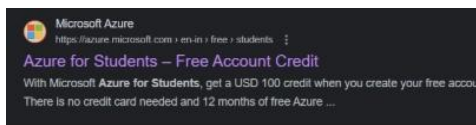


NAME : SACHIN MANOJ SHARMA
BSC.IT
SEAT NO: 31010921047
SUBJECT: CLOUD COMPUTING

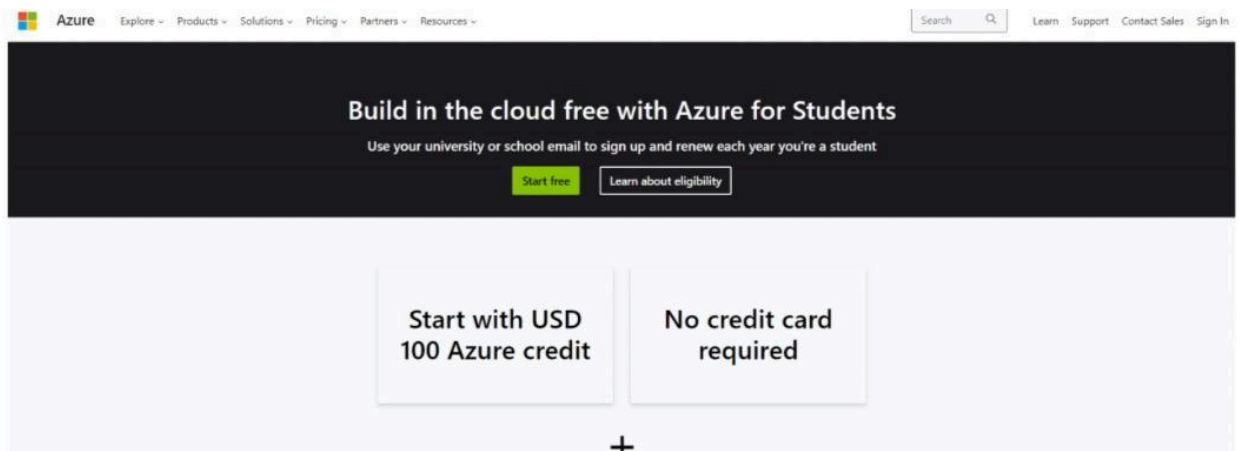
Practical 1

Setting up of Azure Account.

1. Search for "Microsoft Azure for Students" on Google and click on the link.



2. Click on "Start Free"



3. Sign in to Microsoft using the email address and password.



Sign in

No account? [Create one!](#)

[Can't access your account?](#)

Back

Next



Sign in with GitHub



Sign-in options

4. Fill in the details mentioned and verify the academic status.

Student Verification



Start by entering your name as per the school records. Select your school's country and enter your school's name. Enter your date of birth as per the school records. The email address may be used to reach you if we have trouble verifying your application, so please enter your school provided email address.

First name

Last name

Country

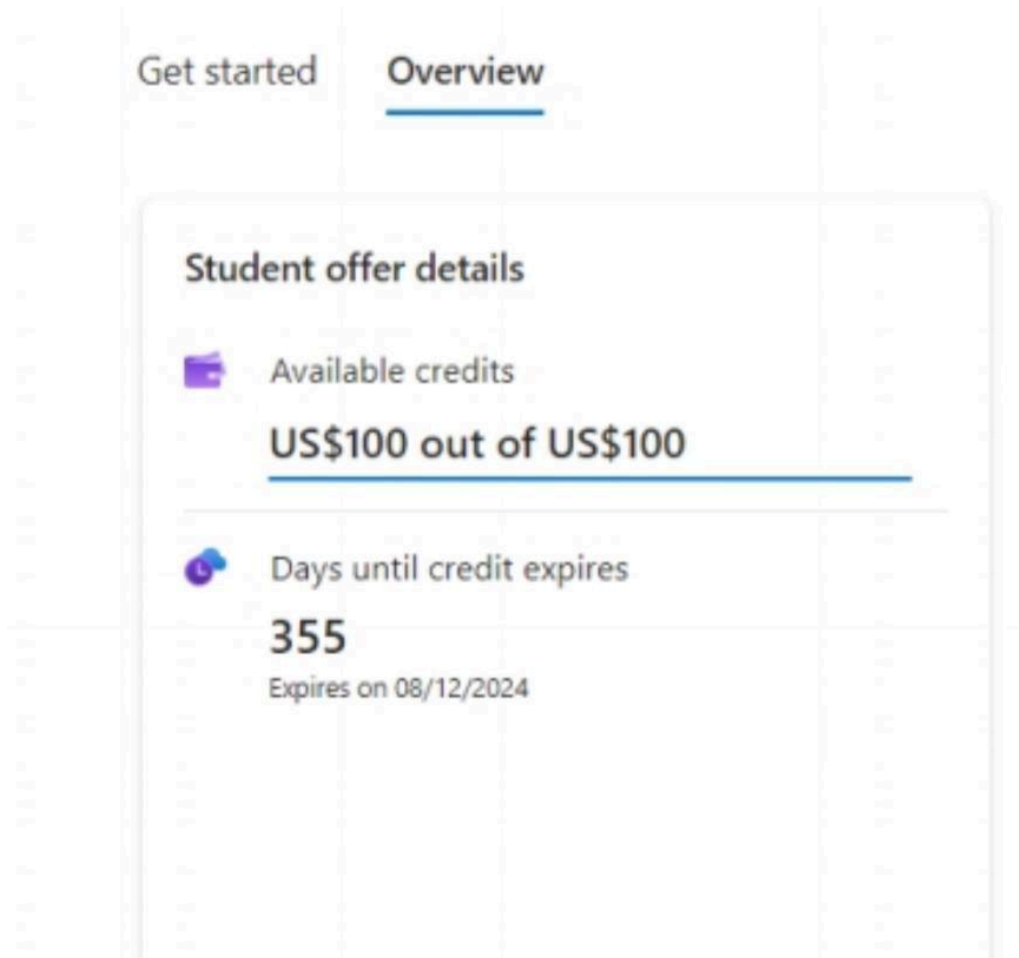
If your country is not listed, the offer is not available in your region. [Learn More](#)

School name

School name will help provide Microsoft with additional information for verification. If available, please enter it here.

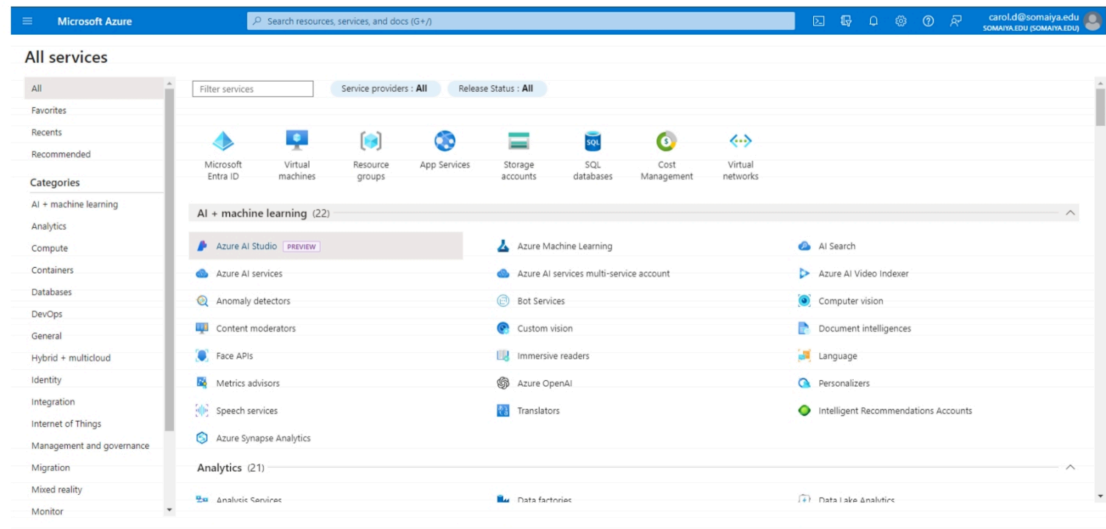
Date of birth

5. The student version of Azure has \$100 credits free for students

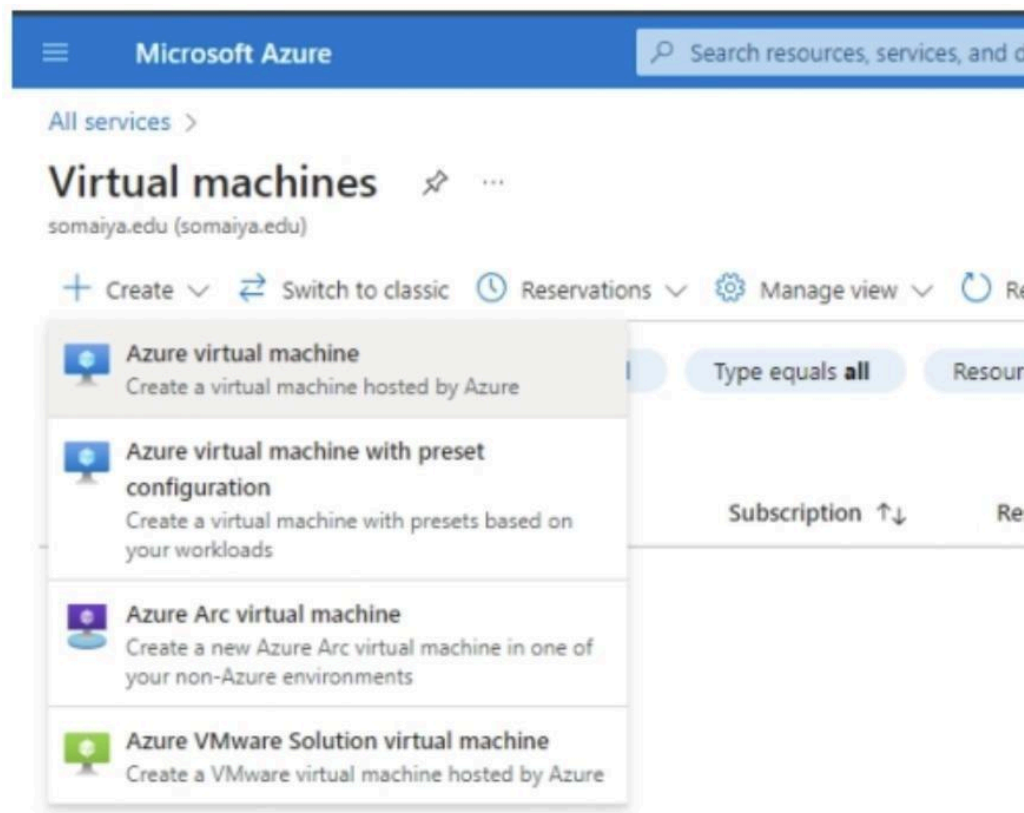


Creating a Virtual machine in Azure with Linux OS

1. Go to Home section on Azure and select "Virtual Machines"



2. Click on "Create" and select "Azure virtual machine - Create a virtual machine hosted by



Azure"

3. Enter name and change region to india

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) VirtualMachine1_group ▼

[Create new](#)

Instance details

Virtual machine name * ⓘ VirtualMachine1 ✓

Region * ⓘ (Asia Pacific) Central India ▼

Availability options ⓘ Availability zone ▼

Availability zone * ⓘ Zones 1 ▼

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

Microsoft Azure

[All services >](#)

Create a virtual machine ...

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) ⓘ ☐

Administrator account

Authentication type ⓘ ☒ SSH public key ☐ Password

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

[All services >](#)

Create a virtual machine ...

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 ▼

Key pair name *

VirtualMachine1_key ✓

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.

Review + create

< Previous


Next : Disks >

Review + create


[< Previous](#)

Next : Disks >

4. Click on "Review + create". After validation, click on "Create".


 Validation passed

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

 Cost given below is an estimate and not the final price. Please use [Pricing calculator](#) for all your pricing needs.

Price

1 X Standard B1s
by Microsoft
[Terms of use](#) | [Privacy policy](#)

Subscription credits apply 

0.8796 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.

Name

Preferred e-mail address

Create [< Previous](#) [Next >](#) [Download a template for automation](#)

5. The machine will be created along with the SSH keys. Download the private key pair present as a "PEM file" and save it. Click on "Go to resource"






Microsoft Azure

Search resources, services, and docs (G+)

All services >

CreateVm-canonical.0001-com-ubuntu-server-focal-2-20231220071742 | Overview

Deployment


 Delete  Cancel  Redeploy  Download  Refresh


Overview

Inputs

Outputs

Template

 Your deployment is complete

 Deployment name: CreateVm-canonical.0001-com-ubuntu-server-f... Start time: 12/20/2023, 7:27:23 AM
Subscription: Azure for Students Correlation ID: 85542b42-40fa-43a5-9ae3-d616495a5449
Resource group: VirtualMachine1_group

Deployment details

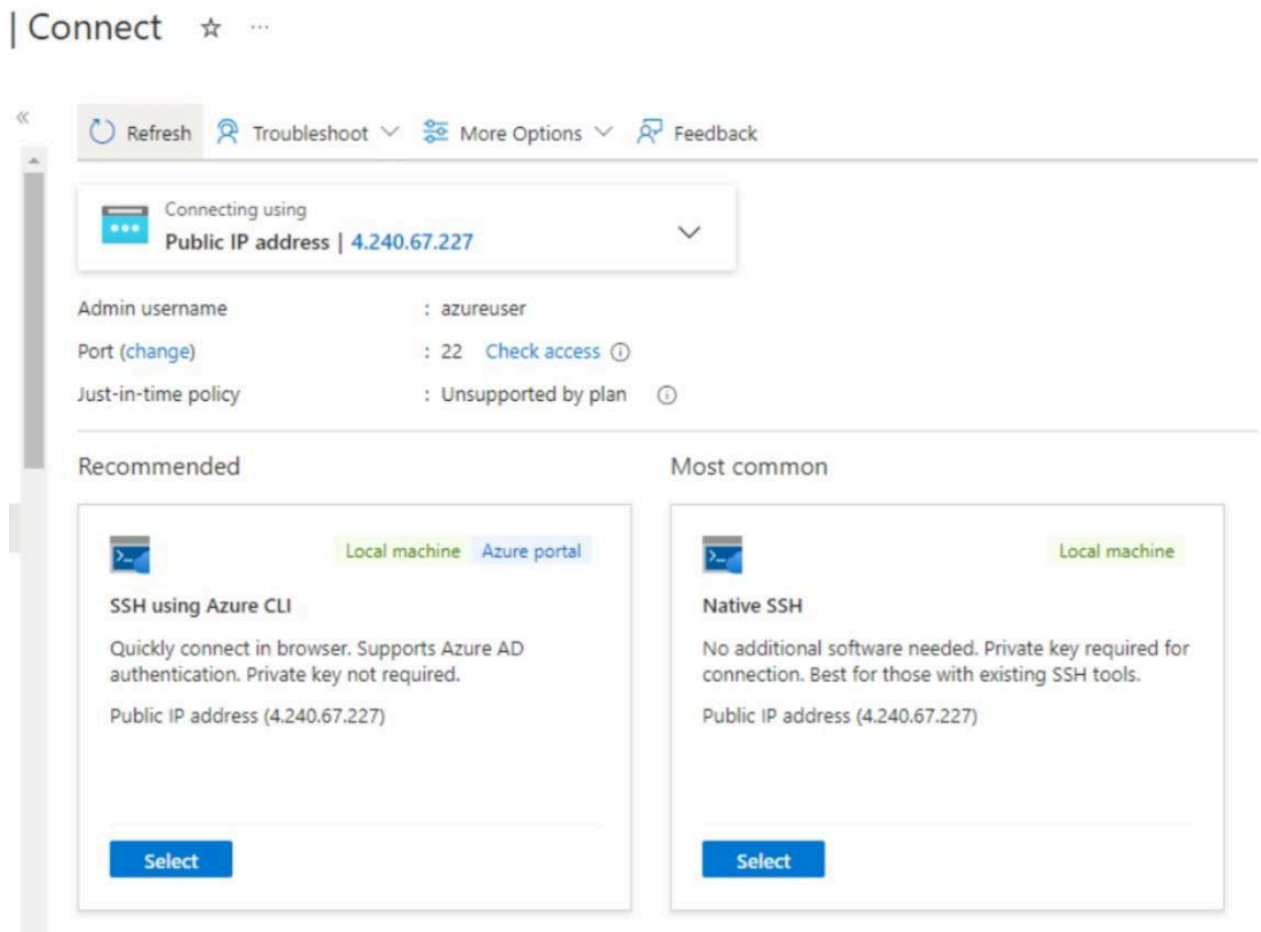
Next steps

Setup auto-shutdown Recommended
Monitor VM health, performance and network dependencies Recommended
Run a script inside the virtual machine Recommended

Go to resource Create another VM

Give feedback
Tell us about your experience with deployment

- Under “Connect” , select “Native SSH”



- Follow the instructions given to connect the local machine i.e. copy the path of the private key (PEM File) and paste it. Then, open the local shell (Command Prompt) on

the PC and execute the command.

Native SSH



Connect from your local machine (Windows)

Switch local machine OS

1 Configure prerequisites for Native SSH

Azure needs to configure some features in order to connect to the VM.

Prerequisites configured

Port 22 access

Port 22 on this virtual machine is accessible from the local machine IP (14.142.143.98). [Learn more](#)

Change the port for connecting to this virtual machine on the Connect page of the virtual machine.

Public IP address: 4.240.67.227

A public IP address is required to connect via this connection method.

Configured

2 Open a local shell (on 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 azureuser@4.240.67.227`



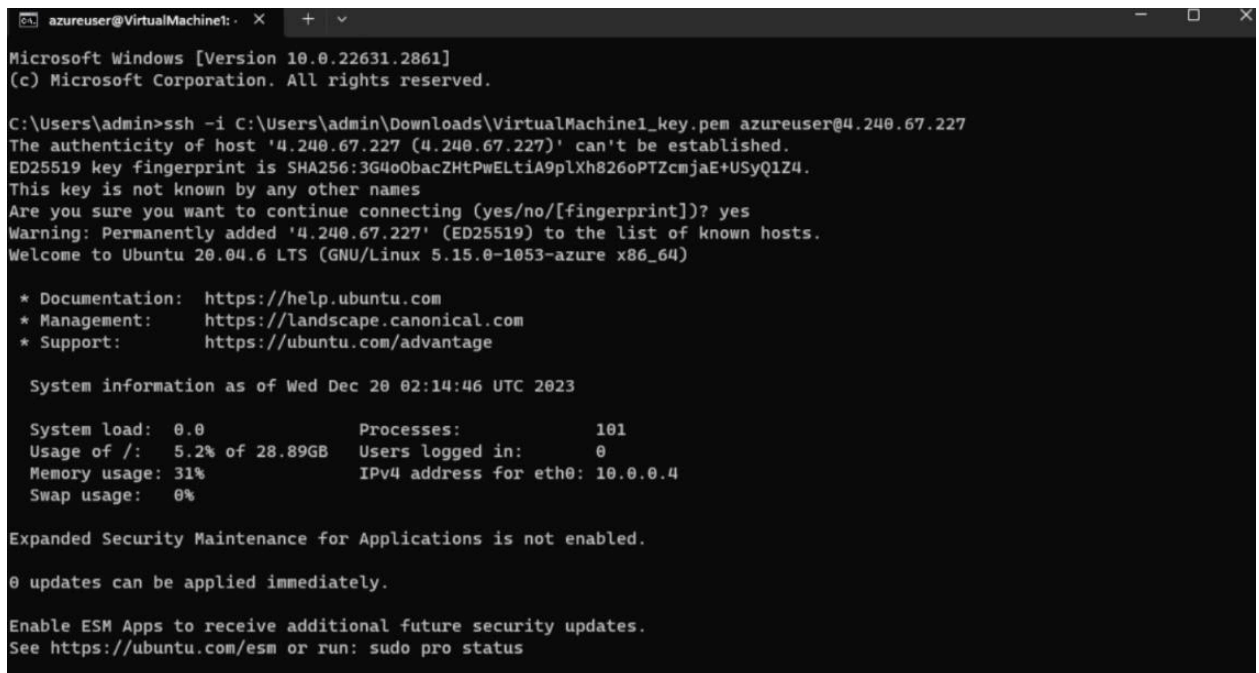
Close

Troubleshooting



Give feedback

8. The command is executed as shown below in the Command Prompt and the local machine is now connected to the virtual machine.



```
azureuser@VirtualMachine1: ~
Microsoft Windows [Version 10.0.22631.2861]
(c) Microsoft Corporation. All rights reserved.

C:\Users\admin>ssh -i C:\Users\admin\Downloads\VirtualMachine1_key.pem azureuser@4.240.67.227
The authenticity of host '4.240.67.227 (4.240.67.227)' can't be established.
ED25519 key fingerprint is SHA256:3G4o0bacZHTpWELtiA9plXh826oPTZcmjaE+USyQ1Z4.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '4.240.67.227' (ED25519) to the list of known hosts.
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-1053-azure x86_64)

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

System information as of Wed Dec 20 02:14:46 UTC 2023

System load:  0.0               Processes:            101
Usage of /:   5.2% of 28.89GB   Users logged in:     0
Memory usage: 31%              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
```

Practical 2 - Creating Excel Blob using storage account in Azure.

1. Go to “Home” and click on “Storage Accounts”
2. Click on Create
3. Enter name for Storage account and fill in required information, then click on “review” and “Create”

[Home](#) > [Storage accounts](#) >

Create a storage account ...

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

Azure Storage is a Microsoft-managed service providing cloud storage that is highly available, secure, durable, scalable, and redundant. Azure Storage includes Azure Blobs (objects), Azure Data Lake Storage Gen2, Azure Files, Azure Queues, and Azure Tables. The cost of your storage account depends on the usage and the options you choose below. [Learn more about Azure storage accounts](#)

Project details

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

Subscription *

Azure for Students



Resource group *

NetworkWatcherRG

[Create new](#)

Instance details

Storage account name ⓘ *

vm1storageaccount

Region ⓘ *

(Asia Pacific) Central India

[Review](#)[< Previous](#)[Next : Advanced >](#)

[Home](#) > [Storage accounts](#) >

Create a storage account ...

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

Basics

Subscription	Azure for Students
Resource Group	NetworkWatcherRG
Location	centralindia
Storage account name	vm1storageaccount
Deployment model	Resource manager
Performance	Standard
Replication	Read-access geo-redundant storage (RA-GRS)

Advanced

Enable hierarchical namespace	Disabled
Enable network file system v3	Disabled
Allow cross-tenant replication	Disabled
Access tier	Hot
Enable SFTP	Disabled
Large file shares	Disabled

[Create](#)[< Previous](#)[Next >](#)[Download a template for automation](#)

4. Storage account is created and deployed successfully. Click on “Go to resource”

The screenshot shows the Microsoft Azure portal interface. At the top, there's a blue header with the Microsoft Azure logo and a search bar. Below the header, the breadcrumb navigation shows "Home >". The main heading is "vm1storageaccount_1703039827783 | Overview", with a "Deployment" icon and a "Go to resource" link. A search bar is present below the heading. On the left, there's a sidebar with navigation links: "Overview" (selected), "Inputs", "Outputs", and "Template". On the right, a green checkmark indicates "Your deployment is complete". Below this, details are provided: "Deployment name: vm1storageaccount_1703039827783", "Subscription: Azure for Students", and "Resource group: NetworkWatcherRG". There are expandable sections for "Deployment details" and "Next steps". A prominent blue button labeled "Go to resource" is visible. At the bottom, there are links for "Give feedback" and "Tell us about your experience with deployment".

5. Click on “Upload”


The screenshot shows the Microsoft Azure portal interface for a storage account. The breadcrumb navigation shows "Home > vm1storageaccount_1703039827783 | Overview >". The main heading is "vm1storageaccount", with a "Storage account" icon and a "Go to resource" link. A search bar is present below the heading. On the left, there's a sidebar with navigation links: "Overview" (selected). On the right, there are action buttons: "Upload", "Open in Explorer", and "Delete". Below these buttons, there's an "Essentials" section.


6. Create an excel file as below and save it.

	A	B
1	Name	Country
2	ABC	India
3	DEF	Thailand
4	GHI	Korea

7. Upload the file. Create a new container and name it.


Upload blob





1 file(s) selected: VM1Excel.xlsx
Drag and drop files here or [Browse for files](#)


Select an existing container

vm1container


[Create new](#)


☐ Overwrite if files already exist

^ Advanced

Blob type ⓘ
Block blob

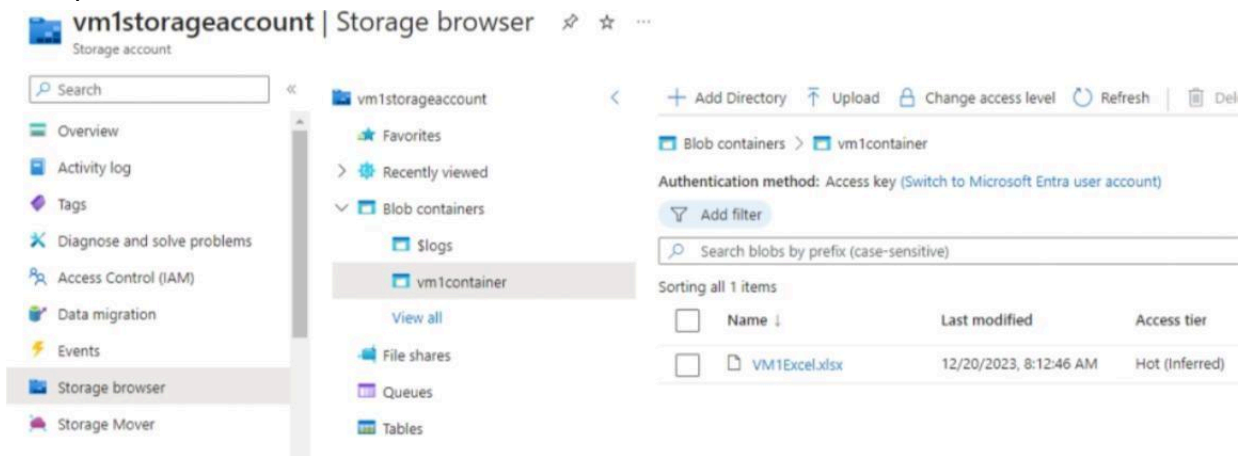
☒ Upload .vhd files as page blobs (recommended)

Block size ⓘ
4 MiB

Access tier ⓘ
Hot (Inferred)

Upload to folder

8. Navigate to “Storage Browser” and enter the blob container to check if Excel file has been uploaded.



Practical 3 - Creating Image blob using storage account in Azure.

1. Go to “Home” and click on “Storage Accounts”
2. Click on Create
3. Enter name for Storage account and fill in required information, then click on “review” and “Create”

[Home](#) > [Storage accounts](#) >

Create a storage account ...

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

Azure Storage is a Microsoft-managed service providing cloud storage that is highly available, secure, durable, scalable, and redundant. Azure Storage includes Azure Blobs (objects), Azure Data Lake Storage Gen2, Azure Files, Azure Queues, and Azure Tables. The cost of your storage account depends on the usage and the options you choose below. [Learn more about Azure storage accounts](#)

Project details

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

Subscription *

Azure for Students



Resource group *

NetworkWatcherRG

[Create new](#)

Instance details

Storage account name ⓘ *

vm1storageaccount

Region ⓘ *

(Asia Pacific) Central India

[Review](#)

< Previous

Next : Advanced >

[Home](#) > [Storage accounts](#) >

Create a storage account ...

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

Basics

Subscription	Azure for Students
Resource Group	NetworkWatcherRG
Location	centralindia
Storage account name	vm1storageaccount
Deployment model	Resource manager
Performance	Standard
Replication	Read-access geo-redundant storage (RA-GRS)

Advanced

Enable hierarchical namespace	Disabled
Enable network file system v3	Disabled
Allow cross-tenant replication	Disabled
Access tier	Hot
Enable SFTP	Disabled
Large file shares	Disabled

[Create](#)[< Previous](#)[Next >](#)[Download a template for automation](#)

4. Storage account is created and deployed successfully. Click on “Go to resource”

The screenshot shows the Microsoft Azure portal interface. At the top, there's a blue header with the Microsoft Azure logo and a search bar. Below the header, the breadcrumb navigation shows "Home >". The main heading is "vm1storageaccount_1703039827783 | Overview", with a "Deployment" icon and a "Go to resource" link. A search bar is present below the heading. On the left, there's a sidebar with navigation links: "Overview" (selected), "Inputs", "Outputs", and "Template". On the right, a green checkmark indicates "Your deployment is complete". Below this, deployment details are listed: "Deployment name: vm1storageaccount_1703039827783", "Subscription: Azure for Students", and "Resource group: NetworkWatcherRG". There are expandable sections for "Deployment details" and "Next steps". A prominent blue button labeled "Go to resource" is visible. At the bottom, there are links for "Give feedback" and "Tell us about your experience with deployment".

5. Click on “Upload”

The screenshot shows the Microsoft Azure portal interface for a storage account. The breadcrumb navigation shows "Home > vm1storageaccount_1703039827783 | Overview >". The main heading is "vm1storageaccount", with a "Storage account" icon and a "Go to resource" link. A search bar is present below the heading. On the left, there's a sidebar with navigation links: "Overview" (selected). On the right, there are action buttons: "Upload", "Open in Explorer", and "Delete". Below these buttons, there's an "Essentials" section.

6. Download an image and upload using “Browse files” . Create a new container and name it.

Upload blob



1 file(s) selected: dogblob.jpg

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

Select an existing container

vm1container



[Create new](#)



Overwrite if files already exist



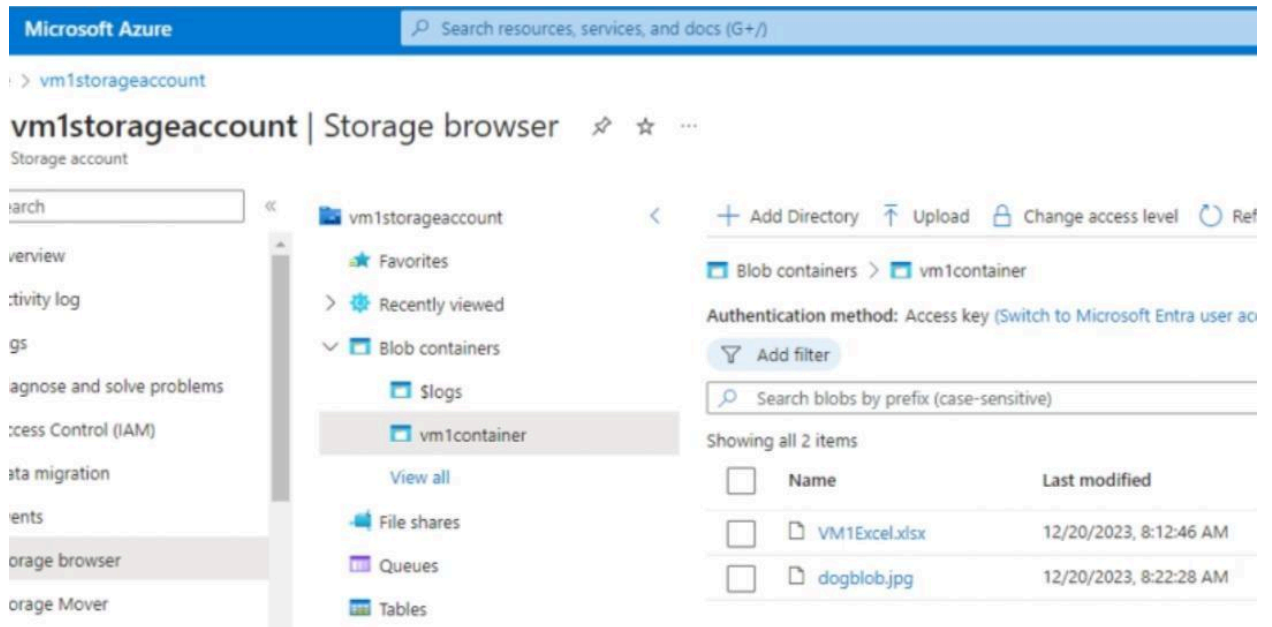
Advanced

Upload



Give feedback

7. Navigate to “Storage Browser” and enter the blob container to check if image file has been uploaded.




Practical 4 - Creating SQL database in azure.

1. Go to “Home” and click on “SQL databases”

2. Click on “Create SQL Database”


Server ↑↓ Replica type ↑↓ Pricing tier ↑↓ Location ↑↓




No SQL databases to display

Try changing or clearing your filters.

[Create SQL database](#)

[Learn more](#) 

3. Enter name and location for SQL database Server.

 Microsoft Azure

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

Home > SQL databases > Create SQL Database >

Create SQL Database Server

Microsoft

Server details

Enter required settings for this server, including providing a name and location. This server will be created in the same subscription and resource group as your database.

Server name *


sqlserverm1

.database.windows.net

Location *

(US) East US

Authentication

 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

OK

4. Select the "Authentication method" as "Use SQL authentication". Enter the admin login and password (Remember the login and password). Then click "Ok"

Microsoft Azure

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

Home > SQL databases > Create SQL Database >

Create SQL Database Server

Microsoft

.database.windows.net

Location * (Asia Pacific) Central India

Authentication

i 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 * system

Password *

Confirm password *

OK

5. Under “Review + Create” click on “Create”

[Home](#) > [SQL databases](#) >

Create SQL Database

Microsoft

Basics Networking Security Additional settings Tags **Review + create**

Product details

SQL database
by Microsoft
[Terms of use](#) | [Privacy policy](#)

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

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. For additional details see [Azure Marketplace Terms](#).

Basics


Subscription	Azure for Students
Resource group	NetworkWatcherRG
Region	Central India
Database name	VM1
Server	(new) sqlserverm1
Authentication method	SQL authentication

[Create](#) [< Previous](#) [Download a template for automation](#)

6. After deployment, click on “Go to Resource”



Your deployment is complete



Deployment name : Microsoft.SQLDatabase.newDatabaseNewServer_6d8984ee...

Subscription : [Azure for Students](#)







Resource group : [NetworkWatcherRG](#)

> Deployment details

∨ Next steps

[Go to resource](#)

7. Click on “Properties”

 Copy  Restore  Export  Set server firewall  Delete  Connect via

^ Essentials

Resource group [\(move\)](#) : [NetworkWatcherRG](#)

Status : Online

Location : Central India

Subscription [\(move\)](#) : [Azure for Students](#)

Subscription ID : 9ae460b0-ea40-4d04-a8b1-fd15fd239164

Tags [\(edit\)](#) : [Add tags](#)

[Getting started](#)

Monitoring

Properties

Features

Notifications (0)

Int

8. Click on “Networking”, then click on “selected networks” under public access

Home > VM1 (sqlserverm1/VM1) > sqlserverm1

sqlserverm1 | Networking

SQL server

Search

Feedback

Public access Private access Connectivity

Public network access

Public Endpoints allow access to this resource through the internet using a public IP address. [Learn more](#)

Public network access

☐ Disable

☒ Selected networks

① Connections from the IP addresses connected to the public endpoint will be allowed.

② Please save public network access value.

Virtual networks

Allow virtual networks to connect to your resource using service endpoints. [Learn more](#)

+ Add a virtual network rule

Rule	Virtual network	Subnet	Address range	End
------	-----------------	--------	---------------	-----

Firewall rules

Allow certain public internet IP addresses to access your resource. [Learn more](#)

[Save](#) [Discard](#)

Settings

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

Data management

- Microsoft Entra ID
- SQL databases
- SQL elastic pools
- DTU quota
- Properties
- Locks
- Backups
- Deleted databases
- Failover groups
- Import/Export history

- Click on "Add your client IPv4 address" and select the "Allow Azure services and resources to access this server" checkbox". Then click "Save"

Firewall rules

Allow certain public internet IP addresses to access your resource. [Learn more](#)

[+ Add your client IPv4 address \(14.142.143.98\)](#) [+ Add a firewall rule](#)

Rule name	Start IPv4 address	End IPv4 address	
ClientIPAddress_2023-12-20_8-38-53	14.142.143.98	14.142.143.98	

Exceptions

☒ Allow Azure services and resources to access this server 

[Save](#) [Discard](#)

10. Navigate to "Query Editor". Create a table using SQL queries and insert values into the table.

Query 1

 Run ☐ Cancel query  Save query  Export data as  Show only Editor

```
1 CREATE TABLE student
2 (id int,
3  name varchar(20)
4 );
```

Results Messages

Query succeeded: Affected rows: 0

Query 1

  Run ☐ Cancel query  Save query  Export data as  St


```
1 INSERT INTO student VALUES( 101, 'Carol');
```

Results Messages


Query succeeded: Affected rows: 1


11. Display the columns present in table using "Select" statement

Query 1 ✕

 Run

☐ Cancel query

 Save query


 Export data

1

`SELECT * FROM student;`

Results

Messages

 Search to filter items...

id

101

Practical 6 - Performing PowerBI in Azure

1. Login to azure and click on "more services"
2. under "All services", select "Analytics"
3. Click on "Analysis services"

4. Click on Create in "Analysis Service"

Microsoft Azure

[All services >](#)

Analysis Services

somaiya.edu (somaiya.edu)



+ Create ⚙ Manage view ↕ ↻ Refresh ⬇ Export to

Filter for any field... Subscription equals **all** Re

Showing 0 to 0 of 0 records.


Name ↑↓

5. Enter the details and create a new resource group. Select "B2 (80 Query Processing Units)" as the Pricing tier


 Microsoft Azure  Search resources


[All services](#) > [Analysis Services](#) >

Analysis Services




Analysis Services


Server name * 

analysis13 

Subscription *


Azure for Students 

Resource group *


(New) analysisresource 


[Create new](#)


Location *

West India 

Pricing tier ([View full pricing details](#)) *

B2 (80 Query Processing Units) 


Administrator ([Select](#)) * 

carol.d@somaiya.edu 

Backup Storage Settings

[Backup Storage: Not configured](#)

Storage key expiration

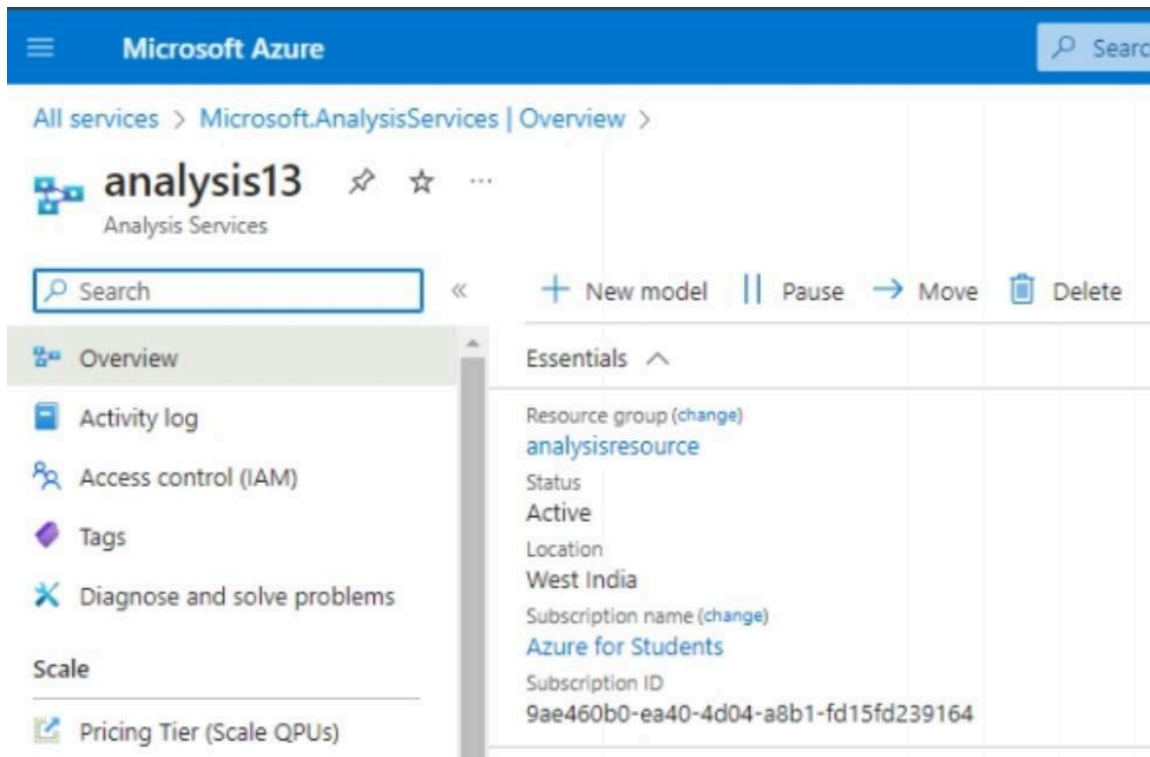
Never 

Create

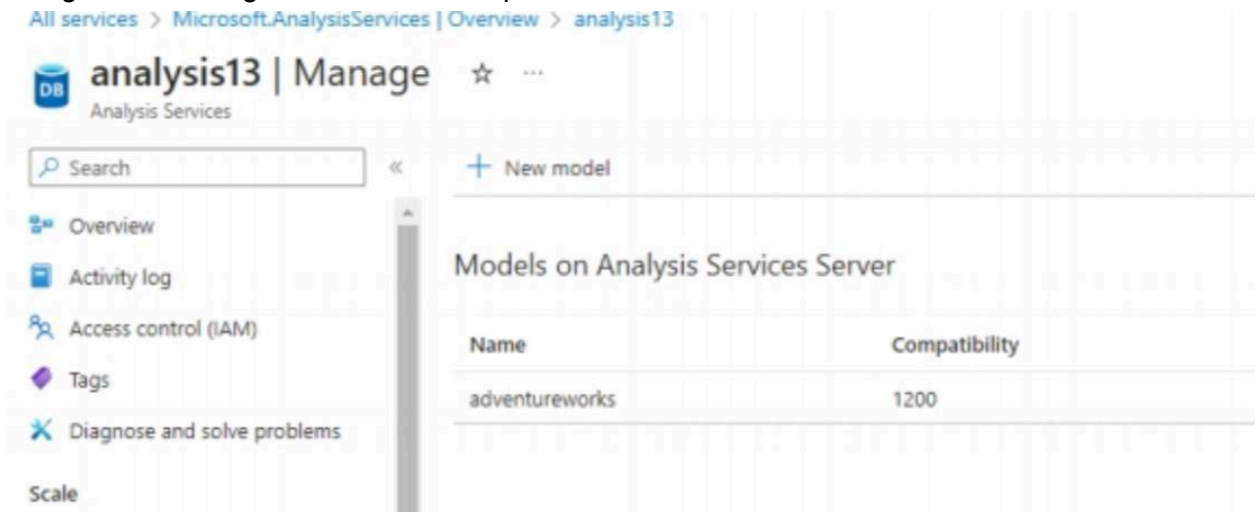
[Automation options](#)

6. After deployment, click on "Go to resource"

7. Select “New Model”

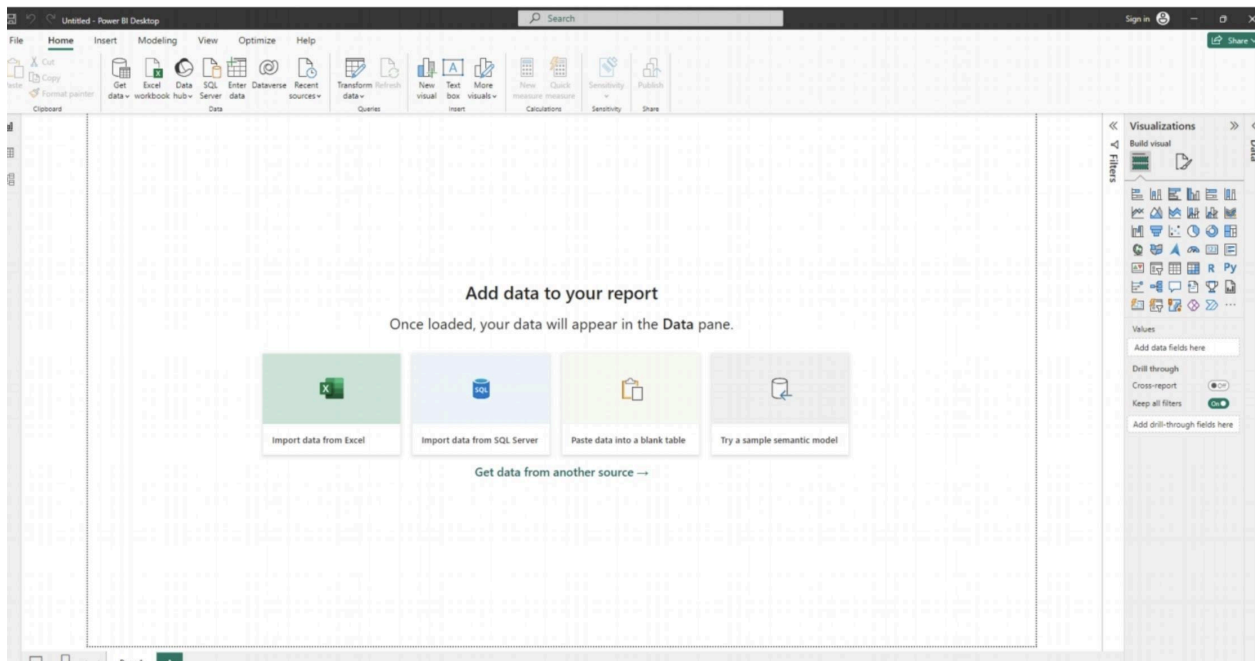


8. Choose the data source as “Sample data” and then click on “Add”
9. Navigate to “Manage tab” and the sample data will be visible there



10. Right click on Sample data and click on “Open in PowerBI desktop”

11. Once PowerBI is opened, click on “Import data from Excel”



12. Add an excel sheet into PowerBI and click on “Load”

Navigators

Display Options ▾

Book1.xlsx [2]

☒ Table1

☐ Sheet1

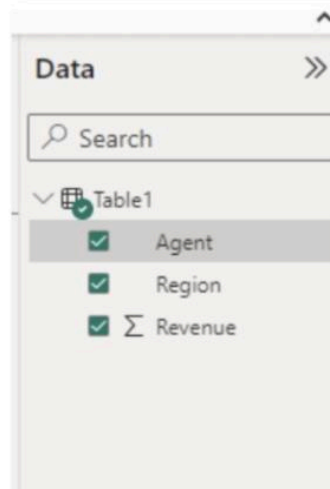
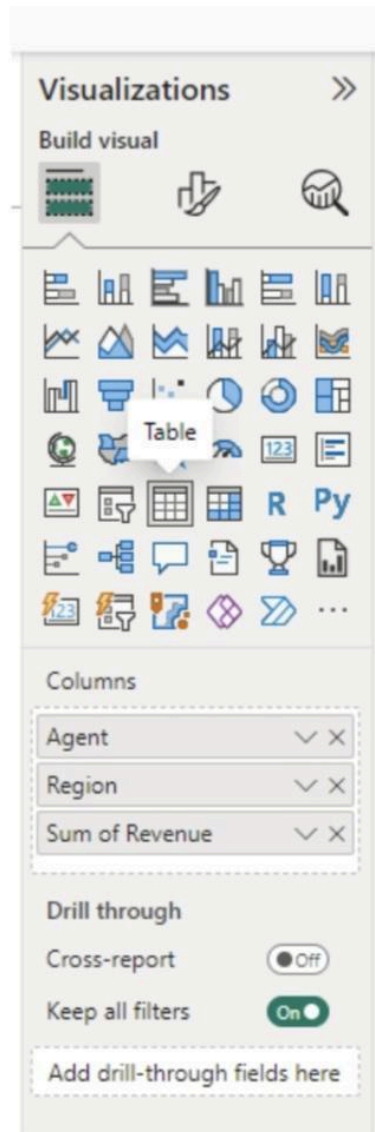
Sheet1

Preview downloaded on Monday

Region	Agent	Revenue
East	Cardan	1468
west	Hedice	345
north	Kenzi	987
south	Castin	781
East	Hook	435
west	Jude	678
north	Hockey	458
south	Rum	1111
East	Juliet	257
west	Rayun	980
north	Rahui	567
south	Aayush	200

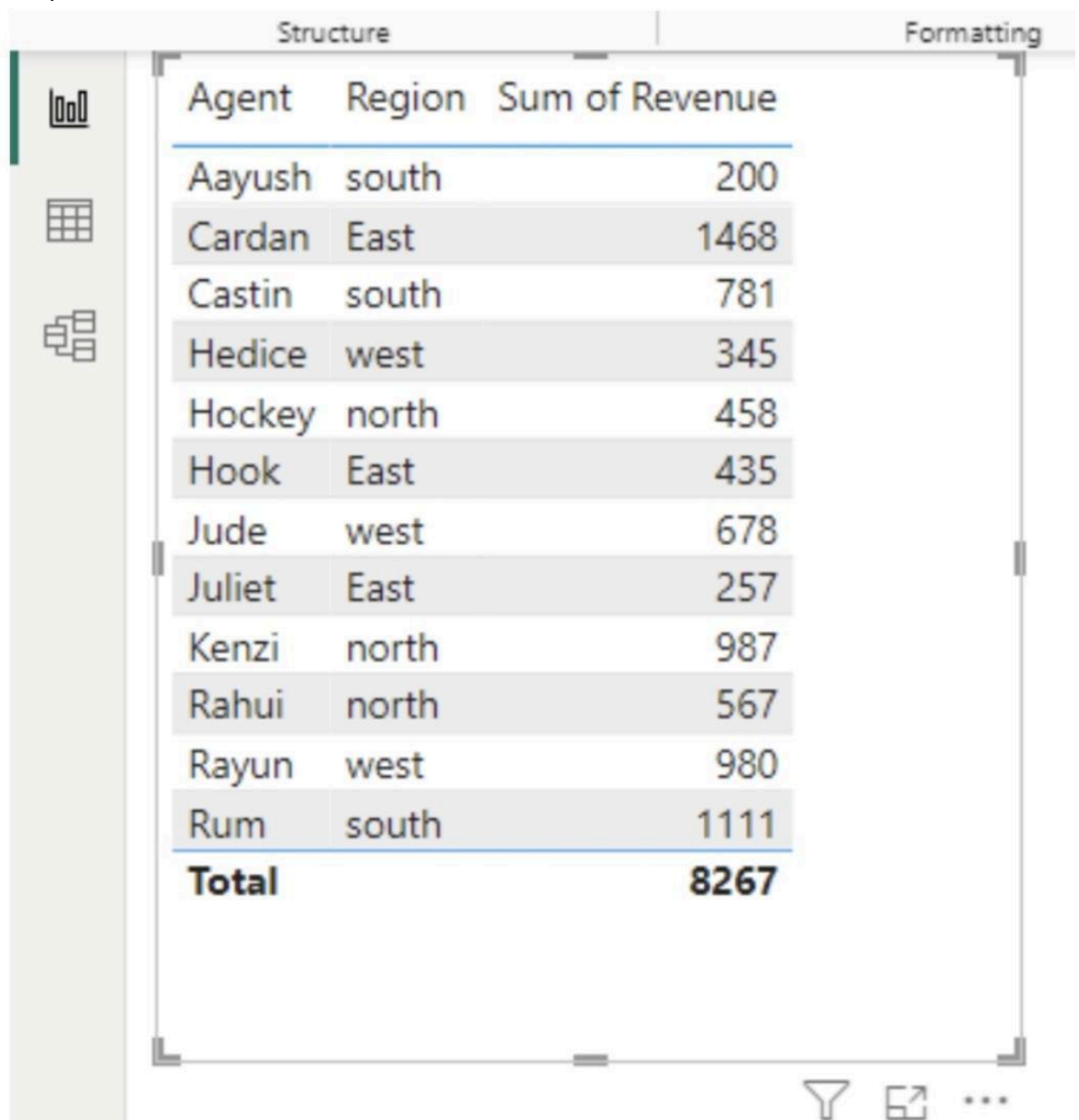
[Load](#) [Transform Data](#) [Cancel](#)

13. We use Power Bi in order to visualize the data stored. On the right hand side of the screen, select the visualizations you want (In this case, it is table) and select the various



columns you want to visualize.

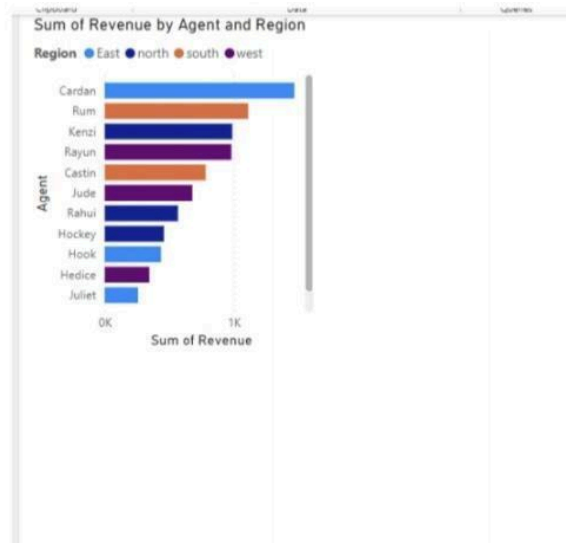
14. The output of the visualization is as shown below



The image shows a table visualization interface. At the top, there are two tabs: 'Structure' and 'Formatting'. On the left side, there is a vertical toolbar with three icons: a bar chart, a table, and a grid. The main area displays a table with three columns: 'Agent', 'Region', and 'Sum of Revenue'. The table contains 12 rows of data, with the last row being a 'Total' row. The 'Sum of Revenue' column is right-aligned. At the bottom right of the table, there are three icons: a funnel (filter), a square with an arrow (export), and a three-dot menu (options).

Agent	Region	Sum of Revenue
Aayush	south	200
Cardan	East	1468
Castin	south	781
Hedice	west	345
Hockey	north	458
Hook	East	435
Jude	west	678
Juliet	East	257
Kenzi	north	987
Rahui	north	567
Rayun	west	980
Rum	south	1111
Total		8267

15. Similarly, we can use other visualizations in order to visualize the the data



practical 6 - case study on microsoft azure

Azure is a cloud computing platform trusted by a large number of enterprises all over the world. It allows users to access and manage cloud services and resources securely and efficiently. You can store data and transform it depending on your needs and goals. You can even get started for free to understand this platform better.

FEATURES

.1 Easiest Way to Deploy Apps to the Cloud

If you are using Visual Studio, deploying your application to Azure is just a couple of clicks. You can also deploy your app automatically via git, Powershell, and other options. Azure automatically handles deploying your code to multiple servers and high availability. Deployments are very fast.

2.Combine Multiple Apps to Save Money

One of the best features is being able to combine multiple applications together. If you used Azure Worker Roles before, they required that each app had its own servers. You can save a lot of money by switching to App Services and combining your application together. If you want to separate them, you can just put them on different App Service Plans, which is more like different groups of servers.

3.Automatic High Availability & Auto-Scaling

You can automatically or manually autoscale your app out to use additional servers. Based on your App Service Plan, you can define the server size and the rules about autoscaling. Azure also automatically takes care of high availability and provides a 99.95% SLA.

4.Security

Along with the security, given by the developer, Azure App Service also provides Infrastructure and platform security where the application is run securely on the cloud. App service provides layered security like multi-factor authentication to access the application. Azure App Service is also ISO and PCI compliant.

APPLICATIONS

1.University Of Toronto

This is the largest Canadian university and leads the global front when it comes to research at an institutional fare. It made use of Microsoft Azure to avoid heavy hardware renewal costs. It migrated some of its activities to Microsoft Azure Cloud. With it, the university managed to transform IT processes, saving a lot of time

AkzoNobel

2 AkzoNobel is a popular Dutch Company that leads way in paint and coating business. It serves in more than 100 countries and always needs better connectivity across the globe. It harnessed the power of Microsoft Azure IoT services to improve its performance and connectivity at a global level.

3.IHG (Intercontinental Hotel Group)

This is one of the largest and leading hotel groups in the world. It owns around 5200 properties across the globe and serves more than a hundred countries. The fact that you own 5200 properties tells you the group holds its values of service very truly and also must have experimented a lot to stay up to date with market needs as well. This fact is also supported by the fact that this group invests a lot of money in innovations to meet the experience quality the customers deserve.

ADVANTAGES

1 .On-Demand Scalability Options

One of the biggest advantages of Microsoft Azure is its on-demand scalability. The platform allows organizations to scale their resources up or down based on their needs. This is because all the applications and data of a company are clustered out, thus mitigating the chances of server space shortage.

2.Vast Product Integration Capabilities

Another significant advantage of Microsoft Azure is its integration with a wide variety of products. They include applications related to Software as a Service (SaaS), Platform as a Service (PaaS), Infrastructure as a Service (IaaS), Active Directory, Visual Studio, and more. Thus, clients can integrate their Customer Relationship Management (CRM) and Enterprise Resource Planning (ERP) systems with Azure and take their business operations to the next level.

3. Hybrid Environments (Cloud and On-Premise)

Now, not all organizations are in a state to migrate their entire operations to a cloud computing platform. But does that mean that they cannot reap the immense benefits that cloud solutions have to offer?

. 4. Big Data Applications

Today, most organizations use Apache Hadoop to handle large volumes of data. Thus, Microsoft Azure enables companies to use this application on their platform as a cloud solution via Azure HDInsight.

.5. Scheduling and Automation

The Microsoft Azure platform also comes with the power of automation. Thus, businesses can easily schedule recurring tasks, thus saving both time and resources. They may include fetching data, scaling resources, setting triggers, and more.

Practical 7

Case study on google cloud

ADVANTAGES

1. Comprehensive Suite of Services: Shaping Tools to Your Needs:-Google Cloud Platform provides an extensive array of services, ensuring that businesses can find the perfect tools for their unique requirements. From software development to app development, GCP's "cloud native" approach guarantees applications that seamlessly leverage the cloud's scalability and flexibility. The platform is backed by Google's world-class infrastructure, ensuring optimal availability and performance
2. .Cost Efficiency: Hardware and Software OverheadGCP empowers businesses to slash hardware and software costs significantly. Organizations can sidestep hefty investments in infrastructure and maintenance through managed environments for development and cloud-native applications. The pay-as-you-go pricing model further allows businesses to manage costs effectively, with additional training and support resources ensuring maximum returns on investment.
3. Robust Security: Trust Google's Expertise in Cloud Computing:- Leverage Google Cloud Platform's robust security features to safeguard your data effectively. With tools like Identity and Access Management, Data Loss Prevention, and Security Health Analytics, businesses can confidently ensure the safety and integrity of their data within the GCP ecoecosyste
4. Scalability: Unlimited Business Growth:- Google Cloud Platform offers unparalleled scalability, allowing businesses to develop and deploy applications without concerns about underlying infrastructure. Ideal for those embracing a cloud-native approach, GCP harnesses Google's top-tier data centers and global network, enabling businesses to scale usage up or down as needed without incurring additional costs

FEATURES

VMware Engine provides you with a number of benefits to your overall productivity:

1. Infrastructure agility. Get on-demand self-service provisioning of VMware cloud environments, with the ability to add and remove capacity on demand or reserve capacity to lower costs.

2. Infrastructure monitoring, troubleshooting, and support. Google operates your underlying infrastructure as a service. Failed hardware is automatically replaced. Focus on consumption while Google manages VMware platform deployments and upgrades, management plane backups, health and capacity monitoring, alerting, troubleshooting, and remediation.

3. Security. Edge-type networking services, including VPN, public IP, and internet gateways run on Google Cloud and carry the security and distributed denial-of-service attack (DDoS) protection of Google Cloud. Infrastructure is fully dedicated to you and physically isolated from infrastructure of other customers.

4. Hybrid platform. VMware Engine enables high-speed, low-latency connectivity to the rest of Google Cloud, as well as your on-premises environment. VMware Engine also provides the underlay networking services required to enable VMware, including L2/L3 services and firewall rule management.

5. Convenient monitoring. Monitoring and management tools help you keep track of platform activity, resource usage, user account management, billing, and metering.

APPLICATIONS

1. Retire or migrate data centers

Scale data center capacity in the cloud and stop managing hardware refreshes. Cloud migrations reduce risk and cost by using familiar VMware tools and skills. In the cloud, use Google Cloud services to modernize your applications at your pace.

2. Expand on demand

Scale capacity to meet unanticipated needs, such as new development environments or seasonal capacity bursts, and keep it only as long as you need it. Reduce your up-front investment, accelerate speed of provisioning, and reduce complexity by using the same architecture and policies across both on-premises and the cloud.

3. Disaster recovery and virtual desktops in Google Cloud

Establish remote access to data, apps, and desktops in Google Cloud. High-bandwidth connections let you quickly upload and download data to recover from incidents. Low-latency networks give you fast response times similar to those of a desktop app. Use the VMware Engine portal and familiar VMware tools to replicate all your policies and networking in the cloud. Recovery and replication with VMware Engine greatly reduces the effort and risk of creating and managing DR and VDI implementations.

4. Power high-performance applications and databases

Google provides a hyper-converged architecture designed to run your most demanding VMware workloads. Run Oracle, Microsoft SQL Server, middleware systems, and high-performance noSQL databases. Experience the cloud as your own data center with high speed network connections that let you run hybrid apps that span your on-premises environment, VMware on Google Cloud, and Google Cloud private workloads without compromising performance.

5. Unify DevOps across VMware and Google Cloud

Optimize VMware administration by using Google Cloud services and solutions that can be applied across all your workloads. Access public cloud services without having to expand your data center or re-architect your applications. Centralize identities, access control policies, logging, and monitoring for VMware applications on Google Cloud.

Practical 8

Case study oracle cloud

FEATURES

1. Fully Managed with Zero Administration: Developers do not need to administer data servers or the underlying infrastructure and security. Oracle maintains the hardware and software which allows developers to focus on building applications.

2. Faster Development Life Cycle: After purchasing access to the service, developers write their applications, and then connect to the service using their credentials. Reading and writing data can begin immediately. Oracle performs Database Management, Storage Management, High Availability, and Scalability which helps developers concentrate on delivering high-performance applications.

3. High Performance and Predictability: Oracle NoSQL Database Cloud Service takes advantage of the latest component technologies in the Oracle Cloud Infrastructure by providing high performance at scale. Developers know that their applications return data with predictable latencies, even as their throughput and storage requirements increase.

On-Demand Throughput and Storage Provisioning: Oracle NoSQL Database Cloud Service scales to meet application throughput performance requirements with low and predictable latency. As workloads increase with periodic business fluctuations, applications can increase their provisioned throughput to maintain a consistent user experience. As workloads decrease, the same applications can reduce their provisioned throughput, resulting in lower operating expenses