

Cloud Computing

Practical Journal

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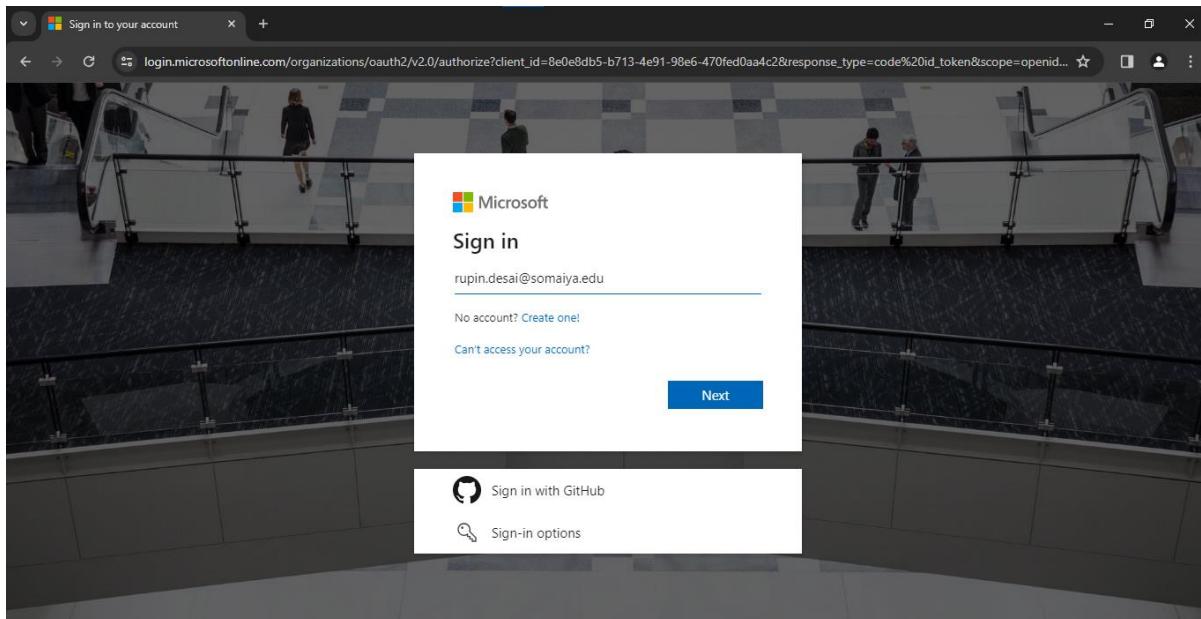
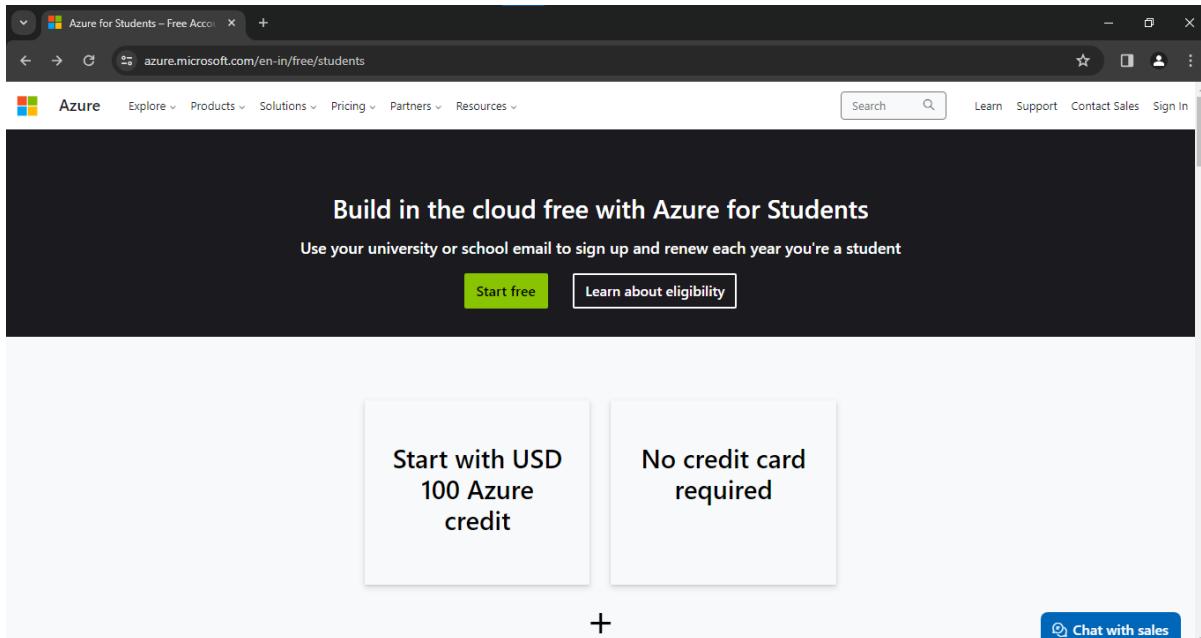
INDEX

Sr No	List
1	Creating a virtual machine using VMWare in MS Azure.
2	Creating a BLOB Storage using a Storage Account.
3	SQL Database using Azure
4	Analyzing data using Power BI.
5	Web Feeds using Azure
6	Artificial Intelligence Services in Cloud
7	Generating SSH keys using azure
8	User management in cloud
9	Virtualization in Cloud
10	Cost Management
11	Web Hosting on cloud
12	Security as a service

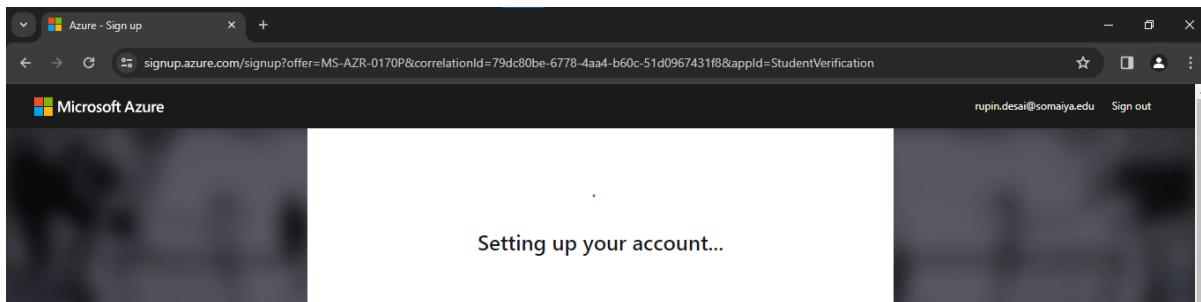
Practical 1 : Creating a virtual machine using VMWare in MS Azure.

Account Creation

Step 1 : Go to <https://azure.microsoft.com/en-in/free/students>



A screenshot of a Microsoft Azure sign-up page titled "Student Verification". The page instructs the user to enter their name as per school records, select their school's country, and enter their school's name and date of birth. The "First name" field contains "Rupin", the "Last name" field contains "Desai", the "Country" dropdown is set to "United States", and the "School name" field has "Type in a school name". A note at the bottom states: "If your country is not listed, the offer is not available in your region. [Learn More](#)". A "Start Chat" button is visible in the bottom right corner.



Virtualization :

Step 1:

Go to Azure Web Portal

The screenshot shows the Microsoft Azure Education Overview page. The left sidebar has sections for Learning resources (Roles, Software, Learning, GitHub), Need help? (Support), and Overview (which is selected). The main content area is divided into several sections: Free Services (Azure Virtual Machines – Windows, Azure Blob Storage, Computer Vision, Azure App Service), Free software (SQL Server 2019 Developer, Machine Learning Server 9.4.7 for Windows, Microsoft R Client 9.4.7), Agents for Visual Studio 2019 (version 16.0), Test Agent, Agents for Visual Studio 2019 (version 16.0), Test Controller, Explore all, Free learning paths (Data Scientist), and Resources (Get started guide for Azure developers).

Step 2:

Select Virtual Machine Service

This is a zoomed-in view of the "Free Services" section from the previous screenshot. It highlights the "Azure Virtual Machines – Windows" service, which offers 750 hours of access to B1s virtual machines.

Step 3 : Click on Create

The screenshot shows the Microsoft Azure portal interface for managing virtual machines. The top navigation bar includes links for Home, Virtual machines, somaiya.edu (somaia.edu), and a search bar. Below the navigation is a toolbar with actions like Create, Switch to classic, Reservations, Manage view, Refresh, Export to CSV, Open query, Assign tags, Start, Stop, Restart, Delete, and more. A filter bar at the top allows filtering by Subscription, Type, Resource group, Location, and other criteria. The main content area displays a message: "No virtual machines to display" with a small icon of a computer monitor with a cube on it. It encourages users to "Create a virtual machine that runs Linux or Windows. Select an image from the marketplace or use your own customized image." A prominent blue "Create" button is centered below the message. At the bottom, there are links for "Learn more about Windows virtual machines" and "Give feedback".

Step 4 : Fill in the details

Create a virtual machine ...

Project details

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

Subscription * ⓘ Azure for Students

Resource group * ⓘ (New) MyPC_group

Create new

Instance details

Virtual machine name * ⓘ MyPC

Region * ⓘ (Asia Pacific) Central India

Availability options ⓘ Availability zone

Availability zone * ⓘ Zones 1

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

Review + create < Previous Next : Disks >

Step 5 : Use Image (linux or windows)

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

Run with Azure Spot discount ⓘ

Size * ⓘ Standard_D2s_v3 - 2 vcpus, 8 GiB memory (₹6,019.67/month)

[See all sizes](#)

Enable Hibernation (preview) ⓘ

ⓘ To enable Hibernation, you must register your subscription. [Learn more](#)

Step 6 : Setup Admin account for VM

Administrator account

Authentication type Password

Username *

Password *

Confirm password *

Inbound port rules

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

Public inbound ports * Allow selected ports

Select inbound ports *

Review + create < Previous Next : Disks >

Step 7: Choose storage type

Create a virtual machine - Microsoft Azure

Encryption at host

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

OS disk

OS disk size

OS disk type *

Delete with VM

Key management

Enable Ultra Disk compatibility

Data disks

Step 8 : Create Virtual Network

Basics Disks Networking Management Monitoring Advanced Tags Review + create

Define network connectivity for your virtual machine by configuring network interface card (NIC) settings. You can control ports, inbound and outbound connectivity with security group rules, or place behind an existing load balancing solution.
[Learn more](#)

Network interface

When creating a virtual machine, a network interface will be created for you.

Virtual network * ⓘ (new) RupinVM-vnet

Subnet * ⓘ (new) default (10.0.0.0/24)

Public IP ⓘ (new) RupinVM-ip

NIC network security group ⓘ None Basic Advanced

Step 9 : Choose all options

Select inbound ports * HTTP (80), HTTPS (443), SSH (22), RDP (3389)

⚠ 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.

Delete public IP and NIC when VM is deleted

Enable accelerated networking ⓘ
The resource provider 'Microsoft.Network' should be registered in order to enable accelerated networking. [Learn more](#)

Step 10 : Create

The screenshot shows the Microsoft Azure portal interface for creating a virtual machine. The top navigation bar includes links for Home, Microsoft Azure, and a search bar. The main title is 'Create a virtual machine'. Below the title, a green validation message says 'Validation passed'. The 'Review + create' tab is selected, showing the configuration details. Under 'Price', it lists '1 X Standard D2s v3 by Microsoft' with a cost of '8.2461 INR/hr' and a note about 'Subscription credits apply'. The 'TERMS' section contains legal language about agreeing to terms and privacy statements. At the bottom, there are 'Create', 'Previous', 'Next >', 'Download a template for automation', and 'Give feedback' buttons.

Step 11 : Deployment is complete

The screenshot shows the Microsoft Azure portal's 'Overview' page for a deployment named 'CreateVm-canonical.0001-com-ubuntu-server-focal-2-20240105095049'. The main heading is 'Your deployment is complete'. It provides deployment details: name, subscription, start time, and correlation ID. Below this, there are sections for 'Deployment details' (Setup auto-shutdown, Monitor VM health, Run a script inside the virtual machine) and 'Next steps' (links to Go to resource and Create another VM). On the right side, there are promotional cards for 'Cost Management', 'Microsoft Defender for Cloud', 'Free Microsoft tutorials', and 'Work with an expert'. At the bottom, there are 'Give feedback' and 'Tell us about your experience with deployment' buttons.

Step 12 : Connect

Native SSH



Connect from your local machine (Windows)

- Open Terminal (Windows 11), PowerShell (Windows 10 or less), or a shell of your choice. Or switch the local machine OS above to view more instructions.

3

Copy and execute SSH command

Provide a path to your SSH private key file on your local machine.

```
~/ssh/id_rsa.pem
```

Can't find your private key? [Reset your SSH private key](#)

SSH to VM with specified private key.

```
ssh -i ~/ssh/id_rsa.pem Rupin@4.240.108.129
```



Other Information

Using a Linux subsystem like WSL or Ubuntu on Terminal?

Copy your private key path to the Linux subsystem and ensure it has the correct read-only access.

Move your private key to the Linux subsystem. Use chmod to assign read-only access, then SSH.

```
mv /mnt/c/<your-private-key> ~/ssh/
```



```
chmod 400 ~/ssh/<your-private-key>
```



```
ssh -i ~/ssh/<your-private-key> Rupin@4.240.108.129
```



[Close](#)

[Troubleshooting](#)



[Give feedback](#)

Step 13 : VM

```
C:\ Rupin@RupinVM: ~
Microsoft Windows [Version 10.0.19042.928]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Admin>ssh -i ~/.ssh/id_rsa.pem Rupin@4.240.108.129
Warning: Identity file C:\Users\Admin/.ssh/id_rsa.pem not accessible: No such file or directory.
The authenticity of host '4.240.108.129 (4.240.108.129)' can't be established.
ECDSA key fingerprint is SHA256:eS+NLyJoj8T1r00MUT+QMqV3srZtNCoh0E7nA1YyZks.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '4.240.108.129' (ECDSA) to the list of known hosts.
Rupin@4.240.108.129's password:
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-1053-azure x86_64)
```

```
C:\ Rupin@RupinVM: ~
* Support: https://ubuntu.com/advantage

System information as of Fri Jan  5 04:50:47 UTC 2024

System load:  0.07      Processes:           113
Usage of /:   5.9% of 28.89GB  Users logged in:     0
Memory usage: 3%          IPv4 address for eth0: 10.0.0.4
Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

12 updates can be applied immediately.
11 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

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.

Rupin@RupinVM:~$ ls
Rupin@RupinVM:~$ cd home
-bash: cd: home: No such file or directory
Rupin@RupinVM:~$ sudo ls
Rupin@RupinVM:~$
```

Practical 2 : Creating a BLOB Storage using Storage Account.

Step 1 : Create a storage account

The screenshot shows the 'Create a storage account' wizard in the Microsoft Azure portal. The 'Basics' tab is selected. In the 'Subscription' dropdown, 'Azure for Students' is chosen. Under 'Resource group', 'RupinVM_group' is selected. The 'Instance details' section includes a 'Storage account name' field containing 'rupin', a 'Region' dropdown set to '(Asia Pacific) Central India', and a 'Performance' dropdown set to 'Standard'. A note below the performance dropdown states: 'Standard: Recommended for most scenarios (general-purpose v2 account)'.

Basics

Subscription	Azure for Students
Resource Group	RupinVM_group
Location	centralindia
Storage account name	rupin
Deployment model	Resource manager
Performance	Standard
Replication	Read-access geo-redundant storage (RA-GRS)

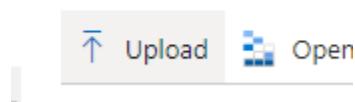
Step 2 : Wait till deployed

The screenshot shows the Azure Deployment Overview page for a deployment named 'rupin_1704429786080'. The status is 'Your deployment is complete' with a green checkmark icon. Deployment details include: Deployment name: rupin_1704429786080, Subscription: Azure for Students, Resource group: RupinVM_group, Start time: 1/5/2024, 10:13:08 AM, and Correlation ID: 7b90d6b4-b5fc-4d99-a259-044d853dd236. Below the main summary, there are sections for 'Deployment details' and 'Next steps', and a 'Go to resource' button.

Step 3 : Click on upload

The screenshot shows the Azure Storage Accounts page for a storage account named 'rupin'. The 'Overview' tab is selected. In the top navigation bar, there is an 'Upload' button. The main pane displays the storage account's essentials, including its resource group (RupinVM_group), location (centralindia), primary/secondary location (Central India/ South India), subscription (Azure for Students), and creation details (Created: 1/5/2024, 10:13:09 AM). The 'Data storage' section lists containers, file shares, queues, and tables.

Step 4 : Click



Step 5 : Name Container

New container

Name

Anonymous access level ⓘ

Private (no anonymous access)

ⓘ Anonymous access to this container is being blocked because anonymous access is disabled on this storage account.

Ok **Cancel**

Overwrite if files already exist

Step 6 : Select your files

Upload blob X

2 file(s) selected: pexels-gylfi-gylfason-12721392 (Original).mp4, pexels-...

Drag and drop files here or [Browse for files](#)

Select an existing container

rupincontainer ▼

[Create new](#)

Overwrite if files already exist

28 ▼ Advanced

A Give feedback

Upload

10:24

Step 7 : Go to storage browser



Storage
browser

Step 8 : Uploaded

The screenshot shows the Microsoft Storage browser interface. The left sidebar lists storage resources: rupin (selected), Favorites, Recently viewed, Blob containers (selected), \$logs, rupincontainer (selected), View all, File shares, Queues, and Tables. The main pane displays the contents of the rupincontainer blob container under the rupin blob container. The path shown is Blob containers > rupincontainer. A search bar at the top right contains the prefix "pixels-ade...". The table below shows two blobs:

	Name	Last modified	Access tier	Blob type	Size
<input type="checkbox"/>	pixels-ade...	1/5/2024, 10:24:56 AM	Hot (Inferred)	Block blob	8.76 MiB
<input type="checkbox"/>	pixels-gylfi...	1/5/2024, 10:24:58 AM	Hot (Inferred)	Block blob	182.3 MiB

Practical 3 : SQL Database using Azure.

Step 1 : Go to SQL Databases

The screenshot shows the Microsoft Azure portal interface. The top navigation bar includes the Microsoft Azure logo, a search bar, and user information (rupin.desai@somaiya.edu). The main title is "SQL databases". Below the title, there are filter options: "Subscription equals all", "Resource group equals all", and "Location equals all". A message states "Showing 0 to 0 of 0 records." A large "SQL" icon is centered, with the text "No SQL databases to display" and a note "Try changing or clearing your filters." A "Create SQL database" button is present. On the right side, there is a "Notifications" panel with a bell icon and the message "No new notifications from this session".

Step 2 : Fill in the details

The screenshot shows the "Create SQL Database Server" wizard in the Microsoft Azure portal. The title is "Create SQL Database Server". The "Server details" section requires entering a server name ("rupindb") and location ("(Asia Pacific) Central India"). A note indicates that the server will be created in the same subscription and resource group as the database. The "Authentication" section allows selecting authentication methods: "Use Microsoft Entra-only authentication" (selected), "Use both SQL and Microsoft Entra authentication", and "Use SQL authentication". A note at the bottom states: "Azure Active Directory (Azure AD) is now Microsoft Entra ID. Learn more." An "OK" button is at the bottom left.

 Azure Active Directory (Azure AD) is now Microsoft Entra ID. [Learn more](#)

Select your preferred authentication methods for accessing this server. Create a server admin login and password to access your server with SQL authentication, select only Microsoft Entra authentication [Learn more](#) using an existing Microsoft Entra user, group, or application as Microsoft Entra admin [Learn more](#), or select both SQL and Microsoft Entra authentication.

Authentication method

Use Microsoft Entra-only authentication
 Use both SQL and Microsoft Entra authentication
 Use SQL authentication

Server admin login *

rupindb

Password *

.....

Confirm password *

.....

OK

Rupin@123*

Step 3 : Use server

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

Subscription * Resource group *

Database details

Enter required settings for this database, including picking a logical server and configuring the compute and storage resources

Database name * Server *

Want to use SQL elastic pool? Yes No

Workload environment Development Production

Review + create **Next : Networking >**

Step 4 : Create

Microsoft Azure

Home > SQL databases > Create SQL Database

Product details

SQL database by Microsoft

Estimated cost
Storage cost 428.31 INR / month + Compute cost 0.012520 INR / vCore second

Cost summary

General Purpose (GP_S_Gen5_1)	10.30
Cost per GB (in INR)	x 41.6
Max storage selected (in GB)	
ESTIMATED STORAGE COST / MONTH	428.31 INR
COMPUTE COST / VCORE SECOND ¹	0.012520 INR

NOTES
¹ Serverless databases are billed in vCore seconds based on a combination of CPU and memory utilization. Learn more about serverless billing

Basics

Subscription	Azure for Students
Resource group	cloud-shell-storage-centralindia
Region	Central India
Database name	rupinDb
Server	(new) rupinDb
Authentication method	SQL authentication

Create < Previous Download a template for automation

Step 5 : Wait till deployed

The screenshot shows the Microsoft Azure Deployment Overview page for a database named "Microsoft.SQLDatabase.newDatabaseNewServer_a9c6ee0131684df5859a0". The main message is "Your deployment is complete". Deployment details include a deployment name, subscription (Azure for Students), resource group (cloud-shell-storage-centralindia), start time (1/12/2024, 9:46:49 AM), and correlation ID (8dd73aa8-8ee8-41d0-8b38-5bd4939f5918). A "Deployment succeeded" notification is present in the Notifications sidebar.

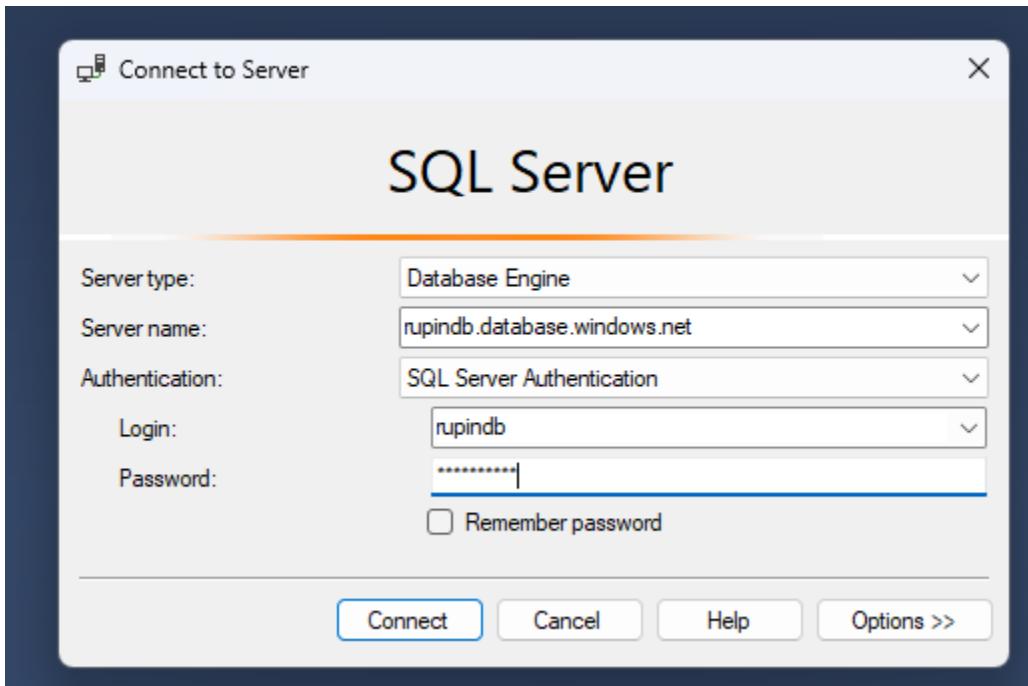
Step 6 :

The screenshot shows the Microsoft Azure SQL Database Overview page for a database named "rupinDb (rupinDb/rupinDb)". The main section displays database essentials like resource group (cloud-shell-storage-centralindia), status (Online), location (Central India), and connection strings. It also shows tags (Add tags) and a "Getting started" tab with sections for "Configure access", "Connect to application", and "Start developing".

Step 7 : Go to networking and add your current ip address

The screenshot shows the Microsoft Azure portal interface for managing a SQL server named 'rupindb'. The left sidebar navigation bar includes 'Home', 'All resources', 'Search resources, services, and docs (G+)', 'Locks', 'Data management' (with options for 'Backups', 'Deleted databases', 'Failover groups', 'Import/Export history'), 'Security' (with 'Networking' selected), 'Microsoft Defender for Cloud', 'Transparent data encryption', 'Identity', 'Auditing', 'Intelligent Performance' (with 'Automatic tuning' and 'Recommendations'), 'Monitoring', and 'Logs'. The main content area is titled 'rupindb | Networking' and shows the 'Public access' tab selected under 'Data management'. It displays options for 'Public network access' (radio buttons for 'Disable', 'Selected networks' (selected), and 'Connections from the IP addresses configured in the Firewall rules section below will have access to this database. By default, no public IP addresses are allowed.'), 'Virtual networks' (button to 'Add a virtual network rule'), and 'Firewall rules' (button to 'Add your client IPv4 address (182.73.90.242)'). A table for 'Firewall rules' lists one entry: Rule name 'ClientIPAddress_2024-1-12_9-50-24', Start IPv4 address '182.73.90.242', and End IPv4 address '182.73.90.242'. Below the table is an 'Exceptions' section with a checked checkbox for 'Allow Azure services and resources to access this server'. At the bottom are 'Save' and 'Discard' buttons.

Step 8 : Open SSMS and connect



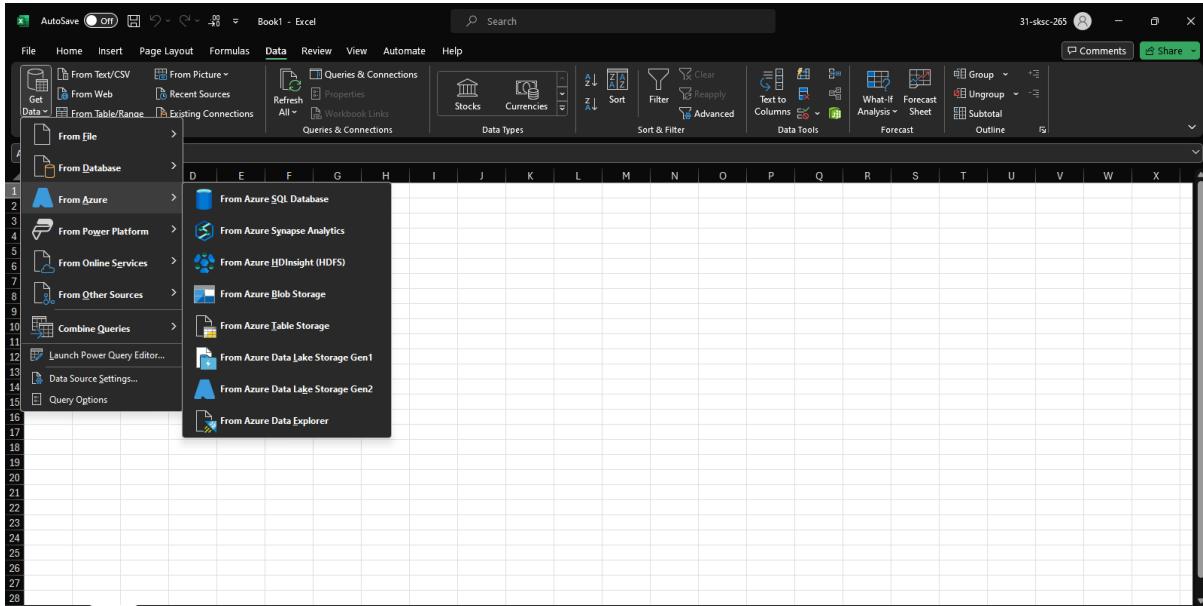
Step 9 : Create a table

Column Name		Data Type	Allow Nulls	
▶	Name	varchar(50)	<input checked="" type="checkbox"/>	rupindb.rupinDb - dbo.Table_1
▶	Roll_no	varchar(50)	<input checked="" type="checkbox"/>	<input type="checkbox"/>

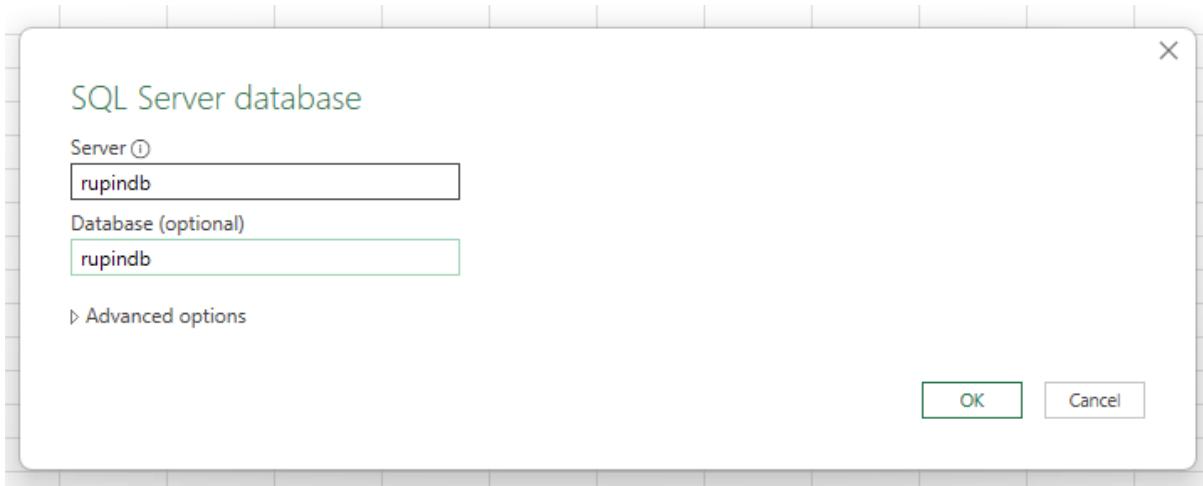
Step 10 : Add data

rupindb.rupinDb - dbo.data		
	Name	Roll_no
▶	Rupin	08
▶*	NULL	NULL

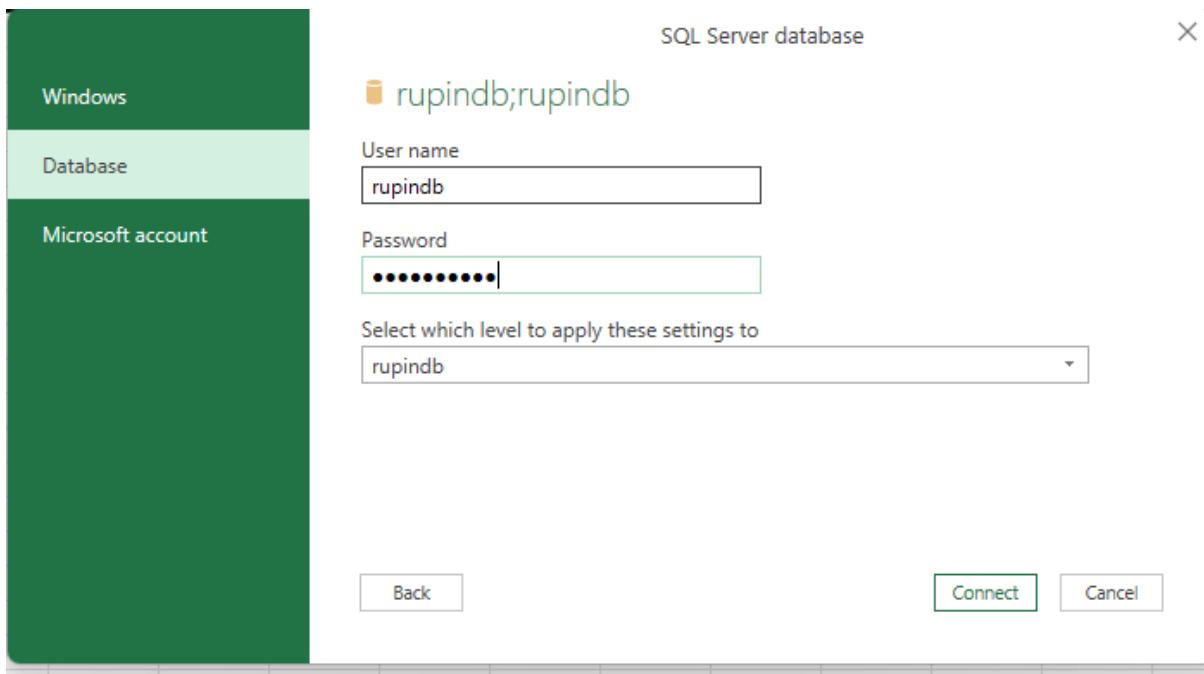
Step 11 : Open Excel and Go to get data -> From azure -> From azure sql database



Step 12 : Use ur server name



Step 13 : Enter credentials



Step 14 : Imported

Get & Transform Data					
B1	A	B	C	D	E
1	Rupin	08			
2					

Practical 4 : Analyzing data using Power BI.

Step 1 : Go to Power BI Embedded and create

The screenshot shows the Microsoft Azure Power BI Embedded creation interface. At the top, there's a banner for 'Welcome to Embedded Generation 2' with a 'Find out more' button. Below it, the 'PROJECT DETAILS' section includes fields for 'Subscription' (set to 'Azure for Students'), 'Resource group' (set to 'NetworkWatcherRG'), 'Resource name' (set to 'rupinbi'), and 'Location' (set to 'Central India'). There are tabs for 'Basics', 'Tags', and 'Review + Create', with 'Review + Create' being the active tab. Under 'BASICS', the configuration is summarized. Under 'TAGS', it says '(none)'. At the bottom, there are buttons for 'Create', '< Previous : Tags', and 'Automation template'.

* Basics Tags Review + Create

PROJECT DETAILS

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

Subscription *

Resource group *

Resource name *

Location *

BASICS

Subscription	Azure for Students
Resource group	NetworkWatcherRG
Location	Central India
Resource name	rupinbi
Size	A1
Power BI capacity administrator	rupin.desai@somaiya.edu
Resource mode	Embedded Generation 2

TAGS

(none)

Step 2 : Wait till deployed

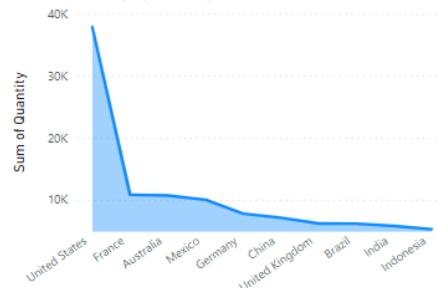
The screenshot shows the Microsoft Azure Power BI Dedicated Overview page. At the top right, there is a message box indicating "Deployment succeeded" for the deployment "Microsoft.PowerBIDedicated" to resource group "NetworkWatcherRG". The main content area displays deployment details: Deployment name: Microsoft.PowerBIDedicated, Subscription: Azure for Students, Resource group: NetworkWatcherRG. The deployment started at 1/12/2024, 10:20:46 AM with Correlation ID: c7b39484-8fb4-4299-aab3-7c44e5ba42f9. Below this, there are sections for "Deployment details" and "Next steps", along with links to "Go to resource" and "Give feedback". On the right side, there are promotional cards for "Cost management", "Microsoft Defender for Cloud", and "Work with an expert".

Analysis :

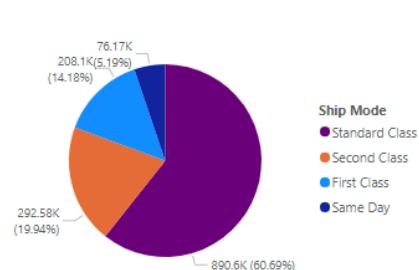
Sum of Profit by City



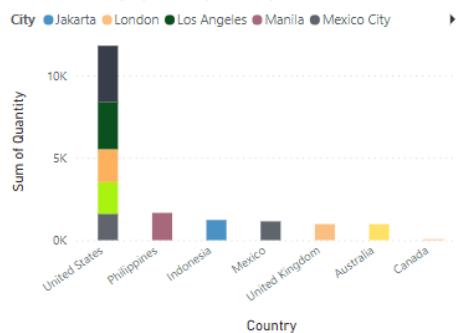
Sum of Quantity by Country



Sum of Profit by Ship Mode

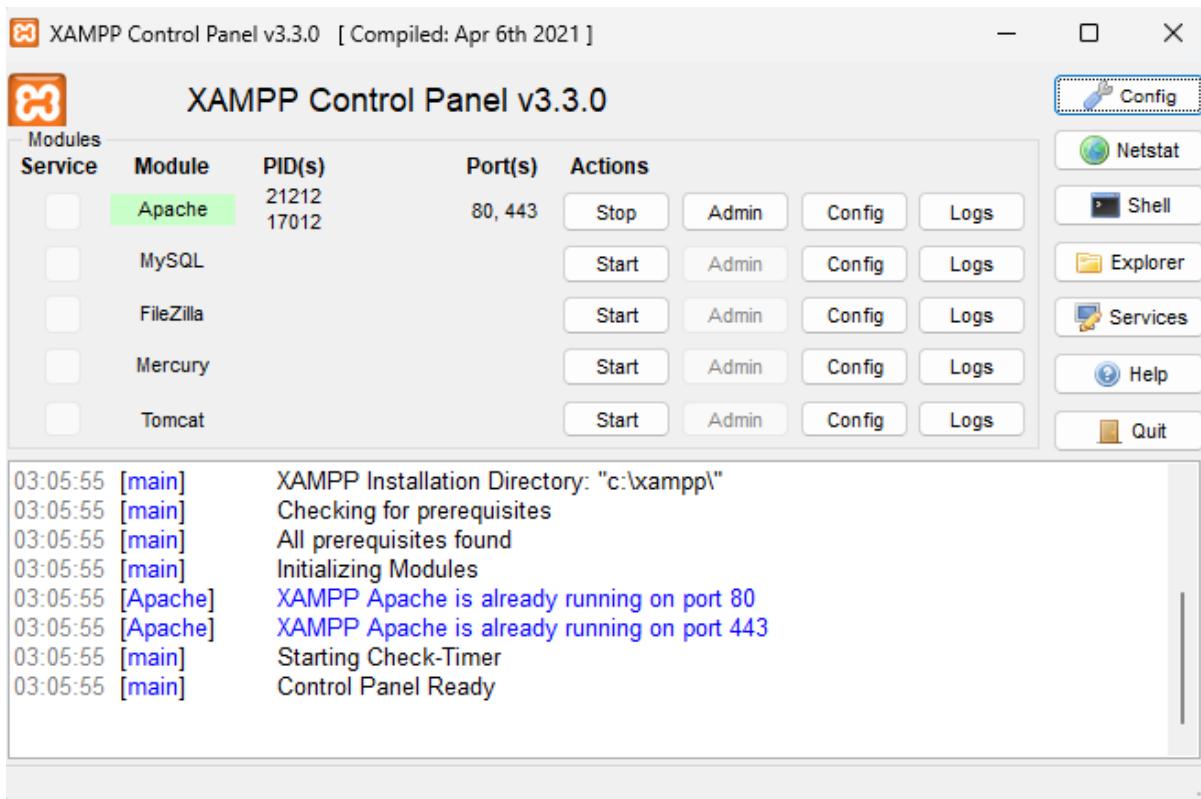


Sum of Quantity by Country and City



Practical 5 : Web Feeds using Azure

Step 1 : Run XAMPP server



Step 2 : Open browser



Index of /prac_5

<u>Name</u>	<u>Last modified</u>	<u>Size</u>	<u>Description</u>
Parent Directory		-	
prac5.html	2024-01-18 02:35	877	
prac5_2.html	2024-01-18 02:31	871	
prac_5_3.php	2024-01-18 02:55	1.3K	

Apache/2.4.58 (Win64) OpenSSL/3.1.3 PHP/8.0.30 Server at localhost Port 80

Code :

prac5.html

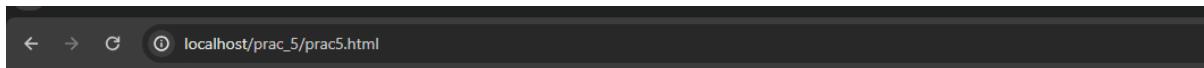
```
<html>
<head>
<script> function showRSS(str) {
if (str.length == 0) {
document.getElementById("output").innerHTML = "";
return;
}
if (window.XMLHttpRequest) {
xmlhttp = new XMLHttpRequest();
}else {
xmlhttp = new ActiveXObject("Microsoft.XMLHTTP");
}
xmlhttp.onreadystatechange = function() {
if (xmlhttp.readyState == 4 && xmlhttp.status == 200) {
document.getElementById("output").innerHTML = xmlhttp.responseText;
}
}
xmlhttp.open("GET","prac_5_3.php?q="+str,true);
xmlhttp.send();
}
</script>
</head>
<body>
<p>Please Select an option to get RSS:</p>
<form>
<select onchange = "showRSS(this.value)">
<option value = "">Select an RSS-feed:</option>
<option value = "cnn">CNN</option>
<option value = "bbc">BBC News</option>
<option value = "pcw">PC World</option>
</select>
</form>
<br>
<div id = "output">RSS-feeds</div>
</body>
</html>
```

prac5_3.php

```
<?php
$q = $_GET["q"];
if($q == "cnn") {
$xml = ("http://rss.cnn.com/rss/cnn_topstories.rss");
}elseif($q == "bbc") {
$xml =
("http://newsrss.bbc.co.uk/rss/newsinline_world_edition/americas/rss.xml");
}elseif($q == "pcw"){
$xml = ("http://www.pcworld.com/index.rss");
}
$xmlDoc = new DOMDocument();
$xmlDoc->load($xml);
$channel = $xmlDoc->getElementsByTagName('channel')->item(0);
$channel_title = $channel->getElementsByTagName('title')
->item(0)->childNodes->item(0)->nodeValue;
$channel_link = $channel->getElementsByTagName('link')
->item(0)->childNodes->item(0)->nodeValue;
$channel_desc = $channel->getElementsByTagName('description')
->item(0)->childNodes->item(0)->nodeValue;
echo("<p><a href = '" . $channel_link . "'>" .

$channel_title . "</a>");
echo("<br>");
echo($channel_desc . "</p>");
$x = $xmlDoc->getElementsByTagName('item');
for ($i = 0; $i<=2; $i++) {
$item_title = $x->item($i)->getElementsByTagName('title')
->item(0)->childNodes->item(0)->nodeValue;
$item_link = $x->item($i)->getElementsByTagName('link')
->item(0)->childNodes->item(0)->nodeValue;
//$/item_desc = $x->item($i)->getElementsByTagName('description')
//->item(0)->childNodes->item(0)->nodeValue;
echo ("<p><a href = '" . $item_link . "'>" .
$item_title . "</a>");
echo ("<br>");
//echo ($item_desc . "</p>");
}
?>
```

Output :



Please Select an option to get RSS:

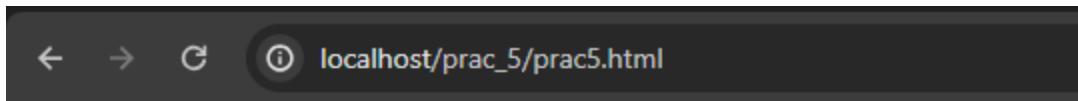
[CNN.com - RSS Channel - HP Hero](#)

CNN.com delivers up-to-the-minute news and information on the latest top stories, weather, entertainment, politics and more.

[Some on-air claims about Dominion Voting Systems were false, Fox News acknowledges in statement after deal is announced](#)

[Dominion still has pending lawsuits against election deniers such as Rudy Giuliani and Sidney Powell](#)

[Here are the 20 specific Fox broadcasts and tweets Dominion says were defamatory](#)



Please Select an option to get RSS:

[BBC News - US & Canada](#)

BBC News - US & Canada

[E Jean Carroll trial: Judge threatens to remove Trump from court](#)

[US launches fourth round of strikes on Houthi targets in Yemen](#)

[Bodycam shows police raiding home with ill child inside](#)

Azure DevOps
rupin.desai@somaiya.edu

Get started with Azure DevOps

Project name *

Project visibility

Public

Choosing **Continue** means that you agree to our [Terms of Service](#), [Privacy Statement](#), and [Code of Conduct](#).

I will receive information, tips, and offers about Azure DevOps and other Microsoft products and services.
[Privacy Statement](#).

Country/region

India

Enter the characters you see

New Audio



Continue

Create a project to get started

Project name *

Visibility

Public

Anyone on the internet can view the project. Certain features like TFVC are not supported.

Private

Only people you give access to will be able to view this project.

Public projects are disabled for your organization. You can turn on public visibility with [organization policies](#).

+ Create project

Create feed

/ prac5 / Artifacts / Feeds

Search RD

+ rupindesai ✓

Connect to Feed + Create Feed Search Upstream Sources Recycle Bin

Create new feed

Feeds host your packages and let you control permissions.

Name *

Visibility

Members of your Microsoft Entra tenant
 Any member of your Microsoft Entra tenant can view the packages in this feed

Members of rupindesai
 Any member of your organization can view the packages in this feed

Specific people
 Only users you grant access to can view the packages in this feed

Upstream sources

Include packages from common public sources

For example: nuget.org, npmjs.com

Scope

Project: prac5 (Recommended)
 The feed will be scoped to the prac5 project.

Organization

Cancel Create

Practical 6 : Artificial Intelligence Services in Cloud

Step 1 : Go to speech services

Basics Network Identity Tags Review + create

Transcribe audible speech into readable, searchable text. Add real-time speech translations to your apps and services. Convert text to audio nearly in real time. Quickly build speech-enabled apps and services using the programming languages you already work with. Customize speech systems to optimize quality for specific scenarios.

Learn more

Project Details

Subscription * Resource group * Create new

Azure AI services resource creation requires subscription registration, we detected that your selected subscription did not register Cognitive services resource type before, we will help you to register Cognitive services resource type when you select a subscription in subscription dropdown. Click to learn more how to check registration state for your selected subscription.

Instance Details

Region Name Pricing tier *

View full pricing details

Previous Next Review + create

Step 2 : Go to resource Speech studio

Overview Activity log Access control (IAM) Tags Diagnose and solve problems

Resource Management Keys and Endpoint Encryption Pricing tier Networking Identity Cost Analytics Properties Locks Monitoring Alerts Metrics Diagnostic settings Logs Automation Tasks (preview) Export template

Get Started Try out all use cases and see other custom tools for building Speech AI models Go to Speech Studio

Feedback

Open in a new window Azure English

How likely is it that you would recommend Speech Services to a friend or colleague? Please select one.

0 1 2 3 4 5 6 7 8 9 10

Microsoft Privacy Statement Contact Us

Step 3 : Upload a mp3 file and let it caption

Try it out Next steps

Choose audio files

Drag and drop audio file(s) here or [Browse files...](#)

Or record audio with a microphone

Audio files

Post Malone, Swae Lee - Sunflower (Spider-Man...).mp3

Clear all

Test results

File name: Post Malone, Swae Lee - Sunflower (Spider-Man...).mp3 Language: English (United States) Output format: Detailed Phrase list: Off

Custom endpoint: [None]

01:11 02:41s

Text JSON

She was a bad, bad nevertheless. Baby, I'm alright. Crush at my place. Baby, you're wreck. Needless to say I'm keeping a check. She was a bad, bad nevertheless, calling it quits now. Baby, I'm a wreck. Crushing my face. Baby, you're a wreck. Digging in a bad way. Losing your grip. Screaming at my face. Baby, don't you? Someone took a big, I don't know how that left. I'm not gonna sit down on you. So, if you gonna get up, I'm gonna ride a crowd, and I'm not gonna be lost. Then you're left in the dust. Unless I stuck fire, you won't be sunflower. If you gonna leave me too much or you'll be left in the dust. Unless I stuck fire, you're a sunflower. You're the Sunflower. Every time I'm leaving or you. You don't make it easy. No wish I could beat it for you. Give me a reason to. Every time I'm walking now, I can hear you telling me to turn around fighting for my trust. And you won't back down even if we got to risk it. All right now a nice get it. You know you don't want to be alone. I know I always come and go, but it's out of my control, and you'll be left in the dust unless I stuck fire you're a sunflower I think you love with me too much or you'll be left in the dust

Next steps

[Get started](#) [Common scenarios](#)

1. Select a Speech resource

Select a resource to view keys and region for speech configuration.

Speech resource

Using Mic :

Try it out Next steps

Use with your resource

I acknowledge that this application uses the resource rupin and will incur usage to my account. [Choose a different resource](#)

Choose a language

English (United States)

Show advanced options

Choose audio files

Drag and drop audio file(s) here or [Browse files...](#)

Or record audio with a microphone

Audio files

20240004_015935.wav

Clear all

Test results

File name: 20240004_015935.wav Language: English (United States) Output format: Detailed Phrase list: Off

Custom endpoint: [None]

00:00 00:02s

Text JSON

Hello my name is Rupin Desai.

Translation Text :

Speech Studio > Speech Translation

Try it out [Next steps](#)

Choose audio files

Drag and drop audio file(s) here or [Browse files...](#)
Or record audio with a microphone

Test results

File: Post Malone, Swae Lee - Sunflower (Spider-Man_name: Into the Spider-Verse).mp3
Target language: Hindi
Language: English (United States)
Voice name: स्वरा (hi-IN-SwaraNeural)

00:22 02:41s ↴

Translated text Original text JSON

She was a bad bad Nevertheless, baby. I'm alright crush at my place. Baby, I'm Rick do this is say I'm keeping RJ. She was a bad bad nevertheless. Calling it quiz now baby. I'm a wreck crushing my face. Baby you're a wreck. Digging in a bad way. Losing your grip. Screaming at my face baby

Choose audio files

Drag and drop audio file(s) here or [Browse files...](#)
Or record audio with a microphone

Test results

File: Post Malone, Swae Lee - Sunflower (Spider-Man_name: Into the Spider-Verse).mp3
Target language: Hindi
Language: English (United States)
Voice name: स्वरा (hi-IN-SwaraNeural)

00:22 02:41s ↴

Translated text Original text JSON

वह एक बुरा बुरा था। फिर भी, बेबी, मैं अपनी जगह पर ठीक क्रश हूँ। बेबी, तुम सही हो। कहने की जरूरत नहीं है कि मैं एक जांच रख रहा हूँ। वह फिर भी एक बुरा बुरा था। इसे अब प्रश्नोत्तरी कहते हुए, बेबी, मैं एक मतलब हूँ। मेरे चेहरे को कुचल दिया। बेबी, तुम एक मतलब हो। बुरी तरफ से खुदाई! अपनी पकड़ खोना। मेरे चेहरे पर चिल्लाते हुए, बेबी, है ना? किसी ने बड़ा शिया। मुझे नहीं पता कि यह कैसा लगा। झुकाव पर अपनी बगल में पार्टी को देखते हुए।

Practical 7 : Generating SSH keys using azure

Step 1 : Go to SSH Keys

The screenshot shows the Microsoft Azure portal interface for creating an SSH key. The top navigation bar includes 'Microsoft Azure', a search bar, and user information ('rupin.desh@somaiya.edu'). The main title is 'Create an SSH key'. Below it, there are tabs for 'Basics', 'Tags', and 'Review + create'. The 'Basics' tab is selected. The form fields include:

- Project details:** Subscription is set to 'Azure for Students' and Resource group is 'NetworkWatcherRG'.
- Instance details:** Region is '(Asia Pacific) Central India' and Key pair name is 'secretcode'.
- SSH public key source:** Set to 'Generate new key pair'.

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

Step 2 : Generate new pair

This is a modal dialog titled 'Generate new key pair'. It contains an informational message and two buttons at the bottom.

Generate new key pair

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

Download private key and create resource

Return to create an SSH key resource

Step 3 : New pair created

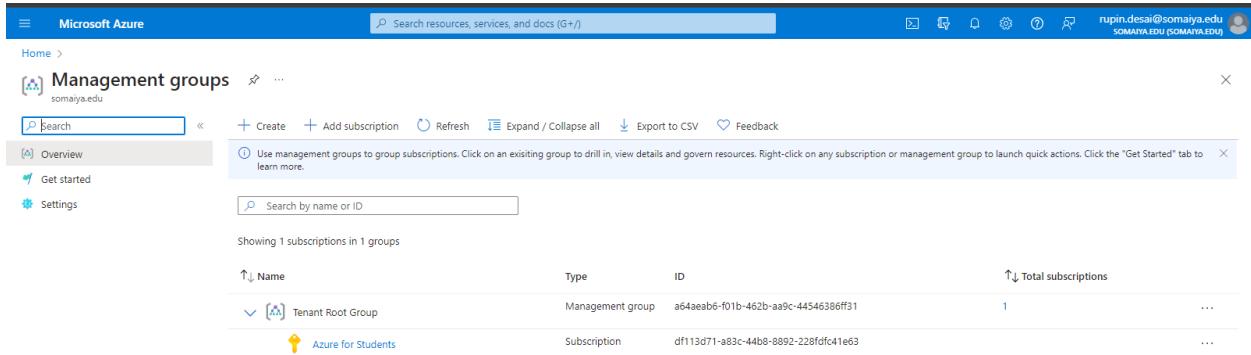
The screenshot shows the Microsoft Azure portal interface. A search bar at the top has 'secretcode' typed into it. Below the search bar, there's a table with columns for Name, Public key, and SSH Key format. The Name is 'secretcode', the Public key is a long string of characters, and the SSH Key format is 'RSA'. To the right of the table is a 'JSON View' button. Below the table, there's a section titled 'Getting started with SSH keys' with three cards: 'Create a Linux virtual machine', 'How to connect', and 'SSH troubleshooting'.

Step 4 : Downloaded File

```
-----BEGIN RSA PRIVATE KEY-----
MIIGIABAAKCAYEAOxcPJVKrjTqHzxGnFy/GjE06/MkNjzAeZXgoaI1dGojtisM
xncJNa4cZb0sYLH+jVe0EGPHovw4a9WbqCiywOazb26t0HTCwP0mSf1sazJMIan
cYEwOh57s3lGYxxDwf9Wljm9Xwz70631sVfg8cyw2Xck51hJn1URjCDhwztxYET
1fJNcD+jTPU+T198dFh2blq2rnShQ84oK2G38rpvxkmUIkjU1gpdu6EwaehD03Tw
ozgYhdmTTNJvBdmItj8IRPxj424v1er1+SP6EkriFzvVSYneKix66BcrV7lq
3jBuWksaR227TQA3IR04Pq39kQr/IKZ2FPVibeqSUkdm+GshUVLUOA5panisqmg
Fu1c/745R6xsR3qxPpIgJ21h22uFXZRGw8SnxphuX78b28kRGPTVtykzhxd2puVx
CE2a1TsM2Avnw1y/tNL+WeMuRmpZYbThjbp0ba1KgrJkYhqkvw72L00kgQZj
4AuActu0NhQ1tyBaGMBAAECggGAIV28Jjhvn5x6q03DgN01s4X1aww0Bb3EN8c
Q/GWgISpVtNju0ka8cAzsAg7RmlKF69CfeW61niA7nn1H4mxAZ7ZyQa/MegZV+
hRoVt3Cf9d5eHJcymqOhrL2BK0/Zo4z5GftBPC3MxJxuBCL+fV2D6XQxU/AT86
tZL0ZpmIdkGcxDuZUEUHF2LizFPmUtWMBTYG3eu+GfsD3z+<+4BDGjl1V8XGPGoa
9D/AMGjZ7IuBeb/txbZbhDvFyJ4QXB1yf5PHPUq9R2j0z1/DmMn1QQ+92bgvP9
3iEW6wuJ2P9T1o08ZugacDHMDPZ1708hnczTjKst7G7JFVC8SR28acz5KxB7Sx
wMxDMa4n91lqqA+ph2cnexgno3lh90jNK3f485znj1aTD0HrVm6f84q0q1w5h1G
ed7bNBaGwNFDPqSe5lyuz9tFmwSEhRB78RD385g2arkIU7poVbd05vEAUDu4h
A90wMqj9IRRAG1wj3/byZCM1ym/FAohBAMinFNCKd+VxdnP1fDCR11jB9ndgyg4m
o49z7w6s+tTX/Q1TEzDqcDL8n8@0FhsBmpzwR36P01//diE5HZVr57ft4MCTtS
8brsJMoSkXfyjhwx0+Yp1SMzlZKxhtLLFPV87XUWaAe19m/PRFcYXC1PHIEss
njparzUz1mm8d/0Vc9RYfcj+Ux6BE8v8Kqlyisin7AVPR8D0AyPig/P81pDyq8v
AYubWTZ4vh3+gZ0vZtn/hms0j15+wiKbwQDQLjYfvhmdCtXm5MhhdgBmdD
k1xFtAuE2F6v6BG1K/e1mkQ0n99NpqfaEX38KwT59yk1VTasqJP+E06Wh2whgvp
DdE71tdpU0suvO0YIFxDGmGjso:2IZj0Wt0st0fu0ajk/ak1Wt0eXcfbfqbaB1Ic
vojj1lVaR9pGusXXYRJPRYTmc6pQefcDjcyGxWtg:5qn9/3w5H1Ict4D0K5xVRDKH
DRZ54ghCgivzqzF47964ccT2t4NRdzxF0s12sCgcEAjtBeuXeetxwJAUcqAe
cFG0+5v8sFmzL4ndduNr+/dCzN/UmfF088x fogA3Uqrax8f0lQar0JYdjUH6oYk
Hub4s65tEPWGGu2:i2VCaip1XPh73FCvnwQAL2dvIw49HtxqY2E/Wb1e7qLAG
KYnbIEA6/veZlUrjvvYerzMzCLE0hKE0efQCCgg7BWKLmC6vCxaGw17tizhwD
8j1jXgo1n8yyHKCFdsIB1l1tYuJKEVKeHL68vevhP1zAqHBAKhhuEVVYimoCpmi
7Bjrsx+rmnp+wginiGmcKPP+s+k+DYHsyQ5bXgma0k6b0ACPa91PjZgN5BXkeo0or
dBx1FrSAT4F505M64mC8ouLpErgGwm1rffjy3Ypa/QuDUuGmER0GxiTxR0s5+z4CQ
0dg3rx0kbs/x0kD/08clLdyFegEcErNqRUD1VsJwFuduBae8YsvYve8mFq+R16hC
-----
```

Practical 8 : User management in cloud

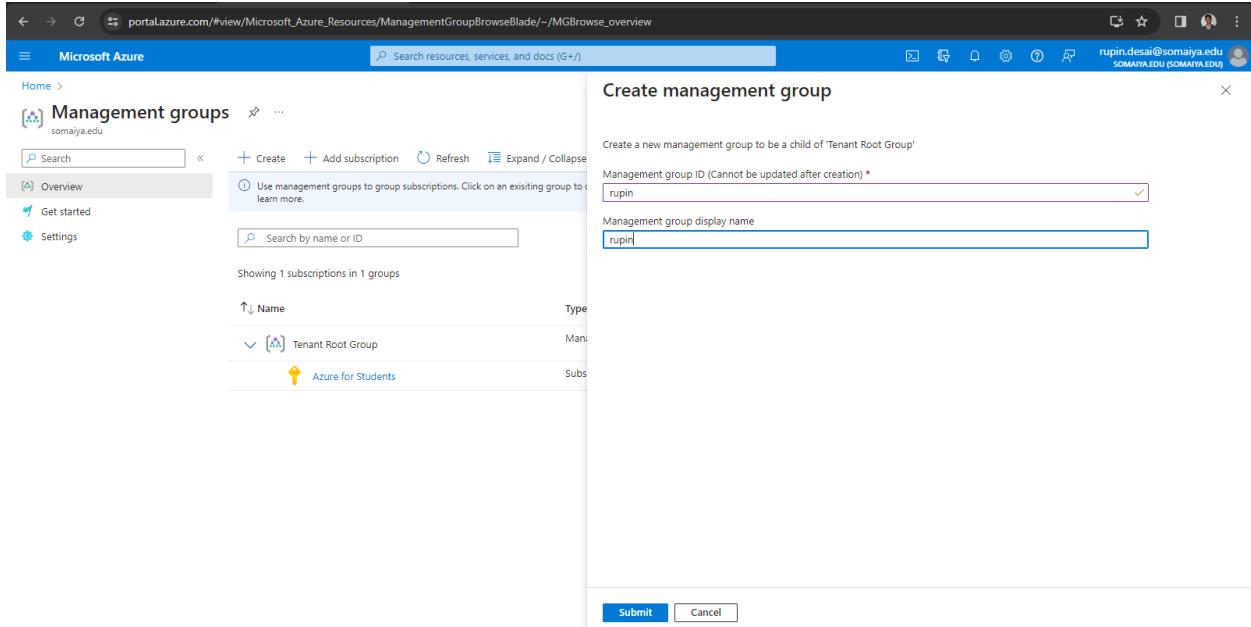
Step 1: Go to management groups



The screenshot shows the Microsoft Azure Management Groups interface. At the top, there's a search bar and a navigation bar with icons for Home, Overview, Get started, and Settings. Below the navigation is a search bar labeled "Search by name or ID". A main message says, "Use management groups to group subscriptions. Click on an existing group to drill in, view details and govern resources. Right-click on any subscription or management group to launch quick actions. Click the 'Get Started' tab to learn more." The main content area displays "Showing 1 subscriptions in 1 groups". A table lists the subscription details:

Name	Type	ID	Total subscriptions
Tenant Root Group	Management group	a64aeab6-f01b-462b-aa9c-44546386ff31	1
Azure for Students	Subscription	df113d71-a83c-44b8-8892-228fdfc41e63	...

Step 2: Create management group



The screenshot shows the Microsoft Azure Management Groups interface with a "Create management group" modal window open on the right side. The main page on the left shows the same management groups list as the previous screenshot. The modal has a title "Create management group" and a sub-instruction "Create a new management group to be a child of Tenant Root Group". It contains two input fields: "Management group ID (Cannot be updated after creation)*" with the value "rupin" and "Management group display name" with the value "rupin". At the bottom of the modal are "Submit" and "Cancel" buttons.

Step 3 : Wait till it updates

The screenshot shows the 'Management groups' blade for the 'rupin' management group. The 'Overview' tab is selected. Key details shown include:

- Name: rupin
- ID: rupin
- Access Level: Owner
- Path: Tenant Root Group / rupin
- Parent management group: Tenant Root Group
- Child management groups: 0
- Total subscriptions: 0

A search bar and a 'Create' button are at the top. Below the details, there's a table for 'Subscriptions' which is currently empty. A large 'Empty Management Group' message with a 'Buddies' icon is centered.

Step 4 : Go to policy -> compliance -> assign policy

The screenshot shows the 'Policy | Compliance' blade. The 'Compliance' tab is selected. Key statistics displayed are:

- Overall resource compliance: 100%
- Resources by compliance state:
 - Compliant: 0
 - Non-compliant: 0
- Non-compliant initiatives: 0 out of 0
- Non-compliant policies: 0 out of 0

On the left, a navigation menu includes 'Overview', 'Getting started', 'Compliance' (selected), 'Remediation', 'Events', 'Authoring', 'Definitions', 'Assignments', and 'Exemptions'. A search bar and filter options ('Scope: rupin', 'Definition type: All definition types', 'Compliance state: All compliance states') are at the top.

Step 5: Fill details

Microsoft Azure

Search resources, services, and docs (G+)

rupin.desai@somaiya.edu SOMAIYA.EDU (SOMAIYA.EDU)

Assign policy

Basics Advanced Parameters Remediation Non-compliance messages Review + create

Scope Scope Learn more about setting the scope *

Optional exclusions Exclusions Optionally select resources to exclude from the policy assignment.

Policy definition Policy definition *

Audit virtual machines without disaster recovery configured

Assignment name * Assignment name *

Audit virtual machines without disaster recovery configured

Description

Policy enforcement

Review + create Cancel Previous Next

Step 6 : Let it update

Microsoft Azure

Search resources, services, and docs (G+)

rupin.desai@somaiya.edu SOMAIYA.EDU (SOMAIYA.EDU)

Home > Policy

Policy | Assignments

Assign policy Assign initiative Refresh

Search Filter by name or ID... Scope : rupin Definition type : All definition types

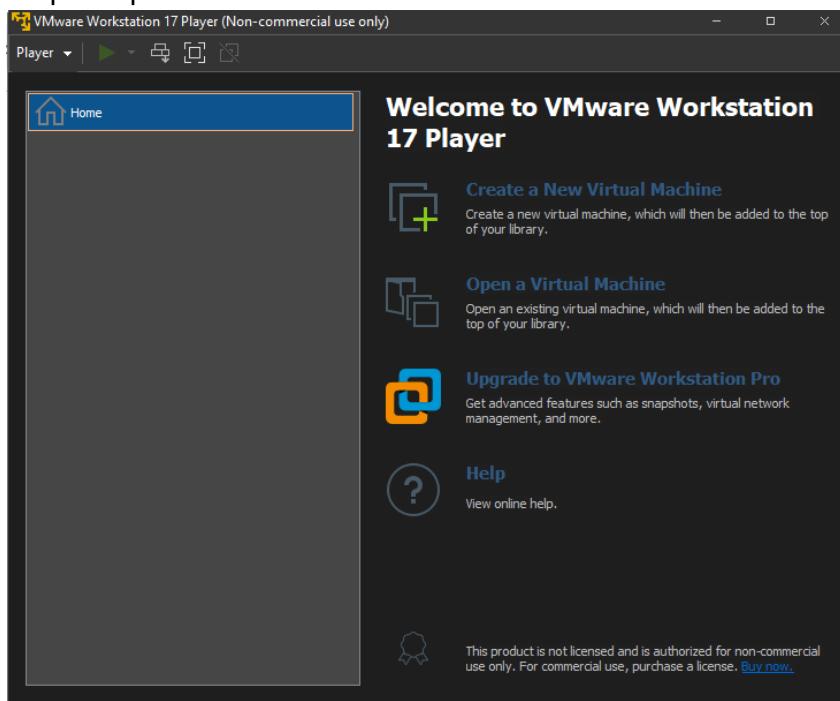
Total Assignments: 2 Initiative Assignments: 0 Policy Assignments: 2

Assignment name	Scope	Type
Audit virtual machines without disaster recovery configured	rupin	Policy
Audit virtual machines without disaster recovery configured	rupin	Policy

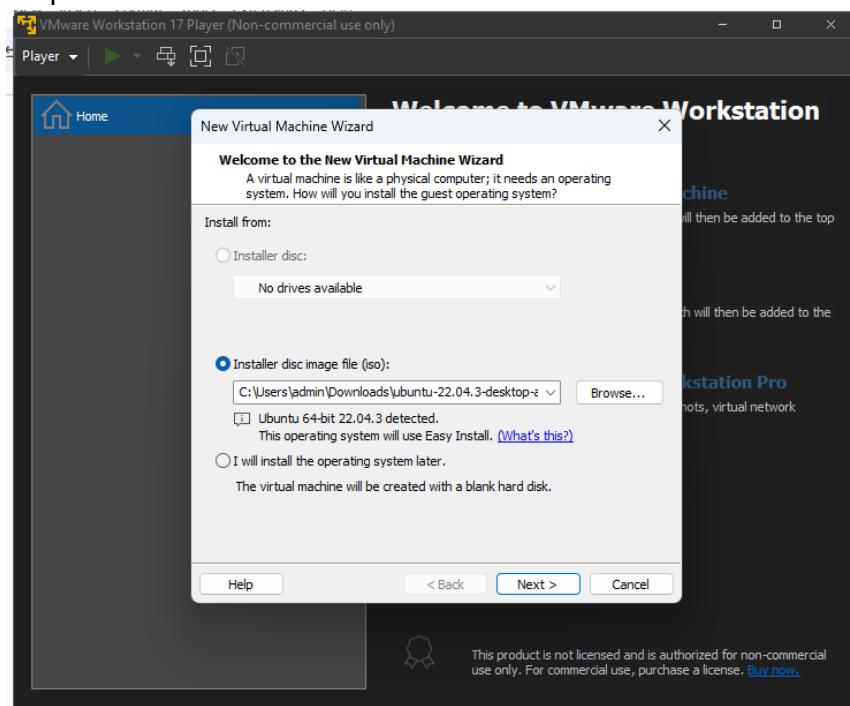
Practical 9 : Virtualization in Cloud

A. Using VMWARE

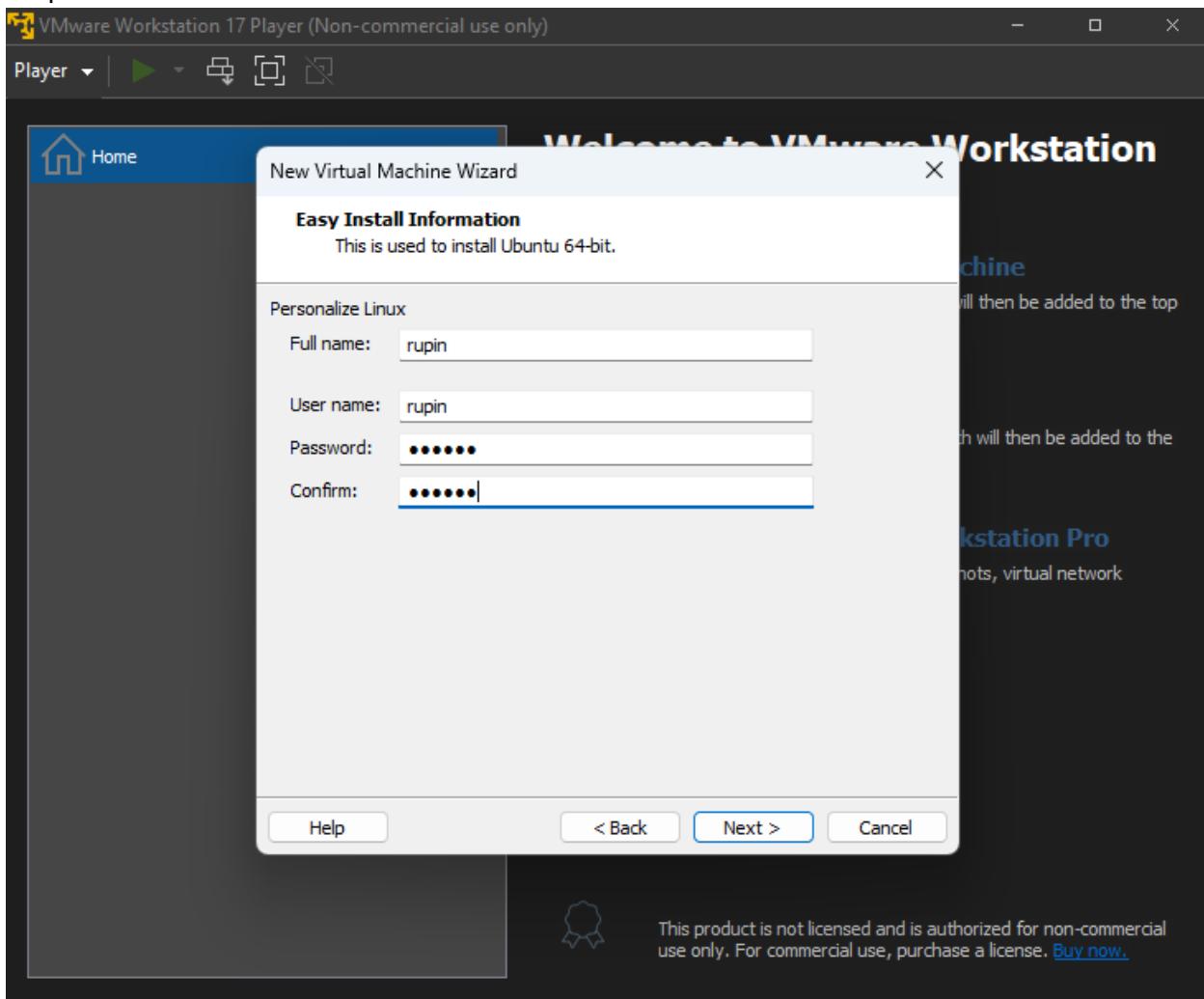
Step 1: Open VM Ware



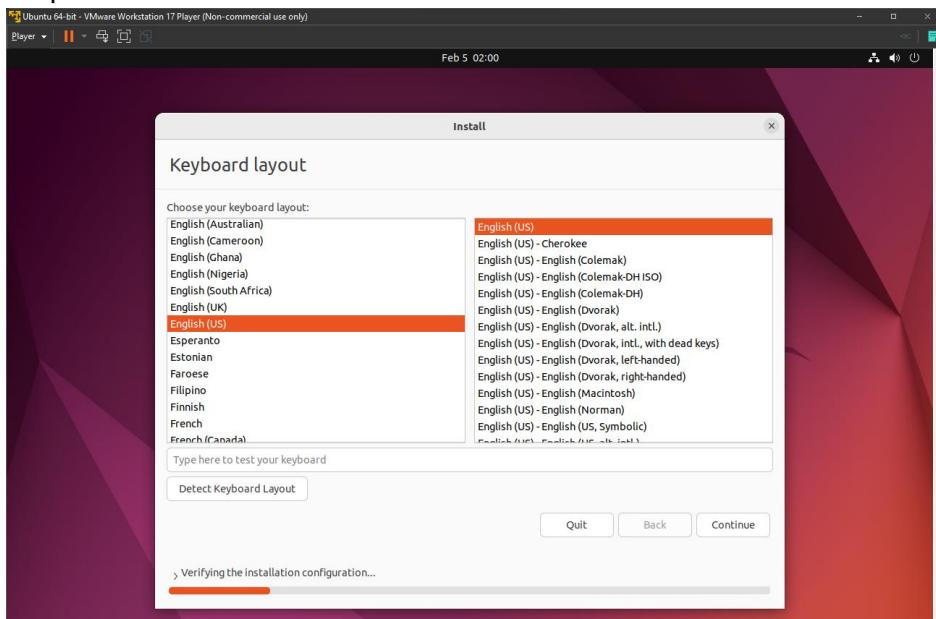
Step 2 : Click new



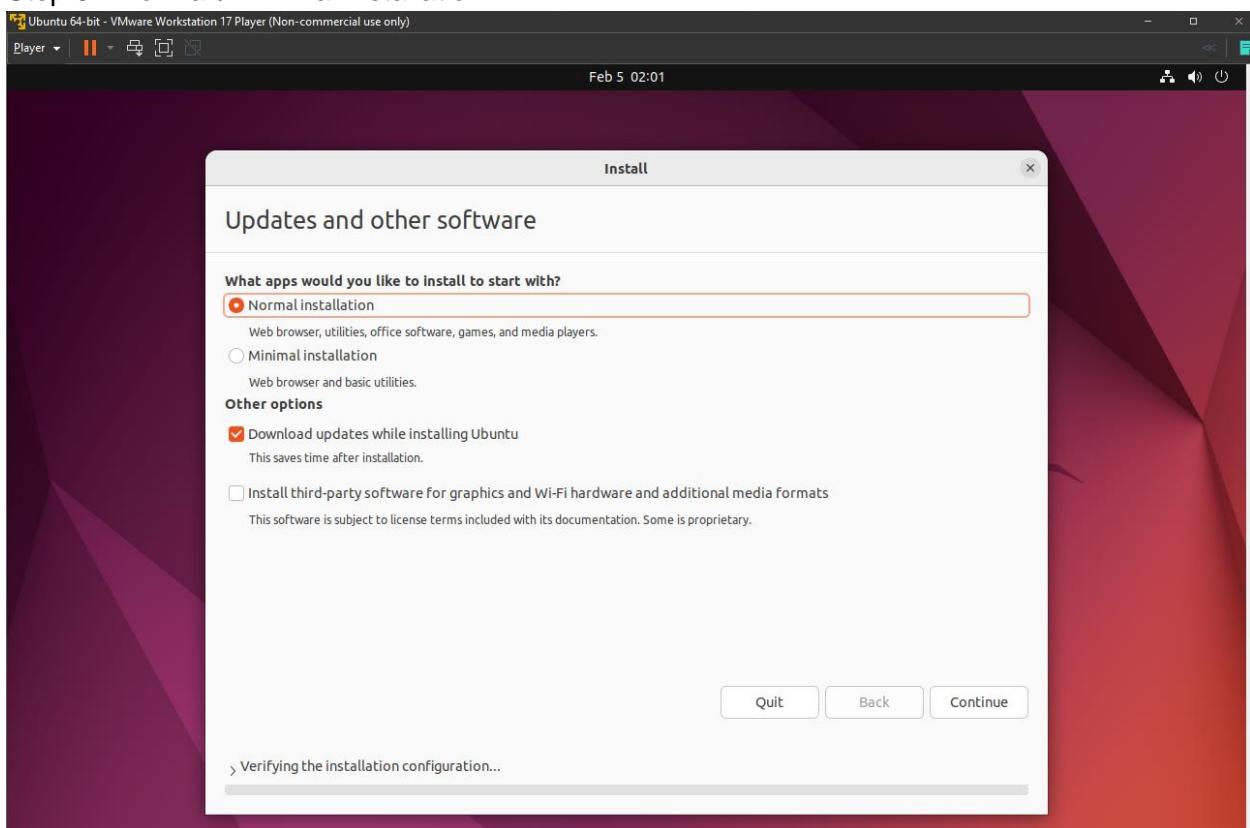
Step 3 - Enter credentials



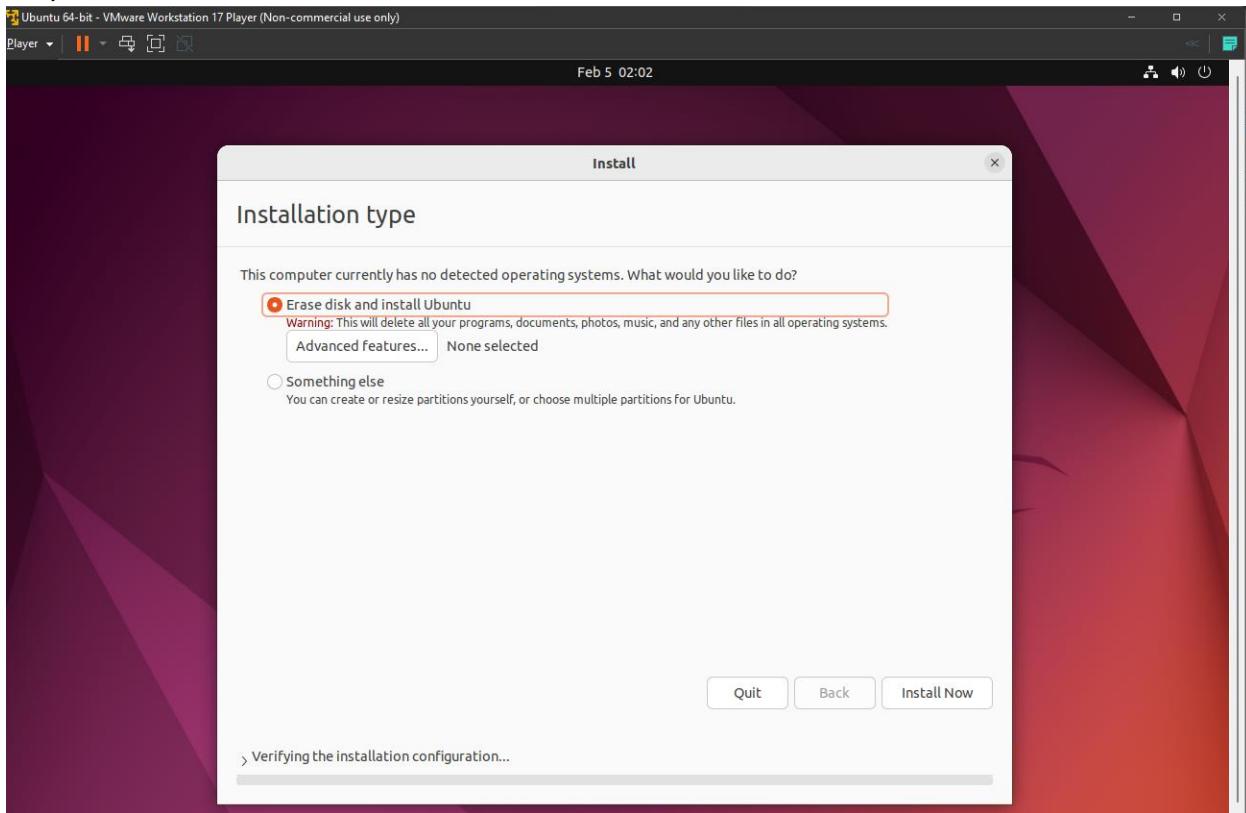
Step 4 - Install ubuntu



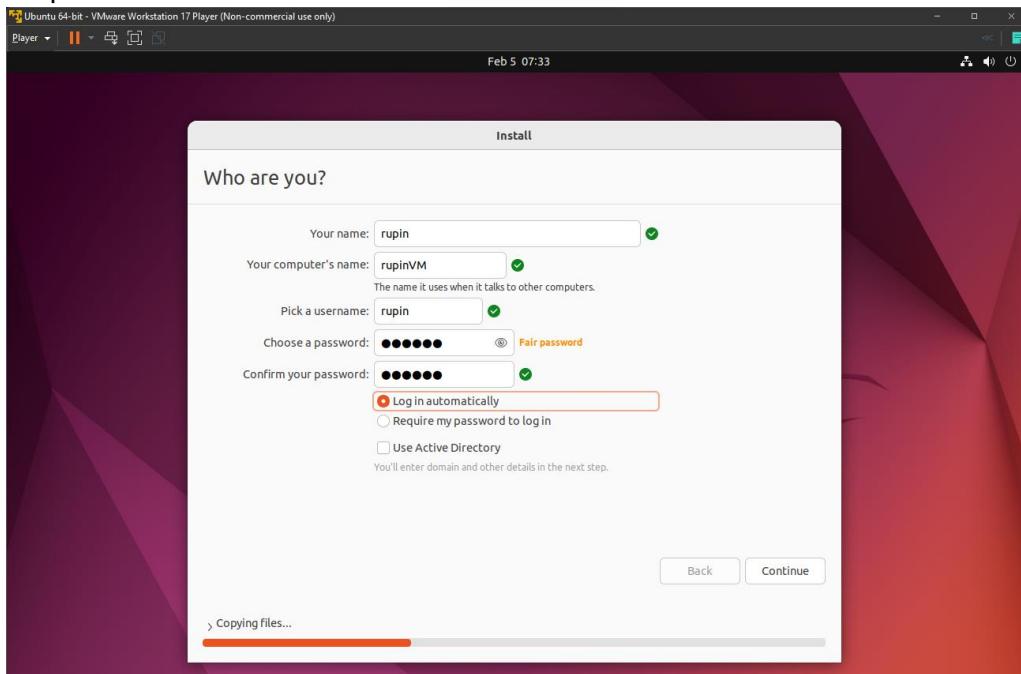
Step 5 - Normal / minimal installation



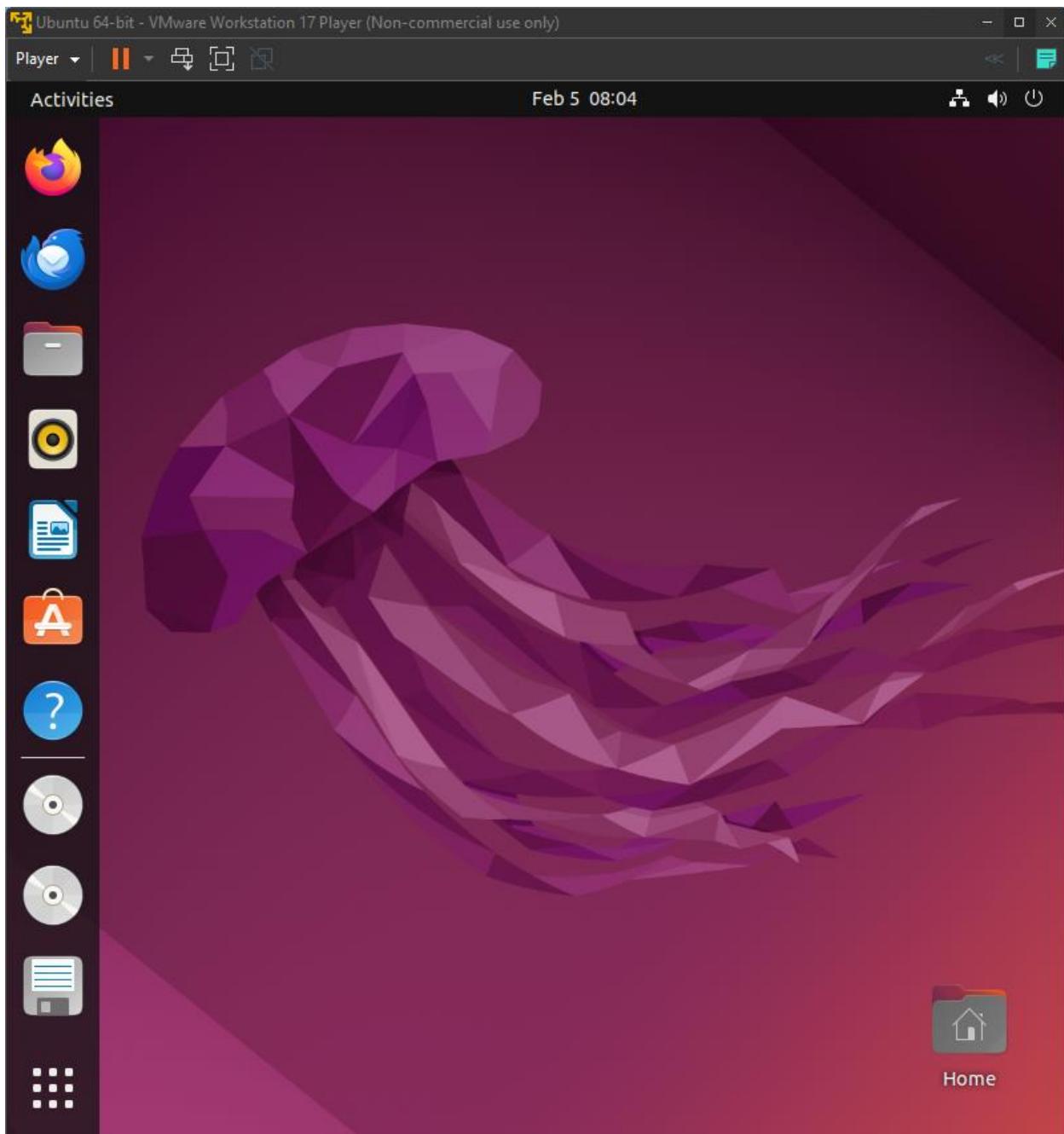
Step 6- erase disk



Step 7 - enter admin credentials



Step 8 - Run ubuntu



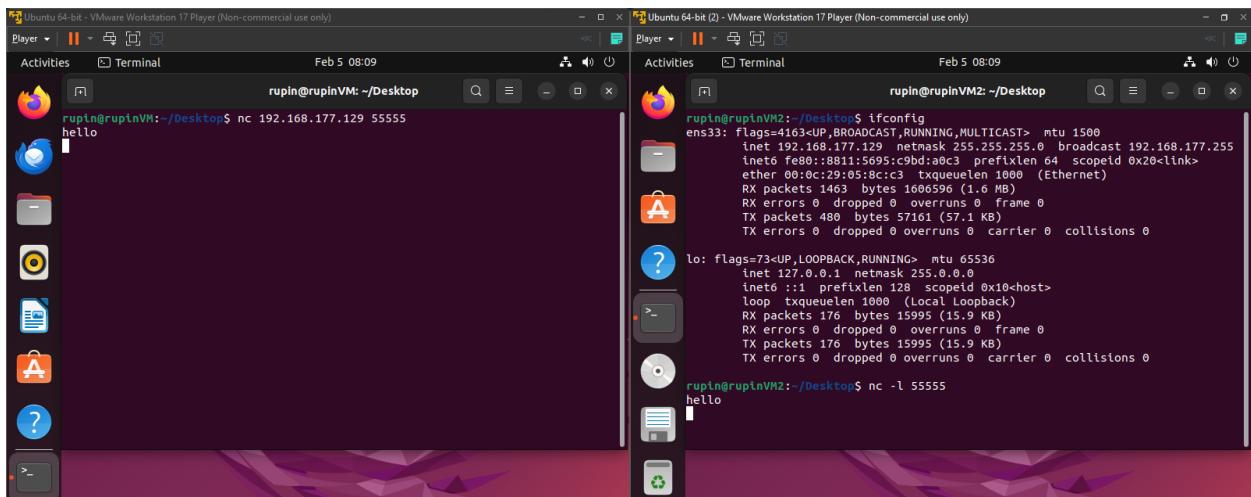
-> Similarly create second virtual machine

->Ping both machines to check connectivity

Use commands to send messages :

Nc -l 55555(\any open port number)

Nc 192.168.179.129(\server's ip) 55555



B. Using Azure

Step 1 : create virtual machine

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

Subscription: Azure for Students

Resource group: (New) RupinVM_group

Virtual machine name: RupinVM

Region: (Asia Pacific) Central India

Availability options: Availability zone

Availability zone: Zones 1

Security type: Trusted launch virtual machines

Image: Windows 10 Pro, version 22H2 - x64 Gen2

Step 2 : fill details and create

Network interface

Virtual network: (new) RupinVM-vnet

Subnet: (new) default (10.0.0.0/24)

Public IP: (new) RupinVM-ip

NIC network security group: basic

Public inbound ports: Allow selected ports (RDP (3389))

Note: 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.

Delete public IP and NIC when VM is deleted:

Step 3 : Let it deploy

The screenshot shows the Microsoft Azure Deployment Overview page for a deployment named "CreateVm-MicrosoftWindowsDesktop.Windows-10-win10-20240208072111". The status is "Deployment is in progress". The deployment details table lists the following resources:

Resource	Type	Status	Operation details
RupinVM	Microsoft.Compute/virtualMachines	Created	Operation details
rupinvm809_z1	Microsoft.Network/networkInterfaces	Created	Operation details
RupinVM-vnet	Microsoft.Network/virtualNetworks	OK	Operation details
RupinVM-nsg	Microsoft.Network/networkSecurityGroups	OK	Operation details
RupinVM-ip	Microsoft.Network/publicIPAddresses	OK	Operation details

On the right side, there are notifications for Microsoft Defender for Cloud, Free Microsoft tutorials, and Work with an expert.

The screenshot shows the Microsoft Azure Deployment Overview page for the same deployment, now showing "Your deployment is complete". The deployment details table is identical to the previous screenshot. On the right side, there is a notification for "Deployment succeeded" indicating the deployment was successful.

Step 4 : Similarly create another machine while choosing the same virtual network from the previous VM

Home >

Create a virtual machine

Basics Disks Networking Management Monitoring Advanced Tags Review + create

Define network connectivity for your virtual machine by configuring network interface card (NIC) settings. You can control ports, inbound and outbound connectivity with security group rules, or place behind an existing load balancing solution.
[Learn more](#)

Network interface

When creating a virtual machine, a network interface will be created for you.

Virtual network* ⓘ RupinVM-vnet

Subnet* ⓘ default (10.0.0.0/24)

Public IP ⓘ (new) rupin2-ip

NIC network security group ⓘ None Basic Advanced

Public inbound ports* ⓘ None Allow selected ports

Select inbound ports* RDP (3389)

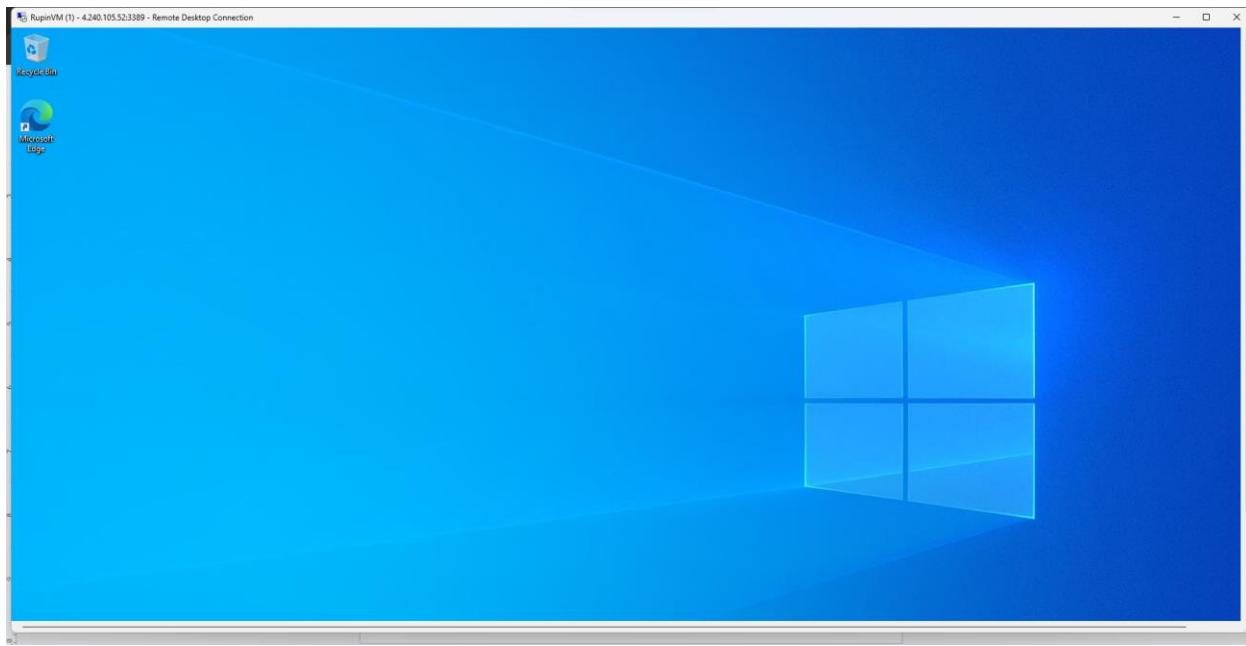
⚠ This will allow all IP addresses to access your virtual machine. This is only recommended for testing. Use the Advanced controls in the Networking tab to create rules to limit inbound traffic to known IP addresses.

Delete public IP and NIC when VM is deleted

Review + create

Step 5 : Run the machine

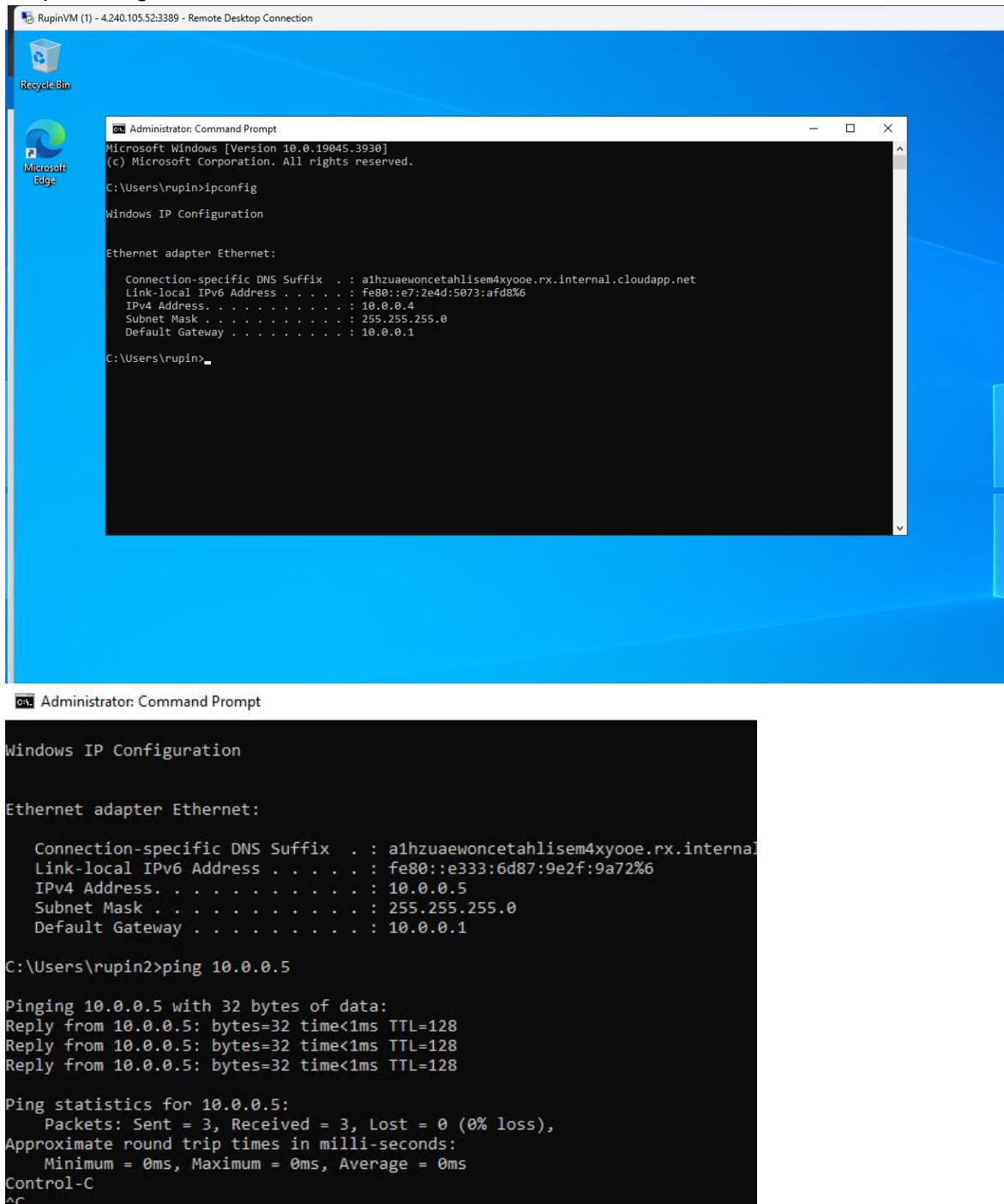
The screenshot shows the RupinVM Connect interface for a virtual machine named "RupinVM". The left sidebar contains navigation links for Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Settings (Networking, Connect, Disks, Size, Microsoft Defender for Cloud, Advisor recommendations, Extensions + applications, Availability + scaling, Configuration, Identity, Properties, Locks), Operations (Bastion, Auto-shutdown), and a Search bar. The main content area displays connection information: "Connecting using Public IP address | 4.240.105.52". It includes fields for Admin username ("rupin"), Port (3389, with a "Check access" link), and Just-in-time policy (Unsupported by plan). Below this, a "Most common" section lists "Native RDP" with a "Select" button, a "Download RDP file" button, and a heart icon. A link to "More ways to connect (3)" is also present.



Step 6 : Disable firewall on both the machines

A screenshot of the Windows Security settings window. The left sidebar shows navigation options like Home, Virus & threat protection, Account protection, Firewall & network protection (which is selected), App & browser control, Device security, Device performance & health, and Family options. The main content area is titled "Firewall & network protection" and includes sections for "Domain network" (Firewall is off, "Turn on" button), "Private network" (Firewall is off, "Turn on" button), and "Public network (active)" (Firewall is off, "Turn on" button). A sidebar on the right provides links to "Windows Community videos", "Learn more about Firewall & network protection", "Have a question?", "Get help", "Who's protecting me?", "Manage providers", "Help improve Windows Security", "Give us feedback", "Change your privacy settings", "View and change privacy settings for your Windows 10 device", "Privacy settings", "Privacy dashboard", and "Privacy Statement".

Step 7 : Ping both devices



```
RupinVM (1) - 4.240.105.52:3389 - Remote Desktop Connection

Administrator: Command Prompt
Microsoft Windows [Version 10.0.19045.3930]
(c) Microsoft Corporation. All rights reserved.

C:\Users\rupin>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

Connection-specific DNS Suffix . . . : a1hzuaewoncetahlisem4xyoee.rx.internal.cloudapp.net
Link-local IPv6 Address . . . . . : fe80::e7:2e4d:5073:af8%6
IPv4 Address . . . . . : 10.0.0.4
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 10.0.0.1

C:\Users\rupin>

Administrator: Command Prompt

Windows IP Configuration

Ethernet adapter Ethernet:

Connection-specific DNS Suffix . . . : a1hzuaewoncetahlisem4xyoee.rx.internal
Link-local IPv6 Address . . . . . : fe80::e333:6d87:9e2f:9a72%6
IPv4 Address . . . . . : 10.0.0.5
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 10.0.0.1

C:\Users\rupin>ping 10.0.0.5

Pinging 10.0.0.5 with 32 bytes of data:
Reply from 10.0.0.5: bytes=32 time<1ms TTL=128
Reply from 10.0.0.5: bytes=32 time<1ms TTL=128
Reply from 10.0.0.5: bytes=32 time<1ms TTL=128

Ping statistics for 10.0.0.5:
    Packets: Sent = 3, Received = 3, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
Control-C
^C
```

Practical 10 : Cost Management in Azure

Artifacts free tier and upgrade

Azure Artifacts is provided at no cost for every organization with up to 2 GiB of storage. Upon reaching the maximum storage limit, you won't be able to publish new artifacts. To continue, you'll need to either delete some of your existing artifacts or set up billing to increase your storage limit. Explore the Pricing Calculator for further insights into Azure DevOps billing.

[View organization billing](#)

Follow the steps below to access your organization's billing settings:

1. Sign in to your Azure DevOps organization.
2. Select Organization settings, and then select Billing.
3. View your Artifacts tier and usage limit.

The screenshot shows the Azure DevOps Organizations dashboard. At the top, there is a navigation bar with icons for back, forward, search, and user information. The main header reads "Azure DevOps Organizations" with a "Create new organization" button. Below the header, it shows the URL "dev.azure.com/rupindesai" and indicates the user is the owner. On the left, there is a user profile section for "Rupin Desai" with a blue circular icon containing "RD". It lists email (rupin.desai@somaiya.edu), website (somaiya.edu), location (India), and contact information (rupin.desai@somaiya.edu). Below this, there is a "Visual Studio Dev Essentials" section with a brief description and a "Use your benefits" link. In the center, there is a "Projects" section showing one project named "prac5" with a green square icon. To the right, there is an "Actions" section with a "New project" link. At the bottom, there is a footer with links for "Azure DevOps", "Visual Studio", "Related sites", "Products", and "Support".

The screenshot shows the Azure DevOps interface for the organization 'rupindesai'. The top navigation bar includes back, forward, refresh, and search icons, along with the URL 'dev.azure.com/rupindesai'. The main header features the Azure DevOps logo and the organization name 'rupindesai'. A sidebar on the left contains links for 'New organization' and 'What's new' (highlighted in blue), followed by a section for 'Sprint 233' which includes a message about Team automation rules and validation. Below this is an 'Organization settings' link. The main content area displays a project card for 'prac5', which has a green 'P' icon. At the bottom of the project card, there are five small circular dots. The top navigation bar also includes links for 'Projects', 'My work items', and 'My pull requests'.

The screenshot shows the Azure DevOps Settings/Billing page. The left sidebar lists various settings categories like General, Boards, Pipelines, and Repos. The 'Billing' section is currently selected. The main content area displays usage statistics and trial information.

Resource Type	Current Usage	Usage Limit	
MS Hosted CI/CD	1800 minutes	0	
Self-Hosted CI/CD	1	0	
Visit parallel jobs for full details on free pipelines and public concurrency			
Boards, Repos and Test Plans	Free		
Basic users	5		
Basic + Test Plans	Start free trial		
Settings	Access level		
Default access level for new users	Stakeholder		
Advanced Security	Used		
Unique active committers	0		
Advanced Security is billed based on the number of unique active committers in repositories. Active committers are users that have committed to an Advanced-Security-enabled repository in the last 90 days. Learn more			
Resources	Free	Used	Usage limit
Artifacts	2 GiB*	Less than 1 GiB	Up to 2 GiB free

*Artifacts now bills for packages-only. For other updates, please see <https://aka.ms/artbilling>.

Practical 11 : Web Hosting in cloud

Step 1 : Create Web Hosting

The screenshot shows the 'Create Static Web App' wizard in the Microsoft Azure portal. The 'Basics' tab is selected. The page displays the following information:

- Project Details:** A note states: "App Service Static Web Apps is a streamlined, highly efficient solution to take your static app from source code to global high availability. Pre-rendered content is distributed globally with no web servers required." A "Learn more" link is provided.
- Subscription:** Set to "Azure for Students".
- Resource Group:** Set to "(New) BasicLogin_group".
- Static Web App details:** Name is "BasicLogin".
- Hosting plan:** Plan type is set to "Free: For hobby or personal projects".
- Azure Functions and staging details:** Region is set to "East Asia".
- Deployment details:** Source is set to "GitHub".
- Github account:** A link to "Sign in with GitHub Click here to login".

At the bottom, there are "Review + create" and "Next : Tags >" buttons.

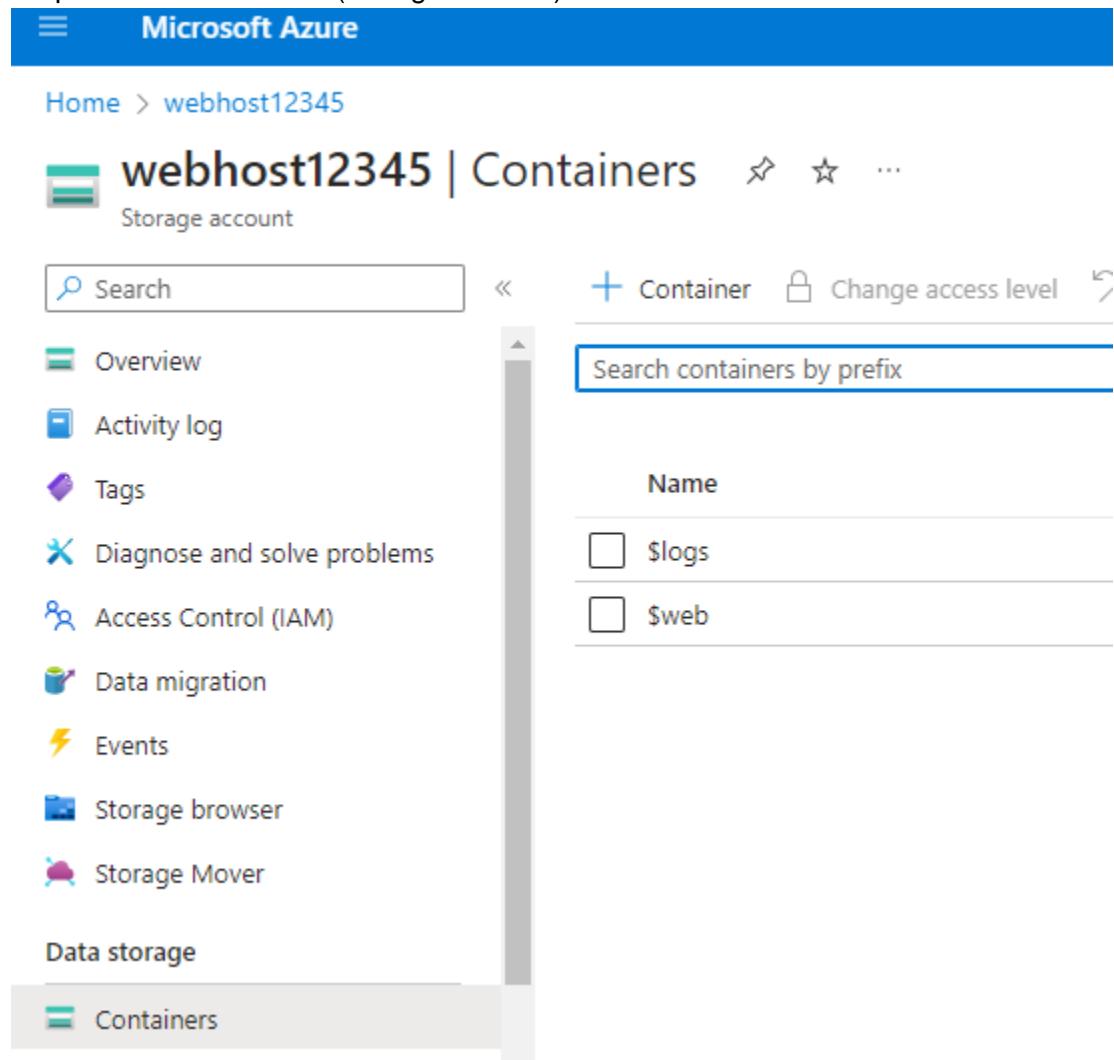
Step 2 : Name the documents

The screenshot shows the "Static website" configuration page for the "webhost12345" resource. The left sidebar lists "Storage account", "Data management", "Static website", "Settings", "Resource sharing (CORS)", "Automation", and "Export template". The "Static website" section is active, showing the following settings:

- Storage account:** "we" (selected).
- Settings:** "Enabled" (radio button selected).
- Primary endpoint:** "https://webhost12345.z29.web.core.windows.net/"
- Secondary endpoint:** "https://webhost12345-secondary.z29.web.core.windows.net/"
- Index document name:** "index.html"
- Error document path:** "404.html"

At the top, there are "Save", "Discard", and "Give feedback" buttons. The URL bar shows "Home > webhost12345".

Step 3 : Go to containers(storage account)



The screenshot shows the Microsoft Azure Storage Account interface for a storage account named "webhost12345". The left sidebar contains navigation links for Overview, Activity log, Tags, Diagnose and solve problems, Access Control (IAM), Data migration, Events, Storage browser, and Storage Mover. Under the "Data storage" section, the "Containers" link is highlighted. The main content area displays a list of containers with a search bar at the top. Two containers are listed: "\$logs" and "\$web".

Microsoft Azure

Home > webhost12345

webhost12345 | Containers

Storage account

Search

+ Container Change access level

Search containers by prefix

Name

\$logs

\$web

Overview

Activity log

Tags

Diagnose and solve problems

Access Control (IAM)

Data migration

Events

Storage browser

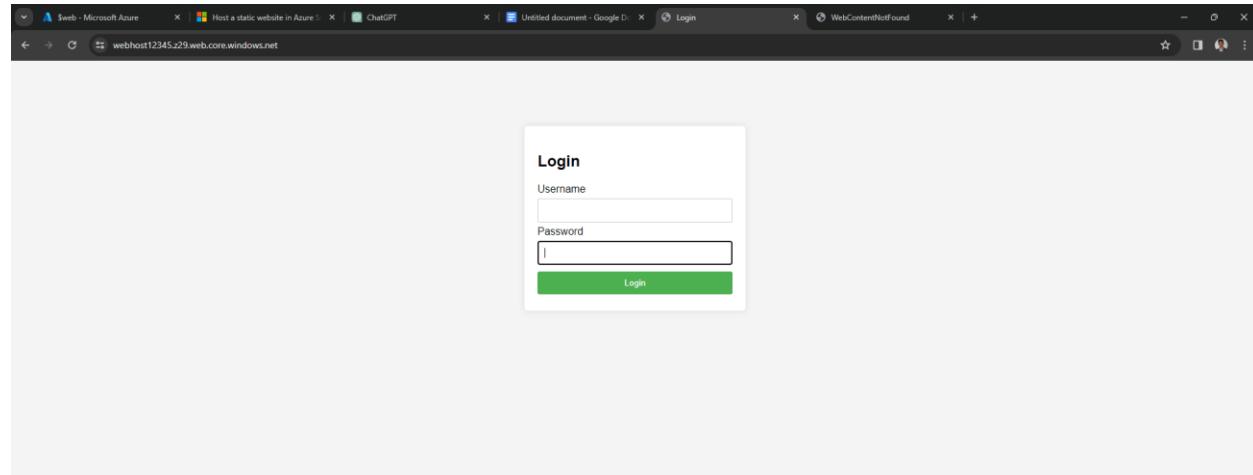
Storage Mover

Data storage

Containers

Step 4 : Upload your web page

The screenshot shows the Microsoft Azure Storage interface for the '\$web' container. The left sidebar has 'Overview' selected. The main area shows a search bar, an 'Upload' button, and a 'Change access level' button. Below these are sections for 'Authentication method' (Access key) and 'Location' (\$web). A search bar for blobs by prefix ('index.html') is also present. On the right, a list of files shows 'index.html'. The bottom part of the screenshot shows a browser window displaying a simple 'Login' form with fields for 'Username' and 'Password' and a 'Login' button.



Code :

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Login</title>
    <style>
        body {
            font-family: Arial, sans-serif;
            background-color: #f4f4f4;
        }
        .login-container {
            width: 300px;
            margin: 100px auto;
            background-color: #fff;
            padding: 20px;
            border-radius: 5px;
            box-shadow: 0px 0px 10px rgba(0,0,0,0.1);
        }
        input[type="text"],
        input[type="password"],
        input[type="submit"] {
            width: 100%;
            padding: 10px;
            margin: 5px 0;
            box-sizing: border-box;
            border: 1px solid #ccc;
            border-radius: 3px;
        }
        input[type="submit"] {
            background-color: #4CAF50;
            color: white;
            border: none;
            cursor: pointer;
        }
        input[type="submit"]:hover {
            background-color: #45A049;
        }
    </style>
</head>
<body>
    <div class="login-container">
        <input type="text" placeholder="Email" />
        <input type="password" placeholder="Password" />
        <input type="submit" value="Login" />
    </div>
</body>
</html>
```

```
</style>
</head>
<body>
<div class="login-container">
    <h2>Login</h2>
    <form action="your_login_handler_page.php" method="POST">
        <label for="username">Username</label>
        <input type="text" id="username" name="username" required>
        <label for="password">Password</label>
        <input type="password" id="password" name="password" required>
        <input type="submit" value="Login">
    </form>
</div>
</body>
</html>
```

Practical 12

Topic : Security as a service

Step 1 : Create SQL Database server

The screenshot shows the 'Create SQL Database Server' page in the Microsoft Azure portal. The top navigation bar includes 'Microsoft Azure', a search bar, and a 'Create' button. The breadcrumb trail shows 'Home > SQL databases > Create SQL Database'. The main title is 'Create SQL Database Server' with a '...' link.

The 'Server name *' field contains 'rupindb' with a green checkmark. Below it is the suffix '.database.windows.net'. The 'Location *' dropdown is set to '(US) East US'.

The 'Authentication' section includes a note: 'Azure Active Directory (Azure AD) is now Microsoft Entra ID. [Learn more](#)'.

The 'Select your preferred authentication methods for accessing this server.' section allows choosing between 'Use Microsoft Entra-only authentication', 'Use both SQL and Microsoft Entra authentication' (which is selected), and 'Use SQL authentication'.

The 'Set Microsoft Entra admin' section shows an email address 'rupin.desai@somaiya.edu' and an Admin Object/App ID: '5d2a2951-0a50-4282-a9b8-3607cf6dedff'. A 'Set admin' button is present.

The 'Server admin login *' field contains 'rupindb' with a green checkmark. The 'Password *' and 'Confirm password *' fields both contain '*****' with green checkmarks.

A blue 'OK' button is located at the bottom left of the form.

Step 2 : Review + create

The screenshot shows the 'Create SQL Database' wizard in Microsoft Azure. The top navigation bar includes 'Microsoft Azure', a search bar, and a 'Home > SQL databases >' breadcrumb. The main title is 'Create SQL Database'. A call-to-action button 'Apply offer (Preview)' is visible. A promotional banner for 'SQL Database Hyperscale' is present. The 'Project details' section allows selecting a subscription ('Azure for Students') and a resource group ('BasicLogin_group'). The 'Database details' section includes fields for 'Database name' ('rupin'), 'Server' ('(new) rupindb (East US)'), and 'Workload environment' ('Development'). A note indicates default settings for development workloads. Navigation buttons at the bottom include 'Review + create' (highlighted in blue), 'Next : Networking >', and 'Back : General <'.

Step 3 : Select Public endpoint and create

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

Home > SQL databases >

Create SQL Database

Microsoft

Basics Networking Security Additional settings Tags Review + create

Configure network access and connectivity for your server. The configuration selected below will apply to the selected server 'rupinadb' and all databases it manages. [Learn more](#)

Network connectivity

Choose an option for configuring connectivity to your server via public endpoint or private endpoint. Choosing no access creates with defaults and you can configure connection method after server creation. [Learn more](#)

Connectivity method * No access Public endpoint Private endpoint

Firewall rules

Setting 'Allow Azure services and resources to access this server' to Yes allows communications from all resources inside the Azure boundary, that may or may not be part of your subscription. [Learn more](#)

Setting 'Add current client IP address' to Yes will add an entry for your client IP address to the server firewall.

Allow Azure services and resources to access this server * No Yes

Add current client IP address * No Yes

Connection policy

Configure how clients communicate with your SQL database server. [Learn more](#)

Connection policy Default - Uses Redirect policy for all client connections originating inside of Azure (except Private Endpoint connections) and Proxy for all client connections originating outside Azure Proxy - All connections are proxied via the Azure SQL Database gateways Redirect - Clients establish connections directly to the node hosting the database

Cost summary

General Purpose (GP_S_Gen5_1)	9.57
Cost per GB (in INR)	9.57
Max storage selected (in GB)	x 41.6
ESTIMATED STORAGE COST / MONTH	398.00 INR
COMPUTE COST / VCORE SECOND ¹	0.012058 INR

NOTES

¹ Serverless databases are billed in vCore seconds based on a combination of CPU and memory utilization. [Learn more about serverless billing](#)

Review + create < Previous Next : Security >

Step 4 : Wait till deployed

The screenshot shows the Microsoft Azure Deployment Overview page for a deployment named "Microsoft.SQLDatabase.newDatabaseNewServer_938f75dbfdcb493fac06f". The main message is "Your deployment is complete". Deployment details include:

- Deployment name: Microsoft.SQLDatabase.newDatabaseNewServer_938f75dbfdcb493fac06f
- Subscription: Azure for Students
- Resource group: BasicLogin_group
- Start time: 3/4/2024, 7:27:57 AM
- Correlation ID: 0576b286-24ab-43c5-8ff3-c8fa46ca80be

Below the deployment details, there are sections for "Deployment details" and "Next steps". A "Go to resource" button is present. On the right side, there are promotional cards for Cost management, Microsoft Defender for Cloud, Free Microsoft tutorials, and Work with an expert.

Step 5 : Open resources & Go to microsoft defender

The screenshot shows the Microsoft Azure portal interface. The left sidebar lists 'All resources' under 'somaiya.edu (somaiya.edu)'. The main content area is focused on the 'rupin' SQL server resource. On the right, there's a 'Notifications' panel showing a deployment succeeded message. Under the 'Features' section, 'Microsoft Defender for SQL' is listed as 'NOT CONFIGURED'.

Step 6 : Go to microsoft defender

The screenshot shows the Microsoft Defender for Cloud portal. The left sidebar includes sections like 'General', 'Getting started', 'Cloud Security Explorer', and 'Management'. The main content area features a 'Getting started' section with a '30-day free trial' offer. It also displays three key features: 'Cloud security posture management', 'Cloud workload protection for machines', and 'Advanced threat protection for PaaS'.

Step 7 : Configured

The screenshot shows the Azure portal interface for managing a SQL server named 'rupindb'. The left sidebar contains navigation links for Home, Overview, Activity log, Access control (IAM), Tags, Quick start, Diagnose and solve problems, Settings (Microsoft Entra ID, SQL databases, SQL elastic pools, DTU quota, Properties, Locks), Data management (Backups, Deleted databases, Failover groups, Import/Export history), Security (Networking, Microsoft Defender for Cloud, Transparent data encryption, Identity), and Notifications.

The main content area displays the 'Essentials' section for the 'rupindb' SQL server. It shows the following details:

Setting	Value
Resource group (move)	: basicLogin_group
Status	: Available
Location	: East US
Subscription (move)	: Azure for Students
Subscription ID	: df113d71-e83c-44b8-8892-228fdfc41e63
Tags (edit)	: Add tags

Under the 'Features' tab, six features are listed with their status:

Feature	Status
Microsoft Entra admin	CONFIGURED
Microsoft Defender for SQL	CONFIGURED
Automatic tuning	CONFIGURED
Auditing	NOT CONFIGURED
Failover groups	NOT CONFIGURED
Transparent data encryption	SERVICE-MANAGED KEY

At the bottom, the 'Available resources' section lists one database named 'rupin'.

Step 8 : Open and connect in ssms

