

# **REPORT ON MICROSOFT AZURE FUNDAMENTALS**

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Date	10.08.2024

## 1) Sandbox:

- Create a Linux virtual machine and install Nginx

The screenshot shows the Microsoft Learn interface for a training module. On the left, the exercise title is "Exercise - Create an Azure virtual machine" with a duration of 10 minutes. A notification indicates "Sandbox activated! Time remaining: 55 min". The exercise description states: "In this exercise, you create an Azure virtual machine (VM) and install Nginx, a popular web server. You could use the Azure portal, the Azure CLI, Azure PowerShell, or an Azure Resource Manager (ARM) template. In this instance, you're going to use the Azure CLI."

On the right, the Azure Cloud Shell terminal window is open. It shows the command to create a VM:

```
az vm create --resource-group "learn-6a4a0d7c-4cd5-4137-85b3-e9d954bd9976" --name my-vm --public-ip-sku Standard --image Ubuntu2204 --admin-username azureuser --generate-ssh-keys
```

The terminal output shows the VM creation details, including the location (westus), public IP address (40.112.211.226), and resource group.

- Access your web server

The screenshot shows the Microsoft Learn interface for a task. The task title is "Task 1: Access your web server". The procedure states: "In this procedure, you get the IP address for your VM and attempt to access your web server's home page."

Step 1: Run the following `az vm list-ip-addresses` command to get your VM's IP address and store the result as a Bash variable:

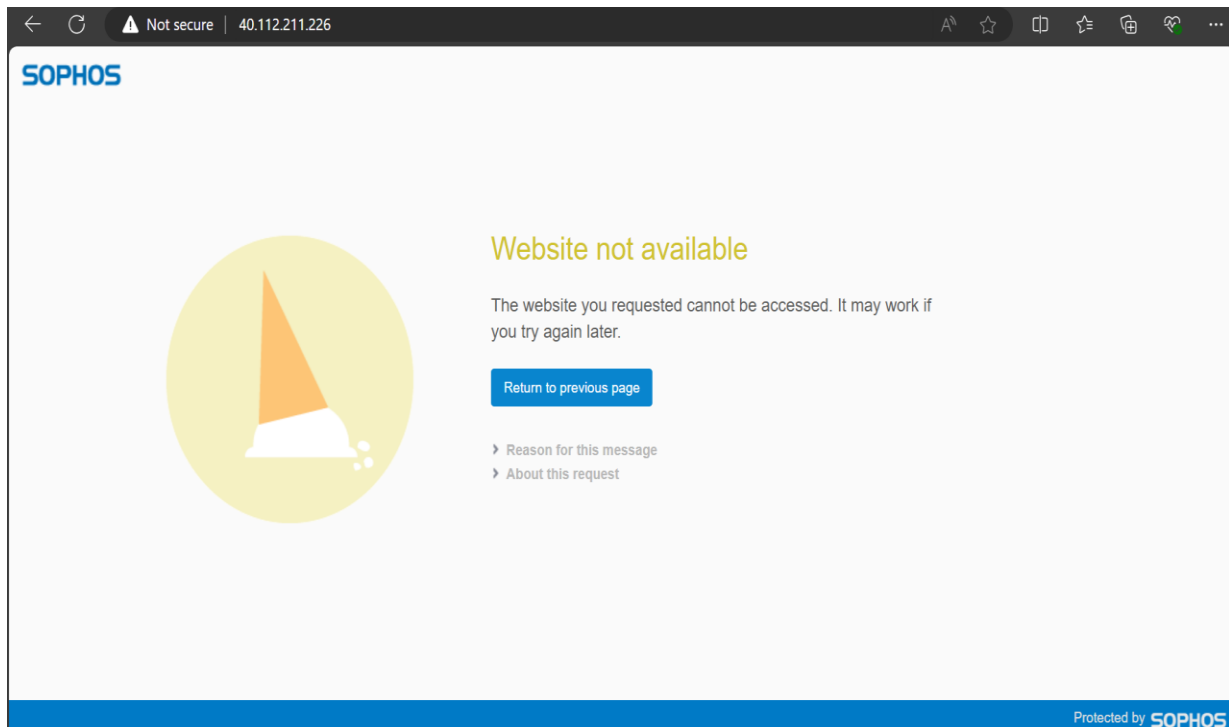
```
IPADDRESS=$(az vm list-ip-addresses \
--resource-group "learn-6a4a0d7c-4cd5-4137-85b3-e9d954bd9976" \
--name my-vm \
--query "[].virtualMachine.network.publicIpAddresses[*].ipAddress" \
--output tsv)
```

Step 2: Run the following `curl` command to download the home page:

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

The terminal output shows the command execution and the resulting IP address (40.112.211.226). The `curl` command fails with a timeout error: "curl: (28) Failed to connect to 40.112.211.226 port 80 after 5002 ms: Timeout was reached".

## Output:



- 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-6a4a0d7c-4cd5-4137-85b3-e9d954bd9976" \
  --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

```
Switch to PowerShell Restart Manage files New session Editor ...
{"protectedSettings": null,
"protectedSettingsFromKeyVault": null,
"provisionAfterExtensions": null,
"provisioningState": "Succeeded",
"publisher": "Microsoft.Azure.Extensions",
"resourceGroup": "learn-6a4a0d7c-4cd5-4137-85b3-e9d954bd9976",
"settings": {
  "fileUri": [
    "https://raw.githubusercontent.com/MicrosoftDocs/mslearn-welcome-to-azure/master/co
nfigure-nginx.sh"
  ]
},
"suppressFailures": null,
"tags": null,
"type": "Microsoft.Compute/virtualMachines/extensions",
"typeHandlerVersion": "2.1",
"typePropertiesType": "customScript"
}
rithiha [ ~ ]$ IPADDRESS=$(az vm list-ip-addresses --resource-group "learn-6a4a0d7c-4cd5-4137-85b3-e9d954bd9976" --name my-vm --query "[].virtualMachine.network.publicIpAddresses[*].ipAddress" --output tsv)
rithiha [ ~ ]$ curl --connect-timeout 5 http://$IPADDRESS
curl: (28) Failed to connect to 40.112.211.226 port 80 after 5002 ms: Timeout was reached
rithiha [ ~ ]$ echo $IPADDRESS
40.112.211.226
rithiha [ ~ ]$ az network nsg list --resource-group "learn-6a4a0d7c-4cd5-4137-85b3-e9d954bd9976" --query '[].name' --output tsv
my-vmNSG
rithiha [ ~ ]$
```

- Create the network security rule

**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

```
Azure Cloud Shell
Switch to PowerShell Restart Manage files New session Editor ...
"destinationAddressPrefixes": [],
"destinationPortRange": "80",
"destinationPortRanges": [],
"direction": "Inbound",
"etag": "W/\"a2757b0c-58e3-4b24-bbf0-8bd0ea007ed4\"",
"id": "/subscriptions/f27a2135-1ae7-44b2-b514-f0b7b1dcbfba/resourceGroups/learn-6a4a0d7c-4cd5-4137-85b3-e9d954bd9976/providers/Microsoft.Network/networkSecurityGroups/my-vmNSG/securityRules/allow-http",
"name": "allow-http",
"priority": 100,
"protocol": "Tcp",
"provisioningState": "Succeeded",
"resourceGroup": "learn-6a4a0d7c-4cd5-4137-85b3-e9d954bd9976",
"sourceAddressPrefix": "*",
"sourceAddressPrefixes": [],
"sourcePortRange": "*",
"sourcePortRanges": [],
"type": "Microsoft.Network/networkSecurityGroups/securityRules"
}
rithiha [ ~ ]$ az network nsg rule list --resource-group "learn-6a4a0d7c-4cd5-4137-85b3-e9d954bd9976" --nsg-name my-vmNSG --query '[{.Name:.name, .Priority:.priority, .Port:.destinationPortRange, .Access:.access}]' --output table
Name Priority Port Access
-----
default-allow-ssh 1000 22 Allow
allow-http 100 80 Allow
rithiha [ ~ ]$ curl --connect-timeout 5 http://$IPADDRESS
<html><body><h2>Welcome to Azure! My name is my-vm.</h2></body></html>
rithiha [ ~ ]$
```

- 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.

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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
```

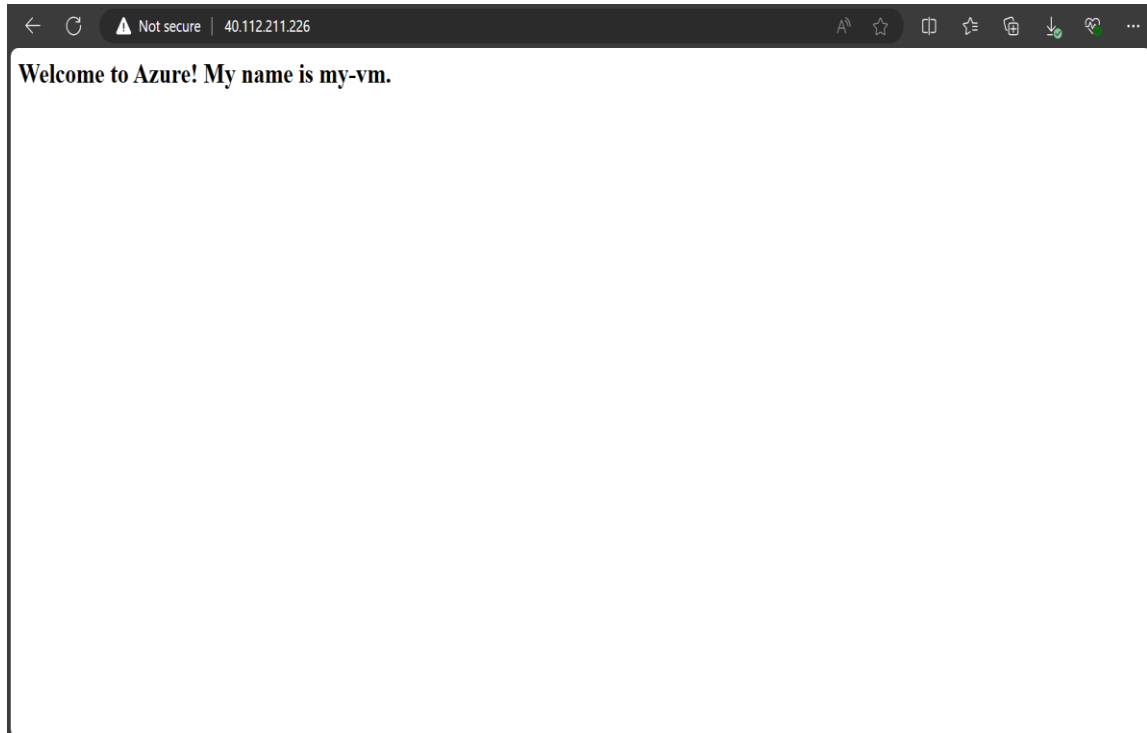
You see this response:

```
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

```
Azure Cloud Shell
Switch to PowerShell Restart Manage files New session Editor ...
"destinationAddressPrefixes": [],
"destinationPortRange": "80",
"destinationPortRanges": [],
"direction": "Inbound",
"etag": "W/\"a2757b0c-58e3-4b24-bbf0-8bd0ea007ed4\"",
"id": "/subscriptions/f27a2135-1ae7-44b2-b514-f0b7b1dcbfba/resourceGroups/learn-6a4a0d7c-4cd5-4137-85b3-e9d954bd9976/providers/Microsoft.Network/networkSecurityGroups/my-vmNSG/securityRules/allow-http",
"name": "allow-http",
"priority": 100,
"protocol": "Tcp",
"provisioningState": "Succeeded",
"resourceGroup": "learn-6a4a0d7c-4cd5-4137-85b3-e9d954bd9976",
"sourceAddressPrefix": "*",
"sourceAddressPrefixes": [],
"sourcePortRange": "*",
"sourcePortRanges": [],
"type": "Microsoft.Network/networkSecurityGroups/securityRules"
}
rithiha [ ~ ]$ az network nsg rule list --resource-group "learn-6a4a0d7c-4cd5-4137-85b3-e9d954bd9976" --nsg-name my-vmNSG --query '[{.Name:.name, .Priority:.priority, .Port:.destinationPortRange, .Access:.access}]' --output table
Name Priority Port Access
-----
default-allow-ssh 1000 22 Allow
allow-http 100 80 Allow
rithiha [ ~ ]$ curl --connect-timeout 5 http://$IPADDRESS
<html><body><h2>Welcome to Azure! My name is my-vm.</h2></body></html>
rithiha [ ~ ]$
```

Final output:



## 2) Azure Academic Services: Azure for Students

- Microsoft Academic Verification Process

The screenshot shows the Microsoft Academic Verification website in a Google Chrome browser. The address bar shows 'verify.microsoft.com'. The page has a blue header with the Microsoft Academic Verification logo and a user profile icon labeled 'RR'. Below the header is a navigation bar with 'Home', 'FAQ', and 'Support' links. The main heading is 'Take advantage of your academic status'. Below this, a paragraph explains that for academic status verification, 'school' is defined to include 'schools, universities, colleges, technical/STEM schools, and other academic schools' throughout the verification process. A progress bar shows four steps: 'Profile information' (completed with a blue checkmark), 'Security Check' (completed with a blue checkmark), 'Additional information' (in progress with a grey circle), and 'Verifying' (completed with a blue checkmark). At the bottom, there are links for 'Consumer Health Privacy Privacy Terms of use Trademark' and a copyright notice '© Microsoft 2024'.

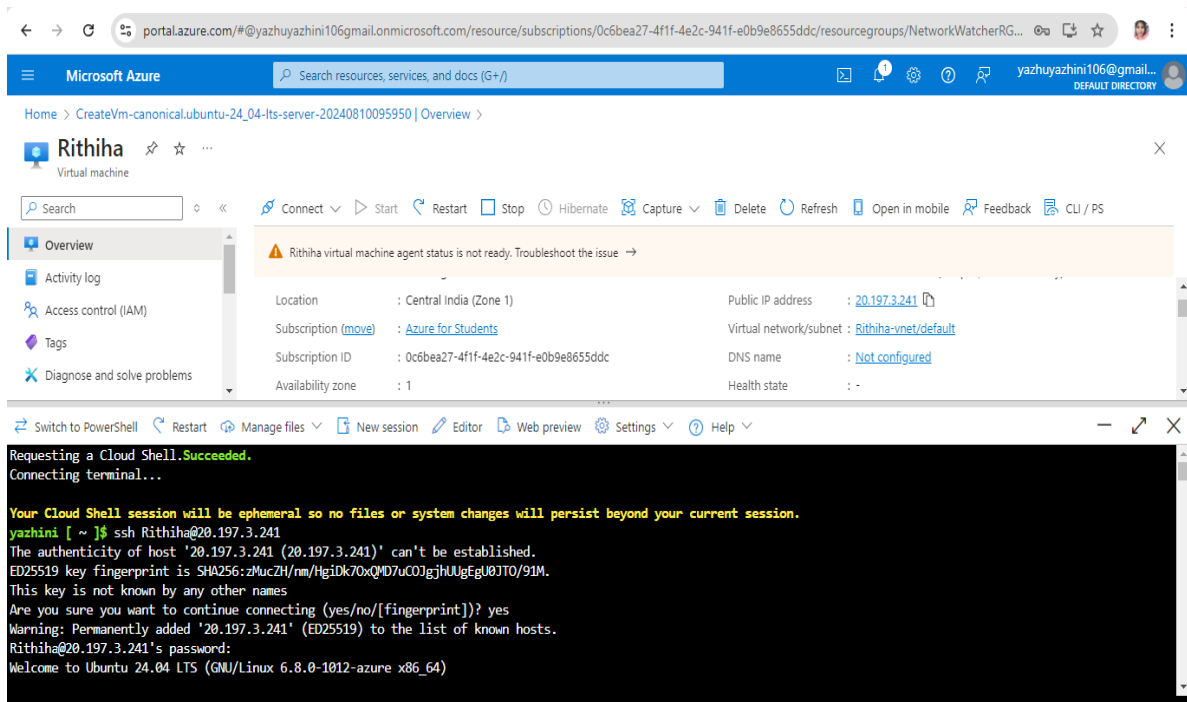
- Creation of resource groups

The screenshot shows the Microsoft Azure portal dashboard. The top navigation bar includes the Microsoft Azure logo, a search bar, and user information for 'yazhuyazhini106@gmail...' with a 'DEFAULT DIRECTORY' label. Below the navigation bar, there are sections for 'Azure services' and 'Resources'. The 'Azure services' section displays various service icons: 'Create a resource', 'Public IP addresses', 'Virtual machines', 'Resource groups', 'All resources', 'Quickstart Center', 'Azure AI services', 'Kubernetes services', 'App Services', and 'More services'. The 'Resources' section has tabs for 'Recent' and 'Favorite'. Under the 'Recent' tab, there is a table with the following data:

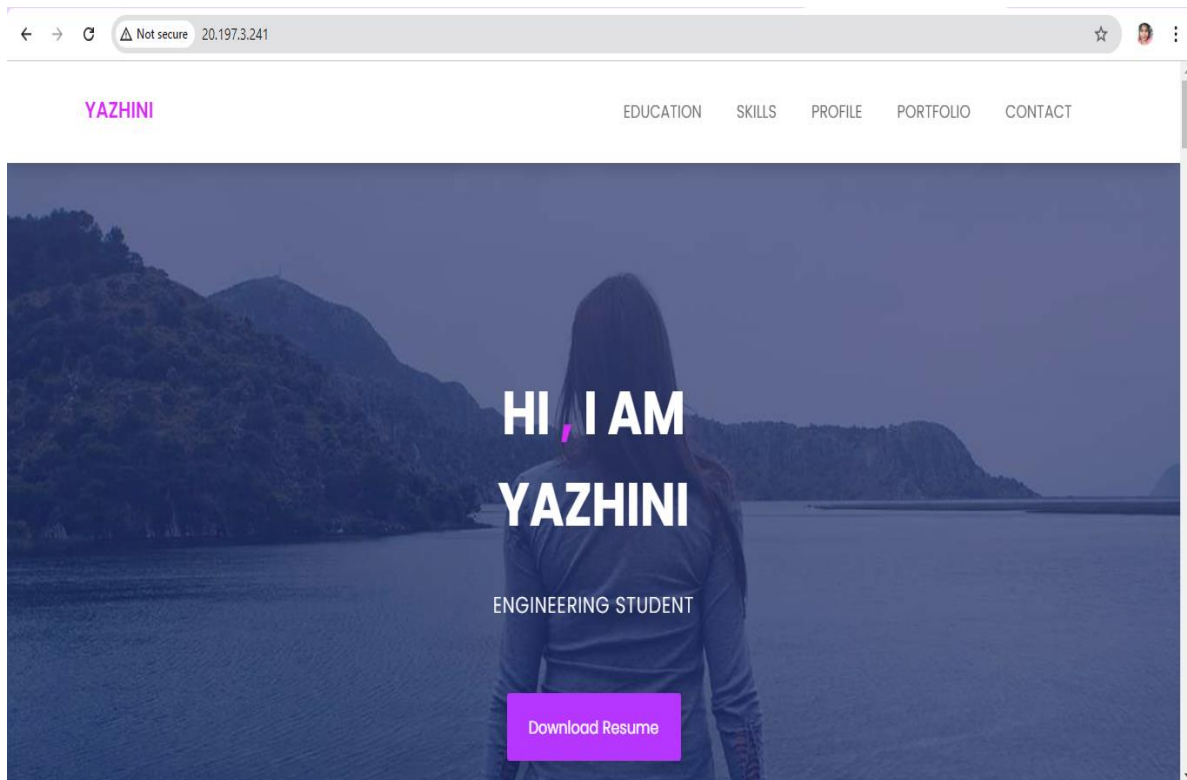
Name	Type	Last Viewed
NetworkWatcherRG	Resource group	a few seconds ago
Rithiha	Virtual machine	18 minutes ago

Below the table, there is a 'See all' link. At the bottom, there is a 'Navigate' section with icons for 'Subscriptions', 'Resource groups', 'All resources', and 'Dashboard'. A URL bar at the bottom shows 'https://portal.azure.com/#create/hub'.

- Creation of Virtual Machine



- Hosting my portfolio using Azure Cloud Services



- Pricing calculator

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 - \$4; 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 SLL Certificates; 0 Wildcard SSL Certificates	\$109.50	\$0.00
Support			Support	Microsoft Customer Agreement (MCA)	\$0.00	\$0.00
			Licensing Program			
			Billing Account			
			Billing Profile			
			Total		\$1,982.03	\$0.00

Disclaimer  
All prices shown are in United States - Dollar (\$) USD. This is a summary estimate, not a quote. For up to date pricing information please visit <https://azure.microsoft.com/pricing/calculator/>  
This estimate was created at 8/9/2024 4:17:03 AM UTC.

- Total Cost of Ownership (TCO) Calculator

On-premises cost breakdown summary		Azure cost breakdown summary	
Category	Cost	Category	Co
Compute	\$903,106.08	Compute	\$364,284.1
Hardware	\$632,224.00	Data Center	\$0.1
Software	\$123,100.00	Networking	\$27,639.1
Electricity	\$42,166.08	Storage	\$148,856.1
Virtualization	\$105,616.00	IT Labor	\$115,000.1
Data Center	\$68,917.56		
Networking	\$213,237.39		
Storage	\$19,174.40		
IT Labor	\$115,000.23		
Total	\$1,319,436.00	Total	\$655,780.1



- Creation of container

The screenshot shows the Microsoft Azure portal interface. The top navigation bar includes the Microsoft Azure logo, a search bar, and the user profile 'rithihaumani2004@gma...'. The breadcrumb trail indicates the path 'Home > demonst'. The main heading is 'demonst | Containers', with 'demonst' identified as a 'Storage account'. A left-hand sidebar lists various services: Overview, Activity log, Tags, Diagnose and solve problems, Access Control (IAM), Data migration, Events, Storage browser, Storage Mover, Data storage, Containers (selected), File shares, and Queues. The main content area features a search bar 'Search containers by prefix' and a toggle for 'Show deleted containers'. Below this is a table listing containers:

Name	Last modified	Anonymous access level	Lease state	
<input type="checkbox"/> \$logs	8/10/2024, 10:46:16 AM	Private	Available	...
<input type="checkbox"/> bike	8/10/2024, 11:07:07 AM	Blob	Available	...

The screenshot shows the Microsoft Azure portal interface for a specific container. The top navigation bar is consistent with the previous image. The breadcrumb trail is 'Home > bike'. The main heading is 'bike | Overview', with 'bike' identified as a 'Container'. The left-hand sidebar lists: Overview (selected), Diagnose and solve problems, Access Control (IAM), and Settings. The main content area includes a search bar 'Search blobs by prefix (case-sensitive)' and a toggle for 'Show deleted blobs'. Below this is a table listing blobs:

Name	Modified	Access tier	Archive status	Blob type
<input type="checkbox"/> duke.jpg	8/10/2024, 11:06:34 ...	Hot (Inferred)		Block blob



### 3) Badges :

The screenshot displays a user profile for 'RITHIHA U' (rithihaumani2004@gmail.com) on a learning platform. The profile header includes a navigation bar with 'Learn', 'Discover', 'Product documentation', 'Development languages', and 'Topics'. The user's profile card shows a circular avatar with 'RU' and a background image of a glowing red cube on a circuit board. Below the profile card, statistics are listed: 51 Badges, 10 Trophies, 0 Reputation points, 0 Accepted answers, 0 Following, and 0 Followers. A progress bar indicates 'LEVEL 9' with 72,975/106,299 XP. The 'Achievements' section prompts the user to redeem a code. The 'Modules' tab is active, showing three badges: 'Enhance Power Virtual Agents bots', 'Use text generation in AI Builder', and 'Manage models in AI Builder'. A left sidebar contains links for Activity, Training, Plans, Challenges, Credentials, and Q&A.

Stat	Value
Badges	51
Trophies	10
Reputation points	0
Accepted answers	0
Following	0
Followers	0

LEVEL 9 72,975/106,299 XP

**Achievements**  
Have an achievement code? [Redeem your code now.](#)

**Modules** Learning Paths Courses Plans Other

Badge Icon	Badge Title
	Enhance Power Virtual Agents bots
	Use text generation in AI Builder
	Manage models in AI Builder