

MICROSOFT AZURE

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GITHUB LINK: <https://github.com/ijaz-01/Azure.git>

**REQUESTING A CLOUD SHELL SUCCEEDED.
CONNECTING TERMINAL...**

SANDBOX

- `az vm create --resource-group " learn-8375adde-9dfe-42c3-87c5-4689fbe888b8" --name my-vm --public-ip-sku Standard --image Ubuntu2204 --admin-username azureuser --generate-ssh-keys`
- `az vm extension set --resource-group " learn-8375adde-9dfe-42c3-87c5-4689fbe888b8" --vm-name my-vm --name customScript --publisher Microsoft.Azure.Extensions --version 2.1 --settings '{"fileUri":["https://raw.githubusercontent.com/MicrosoftDocs/mslearn-welcome-to-azure/master/configure-nginx.sh"]}' --protected-settings '{"commandToExecute": "./configure-nginx.sh"}'`
- `sudo apt-get update`
- `ssh azureuser@52.160.88.235`
- `echo "sudo apt-get update -y"`
- `sudo apt-get install nginx -y`
- `sudo systemctl start nginx`

- `sudo systemctl enable nginx" > setup_nginx.sh`
- `chmod +x setup_nginx.sh`
- `./setup_nginx.sh`
- `echo "<html><body><h2>Welcome to Azure! My name is $(hostname).</h2></body></html>" | sudo tee -a /var/www/html/index.html`
- `sudo systemctl status nginx`
- `az vm open-port --resource-group "learn-8375adde-9dfe-42c3-87c5-4689fbe888b8" --name my-vm --port 80`
- `az vm list-ip-addresses --resource-group "learn-8375adde-9dfe-42c3-87c5-4689fbe888b8" --name my-vm --output table`
- `ssh azureuser@52.160.88.235`
- `sudo apt-get update`
- `git clone https://github.com/ijaz-01/REP.git`
- `sudo cp -r html/* /var/www/html/`
- `sudo chown -R www-data:www-data /var/www/html`
- `sudo chmod -R 755 /var/www/html`
- `sudo systemctl restart nginx`

Requesting a Cloud Shell.**Succeeded.**
Connecting terminal...

Welcome to Azure Cloud Shell

Type "az" to use Azure CLI

Type "help" to learn about Cloud Shell

```
ijaz [ ~ ]$ az vm create --resource-group "learn-8375adde-9dfe-42c3-87c5-4689fbe888b8" --name my-vm --public-ip-sku Standard --image Ubuntu2204 --admin-username azureuser --generate-ssh-keys
```

```
{
  "fqdns": "",
  "id": "/subscriptions/16982123-2d3c-44ce-ab2d-0c419f4ce699/resourceGroups/learn-8375adde-9dfe-42c3-87c5-4689fbe888b8/providers/Microsoft.Compute/virtualMachines/my-vm",
  "location": "westus",
  "macAddress": "60-45-BD-00-2F-68",
  "powerState": "VM running",
  "privateIpAddress": "10.0.0.4",
  "publicIpAddress": "52.160.88.235",
  "resourceGroup": "learn-8375adde-9dfe-42c3-87c5-4689fbe888b8",
  "zones": ""
}
```

```
ijaz [ ~ ]$ az vm extension set --resource-group "learn-8375adde-9dfe-42c3-87c5-4689fbe888b8" --vm-name my-vm --name customScript --publisher Microsoft.Azure.Extensions --version 2.1 --settings '{"fileUri":["https://raw.githubusercontent.com/MicrosoftDocs/mslearn-welcome-to-azure/master/configure-nginx.sh"]}' --protected-settings '{"commandToExecute": "./configure-nginx.sh"}'
```

```
{
  "autoUpgradeMinorVersion": true,
  "enableAutomaticUpgrade": null,
```

```
    "forceUpdateTag": null,
    "id": "/subscriptions/16982123-2d3c-44ce-ab2d-0c419f4ce699/resourceGroups/learn-8375adde-9dfe-42c3-87c5-4689fbe888b8/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-8375adde-9dfe-42c3-87c5-4689fbe888b8",
    "settings": {
      "fileUri": [
        "https://raw.githubusercontent.com/MicrosoftDocs/mslearn-welcome-to-azure/master/configure-nginx.sh"
      ]
    },
    "suppressFailures": null,
    "tags": null,
    "type": "Microsoft.Compute/virtualMachines/extensions",
    "typeHandlerVersion": "2.1",
    "typePropertiesType": "customScript"
  }
}
```

```
ijaz [ ~ ]$ sudo apt-get update
```

We trust you have received the usual lecture from the local System Administrator. It usually boils down to these three things:

#1) Respect the privacy of others.

- #2) Think before you type.
- #3) With great power comes great responsibility.

For security reasons, the password you type will not be visible.

```
[sudo] password for ijaz:
sudo: a password is required
ijaz [ ~ ]$ ssh azureuser@20.235.247.204
The authenticity of host '20.235.247.204 (20.235.247.204)' can't be established.
ED25519 key fingerprint is SHA256:Cjh5aLaH7vT7IDwT6UcqGNFu0W7/Qn1LVK/CM/45pLo.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '20.235.247.204' (ED25519) to the list of known hosts.
azureuser@20.235.247.204's password:
Permission denied, please try again.
azureuser@20.235.247.204's password:
Permission denied, please try again.
azureuser@20.235.247.204's password:
```

```
ijaz [ ~ ]$ ssh azureuser@20.235.247.204
azureuser@20.235.247.204's password:

ijaz [ ~ ]$ ssh azureuser@52.160.88.235
The authenticity of host '52.160.88.235 (52.160.88.235)' can't be established.
ED25519 key fingerprint is SHA256:P2Spuz8/iz1NyZy/y2/GDexEZtjapDI8lNYLeoHInhk.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '52.160.88.235' (ED25519) to the list of known hosts.
Welcome to Ubuntu 22.04.4 LTS (GNU/Linux 6.5.0-1025-azure x86_64)
```

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

System information as of Fri Aug 9 04:13:47 UTC 2024

System load:	0.01	Processes:	106
Usage of /:	6.0% of 28.89GB	Users logged in:	0
Memory usage:	9%	IPv4 address for eth0:	10.0.0.4
Swap usage:	0%		

Expanded Security Maintenance for Applications is not enabled.

10 updates can be applied immediately.
10 of these updates are standard security updates.
To see these additional updates run: `apt list --upgradable`

Enable ESM Apps to receive additional future security updates.
See <https://ubuntu.com/esm> or run: `sudo pro status`

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in `/usr/share/doc/*/copyright`.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "`sudo <command>`".
See "`man sudo_root`" for details.

```

azureuser@my-vm:~$ sudo apt-get install -y nginx~
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
E: Unable to locate package nginx~

azureuser@my-vm:~$ echo "sudo apt-get update -y
sudo apt-get install nginx -y
sudo systemctl start nginx
sudo systemctl enable nginx" > setup_nginx.sh
chmod +x setup_nginx.sh
./setup_nginx.sh
Hit:1 http://azure.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://azure.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:3 http://azure.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:4 http://azure.archive.ubuntu.com/ubuntu jammy-security InRelease
Reading package lists... Done
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
nginx is already the newest version (1.18.0-6ubuntu14.4).
0 upgraded, 0 newly installed, 0 to remove and 10 not upgraded.
Synchronizing state of nginx.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable nginx
azureuser@my-vm:~$ echo "<html><body><h2>Welcome to Azure! My name is $(hostname).</h2></body></html>" | sudo tee -a /var/www/html/index.html
<html><body><h2>Welcome to Azure! My name is my-vm.</h2></body></html>
azureuser@my-vm:~$ sudo systemctl status nginx
● nginx.service - A high performance web server and a reverse proxy server
   Loaded: loaded (/lib/systemd/system/nginx.service; enabled; vendor preset: enabled)
   Active: active (running) since Fri 2024-08-09 03:57:23 UTC; 20min ago

```

```

~
~
~
~
~
~
lines 1-14/14 (END)
azureuser@my-vm:~$ exit
logout
Connection to 52.160.88.235 closed.
ijaz [ ~ ]$ az vm open-port --resource-group "learn-8375adde-9dfe-42c3-87c5-4689fbe888b8" \
> ^C
ijaz [ ~ ]$ az vm open-port --resource-group "learn-8375adde-9dfe-42c3-87c5-4689fbe888b8" \
--name my-vm --port 80
{
  "defaultSecurityRules": [
    {
      "access": "Allow",
      "description": "Allow inbound traffic from all VMs in VNET",
      "destinationAddressPrefix": "VirtualNetwork",
      "destinationAddressPrefixes": [],
      "destinationPortRange": "*",
      "destinationPortRanges": [],
      "direction": "Inbound",
      "etag": "W/\\"34cb08a0-2085-48a3-9175-04500b732fec\\"",
      "id": "/subscriptions/16982123-2d3c-44ce-ab2d-0c419f4ce699/resourceGroups/learn-8375adde-9dfe-42c3-87c5-4689fbe888b8/providers/Microsoft.Network/networkSecurityGroups/my-vmNSG/defaultSecurityRules/AllowVnetInBound",
      "name": "AllowVnetInBound",
      "priority": 65000,
      "protocol": "*",
      "provisioningState": "Succeeded",
      "resourceGroup": "learn-8375adde-9dfe-42c3-87c5-4689fbe888b8",
      "sourceAddressPrefix": "VirtualNetwork",
      "sourceAddressPrefixes": [],
      "sourcePortRange": "*",
      "sourcePortRanges": [],
      "type": "Microsoft.Network/networkSecurityGroups/defaultSecurityRules"
    },
    {
      "access": "Allow",
      "description": "Allow inbound traffic from azure load balancer",
      "destinationAddressPrefix": "*",
      "destinationAddressPrefixes": [],
      "destinationPortRange": "*",
      "destinationPortRanges": [],
      "direction": "Inbound",
      "etag": "W/\\"34cb08a0-2085-48a3-9175-04500b732fec\\"",
      "id": "/subscriptions/16982123-2d3c-44ce-ab2d-0c419f4ce699/resourceGroups/learn-8375adde-9dfe-42c3-87c5-4689fbe888b8/providers/Microsoft.Network/networkSecurityGroups/my-vmNSG/defaultSecurityRules/AllowAzureLoadBalancerInBound",
      "name": "AllowAzureLoadBalancerInBound",
      "priority": 65001,
      "protocol": "*",
      "provisioningState": "Succeeded",
      "resourceGroup": "learn-8375adde-9dfe-42c3-87c5-4689fbe888b8",
      "sourceAddressPrefix": "AzureLoadBalancer",
      "sourceAddressPrefixes": [],
      "sourcePortRange": "*",
      "sourcePortRanges": [],
    }
  ]
}

```

```

    "type": "Microsoft.Network/networkSecurityGroups/defaultSecurityRules"
  },
  {
    "access": "Deny",
    "description": "Deny all inbound traffic",
    "destinationAddressPrefix": "*",
    "destinationAddressPrefixes": [],
    "destinationPortRange": "*",
    "destinationPortRanges": [],
    "direction": "Inbound",
    "etag": "W/\"34cb08a0-2085-48a3-9175-04500b732fec\"",
    "id": "/subscriptions/16982123-2d3c-44ce-ab2d-0c419f4ce699/resourceGroups/learn-8375adde-9dfe-42c3-87c5-4689fbe888b8/providers/Microsoft.Network/networkSecurityGroups/my-vmNSG/defaultSecurityRules/DenyAllInBound",
    "name": "DenyAllInBound",
    "priority": 65500,
    "protocol": "*",
    "provisioningState": "Succeeded",
    "resourceGroup": "learn-8375adde-9dfe-42c3-87c5-4689fbe888b8",
    "sourceAddressPrefix": "*",
    "sourceAddressPrefixes": [],
    "sourcePortRange": "*",
    "sourcePortRanges": [],
    "type": "Microsoft.Network/networkSecurityGroups/defaultSecurityRules"
  },
  {
    "access": "Allow",
    "description": "Allow outbound traffic from all VMs to all VMs in VNET",
    "destinationAddressPrefix": "VirtualNetwork",
    "destinationAddressPrefixes": [],
    "destinationPortRange": "*",
    "direction": "Outbound",
    "etag": "W/\"34cb08a0-2085-48a3-9175-04500b732fec\"",
    "id": "/subscriptions/16982123-2d3c-44ce-ab2d-0c419f4ce699/resourceGroups/learn-8375adde-9dfe-42c3-87c5-4689fbe888b8/providers/Microsoft.Network/networkSecurityGroups/my-vmNSG/defaultSecurityRules/AllowVnetOutBound",
    "name": "AllowVnetOutBound",
    "priority": 65000,
    "protocol": "*",
    "provisioningState": "Succeeded",
    "resourceGroup": "learn-8375adde-9dfe-42c3-87c5-4689fbe888b8",
    "sourceAddressPrefix": "VirtualNetwork",
    "sourceAddressPrefixes": [],
    "sourcePortRange": "*",
    "sourcePortRanges": [],
    "type": "Microsoft.Network/networkSecurityGroups/defaultSecurityRules"
  },
  {
    "access": "Allow",
    "description": "Allow outbound traffic from all VMs to Internet",
    "destinationAddressPrefix": "Internet",
    "destinationAddressPrefixes": [],
    "destinationPortRange": "*",
    "destinationPortRanges": [],
    "direction": "Outbound",
    "etag": "W/\"34cb08a0-2085-48a3-9175-04500b732fec\"",
    "id": "/subscriptions/16982123-2d3c-44ce-ab2d-0c419f4ce699/resourceGroups/learn-8375adde-9dfe-42c3-87c5-4689fbe888b8/providers/Microsoft.Network/networkSecurityGroups/my-vmNSG/defaultSecurityRules/AllowInternetOutBound",
    "name": "AllowInternetOutBound",
    "priority": 65001,
    "protocol": "*",

```



```

    "provisioningState": "Succeeded",
    "resourceGroup": "learn-8375adde-9dfe-42c3-87c5-4689fbe888b8",
    "sourceAddressPrefix": "*",
    "sourceAddressPrefixes": [],
    "sourcePortRange": "*",
    "sourcePortRanges": [],
    "type": "Microsoft.Network/networkSecurityGroups/defaultSecurityRules"
  },
  {
    "access": "Deny",
    "description": "Deny all outbound traffic",
    "destinationAddressPrefix": "*",
    "destinationAddressPrefixes": [],
    "destinationPortRange": "*",
    "destinationPortRanges": [],
    "direction": "Outbound",
    "etag": "W/\"34cb08a0-2085-48a3-9175-04500b732fec\"",
    "id": "/subscriptions/16982123-2d3c-44ce-ab2d-0c419f4ce699/resourceGroups/learn-8375adde-9dfe-42c3-87c5-4689fbe888b8/providers/Microsoft.Network/networkSecurityGroups/my-vmNSG/defaultSecurityRules/DenyAllOutBound",
    "name": "DenyAllOutBound",
    "priority": 65500,
    "protocol": "*",
    "provisioningState": "Succeeded",
    "resourceGroup": "learn-8375adde-9dfe-42c3-87c5-4689fbe888b8",
    "sourceAddressPrefix": "*",
    "sourceAddressPrefixes": [],
    "sourcePortRange": "*",
    "sourcePortRanges": [],
    "type": "Microsoft.Network/networkSecurityGroups/defaultSecurityRules"
  }
],
  "etag": "W/\"34cb08a0-2085-48a3-9175-04500b732fec\"",
  "id": "/subscriptions/16982123-2d3c-44ce-ab2d-0c419f4ce699/resourceGroups/learn-8375adde-9dfe-42c3-87c5-4689fbe888b8/providers/Microsoft.Network/networkSecurityGroups/my-vmNSG",
  "location": "westus",
  "name": "my-vmNSG",
  "networkInterfaces": [
    {
      "id": "/subscriptions/16982123-2d3c-44ce-ab2d-0c419f4ce699/resourceGroups/learn-8375adde-9dfe-42c3-87c5-4689fbe888b8/providers/Microsoft.Network/networkInterfaces/my-vmVMNic",
      "resourceGroup": "learn-8375adde-9dfe-42c3-87c5-4689fbe888b8"
    }
  ],
  "provisioningState": "Succeeded",
  "resourceGroup": "learn-8375adde-9dfe-42c3-87c5-4689fbe888b8",
  "resourceGuid": "8c4cca2f-61a0-4782-bb39-cb773c00d661",
  "securityRules": [
    {
      "access": "Allow",
      "destinationAddressPrefix": "*",
      "destinationAddressPrefixes": [],
      "destinationPortRange": "22",
      "destinationPortRanges": [],
      "direction": "Inbound",
      "etag": "W/\"34cb08a0-2085-48a3-9175-04500b732fec\"",
      "id": "/subscriptions/16982123-2d3c-44ce-ab2d-0c419f4ce699/resourceGroups/learn-8375adde-9dfe-42c3-87c5-4689fbe888b8/providers/Microsoft.Network/networkSecurityGroups/my-vmNSG/securityRules/default-allow-ssh",
      "name": "default-allow-ssh",

```



```

    "priority": 1000,
    "protocol": "Tcp",
    "provisioningState": "Succeeded",
    "resourceGroup": "learn-8375adde-9dfe-42c3-87c5-4689fbe888b8",
    "sourceAddressPrefix": "*",
    "sourceAddressPrefixes": [],
    "sourcePortRange": "*",
    "sourcePortRanges": [],
    "type": "Microsoft.Network/networkSecurityGroups/securityRules"
  },
  {
    "access": "Allow",
    "destinationAddressPrefix": "*",
    "destinationAddressPrefixes": [],
    "destinationPortRange": "80",
    "destinationPortRanges": [],
    "direction": "Inbound",
    "etag": "W/\"34cb08a0-2085-48a3-9175-04500b732fec\"",
    "id": "/subscriptions/16982123-2d3c-44ce-ab2d-0c419f4ce699/resourceGroups/learn-8375adde-9dfe-42c3-87c5-4689fbe888b8/providers/Microsoft.Network/networkSecurityGroups/my-vmNSG/securityRules/open-port-80",
    "name": "open-port-80",
    "priority": 900,
    "protocol": "*",
    "provisioningState": "Succeeded",
    "resourceGroup": "learn-8375adde-9dfe-42c3-87c5-4689fbe888b8",
    "sourceAddressPrefix": "*",
    "sourceAddressPrefixes": [],
    "sourcePortRange": "*",
    "sourcePortRanges": [],
    "type": "Microsoft.Network/networkSecurityGroups/securityRules"
  }
],
"tags": {},
"type": "Microsoft.Network/networkSecurityGroups"
}
ijaz [ ~ ]$ az vm list-ip-addresses --resource-group "learn-8375adde-9dfe-42c3-87c5-4689fbe888b8" --name my-vm --output table
VirtualMachine  PublicIPAddresses  PrivateIPAddresses
-----
my-vm          52.160.88.235        10.0.0.4
ijaz [ ~ ]$ ssh azureuser@52.160.88.235
Welcome to Ubuntu 22.04.4 LTS (GNU/Linux 6.5.0-1025-azure x86_64)

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

System information as of Fri Aug  9 04:32:26 UTC 2024

System load:  0.16           Processes:            107
Usage of /:   6.0% of 28.89GB Users logged in:          0
Memory usage: 9%            IPv4 address for eth0: 10.0.0.4
Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

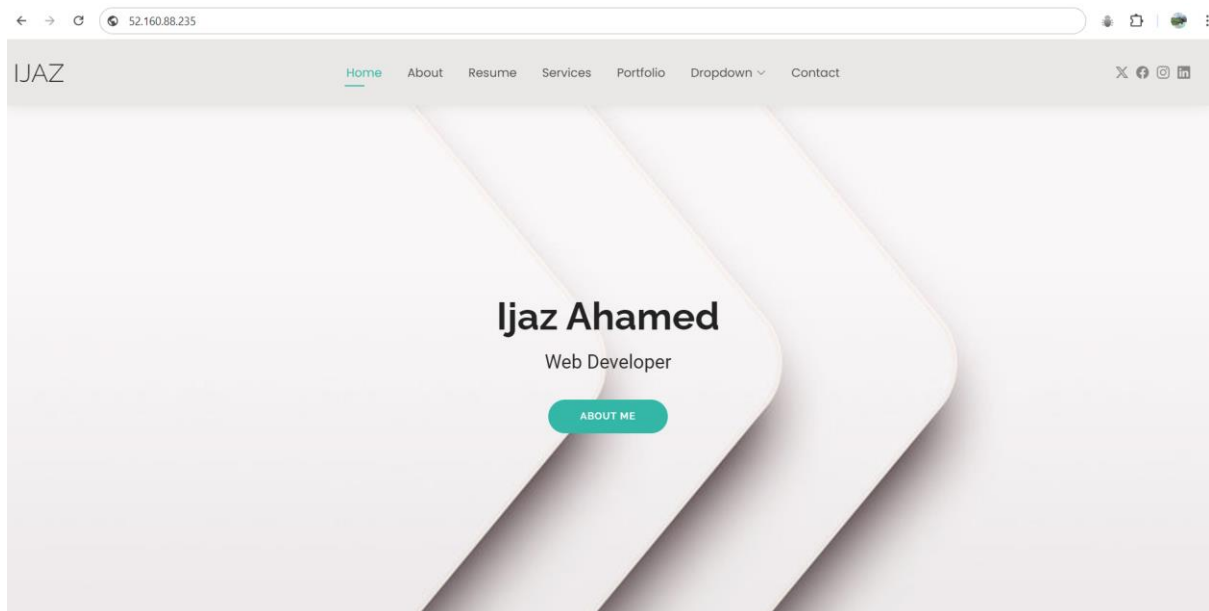
10 updates can be applied immediately.
10 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

```

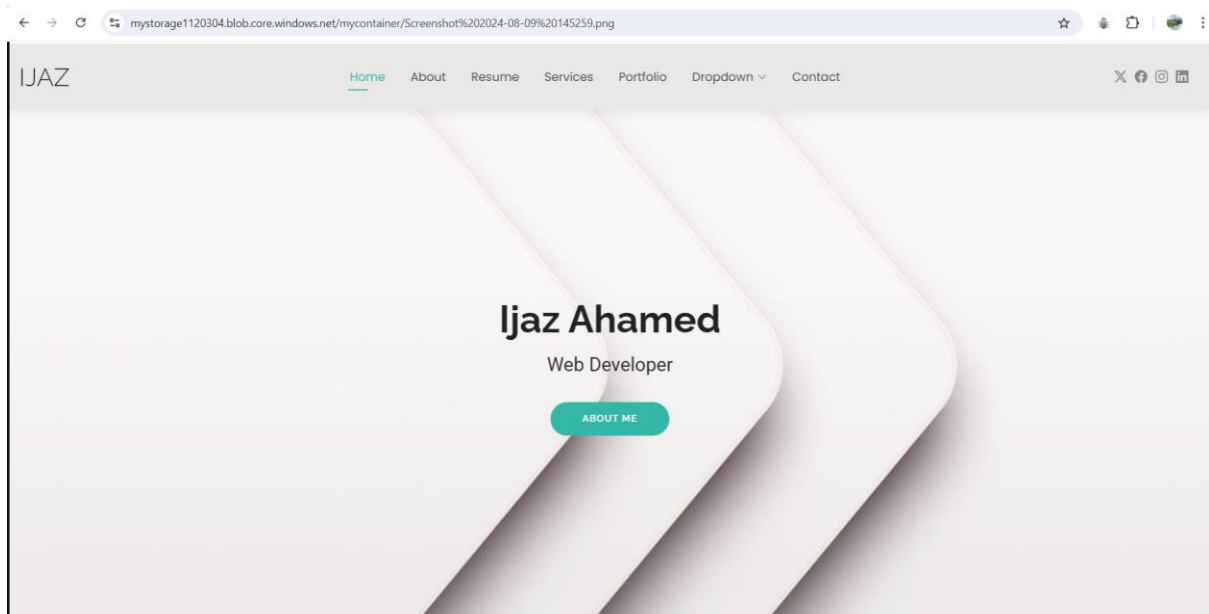
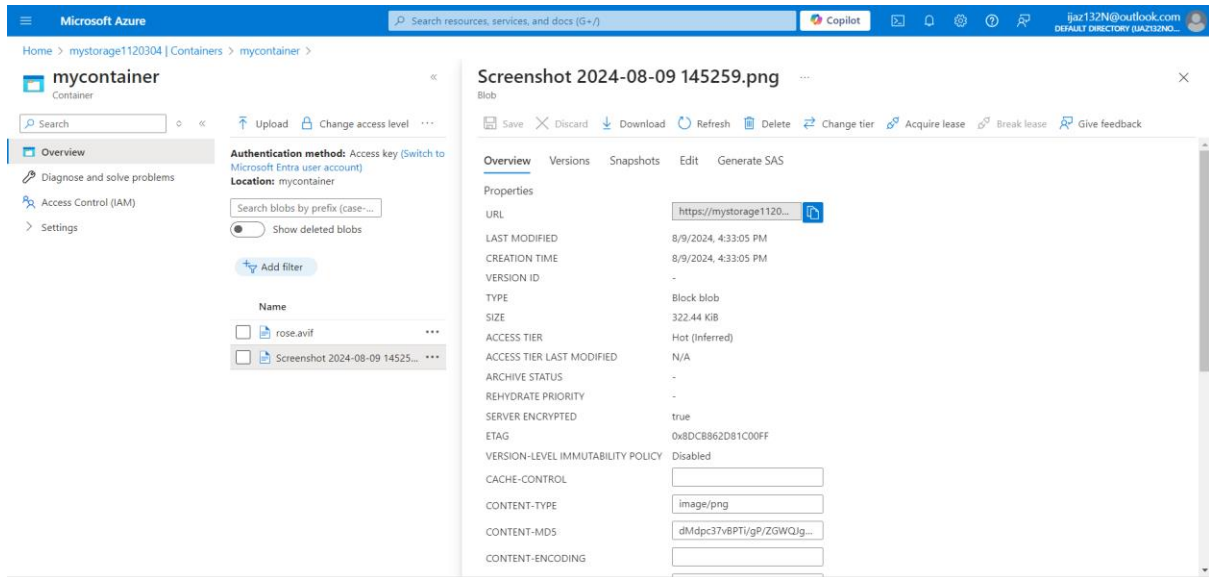
```
Last login: Fri Aug 9 04:13:49 2024 from 20.247.233.238
azureuser@my-vm:~$ sudo apt-get update
sudo apt-get install git -y
Hit:1 http://azure.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://azure.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:3 http://azure.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:4 http://azure.archive.ubuntu.com/ubuntu jammy-security InRelease
Reading package lists... Done
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
git is already the newest version (1:2.34.1-1ubuntu1.11).
git set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 10 not upgraded.

azureuser@my-vm:~$ git clone https://github.com/ijaz-01/REP.git
Cloning into 'REP'...
remote: Enumerating objects: 167, done.
remote: Counting objects: 100% (167/167), done.
remote: Compressing objects: 100% (103/103), done.
remote: Total 167 (delta 55), reused 162 (delta 52), pack-reused 0
Receiving objects: 100% (167/167), 2.31 MiB | 12.17 MiB/s, done.
Resolving deltas: 100% (55/55), done.
azureuser@my-vm:~$ sudo cp -r REP* /var/www/html/
azureuser@my-vm:~$ sudo chown -R www-data:www-data /var/www/html
sudo chmod -R 755 /var/www/html
azureuser@my-vm:~$ sudo systemctl restart nginx
azureuser@my-vm:~$
```

SANDBOX OUTPUT



BLOB



<https://mystorage1120304.blob.core.windows.net/mycontainer/Screenshot%202024-08-09%20145259.png>

ESTIMATED COST

	A	B	C	D	E	F	G
1	Microsoft Azure Estimate						
2	Your Estimate						
3	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
4	Networking	Application Gateway		West US	Web Application Firewall tier, Medium Instance size; 2 Gateway hours instance(s) x 730 Hours, 1 TB Data processed unit(s), 5 GB Zone unit(s)	\$206.04	\$0.00
5	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 – 2 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	\$396.15	\$0.00
6	Support			Support		\$0.00	\$0.00
7				Licensing Program	Microsoft Customer Agreement (MCA)		
8				Billing Account			
9				Billing Profile			
10				Total		\$907.33	\$0.00
11	Disclaimer						
12	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/						
13	This estimate was created at 8/9/2024 11:18:50 AM UTC.						
14							