Name : Mohammad Faraz M Khan

Enrollment No. : A70405219039

Course : B.Tech (CSE) Sem-7

Subject : Cloud Computing Lab

Experiment : 5

Problem Statement

1. Create an EC2 instance with Linux installed on it
2. Shift Files from S3 to EC2
3. Demonstrate working of static and dynamic websites through EC2
4. Shift files from EC2 to S3

Results :

1.   <u>**Create an EC2 instance with linux installed on it**</u>

<u>THEORY</u>

• **What is an EC2 instance?**

The Amazon Web Services (AWS) Cloud offers scalable computing power through Amazon Elastic Compute Cloud (Amazon EC2). You can create and deploy apps more quickly by using Amazon EC2 as you won't need to make an upfront hardware investment. With Amazon EC2, you may start as many or as few virtual servers as you want, set up networking and security settings, and control storage. You don't need to predict traffic since Amazon EC2 lets you scale up or down to manage shifting demands or popularity spikes.

Features of EC2:
- Virtual computing environments, known as instances
- Amazon Machine Images (AMIs), which are pre-configured templates for your instances that bundle the components you require for your server (including the operating system and additional software)
- The various CPU, memory, storage, and networking settings for your instances are referred to as instance types.
- Using key pairs, safeguard your instances' login information (AWS stores the public key, and you store the private key in a secure place)
- Instance store volumes are storage volumes for transient data that disappears when you suspend, hibernate, or terminate your instance.
- Persistent storage volumes for your data using Amazon Elastic Block Store (Amazon EBS), known as Amazon EBS volumes
- Your resources are physically located in several places, such as instances and Amazon EBS volumes, which are referred to as regions and availability zones.
- A firewall that lets you use security groups to determine the protocols, ports, and source IP ranges that may access your instances
- Elastic IP addresses, also known as static IPv4 addresses, are used in cloud computing.
- Your Amazon EC2 resources may include tags, or metadata, that you may add.
- Virtual private clouds are virtual networks that you may build that are conceptually separate from the rest of the AWS Cloud and that you can link to your personal network if you want to (VPCs)

Creating an EC2 instance

• EC2 instance successfully created
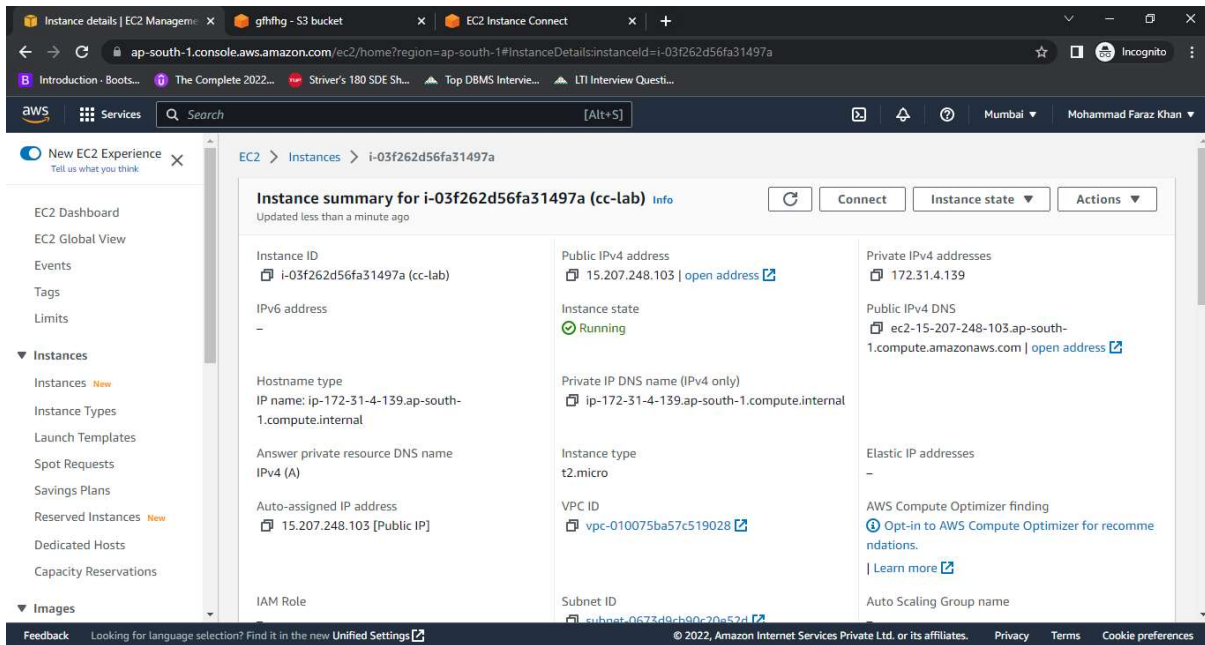
2. Shift files from S3 to EC2

THEORY

- An object storage service called Amazon Simple Storage Service (Amazon S3) provides performance, security, and scalability that are unmatched in the market. For a variety of use cases, including data lakes, websites, mobile apps, backup and restore, archives, business applications, IoT devices, and big data analytics, customers of all sizes and sectors may use Amazon S3 to store and preserve any quantity of data. In order to satisfy your unique business, organisational, and regulatory requirements, Amazon S3 offers management options that allow you to optimise, organise, and customise access to your data.

- Before shifting the files we will have to provide the access of S3 bucket to the EC2 instance. This can be given by using the IAM roles.
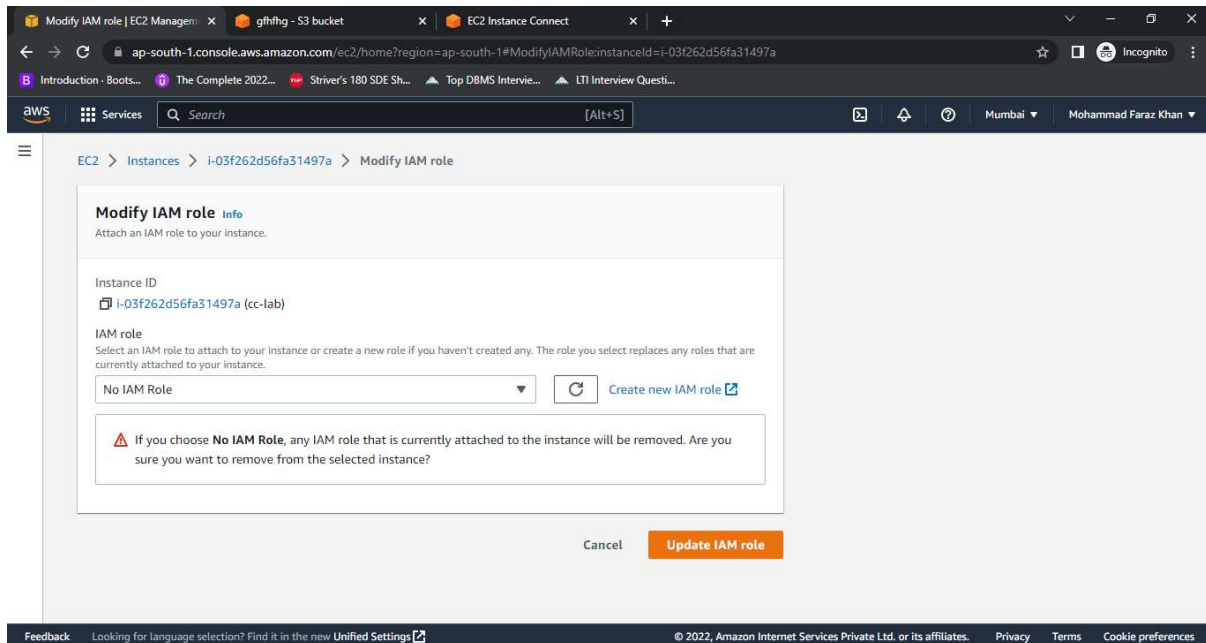
- After providing the access, we will have to setup our Virtual Machine (EC2 Instance) so we will run the following commands:

sudo su yum
update -y yum
install httpd -y

```
https://aws.amazon.com/amazon-linux-2/
13 package(s) needed for security, out of 16 available
Run "sudo yum update" to apply all updates.
[ec2-user@ip-172-31-35-120 ~]$ sudo su
[root@ip-172-31-35-120 ec2-user]# yum update -y
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
Resolving Dependencies
--> Running transaction check
---> Package cloud-init.noarch 0:19.3-45.amzn2 will be updated
---> Package cloud-init.noarch 0:19.3-46.amzn2 will be an update
---> Package ec2-net-utils.noarch 0:1.7.1-1.amzn2 will be updated
---> Package ec2-net-utils.noarch 0:1.7.2-1.amzn2 will be an update
---> Package glibc.x86_64 0:2.26-60.amzn2 will be updated
---> Package glibc.x86_64 0:2.26-61.amzn2 will be an update
---> Package glibc-all-langpacks.x86_64 0:2.26-60.amzn2 will be updated
---> Package glibc-all-langpacks.x86_64 0:2.26-61.amzn2 will be an update
---> Package glibc-common.x86_64 0:2.26-60.amzn2 will be updated
---> Package glibc-common.x86_64 0:2.26-61.amzn2 will be an update
---> Package glibc-locale-source.x86_64 0:2.26-60.amzn2 will be updated
---> Package glibc-locale-source.x86_64 0:2.26-61.amzn2 will be an update
---> Package glibc-minimal-langpack.x86_64 0:2.26-60.amzn2 will be updated
---> Package glibc-minimal-langpack.x86_64 0:2.26-61.amzn2 will be an update
---> Package kernel.x86_64 0:5.10.147-133.644.amzn2 will be installed
---> Package kernel-tools.x86_64 0:5.10.144-127.601.amzn2 will be updated
---> Package kernel-tools.x86_64 0:5.10.147-133.644.amzn2 will be an update
---> Package libcrypt.x86_64 0:2.26-60.amzn2 will be updated
---> Package libcrypt.x86_64 0:2.26-61.amzn2 will be an update
---> Package tzdata.noarch 0:2022d-1.amzn2.0.1 will be updated
---> Package tzdata.noarch 0:2022e-1.amzn2.0.1 will be an update
---> Package vim-common.x86_64 2:8.2.5172-1.amzn2.0.1 will be updated
---> Package vim-common.x86_64 2:9.0.475-1.amzn2.0.1 will be an update
```

i-0a72397159f63ce1a (cc-lab)   ✕

PublicIPs: 13.233.90.83   PrivateIPs: 172.31.35.120

```
Complete!
[root@ip-172-31-35-120 ec2-user]# yum install httpd -y
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
amzn2-core                                                                      | 3.7 kB  00:00:00
Resolving Dependencies
--> Running transaction check
---> Package httpd.x86_64 0:2.4.54-1.amzn2 will be installed
--> Processing Dependency: httpd-tools = 2.4.54-1.amzn2 for package: httpd-2.4.54-1.amzn2.x86_64
--> Processing Dependency: httpd-filesystem = 2.4.54-1.amzn2 for package: httpd-2.4.54-1.amzn2.x86_64
--> Processing Dependency: system-logos-httpd for package: httpd-2.4.54-1.amzn2.x86_64
--> Processing Dependency: mod_http2 for package: httpd-2.4.54-1.amzn2.x86_64
--> Processing Dependency: httpd-filesystem for package: httpd-2.4.54-1.amzn2.x86_64
--> Processing Dependency: /etc/mime.types for package: httpd-2.4.54-1.amzn2.x86_64
--> Processing Dependency: libaprutil-1.so.0()(64bit) for package: httpd-2.4.54-1.amzn2.x86_64
--> Processing Dependency: libapr-1.so.0()(64bit) for package: httpd-2.4.54-1.amzn2.x86_64
--> Running transaction check
---> Package apr.x86_64 0:1.7.0-9.amzn2 will be installed
---> Package apr-util.x86_64 0:1.6.1-5.amzn2.0.2 will be installed
--> Processing Dependency: apr-util-bdb(x86-64) = 1.6.1-5.amzn2.0.2 for package: apr-util-1.6.1-5.amzn2.0.2.x86_64
---> Package generic-logos-httpd.noarch 0:18.0.0-4.amzn2 will be installed
---> Package httpd-filesystem.noarch 0:2.4.54-1.amzn2 will be installed
---> Package httpd-tools.x86_64 0:2.4.54-1.amzn2 will be installed
---> Package mailcap.noarch 0:2.1.41-2.amzn2 will be installed
---> Package mod_http2.x86_64 0:1.15.19-1.amzn2.0.1 will be installed
--> Running transaction check
---> Package apr-util-bdb.x86_64 0:1.6.1-5.amzn2.0.2 will be installed
--> Finished Dependency Resolution
```

i-0a72397159f63ce1a (cc-lab)   ✕

PublicIPs: 13.233.90.83   PrivateIPs: 172.31.35.120

Now, we will transfer the files to our instance using these commands

cd /var/www/html
wget <URL of the file to be shifted>

3. Demonstrate working of static and dynamic websites through EC2

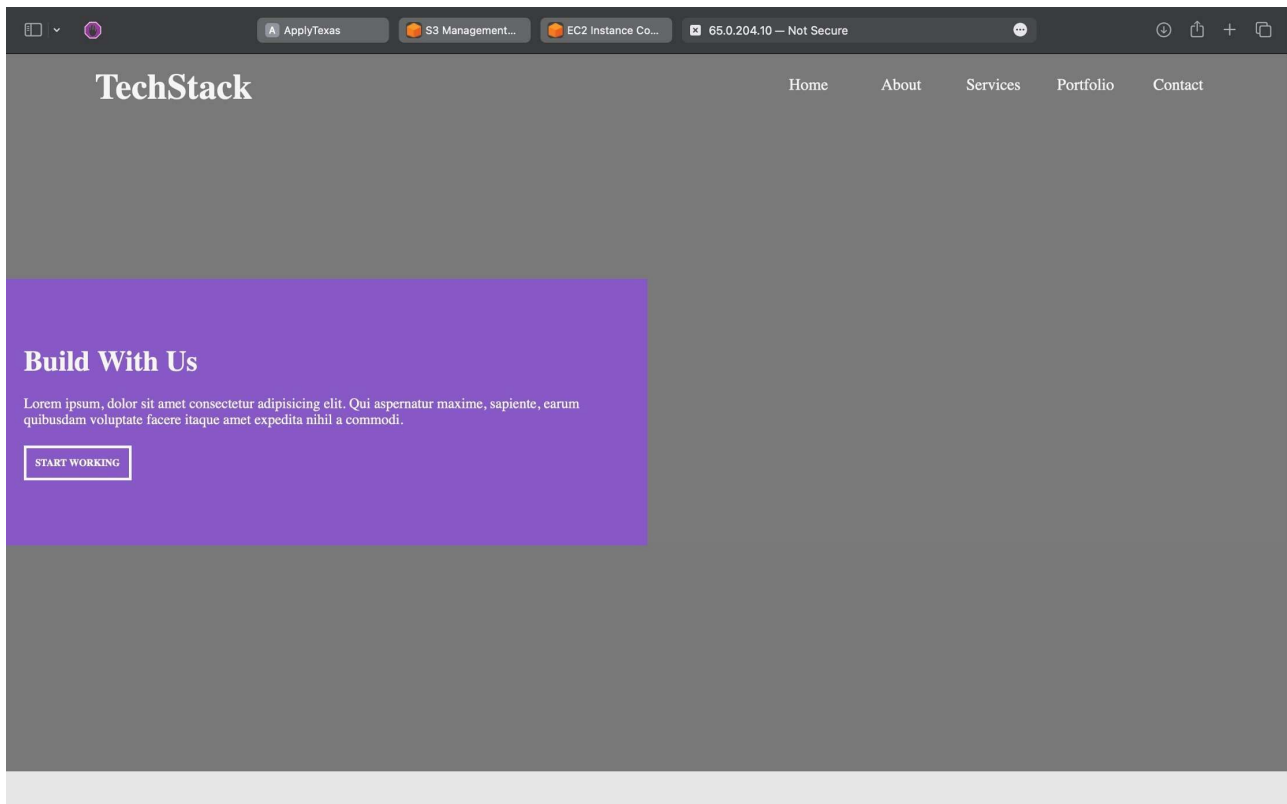The process of accessing the static and dynamic websites is same and consists of only a few steps

1. Enter the command "service httpd start" in the CLI of amazon EC2 instance
2. In a new webpage enter the following :
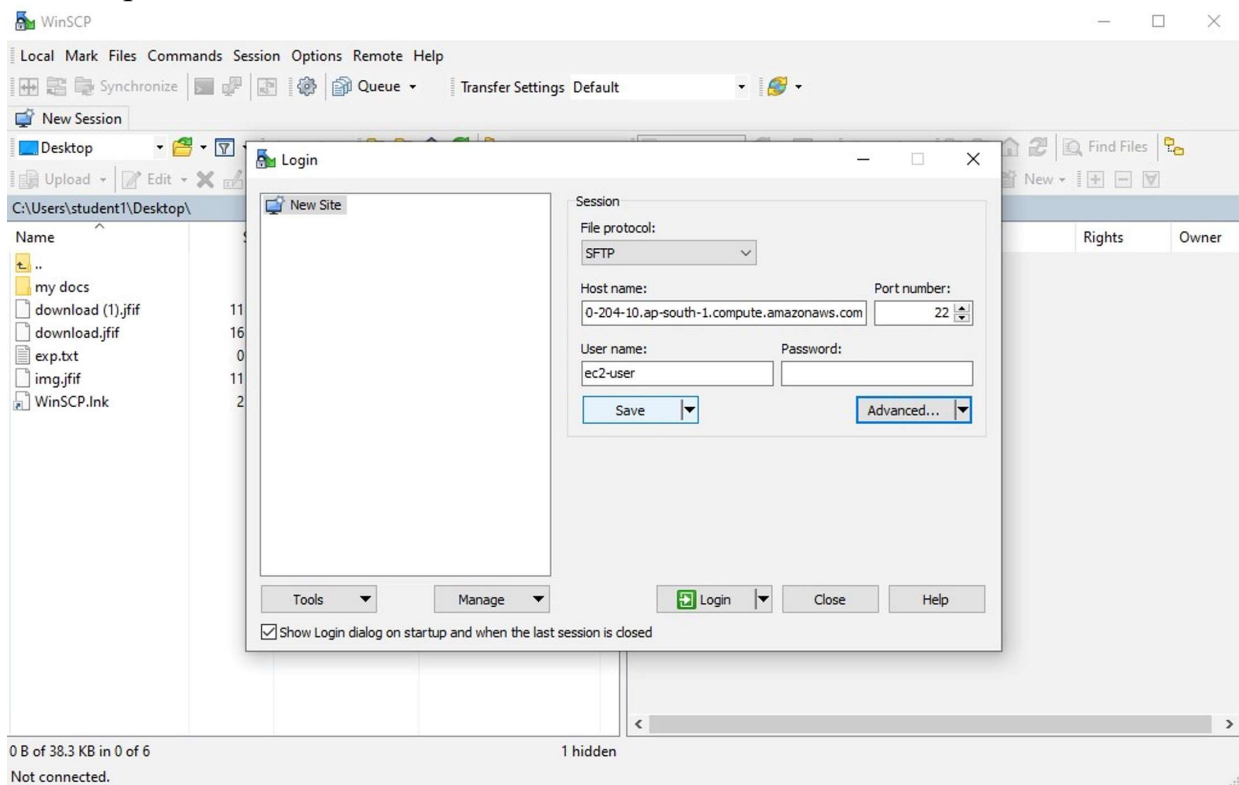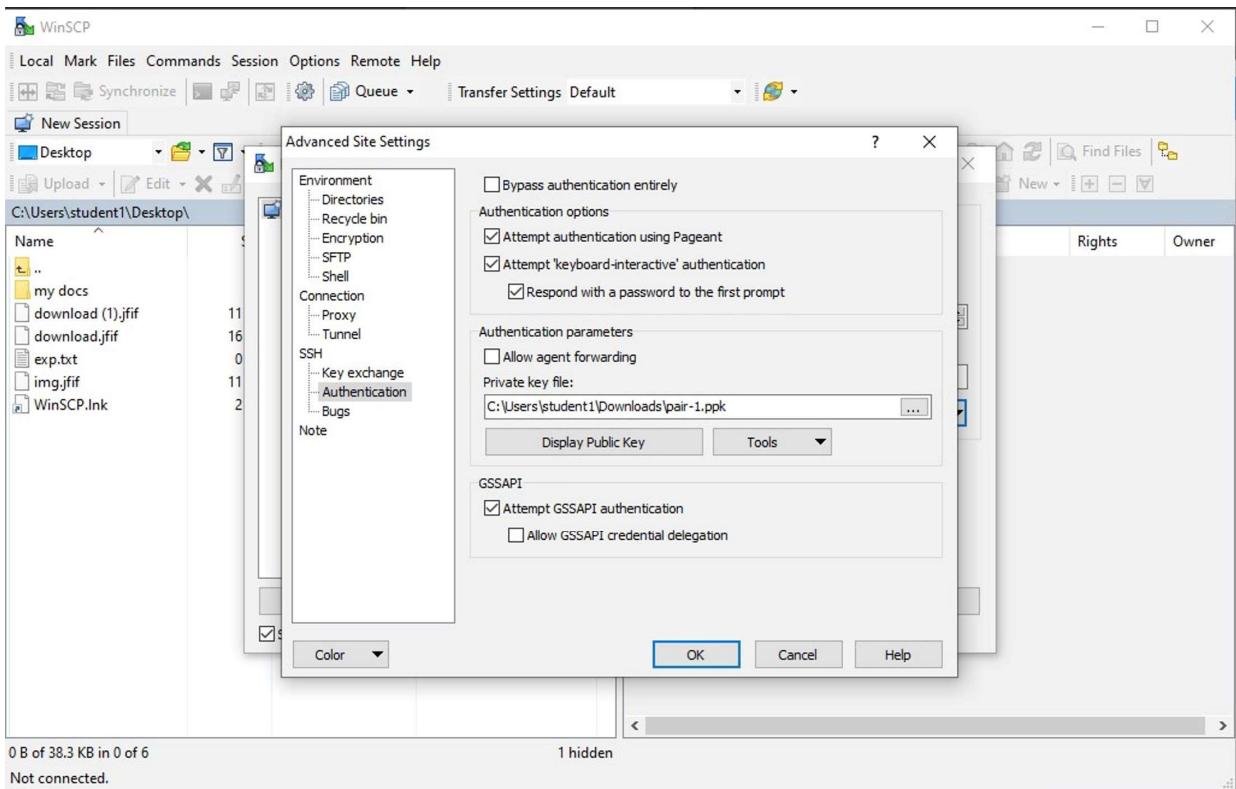   http://<public-ip of ec2 instance>

3. **Shift files from EC2 to S3**

- Before starting this process we will need to install a software called "WinSCP"onto the machine to add a file to your EC2 instance from local machine

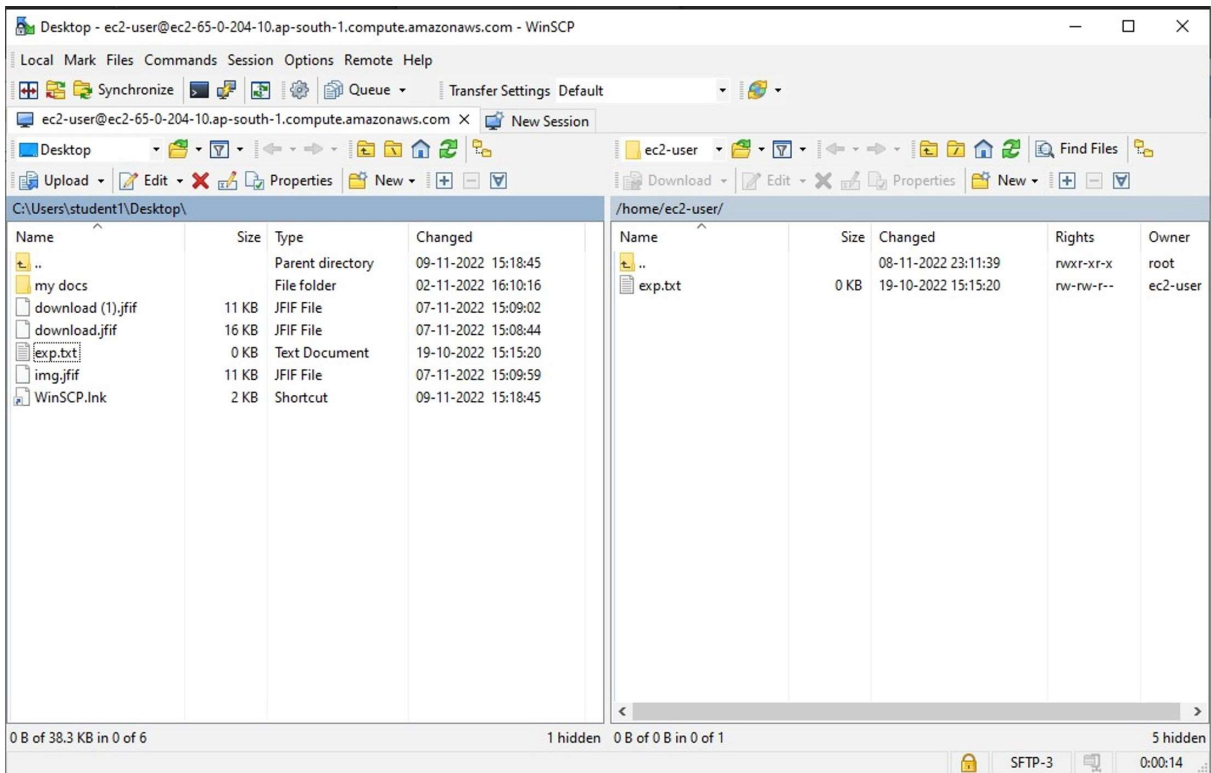- After installing it perform the following steps
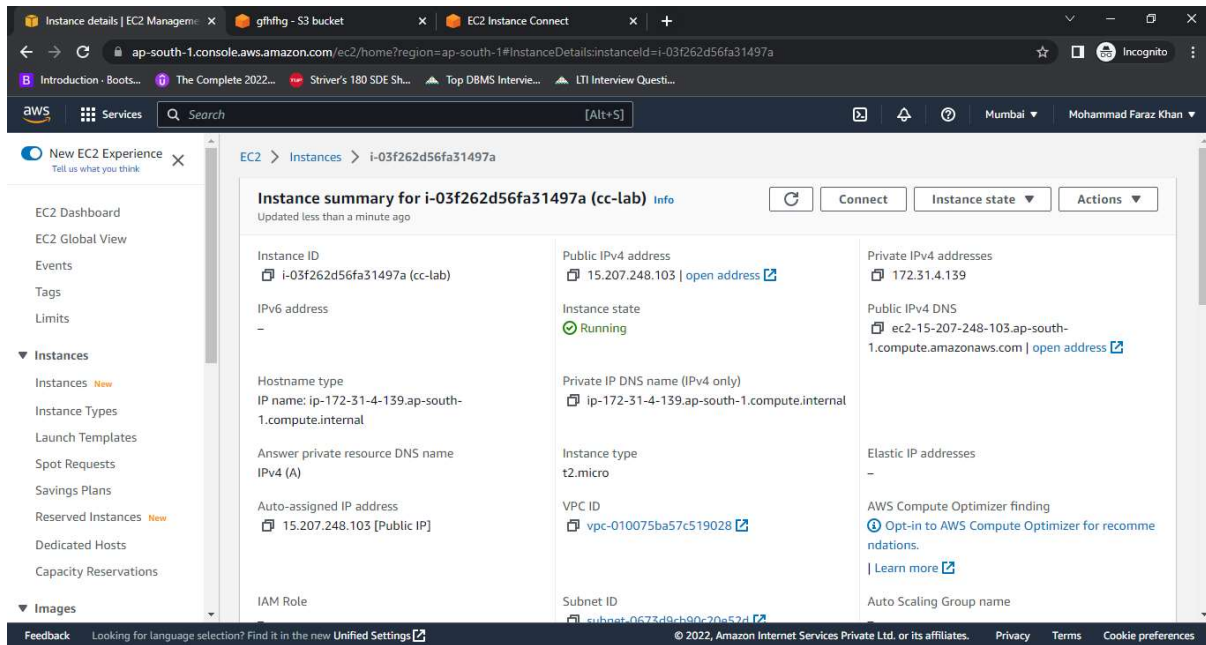
- Upload a file from local machine to EC2 instance

- Files successfully transferred to EC2 instance from local machine

- Enter the following command to transfer the files from EC2 to S3 sudo su

aws s3 cp 'filename' <destination>