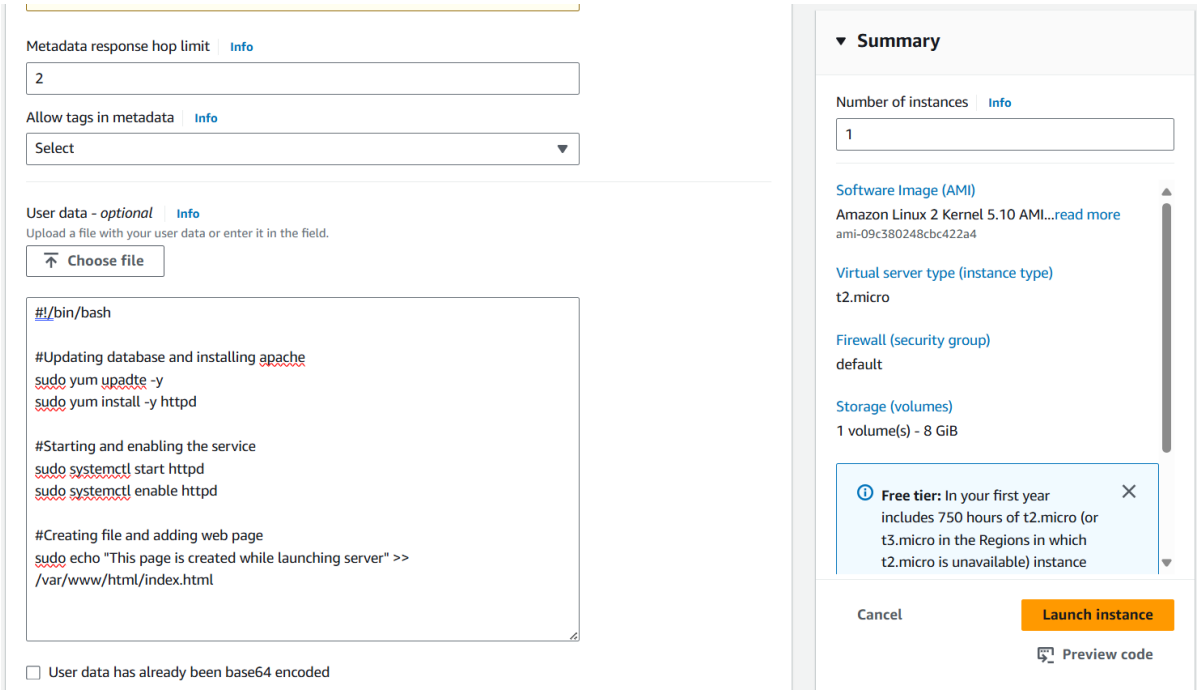
1) Launch one ec2 using Amazon Linux 2 image and add script in user data to install Apache.

>>Selecting linux image 2 and adding script in user data in advance option for installing apache



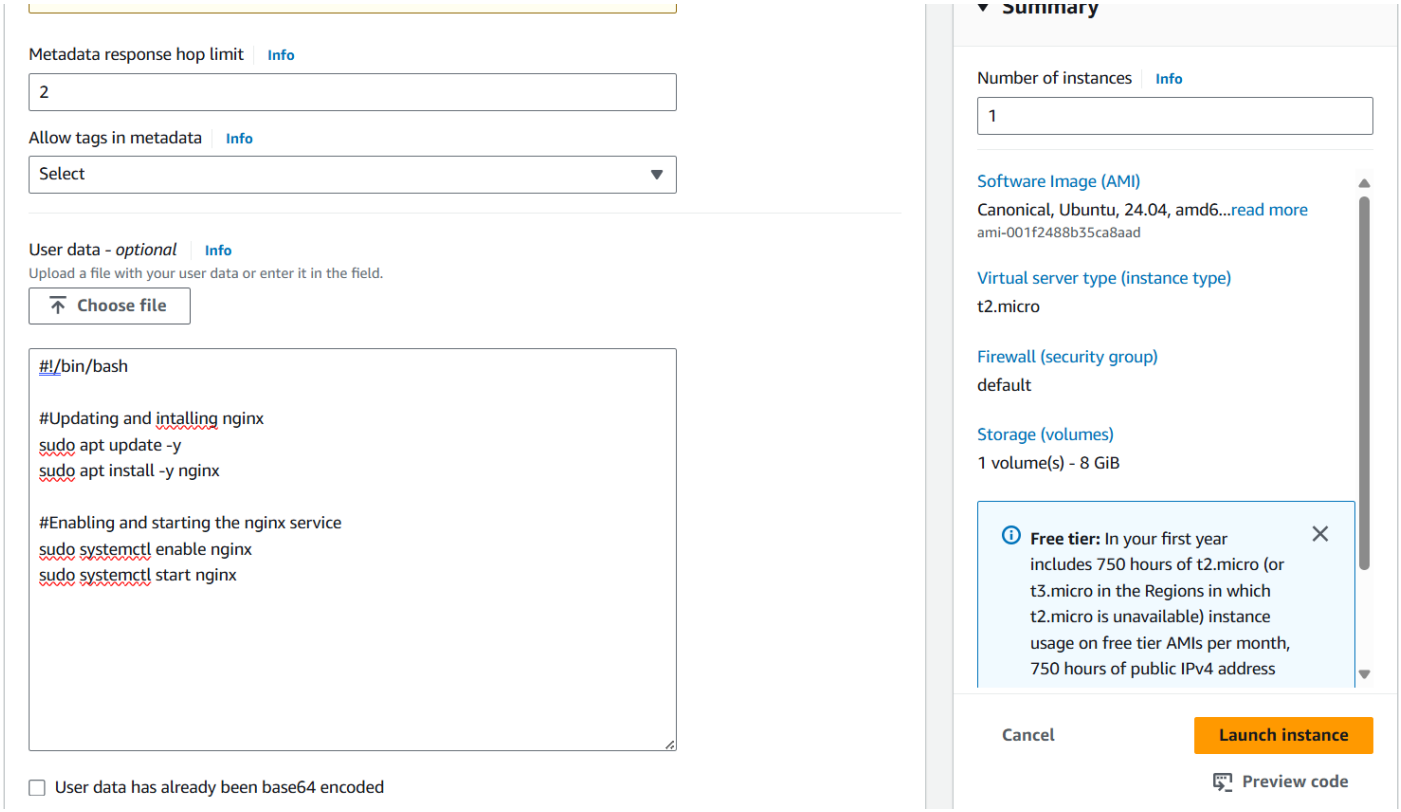
>>logging in through ssh and checking for apache and file

```
syedf@LAPTOP-AM5KM6HG MINGW64 ~/OneDrive/Desktop
$ ssh -i "server01.pem" ec2-user@ec2-3-106-134-53.ap-southeast-2.compute.amazonaws.com
The authenticity of host 'ec2-3-106-134-53.ap-southeast-2.compute.amazonaws.com (3.106.134.53)' can
't be established.
ED25519 key fingerprint is SHA256:OuBAuXwiAQTgmhMtS3SfyMa9og4OgsPQSqky8AZ9ww4.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-3-106-134-53.ap-southeast-2.compute.amazonaws.com' (ED25519) to the
 list of known hosts.
       #_
   ~\_  ####_        Amazon Linux 2
  ~~  \_#####\
  ~~     \###|       AL2 End of Life is 2025-06-30.
  ~~       \#/ ___
   ~~       V~' '->
    ~~~         /    A newer version of Amazon Linux is available!
      ~~._.   _/
         _/ _/       Amazon Linux 2023, GA and supported until 2028-03-15.
       _/m/'           https://aws.amazon.com/linux/amazon-linux-2023/

[ec2-user@ip-172-31-5-89 ~]$ sudo find / -name httpd
/etc/logrotate.d/httpd
/etc/httpd
/run/httpd
/var/cache/httpd
/var/log/httpd
/var/lib/httpd
/usr/sbin/httpd
/usr/lib64/httpd
/usr/share/httpd
/usr/libexec/initscripts/legacy-actions/httpd
[ec2-user@ip-172-31-5-89 ~]$ sudo systemctl status httpd | grep active
   Active: active (running) since Fri 2024-11-08 10:11:07 UTC; 2min 48s ago
[ec2-user@ip-172-31-5-89 ~]$ cat /var/www/html/index.html
This page is created while launching server
```

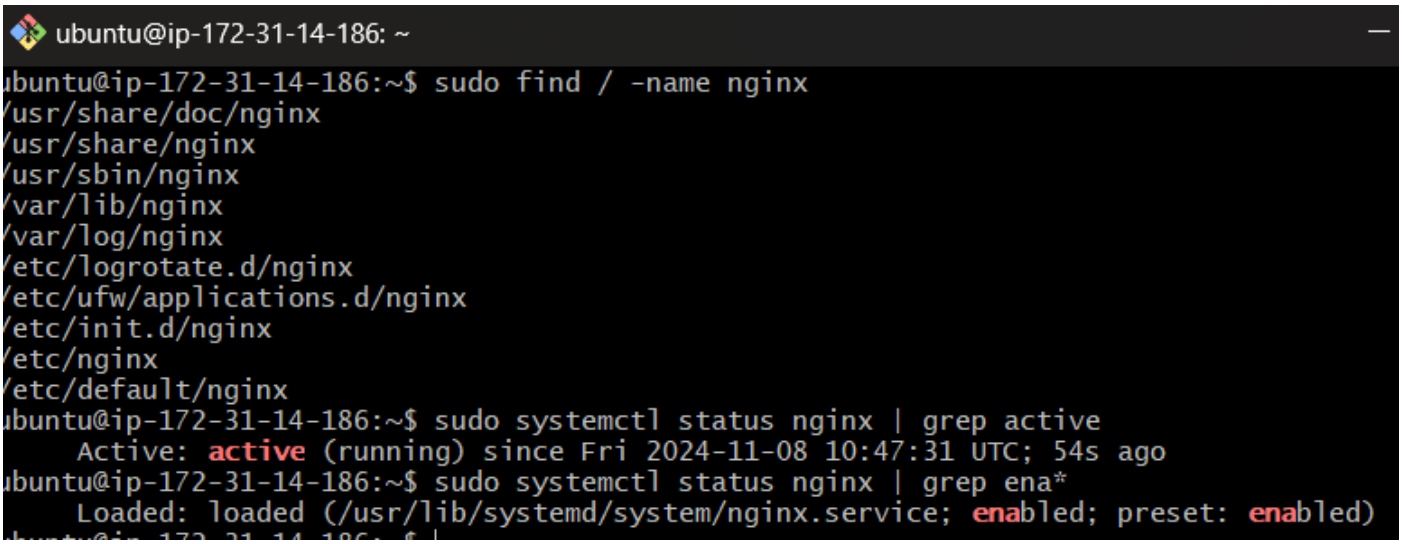
>>searching the ip on web

2) Launch one ec2 using Ubuntu image and add script in user data to install Nginx.

>> Selecting ubuntu image and adding script in user data in advance option for installing nginx on launch



>>checking on CLI for Nginx service



3) Launch one windows server and install tomcat in windows.

Create instance with windows image

launch the instance by clicking connect and follow the instrunctions.

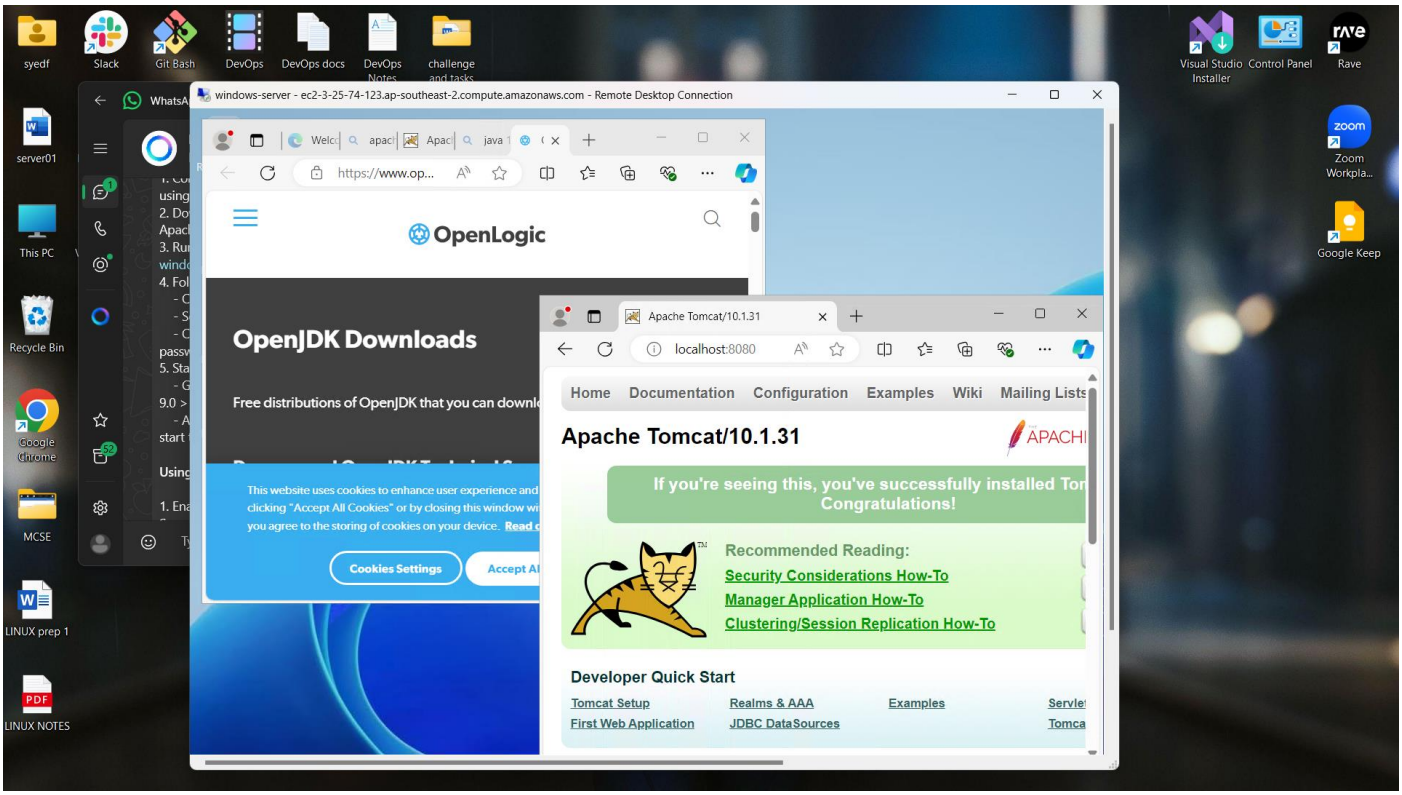
Go to browser and download java jdk from official page

Download tomcat from official page

Install it

Open cmd prompt and run command <net start tomcat*>

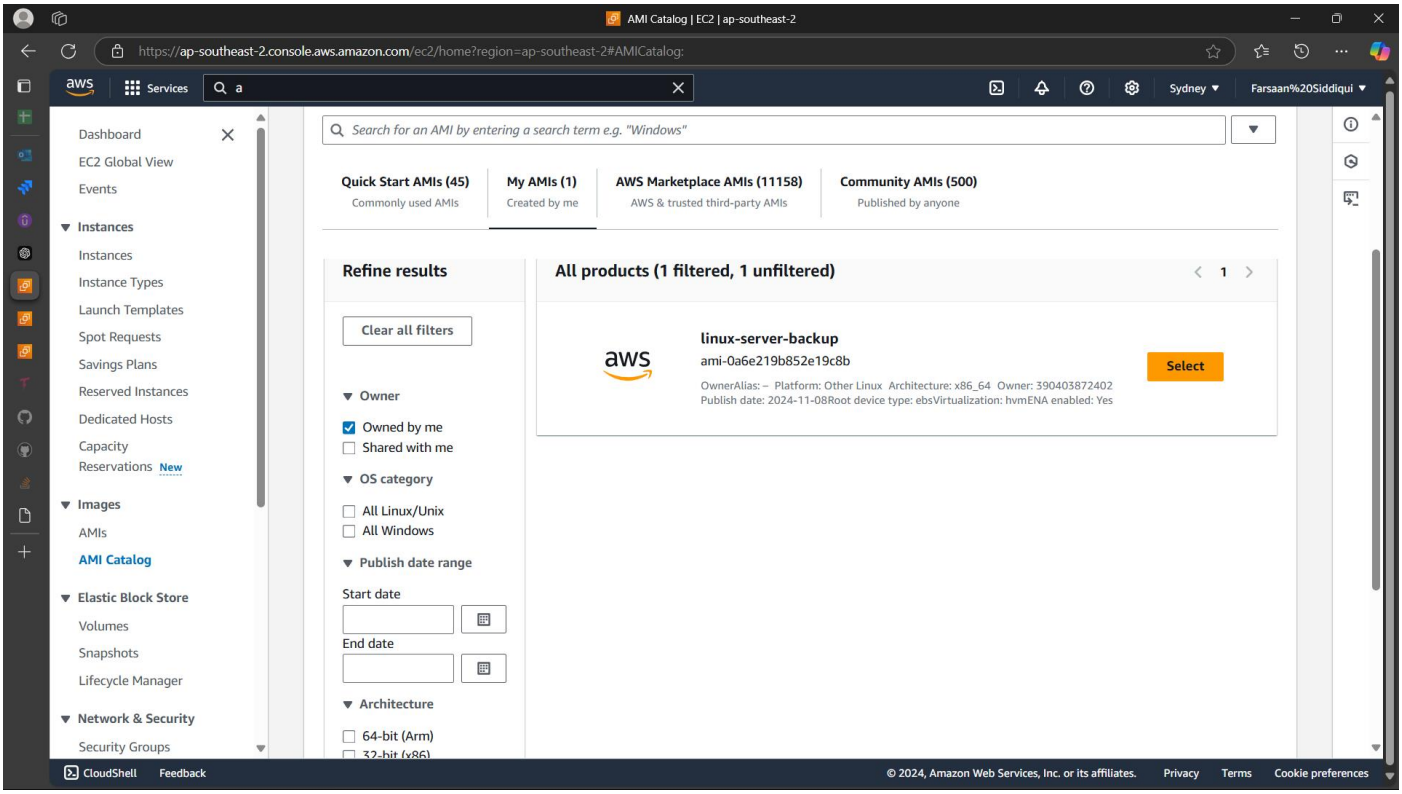
Go to browser on windows server search locathost:8080



4) Take snapshot of the instane created in Task 1.

->First stop the instance

go to Actions > Image and template > Create Image > Give image name > Create Image



5) Assign password less authentication for ec2 created on Task 2.

>create a key-gen in local server

>cat the key and copy it

```
syedf@LAPTOP-AM5KM6HG MINGW64 ~/OneDrive/Desktop
$ ssh-keygen -t rsa
Generating public/private rsa key pair.
Enter file in which to save the key (/c/Users/syedf/.ssh/id_rsa):
/c/Users/syedf/.ssh/id_rsa already exists.
Overwrite (y/n)? y
Enter passphrase for "/c/Users/syedf/.ssh/id_rsa" (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /c/Users/syedf/.ssh/id_rsa
Your public key has been saved in /c/Users/syedf/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:NXcvvUlNEVJPzBAeJq2flqtJQNP7Ga8Pn9RG2pdouGs syedf@LAPTOP-AM5KM6HG
The key's randomart image is:
+---[RSA 3072]----+
|            .o*Oo|
|           . +oo=|
|          = o.o o|
|         o +.o +.|
|        S . ..o+=|
|           ...BO=|
|           ..+=**|
|          Eo.o=o|
|         .o+..oo|
+----[SHA256]-----+

syedf@LAPTOP-AM5KM6HG MINGW64 ~/OneDrive/Desktop
$ cat /c/Users/syedf/.ssh/id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAABgQCPKUaCxuifjhVVaGUGl2t/vsBJeEpOff6mu8sSG5fg
xpu2xvKcyoRubpXSpUff20AqcbOIZooGjIJ7T0t1i21FEHRbHypS1fMhQ6gFKaIUuQohJI65GJwBHDw0
jjWOus2GR5Fr6RaHJ4y7sC13DNUjh6GqKSz/0GZpIaKr+qvn6DfmOtX/YmEyAHEPCyOKJfnwFsXGPbP4
gsBBtYL6IQKEKj9fr3VL3NlfdL7xnBwsNlx1VhVszZOr+i55UGgBUV/Jrp5d89wTfbPOgU2cBDRnoWwH
ofD6fLfkOVDBydbP8w83ZgfYYE2ZtS9HBpFALEKGIguOGpfFz6xTuCPQz/b6tOO94EOxDaR6CSpodQE7
YBTwEz/xAGroyHj4/kCCIIndkgeCxbOwsmvhXGTOu+QjF3aysW88ItHwdMDQJIeWThloOFzGfH1lGEeV
baHrGqR29j3kvIl3JzexYRBBuOSPhtc9Lm5jVraCOOEO+Ta5EFnSoOc/7Rw6lWQRlzpOJOc= syedf@L
APTOP-AM5KM6HG
```

>login to ubuntu server

>got to .ssh directory

>edit the file authorized keys

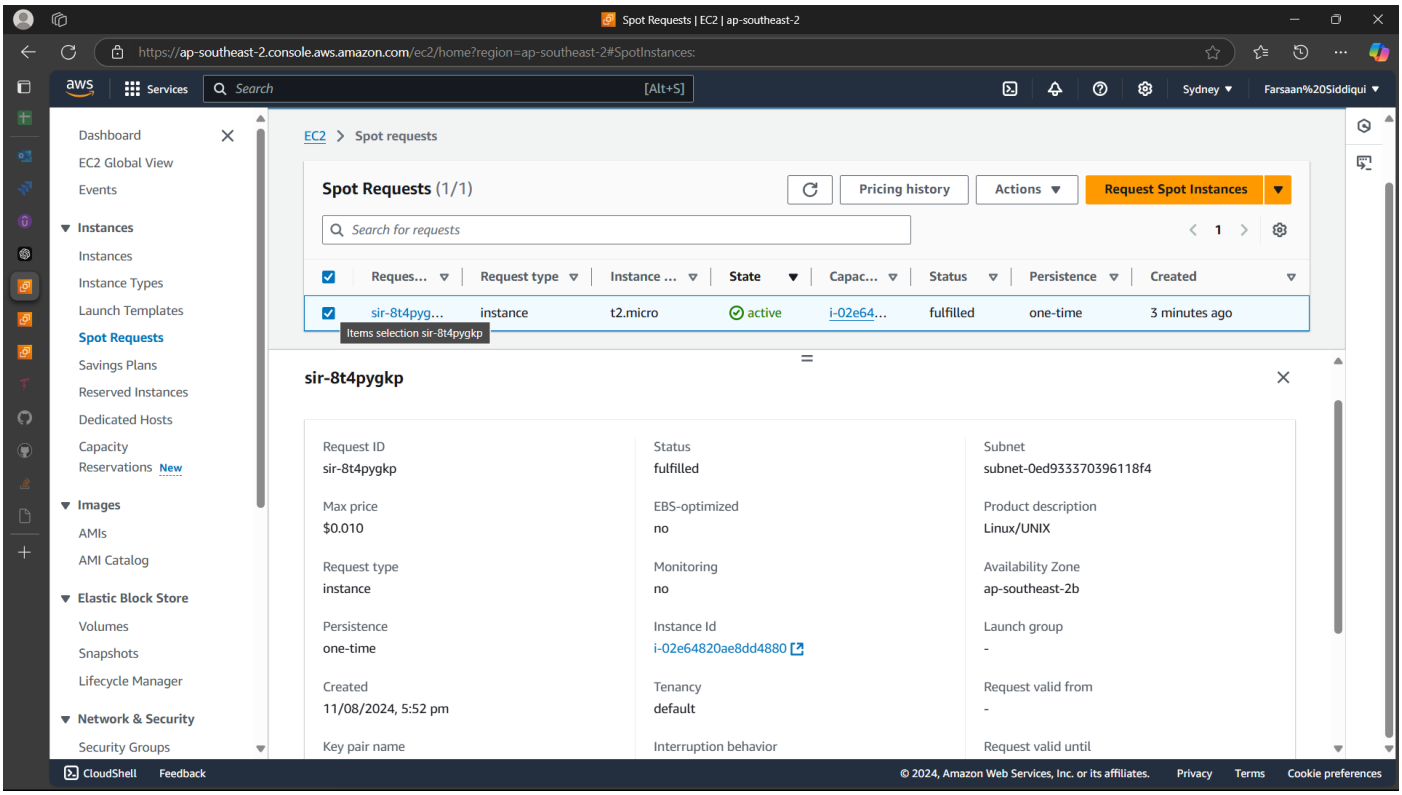
>add the copied key in that file and save the file then restart the ssh service

```
root@ip-172-31-14-186:/home/ubuntu/.ssh# vi authorized_keys
root@ip-172-31-14-186:/home/ubuntu/.ssh# chmod 660 authorized_keys
root@ip-172-31-14-186:/home/ubuntu/.ssh# ls -ltr
total 4
-rw-rw---- 1 ubuntu ubuntu 966 Nov  9 08:57 authorized_keys
root@ip-172-31-14-186:/home/ubuntu/.ssh# chmod 600 authorized_keys
root@ip-172-31-14-186:/home/ubuntu/.ssh# ls -ltr
total 4
-rw------- 1 ubuntu ubuntu 966 Nov  9 08:57 authorized_keys
root@ip-172-31-14-186:/home/ubuntu/.ssh# systemctl restart ssh
root@ip-172-31-14-186:/home/ubuntu/.ssh# service ssh restart
```

>Login with ssh username@hostname

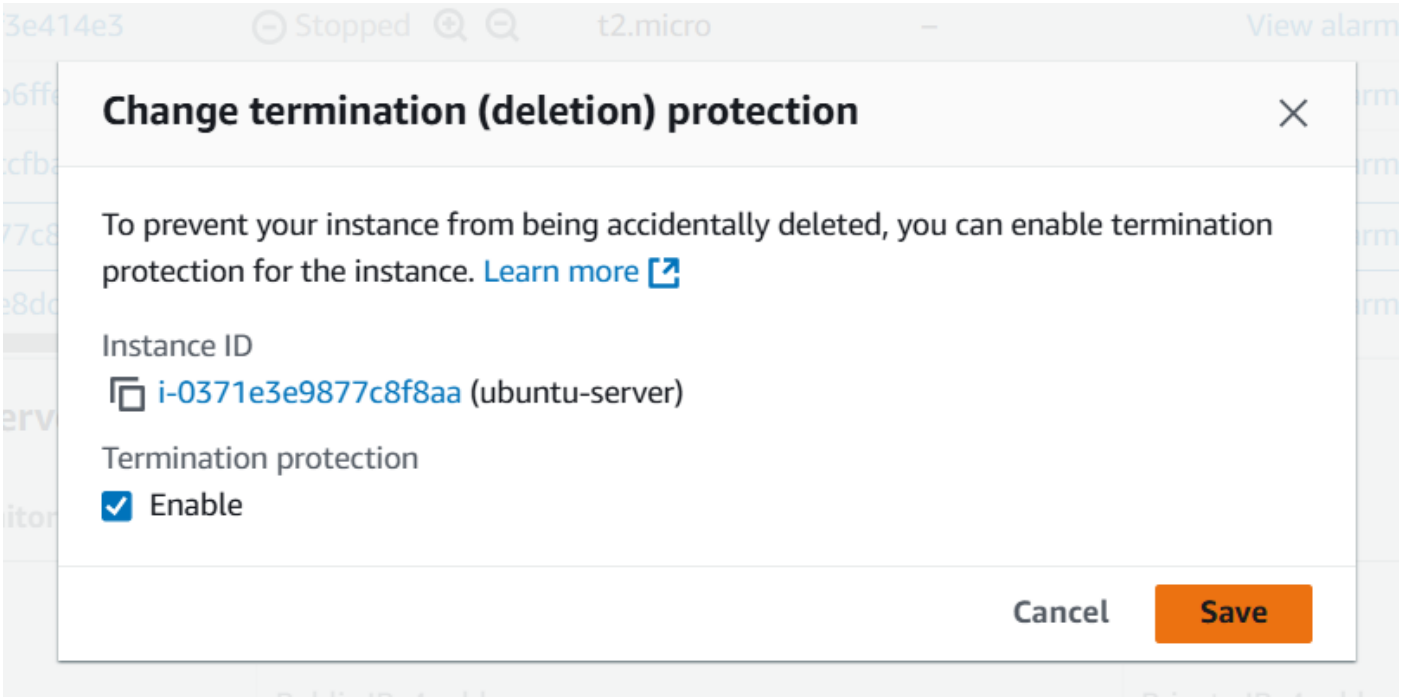
```
syedf@LAPTOP-AM5KM6HG MINGW64 ~/OneDrive/Desktop
$ ssh ubuntu@54.79.193.58
The authenticity of host '54.79.193.58 (54.79.193.58)' can't be established.
ED25519 key fingerprint is SHA256:VaVqInTfH6f9kJ3iEGxIbl8AiT5SOIvHZQEjAByp2Os.
This host key is known by the following other names/addresses:
    ~/.ssh/known_hosts:1: 3.107.85.95
    ~/.ssh/known_hosts:5: ec2-54-79-193-58.ap-southeast-2.compute.amazonaws.com
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '54.79.193.58' (ED25519) to the list of known hosts.
Welcome to Ubuntu 24.04.1 LTS (GNU/Linux 6.8.0-1016-aws x86_64)

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

 System information as of Sat Nov  9 08:59:18 UTC 2024

  System load:  0.0               Processes:             113
  Usage of /:   27.0% of 6.71GB   Users logged in:       1
  Memory usage: 24%               IPv4 address for enX0: 172.31.14.186
  Swap usage:   0%

 * Ubuntu Pro delivers the most comprehensive open source security and
   compliance features.

   https://ubuntu.com/aws/pro

Expanded Security Maintenance for Applications is not enabled.

42 updates can be applied immediately.
22 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


Last login: Sat Nov  9 08:54:34 2024 from 106.222.232.61
```

6) Launch any ec2 using spot purchasing option.



7) Enable Termination policy on ec2 created in Task 2.

select_instance > Actions > Instance_settings > Change_termination_protection > Enable



8) Launch one ec2 using Aws CLI.

Download AWSCLIV2 from browser > setup the application > open gitbash CLI > check version > configure > add requirements > Done

Configure AWS CLI: Once installed, configure the AWS CLI with your credentials by running:

```
syedf@LAPTOP-AM5KM6HG MINGW64 ~
$ aws configure
AWS Access Key ID [****************U3FF]: AKIAVVZPCK2JDQV2U3FF
AWS Secret Access Key [****************QiIM]: ss4vCPuDV3Nu6uxDS2dT5VD+SU3OHs9WUWOLQiIM
Default region name [us-east-1]: us-east-1
Default output format [json]:
```

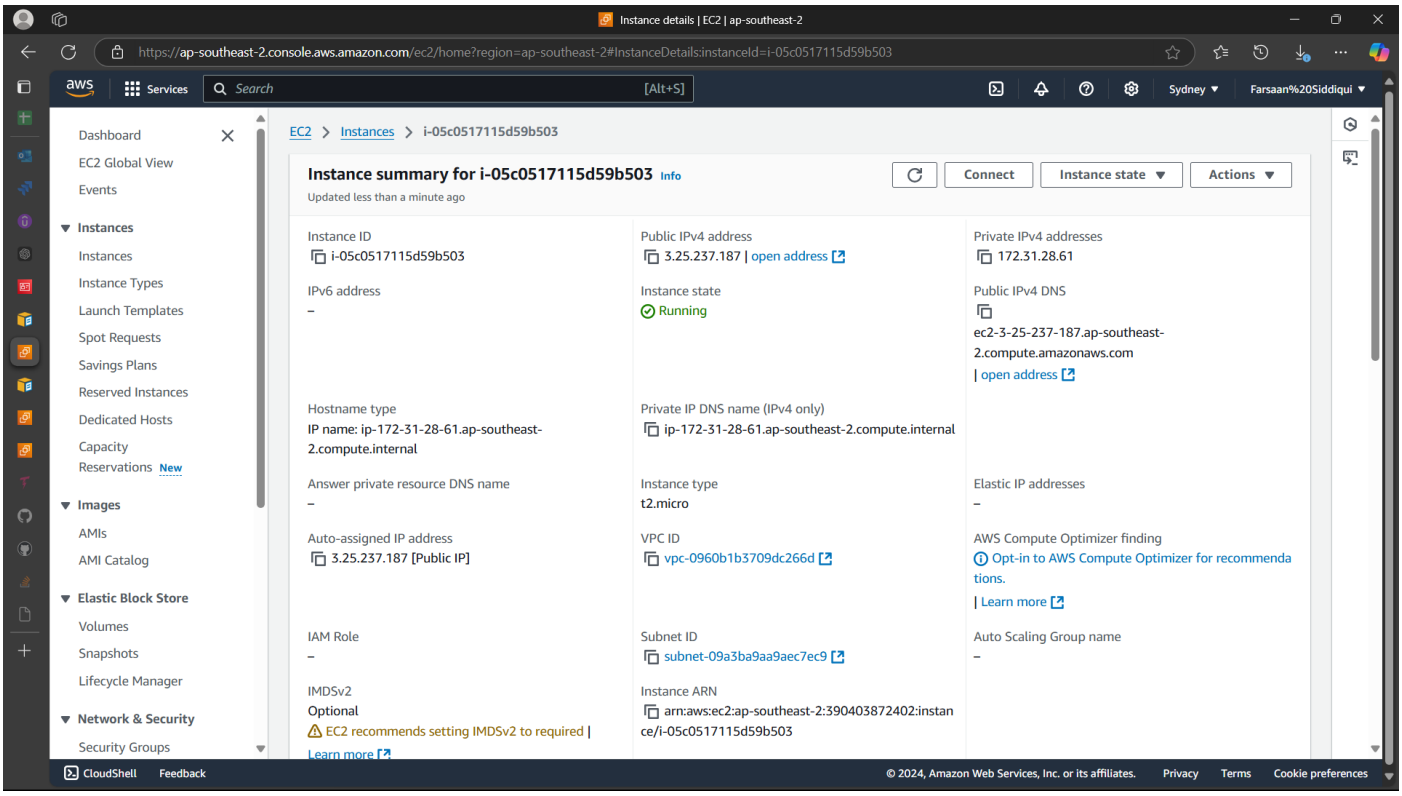
Follow this to get your access key and secret key

Log in to the AWS Management Console > Navigate to the IAM (Identity and Access Management service > Select Users from the left-hand menu > Click on the user for whom you want to find the access keys > Go to the Security credentials tab**.** > Scroll down to the Access keys section

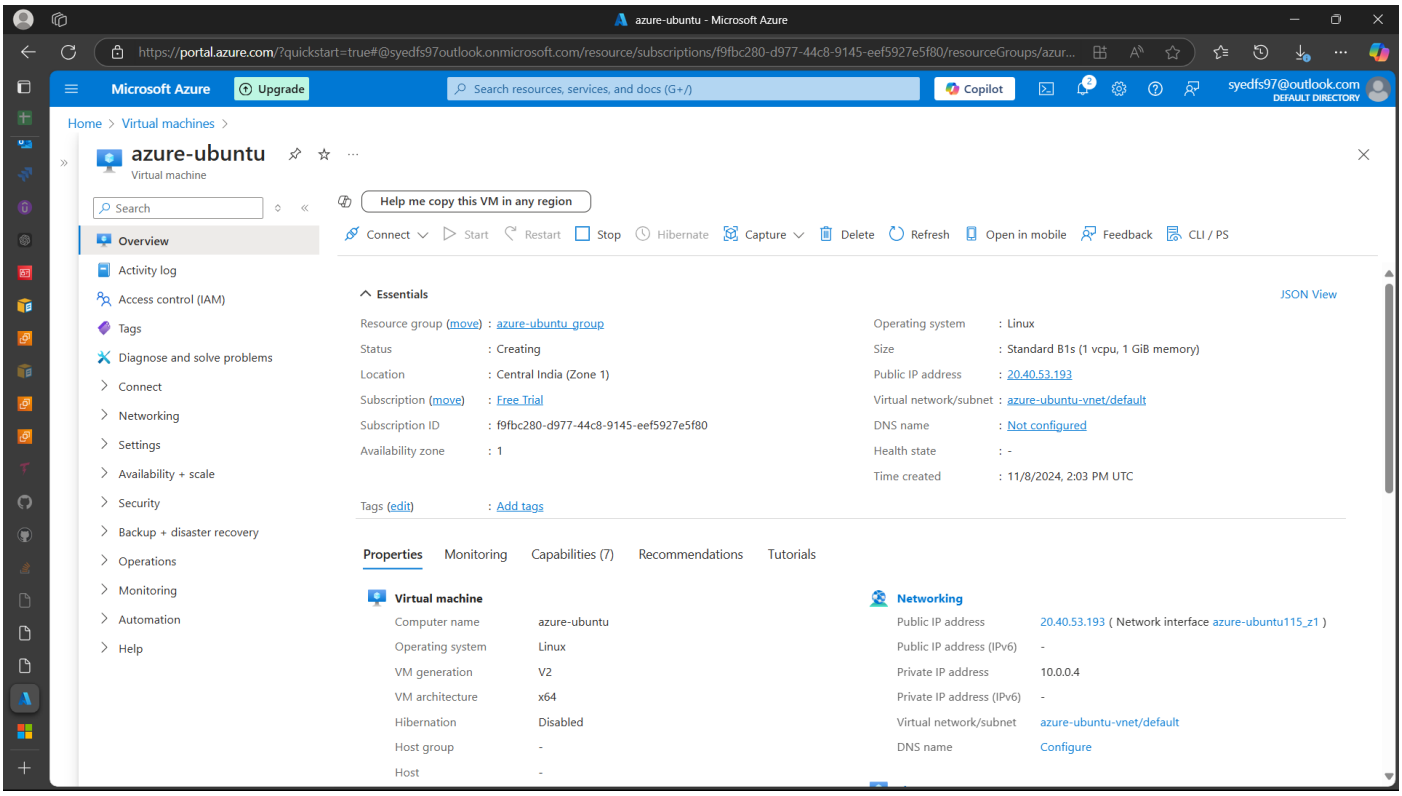
Run command

~$ **aws ec2 run-instances --image-id** <ami-0abcdef1234567890> **--count** <1> **--instance-type** <t2.micro> **--key-name** <your_key> **--security-group-ids** <sg-0123456789abcdef0> **--subnet-id** <subnet-6e7f829e>

```
syedf@LAPTOP-AM5KM6HG MINGW64 ~
$ aws ec2 run-instances --image-id ami-0a6e219b852e19c8b --count 1 --instance-type t2.micr
o --key-name server01 --security-group-ids sg-0b41273241233800c --subnet-id subnet-09a3ba9
aa9aec7ec9
```



9) Launch one azure VM using ubuntu image.

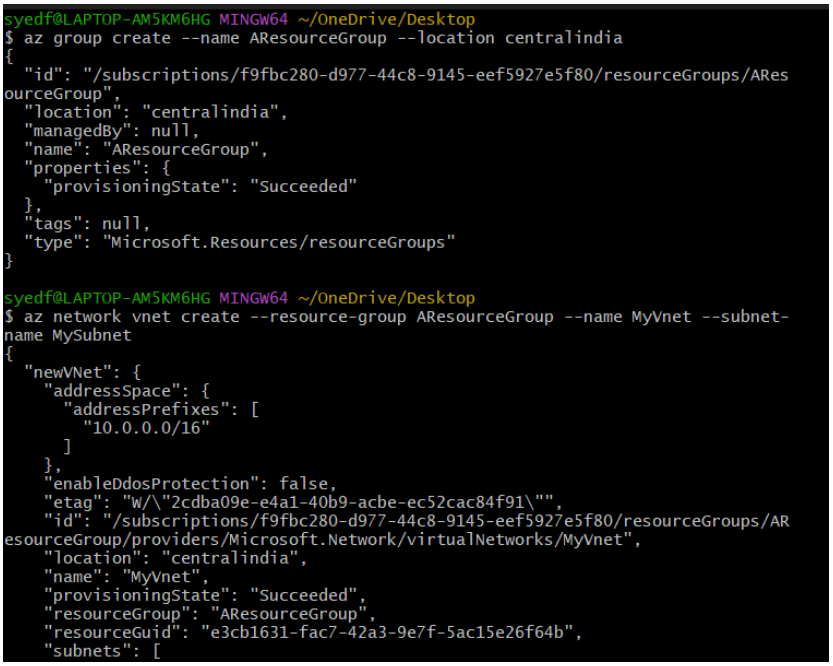



```
syedf@LAPTOP-AM5KM6HG MINGW64 ~/.ssh
$ ssh superman@20.40.53.193
The authenticity of host '20.40.53.193 (20.40.53.193)' can't be established.
ED25519 key fingerprint is SHA256:pdpEqLNQHZDTQeZD9trby4JE5WClk2LqcCEDjs5qvCM.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '20.40.53.193' (ED25519) to the list of known hosts.
superman@20.40.53.193's password:
Welcome to Ubuntu 24.04.1 LTS (GNU/Linux 6.8.0-1017-azure x86_64)

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

 System information as of Fri Nov  8 14:09:29 UTC 2024

  System load:  0.25              Processes:             109
  Usage of /:   5.4% of 28.02GB   Users logged in:       0
  Memory usage: 29%               IPv4 address for eth0: 10.0.0.4
  Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

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


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.

superman@azure-ubuntu:~$
```

10) Launch one azure VM using Azure CLI.

az group create --name AResourceGroup --location eastus

az network vnet create --resource-group AResourceGroup --name MyVnet --subnet-name MySubnet



az network public-ip create --resource-group AResourceGroup --name MyPublicIP

az network nsg create --resource-group AResourceGroup --name MyNetworkSecurityGroup

az network nsg rule create --resource-group AResourceGroup --nsg-name MyNetworkSecurityGroup --name MyNetworkSecurityGroupRuleSSH --protocol tcp --priority 1000 --destination-port-range 22 --access allow

az network nic create --resource-group AResourceGroup --name MyNic --vnet-name MyVnet --subnet MySubnet --network-security-group MyNetworkSecurityGroup --public-ip-address MyPublicIP

```
syedf@LAPTOP-AM5KM6HG MINGW64 ~/OneDrive/Desktop
$ az network nsg rule create --resource-group AResourceGroup --nsg-name MyNetwor
kSecurityGroup --name MyNetworkSecurityGroupRuleSSH --protocol tcp --priority 10
00 --destination-port-range 22 --access allow
{
  "access": "Allow",
  "destinationAddressPrefix": "*",
  "destinationAddressPrefixes": [],
  "destinationPortRange": "22",
  "destinationPortRanges": [],
  "direction": "Inbound",
  "etag": "W/\"d7d6a448-d546-42a8-92e7-fa6c694e86e3\"",
  "id": "/subscriptions/f9fbc280-d977-44c8-9145-eef5927e5f80/resourceGroups/ARes
ourceGroup/providers/Microsoft.Network/networkSecurityGroups/MyNetworkSecurityGr
oup/securityRules/MyNetworkSecurityGroupRuleSSH",
  "name": "MyNetworkSecurityGroupRuleSSH",
  "priority": 1000,
  "protocol": "Tcp",
  "provisioningState": "Succeeded",
  "resourceGroup": "AResourceGroup",
  "sourceAddressPrefix": "*",
  "sourceAddressPrefixes": [],
  "sourcePortRange": "*",
  "sourcePortRanges": [],
  "type": "Microsoft.Network/networkSecurityGroups/securityRules"
}

syedf@LAPTOP-AM5KM6HG MINGW64 ~/OneDrive/Desktop
$ az network nic create --resource-group AResourceGroup --name MyNic --vnet-name
 MyVnet --subnet MySubnet --network-security-group MyNetworkSecurityGroup --publ
ic-ip-address MyPublicIP
{
  "NewNIC": {
    "auxiliaryMode": "None",
    "auxiliarySku": "None",
    "disableTcpStateTracking": false,
    "dnsSettings": {
      "appliedDnsServers": [],
      "dnsServers": [],
      "internalDomainNameSuffix": "gelmxy4h5krufht5llav2jxwjd.rx.internal.clouda
```

az vm create --resource-group MyResourceGroup --name MyVM --nics MyNic --image UbuntuLTS --admin-username azureuser --generate-ssh-keys

```
syedf@LAPTOP-AM5KM6HG MINGW64 ~/OneDrive/Desktop
$ az vm create --resource-group AResourceGroup --name NewVM --nics MyNic --image
 Ubuntu2204 --admin-username Cliuser --generate-ssh-keys
admin user name cannot contain upper case character A-Z, special characters \/"[
]:|<>+=;,?*@#()! or start with $ or -

syedf@LAPTOP-AM5KM6HG MINGW64 ~/OneDrive/Desktop
$ az vm create --resource-group AResourceGroup --name NewVM --nics MyNic --image
 Ubuntu2404 --admin-username cliuser --generate-ssh-keys
{
  "fqdns": "",
  "id": "/subscriptions/f9fbc280-d977-44c8-9145-eef5927e5f80/resourceGroups/AResourceGroup/providers/Microsoft.Compute/virtualMachines/NewVM",
  "location": "centralindia",
  "macAddress": "60-45-BD-A5-AB-6E",
  "powerState": "VM running",
  "privateIpAddress": "10.0.0.4",
  "publicIpAddress": "4.247.152.30",
  "resourceGroup": "AResourceGroup",
  "zones": ""
}
```

Checking the sever on azure website