

REPORT ON MICROSOFT AZURE FUNDAMENTALS

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DATE	10.08.2024

SANDBOX:-

Create a linux virtual machine and install Nginx

Learn / Training / Browse / Describe Azure compute and networking services /

< Previous Unit 3 of 14 Next >

Exercise - Create an Azure virtual machine

10 minutes

Sandbox activated! Time remaining: 58 min

You have used 1 of 10 sandboxes for today. More sandboxes will be available tomorrow.

In this exercise, you create an Azure virtual machine (VM) and install Nginx, a popular web server.

Azure Cloud Shell

Welcome to Azure Cloud Shell

Type "az" to use Azure CLI
Type "help" to learn about Cloud Shell

```
sujsiaro8 [ ~ ]$ az vm create --resource-group "learn-9cf4a57a-92b5-41ab-821f-7d10a805a978" --name my-vm --public-ip-sku Standard --image Ubuntu2204 --admin-username azureuser --generate-ssh-keys
SSH key files '/home/sujsiaro8/.ssh/id_rsa' and '/home/sujsiaro8/.ssh/id_rsa.pub' have been generated under ~/.ssh to allow SSH access to the VM. If using machines without permanent storage, back up your keys to a safe location.
{
  "fqdns": "",
  "id": "/subscriptions/16982123-2d3c-44ce-ab2d-0c419f4ce699/resourceGroups/learn-9cf4a57a-92b5-41ab-821f-7d10a805a978/providers/Microsoft.Compute/virtualMachines/my-vm",
  "location": "westus",
  "macAddress": "08-0D-3A-5C-A8-A4",
  "powerState": "VM running",
  "privateIpAddress": "10.0.0.4",
  "publicIpAddress": "13.64.181.183",
  "resourceGroup": "learn-9cf4a57a-92b5-41ab-821f-7d10a805a978",
}
```

Access your web server

< Previous Unit 9 of 14 Next >

Exercise - Configure network access

10 minutes

Verify your account

Please solve this puzzle so we know you are a real person

Start Puzzle

25417ea491c3d7d23615421004

Azure Cloud Shell

```
{
  "autoUpgradeMinorVersion": true,
  "enableAutomaticUpgrade": null,
  "forceUpdateTag": null,
  "id": "/subscriptions/16982123-2d3c-44ce-ab2d-0c419f4ce699/resourceGroups/learn-9cf4a57a-92b5-41ab-821f-7d10a805a978/providers/Microsoft.Compute/virtualMachines/my-vm/extensions/customScript",
  "instanceView": null,
  "location": "westus",
  "name": "customScript",
  "protectedSettings": null,
  "protectedSettingsFromKeyVault": null,
  "provisionAfterExtensions": null,
  "provisioningState": "Succeeded",
  "publisher": "Microsoft.Azure.Extensions",
  "resourceGroup": "learn-9cf4a57a-92b5-41ab-821f-7d10a805a978",
  "settings": {
    "fileUri": [
      "https://raw.githubusercontent.com/MicrosoftDocs/mslearn-welcome-to-azure/master/figure-nginx.sh"
    ]
  },
  "suppressFailures": null,
  "tags": null,
  "type": "Microsoft.Compute/virtualMachines/extensions",
  "typeHandlerVersion": "2.1",
  "typePropertiesType": "customScript"
}
```

sujsiaro8 [~]\$

List the current network security group rules

Task 2: List the current network security group rules

Your web server wasn't accessible. To find out why, let's examine your current NSG rules.

1. Run the following `az network nsg list` command to list the network security groups that are associated with your VM:

```
Azure CLI
az network nsg list \
  --resource-group "learn-9cf4a57a-92b5-41ab-821f-7d10a805a978" \
  --query '[].name' \
  --output tsv
```

You see this output:

```
Output
my-vmNSG
```

Every VM on Azure is associated with at least one network security group. In this case, Azure created an NSG for you called `my-vmNSG`.

Azure Cloud Shell

```
"protectedSettings": null,
"protectedSettingsFromKeyVault": null,
"provisionAfterExtensions": null,
"provisioningState": "Succeeded",
"publisher": "Microsoft.Azure.Extensions",
"resourceGroup": "learn-9cf4a57a-92b5-41ab-821f-7d10a805a978",
"settings": {
  "fileUri": [
    "https://raw.githubusercontent.com/MicrosoftDocs/mslearn-welcome-to-azure/master/figure-nginx.sh"
  ]
},
"suppressFailures": null,
"tags": null,
"type": "Microsoft.Compute/virtualMachines/extensions",
"typeHandlerVersion": "2.1",
"typePropertiesType": "customScript"
}

sujsiaro8 [ ~ ]$ IPADDRESS=$(az vm list-ip-addresses --resource-group "learn-9cf4a57a-92b5-41ab-821f-7d10a805a978" --name my-vm --query "[].virtualMachine.network.publicIpAddress[0].ipAddress" --output tsv)
sujsiaro8 [ ~ ]$ curl --connect-timeout 5 http://$IPADDRESS
curl: (28) Failed to connect to 13.64.181.183 port 80 after 5002 ms: Timeout was reached
sujsiaro8 [ ~ ]$ echo $IPADDRESS
13.64.181.183
sujsiaro8 [ ~ ]$ az network nsg list --resource-group "learn-9cf4a57a-92b5-41ab-821f-7d10a805a978" --query '[].name' --output tsv
my-vmNSG
sujsiaro8 [ ~ ]$
```

Create the network security rule

Task 3: Create the network security rule

Here, you create a network security rule that allows inbound access on port 80 (HTTP).

1. Run the following `az network nsg rule create` command to create a rule called `allow-http` that allows inbound access on port 80:

```
Azure CLI
az network nsg rule create \
  --resource-group "learn-9cf4a57a-92b5-41ab-821f-7d10a805a978" \
  --nsg-name my-vmNSG \
  --name allow-http \
  --protocol tcp \
  --priority 100 \
  --destination-port-range 80 \
  --access Allow
```

For learning purposes, here you set the priority to 100. In this case, the priority doesn't matter. You would need to consider the priority if you had overlapping port ranges.

2. To verify the configuration, run `az network nsg rule list` to see the updated list of rules:

```
Azure CLI
az network nsg rule list --resource-group "learn-9cf4a57a-92b5-41ab-821f-7d10a805a978" --nsg-name my-vmNSG --query '[Name, Priority, Port, Access]' --output table
```

Name	Priority	Port	Access
default-allow-ssh	1000	22	Allow

```
Azure Cloud Shell
{
  "access": "Allow",
  "destinationAddressPrefix": "*",
  "destinationAddressPrefixes": [],
  "destinationPortRange": "22",
  "destinationPortRanges": [],
  "direction": "Inbound",
  "etag": "W/\"e422f1ef-a3a7-4040-a327-92566ec27688\"",
  "id": "/subscriptions/16982123-2d3c-44ce-ab2d-0c419f4ce699/resourceGroups/learn-9cf4a57a-92b5-41ab-821f-7d10a805a978/providers/Microsoft.Network/networkSecurityGroups/my-vmNSG/securityRules/default-allow-ssh",
  "name": "default-allow-ssh",
  "priority": 1000,
  "protocol": "Tcp",
  "provisioningState": "Succeeded",
  "resourceGroup": "learn-9cf4a57a-92b5-41ab-821f-7d10a805a978",
  "sourceAddressPrefix": "*",
  "sourceAddressPrefixes": [],
  "sourcePortRange": "*",
  "sourcePortRanges": [],
  "type": "Microsoft.Network/networkSecurityGroups/securityRules"
}

sujuisaro8 [ ~ ]$ az network nsg rule list --resource-group "learn-9cf4a57a-92b5-41ab-821f-7d10a805a978" --nsg-name my-vmNSG --query '[Name, Priority, Port, Access]' --output table
Name          Priority  Port  Access
-----
default-allow-ssh 1000    22    Allow
sujuisaro8 [ ~ ]$
```

Access your web server again

Task 4: Access your web server again

Now that you configured network access to port 80, let's try to access the web server a second time.

Note

After you update the NSG, it may take a few moments before the updated rules propagate. Retry the next step, with pauses between attempts, until you get the desired results.

1. Run the same `curl` command that you ran earlier:

```
Bash
curl --connect-timeout 5 http://$IPADDRESS
```

You see this response:

```
HTML
<html><body><h2>Welcome to Azure! My name is my-vm.</h2></body></html>
```

2. As an optional step, refresh your browser tab that points to your web server. You see the home page:

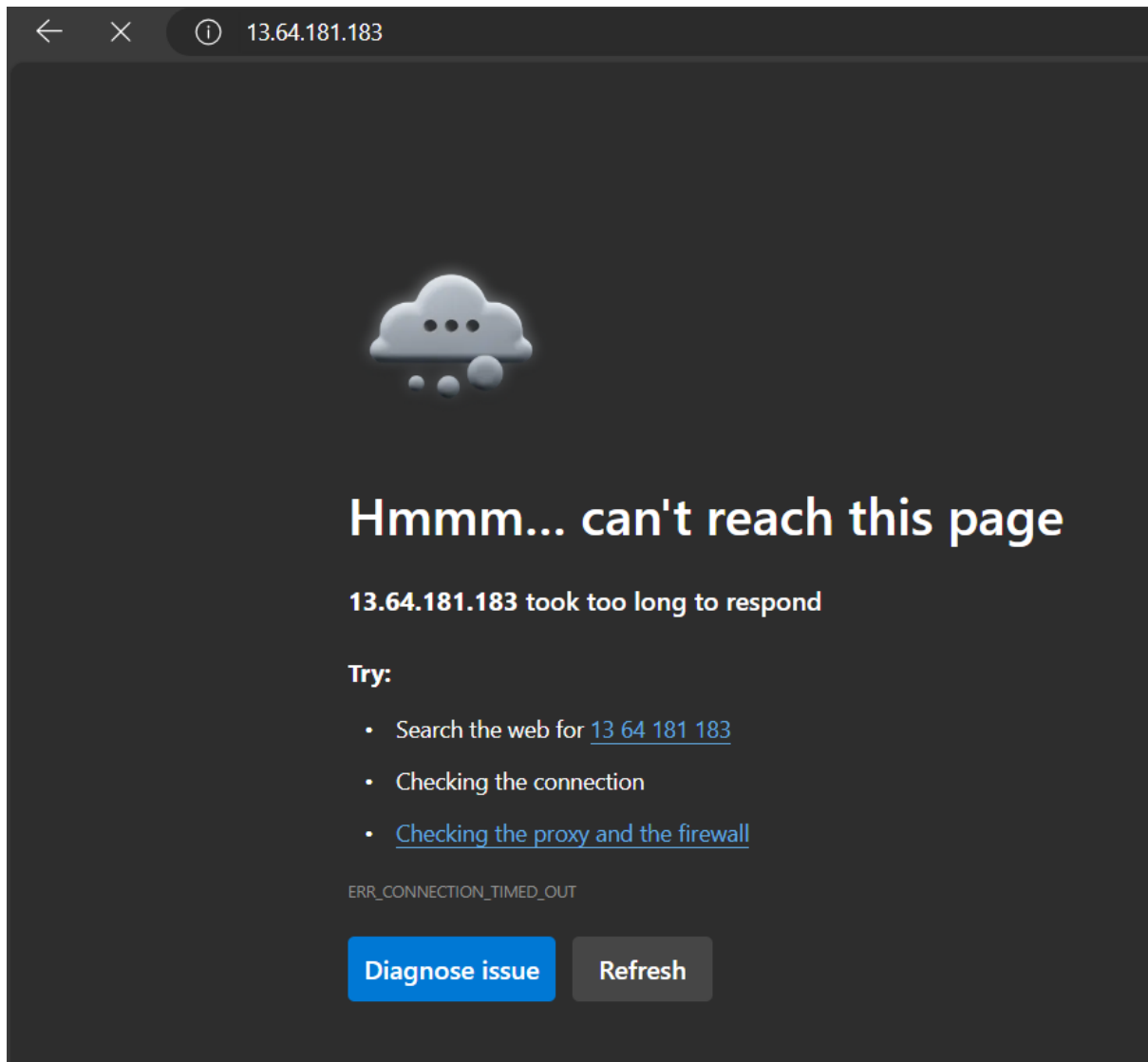
```
Azure Cloud Shell
{
  "access": "Allow",
  "destinationAddressPrefix": "*",
  "destinationAddressPrefixes": [],
  "destinationPortRange": "80",
  "destinationPortRanges": [],
  "direction": "Inbound",
  "etag": "W/\"a318cff4-1a24-432a-ba0e-57727a4ba12b\"",
  "id": "/subscriptions/16982123-2d3c-44ce-ab2d-0c419f4ce699/resourceGroups/learn-9cf4a57a-92b5-41ab-821f-7d10a805a978/providers/Microsoft.Network/networkSecurityGroups/my-vmNSG/securityRules/allow-http",
  "name": "allow-http",
  "priority": 100,
  "protocol": "Tcp",
  "provisioningState": "Succeeded",
  "resourceGroup": "learn-9cf4a57a-92b5-41ab-821f-7d10a805a978",
  "sourceAddressPrefix": "*",
  "sourceAddressPrefixes": [],
  "sourcePortRange": "*",
  "sourcePortRanges": [],
  "type": "Microsoft.Network/networkSecurityGroups/securityRules"
}

sujuisaro8 [ ~ ]$ az network nsg rule list --resource-group "learn-9cf4a57a-92b5-41ab-821f-7d10a805a978" --nsg-name my-vmNSG --query '[Name, Priority, Port, Access]' --output table
Name          Priority  Port  Access
-----
default-allow-ssh 1000    22    Allow
allow-http    100     80    Allow
sujuisaro8 [ ~ ]$
```



FINAL OUTPUT:-

← ↻ ⚠ Not secure | 13.64.181.183

Welcome to Azure! My name is my-vm.




AZURE ACADEMIC SERVICES: AZURE FOR STUDENTS


 


[Home](#) [FAQ](#) [Support](#)


Take advantage of your academic status

For academic status verification 'school' is defined to include 'schools, universities, colleges, technical/STEM schools, and other academic schools' throughout the verification process.

 Profile information

 Security Check

 Additional information

 V.

Congratulations!

Your academic status has been successfully verified.

[Continue](#)

Creation of resources groups

The screenshot shows the Microsoft Azure portal interface. The left sidebar contains navigation options: Overview, Activity log, Access control (IAM), Tags, Resource visualizer, Events, Settings, Cost Management, Monitoring, Automation, and Help. The main area displays the 'Essentials' section for a resource group named 'rg'. It lists several resources:

Name	Type	Location
subraja	Virtual machine	Central India
subraja-ip	Public IP address	Central India
subraja-nsg	Network security group	Central India
subraja-vnet	Virtual network	Central India
subraja872_z1	Network interface	Central India
subraja_OsDisk_1_1edc7f32e7fa48d2844b073f179bd760	Disk	Central India

Creation of virtual machine:-

The screenshot shows the details of a virtual machine named 'subraja' in the Microsoft Azure portal. The left sidebar is the same as the previous screenshot. The main area displays the 'Overview' tab for the virtual machine. It shows the following details:

- Location: Central India (Zone 1)
- Subscription: Azure for Students
- Subscription ID: aec55479-1584-4159-959f-bf1e1647ba4a
- Availability zone: 1
- Public IP address: 20.244.104.186
- Virtual network/subnet: subraja-vnet/default
- DNS name: Not configured
- Health state: -
- Time created: 8/10/2024, 5:41 AM UTC

Below the details, there are tabs for Properties, Monitoring, Capabilities (7), Recommendations, and Tutorials. The 'Properties' tab is selected, showing the following information:

Virtual machine	Networking
Computer name: subraja	Public IP address: 20.244.104.186 (Network interface: subraja872_z1)
Operating system: Linux	Public IP address (IPv6): -

Hosting my portfolio using azure cloud services

The screenshot shows a web browser displaying a portfolio website. The website has a dark blue background with a person sitting on a rock overlooking a lake. The text on the page reads:

BROWNY

EDUCATION PROFILE PORTFOLIO CONTACT

HI, I AM SP

FRONTEND DEVELOPER

Download Resume

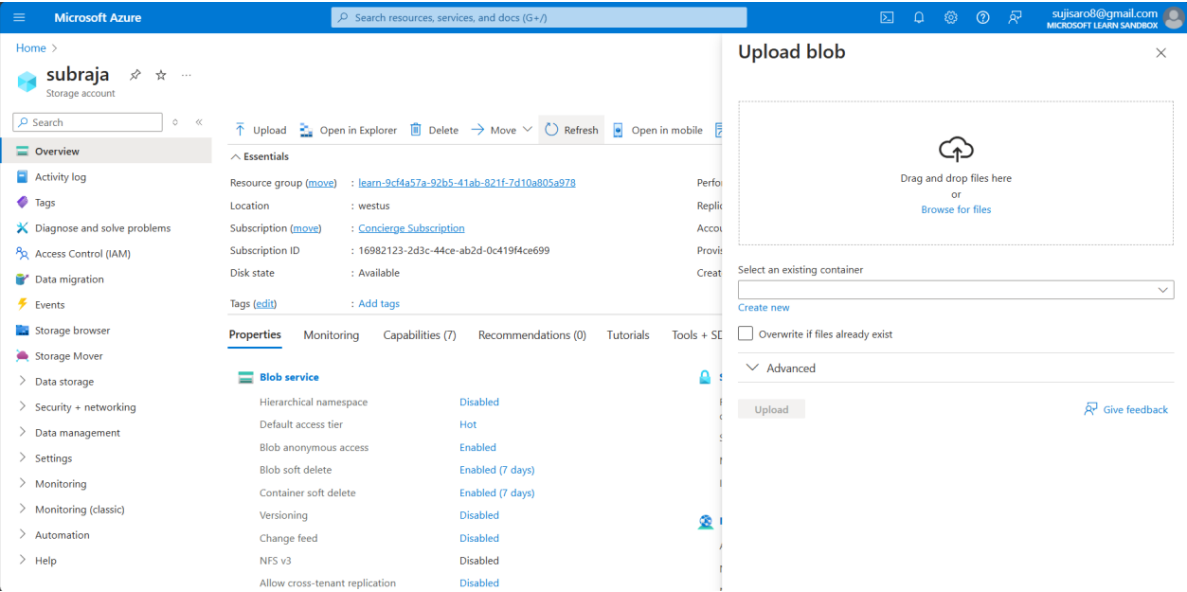
PRICING CALCULATOR:-

A	B	C	D	E	F	G
Your Estimate						
Service category	Service type	Custom name	Region	Description	Estimated monthly cost	Estimated upfront cost
Compute	Virtual Machines		West US	2 D2 v3 (2 vCPUs, 8 GB RAM) x 730 Hours (Pay as you go), Windows (License included), OS Only; 0 managed disks – S4; Inter Region transfer type, 5 GB outbound data transfer from West US to East Asia	\$305.14	\$0.00
Databases	Azure SQL Database		West US	Single Database, vCore, General Purpose, Provisioned, Standard-series (Gen 5), Primary or Geo replica Disaster Recovery, Locally Redundant, 1 - 8 vCore Database(s) x 730 Hours, 32 GB Storage, SQL License (Pay as you go), RA-GRS Backup Storage Redundancy, 0 GB Point-In-Time Restore, 0 x 5 GB Long Term Retention	\$1,567.39	\$0.00
Compute	App Service		West US	Basic Tier; 2 B1 (1 Core(s), 1.75 GB RAM, 10 GB Storage) x 730 Hours; Windows OS; 0 SNI SSL Connections; 0 IP SSL Connections; 0 Custom Domains; 0 Standard SSL Certificates; 0 Wildcard SSL Certificates	\$109.50	\$0.00
Support			Support		\$0.00	\$0.00
			Licensing Program	Microsoft Customer Agreement (MCA)		
			Billing Account			
			Billing Profile			
			Total		\$1,982.03	\$0.00
Disclaimer						

Total Cost of Ownership(TCO) Calculator

₹111,042,021 Cost over 3 year(s)		₹54,977,002 Cost over 3 year(s)	
On-premises cost breakdown summary		Azure cost breakdown summary	
Category	Cost	Category	Cost
Compute	₹76,005,384.60	Compute	₹30,504,686.92
Hardware	₹53,287,872.24	Data Center	₹0.00
Software	₹10,375,700.10	Networking	₹2,314,455.32
Electricity	₹3,440,858.75	Storage	₹12,465,084.92
Virtualization	₹8,900,953.52	IT Labor	₹9,692,779.7334
Data Center	₹5,808,873.37		
Networking	₹17,927,593.05		
Storage	₹1,607,398.80		
IT Labor	₹9,692,779.61		
Total	₹111,042,021.06	Total	₹54,977,001.74

CREATION OF CONTAINER:-



Microsoft Azure

Search resources, services, and docs (G+)

Home >

subraja

Storage account

Search

Upload

Open in Explorer

Delete

Move

Refresh

Open in mobile

Overview

Activity log

Tags

Diagnose and solve problems

Access Control (IAM)

Data migration

Events

Storage browser

Storage Mover

Data storage

Security + networking

Data management

Settings

Monitoring

Monitoring (classic)

Automation

Help

Essentials

Resource group (move)

Location

Subscription (move)

Subscription ID

Disk state

Tags (edit)

Properties

Monitoring

Capabilities (7)

Recommendations (0)

Tutorials

Tools + ST

Blob service

Hierarchical namespace

Default access tier

Blob anonymous access

Blob soft delete

Container soft delete

Versioning

Change feed

NFS v3

Allow cross-tenant replication

Disabled

Hot

Enabled

Enabled (7 days)

Enabled (7 days)

Disabled

Disabled

Disabled

Disabled

Upload blob

Drag and drop files here or Browse for files

Select an existing container

Create new

Overwrite if files already exist

Advanced

Upload

Give feedback

Microsoft Azure

Search resources, services, and docs (G+)

Home >

subraja

Containers

Search

+ Container

Change access level

Restore containers

Refresh

Delete

Give feedback

Overview

Activity log

Tags

Diagnose and solve problems

Access Control (IAM)

Data migration

Events

Search containers by prefix

Show deleted containers

Name	Last modified	Anonymous access level	Lease state	
<input type="checkbox"/> \$logs	8/10/2024, 11:58:41 AM	Private	Available	...
<input type="checkbox"/> container	8/10/2024, 12:04:23 PM	Private	Available	...

Microsoft Azure

Search resources, services, and docs (G+)

Home >

subraja

Containers

container

Search

Upload

Change access level

...

Overview

Diagnose and solve problems

Access Control (IAM)

Settings

Authentication method: Access key (Switch to Microsoft Entra user account)

Location: container

Search blobs by prefix (case-...)

Show deleted blobs

Add filter

Name

☐ wallpaper 1.jpg

wallpaper 1.jpg

Blob

Save

Discard

Download

Refresh

Delete

Change tier

Acquire lease

Break lease

Give feedback

Overview

Versions

Snapshots

Edit

Generate SAS

Properties

URL

LAST MODIFIED

CREATION TIME

VERSION ID

TYPE

SIZE

ACCESS TIER

ACCESS TIER LAST MODIFIED

ARCHIVE STATUS

REHYDRATE PRIORITY

SERVER ENCRYPTED

ETAG

VERSION-LEVEL IMMUTABILITY POLICY

CACHE-CONTROL

CONTENT-TYPE

CONTENT-MD5

CONTENT-ENCODING

https://subraja.blob.cor...

8/10/2024, 12:04:37 PM

8/10/2024, 12:04:37 PM

-

Block blob

470.43 KiB

Hot (Inferred)

N/A

-

-

true

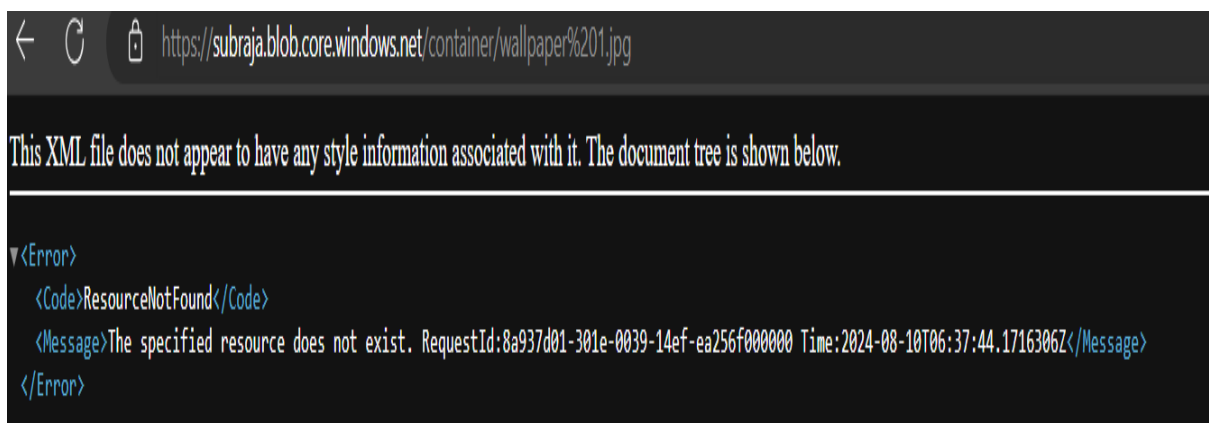
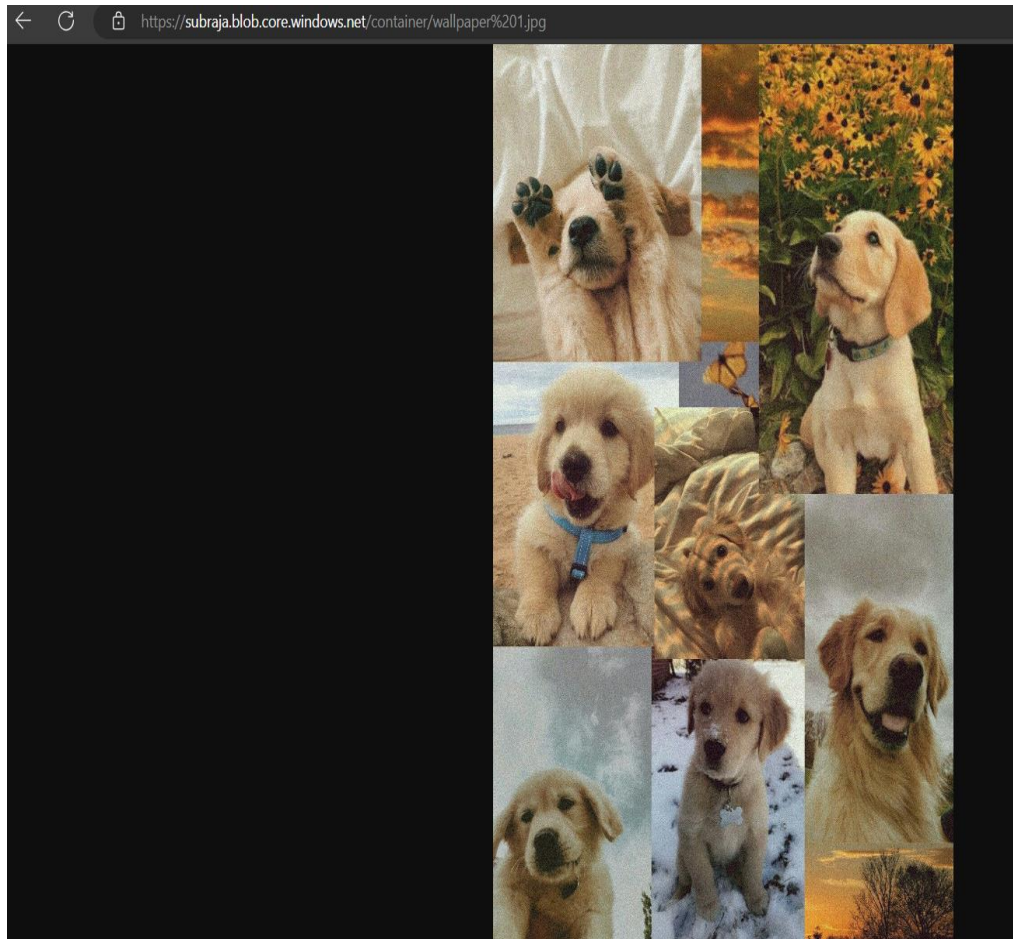
0x8DCB90681C35459

Disabled

image/jpeg

aZLm5+nYWkpiR6uBz71wg...

FINAL OUTPUT:-



BADGES:-

The screenshot displays a user profile for 'SUBRAJA PRANALI.S' (username: sujisaro8@gmail.com) on a learning platform. The profile header includes a search bar and navigation links: 'Learn', 'Discover', 'Product documentation', 'Development languages', and 'Topics'. The user's statistics are as follows:

Badges	Trophies	Reputation points	Accepted answers	Following	Followers
54	9	0	0	0	0

The user is at 'LEVEL 9' with a progress bar showing 75,700/106,299 XP. The 'Activity' section on the left lists: Training, Plans, Challenges, Credentials, and Q&A. The 'Achievements' section includes a link to 'Redeem your code now.' and a list of modules: Learning Paths, Courses, Plans, and Other. Below this, three badge cards are visible, each with a 'BADGE' label and a description: 'Describe features and tools for managing', 'Describe monitoring tools in Azure', and 'Describe Azure identity access and'.