

Lab Manual for Cloud Computing

Lab No. 2

Creating Virtual Machine Using Microsoft Azure

LAB 01: CREATING VIRTUAL MACHINE USING MICROSOFT AZURE

1. INTRODUCTION:

Understanding Azure Virtual Machines

Azure offers several highly scalable computing resources on-demand, and Azure Virtual Machine is one of them. If you require more control over the computing environment than the other computing resources offer, then you should opt for an Azure Virtual Machine.

With Azure Virtual Machine, you get the flexibility of accessing a virtual platform without buying and maintaining the physical hardware that can run the operation. But you will also need a proper maintenance plan for your Azure Virtual Machine while performing tasks like configuring, patching, parsing, and installing the softwares to run on the virtual machines.

Cloud Applications

Your requirement of running applications will constantly change based on your business. Using Azure Virtual Machine is a cost-effective solution that can allow you to pay for extra virtual machines whenever you need them. When out of use, you can shut down these virtual machines.

There are wide use cases of **Azure Virtual Machine**, but some examples in:

- **Extended Data Center:** You can easily connect your organization's network to an Azure Virtual Machine available in the network.
- **Development:** If you need a computer with a definite configuration to write a code or test any application, then Azure Virtual Machine can be a feasible way to go about the process. Whatever be the extent of your requirement, you can scale up using Azure Virtual Machine and streamline your workflows.

Considerations before creating an Azure Virtual Machine

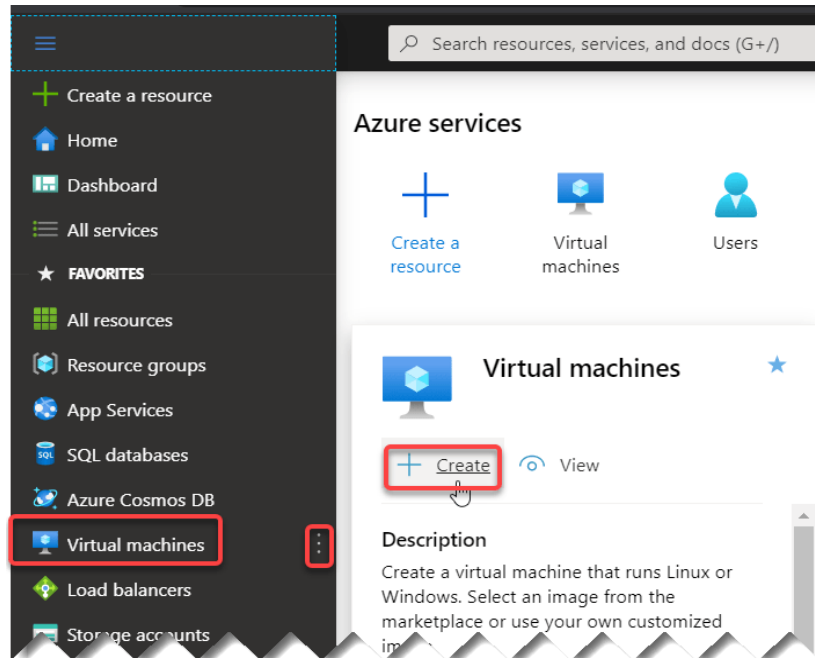
Whenever you set out to build an application infrastructure using Azure, there are several design considerations to note. Before deciding upon creating an **Azure Virtual Machine**, there are a few things that you must think about, like:

- The names of the application resources that you use on Azure Virtual Machine
- The storage location of the resources
- Size required for the Azure Virtual Machine
- Maximum number of virtual machines that you may require to create
- The operating system of the Azure Virtual Machine
- The configuration of the virtual machine after starting up
- All kinds of related resources and extensions that the **Azure Virtual Machine** requires

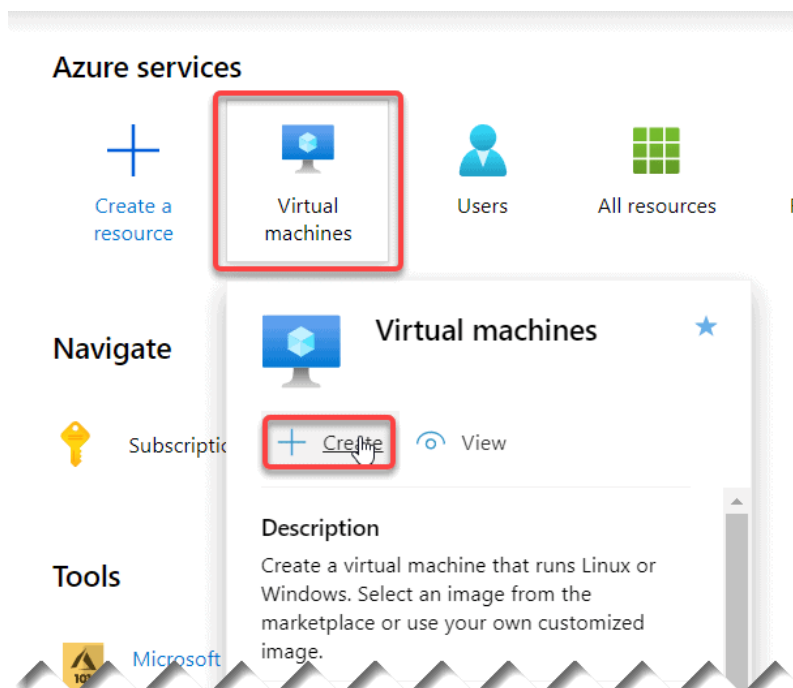
Now that you are equipped with the basic information about **Azure Virtual Machine**, it is time to get started with creating the virtual machine.

Step-1: Login to <https://portal.azure.com>.

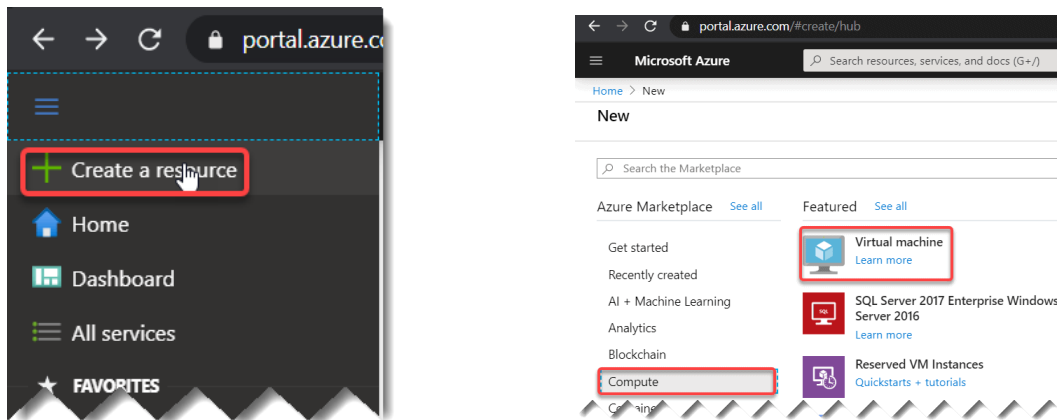
Step-2: Now click on “**Virtual machines**” option from the left side Menu and then click on “**Create**” link.



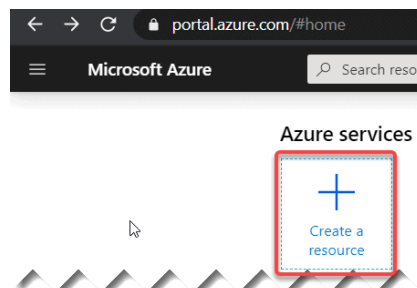
Or Go to “**Virtual machines**” option from the “**Azure services**” section.



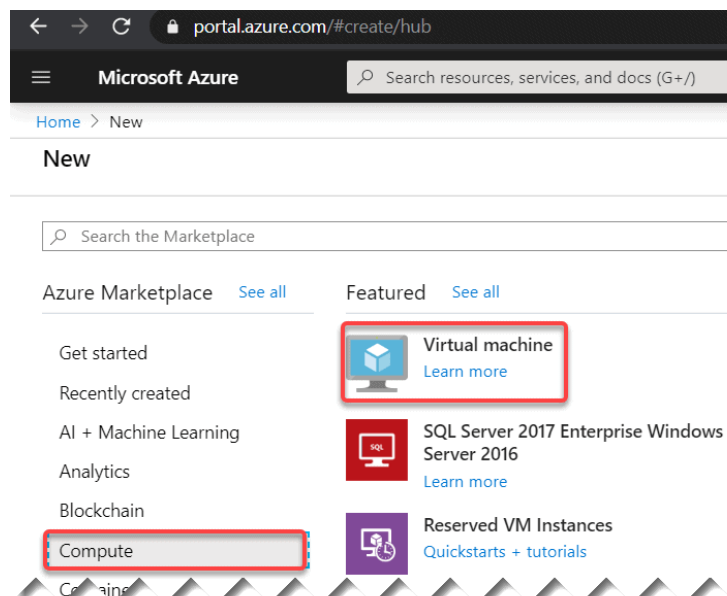
One more way is to go to the same option from the **“Create a resource”** link from the left side menu and then select the **“Compute”** and **“Virtual Machine”**.



virtual machine in azure Or else for the same option you can go to the **“Create a resource”** link from the **“Azure services”** section and then select the **“Compute”** and **“Virtual machine”**.



You can see the option **“Virtual machine”** like below:



Step-3: Fill the details required. A few of the options you can keep as it is but based on your business need you can change those.

- **Subscription:** Choose your correct subscription.
- **Resource group:** You can choose the existing resource group or you can create a new one by clicking the “**Create New**” option. It acts like a container that stores the resources related to an Azure solution.
- **Virtual machine name:** Provide a name for your virtual machine.
- **Region:** This is the location where you are going to create all the resources related to the virtual machine.
- **Image:** Choose the **Windows 10 pro, version 21H2, Gen 2**. You can change it based on your business need.
- **Size:** The size you want to assign based on your requirement. I have chosen **StandardD2s v3** as per my business requirement.

In the Administrator account section, Choose a **Username, Password** that you will use to log into the VM once created.

Select Inbound port: Choose **HTTP(80),RDP(3389)**. This is a very important option. All other options you can keep as it is. Now click on “**Next:Disks >**” button.

portal.azure.com/#create/Microsoft.VirtualMachine

Microsoft Azure Search resources, services, and docs (G+/I)

Home > Virtual machines > Create a virtual machine

Create a virtual machine

Basics Disks Networking Management Advanced Tags Review + create

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

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription *

Resource group * [Create new](#)

Instance details

Virtual machine name *

Region *

Availability options

Image * [Browse all public and private images](#)

Azure Spot instance ☐ Yes ☒ No

Size * [Change size](#)

Standard D2s v3
2 vcpus, 8 GiB memory (₹5,645.28/month)

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 *

Warning: This will allow all IP addresses to access your virtual machine. This is only recommended for testing. Use the Advanced controls in the Networking tab to create rules to limit inbound traffic to known IP addresses.

Basics

Subscription	Azure for Students
Resource group	(new) Spring2023CCLabBUKC
Virtual machine name	MyTESTVM
Region	East US
Availability options	Availability zone
Availability zone	1
Security type	Standard
Image	Windows 10 Pro, version 21H2 - Gen2
VM architecture	x64
Size	Standard D2s v3 (2 vcpus, 8 GiB memory)
Username	Spring2023
Public inbound ports	RDP, HTTP
Already have a Windows license?	Yes
License type	Windows Client
Azure Spot	No

portal.azure.com/#create/Microsoft.VirtualMachine

Microsoft Azure Spring2023

Home >

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 ☐

OS disk

OS disk type *

Delete with VM ☒

Key management

Enable Ultra Disk compatibility ☐

Data disks

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
Create and attach a new disk Attach an existing disk					

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

Microsoft Azure

Spring2023

[Home](#) > [Create a virtual machine](#) >

Create a new disk ...

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

Name *

MyTestVm_DataDisk_0

Source type * ⓘ

None (empty disk) ▾

Size * ⓘ

1024 GiB

Premium SSD LRS

[Change size](#)

Key management ⓘ

Platform-managed key ▾

Enable shared disk

☐ Yes
☒ No

Delete disk with VM

☐

OK

In the next screen (**Disks**), you can add the disk architecture that you want. I kept the default option as it is. You can change it based on your business need. Click on **Next: Networking** button

Microsoft Azure

Search resources, services, and docs (G+/I)

[Home](#) > [Virtual machines](#) > [Create a virtual machine](#)

Create a virtual machine

Basics

Disks

Networking

Management

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](#)

Disk options

OS disk type * ⓘ

Premium SSD ▾

Encryption type *

(Default) Encryption at-rest with a platform-managed key ▾

Enable Ultra Disk compatibility ⓘ

☐ Yes
☒ No

Data disks

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
Create and attach a new disk Attach an existing disk				

Advanced

Review + create

< Previous

Next: Networking >

Basics

Subscription	Azure for Students
Resource group	(new) Spring2023CCLab8UKC
Virtual machine name	MyTESTVM
Region	East US
Availability options	Availability zone
Availability zone	1
Security type	Standard
Image	Windows 10 Pro, version 21H2 - Gen2
VM architecture	x64
Size	Standard D2s v3 (2 vcpus, 8 GiB memory)
Username	Spring2023
Public inbound ports	RDP, HTTP
Already have a Windows license?	Yes
License type	Windows Client
Azure Spot	No

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Virtual Network: Choose a **virtual network** or else you can create a new one by clicking **“Create New”** link.

- **Subnet:** You can keep the default option as it is.
- **Public inbound ports:** choose **Allow selected ports**.
- **Select inbound ports:** This is a very important option. Choose the option as **HTTP(80), RDP(3389)** here. Once you choose this option in the Basics tab it will automatically show the same option here. Keep the option as it is.

Now for other tabs all the options you can keep as it is. Once you fill all the above details click on the **“Review + Create”** button. Azure will validate the above details internally and will show a message **“Validation passed”**.

Resource group	newresgroup
Virtual machine name	MyNewVM
Region	West US
Availability options	No infrastructure redundancy required
Username	rajkishore
Public inbound ports	RDP, HTTP
Already have a Windows license?	No
Azure Spot	No
Disks	
OS disk type	Premium SSD
Use managed disks	Yes
Use ephemeral OS disk	No
Networking	
Virtual network	(new) newresgroup-vnet
Subnet	(new) default (10.0.0.0/24)
Public IP	(new) MyNewVM-ip
Accelerated networking	Off
Place this virtual machine behind an	No

At the bottom, there is a 'Create' button, navigation buttons '< Previous' and 'Next >', and a link 'Download a template for automation'.

Step- 4: Now click on the “**Create**” button. It will show you “**Your deployment is complete**“.Now click on “**Go to resource**”

Step- 5: Congratulations, Now you have created the VM successfully.

The screenshot shows the Microsoft Azure portal interface. At the top, the search bar contains "Spring2023". The main heading is "CreateVm-MicrosoftWindowsDesktop.Windows-10-win10-20230306134413 | Overview". Below this, a green checkmark icon indicates "Your deployment is complete". The deployment details show:

- Deployment name: CreateVm-MicrosoftWindowsDesktop.Windows...
- Subscription: Azure for Students
- Resource group: Spring2023CCLabBUK
- Start time: 3/6/2023, 1:54:29 PM
- Correlation ID: 8ce26a1c-9e35-487c-a0ba-962d82e82e46

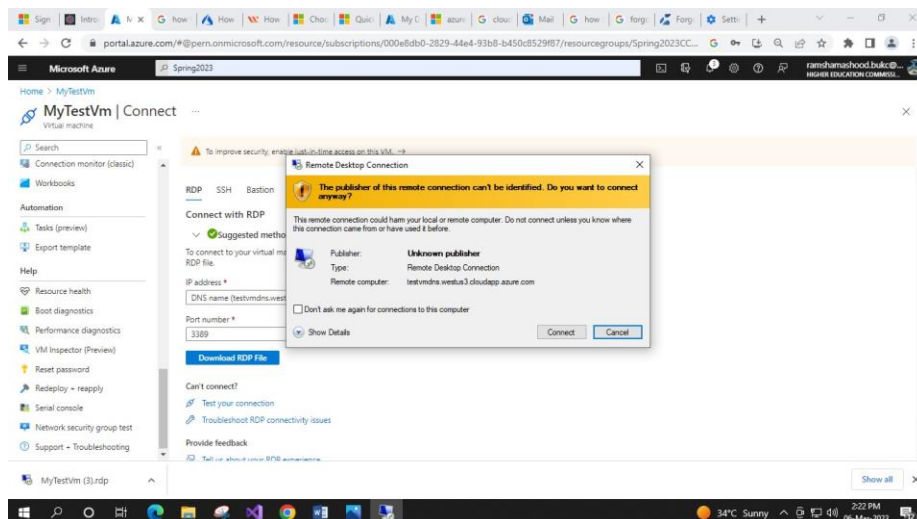
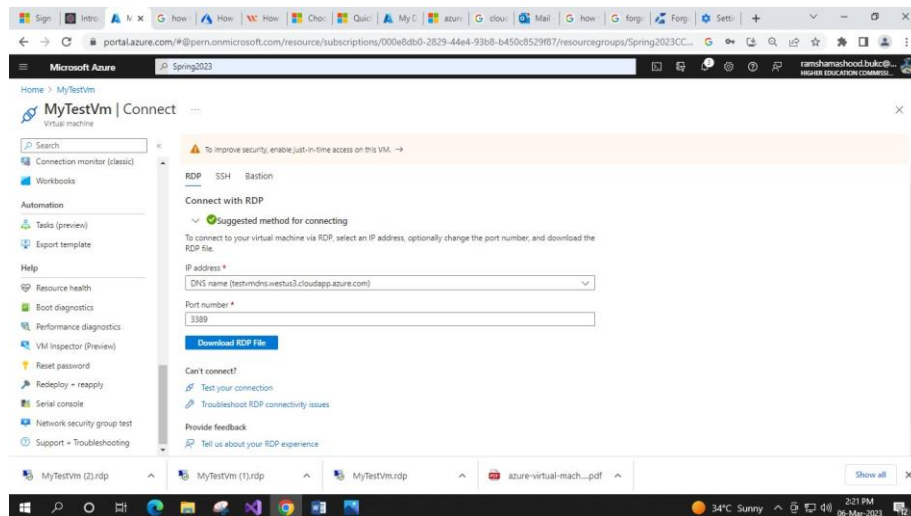
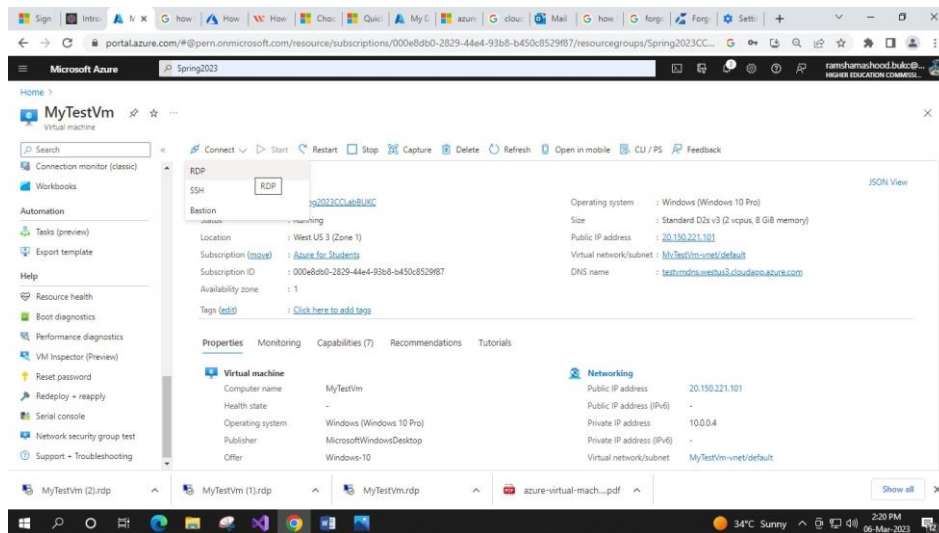
 The "Next steps" section includes links for "Setup auto-shutdown", "Monitor VM health, performance and network dependencies", and "Run a script inside the virtual machine". A "Go to resource" button is prominently displayed. On the right, there are sections for "Cost Management" and "Microsoft Defender for Cloud".

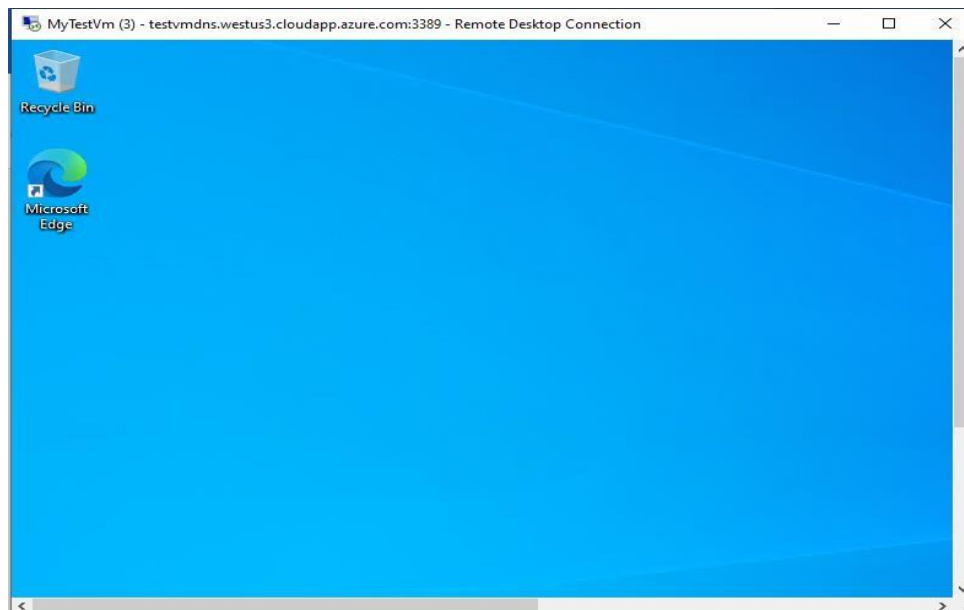
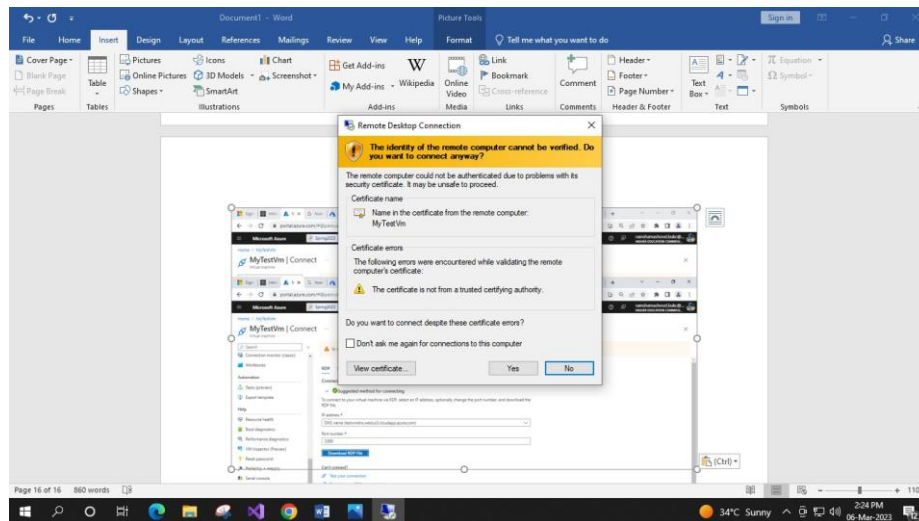
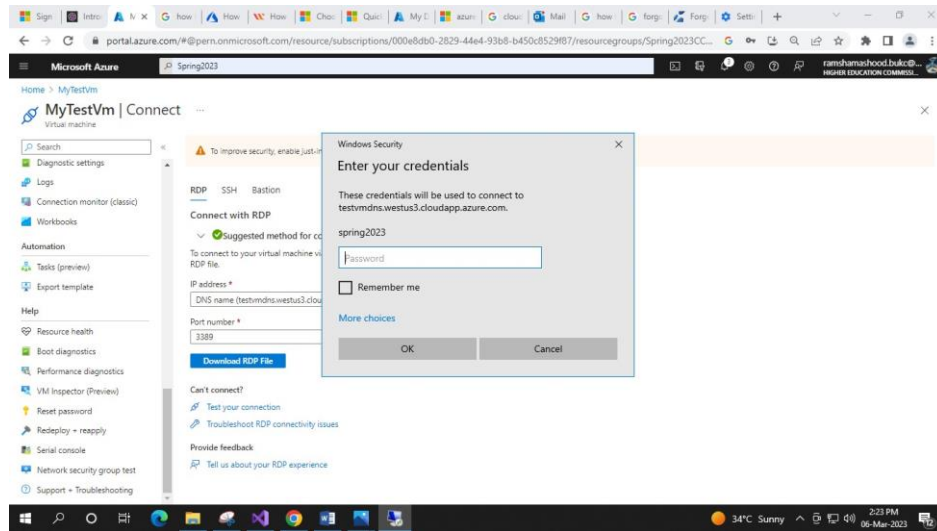
The screenshot shows the Microsoft Azure portal interface for a specific VM. The search bar contains "portal.azure.com/#@fewlines4bijuhotmail.onmicrosoft.com/resource/subscriptions/1cdf4300-dee5-4518-9c9c-feaa72a5cbd1/resourcegroups/newresgroup/providers/Microsoft.Compute/virtualMachines/MyNewVM". The main heading is "MyNewVM | Overview". The VM is highlighted with a red box. Below the heading, a "Connect" button is also highlighted with a red box. The VM details are as follows:

- Resource group (change): newresgroup
- Status: Running
- Location: West US
- Subscription (change): Visual Studio Enterprise
- Subscription ID: 1cdf4300-dee5-4518-9c9c-feaa72a5cbd1
- Computer name: (not available)
- Operating system: Windows
- Size: Standard D2s v3 (2 vcpus, 8 GiB memory)
- Tags (change): Click here to add tags
- Azure Spot: N/A
- Public IP address: 168.61.22.109 (highlighted with a red box)
- Private IP address: 10.0.0.4
- Public IP address (IPv6): -
- Private IP address (IPv6): -
- Virtual network/subnet: newresgroup-vnet/default
- DNS name: Configure

 At the bottom, there is a "Show data for last:" section with a dropdown menu set to "1 hour".

Step-6: Click on the **Connect** button to connect to the VM.





2. TIME BOXING

Activity Name	Activity Time	Total Time
Login Systems	5 mints	5 mints
Walk through Theory & Tasks	60 mints	60 mints
Implement Tasks	80 mints	80 mints
Evaluation Time	30 mints	30 mints
	Total Duration	175 mints

3. LAB TASKS/PRACTICAL WORK

1. Create Windows Virtual Machine in Azure.
2. Install different software on the created VM (including VS Code and Dev++).
3. Create simple login and sign up page on VS Code using VM.