

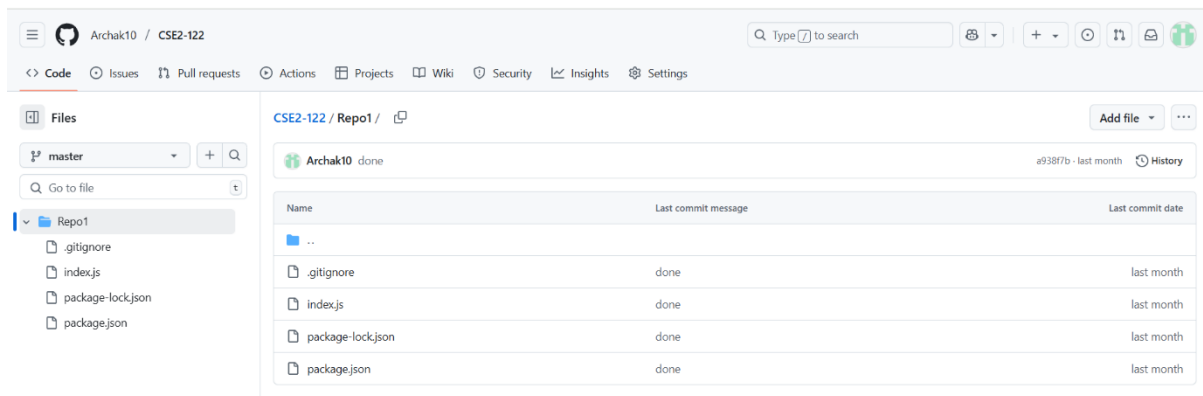
Assignment No: 9

Problem Statement: Deploy a project from GitHub to EC2.

Solution:

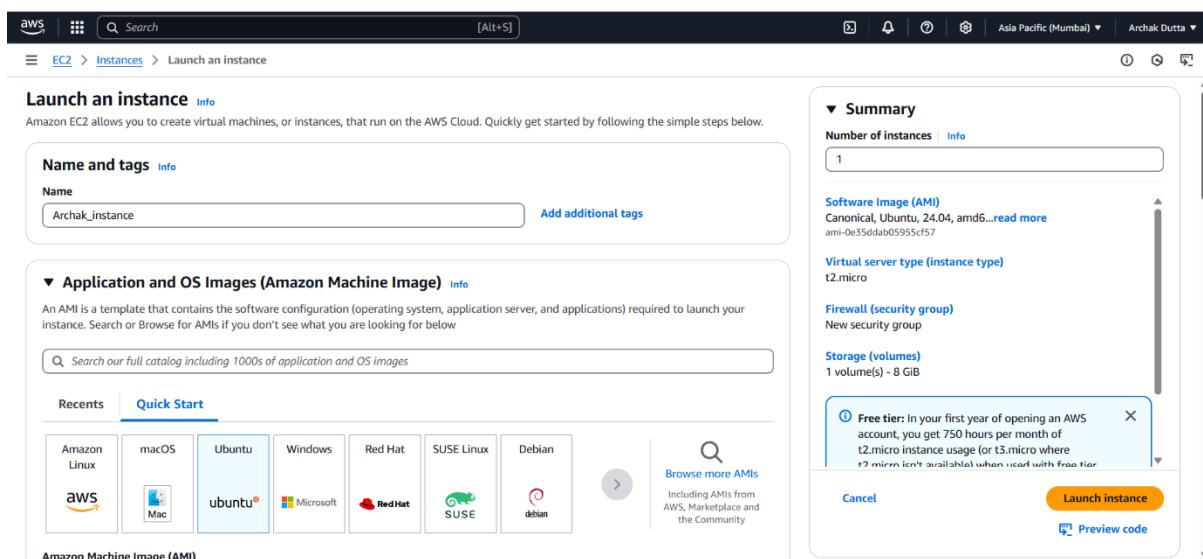
To deploy a project from GitHub to EC2, the steps are-

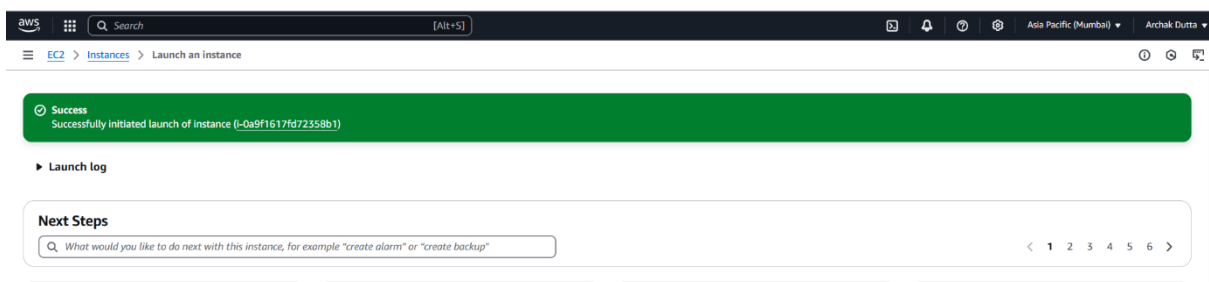
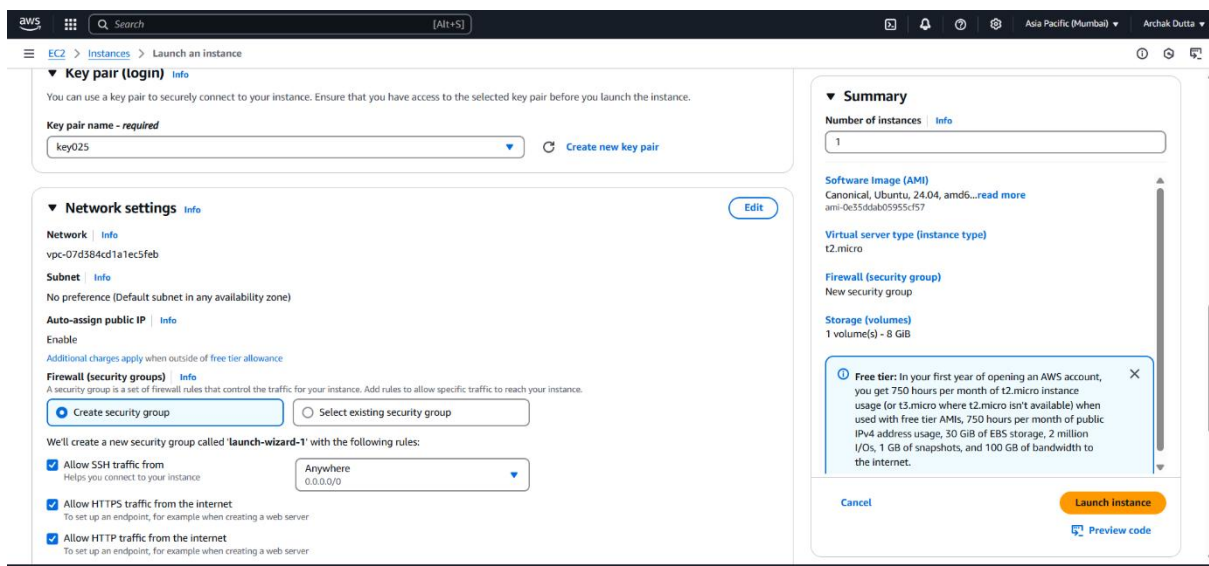
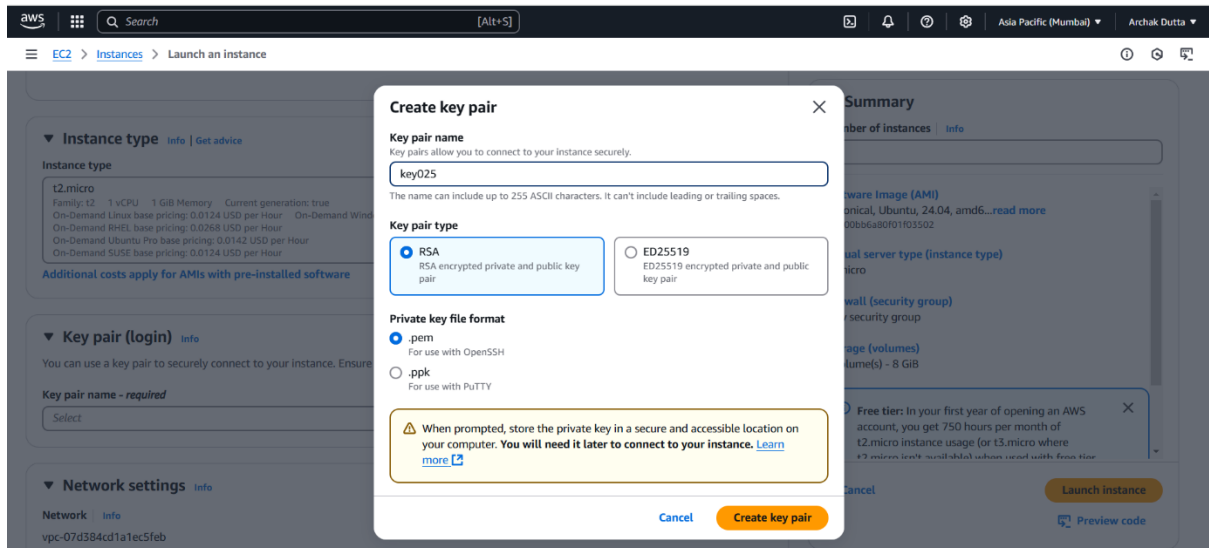
1. At first, we need to upload the required project in GitHub.



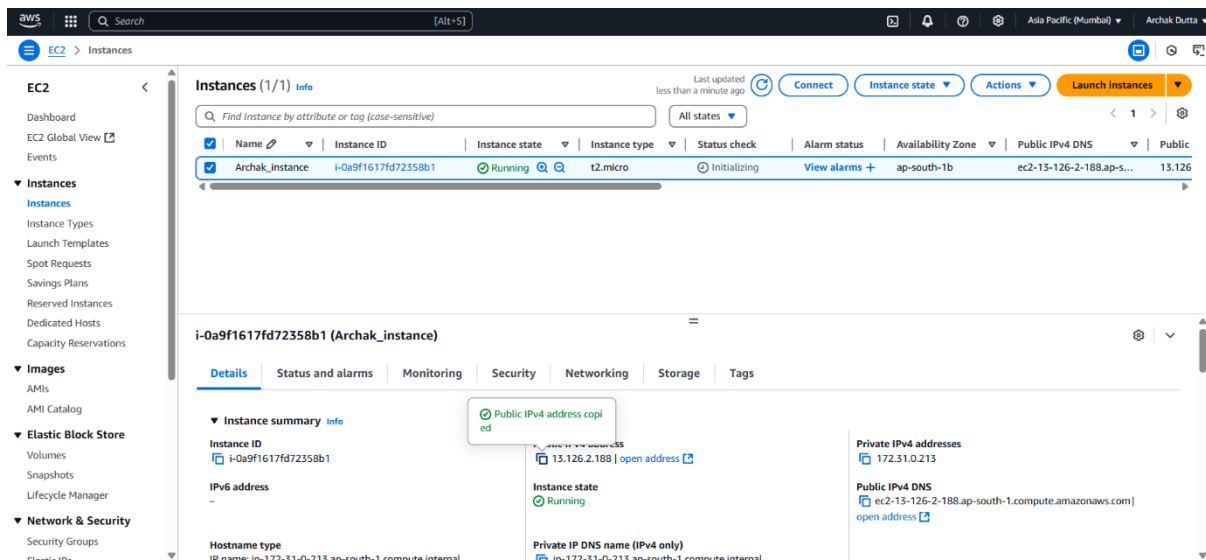
2. Login into the AWS console and open EC2 cloud service. Then follow the steps below-

- Click on launch instance and provide a name to it. Select the operating system as Ubuntu.
- Create a new key pair and under network settings check all the three boxes to allow SSH, HTTP and HTTPS traffics and finally click on launch instances.

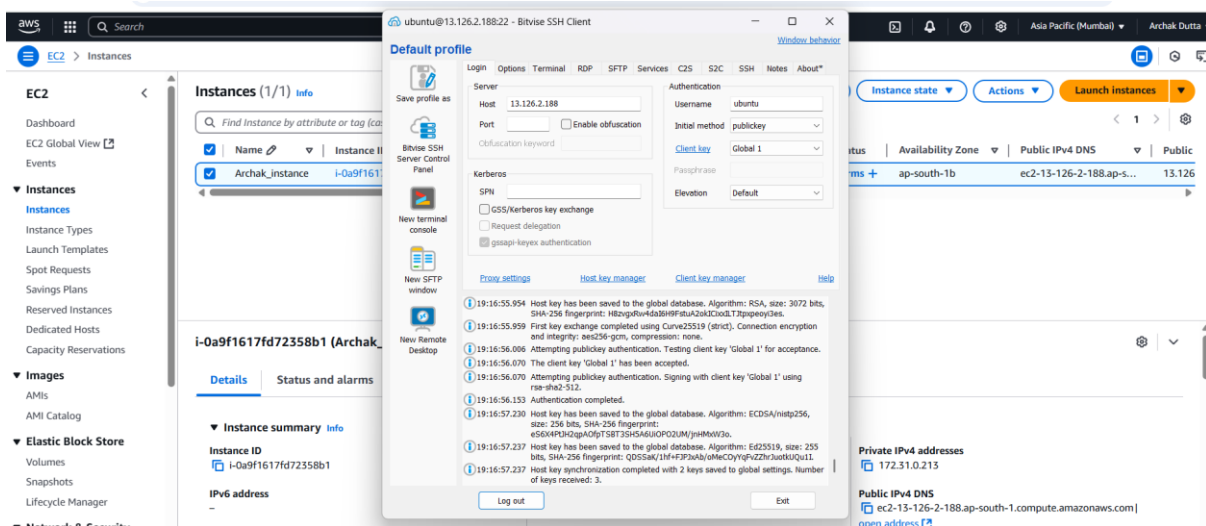
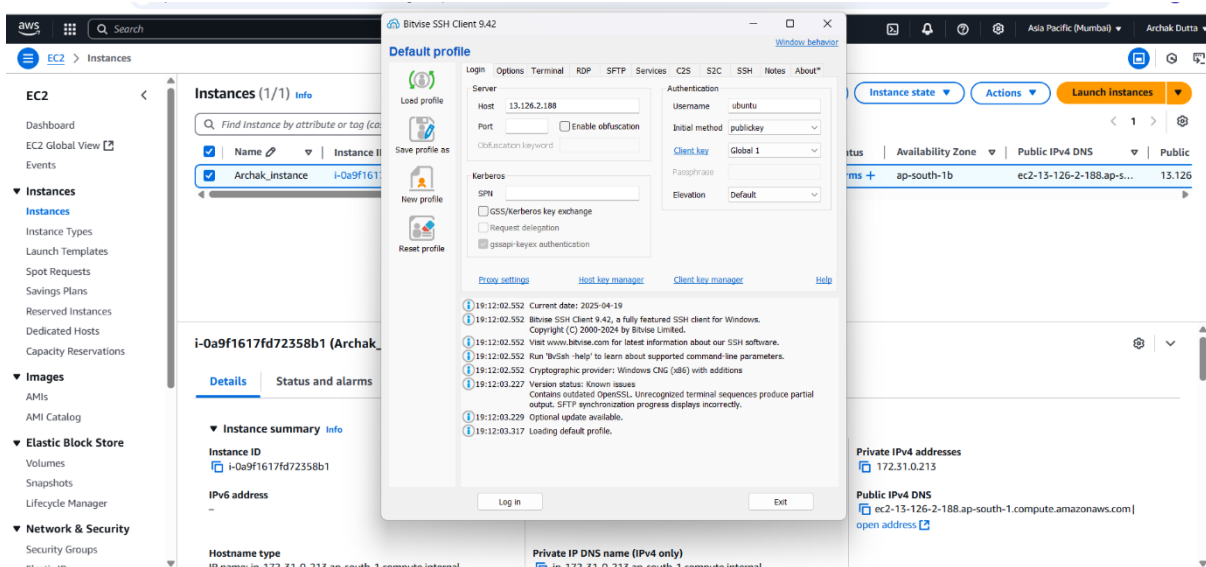




3. Now open the newly created instance in the EC2 and copy the public IPv4 address from the details section.



4. Open the Bitwise SSH Client and paste the IP address in host section. Thereafter set up authentication using the created key pair and login into the bitwise server. After logging in, open the New terminal console.



5. Then, execute **sudo apt-get update** and **sudo apt-get upgrade** in the bitwise terminal.

```
ubuntu@13.126.2.188:22 - Bitwise xterm - ubuntu@ip-172-31-0-213: ~
The list of available updates is more than a week old.
To check for new updates run: sudo apt update

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.

ubuntu@ip-172-31-0-213:~$ pwd
/home/ubuntu
ubuntu@ip-172-31-0-213:~$ sudo apt-get update
Get:44 http://security.ubuntu.com/ubuntu noble-security/main amd64 c-n-f Metadata [7068 B]
Get:45 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Packages [830 kB]
Get:46 http://security.ubuntu.com/ubuntu noble-security/universe Translation-en [181 kB]
Get:47 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Components [52.2 kB]
Get:48 http://security.ubuntu.com/ubuntu noble-security/universe amd64 c-n-f Metadata [17.0 kB]
Get:49 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Packages [859 kB]
Get:50 http://security.ubuntu.com/ubuntu noble-security/restricted Translation-en [175 kB]
Get:51 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Components [212 B]
Get:52 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 c-n-f Metadata [468 B]
Get:53 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Packages [17.6 kB]
Get:54 http://security.ubuntu.com/ubuntu noble-security/multiverse Translation-en [3792 B]
Get:55 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Components [208 B]
Get:56 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 c-n-f Metadata [380 B]
Fetched 33.5 MB in 24s (1395 kB/s)
Reading package lists... Done
ubuntu@ip-172-31-0-213:~$ sudo apt-get upgrade
```

6. Now execute **sudo apt-get install nginx** for setting up the web server and thereby execute **nginx -v** to view the installed edition.

```
ubuntu@13.126.2.188:22 - Bitwise xterm - ubuntu@ip-172-31-0-213: ~
Scanning linux images...

Running kernel seems to be up-to-date.

Restarting services...
systemctl restart multipathd.service packagekit.service polkit.service udisks2.service

Service restarts being deferred:
systemctl restart ModemManager.service
/etc/needrestart/restart.d/dbus.service
systemctl restart networkd-dispatcher.service
systemctl restart systemd-logind.service
systemctl restart unattended-upgrades.service

No containers need to be restarted.

User sessions running outdated binaries:
ubuntu @ session #2: sshd[1037]
ubuntu @ user manager service: systemd[1042]

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-0-213:~$ sudo apt-get install nginx
Reading package lists... Done
```

```
ubuntu @ user manager service: systemd[1042]

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-0-213:~$ nginx -v
nginx version: nginx/1.24.0 (Ubuntu)
ubuntu@ip-172-31-0-213:~$
```

7. Now load the NodeJS from the given address (version) using the command **curl -sL https://deb.nodesource.com/setup_18.x | sudo -E bash -**. Thereby install NodeJS using **sudo apt-get install nodejs**. Execute **node -v** to view the installed node version.

```
ubuntu@13.126.2.188:22 - Bitvise xterm - ubuntu@ip-172-31-0-213: ~
Scanning linux images...

Running kernel seems to be up-to-date.

Restarting services...

Service restarts being deferred:
/etc/needrestart/restart.d/dbus.service
systemctl restart networkd-dispatcher.service
systemctl restart systemd-logind.service
systemctl restart unattended-upgrades.service

No containers need to be restarted.

User sessions running outdated binaries:
ubuntu @ session #2: sshd[1037]
ubuntu @ user manager service: systemd[1042]

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-0-213:~$ nginx -v
nginx version: nginx/1.24.0 (Ubuntu)
ubuntu@ip-172-31-0-213:~$ curl -sL https://deb.nodesource.com/setup_18.x | sudo -E bash -
2025-04-19 14:09:26 - Installing pre-requisites
2025-04-19 14:09:33 - Repository configured successfully.
2025-04-19 14:09:33 - To install Node.js, run: apt-get install nodejs -y
2025-04-19 14:09:33 - You can use N|solid Runtime as a node.js alternative
2025-04-19 14:09:33 - To install N|solid Runtime, run: apt-get install nsolid -y

ubuntu@ip-172-31-0-213:~$ sudo apt install nodejs
```

```
No containers need to be restarted.

User sessions running outdated binaries:
ubuntu @ session #2: sshd[1037]
ubuntu @ user manager service: systemd[1042]

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-0-213:~$ node -v
v18.20.8
ubuntu@ip-172-31-0-213:~$
```

8. Now clone the GitHub repository from GitHub using **git clone** paste the link of the repository (<https://github.com/Archak10/CSE2-122.git>).

```
ubuntu@ip-172-31-0-213:~$ git clone https://github.com/Archak10/CSE2-122.git
Cloning into 'CSE2-122'...
remote: Enumerating objects: 7, done.
remote: Counting objects: 100% (7/7), done.
remote: Compressing objects: 100% (6/6), done.
remote: Total 7 (delta 0), reused 7 (delta 0), pack-reused 0 (from 0)
Receiving objects: 100% (7/7), 48.12 KiB | 8.02 MiB/s, done.
ubuntu@ip-172-31-0-213:~$ pwd
/home/ubuntu
ubuntu@ip-172-31-0-213:~$ ls
CSE2-122
```

```

CSE2-122
ubuntu@ip-172-31-0-213:~$ npm install
npm error code ENOENT
npm error syscall open
npm error path /home/ubuntu/package.json
npm error errno -2
npm error enoent Could not read package.json: Error: ENOENT: no such file or directory, open '/home/ubuntu/package.json'
npm error enoent This is related to npm not being able to find a file.
npm error enoent
npm error A complete log of this run can be found in: /home/ubuntu/.npm/_logs/2025-04-19T14_40_22_098Z-debug-0.log
ubuntu@ip-172-31-0-213:~$ sudo apt install npm
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Some packages could not be installed. This may mean that you have
requested an impossible situation or if you are using the unstable
distribution that some required packages have not yet been created

```

```

Depends: node-semver but it is not going to be installed
Depends: node-string-width but it is not going to be installed
Depends: node-strip-ansi but it is not going to be installed
Depends: node-tar but it is not going to be installed
Depends: node-validate-npm-package-name but it is not going to be installed
Depends: node-which but it is not going to be installed
Depends: nodejs:any
Recommends: node-tap but it is not going to be installed
E: Unable to correct problems, you have held broken packages.
ubuntu@ip-172-31-0-213:~$ npm -v
10.8.2
ubuntu@ip-172-31-0-213:~$

```

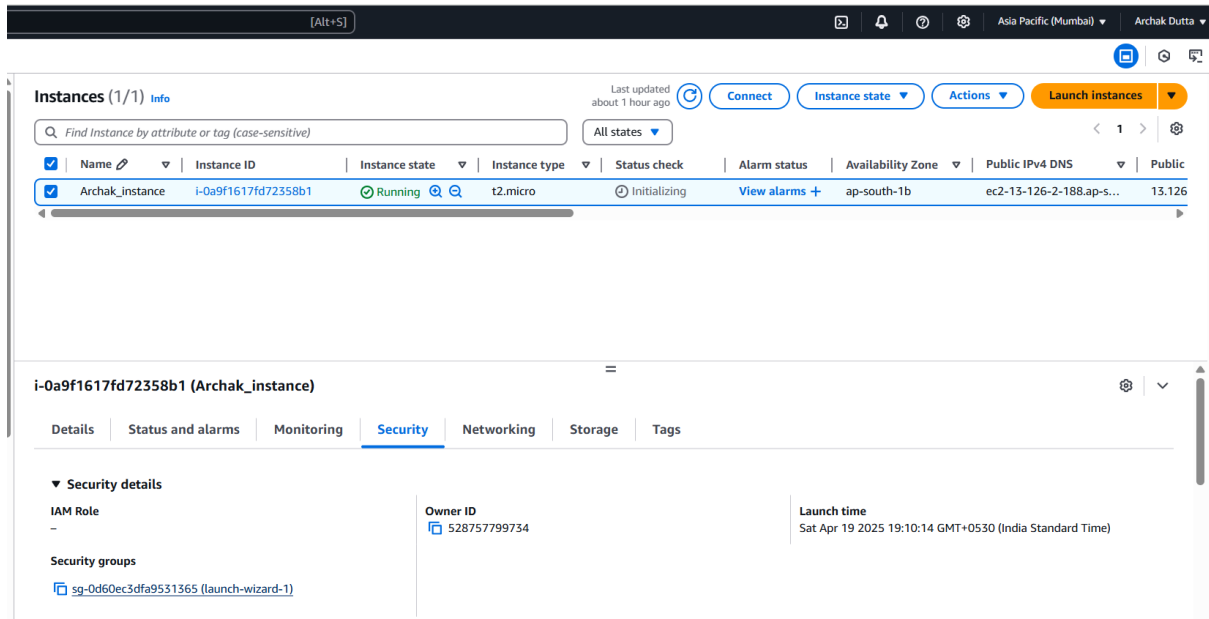
```

E: Unable to correct problems, you have held broken packages.
ubuntu@ip-172-31-0-213:~$ npm -v
10.8.2
ubuntu@ip-172-31-0-213:~$ node index.js
node:internal/modules/cjs/loader:1143
  throw err;
  ^
Error: Cannot find module '/home/ubuntu/index.js'
    at Module._resolveFilename (node:internal/modules/cjs/loader:1140:15)
    at Module._load (node:internal/modules/cjs/loader:981:27)
    at Function.executeUserEntryPoint [as runMain] (node:internal/modules/run_main:128:12)
    at node:internal/main/run_main_module:28:49 {
  code: 'MODULE_NOT_FOUND',
  requireStack: []
}

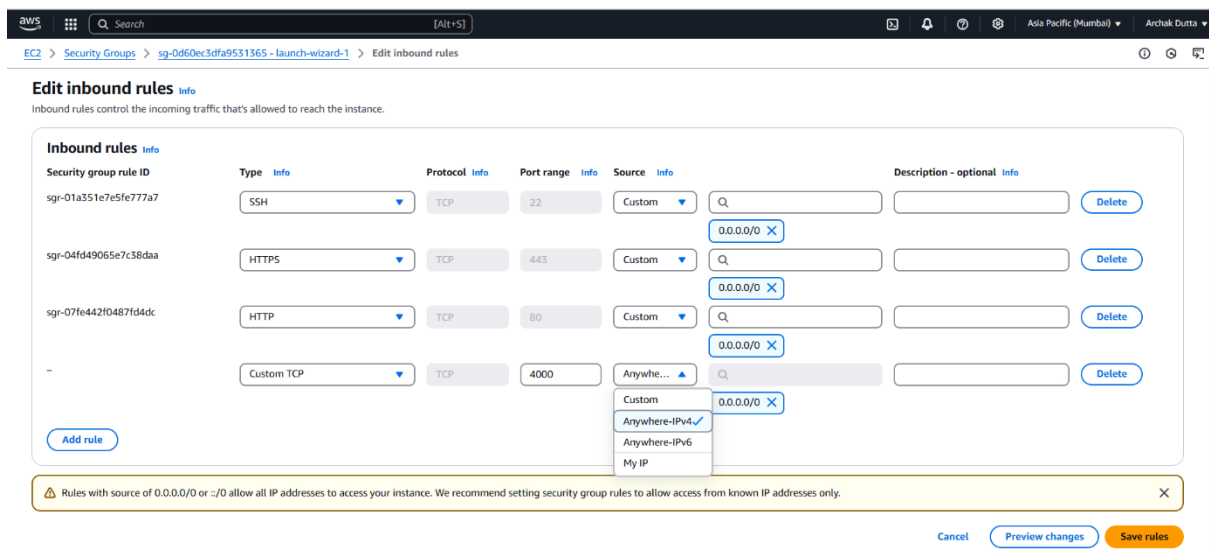
Node.js v18.20.8
ubuntu@ip-172-31-0-213:~$ ls
CSE2-122 package-lock.json
ubuntu@ip-172-31-0-213:~$ cd Repo1/
-bash: cd: Repo1/: No such file or directory
ubuntu@ip-172-31-0-213:~$ cd CSE2-122
ubuntu@ip-172-31-0-213:~/CSE2-122$ cd Repo1/
ubuntu@ip-172-31-0-213:~/CSE2-122/Repo1$ npm install
npm warn deprecated uuid@3.4.0: Please upgrade to version 7 or higher. Older versions may use Math.random() in certain circumstances, which is known to be problematic. See https://v8.dev/blog/math-random for details.

```

9. Now go back to the created EC2 instance and go to its security section. Then click on the link in the security groups and click on edit inbound rules.



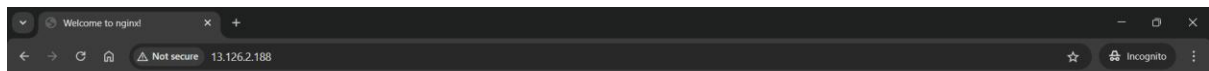
10. Click on add rule and select the type of new rule **custom TCP**, Port range **4000**, Source **0.0.0.0** or **anywhere IPv4** and click on save rules.



11. Open the Bitwise SSH Client terminal console and start the server using **node index.js** command.

```
ubuntu@ip-172-31-0-213:~/CSE2-122/Repo1$ ls
index.js  node_modules  package-lock.json  package.json
ubuntu@ip-172-31-0-213:~/CSE2-122/Repo1$ node index.js
Started server
```

12. Copy and paste the public IPv4 address of the created EC2 instance in an incognito web browser.



Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to nginx.org.
Commercial support is available at nginx.com.

Thank you for using nginx.

13. Now put the IP address as IP address:4000(13.126.2.188:4000).



The commands used in this assignment are as follows:

1. `sudo apt-get update`

2. `sudo apt-get upgrade`

3. `nginx -v`

4. `curl -sL https://deb.nodesource.com/setup_18.x | sudo -E bash -`

5. `sudo apt install nodejs`

6. `git clone https://github.com/Archak10/CSE2-122.git`

7. `npm install`

8. `npm -v`

9. `node index.js`