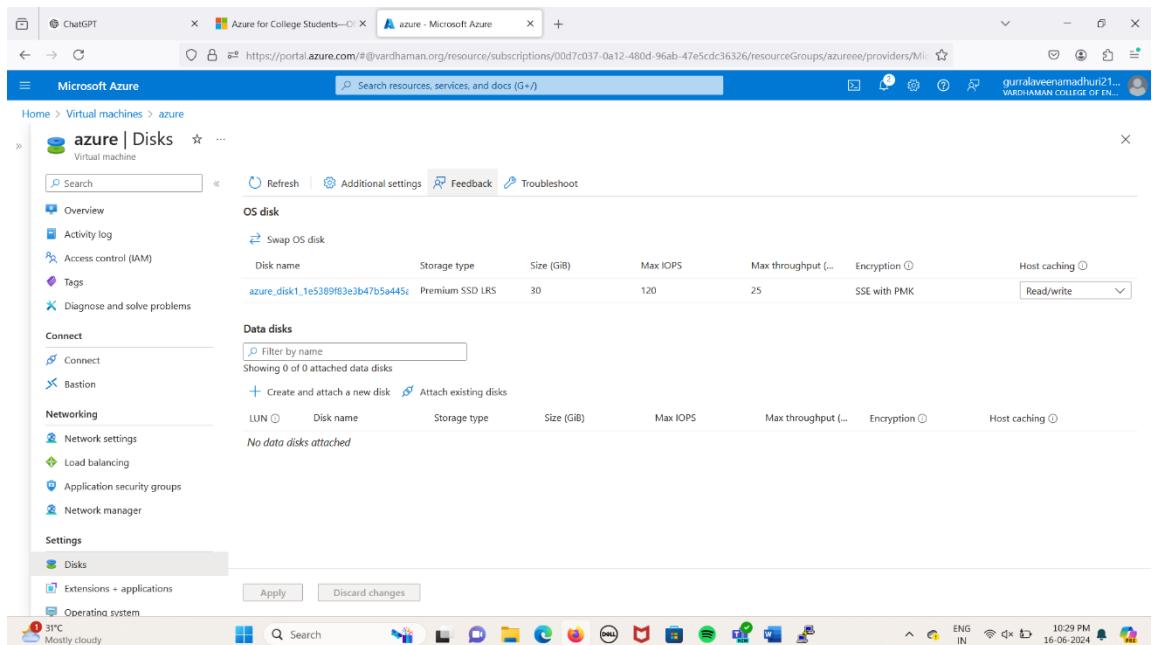


```

veena@azure:~$ lsblk
NAME   MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
loop0    7:0     0  64M  1 loop /snap/core20/2318
loop1    7:1     0 91.9M  1 loop /snap/lxd/24061
loop2    7:2     0 38.8M  1 loop /snap/snapd/21759
sda      8:0     0  30G  0 disk 
├─sda1   8:1     0 29.9G 0 part /
├─sda14  8:14    0   4M  0 part 
└─sda15  8:15    0 106M  0 part /boot/efi
sdb      8:16    0   7G  0 disk 
└─sdb1   8:17    0   7G  0 part /mnt
sdc      8:32    0   1T  0 disk 
sr0     11:0     1 628K 0 rom
veena@azure:~$ sudo filoe -s/dev/sdc
sudo: filoe: command not found
veena@azure:~$ sudo file -s/dev/sdc
file: invalid option -- '-'
Usage: file [-bcCdEhikLlNnprsSvzZ0] [--apple] [--extension] [--mime-encoding]
           [--mime-type] [-e <testname>] [-F <separator>] [-f <namefile>]
           [-m <magicfiles>] [-P <parameter=value>] <file> ...
       file -C [-m <magicfiles>]
       file [--help]
veena@azure:~$ sudo mount /dev/sdc/test
mount: /dev/sdc/test: can't find in /etc/fstab.
veena@azure:~$ cd test
-bash: cd: test: No such file or directory
veena@azure:~$ cd test
-bash: cd: test: No such file or directory
veena@azure:~$ sudo mkfs -t ext4 /dev/sdc
mke2fs 1.45.5 (07-Jan-2020)

```

Step 13 : Click on Apply



The screenshot shows the Microsoft Azure portal interface. The user is navigating through the Azure for College Students account. The current view is on the 'Disks' settings page for a specific virtual machine. The left sidebar lists various configuration options like Overview, Activity log, Access control (IAM), Tags, and Diagnose and solve problems. The main content area shows the 'OS disk' section, which includes details about the disk name (azure_disk1_1e538983e3b47b5a445c), storage type (Premium SSD LRS), size (30 GiB), max IOPS (120), max throughput (25), encryption (SSE with PMK), and host caching (Read/write). Below this, the 'Data disks' section shows a table with columns for LUN, Disk name, Storage type, Size (GiB), Max IOPS, Max throughput, Encryption, and Host caching. A note indicates 'Showing 0 of 0 attached data disks'. At the bottom of the page, there are buttons for 'Apply' and 'Discard changes', along with a toolbar containing icons for search, refresh, and other navigation functions.

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

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

The screenshot shows the 'Create a resource group' wizard in Microsoft Azure. The 'Basics' tab is selected. Under 'Project details', the subscription is set to 'Azure for Students' and the resource group name is 'RG1'. Under 'Resource details', the region is set to '(Asia Pacific) Central India'. At the bottom, there are buttons for 'Review + create', '< Previous', and 'Next : Tags >'.

The screenshot shows the 'Resource groups' blade in Microsoft Azure. It lists two resource groups: 'RG1' and 'RG2'. Both are associated with 'Azure for Students' and are located in 'Central India'. There are filter and sorting options at the top, and a 'List view' button on the right.

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

Essentials

- Resource group (move) : RG1
- Status : Running
- Location : Central India (Zone 1)
- Subscription (move) : Azure for Students
- Subscription ID : 763b4aa1-744d-4fa4-9b3a-815e4bcd0be8
- Availability zone : 1
- Operating system : Windows
- Size : Standard DS1 v2 (1 vcpu, 3.5 GiB memory)
- Public IP address : 20.40.40.98
- Virtual network/subnet : vm-vnet/default
- DNS name : Not configured
- Health state : -
- Time created : 6/14/2024, 5:36 PM UTC

Properties

Virtual machine	Networking
Computer name : vm	Public IP address : 20.40.40.98 (Network interface vm748_z1)
Operating system : Windows	Public IP address (IPv6) : -
VM generation : V2	Private IP address : 10.0.0.4
VM architecture : x64	Private IP address (IPv6) : -
Agent status : Not Ready	Virtual network/subnet : vm-vnet/default
Agent version : Unknown	DNS name : Configure
Hibernation : Disabled	

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

RG1

Overview

Essentials

- Subscription (move) : Azure for Students
- Subscription ID : 763b4aa1-744d-4fa4-9b3a-815e4bcd0be8
- Tags (edit) : Add tags
- Deployments : 1 Succeeded
- Location : Central India

Resources

Name	Type	Location
vm	Virtual machine	Central India
vm-ip	Public IP address	Central India
vm-nsg	Network security group	Central India
vm-vnet	Virtual network	Central India
vm748_z1	Network Interface	Central India
vm_OsDisk_1_acf52507ebab4fad8260b65454ef155d	Disk	Central India

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

Microsoft Azure

Home > RG1 > Overview

Essentials

Subscription (move) : Azure for Students
Subscription ID : 763b4aa1-744d-4fa4-9b3a-815e4bd0be8
Tags (edit) : Add tags

Deployments : 1 Succeeded
Location : Central India

Resources Recommendations

Showing 1 to 6 of 6 records. Filter for any field... Type equals all Location equals all Add filter

Name	Type	Location
vm	Virtual machine	Central India
vm-ip	Public IP address	Central India
vm-nsg	Network security group	Central India
vm-vnet	Virtual network	Central India
vm748_z1	Network Interface	Central India
vm_OsDisk_1_acf52507ebab4fad8260b65454ef155d	Disk	Central India

< Previous Page 1 of 1 Next >

Give feedback

Microsoft Azure

Home > RG1 > Move resources

Source

Subscription : Azure for Students
Resource group : RG1

Target

Subscription : Azure for Students
Resource group : RG2

Next

Microsoft Azure

Home > RG1 > Move resources

Resources to move

Review

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

Name	Type	Resource type	Validation status
vm_OsDisk_1_acf52507ebab4fad8260b65454ef155d	Disk	microsoft.compute/disks	Pending validation
vm748_z1	Network interface	microsoft.network/networkinterfaces	Pending validation
vm-vnet	Virtual network	microsoft.network/virtualnetworks	Pending validation
vm-nsg	Network security group	microsoft.network/networksecuritygroups	Pending validation
vm-ip	Public IP address	microsoft.network/publicipaddresses	Pending validation
vm	Virtual machine	microsoft.compute/virtualmachines	Pending validation

The screenshot shows the Microsoft Azure Resource Group Overview for RG1. The search bar at the top contains "Search resources, services, and docs (G+/" followed by a magnifying glass icon. The main area has a title "RG1" and a subtitle "Resource group". A left sidebar lists navigation options: Home, Overview, Activity log, Access control (IAM), Tags, Resource visualizer, Events, Settings, Cost Management, Monitoring, Automation, and Help. The "Overview" tab is selected. The "Essentials" section displays the following details:

- Subscription (move) : Azure for Students
- Subscription ID : 763b4aa1-744d-4fa4-9b3a-815e4bcd0be8
- Tags (edit) : Add tags
- Deployments : 1 Succeeded
- Location : Central India

The "Resources" section includes a filter bar with "Filter for any field..." and dropdowns for "Type equals all" and "Location equals all". It also features "Add filter" and grouping options ("No grouping" and "List view"). Below the filter bar, it says "Showing 0 to 0 of 0 records." and "Show hidden types". The main content area displays a large gray cube icon and the message "No resources match your filters". Below the message are buttons for "Create resources" and "Clear filters".

The screenshot shows the Microsoft Azure Resource Group Overview for RG2. The search bar at the top contains "Search resources, services, and docs (G+/" followed by a magnifying glass icon. The main area has a title "RG2" and a subtitle "Resource group". A left sidebar lists navigation options: Home, Resource groups, Overview, Activity log, Access control (IAM), Tags, Resource visualizer, Events, Settings, Cost Management, Monitoring, Automation, and Help. The "Overview" tab is selected. The "Essentials" section displays the following details:

- Subscription (move) : Azure for Students
- Subscription ID : 763b4aa1-744d-4fa4-9b3a-815e4bcd0be8
- Tags (edit) : Add tags
- Deployments : No deployments
- Location : Central India

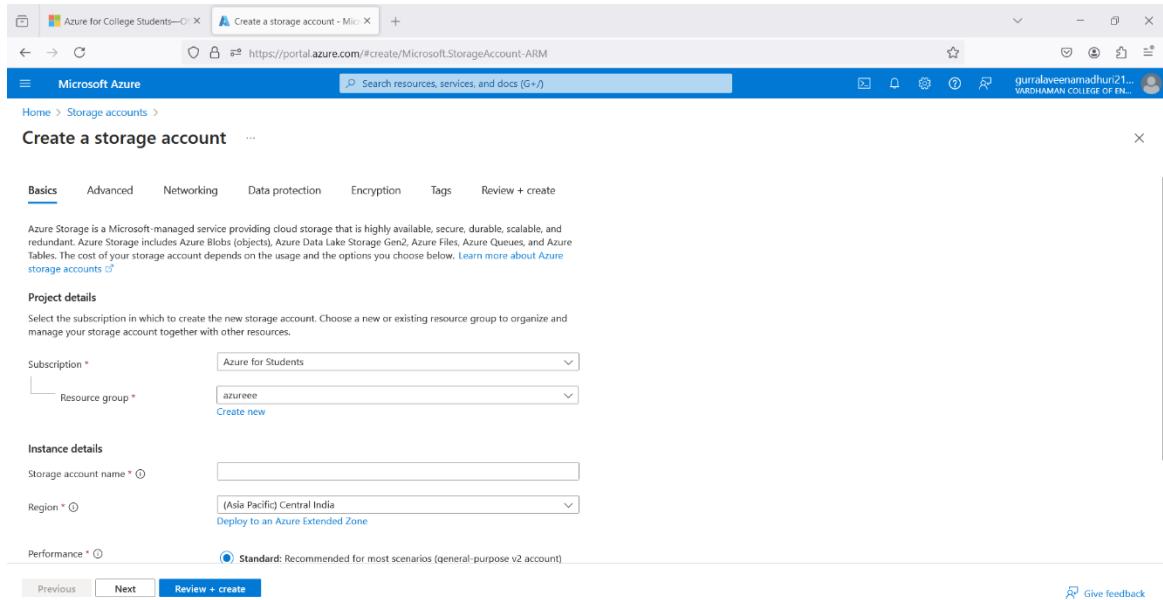
The "Resources" section includes a filter bar with "Filter for any field..." and dropdowns for "Type equals all" and "Location equals all". It also features "Add filter" and grouping options ("No grouping" and "List view"). Below the filter bar, it says "Showing 1 to 6 of 6 records." and "Show hidden types". The main content area displays a table of resources:

Name	Type	Location	Actions
vm	Virtual machine	Central India	...
vm-ip	Public IP address	Central India	...
vm-nsg	Network security group	Central India	...
vm-vnet	Virtual network	Central India	...
vm748_x1	Network Interface	Central India	...
vm_OsDisk_1_ecf52507ebab4fad8260b65454ef155d	Disk	Central India	...

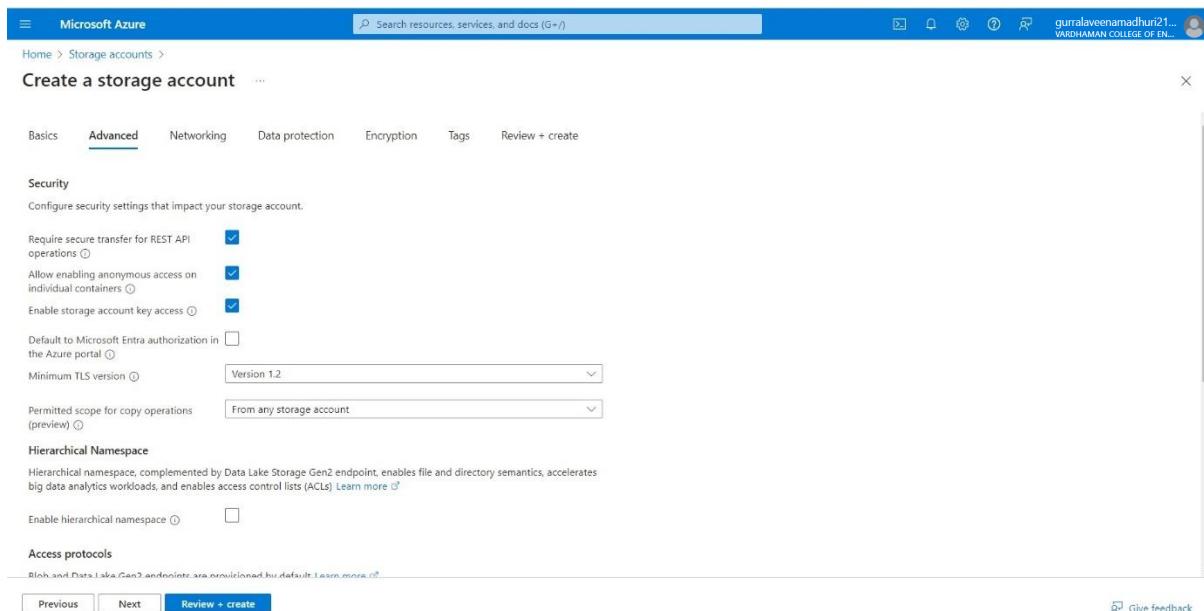
At the bottom, there are navigation buttons for "< Previous", "Page 1 of 1", and "Next >".

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

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



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



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

The screenshot shows the Microsoft Azure Storage Accounts interface for the 'veenamad' storage account. The left sidebar includes options like 'Create', 'Restore', and 'Tags'. The main area displays an 'Overview' with a table showing one container named 'Logs' (Last modified: 6/16/2024, 10:40:33 PM, Anonymous access: Private). On the right, a 'New container' dialog box is open, asking for a name ('cont0') and setting the 'Anonymous access level' to 'Private (no anonymous access)'. There are also 'Advanced' settings and 'Create' and 'Give feedback' buttons.

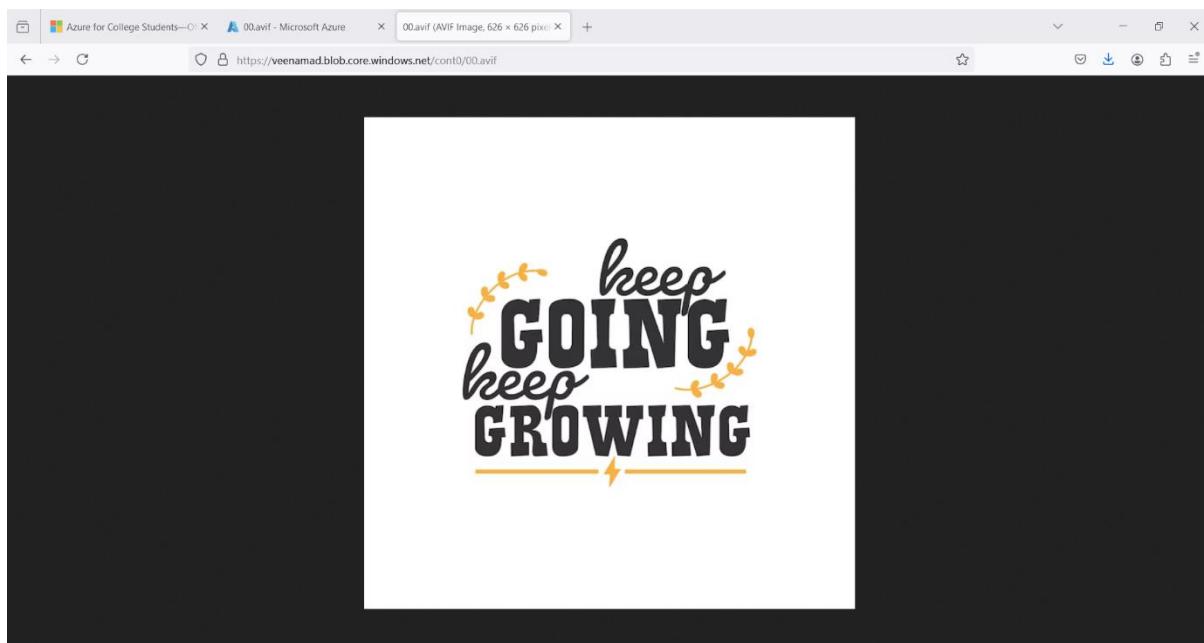
Step-4: Then open new container, click on upload and upload a file from desktop.

The screenshot shows the Microsoft Azure Storage Containers interface for the 'cont1' container. The left sidebar has sections for 'Overview', 'Diagnose and solve problems', 'Access Control (IAM)', and 'Settings'. The main area shows a table with no results. On the right, an 'Upload blob' dialog box is open, featuring a cloud icon and a 'Drag and drop files here' field, along with a 'Browse for files' button. Below the dialog, there's a checkbox for 'Overwrite if files already exist' and an 'Upload' button.

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

The screenshot shows the Azure Storage Container Overview page for the 'cont0' container. The top navigation bar includes tabs for 'Overview', 'Diagnose and solve problems', 'Access Control (IAM)', and 'Settings'. Under 'Settings', options like 'Shared access tokens', 'Access policy', 'Properties', and 'Metadata' are listed. The main content area displays a table of blobs. One row for '00.avif' is shown with columns: Name, Modified, Access tier, Archive status, Blob type, Size, and Lease state. A message at the top right indicates 'Successfully deleted blob(s)'.

Name	Modified	Access tier	Archive status	Blob type	Size	Lease state
00.avif	6/16/2024, 10:47:48 ...	Hot (inferred)		Block blob	12.28 KiB	Available



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.

Change access level
Change the access level of container 'cont0'.
Anonymous access level
Container (anonymous read access for containers and blobs)

Blob type	Size	Lease state
Block blob	12.28 KiB	Available

```
<Error>
<Code>ResourceNotFound</Code>
<Message>
The specified resource does not exist. RequestId:4d289305-e01e-004c-4e11-c00a4f00000 Time:2024-06-16T17:20:57.0834145Z
</Message>
</Error>
```

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