HPCSA

Cloud Computing and Security

Lab Assignment 1

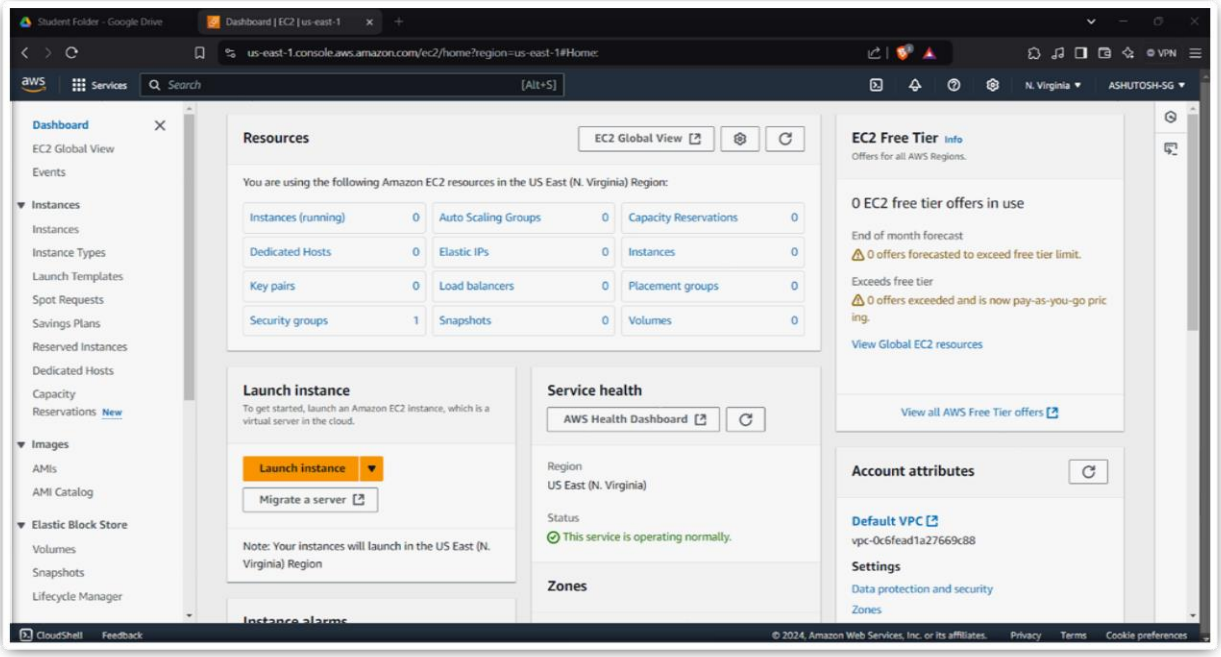
Name : **Ashutosh Gangurde**

PRN : **240840127031**

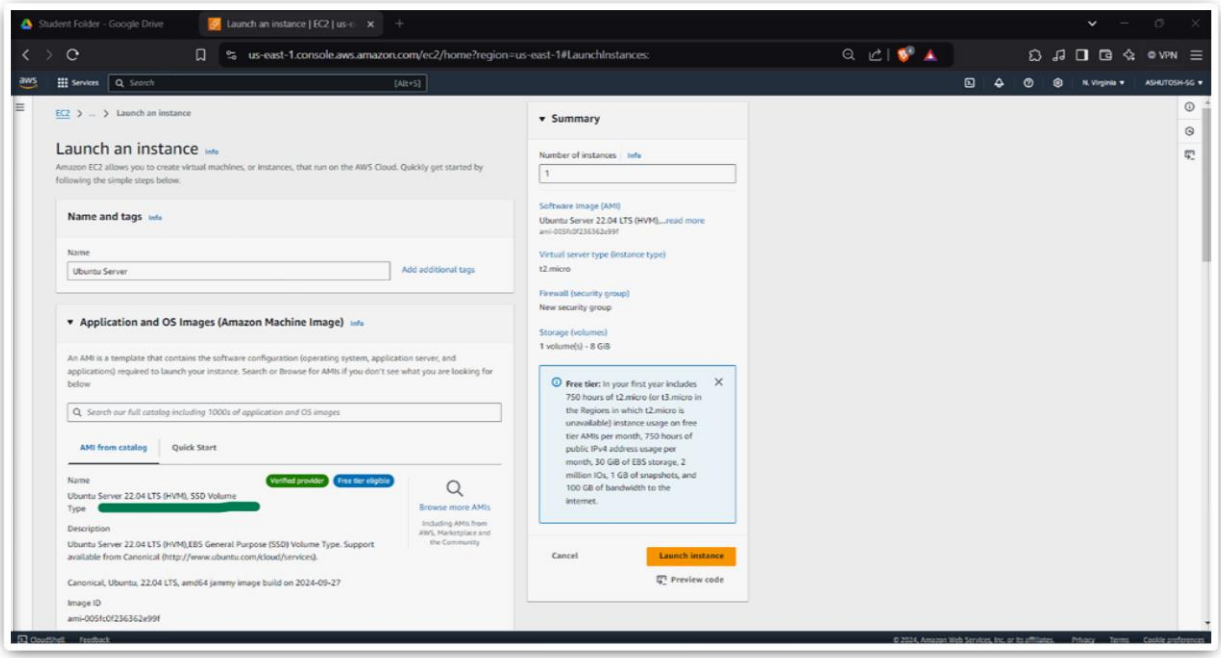
1. Create an Ubuntu EC2 instance and host a website on it which will display “Welcome to Cloud computing” message.
   Also copy some files from your machine to this instance using Winscp

Step 1: Launch an Ubuntu EC2 Instance

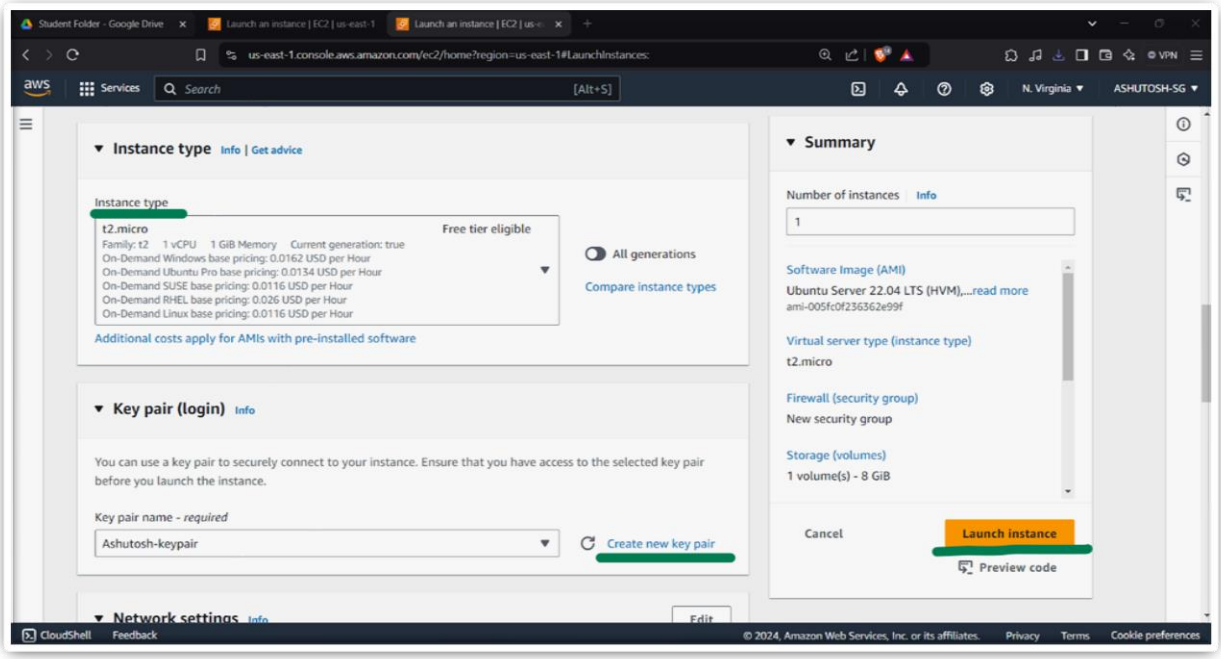
1) Navigate to **EC2** service and click **Launch Instance**.



2) Choose **Ubuntu Server 22.04 LTS** (or the latest LTS version) under the **Amazon Machine Image (AMI)**.



3) Select **t2.micro** instance type (eligible for the Free Tier) and click **Next**.
4) Configure the instance as needed and click **Review and Launch**.
5) On the **Key Pair** page, choose an existing key pair or create a new one (download the .pem file as it's required to access your instance).
6) Click **Launch Instances** and wait until the instance status changes to "running."

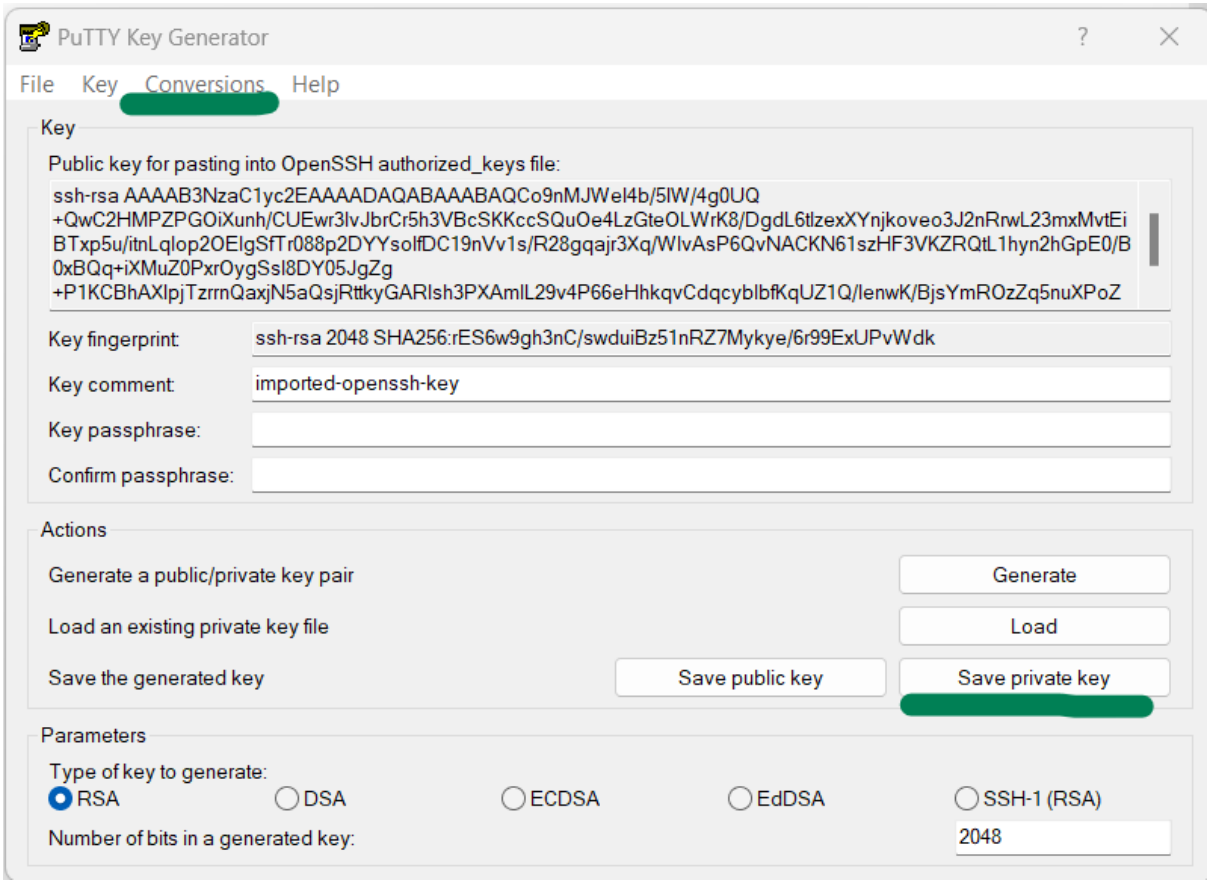


Step 2: Connect to Your EC2 Instance Using PuTTY

7) Since PuTTY doesn't accept .pem & Pkt files directly, you'll first need to convert it to a .ppk format:

Convert the .pem Key to .ppk Using PuTTYgen

Open **PuTTYgen** (part of the PuTTY installation package).
Click **Load** and select your .pem file.
PuTTYgen will load and convert the file. Once it's done, click **Save private key** (you may get a warning about saving without a passphrase; click **Yes** to proceed).
Save the converted file as a .ppk file.



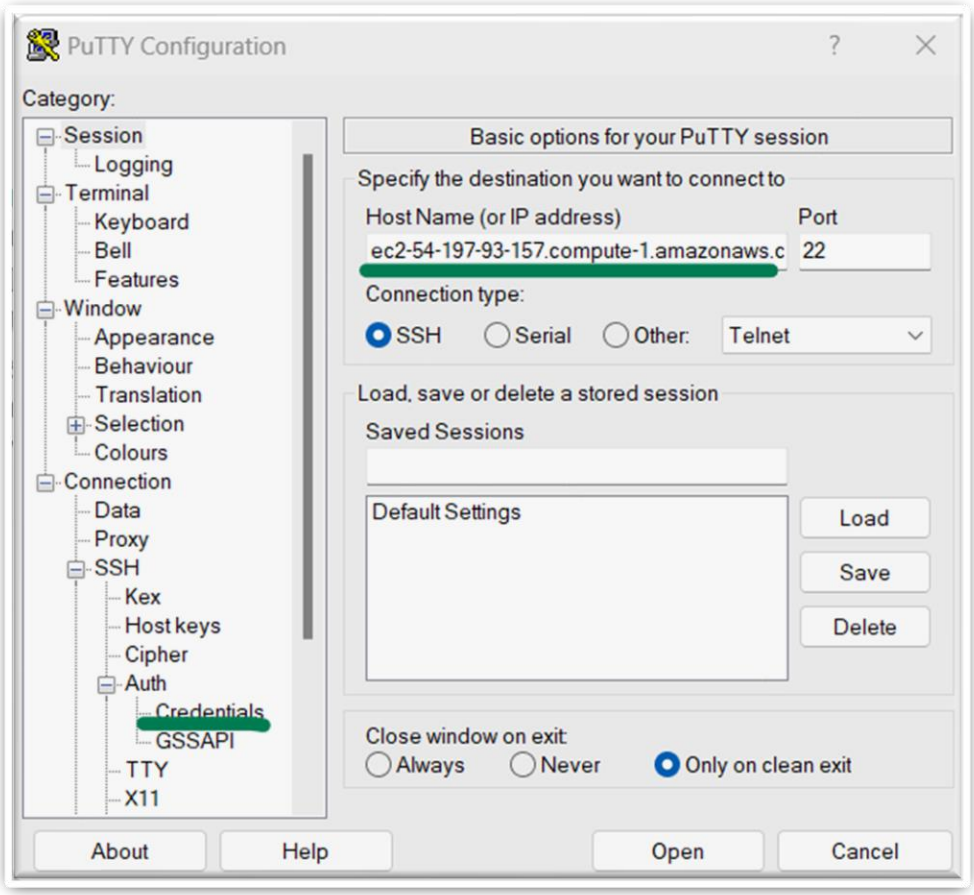
Connect to the Instance

1. Open **PuTTY** and enter your **EC2 instance's public DNS or IP** in the **Host Name (or IP address)** field.

2. Under **Connection > SSH > Auth**, browse and select the .ppk file you saved.

3. Go back to the **Session** tab and click **Open** to connect.

4. When prompted for the username, enter ubuntu.



Step 3: Install Apache Web Server

sudo apt update
sudo apt install apache2 -y
sudo systemctl start apache2
sudo systemctl enable apache2

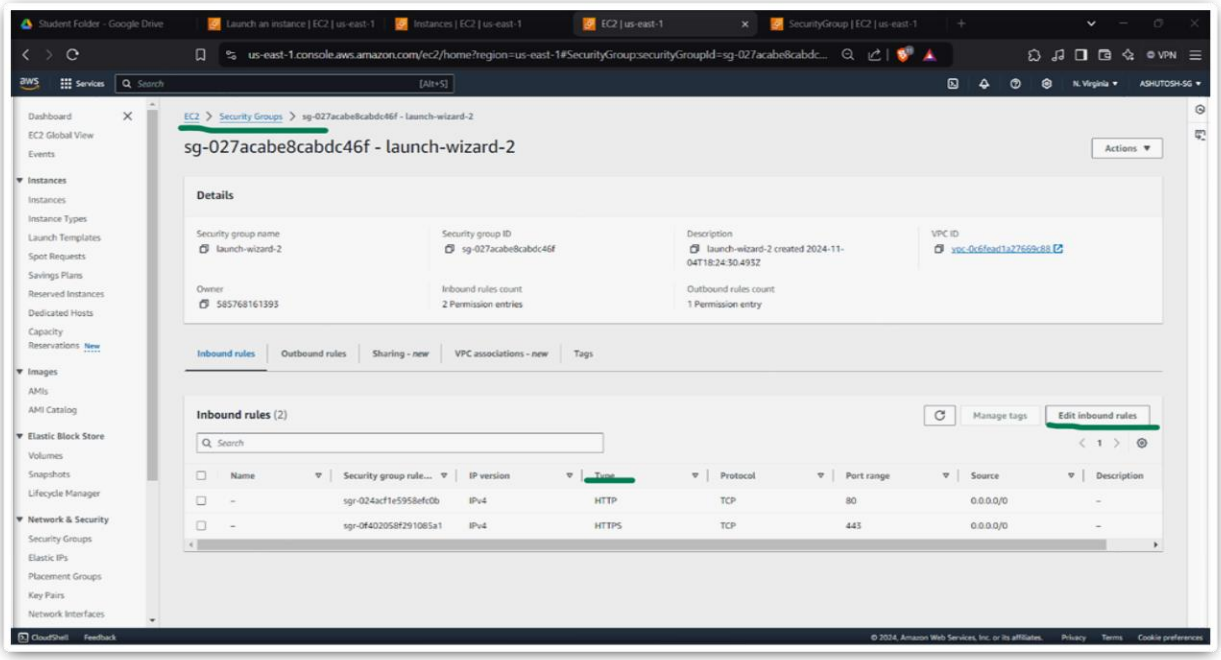
Step 4: Create a Simple HTML Page

sudo nano /var/www/html/index.html

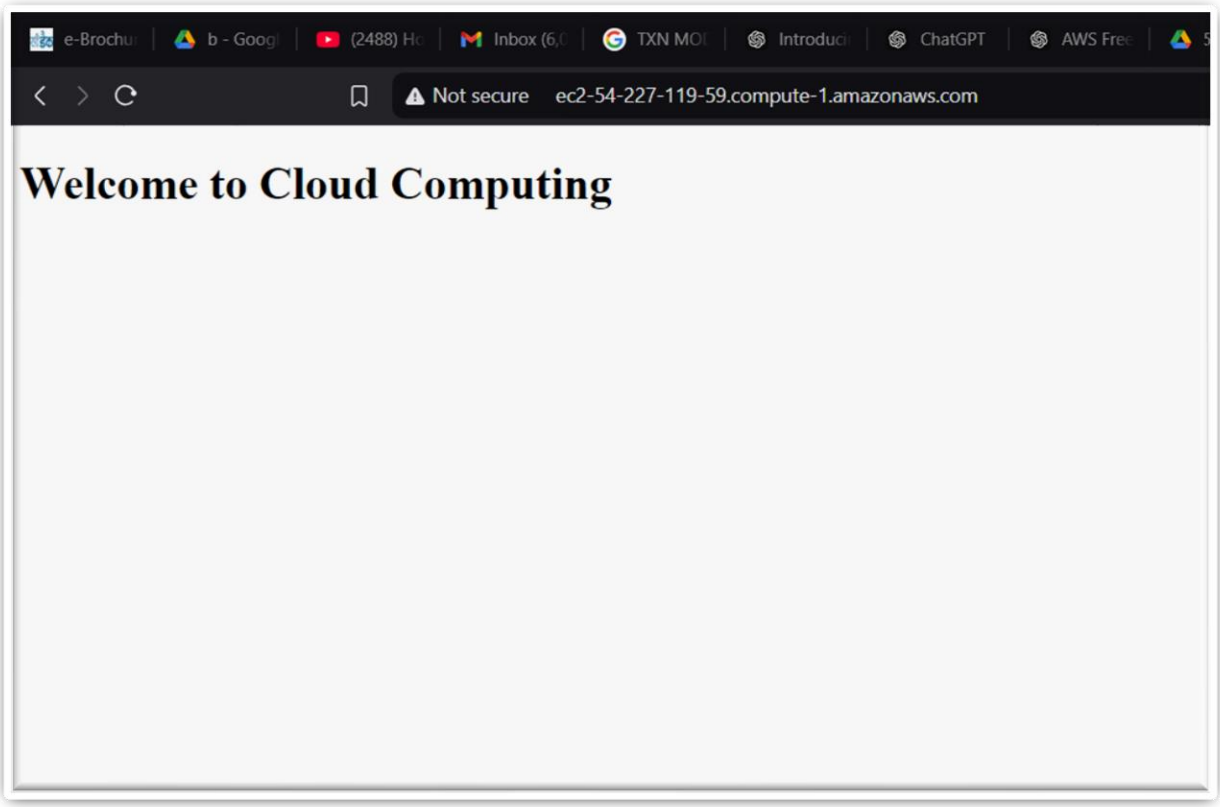
```
<!DOCTYPE html>
<html>
<head>
   <title>Welcome Page</title>
</head>
<body>
   <h1>Welcome to Cloud Computing</h1>
</body>
</html>
```

Step 5: Configure Security Group for HTTP Access

1. In the **EC2 Dashboard**, select your instance.
2. Under **Security**, click the **Security Group** link.
3. Edit inbound rules, adding:
    - **Type**: HTTP
    - **Protocol**: TCP
    - **Port**: 80
    - **Source**: Anywhere (0.0.0.0/0)
4. Save the rule



Open your instance's public IP or DNS in a browser to see your message.



Step 7: Transfer Files with WinSCP

1. Open **WinSCP** and create a new session.
2. Configure the session with:
    - **File Protocol**: SFTP
    - **Host Name**: Your instance's public IP/DNS
    - **Port Number**: 22
    - **User Name**: ubuntu
    - **Private Key File**: Select your .ppk file.

    Configure the Private Key File:
    - Click on **Advanced…** in the bottom left corner of the WinSCP Login window.
    - In the **Advanced Site Settings** dialog, go to **SSH** > **Authentication** on the left sidebar.
    - Under **Authentication parameters**, find **Private key file** and click **Browse…**.
    - Navigate to the location where you saved your **.ppk** file (the converted key from your .pem file).
    - Select the **.ppk** file and click **Open**.
    - **Save and Connect**:
    - Click **OK** to close the Advanced Site Settings.
    - Optionally, click **Save** on the main WinSCP Login screen to save

your settings for future connections.
    - Finally, click **Login** to connect to your EC2 instance
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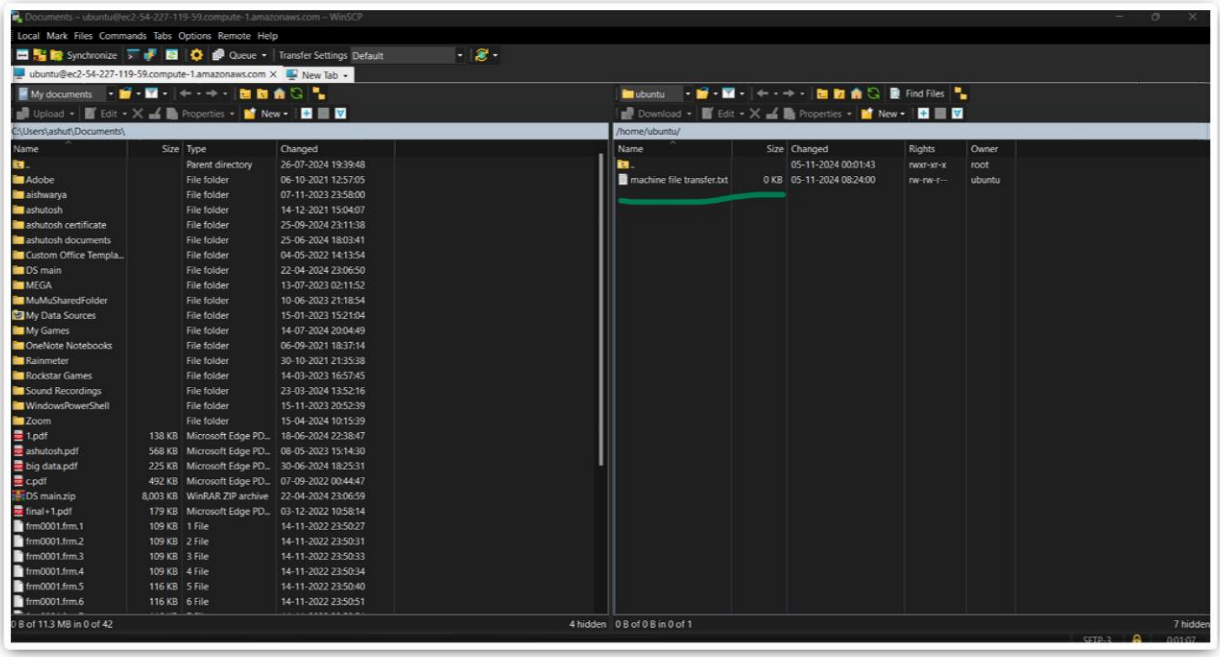
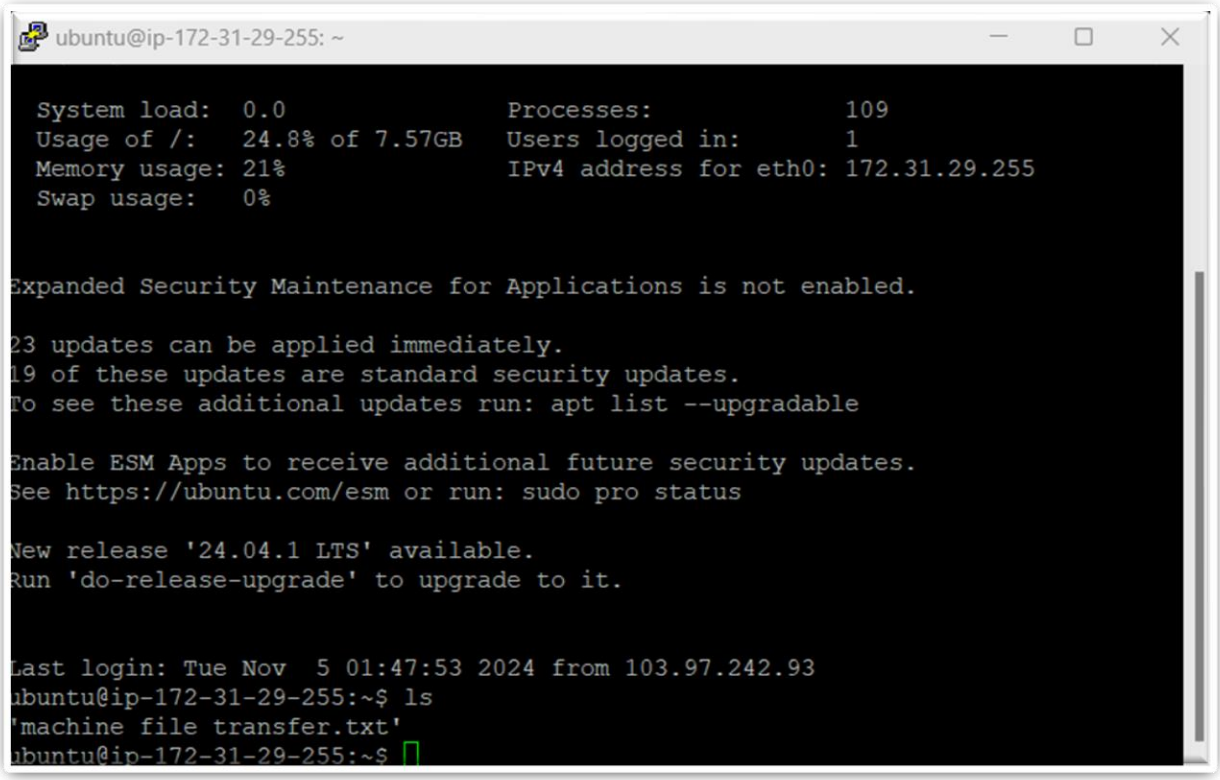
3. Click **Login** and **Yes** if prompted about the host key.

Verify Security Group Inbound Rules

Ensure that your EC2 instance's **Security Group** allows inbound SSH traffic:

- Go to the **EC2 Dashboard** in AWS, select **Instances**, and click on your instance.
- Under **Description**, locate the **Security groups** and click the Security Group ID.
- In **Inbound rules**, make sure there's an entry for **SSH** with **Port 22** open to **My IP** or **Anywhere (0.0.0.0/0)** (for unrestricted access).
- Save the changes if you added or modified the rule.




ubuntu@ip-172-31-29-255: ~
System load: 0.0 Processes: 109
Usage of /: 24.8% of 7.57GB Users logged in: 1
Memory usage: 21% IPv4 address for eth0: 172.31.29.255
Swap usage: 0%
Expanded Security Maintenance for Applications is not enabled.
23 updates can be applied immediately.
19 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
New release '24.04.1 LTS' available.
Run 'do-release-upgrade' to upgrade to it.
Last login: Tue Nov 5 01:47:53 2024 from 103.97.242.93
ubuntu@ip-172-31-29-255:~$ ls
'machine file transfer.txt'
ubuntu@ip-172-31-29-255:~$