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# **Cloud Computing Journal**

**Submitted by**

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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    | Infrastructure as a Service                          |
| 12    | Security in Cloud                                    |

## Practical - 1: Creating a VM on Azure.

Step 1: Open Microsoft Azure Website and login with Somaiya.edu

The screenshot shows the Microsoft Azure portal homepage. At the top, there is a navigation bar with various tabs and a search bar. Below the navigation bar, the 'Azure services' section is visible, featuring icons for creating a resource, SQL databases, storage accounts, Power BI Embedded, virtual machines, resource groups, container instances, Azure Cosmos DB, SSH keys, and more services. The 'Resources' section follows, showing a list of recent and favorite resources. A message indicates 'No resources have been viewed recently' with a 'View all resources' button. The overall interface is clean and modern, typical of cloud service management platforms.

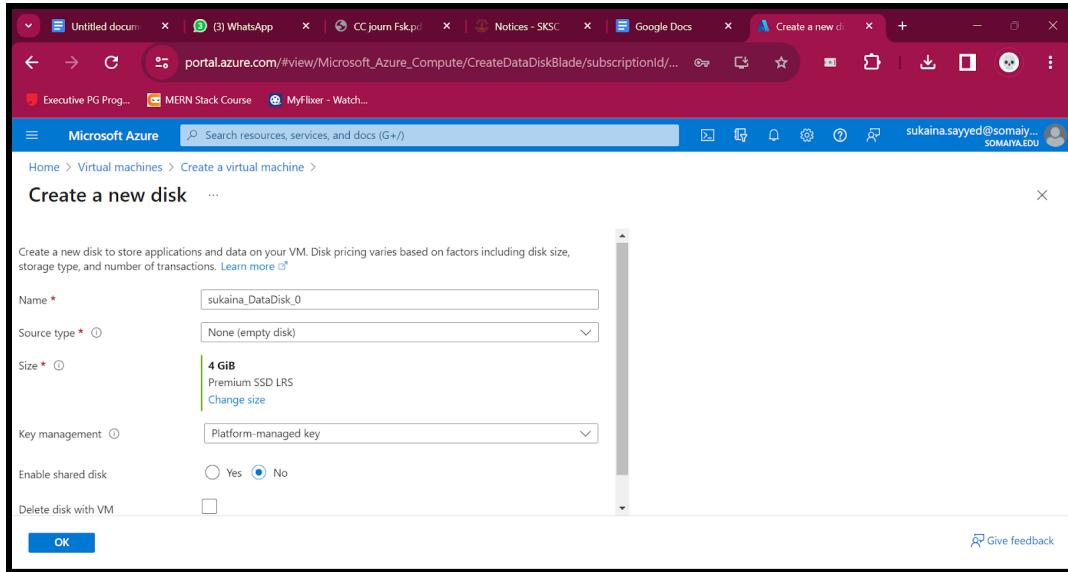
Step 2: Click on Create resource Click on create virtual machine

The screenshot shows the 'Create a virtual machine' wizard on the Microsoft Azure portal. The current step is 'Project details'. It asks the user to select a subscription and a resource group. The 'Subscription' dropdown is set to 'Azure for Students' and the 'Resource group' dropdown is set to 'sukaina' with a 'Create new' option available. Below this, the 'Instance details' section is shown, where the 'Virtual machine name' is set to 'sukaina', the 'Region' is '(Asia Pacific) Central India', and the 'Availability options' dropdown is set to 'Availability zone'. At the bottom of the page, there are buttons for 'Review + create' and 'Next : Disks >'. The overall process is guided by clear steps and validation messages.

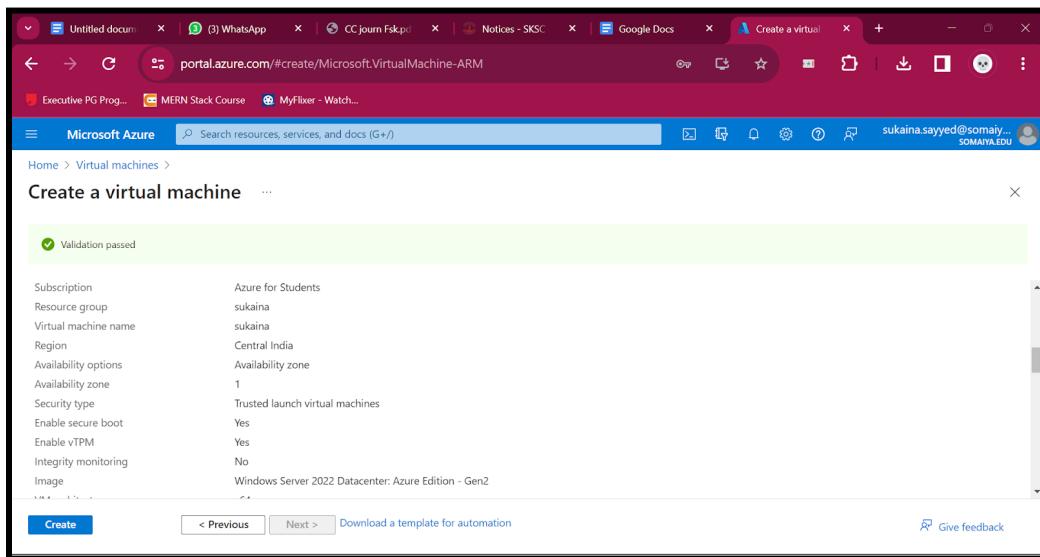
Name: Sayed Sukaina

Roll no: 31031523028

Step 3: Fill in details such as Resource Group, VM Name, Region, Image and Inbound type. Disk, Network, Management, Advanced and Tags. Keep everything default.



Step 4: Click next and go to Review + create. Verify your VM information and click create.



Name: Sayed Sukaina

Roll no: 31031523028

## Step 5: Click 'Go to Resource'

The screenshot shows the Microsoft Azure portal interface. The URL in the address bar is <https://portal.azure.com/#@somaiya.edu/resource/subscriptions/1264a108-85d3-416e-abd5-ff86ada50191>. The page title is "CreateVm-MicrosoftWindowsServer.WindowsServer-202-20240113134358 | Overview". The main content area displays the following details for the virtual machine "sukaina":

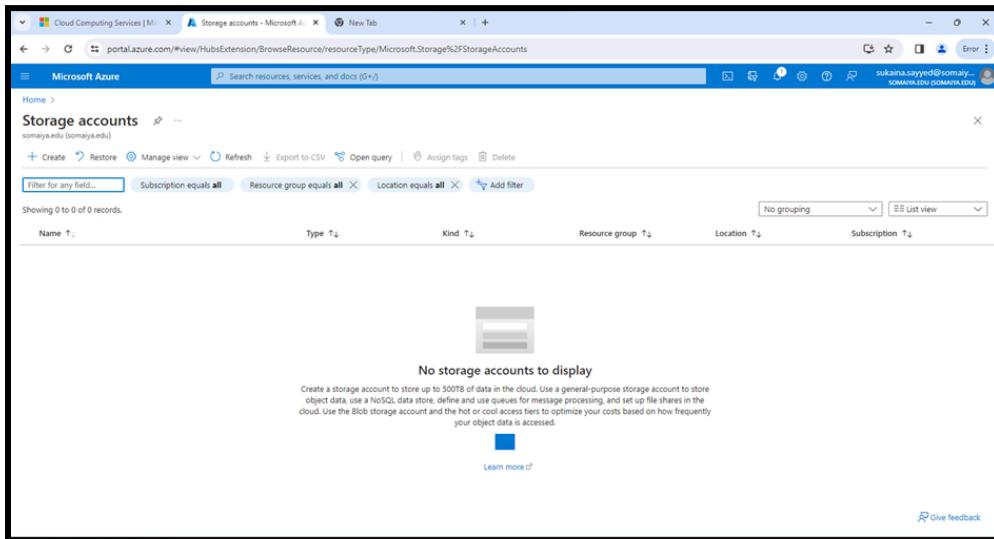
| Essentials             | Value  |
|------------------------|--|
| Resource group (move)  | sukaina  |
| Status                 | Running  |
| Location               | Central India (Zone 1)                                 |
| Subscription (move)    | Azure for Students                                     |
| Subscription ID        | 1264a108-85d3-416e-abd5-ff86ada50191                   |
| Availability zone      | 1  |
| Tags (edit)            | Add tags   |
| Operating system       | Windows (Windows Server 2022 Datacenter Azure Edition) |
| Size                   | Standard D2s v3 (2 vcpus, 8 GiB memory)                |
| Public IP address      | 20.197.10.127  |
| Virtual network/subnet | sukaina-vnet/default                                   |
| DNS name               | Not configured   |
| Health state           | -  |

Name: Sayed Sukaina

Roll no: 31031523028

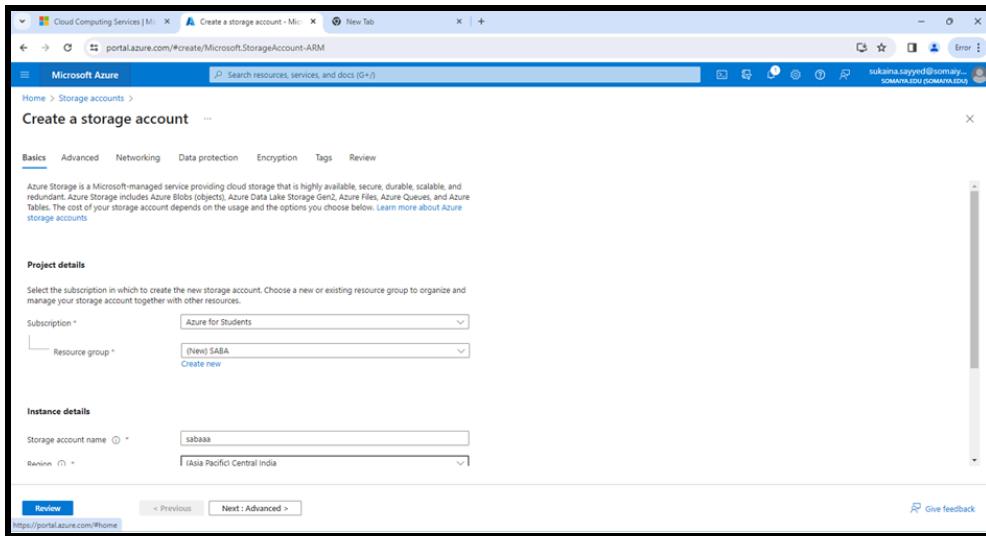
## Practical - 2: Creating Storage account in Azure and uploading data in it.

Step 1: Click on the storage accounts option on the dashboard.



The screenshot shows the Microsoft Azure Storage accounts dashboard. The title bar reads "Storage accounts". Below the title, there are filter options: "Subscription equals all", "Resource group equals all", and "Location equals all". A search bar is present above the main table. The table has columns: Name, Type, Kind, Resource group, Location, and Subscription. A message at the bottom states "No storage accounts to display". It provides instructions for creating a storage account and links to "Learn more" and "Give feedback".

Step 2: Click on Create storage account and create your storage account.



The screenshot shows the "Create a storage account" wizard in Microsoft Azure. The title bar reads "Create a storage account". The "Basics" tab is selected. The "Project details" section asks to choose a subscription and resource group. The "Subscription" dropdown is set to "Azure for Students" and the "Resource group" dropdown is set to "(New) SABA". The "Instance details" section asks for the storage account name "sabaa" and the location "Asia Pacific Central India". At the bottom, there are "Review" and "Next : Advanced" buttons.

Name: Sayed Sukaina

Roll no: 31031523028

Step 3: After finally providing all the required information click on the review tab and click on create.

The screenshot shows the Microsoft Azure portal with a deployment overview for 'sabaaa\_1705033034995'. The main message is 'Your deployment is complete'. Deployment details include a name, subscription, and resource group. A 'Go to resource' button is visible. On the right, there are promotional cards for Cost Management, Microsoft Defender for Cloud, Free Microsoft tutorials, and Work with an expert.

Step 4: Now, click on 'Go to resource' and create a container in which you will be uploading the files.

The screenshot shows the Microsoft Azure portal for a storage account named 'sabaaa'. The left sidebar shows various storage management options like Data migration, Events, Storage browser, and Storage Mover. The 'Containers' section is selected. A 'New container' dialog is open on the right, prompting for a container name ('sabasukaina') and access level ('Private'). Advanced settings for encryption and immutability are also shown. A 'Create' button is at the bottom of the dialog.

Name: Sayed Sukaina

Roll no: 31031523028

Step 5: Click on the container you have just created and upload the files.

The screenshot shows the Microsoft Azure Storage Container blade for the 'sabasukaina' container. The left sidebar lists 'Overview', 'Diagnose and solve problems', 'Access Control (IAM)', and 'Settings' (with options for 'Shared access tokens', 'Access policy', 'Properties', and 'Metadata'). The main area displays a table of blobs. A success message at the top right states 'Successfully uploaded blob(s)' and 'Successfully uploaded 1 blob(s)'. The table has columns: Name, Modified, Access tier, Archive status, Blob type, Size, and Lease state. One row is shown: 'Screenshot 2024-01-10 120017.png' (Modified: 1/12/2024, 9:49:58 AM, Access tier: Hot (inferred), Archive status: Not yet archived, Blob type: Block blob, Size: 7842 KB, Lease state: Available).

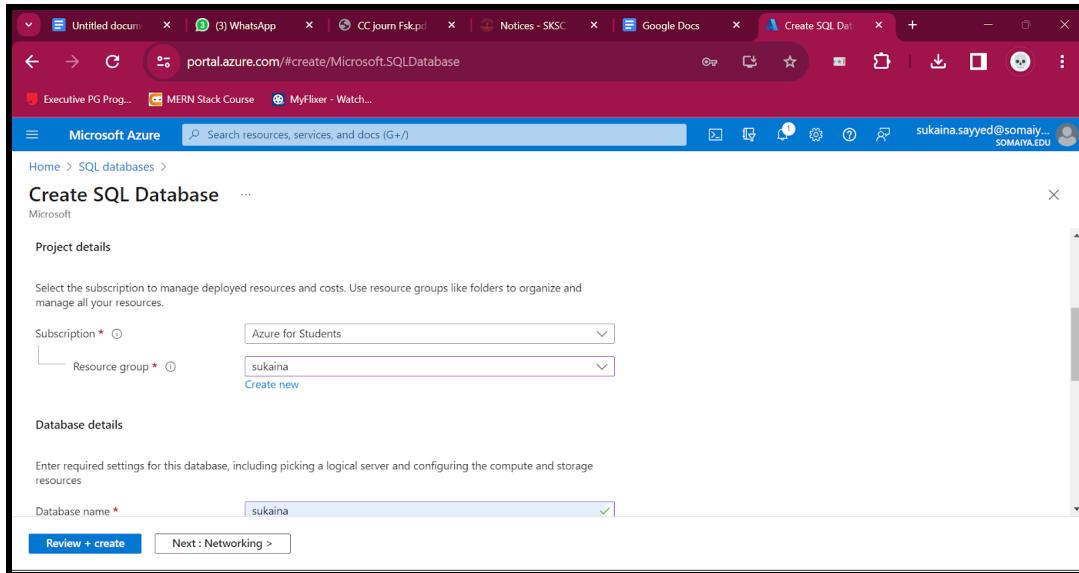
| Name                             | Modified              | Access tier    | Archive status   | Blob type  | Size    | Lease state |
|----------------------------------|-----------------------|----------------|------------------|------------|---------|-------------|
| Screenshot 2024-01-10 120017.png | 1/12/2024, 9:49:58 AM | Hot (inferred) | Not yet archived | Block blob | 7842 KB | Available   |

Name: Sayed Sukaina

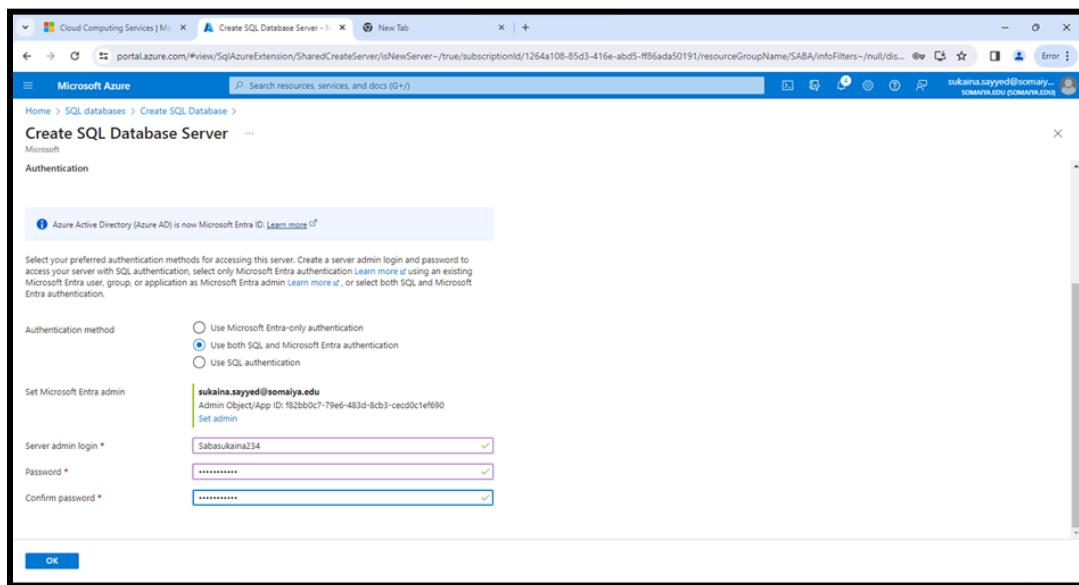
Roll no: 31031523028

## Practical - 3: SQL Database using Azure.

### 1. Create SQL database.



### 2. Create a new Server and give it a name.



Name: Sayed Sukaina

Roll no: 31031523028

3. Leave all other options default and click Review and Create.

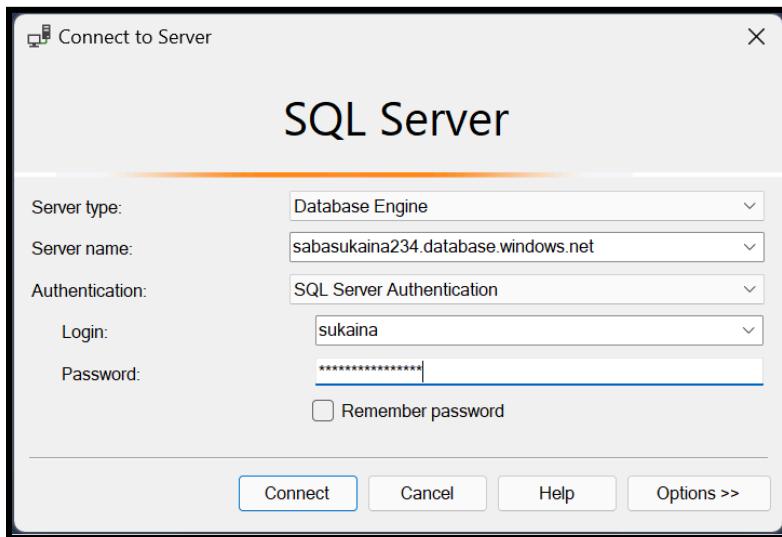
The screenshot shows the Microsoft Azure portal interface for a SQL database named 'Sabasukaina234'. The left sidebar contains navigation links for Overview, Activity log, Tags, Diagnose and solve problems, Query editor (preview), Settings, Compute + storage, Connection strings, Properties, Locks, Data management (Replicas, Sync to other databases), Integrations (Azure Synapse Link, Stream analytics (preview), Add Azure AI Search), and Monitoring. The main content area displays the database's status as 'Online' in the 'Essentials' section, with details like Resource group (SABA), Server name (sabasukaina234.database.windows.net), and Pricing tier (General Purpose: Gen5, 2 vCores). Below this, there are sections for 'Start working with your database' (Configure access, Connect to application, Start developing), 'See connection strings', 'Open Azure Data Studio', and 'Open in Visual Studio'.

4. Click on set server firewall.

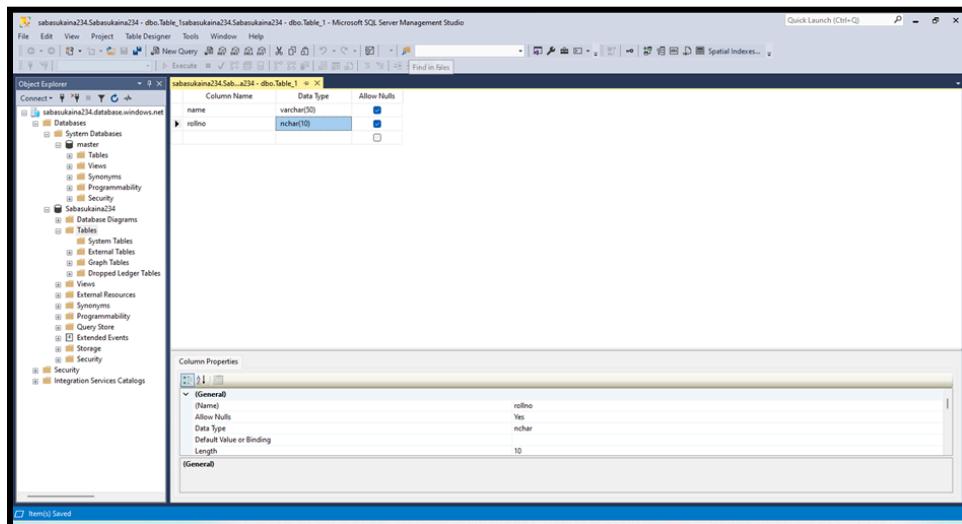
5. Select “Selected networks” option and click “Add your client IPv4 address” under Firewall rules section. Also check the “Allow Azure services and resources to access this server”

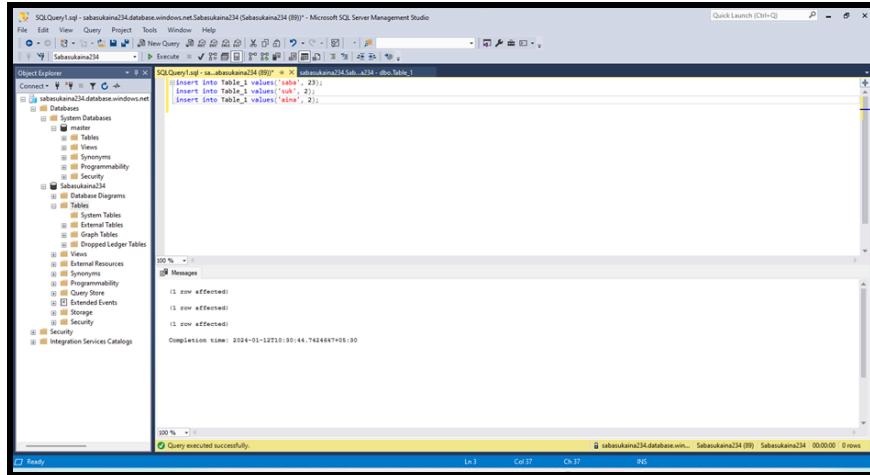
The screenshot shows the 'Networking' settings for the 'Sabasukaina234' SQL server. The left sidebar includes links for Overview, Activity log, Access control (IAM), Tags, Quick start, Diagnose and solve problems, Settings (Microsoft Entra ID, SQL databases, SQL elastic pools, DTU quota, Properties, Locks), Data management (Backups, Deleted databases, Failover groups, Import/Export history), and Networking. In the main area, the 'Selected networks' option is selected for Firewall rules. A table lists a single rule: 'ClientIPAddress\_2024-1-12\_10-10-27' with 'Start IPv4 address' and 'End IPv4 address' both set to '182.73.90.242'. There is also a section for 'Exceptions' with 'Save' and 'Discard' buttons.

6.Go to Microsoft SQL Server Management Studio and enter the following credentials.

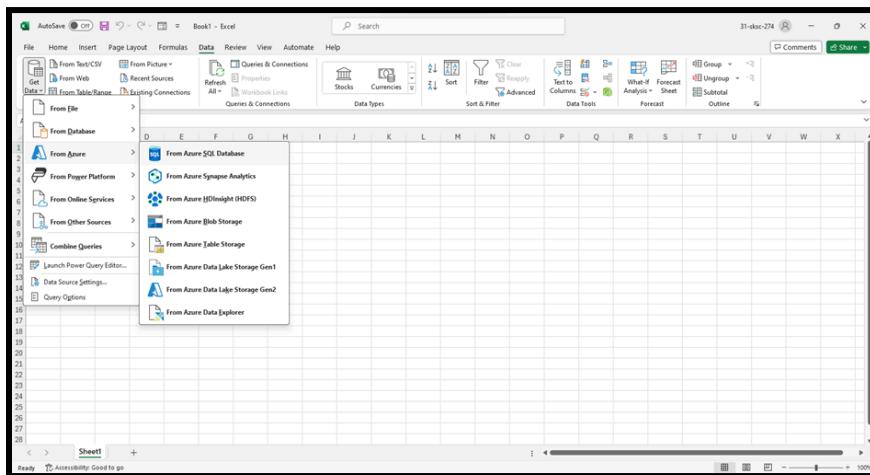


7.After successful login, create a new table and insert data into it.





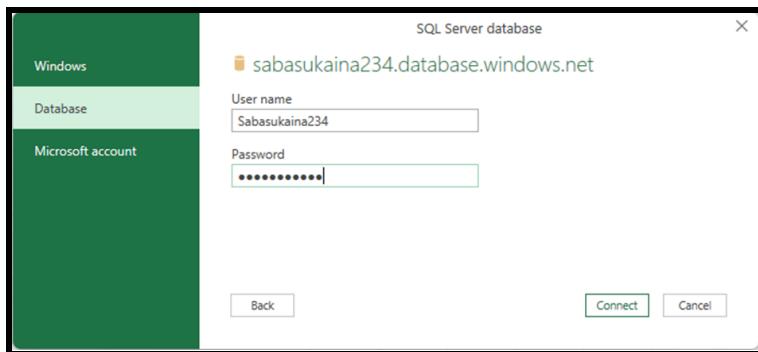
8. Open excel and create a new blank workbook. Go to Data Section and select “Get Data -> From Azure -> From Azure SQL Database”



13. Enter the valid credentials and click next.

Name: Sayed Sukaina

Roll no: 31031523028



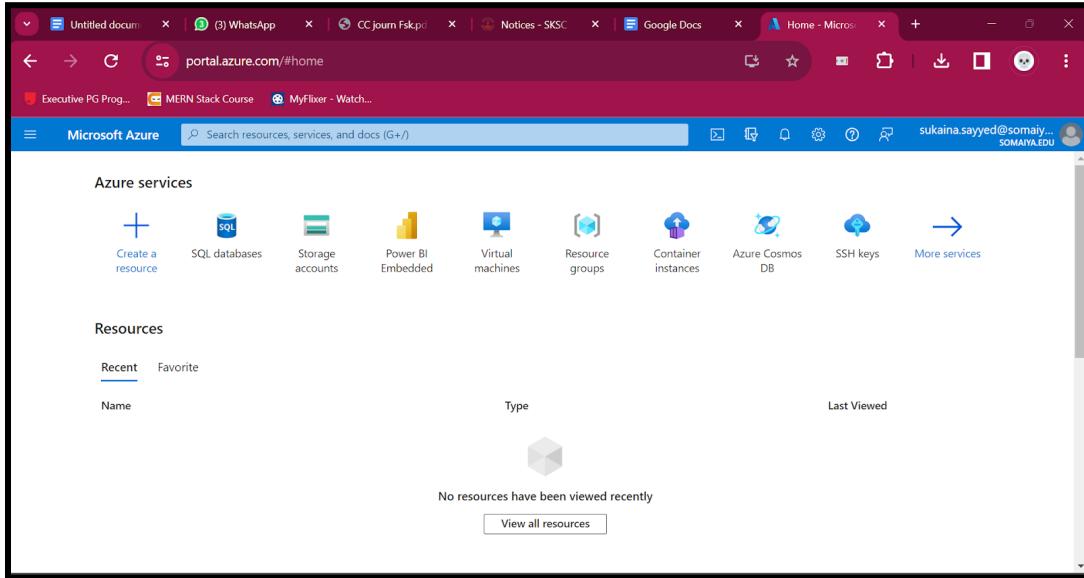
The screenshot shows a Microsoft Excel spreadsheet titled 'Book1 - Excel'. The 'Table Design' tab is selected in the ribbon. A table named 'Table\_1' is displayed in the worksheet, containing the following data:

|    | A | B      | C  | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S |
|----|---|--------|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3  |   | Rollno |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 4  |   | saba   | 23 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 5  |   | saba   | 23 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 6  |   | suk    | 2  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 7  |   | saba   | 23 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 8  |   | suk    | 2  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 9  |   |        |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 10 |   |        |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 11 |   |        |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 12 |   |        |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 13 |   |        |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 14 |   |        |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 15 |   |        |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 16 |   |        |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 17 |   |        |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 18 |   |        |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 19 |   |        |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 20 |   |        |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 21 |   |        |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 22 |   |        |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 23 |   |        |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 24 |   |        |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 25 |   |        |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 26 |   |        |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 27 |   |        |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 28 |   |        |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

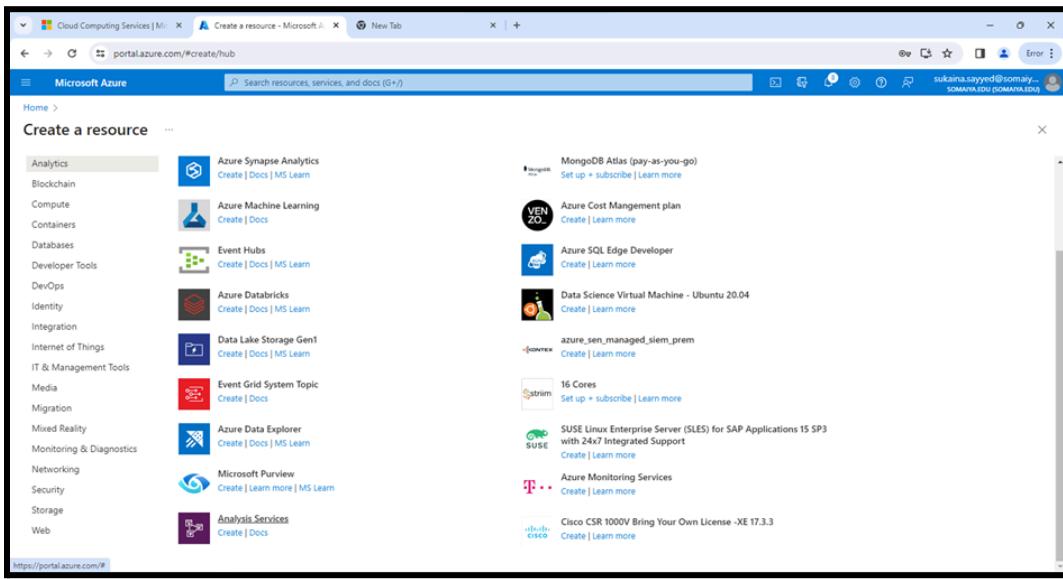
The 'Queries & Connections' pane on the right shows a single query named 'Table\_1' with '6 rows loaded.'

## Practical - 4: Analyzing data using Power BI.

Step 1: Open Microsoft Azure and Login into your account.  
Click on 'Create a resource' on home page.



Step 2: Then, click on 'Analytics' in Categories.



Step 3: From Analysis Services click on Create. Fill in all the details in Analysis Services. Create new resource group.

Step 4: Select (B2 80 Query Processing Unit) in Pricing Tier. Click on create.

Microsoft Azure

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

Home > Create a resource >

## Analysis Services

Analysis Services

Server name \*

sukaina

Subscription \*

Azure for Students

Resource group \*

sukaina

Create new

Location \*

East US

Pricing tier (View full pricing details) \*

B2 (80 Query Processing Units)

Administrator (Select) \*

sukaina.sayeed@somaiya.edu

Step 6: Wait till the deployment is complete.

Microsoft.AnalysisServices | Overview

Your deployment is complete

Deployment name : Microsoft.AnalysisServices  
Subscription : Azure for Students  
Resource group : sukaina

Start time : 13/1/2024, 4:07:20 pm  
Correlation ID : c8fca3d0-eaa4-4d46-8a0b-affc...

Cost management

Get notified to stay within your budget and prevent unexpected charges on your bill.

Set up cost alerts >

Microsoft Defender for Cloud

Secure your apps and infrastructure

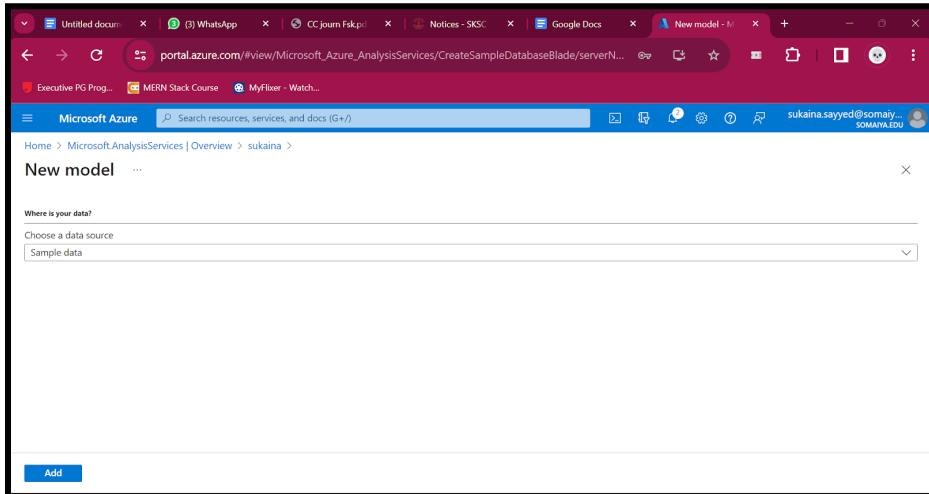
Go to Microsoft Defender for Cloud >

Name: Sayed Sukaina

Roll no: 31031523028

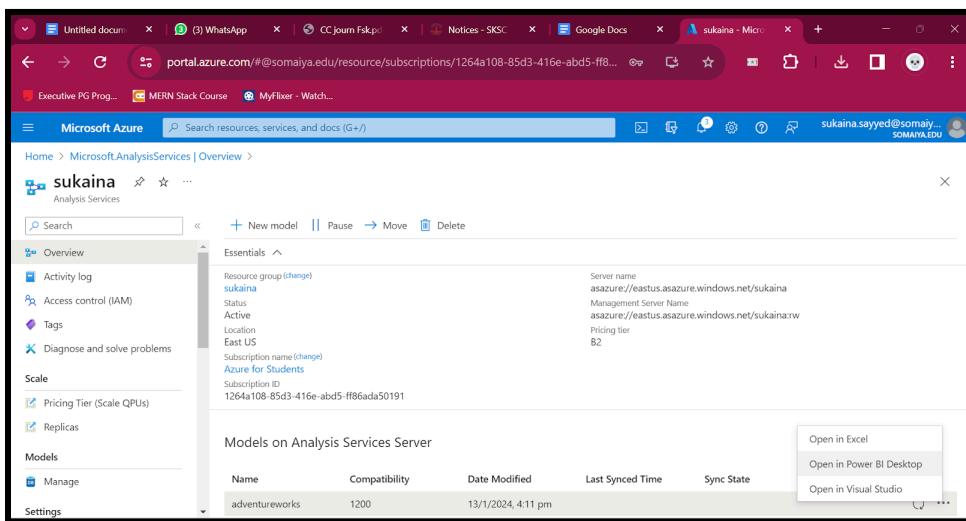
Step 7: Click on ‘Go to Resource’.

Step 8: Click on ‘New Model’.



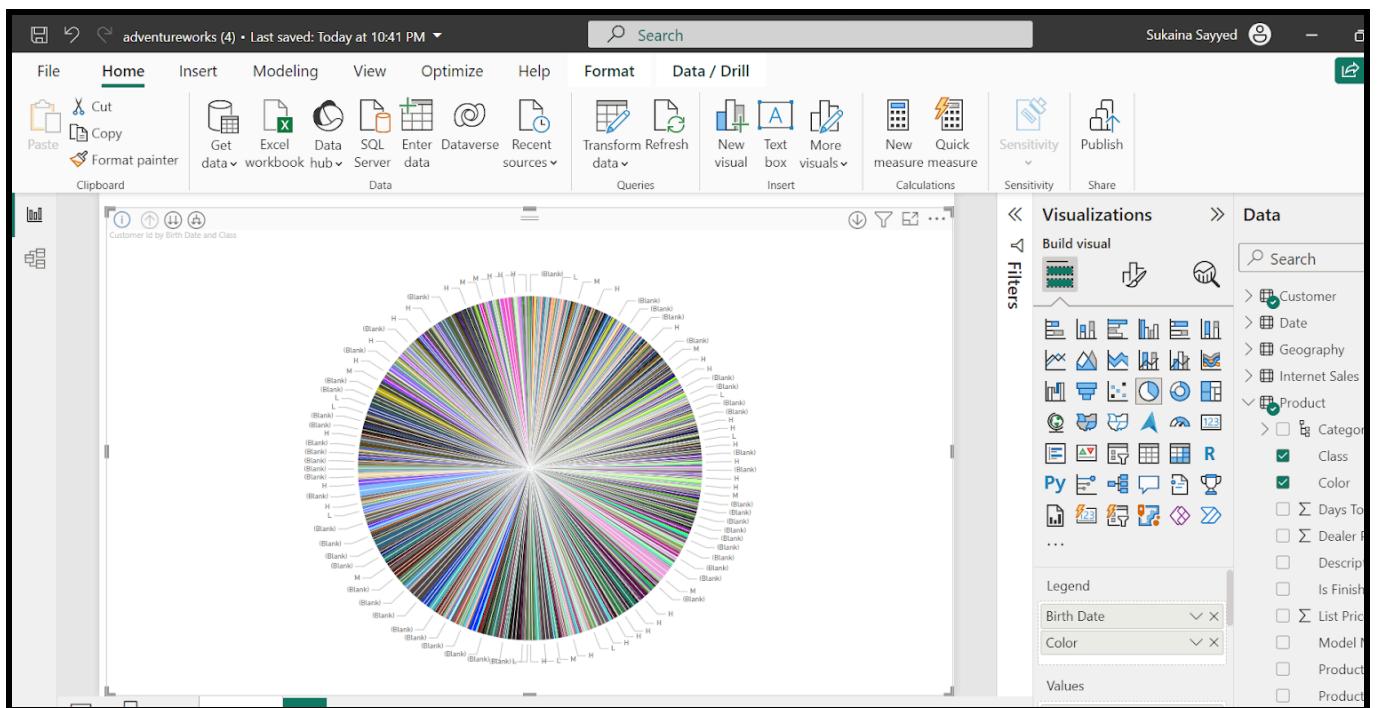
Step 9: Click on Add.

Step 10: Click on ‘Context Menu’ in Models on Analysis Services Server and click on ‘Open in Excel’ and ‘Open in Power BI’ and download it.



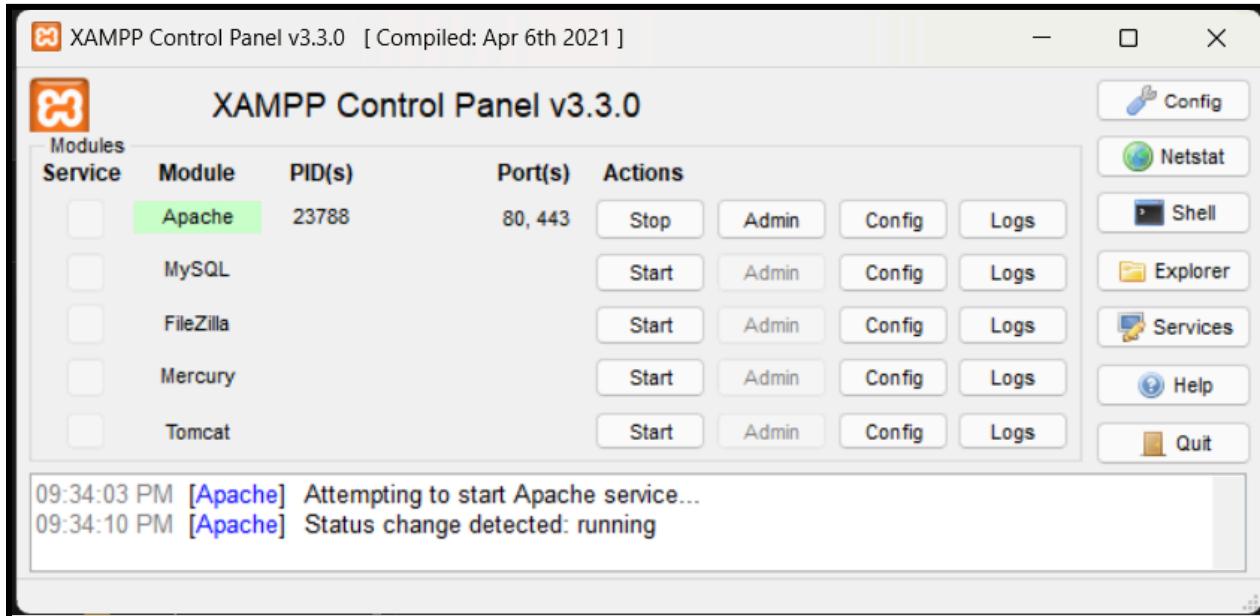
Name: Sayed Sukaina

Roll no: 31031523028



## Practical 5: Web Feeds Using RSS.

Step 1: Open XAMPP and Start Apache Server.



Step 2: Write this HTML code.

```
<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;
          }
        }
      }
    </script>
  </head>
  <body>
    <div id="output"></div>
    <button onclick="showRSS('')>Get RSS</button>
  </body>
</html>
```

```

        }
    };
    xmlhttp.open("GET", "rss.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>
        </select>
    </form>
    <br />
    <div id="output">RSS-feeds</div>
</body>
</html>

```

Step 3: Write the php code.

```

<?php
$q = $_GET["q"];

if ($q == "cnn") {
    $xml = ("http://rss.cnn.com/rss/edition_entertainment.rss");
} elseif ($q == "bbc") {
    $xml =
("http://newsrss.bbc.co.uk/rss/newsinline_world_edition/americas/rss.xml");
}

$xmlDoc = new DOMDocument();
$xmlDoc->load($xml);

$channel = $xmlDoc->getElementsByTagName('channel')->item(0);

```

Name: Sayed Sukaina

Roll no: 31031523028

```
$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>");
```

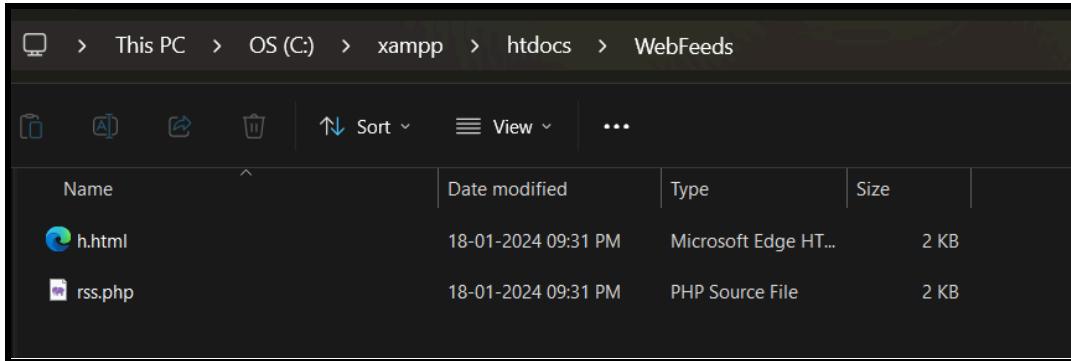
}

?>

Name: Sayed Sukaina

Roll no: 31031523028

Step 4: Save both the files inside a new folder called WebFeeds at the path C:\xampp\htdocs.



Step 5: Go to localhost/WebFeeds.



Step 6: Open h.html and choose any RSS Feed.

Name: Sayed Sukaina

Roll no: 31031523028

A screenshot of a web browser window titled "localhost/webfeeds/h.html". The address bar also shows "localhost/webfeeds/h.html". The main content area displays a dropdown menu with "CNN" selected. Below the dropdown, there is a link to "CNN.com - RSS Channel - Entertainment" followed by a brief description of CNN's news coverage. There are two more links: "Kirstie Alley, 'Cheers' and 'Veronica's Closet' star, dead at 71" and "Chelsea Handler, Leslie Jones and John Leguizamo among guest hosts to step in for Trevor Noah on 'The Daily Show'", each with a short accompanying text.

Please select an option to get RSS:

[CNN.com - RSS Channel - Entertainment](#)  
CNN.com delivers up-to-the-minute news and information on the latest top stories, weather, entertainment, politics and more.

[Kirstie Alley, 'Cheers' and 'Veronica's Closet' star, dead at 71](#)  
Actress Kirstie Alley has died after a brief battle with cancer, her children announced on social media.

[John Travolta and Kirstie Alley: A love story](#)  
Kirstie Alley and John Travolta were never romantically involved, but that wasn't how she initially wanted it.

[Chelsea Handler, Leslie Jones and John Leguizamo among guest hosts to step in for Trevor Noah on 'The Daily Show'](#)  
The end of an era is fast approaching at Comedy Central's "The Daily Show," and the network has announced at least the first phase of plans for what's to come next.

Name: Sayed Sukaina

Roll no: 31031523028

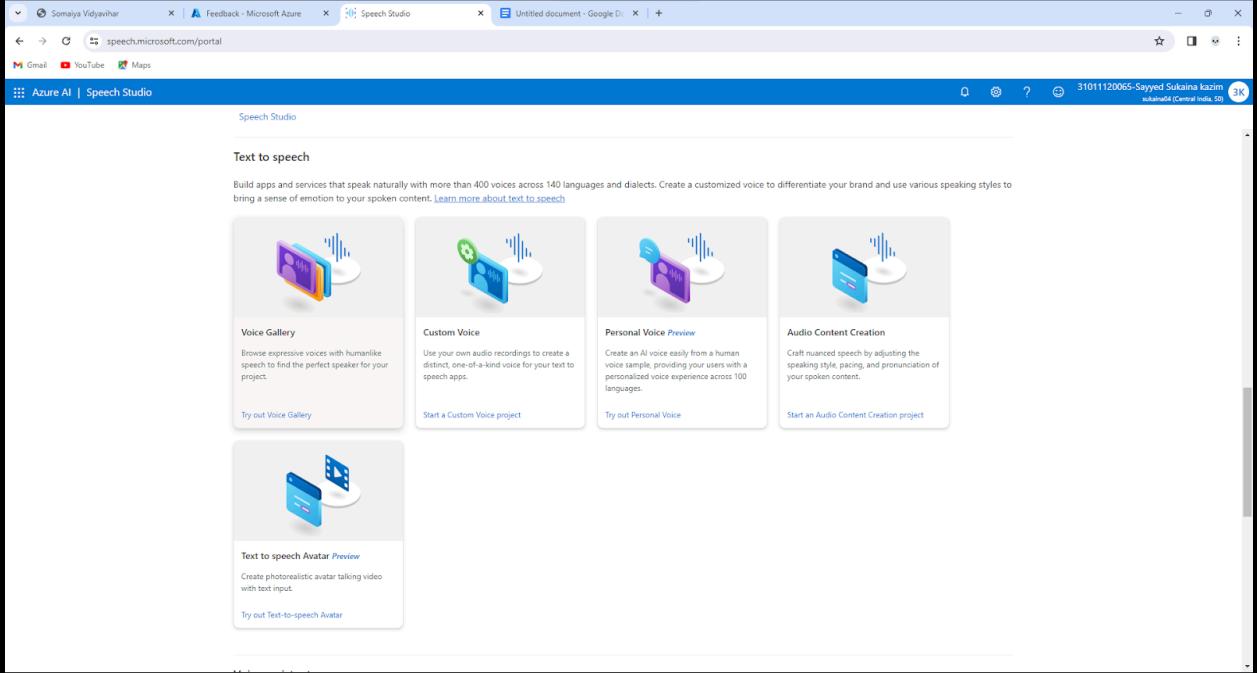
## Practical 6: Artificial Intelligence Services in Cloud

### Step 1: Create Speech Services in Azure AI Services

Screenshot of the Microsoft Azure portal showing the 'Create Speech Services' wizard. The 'Project Details' step is shown, where a new resource group 'sukaina' is selected under 'Subscription' 'Azure for Students'. Other fields include Region 'Central India', Name 'sukaina04', and Pricing tier 'Standard S0'. The 'Review + create' button is at the bottom.

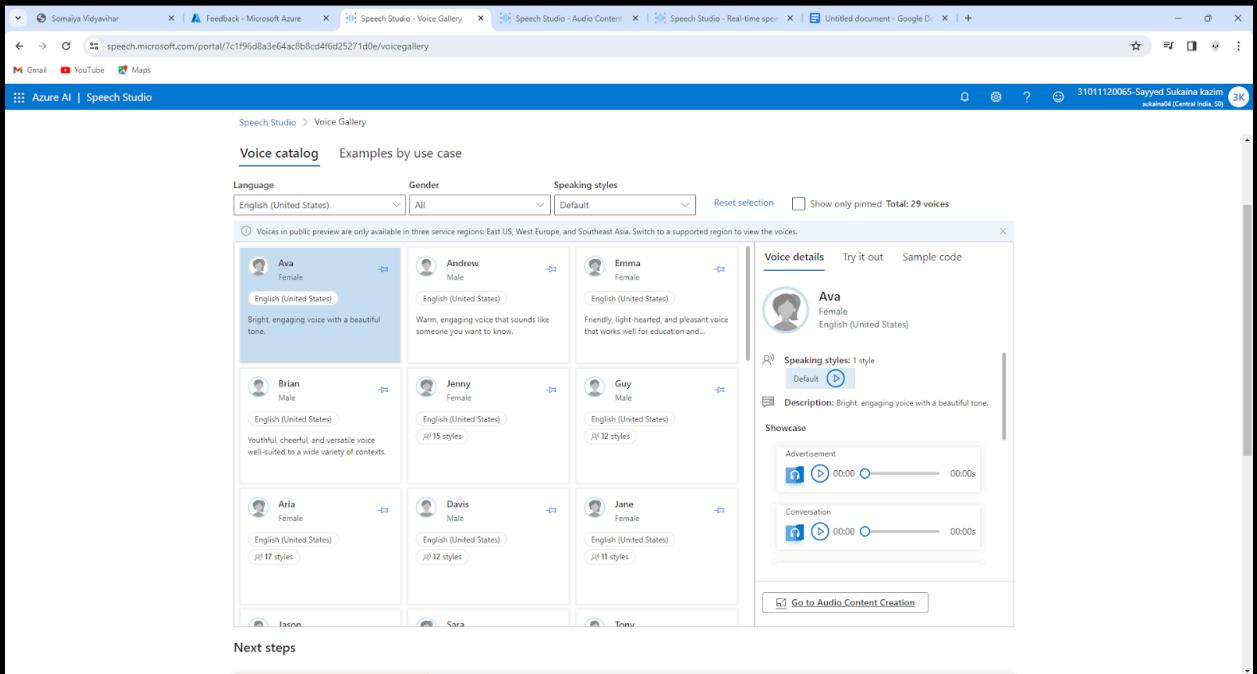
Screenshot of the Microsoft Azure portal showing the 'Overview' page for the deployed 'Microsoft.CognitiveServicesSpeechServices-20240125073244' service. It shows deployment status as 'Deployment succeeded', deployment details, and next steps. A sidebar on the right provides links for cost management, Microsoft Defender for Cloud, free tutorials, and expert work.

## Step 2: After the deployment is completed successfully, select the respective operation you want to perform.



The screenshot shows the Microsoft Azure Speech Studio portal. The main heading is "Text to speech". Below it, there's a brief description: "Build apps and services that speak naturally with more than 400 voices across 140 languages and dialects. Create a customized voice to differentiate your brand and use various speaking styles to bring a sense of emotion to your spoken content." Below the description are five cards:

- Voice Gallery**: Browse expressive voices with humanlike speech to find the perfect speaker for your project.  
[Try out Voice Gallery](#)
- Custom Voice**: Use your own audio recordings to create a distinct, one-of-a-kind voice for your text-to-speech app.  
[Start a Custom Voice project](#)
- Personal Voice Preview**: Create an AI voice easily from a human voice sample, providing your users with a personalized voice experience across 100 languages.  
[Try out Personal Voice](#)
- Audio Content Creation**: Craft nuanced speech by adjusting the speaking style, pacing, and pronunciation of your spoken content.  
[Start an Audio Content Creation project](#)
- Text to speech Avatar Preview**: Create photorealistic avatar talking video with text input.  
[Try out Text-to-speech Avatar](#)

The screenshot shows the "Voice Gallery" section of the Microsoft Azure Speech Studio portal. It includes filters for Language (English (United States)), Gender (All), and Speaking styles (Default). A message states: "Voices in public preview are only available in three service regions: East US, West Europe, and Southeast Asia. Switch to a supported region to view the voices." Below the filters is a grid of voice samples:

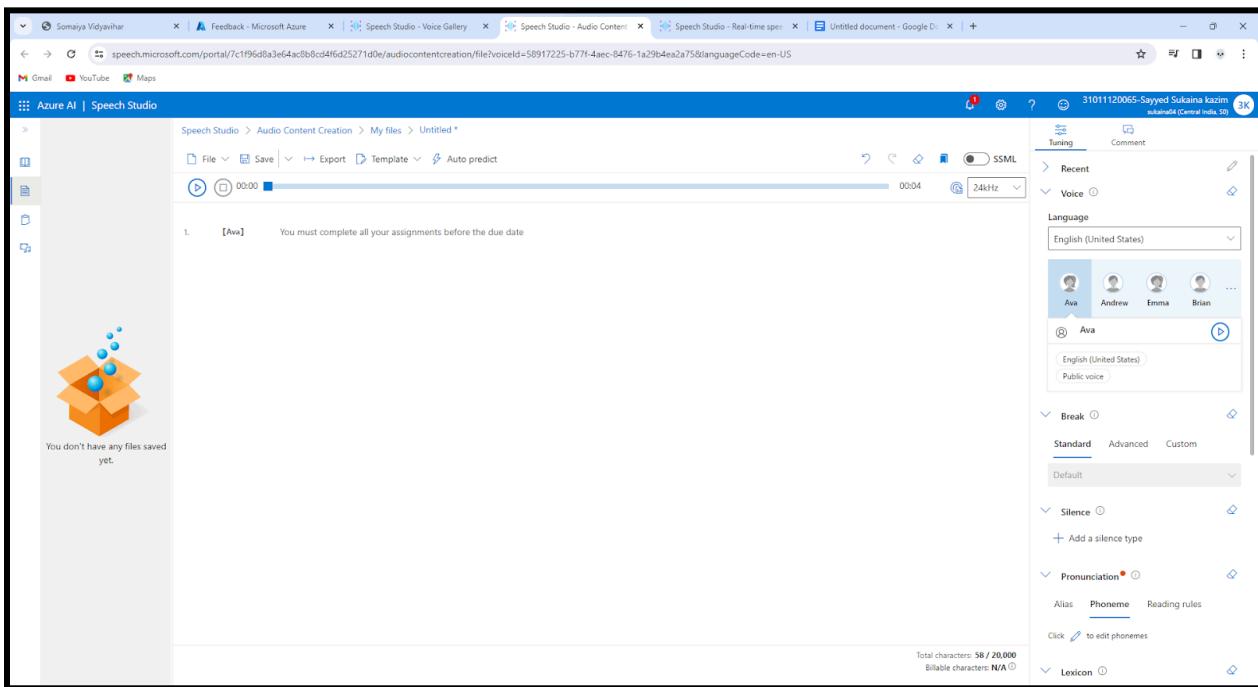
| Language                | Gender | Speaking styles   |
|-------------------------|--------|---|
| English (United States) | All    | Default   |
| Ava                     | Female | English (United States)<br>Bright, engaging voice with a beautiful tone.                                      |
| Andrew                  | Male   | English (United States)<br>Warm, engaging voice that sounds like someone you want to know.                    |
| Emma                    | Female | English (United States)<br>Friendly, light-hearted, and pleasant voice that works well for education and...   |
| Brian                   | Male   | English (United States)<br>Youthful, cheerful, and versatile voice well-suited to a wide variety of contexts. |
| Jenny                   | Female | English (United States)<br>15 styles  |
| Guy                     | Male   | English (United States)<br>12 styles  |
| Aria                    | Female | English (United States)<br>17 styles  |
| Davis                   | Male   | English (United States)<br>12 styles  |
| Jane                    | Female | English (United States)<br>11 styles  |

On the right side, there's a detailed view for the "Ava" voice, showing its details, a "Try it out" button, and a "Sample code" section. The "Sample code" section includes examples for "Advertisement" and "Conversation".

Name: Sayed Sukaina

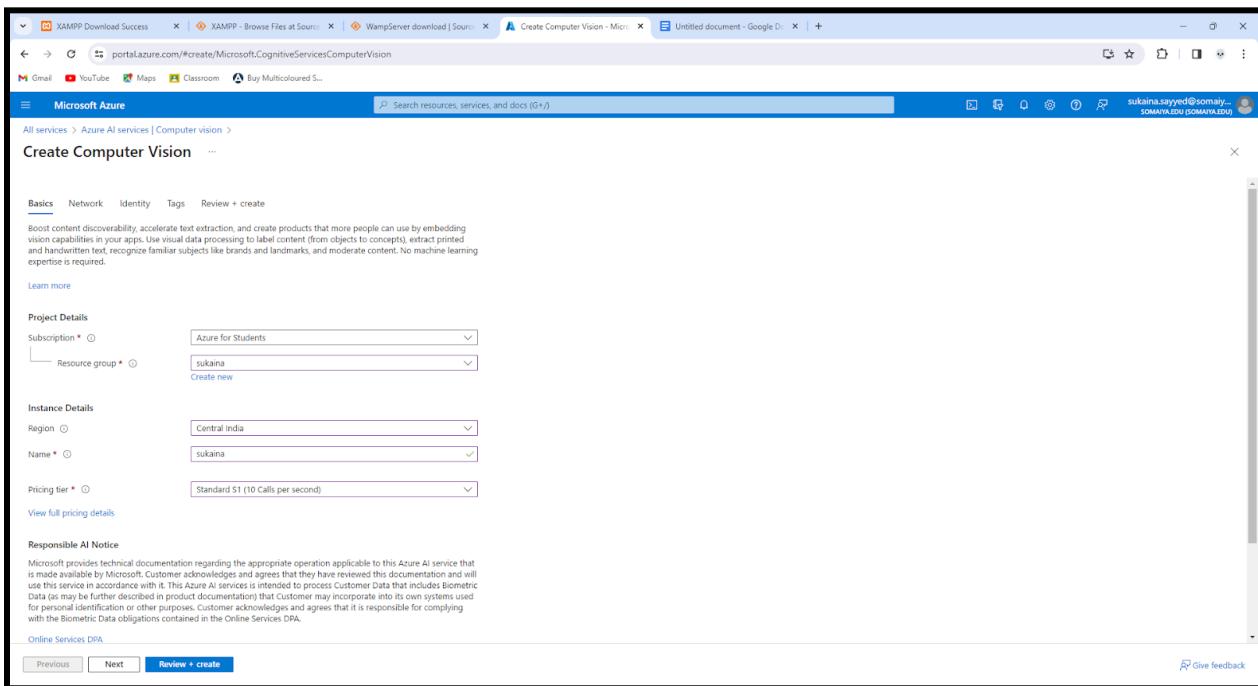
Roll no: 31031523028

### Step 3: Type in the text you want the AI to read.



## Computer Vision using Azure AI Services

### Creating Computer Vision resources



Name: Sayed Sukaina

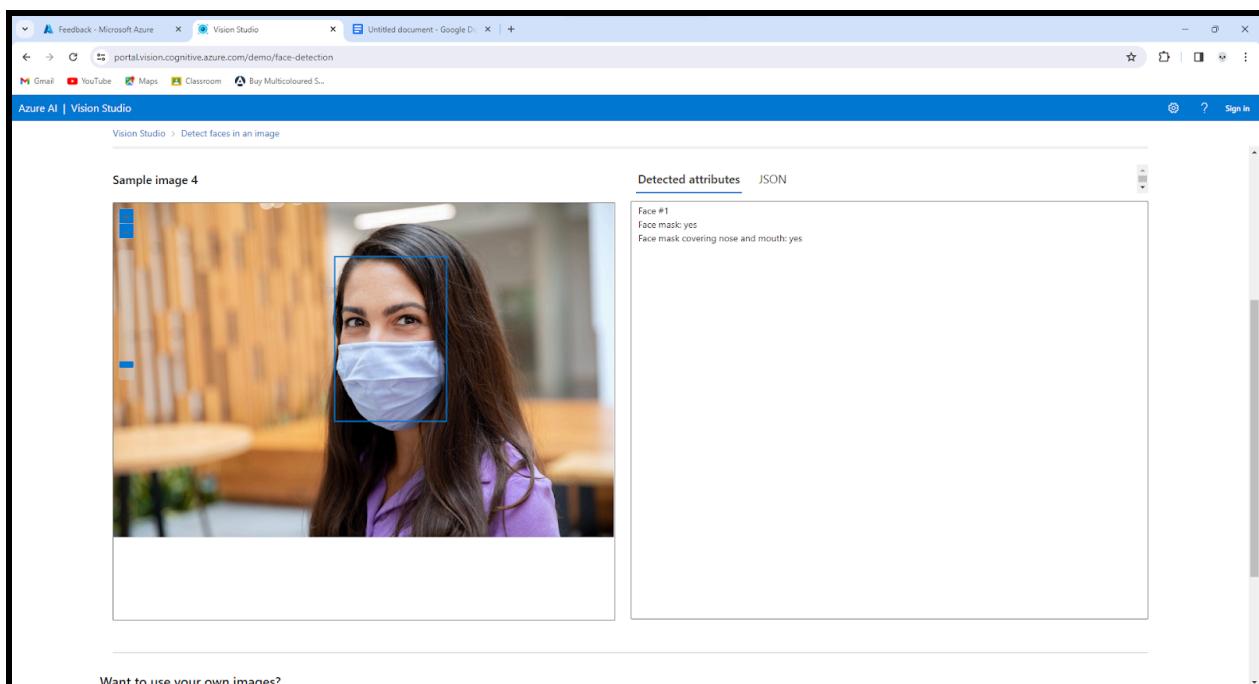
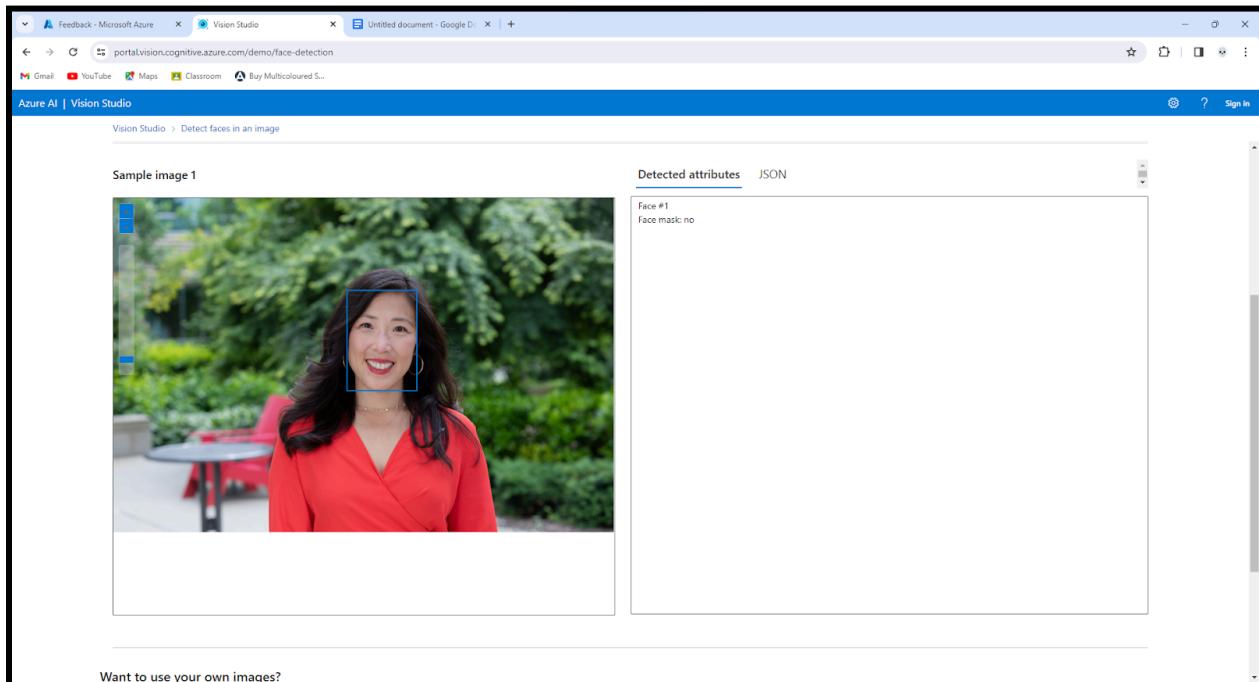
Roll no: 31031523028

The screenshot shows the Microsoft Azure portal with a deployment overview page. The title is "Microsoft.CognitiveServicesComputerVision-20240201083158 | Overview". A prominent message says "Your deployment is complete". Deployment details include: Deployment name: Microsoft.CognitiveServicesComputerVision-20240201083158, Subscription: Azure for Students, Resource group: sukaina. The start time was 2/1/2024, 8:34:51 AM, and the Correlation ID is a6451ab-0bb1-460a-8cbf-b9b25b3e013. On the right side, there are promotional cards for Cost management, Microsoft Defender for Cloud, Free Microsoft tutorials, and Work with an expert.

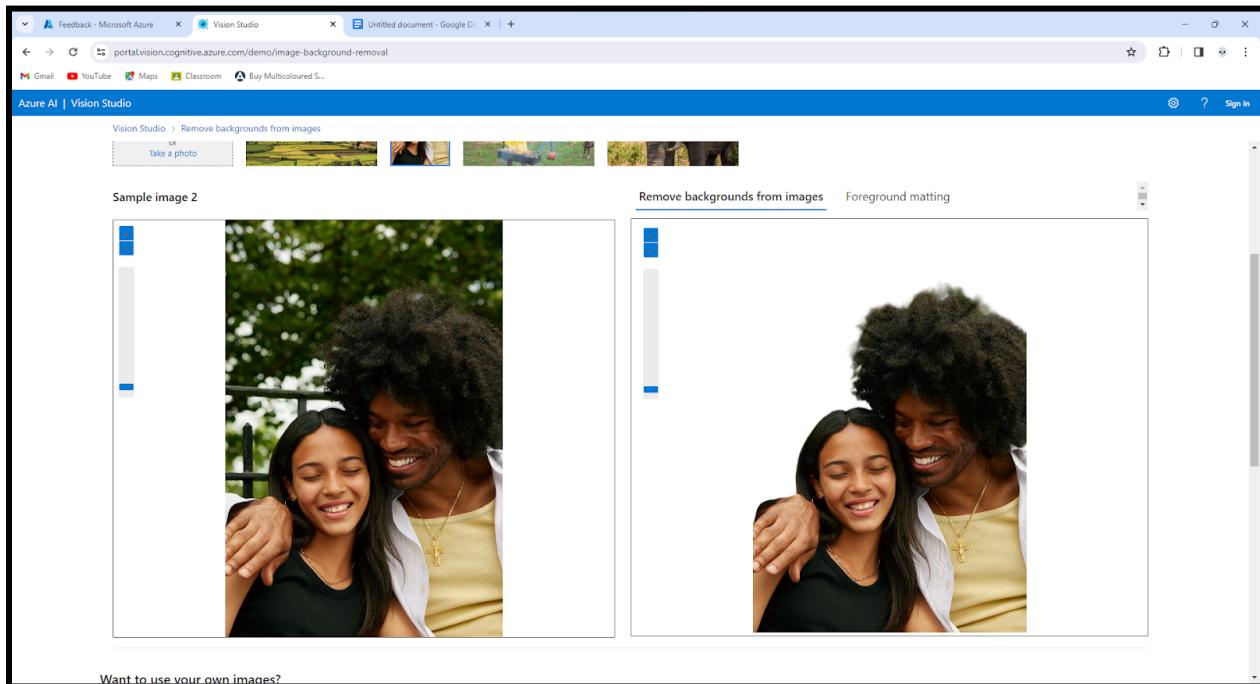
## Extracting text from images

The screenshot shows the Azure AI Vision Studio interface. The top navigation bar includes "Feedback - Microsoft Azure", "Vision Studio", and "Untitled document - Google Docs". The main area is titled "Azure AI | Vision Studio" and shows a "Extract text from images" tool. It features a "Sample form #1" section with a purple sticky note containing handwritten text: "You must be the change you wish to see in the world" and "Everything has its beauty, but not everyone sees it". To the right, under "Detected attributes", the extracted text is displayed: "You must be the change you wish to see in the world! Everything has its beauty, but not everyone sees it!". Below this, there is a JSON output field.

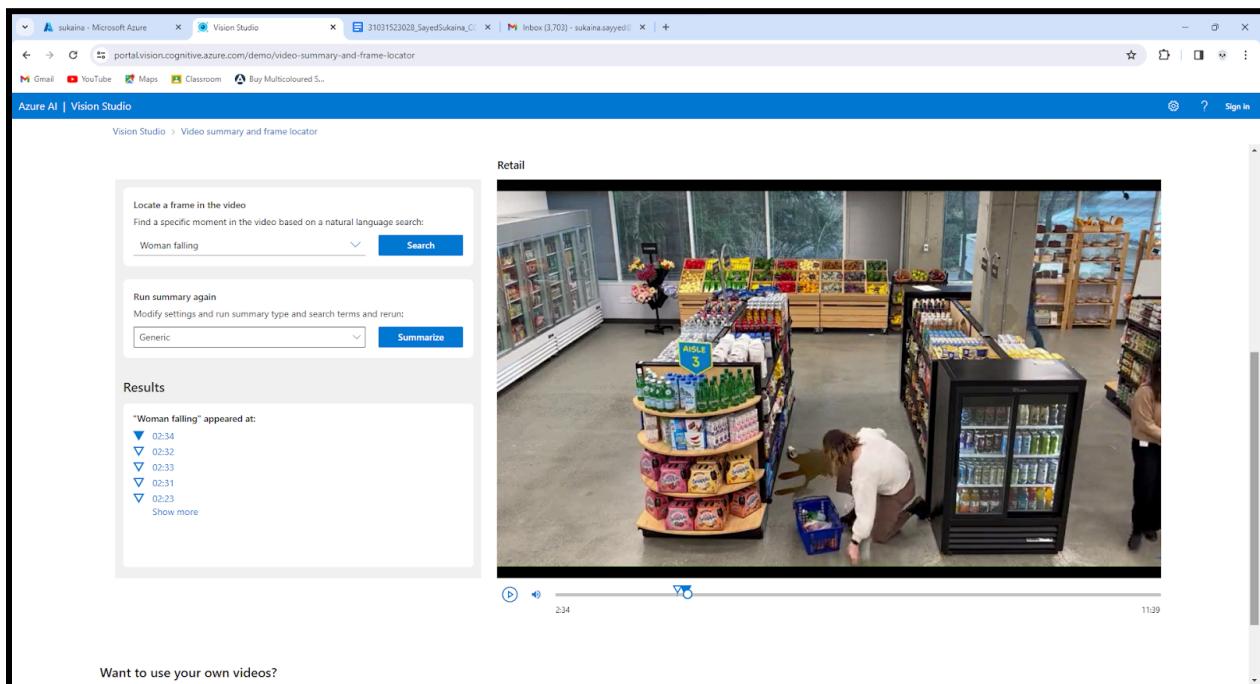
## Detecting faces in an image



## Removing background from images



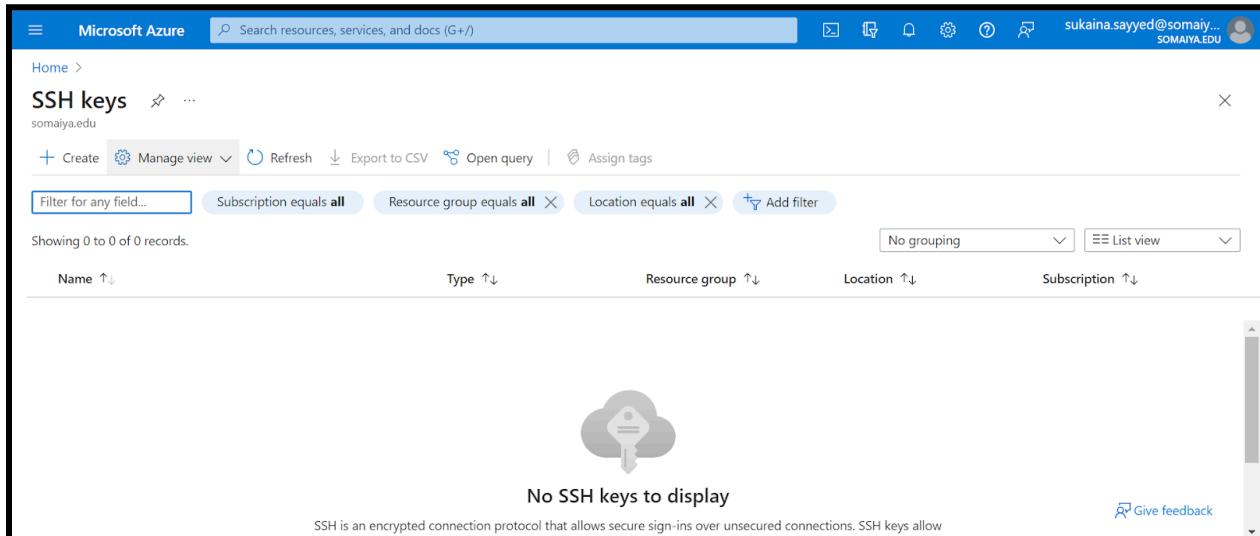
## Video Summary and Frame Locator



## Practical 7

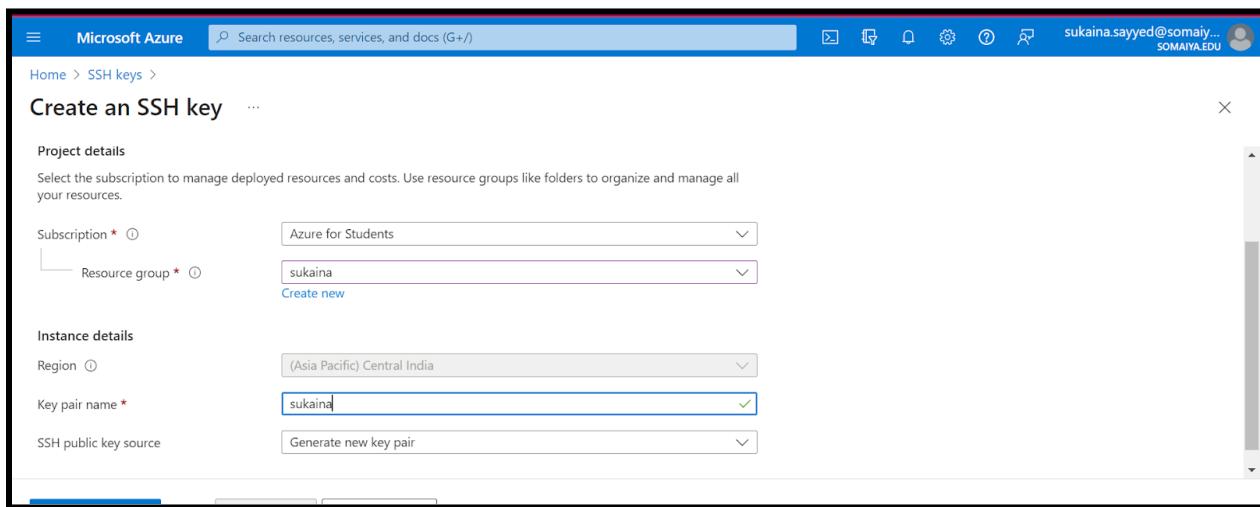
### Generating SSH key pairs using Azure

#### Step 1:



The screenshot shows the Microsoft Azure portal interface. The top navigation bar includes the Microsoft Azure logo, a search bar, and user information (sukaina.sayed@somaiy... SOMAIYA.EDU). Below the navigation is the 'SSH keys' blade under the 'somaiya.edu' resource group. The blade has a header with 'Create', 'Manage view', 'Refresh', 'Export to CSV', 'Open query', and 'Assign tags' buttons. It also features filter options for 'Subscription equals all', 'Resource group equals all', 'Location equals all', and 'Add filter'. The main content area displays a message: 'Showing 0 to 0 of 0 records.' Below this is a large icon of a cloud with a key inside. A message below the icon states: 'No SSH keys to display' and 'SSH is an encrypted connection protocol that allows secure sign-ins over unsecured connections. SSH keys allow'. There are 'Give feedback' and 'List view' buttons at the bottom right.

#### Step 2:



The screenshot shows the 'Create an SSH key' form within the Microsoft Azure portal. The top navigation bar is visible. The form is titled 'Create an SSH key' and includes sections for 'Project details' and 'Instance details'. In the 'Project details' section, 'Subscription' is set to 'Azure for Students' and 'Resource group' is set to 'sukaina' (with a 'Create new' option). In the 'Instance details' section, 'Region' is set to '(Asia Pacific) Central India', 'Key pair name' is set to 'sukaina' (highlighted with a blue border), and 'SSH public key source' is set to 'Generate new key pair'. The form includes a progress bar at the bottom.

Name: Sayed Sukaina

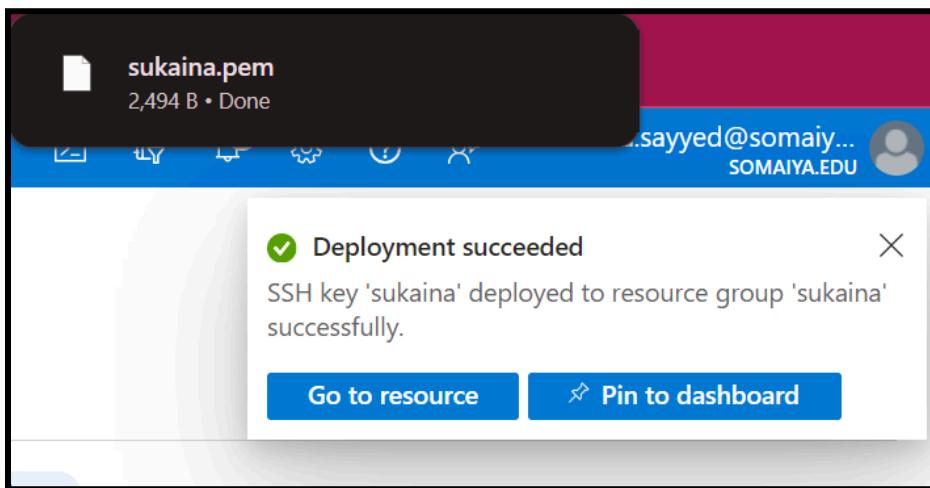
Roll no: 31031523028

### Step 3:

The screenshot shows the 'Create an SSH key' wizard in Microsoft Azure. The 'Validation passed' step has been completed successfully. The 'Review + create' tab is selected. The 'Basics' section displays the following configuration:

| Setting        | Value              |
|----------------|--------------------|
| Subscription   | Azure for Students |
| Resource group | sukaina            |
| Region         | Central India      |
| Key pair name  | sukaina            |

At the bottom, there are 'Create' and 'Next >' buttons, along with a link to 'Download a template for automation'.



The screenshot shows the Azure portal page for the 'sukaina' resource group. The left sidebar lists 'Overview', 'Activity log', 'Access control (IAM)', 'Tags', 'Diagnose and solve problems', 'Properties', 'Locks', and 'Tasks (preview)'. The main panel displays the 'Essentials' section for the 'sukaina' SSH key, which includes:

- Resource group (move): sukaina
- Location: Central India
- Subscription (move): Azure for Students
- Subscription ID: 12644108-85d3-416e-abd5-ff86ada50191
- Tags (edit): Add tags
- Public key:  
ssh-rsa AAAAB3NzaC1yc2EAAAQABAAQgQDKgHahLrC5a/+msDxw2mlrW4gYj+Xw8Ow9ZzJckGJQHDC96uZWl/h9PHvAK4GImnSwQRmgsH6b8snoWGoZ510wSNWt+GMNIcP9zxldKOKDfQrif3SDABYfO48hZb1y3FMhdR2urQj6TsZh1Nv0nQAK+3DMMyAF1ISNJovH4v48Tnoglb6uLbVmMgy4MU5Rt92WMWt+G455tE2jWpp50TvY6rv5GUmgd6OpH4sOI

## Practical 8

### User Management in Cloud

#### Step 1:

The screenshot shows the Microsoft Azure Management groups interface. It displays a list of management groups and their associated subscriptions. The 'Overview' tab is selected.

| Name               | Type             | ID                                   | Total subscriptions |
|--------------------|------------------|--------------------------------------|---------------------|
| Tenant Root Group  | Management group | a64aeab6-f01b-462b-aa9c-44546386ff31 | 1                   |
| Azure for Students | Subscription     | 1264a108-85d3-416e-abd5-ff86ada50191 | ...                 |
| sukaina            | Management group | sukaina                              | 0                   |

#### Step 2:

The screenshot shows the 'Create management group' dialog box. It is a child window of the Management groups page. The dialog is used to create a new management group under the Tenant Root Group.

Fields filled in the dialog:

- Management group ID: sukaina04
- Management group display name: sukaina04

Buttons at the bottom of the dialog:

- Submit
- Cancel

Name: Sayed Sukaina  
Roll no: 31031523028

The screenshot shows the Microsoft Azure Management Groups interface. The left sidebar lists 'All services > Management groups > sukaina'. The main area displays the 'sukaina' management group details under the 'Essentials' tab. Key information includes:

- Name: sukaina (Parent management group)
- ID: sukaina (Tenant Root Group)
- Access Level: Owner
- Path: Tenant Root Group / sukaina
- Total subscriptions: 0

The sidebar also shows links for Subscriptions, Resource Groups, Resources, Activity Log, Access control (IAM), Governance (Get started, Security, Policy), and Deployments.

### Step 3:

The screenshot shows the Microsoft Azure Policy | Compliance interface. The left sidebar lists 'All services > Management groups > sukaina | Policy > Policy'. The main area displays the 'Policy | Compliance' dashboard with the following data:

- Overall resource compliance: 100%
- Resources by compliance state:
  - 0 - Compliant (green circle)
  - 0 - Non-compliant (red square)
- Non-compliant initiatives: 0 out of 0
- Non-compliant policies: 0 out of 1

A table at the bottom lists a single policy entry:

| Name                         | Scope   | Compliance ... | Resource co...    | Non-Compli... | Non-complia... |
|------------------------------|---------|----------------|-------------------|---------------|----------------|
| Audit virtual machines witho | sukaina | Compliant      | 100% (0 out of 0) | 0             | 0              |

Name: Sayed Sukaina

Roll no: 31031523028

#### Step 4:

The screenshot shows the 'Available Definitions' page in the Microsoft Azure portal. The left sidebar has tabs for 'Basics', 'Advanced', 'Parameters', 'Remediation', and 'Non-compliant'. Under 'Scope', it shows 'sukaina'. Under 'Exclusions', there is a note to ' Optionally select resources to exclude from the policy assignment.'. The main area is titled 'Available Definitions' with a search bar and a 'Type : 2 selected' button. A table lists policy definitions with columns for 'POLICY NAME', 'CATEGORY', and 'TYPE'. The listed policies include:

| POLICY NAME   | CATEGORY        | TYPE    |
|---|-----------------|---------|
| Audit virtual machines without disaster recovery configured                           | Compute         | Builtin |
| Vulnerability assessment should be enabled on your Synapse workspaces                 | Synapse         | Builtin |
| SQL Server Integration Services integration runtimes on Azure Data Factory should ... | Data Factory    | Builtin |
| [Preview]: Configure VMSS created with Shared Image Gallery images to install the ... | Security Center | Builtin |
| Private endpoint connections on Batch accounts should be enabled                      | Batch           | Builtin |
| Enable logging by category group for microsoft.network/p2svpngateways to Storage      | Monitoring      | Builtin |
| Azure Backup should be enabled for Virtual Machines                                   | Backup          | Builtin |
| Configure App Service app slots to use the latest TLS version                         | App Service     | Builtin |

At the bottom, there are buttons for 'Review + create', 'Cancel', 'Previous', 'Next', 'Add', and 'Cancel'.

The screenshot shows the 'Assign policy' configuration page in the Microsoft Azure portal. The left sidebar has tabs for 'Scope', 'Exclusions', 'Basics', 'Policy definition \*', 'Assignment name \*', and 'Description'. The 'Scope' field is set to 'sukaina'. The 'Policy definition \*' dropdown contains 'Audit virtual machines without disaster recovery configured'. The 'Assignment name \*' dropdown also contains 'Audit virtual machines without disaster recovery configured'. The 'Description' field is empty. At the bottom, there are buttons for 'Review + create', 'Cancel', 'Previous', 'Next', and 'Add'.

The screenshot shows the 'Policy | Assignments' summary page in the Microsoft Azure portal. The left sidebar has tabs for 'Overview', 'Getting started', 'Compliance', 'Remediation', 'Events', 'Authoring' (with 'Definitions' selected), and 'Exemptions'. The main area displays summary statistics: 'Total Assignments: 1', 'Initiative Assignments: 0', and 'Policy Assignments: 1'. Below this, a table shows the single assignment with details: 'Assignment name: Audit virtual machines without disaster recovery configured', 'Scope: sukaina', and 'Type: Policy'. There are also buttons for 'Assign policy', 'Assign initiative', and 'Refresh'.

## Practical 9

### Virtualization in cloud

Establishing connections between two Virtual machines using Azure.

#### Step 1: Creating virtual network

The screenshot shows the Microsoft Azure portal interface. The user is on the 'Virtual networks' page under the 'Virtual networks' section. The search bar at the top has 'Virtual networks' typed into it. Below the search bar, there are several filter options: 'Subscription equals all', 'Resource group equals all', 'Location equals all', and a 'Add filter' button. A 'Create virtual network' button is prominently displayed in the center of the page, along with a 'Learn more' link and a 'Give feedback' link.

#### Step 2:

The screenshot shows the 'Create virtual network' wizard in progress. The user is on the 'Basics' tab. The 'Project details' section requires selecting a subscription and resource group. The 'Subscription' dropdown is set to 'Azure for Students' and the 'Resource group' dropdown is set to 'sukaina'. The 'Instance details' section includes fields for 'Virtual network name' (set to 'sukaina') and 'Region' (set to '(Asia Pacific) Central India'). At the bottom of the screen, there are navigation buttons: 'Previous', 'Next', 'Review + create', and a 'Give feedback' link.

Name: Sayed Sukaina

Roll no: 31031523028

### Step 3:

The screenshot shows the Microsoft Azure portal interface for creating a virtual network. The current step is 'Add a subnet'. The IP address range is set to 10.0.0.0 - 10.0.255.255. A new subnet named 'default' is being added with the following details:

| Subnet   | IP address range      | Size                | NAT gateway |
|----------|-----------------------|---------------------|-------------|
| default0 | 10.0.0.0 - 10.0.0.255 | /24 (256 addresses) | -           |
| default1 | 10.0.1.0 - 10.0.1.255 | /24 (256 addresses) | -           |

Buttons at the bottom include 'Previous', 'Next', 'Review + create', 'Add', and 'Cancel'.

### Step 4:

The screenshot shows the Microsoft Azure portal interface for creating a virtual network. The current step is 'Review + create'. The virtual network has been successfully created with the following configuration:

| Subnets  | IP address range      | Size                | NAT gateway |
|----------|-----------------------|---------------------|-------------|
| default0 | 10.0.0.0 - 10.0.0.255 | /24 (256 addresses) | -           |
| default1 | 10.0.1.0 - 10.0.1.255 | /24 (256 addresses) | -           |

Buttons at the bottom include 'Previous', 'Next', 'Review + create', and 'Give feedback'.

Name: Sayed Sukaina

Roll no: 31031523028

## Step 5:

The screenshot shows the Microsoft Azure portal interface for creating a virtual network. The user is on the 'Review + create' step of the wizard. The configuration details are as follows:

- Subscription:** Azure for Students
- Resource Group:** sukaina
- Name:** sukaina
- Region:** Central India

The 'Security' section is currently collapsed. At the bottom of the screen, there are navigation buttons for 'Previous', 'Next', and 'Create', along with a 'Give feedback' link.

## Step 6: Virtual network is successfully created with proper credentials.

The screenshot shows the Microsoft Azure portal displaying the deployment overview for 'sukaina-1707098850401'. The deployment status is marked as 'Your deployment is complete'. Deployment details are listed as follows:

- Deployment name: sukaina-1707098850401
- Subscription: Azure for Students
- Resource group: sukaina

Deployment start time: 2/5/2024 7:37:30 AM  
Correlation ID: edd8cdde-832d-4721-9c1e-274010c10f77

The 'Next steps' section contains a 'Go to resource' button. To the right, there are several promotional links and features:

- Cost management:** Get notified to stay within your budget and prevent unexpected charges on your bill. [Set up cost alerts >](#)
- Microsoft Defender for Cloud:** Secure your apps and infrastructure. [Go to Microsoft Defender for Cloud >](#)
- Free Microsoft tutorials:** Start learning today! [Start learning today >](#)
- Work with an expert:** Azure experts are service provider partners who can help manage your assets on Azure and be your first line of support. [Find an Azure expert >](#)

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Roll no: 31031523028

### Step 7:

The screenshot shows the Microsoft Azure portal interface for a virtual network named 'sukaina'. The left sidebar lists various options like Overview, Activity log, Access control (IAM), Tags, and Diagnose and solve problems. The main content area displays the 'Essentials' section with resource group information: 'Resource group (move) : sukaina', 'Location (move) : Central India', 'Subscription (move) : Azure for Students', and 'Subscription ID : 1264a108-85d3-416e-abd5-ff86ada50191'. It also shows network settings such as 'Address space : 10.0.0.0/16', 'DNS servers : Azure provided DNS service', 'Flow timeout : Configure', 'BGP community string : Configure', and 'Virtual network ID : 6d218cd7-4a90-4661-b5c3-eca77es7a10d'. Below these are four cards: 'DDoS protection' (Not configured), 'Azure Firewall' (Not configured), 'Peerings' (Not configured), and 'Microsoft Defender for Cloud' (Not configured). A 'Tags (edit)' button is visible.

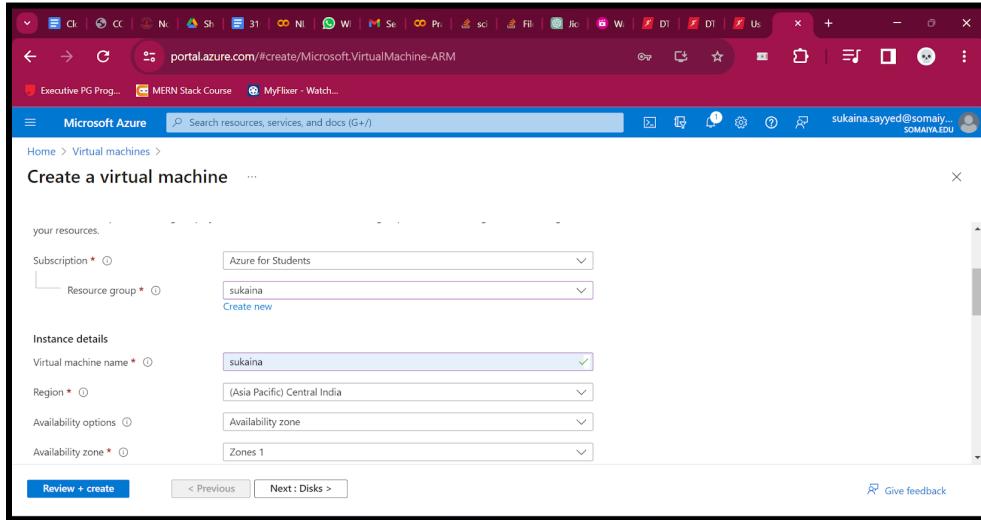
### Step 8: Creating Virtual machines

The screenshot shows the Microsoft Azure portal interface for 'Virtual machines'. The left sidebar has a '+ Create' button and links for 'Switch to classic', 'Reservations', 'Manage view', 'Refresh', 'Export to CSV', 'Open query', 'Assign tags', 'Start', 'Restart', 'Stop', and '...'. The main content area displays a list of options: 'Azure virtual machine' (Create a virtual machine hosted by Azure), 'Azure virtual machine with preset configuration' (Create a virtual machine with presets based on your workloads), and 'More VMs and related solutions' (Discover and deploy full workloads and Azure products for your business needs). A search bar at the top says 'Search resources, services, and docs (G+)'. At the bottom, it says 'No virtual machines to display' and 'Create a virtual machine that runs Linux or Windows. Select an image from the marketplace or use your own'.

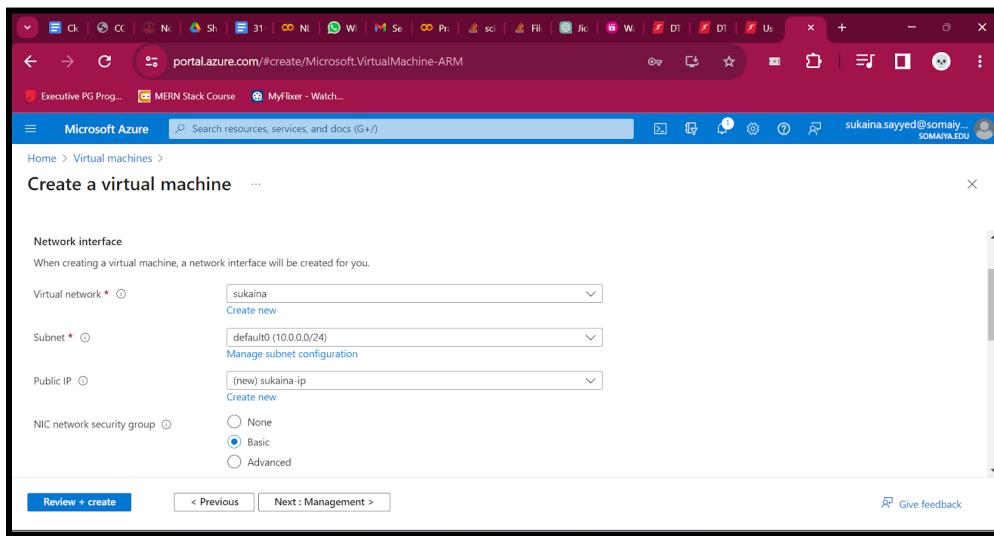
Name: Sayed Sukaina

Roll no: 31031523028

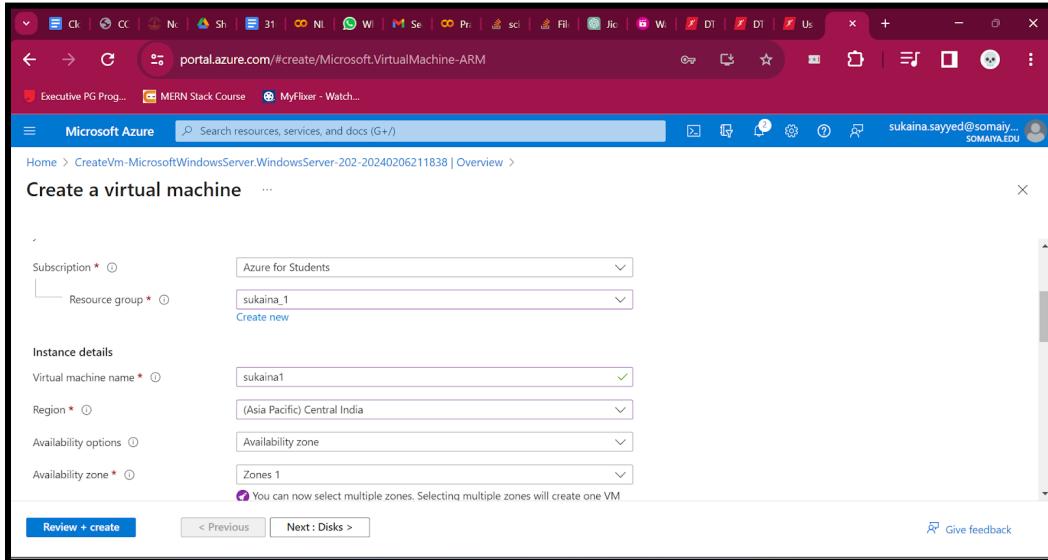
### Step 9:



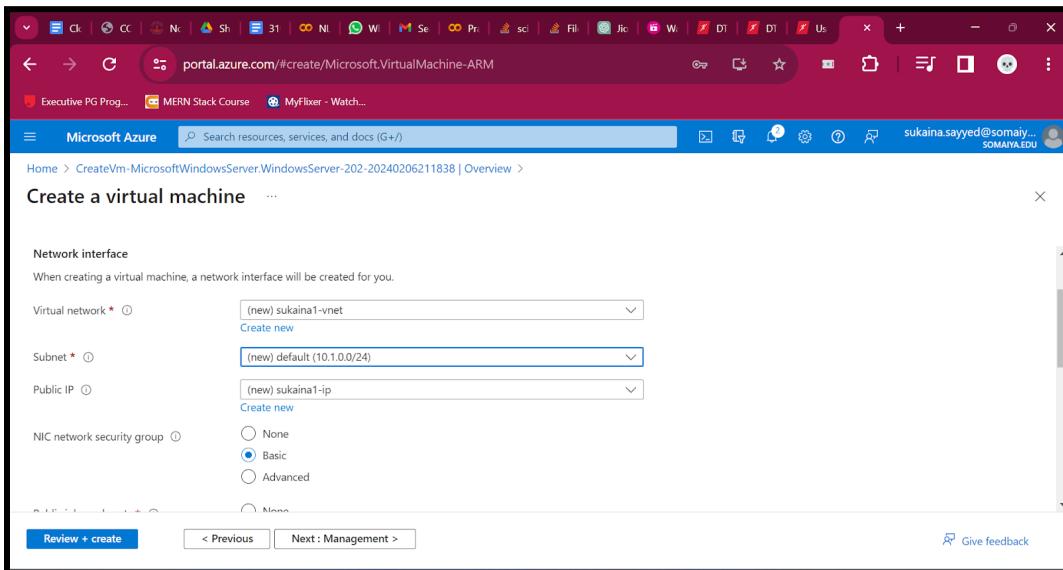
### Step 10:



### Step 11:



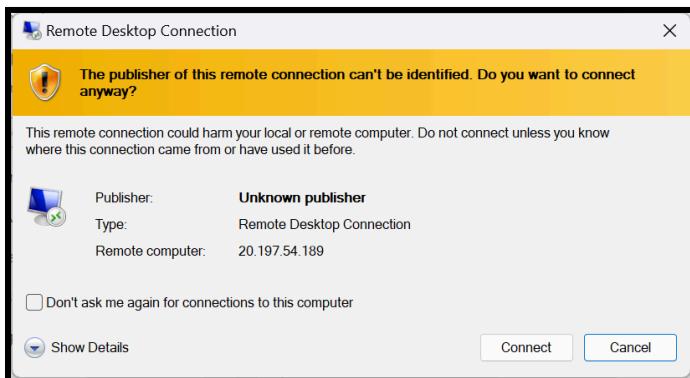
### Step 12:



### Step 13:

The screenshot shows the Microsoft Azure portal at [portal.azure.com](https://portal.azure.com/#view/HubsExtension/DeploymentDetailsBlade/~/overview/id/%2Fsub...). The page title is "CreateVm-MicrosoftWindowsServer.WindowsServer-202-20240206212525 | Overview". A green checkmark icon indicates "Your deployment is complete". Deployment details show: Deployment name: CreateVm-MicrosoftWindowsServer..., Start time: 6/2/2024, 9:29:11 pm, Subscription: Azure for Students, Resource group: sukaina\_1. Below this, there are sections for "Deployment details" (Setup auto-shutdown, Monitor VM health, Run a script) and "Next steps" (Get notified about budget, Set up cost alerts, Microsoft Defender for Cloud). At the bottom are "Go to resource" and "Create another VM" buttons.

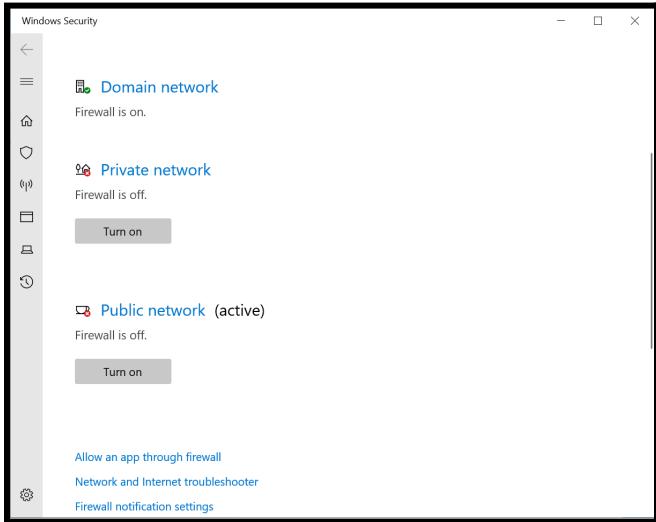
### Step 14:



Name: Sayed Sukaina

Roll no: 31031523028

**Step 15: Turn off the windows firewall for both the VM.**



**Step 16: Open the command prompt and check for the IP address.**

A screenshot of a Windows Command Prompt window. The title bar says 'Select Administrator: Command Prompt'. The content shows the output of the 'ipconfig' command. It lists the 'Ethernet adapter Ethernet' with its connection-specific DNS suffix, link-local IPv6 address, IPv4 address (10.0.0.4), subnet mask (255.255.255.0), and default gateway (10.0.0.1). The prompt at the bottom is 'C:\Users\sukaina>'.

## Step 17: Connection successfully established

```
C:\> Administrator: Command Prompt
Ethernet adapter Ethernet:

Connection-specific DNS Suffix . : beldf33ivucetmtliwch1ypt5f.rx.internal.cloudapp.net
Link-local IPv6 Address . . . . . : fe80::8a7d:cd8e:979a:a0e3%6
IPv4 Address . . . . . : 10.0.0.4
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 10.0.0.1

C:\>Users\sukaina>ping 10.0.0.4

Pinging 10.0.0.4 with 32 bytes of data:
Reply from 10.0.0.4: bytes=32 time<1ms TTL=128

Ping statistics for 10.0.0.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>Users\sukaina>
```

```
Vm1 - 20.197.11.100:3389 - Remote Desktop Connection
Recycle Bin C:\> Administrator: Command Prompt
Reply from 10.0.0.4: bytes=32 time<1ms TTL=128
Reply from 10.0.0.4: bytes=32 time<1ms TTL=128

Ping statistics for 10.0.0.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

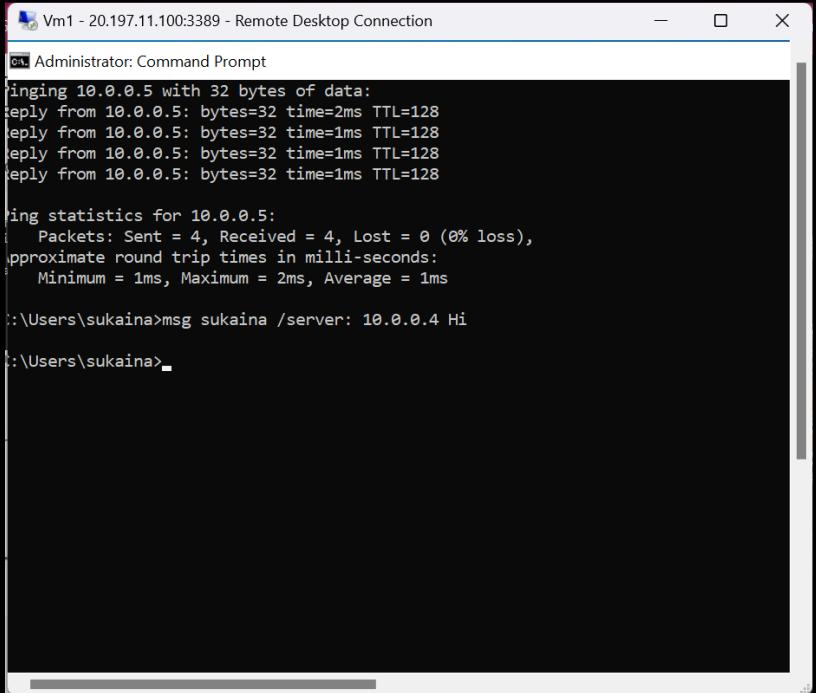
C:\>Users\sukaina>ping 10.0.0.5

Pinging 10.0.0.5 with 32 bytes of data:
Reply from 10.0.0.5: bytes=32 time=2ms 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
Reply from 10.0.0.5: bytes=32 time=1ms TTL=128

Ping statistics for 10.0.0.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 2ms, Average = 1ms

C:\>Users\sukaina>
```

**Step 18: Furthermore, send a message from VM2 to tabishVM1**

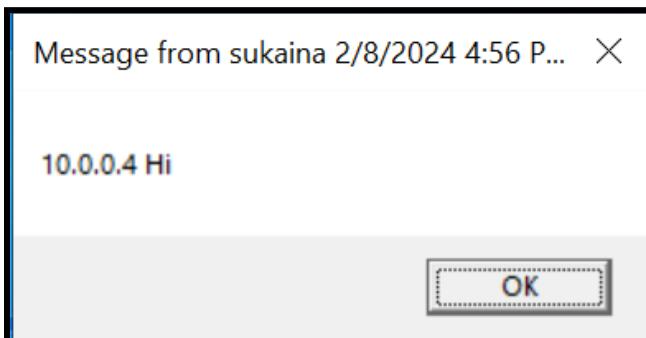


```
Vm1 - 20.197.11.100:3389 - Remote Desktop Connection
Administrator: Command Prompt
pinging 10.0.0.5 with 32 bytes of data:
Reply from 10.0.0.5: bytes=32 time=2ms TTL=128
Reply from 10.0.0.5: bytes=32 time=1ms TTL=128
Reply from 10.0.0.5: bytes=32 time=1ms TTL=128
Reply from 10.0.0.5: bytes=32 time=1ms TTL=128

Ping statistics for 10.0.0.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 2ms, Average = 1ms

C:\Users\sukaina>msg sukaina /server: 10.0.0.4 Hi
C:\Users\sukaina>
```

**Step 19: Message successfully sent and received**

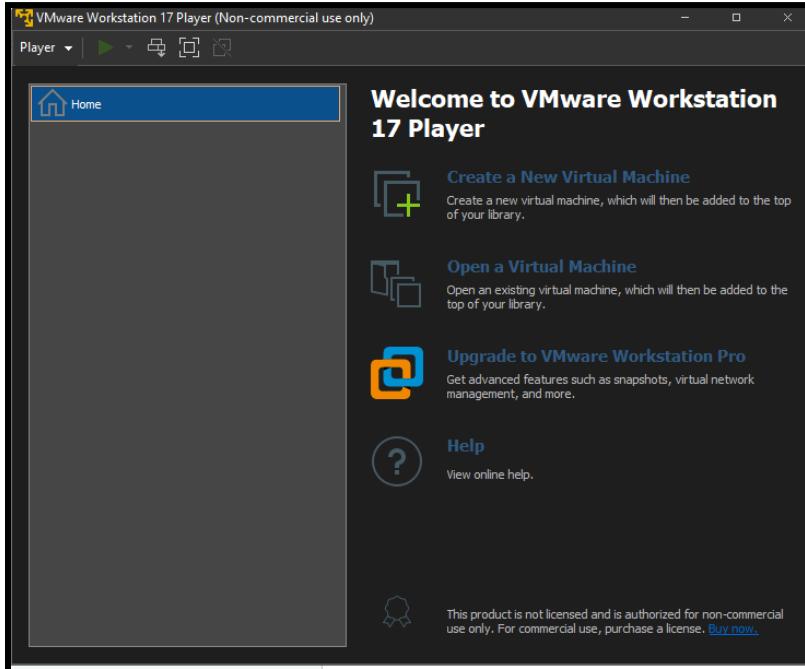


Name: Sayed Sukaina

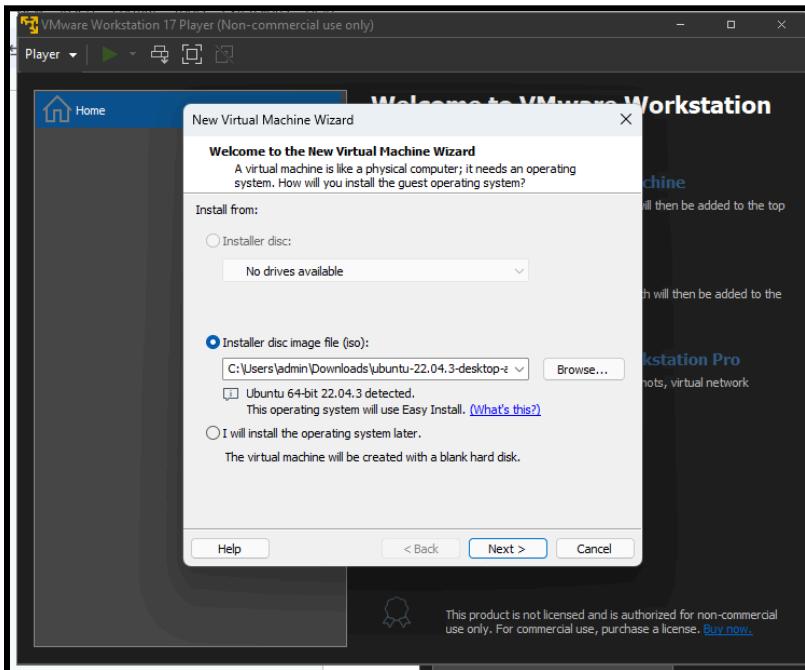
Roll no: 31031523028

## Establishing connections between two Virtual machines using VMware.

### Step 1:



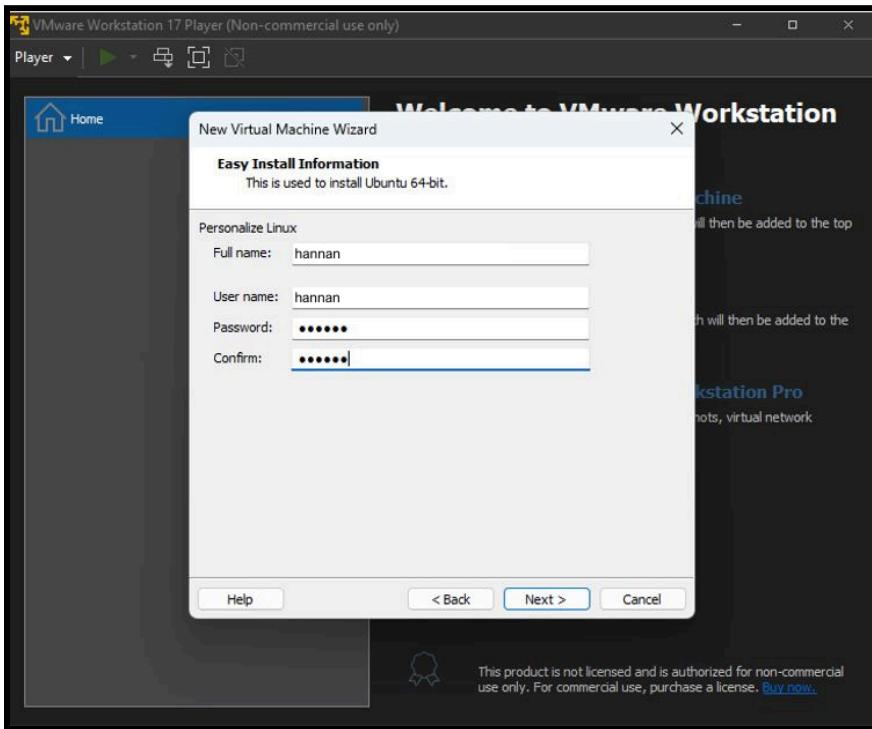
### Step 2



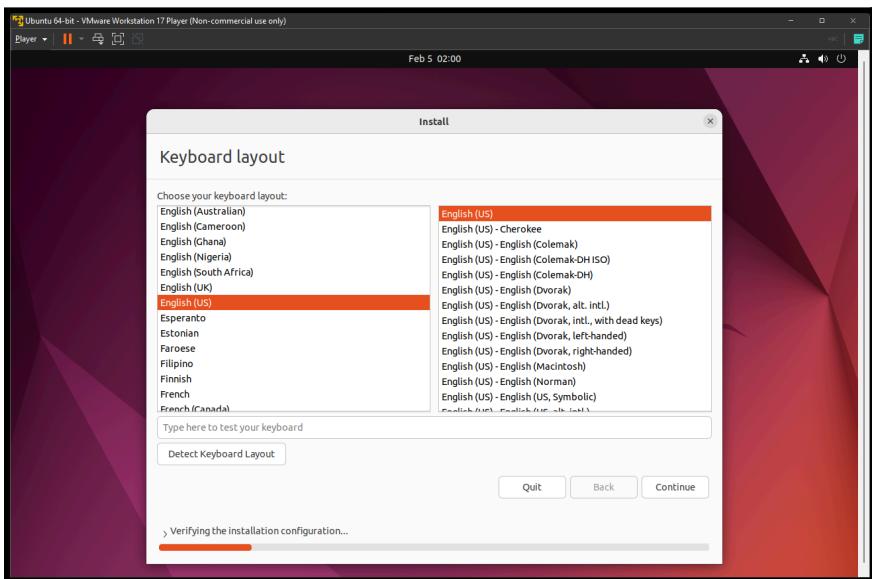
Name: Sayed Sukaina

Roll no: 31031523028

### Step 3 -



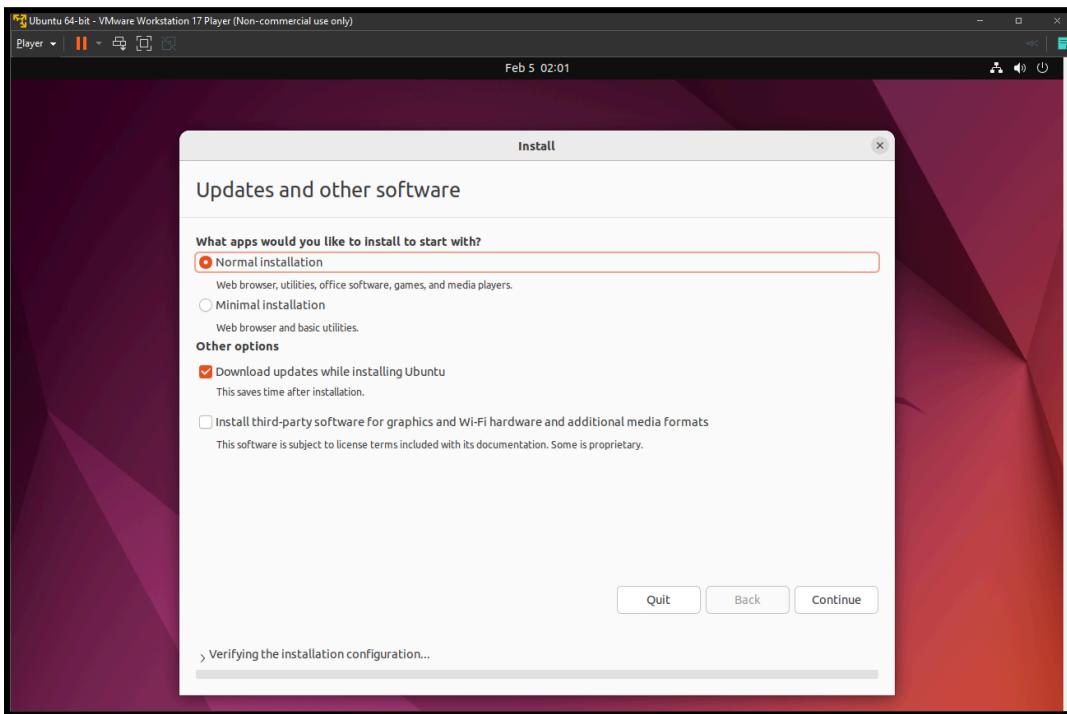
### Step 4 -



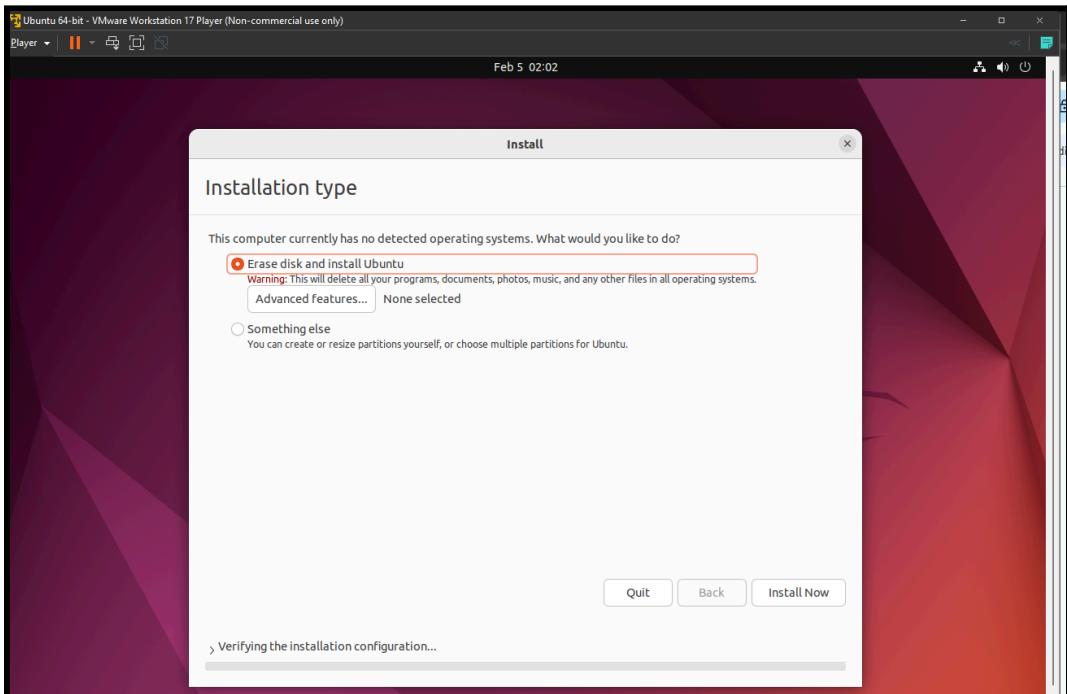
Name: Sayed Sukaina

Roll no: 31031523028

### Step 5 -



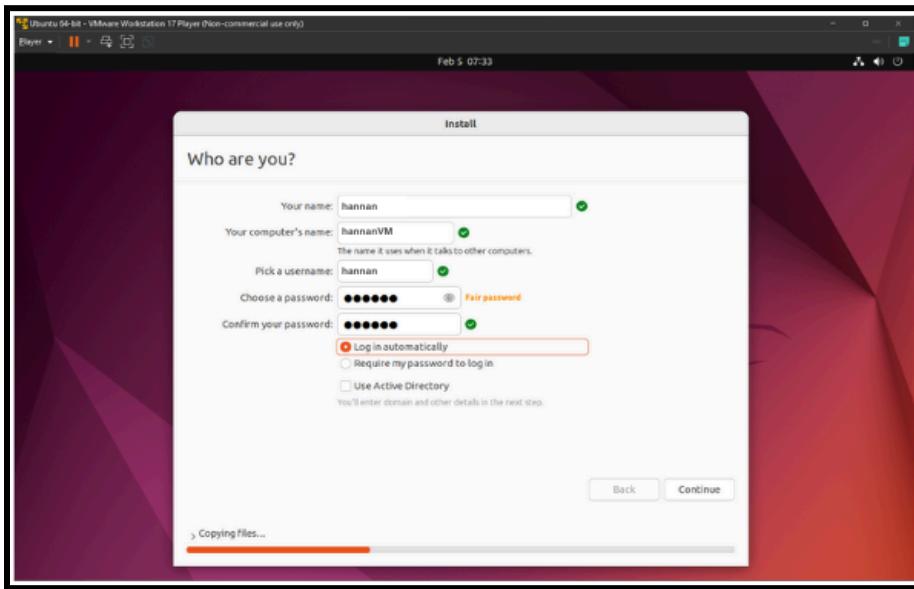
### Step 6-



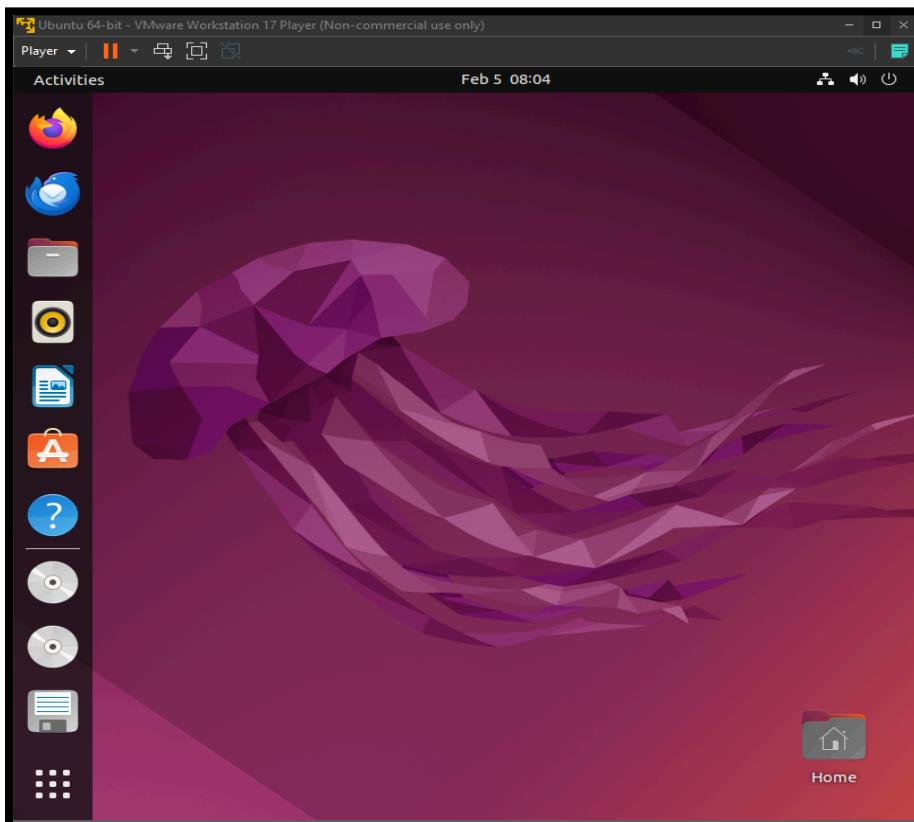
Name: Sayed Sukaina

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### Step 7 -



### Step 8 -



Name: Sayed Sukaina

Roll no: 31031523028

Create 2 different virtual machines

Ping both virtual machines to check connectivity

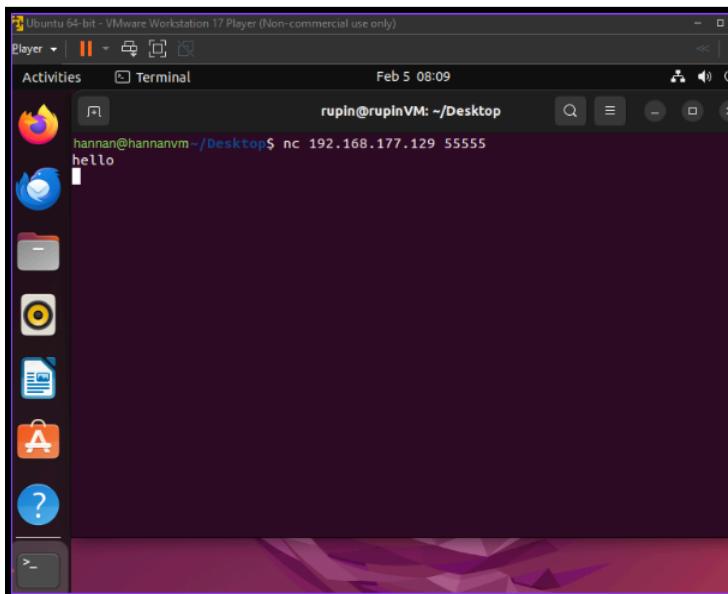
Use commands to send messages: -

nc -l "any port number" note:- enter any open port number

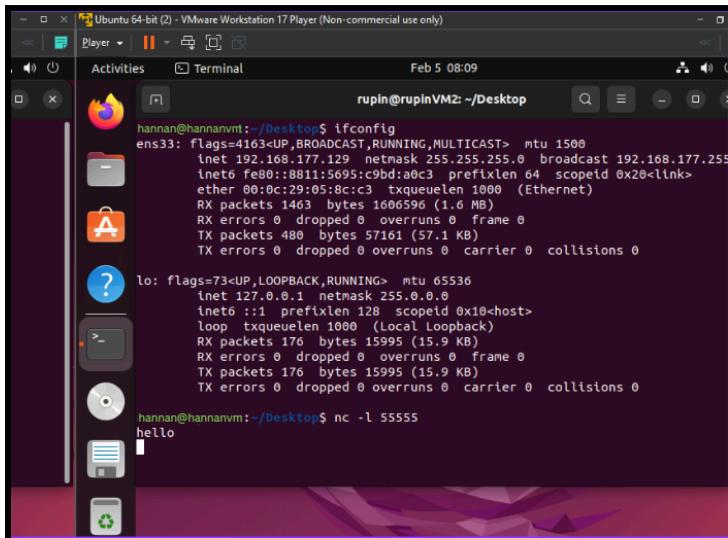
nc "any ip address"(servers ip address) any "port number"

type any message on the server side and client will automatically receive the message.

Client Side



Server Side



## Practical 10

### Cost Management

Step 1: Go to Azure Devs and go to your organization.

The screenshot shows the Azure DevOps interface for creating a new organization. On the left, there's a sidebar with a user profile (mihiran0315), a 'New organization' button, and a 'What's new' section about Sprint 234 and Workload identity federation. The main area has a cartoon illustration of a person and a dog sitting on a stack of blocks. It prompts the user to 'Create a project to get started' and provides fields for 'Project name' and 'Description'. Below these are 'Visibility' options: 'Public' (disabled) and 'Private' (selected). A note states that public projects are disabled for the organization. At the bottom right is a 'Create project' button.

Step 2: Click on billing and check your billing details.

The screenshot shows the 'Billing' section of the Azure DevOps organization settings. The left sidebar lists various settings like General, Projects, Users, Global notifications, Usage, Extensions, Microsoft Entra, Security, Boards, Pipelines, and Agent pools. The 'Billing' option under 'Users' is selected. The main content area displays billing information for pipelines and boards/repos/test plans. It shows that pipelines for private projects are free, with 1800 minutes available for MS Hosted CI/CD and 1 minute for Self-Hosted CI/CD. Boards, Repos, and Test Plans are also listed as free. A 'Start free trial' button is visible for basic + test plans. At the bottom, it shows default access levels for new users.

Name: Sayed Sukaina

Roll no: 31031523028

The screenshot shows the Azure DevOps Organization Settings page for the user 'mihiran0315'. The left sidebar lists various settings categories: General, Security, Boards, Pipelines, and Billing (which is currently selected). The main content area displays billing information:

| Category                           | Value                            |                 |                  |
|------------------------------------|----------------------------------|-----------------|------------------|
| Boards, Repos and Test Plans       | Free                             |                 |                  |
| Basic users                        | 5                                |                 |                  |
| Basic + Test Plans                 | <a href="#">Start free trial</a> |                 |                  |
| Settings                           | Access level                     |                 |                  |
| Default access level for new users | Stakeholder                      |                 |                  |
| Advanced Security                  | Used                             |                 |                  |
| Unique active committers           | 0                                |                 |                  |
| Resources                          | Free                             | Used            | Usage limit      |
| Artifacts                          | 2 GiB*                           | Less than 1 GiB | Up to 2 GiB free |

A note at the bottom states: "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](#)".

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

Name: Sayed Sukaina

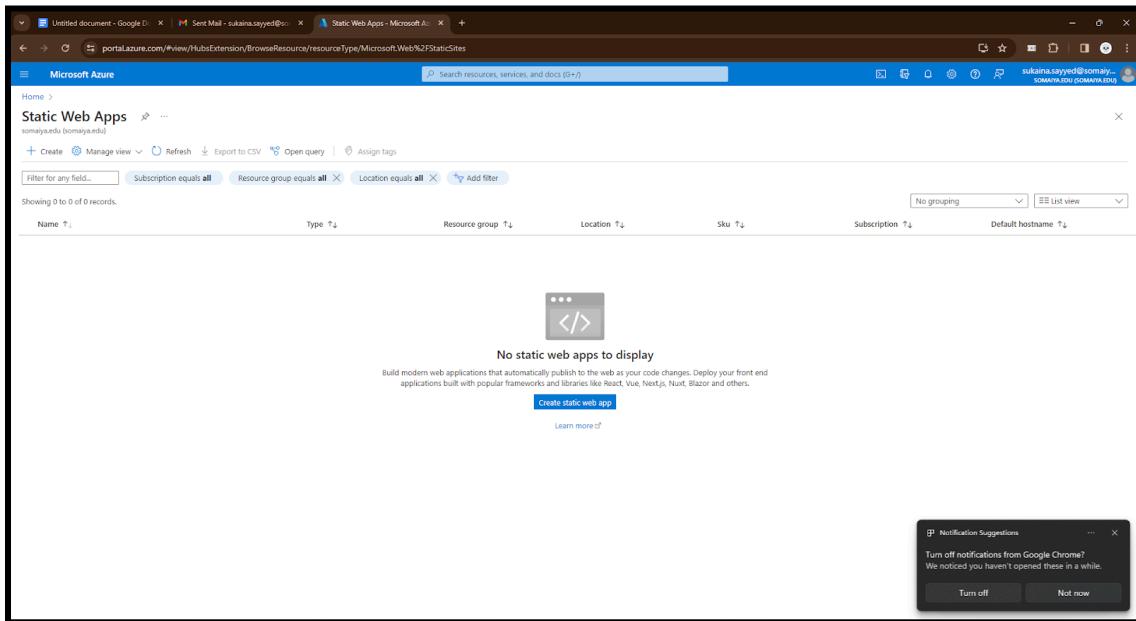
Roll no: 31031523028

# Practical 11

## Infrastructure as a Service

### Web hosting on Azure

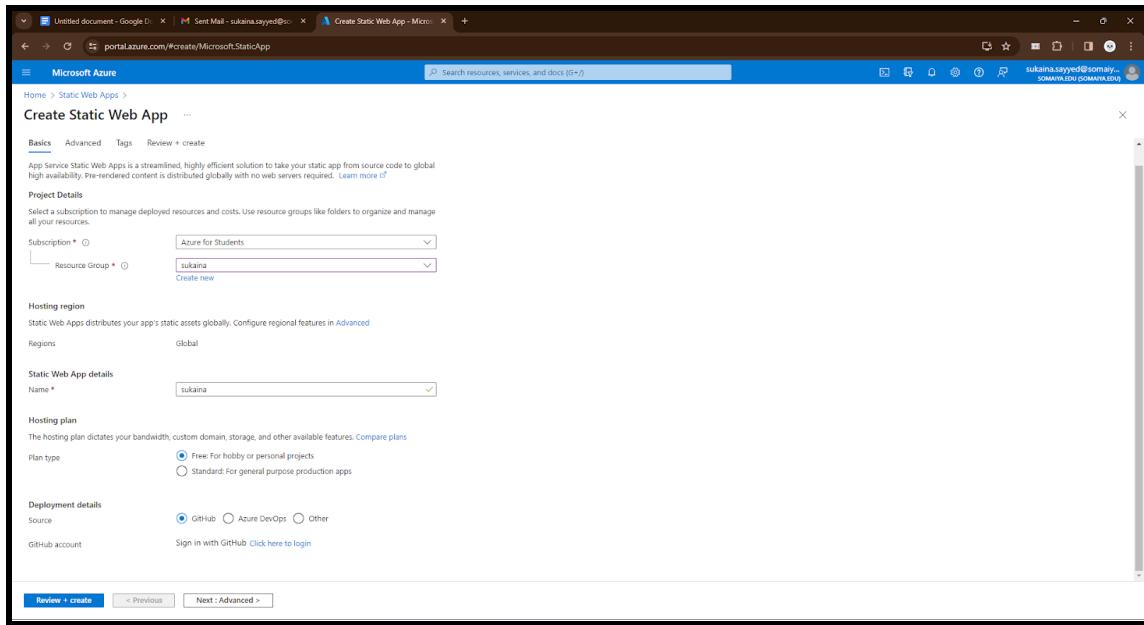
#### Step 1: Create a Static Web App on Azure



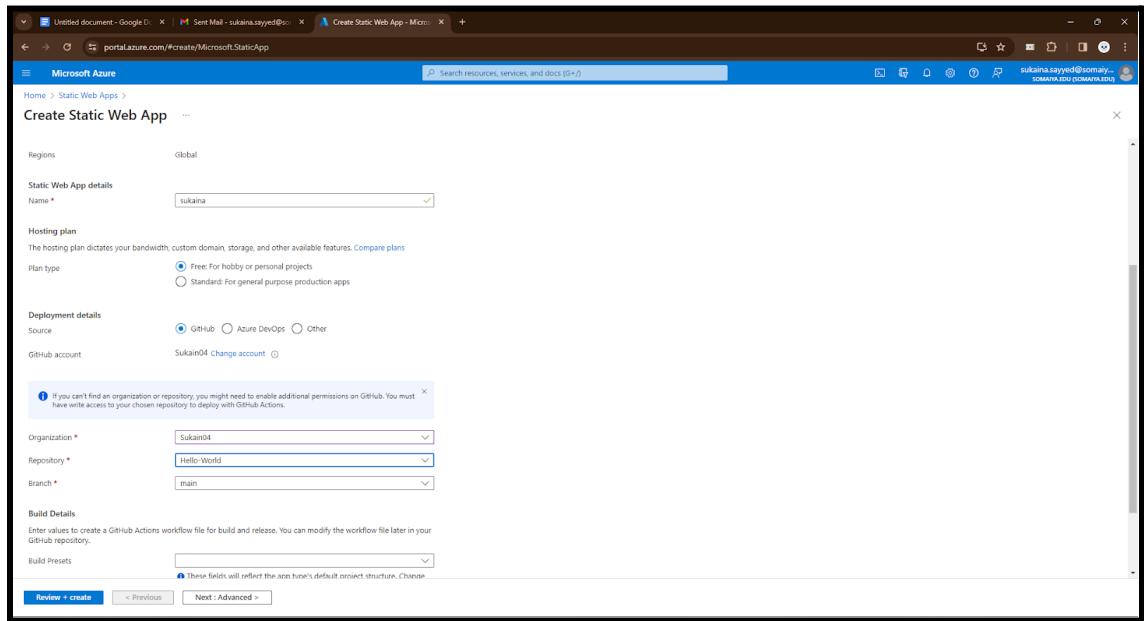
#### Step 2: Fill in the required details

Name: Sayed Sukaina

Roll no: 31031523028



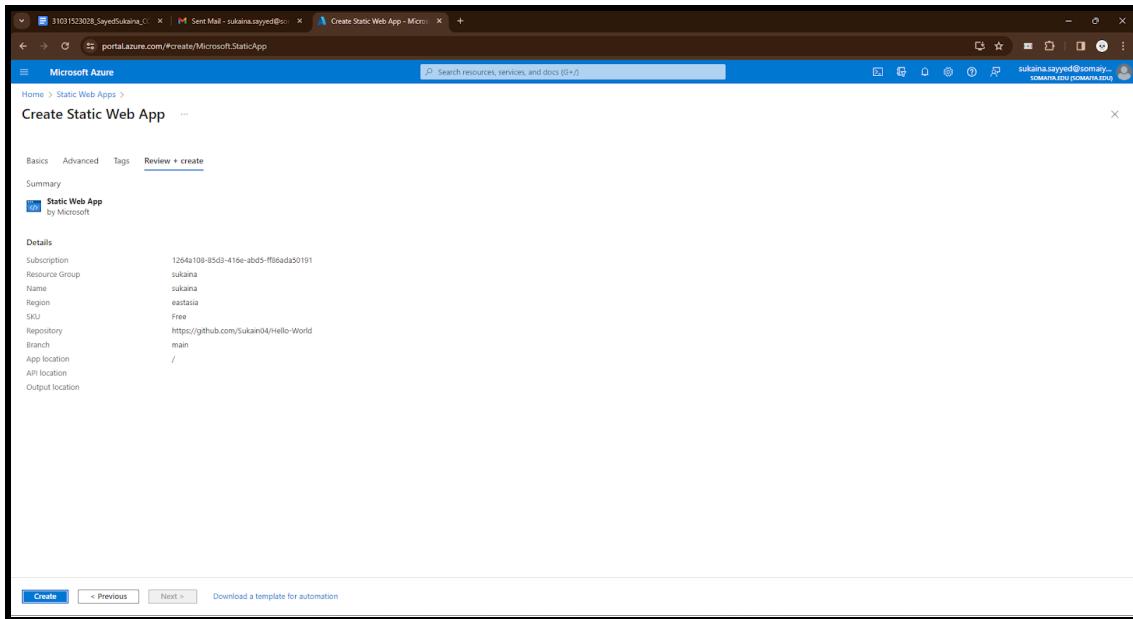
**Step 3: Sign in to your GitHub Account and select a static webpage you already have or create a new one and push it into a new repository.**



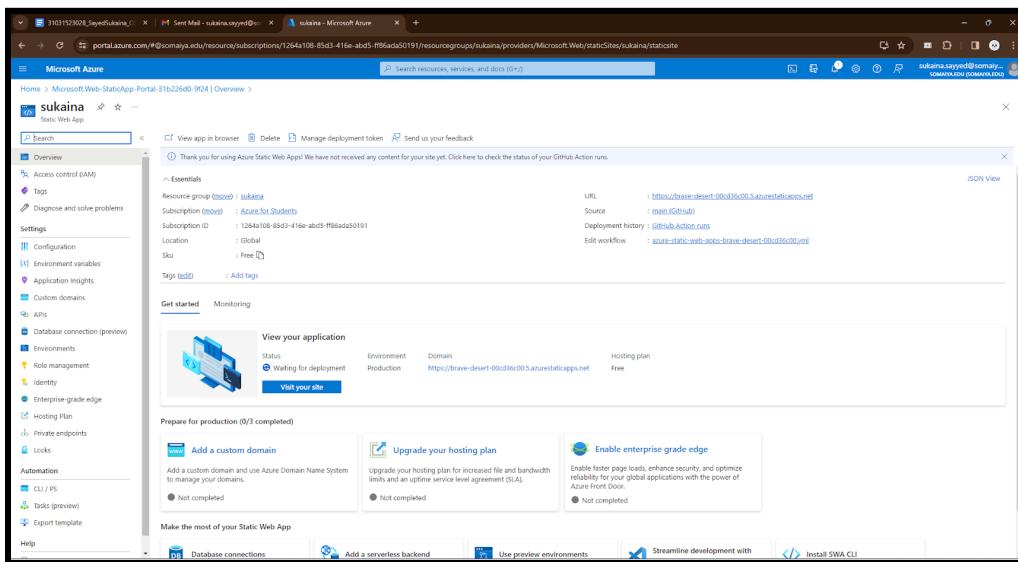
**Step 4: Click on Review and Create and wait for the deployment to get finished.**

Name: Sayed Sukaina

Roll no: 31031523028



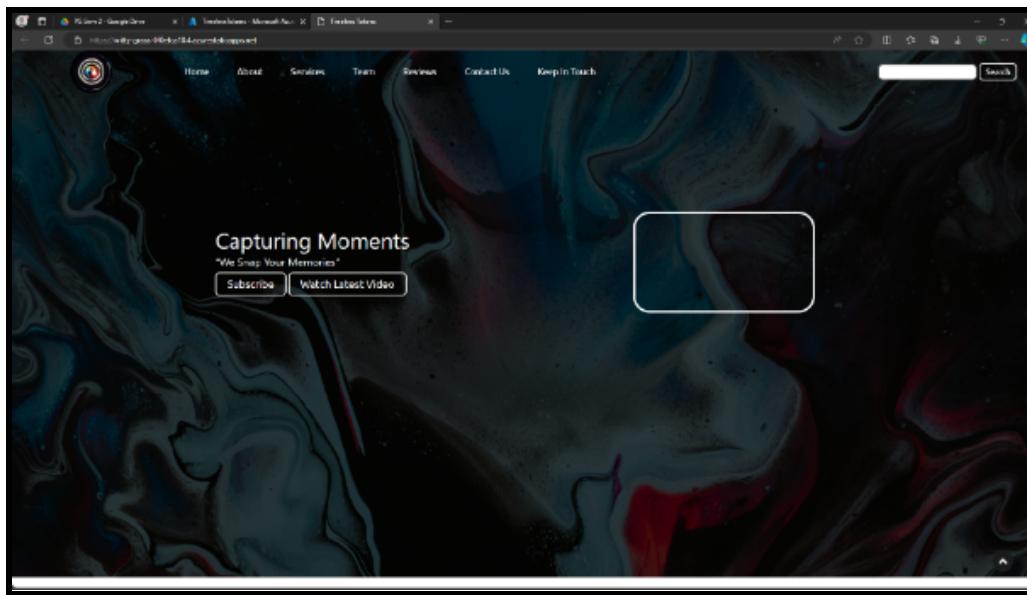
## Step 5: Once the deployment is complete wait for the website to get live.



## Step 6: Click on Visit site once you get the status as Ready. Your website is live.

Name: Sayed Sukaina

Roll no: 31031523028



**Step 7: You can view the link and share it with others so that even they can see your website.**

<https://brave-desert-00cd36c00.5.azurestaticapps.net/>

# Practical 12

## Security as a Service

Microsoft Azure

Create SQL Database Server

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 \* rupindb .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](#) or 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 both SQL and Microsoft Entra authentication  Use Microsoft Entra-only authentication  Use SQL authentication

Set Microsoft Entra admin rupin.desai@somaiya.edu Admin Object/App ID: 5d2a2951-0a50-4282-a9b8-3607cf6dedf5 Set admin

Server admin login \* rupindb

Password \*

Confirm password \*

**OK**

Microsoft Azure

Create SQL Database

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 \* BasicLogin\_group [Create new](#)

Apply offer (Preview)

SQL Database Hyperscale: Low price, high scalability, and best feature set. [Learn more](#)

Project details

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

Subscription \* Azure for Students

Resource group \* BasicLogin\_group [Create new](#)

Database details

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

Database name \* rupin

Server \* (new) rupindb (East US) [Create new](#)

Want to use SQL elastic pool?  Yes  No

Workload environment  Development  Production

Default settings provided for Development workloads. Configurations can be modified as needed.

**Review + create** **Next : Networking >**

Name: Sayed Sukaina

Roll no: 31031523028

The screenshot shows the 'Create SQL Database' wizard in the Microsoft Azure portal. The 'Networking' tab is selected. Key configuration options include:

- Network connectivity:** Connectivity method is set to "Public endpoint".
- Firewall rules:** Both "Allow Azure services and resources to access this server" and "Add current client IP address" are set to "Yes".
- Connection policy:** Default policy is selected.

A summary box on the right displays the cost summary for a "General Purpose (GP\_S\_Gen5\_1)" database tier, showing a monthly cost of 9.57 INR and an estimated storage cost of 398.00 INR.

The screenshot shows the deployment overview for a completed deployment named "Microsoft.SQLDatabase.newDatabaseNewServer\_938f75dbfdcb493fac06f". The deployment details are as follows:

- 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

The deployment status is marked as "Your deployment is complete". The "Next steps" section includes a "Go to resource" button. The right sidebar provides links to cost management, Microsoft Defender for Cloud, and work with experts.

Name: Sayed Sukaina

Roll no: 31031523028

The screenshot shows the Microsoft Azure portal interface for managing a SQL database. The main pane displays the 'rupindb' database under the 'All resources' section. The left sidebar includes options like 'Create', 'Manage view', 'Overview', 'Activity log', 'Access control (IAM)', 'Quick start', 'Diagnose and solve problems', 'Settings' (which lists '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', and 'Identity'), and 'Notifications'. The right pane shows the 'Essentials' section with details such as 'Resource group (maxd)', 'Subscription (maxd)', 'Tags', 'Server admin', 'Networking', 'Location', 'Subscription ID', 'Tags', and 'Audit Log'. Below this, there are tabs for 'All', 'Security (4)', 'Performance (1)', and 'Recovery (1)'. Under 'Security', there are three cards: 'Microsoft Entra admin' (CONFIGURED), 'Microsoft Defender for SQL' (NOT CONFIGURED), and 'Automatic tuning' (CONFIGURED). A 'Notifications' sidebar on the right shows a single event: 'Deployment succeeded' for a deployment to resource group 'testLogin\_group'. The bottom right corner shows the date and time as '07/31'.

The screenshot shows the Microsoft Azure portal for Microsoft Defender for Cloud. The top navigation bar includes 'Home', 'Microsoft Defender for Cloud', and 'Search resources, services, and docs (G+)'. The main content area is titled 'Microsoft Defender for Cloud | Getting started' and features a call-to-action 'Enable Microsoft Defender for Cloud's enhanced security features on your subscriptions.' It includes a 'Get started with a 30-day free trial' button and a link to 'Upgrade'. On the left, a sidebar lists categories: General (Overview, Getting started, Recommendations, Attack path analysis, Security alerts, Inventory, Cloud Security Explorer, Workbooks, Community, Diagnose and solve problems), Cloud Security (Security posture, Regulatory compliance, Workload protections, Data security, Firewall Manager, DevOps security), and Management (Environment settings, Security solutions, Workflow automation). The right side highlights three features: 'Cloud security posture management' (described as continuous assessment and prioritized security recommendations with secure score and verify compliance with regulatory standards), 'Cloud workload protection for machines' (described as protecting workloads running on Azure hybrid, and multi-cloud environments, including server EDR, vulnerability scanning, workload hardening, and more), and 'Advanced threat protection for PaaS' (described as preventing threats and detecting unusual activities on PaaS workloads including App Service plans, Storage accounts, and SQL servers).

Name: Sayed Sukaina

Roll no: 31031523028

The screenshot shows the Microsoft Azure portal interface for managing an Azure SQL Database. The database name is 'rupin'. The 'Essentials' section displays basic information: Resource group (BasicRupin\_group), Status (Available), Location (East US), Subscription (Azure for Students), Subscription ID (d1f130f1-a93c-440b-8992-228fd41e63), and Server name (rupin.database.windows.net). Notifications and Features are listed, with most being configured. Under 'Available resources', there is one database named 'rupin'.

The screenshot shows the Microsoft SQL Server Management Studio (SSMS) interface. A 'Connect to Server' dialog box is open, prompting for connection details. The server type is set to 'Database Engine', the server name is 'rupin.database.windows.net', the authentication method is 'Microsoft Entra MFA', and the user name is 'rupin.diesel@somaiya.edu'. The main SSMS window is visible in the background.

The screenshot shows the Microsoft SQL Server Management Studio (SSMS) interface after connecting to the database. The 'Object Explorer' pane shows the connection path: 'rupin' > 'rupin' > 'rupin'. Under 'rupin', there are nodes for 'Databases', 'Security', and 'Integration Services Catalogs'. The main workspace is currently empty.