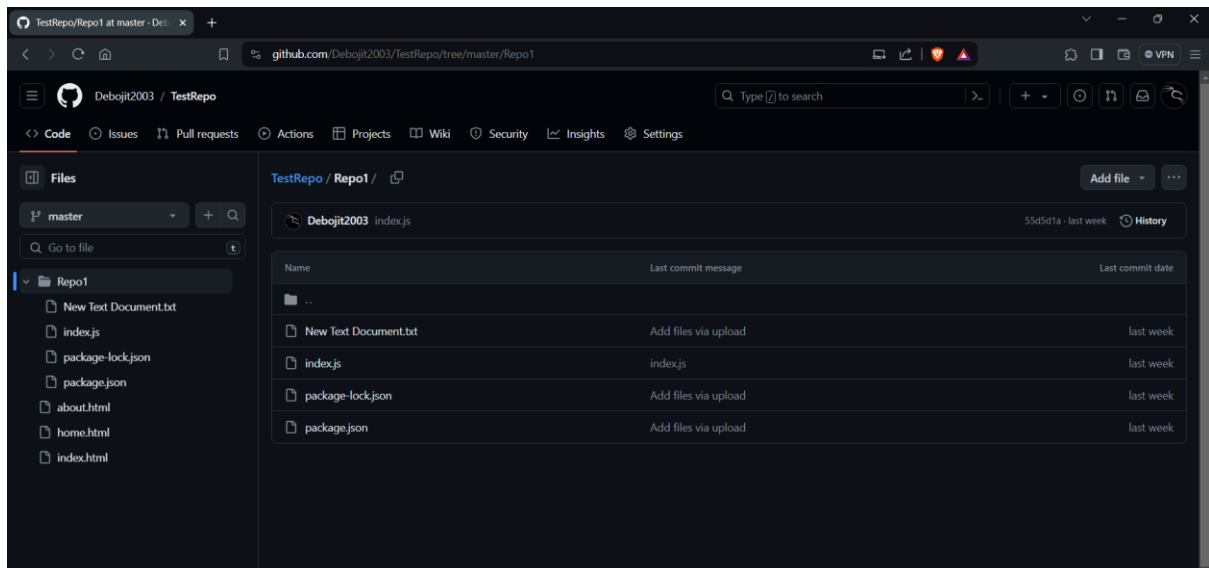


ASSIGNMENT No: 9

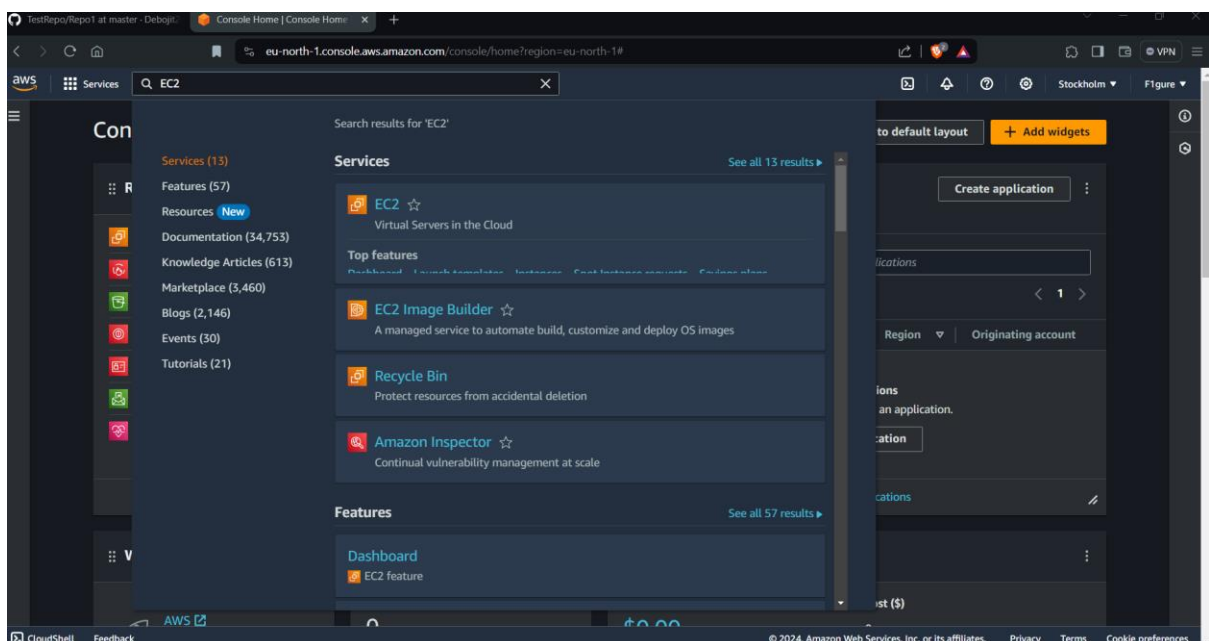
Problem Statement: Deploy a project from GitHub to EC2.

The steps are as follows: -

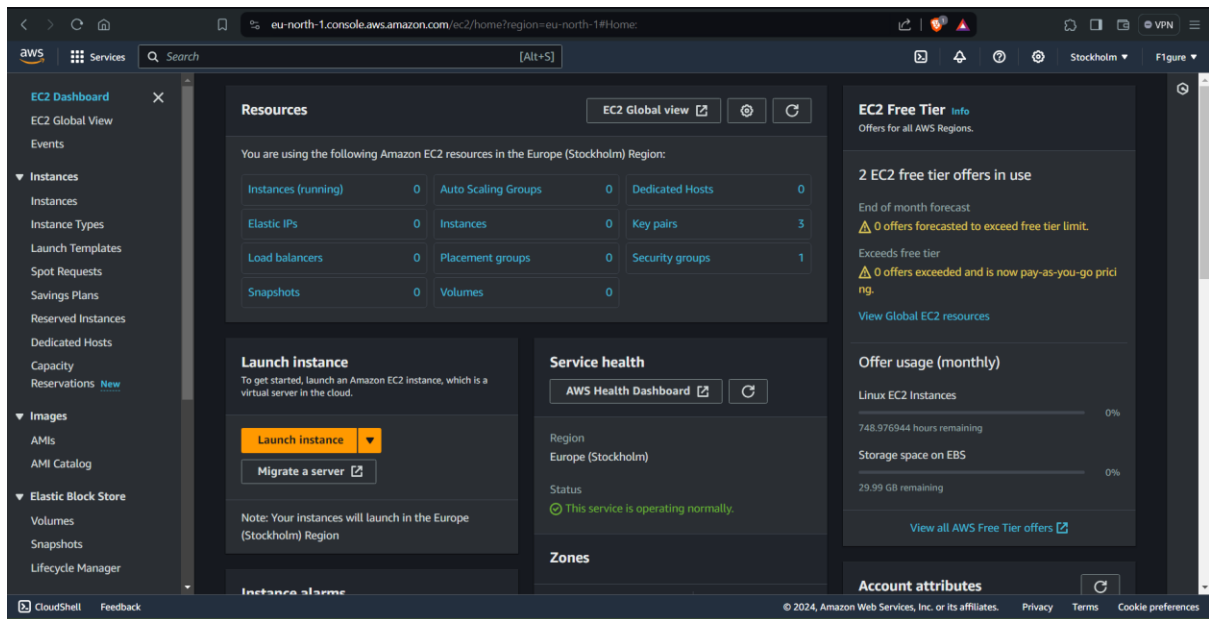
1. Please confirm whether the `index.js` file exists in your GitHub repository. If it's not present, then clone it into a repository if the file already exists on your local machine using the command `git clone <repository_path>`.



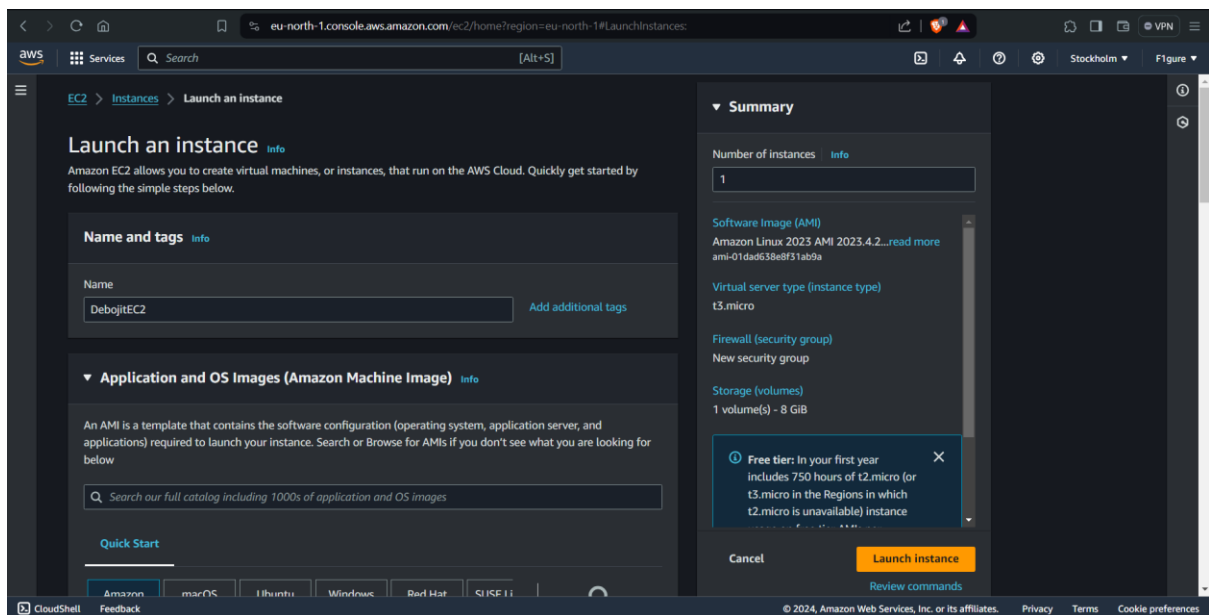
2. Access your AWS account and utilize the search box to look for EC2, then proceed to click on the first option displayed.



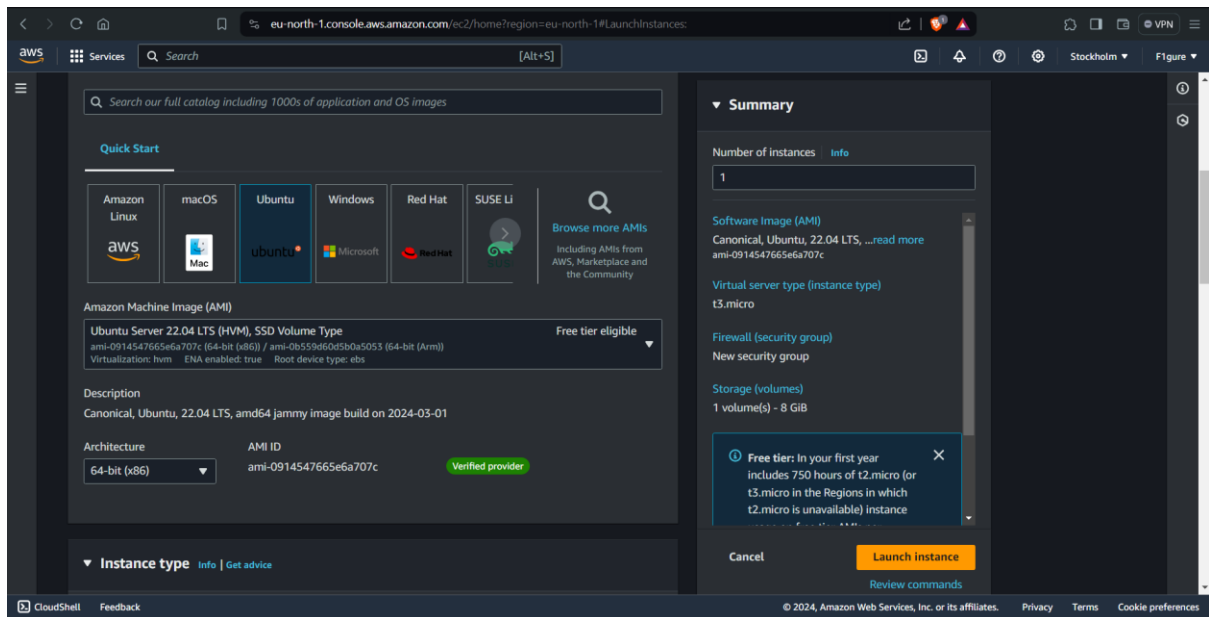
3. Subsequently, select "**Launch Instance**".



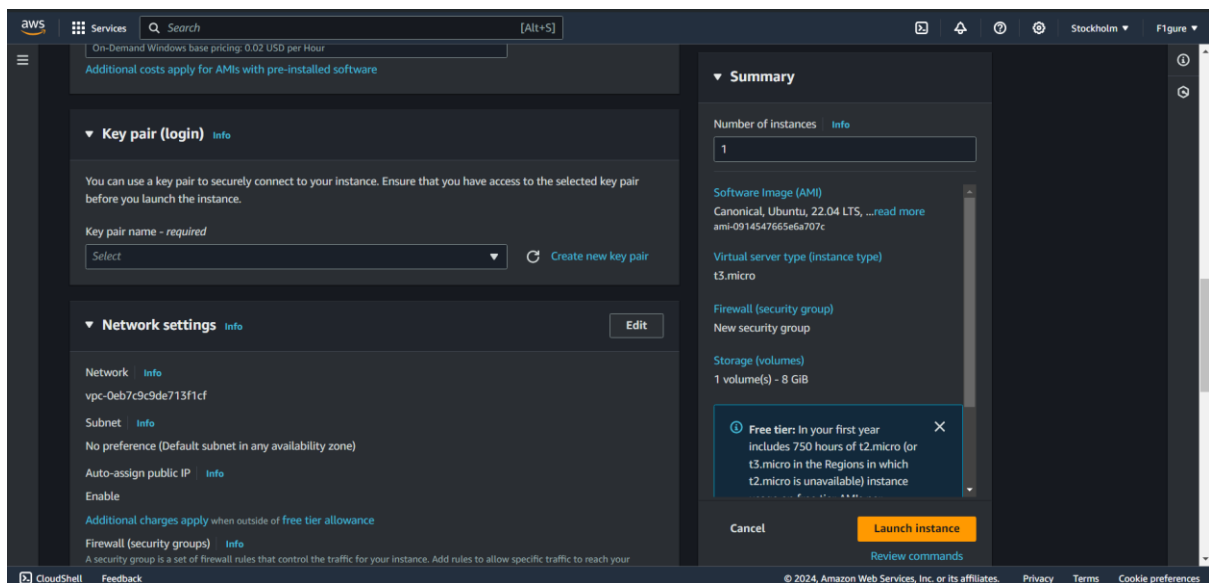
4. For the subsequent step, ensure to assign an appropriate name to the EC2 instance. (For instance, here it is : DebojitEC2)



5. Choose **Ubuntu** from the available AMIs.



6. Generate a new key pair or alternatively, utilize an existing one. A new key pair is generated by selecting **"Create new key pair"**.



7. In the following window, provide a name for the key pair (here it is- newkey1) and opt for the **.pem** format. Then click on **"create key pair"**.

Create key pair

Key pair name

Key pairs allow you to connect to your instance securely.

newkey1

The name can include up to 255 ASCII characters. It can't include leading or trailing spaces.

Key pair type

☒ RSA
RSA encrypted private and public key pair

☐ ED25519
ED25519 encrypted private and public key pair

Private key file format

☒ .pem
For use with OpenSSH

☐ .ppk
For use with PuTTY

⚠ When prompted, store the private key in a secure and accessible location on your computer. You will need it later to connect to your instance. [Learn more](#)

Cancel

Create key pair

8. Select to create a server and ensure to enable all three protocols: SSH, HTTP, and HTTPS.

eu-north-1.console.aws.amazon.com/ec2/home?region=eu-north-1#LaunchInstances:

Network

Info

vpc-0eb7c9c9de713f1cf

Subnet

Info

No preference (Default subnet in any availability zone)

Auto-assign public IP

Info

Enable

Additional charges apply when outside of free tier allowance

Firewall (security groups)

Info

A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

☒ Create security group

☐ Select existing security group

We'll create a new security group called 'launch-wizard-1' with the following rules:

☒ Allow SSH traffic from

Helps you connect to your instance

Anywhere

0.0.0.0/0

☒ Allow HTTPS traffic from the internet

To set up an endpoint, for example when creating a web server

☒ Allow HTTP traffic from the internet

To set up an endpoint, for example when creating a web server

⚠ Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

Summary

Number of instances

Info

1

Software Image (AMI)

Canonical, Ubuntu, 22.04 LTS, ...read more

ami-09145476656a707c

Virtual server type (instance type)

t3.micro

Firewall (security group)

New security group

Storage (volumes)

1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance

Cancel

Launch instance

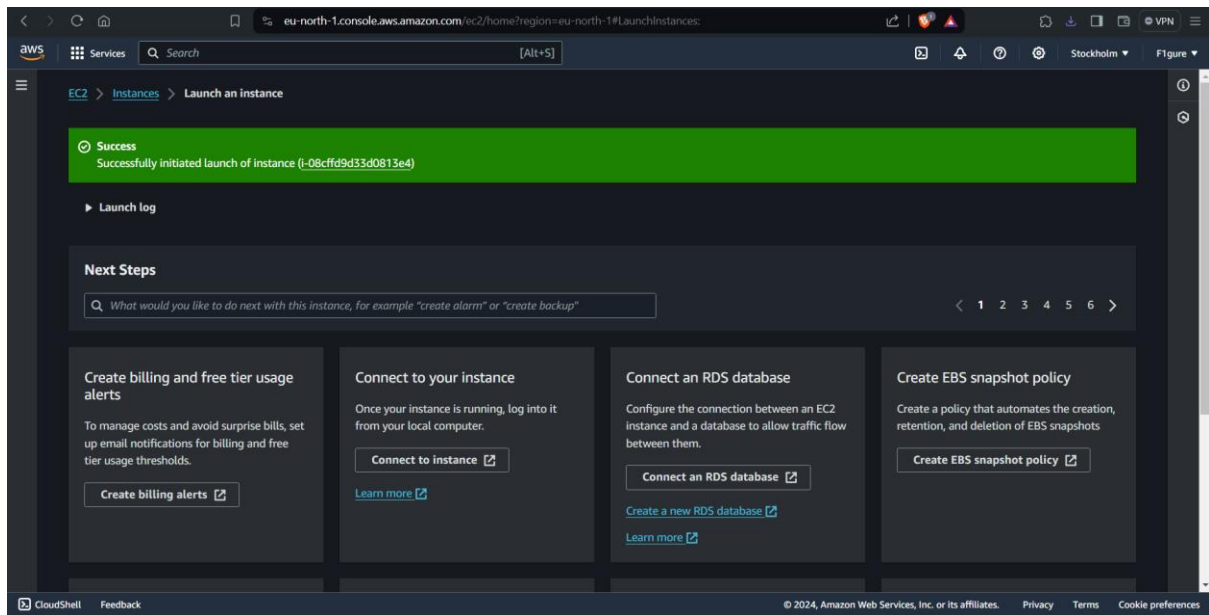
Review commands

CloudShell

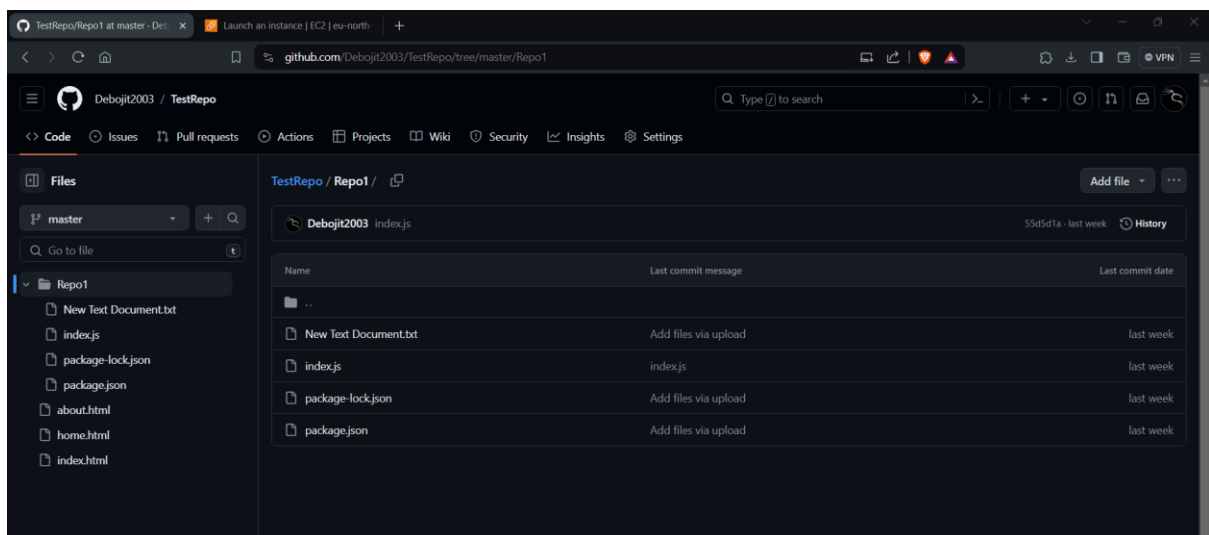
Feedback

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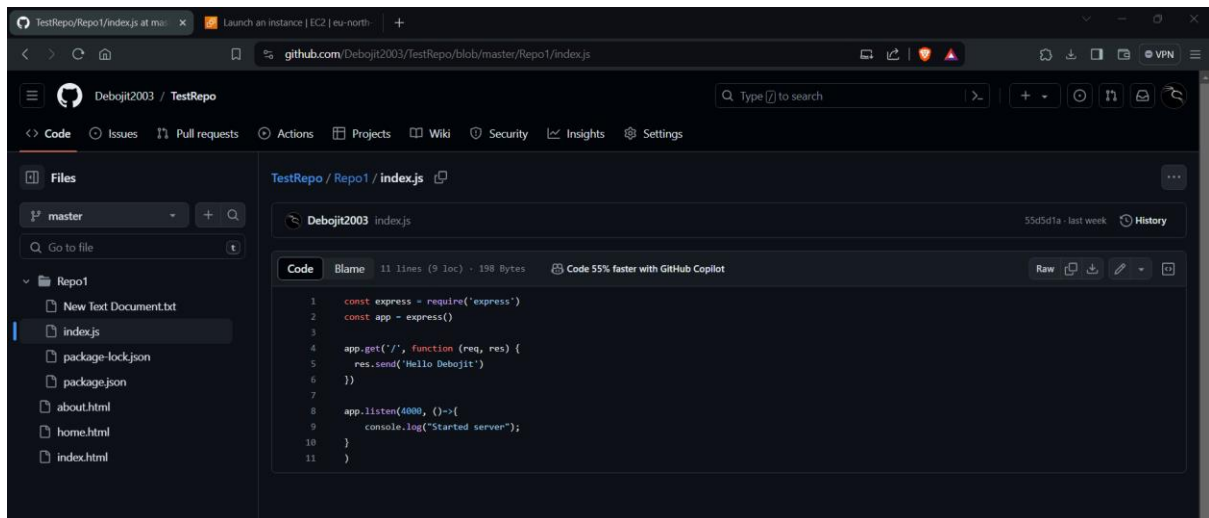
9. Finally, proceed by clicking on **"Launch Instance"**.



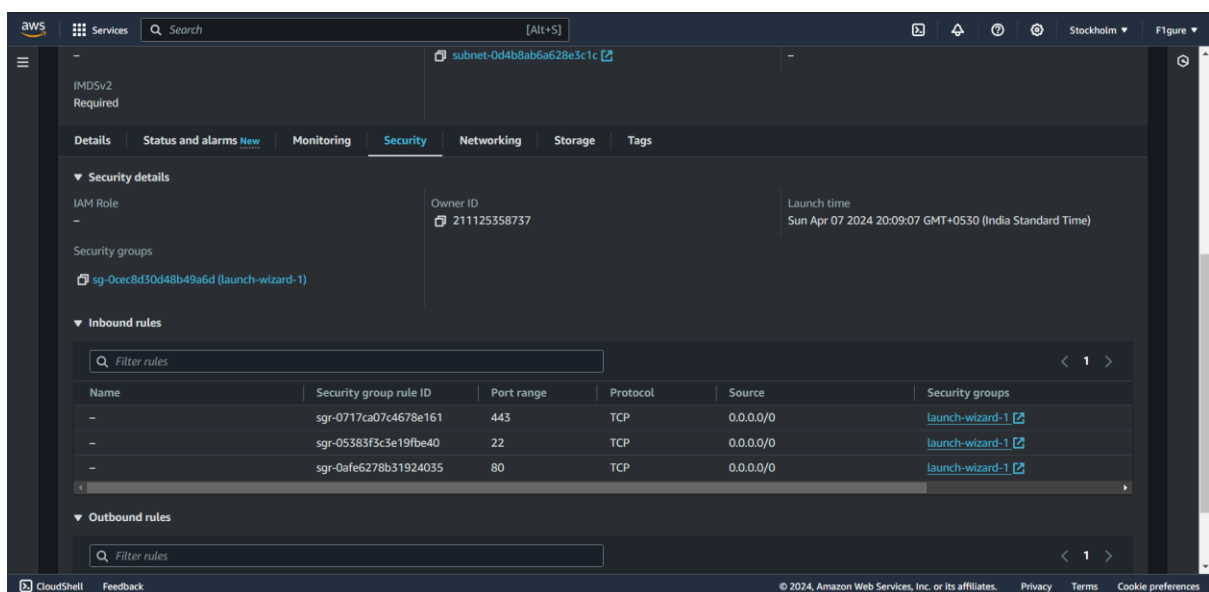
10. Access GitHub and navigate to your repository that is currently being worked on, containing the `index.js` file.



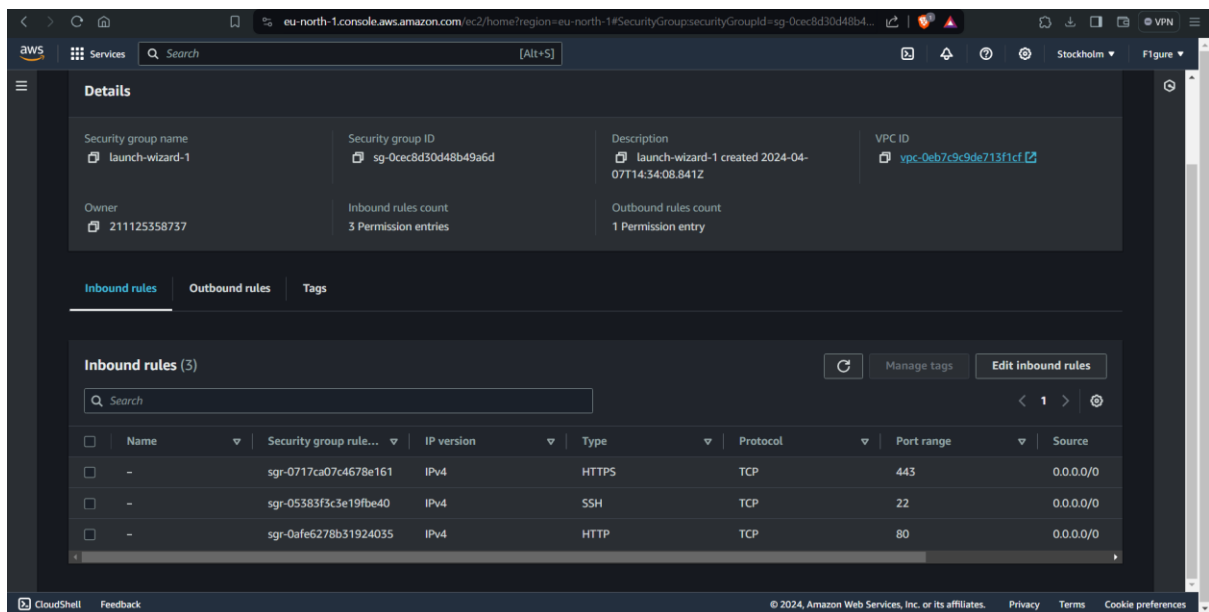
11. Access the `"index.js"` file and modify the code by replacing **"hello students"** with **"hello <your_name>"**.



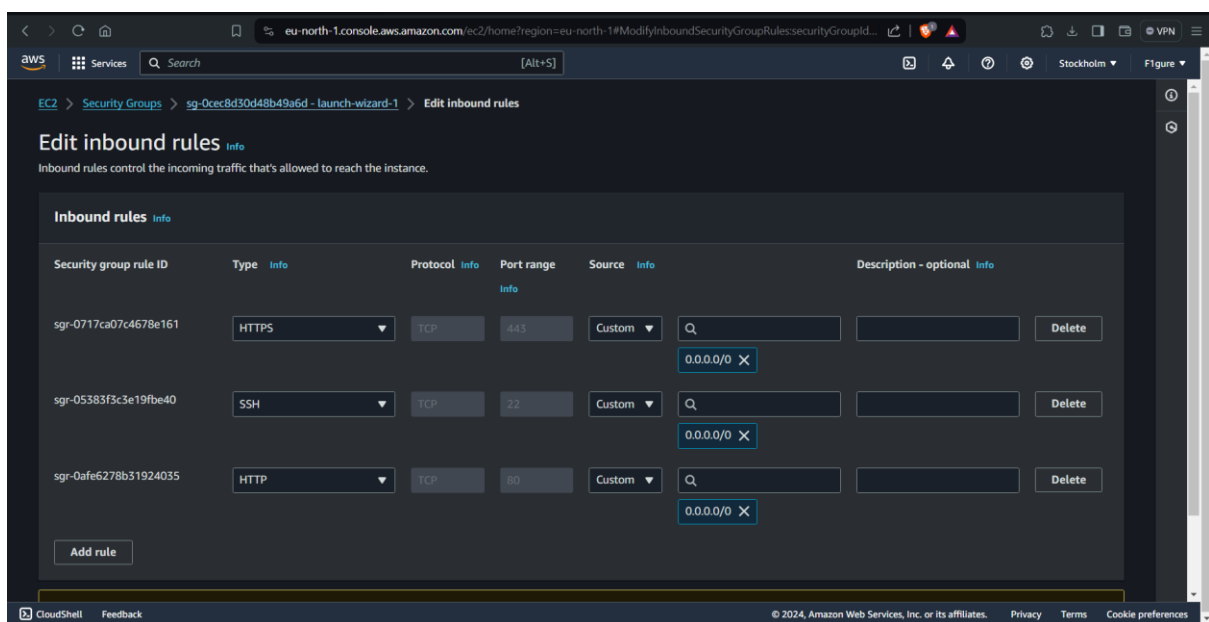
12. Return to the AWS tab currently open in your system, then navigate to **instances** and select **security**.



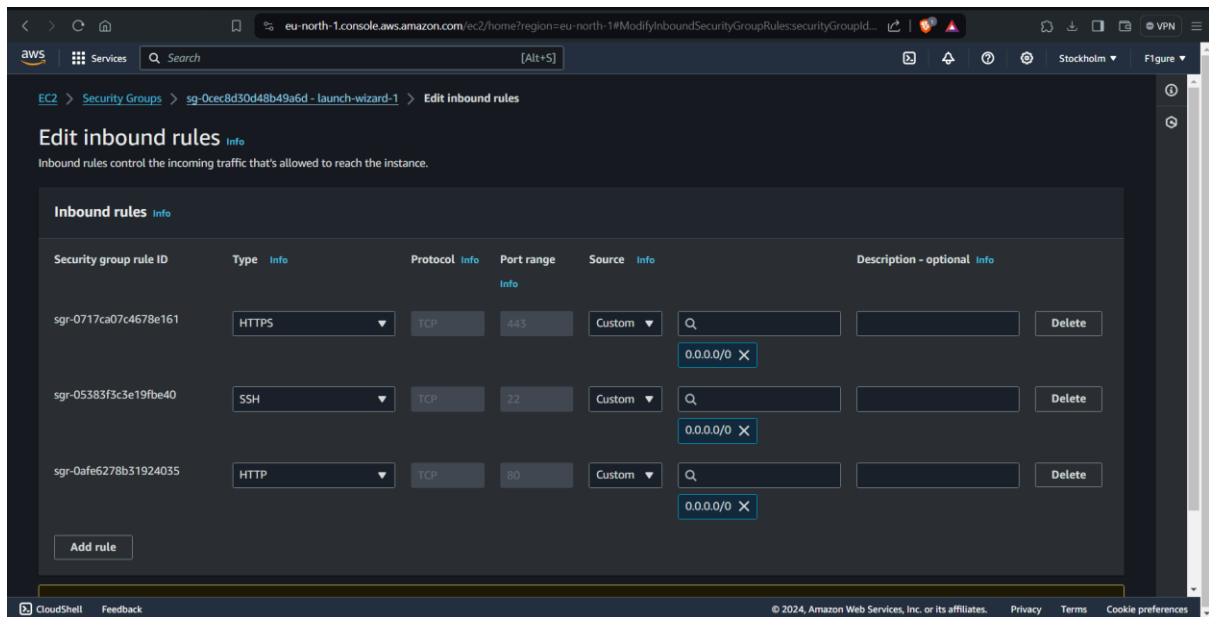
13. Select the security group and observe that three protocols have been chosen.



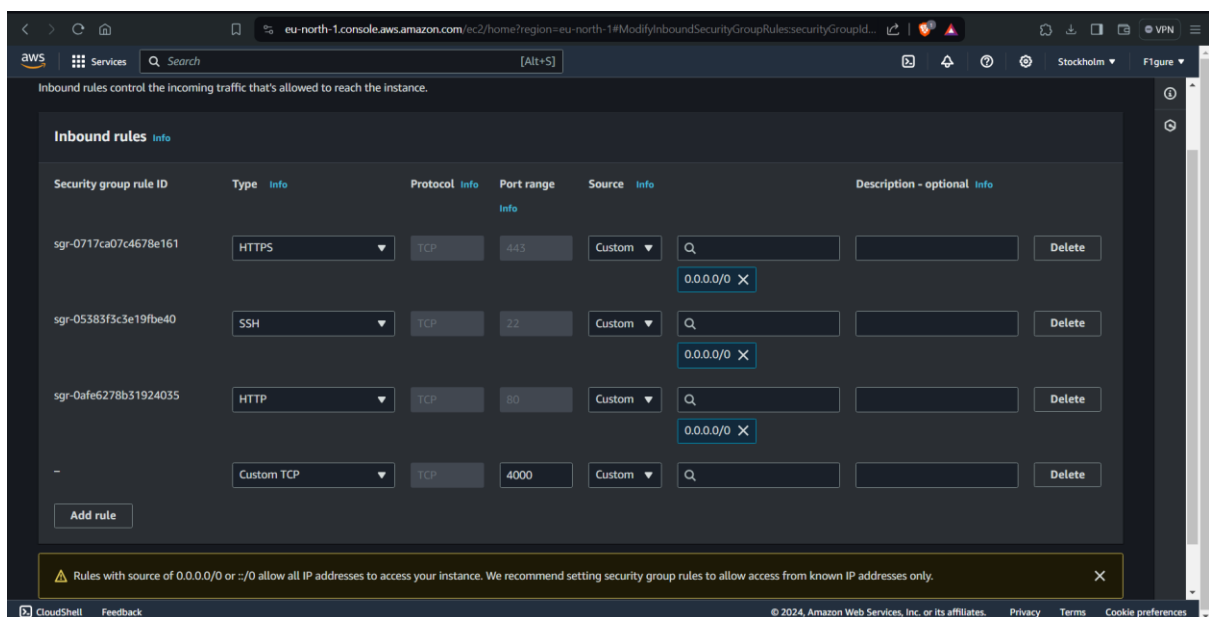
14. Select "Edit inbound rules."



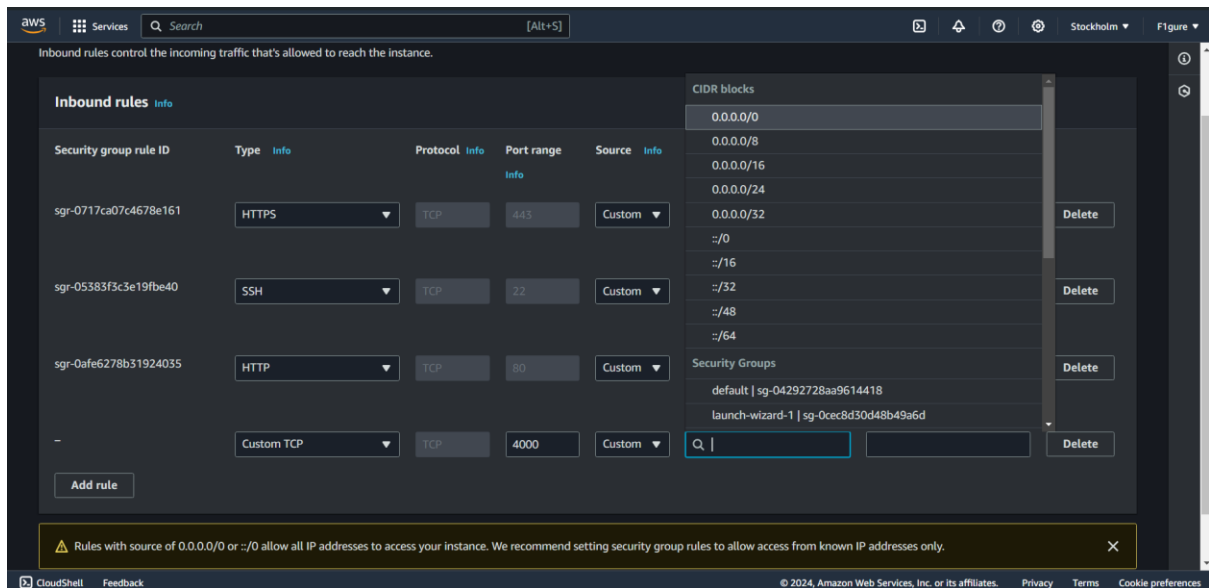
15. Scroll down and select "Add rule" to add Custom protocol.



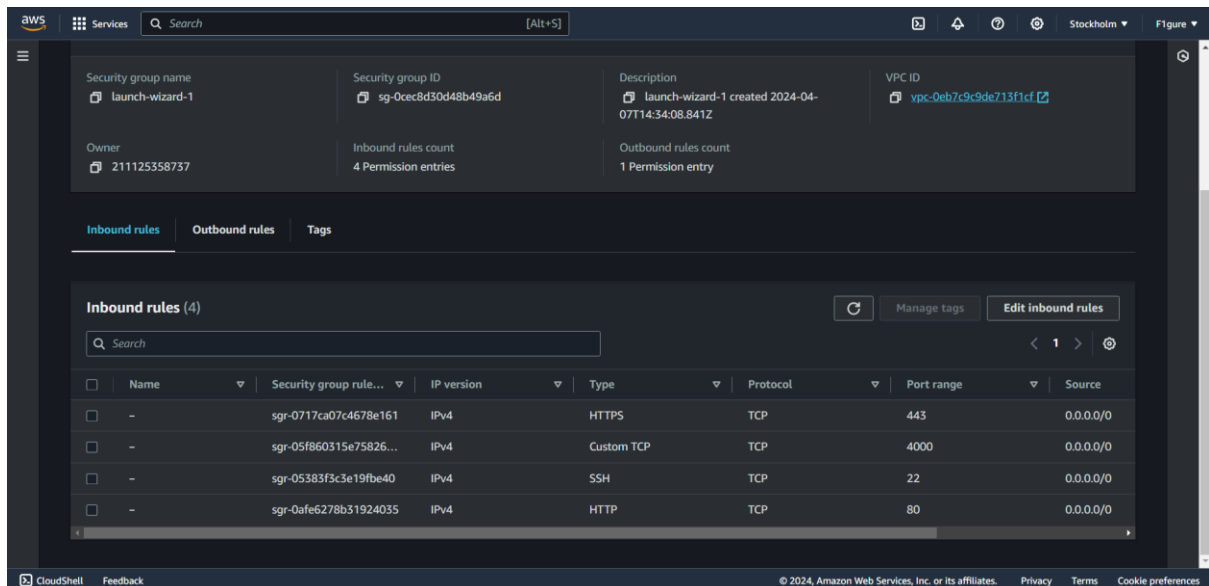
16. Enter 4000 in the port number field, as specified in the `index.js` code.



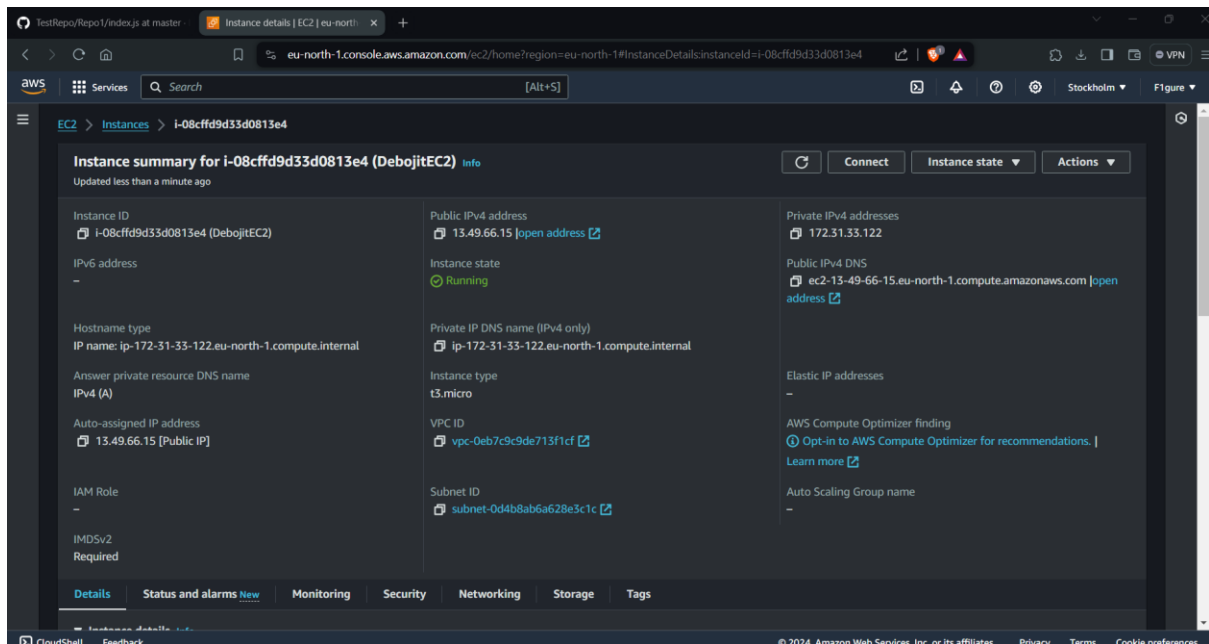
17. Choose the first option available beside it.



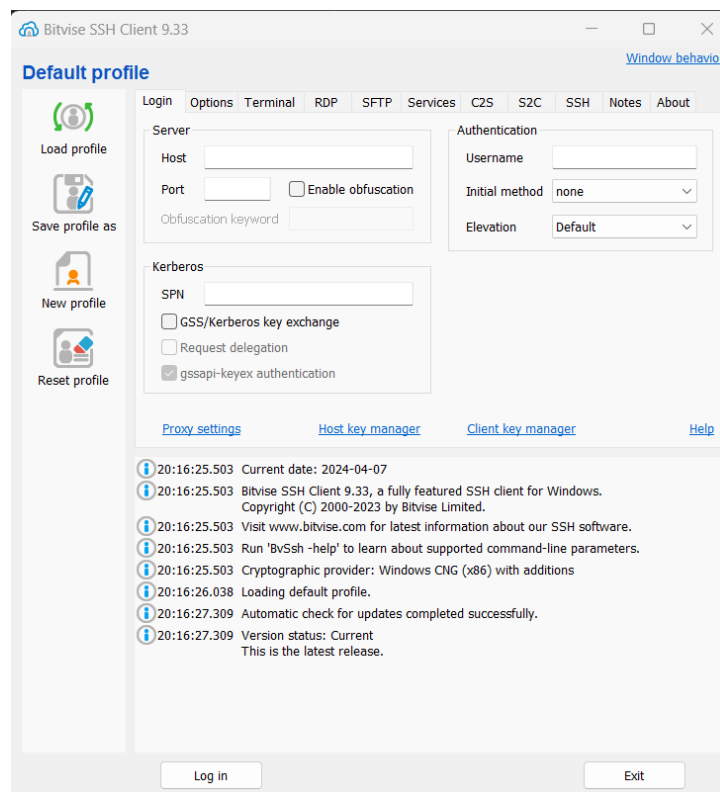
18. Finally click on **Save rules**. Then you will see the following window appears.



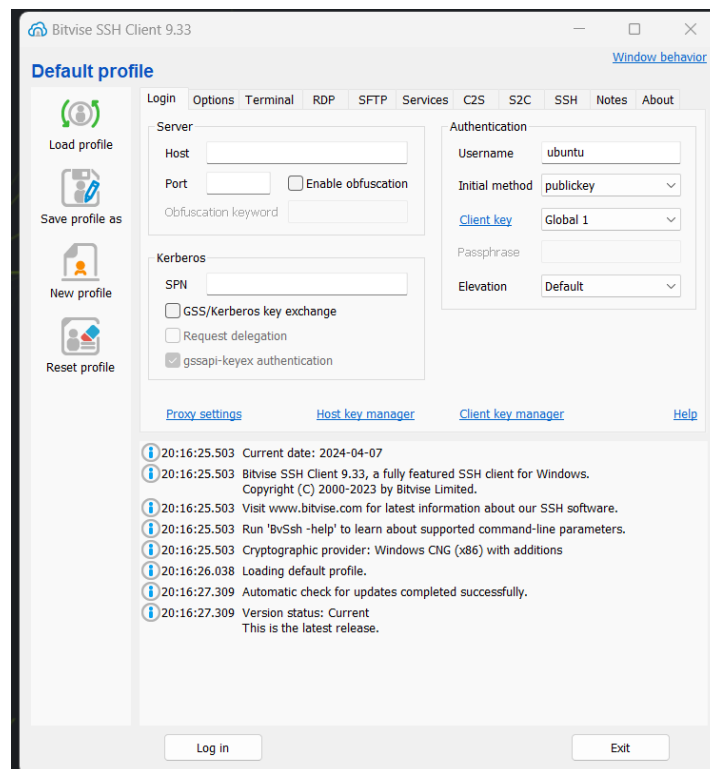
19. Navigate to instances and copy the Public IPv4 address.



20. Launch Bitvise SSH Client and proceed to click on "Login".

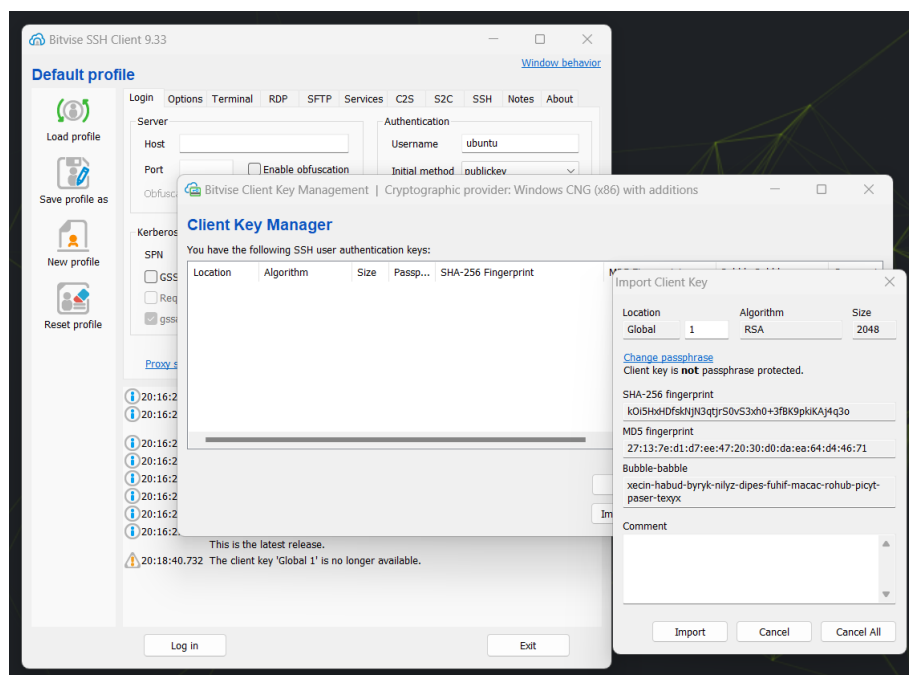


21. Paste the IPv4 address into the host field and enter "ubuntu" as the username.

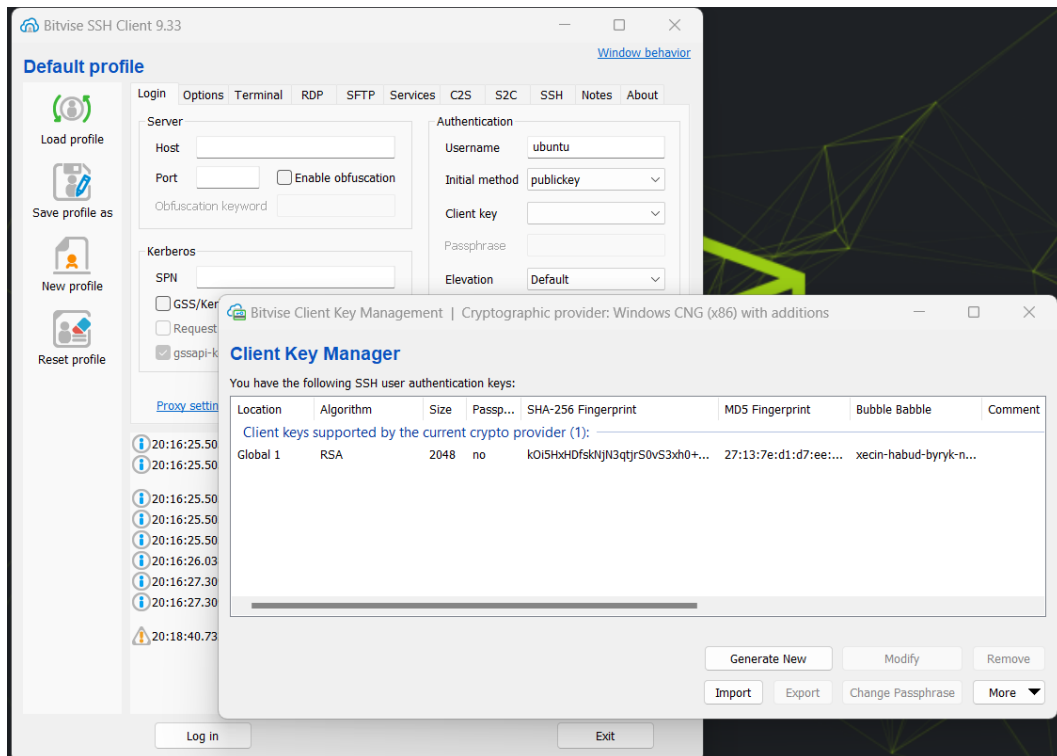


22. Navigate to the client key manager to verify if the correct key is being used. If not, remove the existing key and import the correct one. The steps are: -

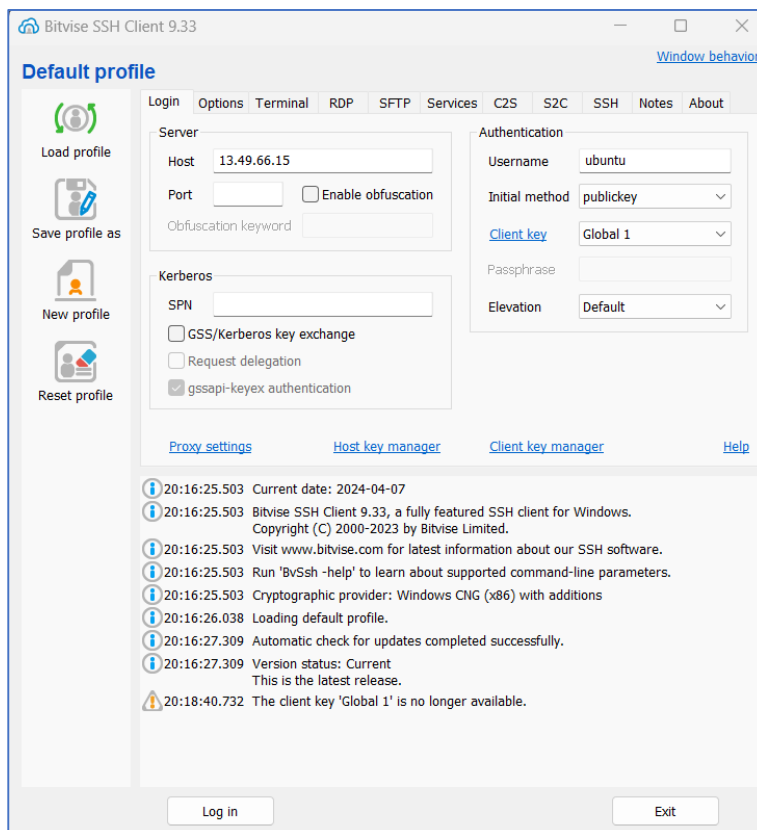
i)

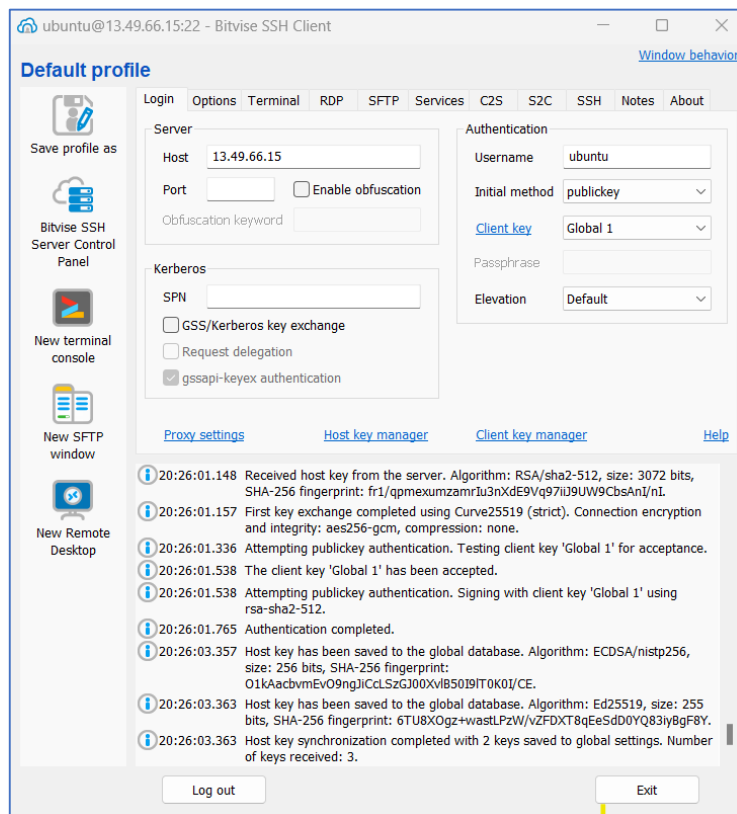
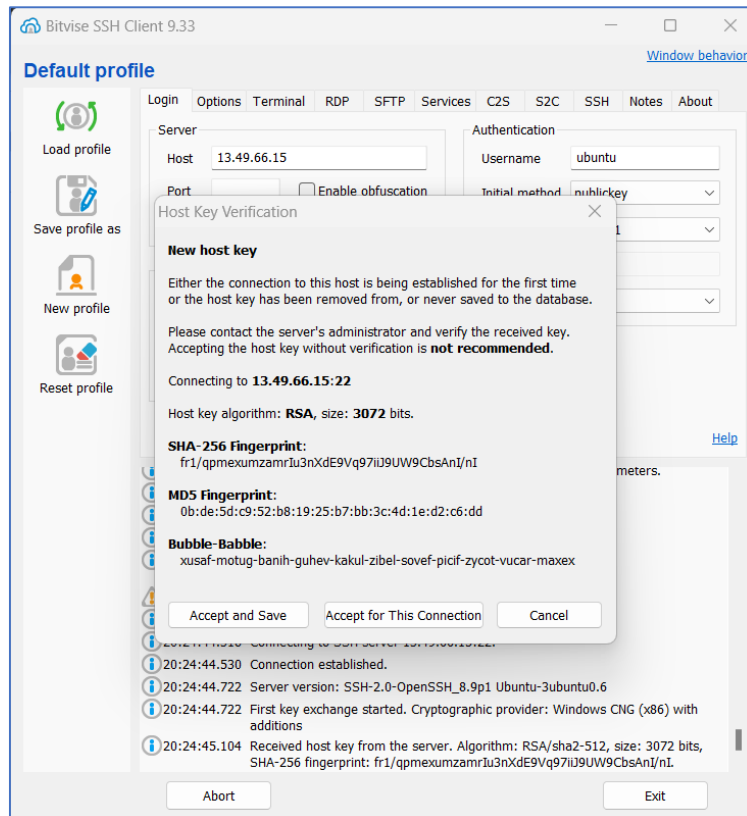


ii)



23. Enter the HOST as the public IP of your instance then click on Log in. After logging in, click on "Accept and Save". Subsequently, the following window will appear.





24. Access the terminal console from the provided left pane.

```
ubuntu@13.49.66.15:22 - Bitwise xterm - ubuntu@ip-172-31-33-122: ~
* Documentation:  https://help.ubuntu.com
* Management:    https://landscape.canonical.com
* Support:       https://ubuntu.com/pro

System information as of Sun Apr  7 14:56:01 UTC 2024

System load:  0.0           Processes:            102
Usage of /:   20.4% of 7.57GB Users logged in:          0
Memory usage: 22%          IPv4 address for ens5: 172.31.33.122
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 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-172-31-33-122:~$
```

25. Proceed by entering the commands as listed below.

->***pwd***

(When executed in a terminal, it displays the current directory or the full path of the current working directory in the file system.)

```
ubuntu@ip-172-31-33-122:~$ pwd
/home/ubuntu
ubuntu@ip-172-31-33-122:~$
```

->***sudo apt-get update***

(The `sudo apt-get update` command is used on Ubuntu and other Debian-based systems to update the local package index.)

```

ubuntu@ip-172-31-33-122:~$ sudo apt-get update
Hit:1 http://eu-north-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease
Get:2 http://eu-north-1.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease [119 kB]
Get:3 http://eu-north-1.ec2.archive.ubuntu.com/ubuntu jammy-backports InRelease [109 kB]
Get:4 http://security.ubuntu.com/ubuntu jammy-security InRelease [110 kB]
Get:5 http://eu-north-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 Packages [14.1 MB]
Get:6 http://security.ubuntu.com/ubuntu jammy-security/main amd64 Packages [1303 kB]
Get:7 http://eu-north-1.ec2.archive.ubuntu.com/ubuntu jammy/universe Translation-en [5652 kB]
Get:8 http://eu-north-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 c-n-f Metadata [286 kB]
Get:9 http://eu-north-1.ec2.archive.ubuntu.com/ubuntu jammy/multiverse amd64 Packages [217 kB]
Get:10 http://eu-north-1.ec2.archive.ubuntu.com/ubuntu jammy/multiverse Translation-en [112 kB]
Get:11 http://eu-north-1.ec2.archive.ubuntu.com/ubuntu jammy/multiverse amd64 c-n-f Metadata [8372 B]
Get:12 http://eu-north-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [1519 kB]
Get:13 http://eu-north-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main Translation-en [293 kB]
Get:14 http://eu-north-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/restricted amd64 Packages [1648 kB]
Get:15 http://security.ubuntu.com/ubuntu jammy-security/main Translation-en [233 kB]
Get:16 http://security.ubuntu.com/ubuntu jammy-security/restricted amd64 Packages [1616 kB]
Get:17 http://eu-north-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/restricted Translation-en [275

```

->***sudo apt-get upgrade***

(The `sudo apt-get upgrade` command, when executed on Ubuntu or other Debian-based systems, upgrades all installed packages to their latest available versions)

```

ubuntu@ip-172-31-33-122:~$ sudo apt-get upgrade
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
The following packages have been kept back:
  linux-aws linux-headers-aws linux-image-aws ubuntu-advantage-tools ubuntu-pro-client-110n
The following packages will be upgraded:
  apt apt-utils bash bsdxtrutils bsdxtrutils coreutils curl dpkg eject ethtool fdisk libapt-pkg6.0
  libblkid1 libcurl3-gnutls libcurl4 libexpat1 libfdisk1 libgpgme11 libldap-2.5-0 libldap-common
  libmount1 libsmartcols1 libuuid1 mount python3-cryptography python3-update-manager snapd
  update-manager-core update-notifier-common util-linux uuid-runtime vim vim-common vim-runtime
  vim-tiny xxd
36 upgraded, 0 newly installed, 0 to remove and 5 not upgraded.

```

->***sudo apt-get install nginx***

(The `sudo apt-get install nginx` command, when executed on Ubuntu or other Debian-based systems, installs the Nginx web server software.)

```

ubuntu@ip-172-31-33-122:~$ sudo apt-get install nginx
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  fontconfig-config fonts-dejavu-core libdeflate0 libfontconfig1 libgd3 libjpeg8 libjpeg-turbo8
  libjpeg8 libnginx-mod-http-geoip2 libnginx-mod-http-image-filter libnginx-mod-http-xslt-filter
  libnginx-mod-mail libnginx-mod-stream libnginx-mod-stream-geoip2 libtiff5 libwebp7 libxpm4
  nginx-common nginx-core

```

->***curl -SL https://deb.nodesource.com/setup_16.x|sudo -E bash***

```

ubuntu@ip-172-31-33-122:~$ curl -SL https://deb.nodesource.com/setup_16.x|sudo -E bash

```

(After execution, your system will be set up to install Node.js version 16.x from the Node Source repository.)

```
DEPRECATION WARNING

Node.js 16.x is no longer actively supported!

You will not receive security or critical stability updates for this version.

You should migrate to a supported version of Node.js as soon as possible.
Use the installation script that corresponds to the version of Node.js you
wish to install. e.g.

* https://deb.nodesource.com/setup_16.x - Node.js 16 "Gallium" (deprecated)
* https://deb.nodesource.com/setup_18.x - Node.js 18 "Hydrogen" (Maintenance)
* https://deb.nodesource.com/setup_19.x - Node.js 19 "Nineteen" (deprecated)
* https://deb.nodesource.com/setup_20.x - Node.js 20 LTS "Iron" (recommended)
* https://deb.nodesource.com/setup_21.x - Node.js 21 "Iron" (current)

Please see https://github.com/nodejs/Release for details about which
version may be appropriate for you.

The NodeSource Node.js distributions repository contains
information both about supported versions of Node.js and supported Linux
distributions. To learn more about usage, see the repository:
https://github.com/nodesource/distributions

=====
Continuing in 10 seconds ...
2024-04-07 15:03:38 - Installing pre-requisites
```

->***sudo apt install nodejs***

(The `sudo apt install NodeJS` command, when executed on Ubuntu or other Debian-based systems, installs the Node.js runtime environment along with the npm package manager.)

```
ubuntu@ip-172-31-33-122:~$ sudo apt install nodejs
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  nodejs
0 upgraded, 1 newly installed, 0 to remove and 5 not upgraded.
Need to get 27.5 MB of archives.
After this operation, 128 MB of additional disk space will be used.
Get:1 https://deb.nodesource.com/node_16.x nodistro/main amd64 nodejs amd64 16.20.2-1nodesource1 [27.5 MB]
Fetched 27.5 MB in 1s (50.0 MB/s)
Selecting previously unselected package nodejs.
(Reading database ... 65516 files and directories currently installed.)
Preparing to unpack .../nodejs_16.20.2-1nodesource1_amd64.deb ...
Unpacking nodejs (16.20.2-1nodesource1) ...
Setting up nodejs (16.20.2-1nodesource1) ...
Processing triggers for man-db (2.10.2-1) ...
```

->***node --version***

(Returns the version of nodejs installed.)


```
ubuntu@ip-172-31-33-122:~$ node --version
v16.20.2
```

->**git clone <your repository path>**

(The `git clone` command is used to create a copy of a Git repository on your local machine.)

```
ubuntu@ip-172-31-33-122:~$ git clone https://github.com/Debojit2003/TestRepo.git
Cloning into 'TestRepo'...
remote: Enumerating objects: 16, done.
remote: Counting objects: 100% (16/16), done.
remote: Compressing objects: 100% (14/14), done.
remote: Total 16 (delta 5), reused 4 (delta 2), pack-reused 0
Receiving objects: 100% (16/16), 50.48 KiB | 1.17 MiB/s, done.
Resolving deltas: 100% (5/5), done.
ubuntu@ip-172-31-33-122:~$
```

>Now go inside the repository using cd and ls.

```
ubuntu@ip-172-31-33-122:~$ ls
TestRepo
ubuntu@ip-172-31-33-122:~$ cd TestRepo
ubuntu@ip-172-31-33-122:~/TestRepo$ ls
Repo1  about.html  home.html  index.html
ubuntu@ip-172-31-33-122:~/TestRepo$ cd Repo1
ubuntu@ip-172-31-33-122:~/TestRepo/Repo1$ ls
'New Text Document.txt'  index.js  package-lock.json  package.json
ubuntu@ip-172-31-33-122:~/TestRepo/Repo1$
```

->**npm install**

(The `npm install` command is used in a Node.js project to install dependencies listed in the `package.json` file)

```
ubuntu@ip-172-31-33-122:~/TestRepo/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.

added 258 packages, and audited 259 packages in 8s

18 packages are looking for funding
  run `npm fund` for details

12 vulnerabilities (10 moderate, 2 critical)

To address all issues, run:
  npm audit fix

Run `npm audit` for details.
npm notice
npm notice New major version of npm available! 8.19.4 -> 10.5.1
npm notice Changelog: https://github.com/npm/cli/releases/tag/v10.5.1
npm notice Run npm install -g npm@10.5.1 to update!
npm notice
ubuntu@ip-172-31-33-122:~/TestRepo/Repo1$
```

->***node index.js***

(The command `node index.js` is used to execute a JavaScript file named `index.js` using the Node.js runtime environment.)

```
ubuntu@ip-172-31-33-122:~/TestRepo/Repo1$ node index.js  
Started server
```

26. Open a new browser window and enter the IPv4 address followed by ":4000", like "IPv4_address:4000".

