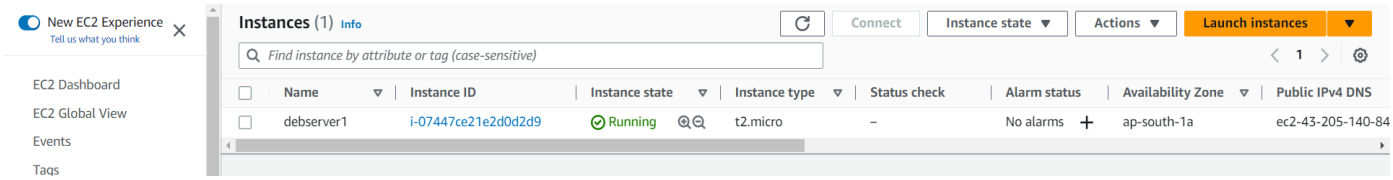
ASSIGNMENT-9

Problem Statement: Deploy a project from GitHub to EC2.

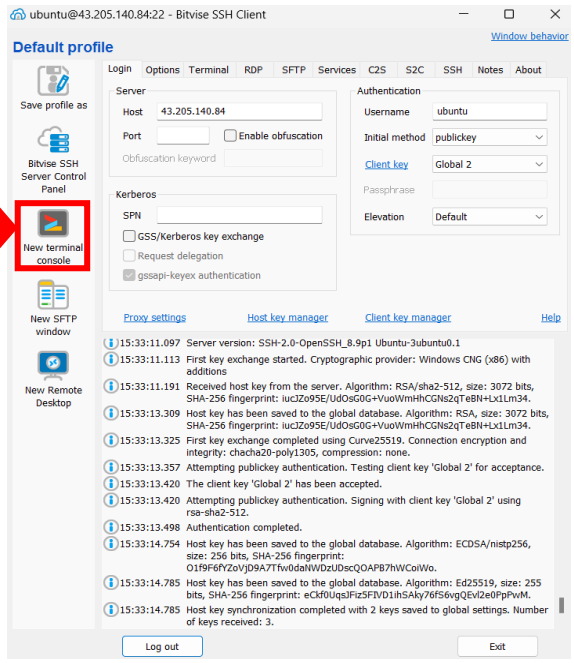
Procedure:

1. **Go to GitHub Website** https://github.com/ and **Sign In** to your account.

2. Also, **Sign-In** to your **AWS account**.
3. Create an **EC2** instance (**Refer to Ass7**)



4. Connect the to the **instance** using the **Bitvise SSH Client** (Refer to Ass7)



5. Now **Click** on **New Terminal Console** option in the Left Sidebar of the Bitvise Client.
6. A terminal window will open and in it type the following commands:-
   - ➔ **sudo apt-get update && sudo apt-get upgrade**
     (After few steps of progression, in case of any prompts asking (Y/N) press ‘y’ button and then press ‘Enter’ to continue. At the last stages if a UI appears on the screen, just press ‘Enter’ to continue. After the whole process is complete enter the next command as mentioned below)
   - ➔ **sudo apt-get install nginx**
     (After few steps of progression, in case of any prompts asking (Y/N) press ‘y’ button and then press ‘Enter’ to continue. At the last stages if a UI appears on the screen, just press ‘Enter’ to continue. After the whole process is complete enter the next command as mentioned below)
   - ➔ **nginx -v**

```
ubuntu@ip-172-31-38-127:~$ nginx -v
nginx version: nginx/1.18.0 (Ubuntu)
```

(This command displays the nginx version installed in the server system)

➔ **curl -Sl https://deb.nodesource.com/setup_18.x | sudo -E bash -**

(This command downloads NodeJS files with all dependencies in our server system)

➔ **sudo apt install nodejs**

(Press 'Enter' to continue when any UI appears on screen)

(This command installs NodeJS in our server system)

➔ **node -v**

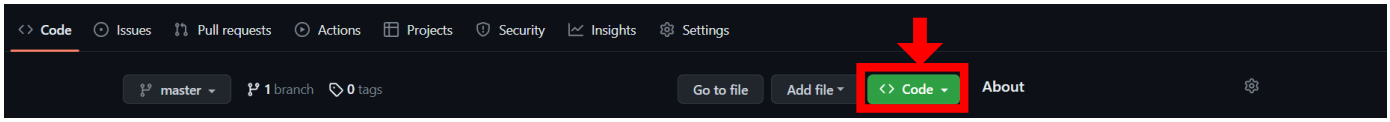
```
ubuntu@ip-172-31-38-127:~$ node -v
v18.15.0
```

(This command displays the version of NodeJS installed in our server system)

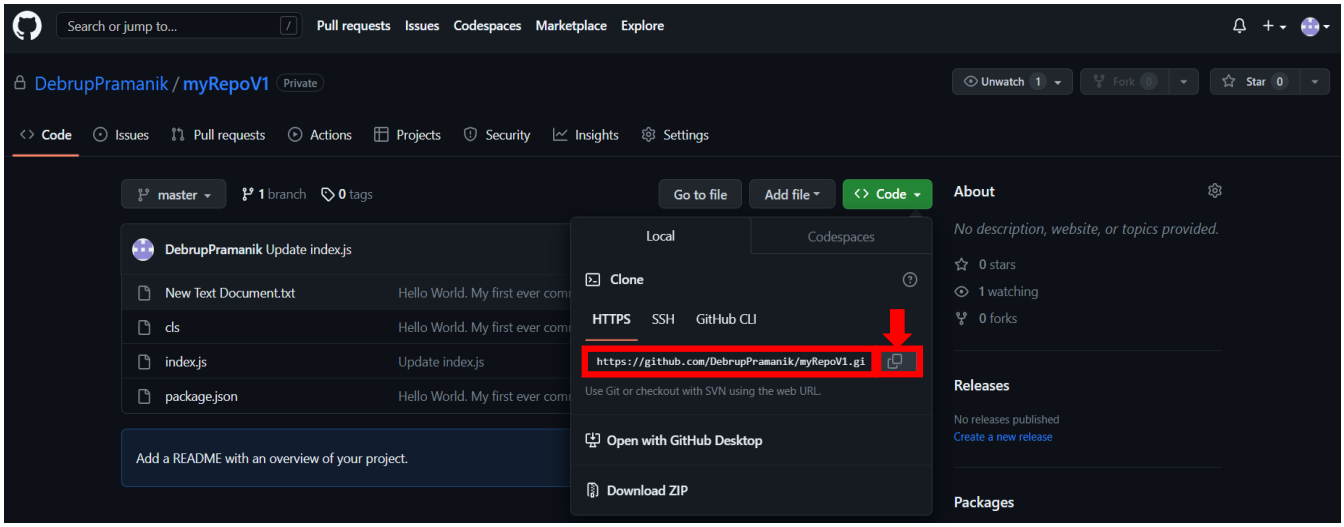
Now, **minimize the terminal window**. Go to the **browser where our GitHub is Logged-In**.

7. Go to your GitHub Repository which you want to upload in your EC2 server.

8. Click on the **code** button (in green color).



9. Now **copy** the **HTTPS address** of your **Repository.**



10. Now return to the minimized terminal window and enter the following commands:-

➔ **git clone https-address-you-just-copied-in-step-10**

```
ubuntu@ip-172-31-38-127:~$ git clone https://github.com/DebrupPramanik/myRepoV1.git
Cloning into 'myRepoV1'...
Username for 'https://github.com':
```

(Remember to paste your own https address that you copied in the above command in place of the one given in the screenshot)

(As shown in the screenshot, you will be asked to enter your **username for GitHub**. So mention your username there.

After that you will be requested to provide your password. However, you have to enter your **Account Token** you generated instead of your password. If you don't have a Account Token then refer to Ass7 and create one for your GitHub account. Now copy-paste the Account Token (from the text file you haved saved it) where it wants to mention your password. For pasting just Right click for a single time on the terminal where you want to paste)

(Note you won't be able to see your pasted token on the terminal as it is hidden by default. So just press 'Enter' to continue)

```
ubuntu@ip-172-31-38-127:~$ git clone https://github.com/DebrupPramanik/myRepoV1.git
Cloning into 'myRepoV1'...
Username for 'https://github.com': DebrupPramanik
Password for 'https://DebrupPramanik@github.com':
remote: Enumerating objects: 9, done.
remote: Counting objects: 100% (9/9), done.
remote: Compressing objects: 100% (8/8), done.
remote: Total 9 (delta 2), reused 4 (delta 0), pack-reused 0
Receiving objects: 100% (9/9), done.
Resolving deltas: 100% (2/2), done.
```

➔ **dir**

```
ubuntu@ip-172-31-38-127:~$ dir
myRepoV1
```

(As seen this is the name of our cloned repository. This means a new directory has been created in our present working directory which has been named automatically to match the name of our Repository.)

➔ **cd myRepoV1/**

```
ubuntu@ip-172-31-38-127:~$ dir
myRepoV1
ubuntu@ip-172-31-38-127:~$ cd myRepoV1/
ubuntu@ip-172-31-38-127:~/myRepoV1$
```

(Now we enter into the directory)

➔ **ls -A**

```
ubuntu@ip-172-31-38-127:~/myRepoV1$ ls -A
 .git  'New Text Document.txt'   cls   index.js   package.json
ubuntu@ip-172-31-38-127:~/myRepoV1$
```

(This command displays all the files in the current directory)

(We observe that we have all the files that we have in our Repository has been cloned in our directory in the server system)

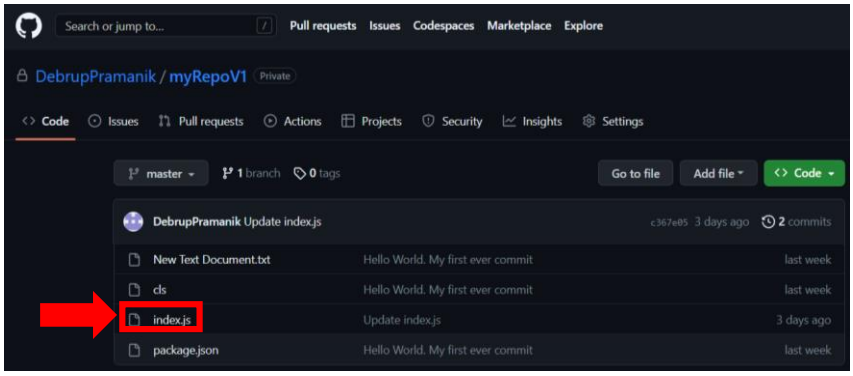
➔ **npm install**

```
ubuntu@ip-172-31-38-127:~/myRepoV1$ 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 10s

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

found 0 vulnerabilities
npm notice
npm notice New minor version of npm available! 9.5.0 -> 9.6.4
npm notice Changelog: https://github.com/npm/cli/releases/tag/v9.6.4
npm notice Run npm install -g npm@9.6.4 to update!
npm notice
ubuntu@ip-172-31-38-127:~/myRepoV1$
```

(This command installs the node package manager in the current directory)

Now before proceeding further we need to return back to GitHub. Minimize the terminal for now.

11. **Go back** to your **Repository in Github**.
12. Open your "**index.js**" file.

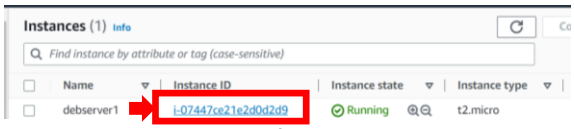


13. Check the **port no.** specified in the program. It is **specified** in **the app.listen()** method as the **first parameter**. Here it is '4000'. **Copy or remember this no. as it is the port no. and will be required to connect to our website**.

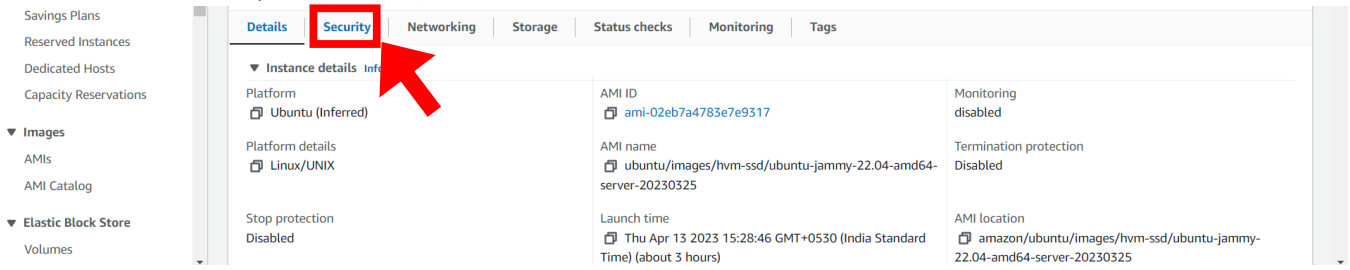
```
11 lines (9 sloc)  205 Bytes
1  const express = require('express')
2  const app = express()
3
4  app.get('/', function (req, res) {
5    res.send('Hello. My Name is Spider-Man!!!')
6  })
7
8  app.listen(4000, ()=>{
9      console.log("Started server");
10 }
11 )
```

We have to add this port no. to our EC2 instance security group rule otherwise we won't be able to access the website from anywhere.

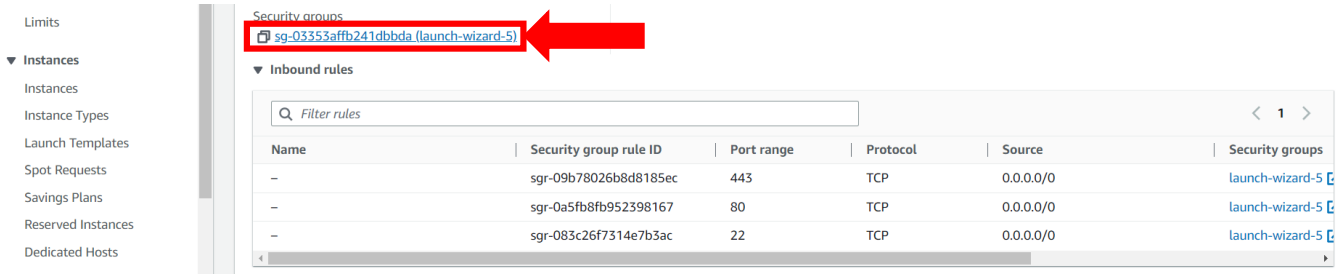
14. Now **go back** to your **AWS EC2 instances** page.
15. Click on the **Instance ID** that is being used.



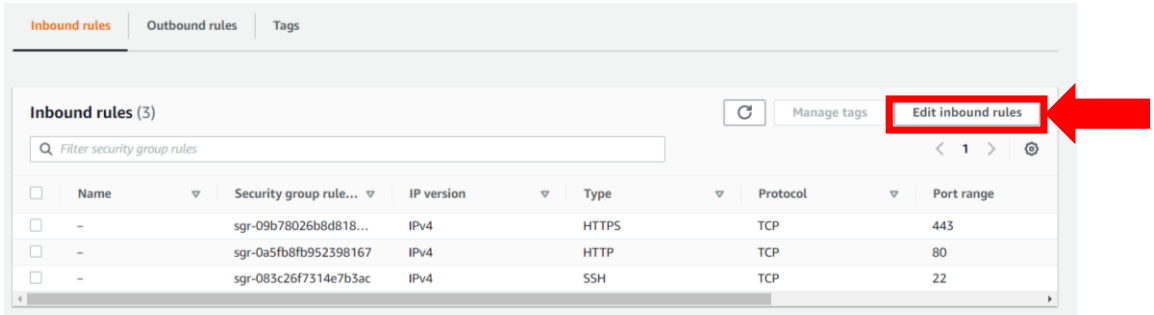
16. **Scroll down** until you find a **section bar** where by default the **details** option is selected. **Select** the **Security** option. It is beside the Details option (in blue).



17. Then **Click** on the **security groups link** under **security groups.**

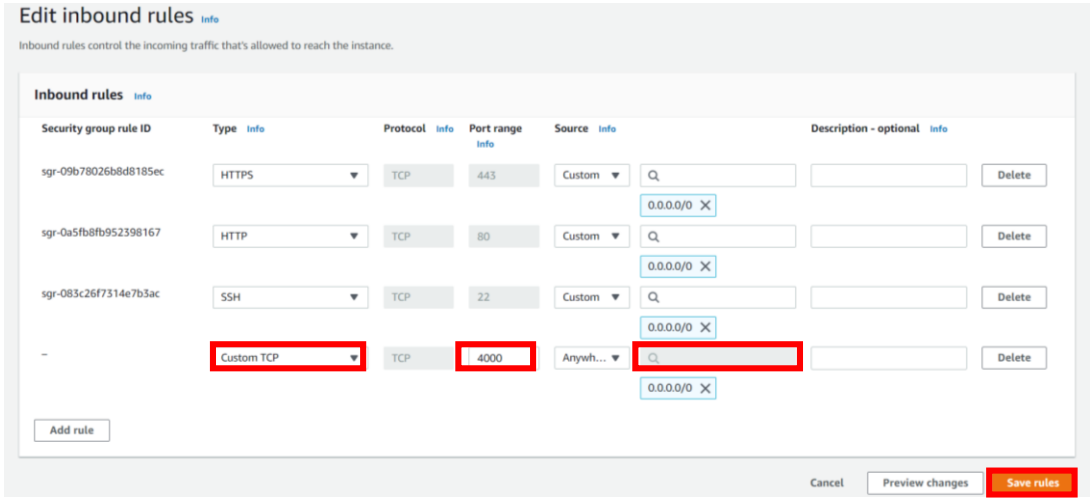


18. Then **Click** on **Edit Inbound Rules** button.



19. **Click** on the **Add Rule** button which is situated below and near the bottom left of the current rules list.

20. A new Row will be generated. Let the **type** remain **Custom TCP**. Under **Port Range** write your **Port no**. you want to open. In this case we have 4000 port no. as we found out earlier in our index.js code. Next in **source** click on the **search box** and the **first option** with value **0.0.0.0/0** should be **selected**.
21. Now **click** on the **save rules** button.



We have successfully added the Port No. to our Inbound rules. Now we can access the our website. But first we need to start our server.

22. We **return back** to the **terminal** and type:-

➔ **node index.js**

```
ubuntu@ip-172-31-38-127:~/myRepoV1$ node index.js
Started server
```

Our server has started and it is also reflected by the terminal prompt. Now to check we need to open another browser and type in the IPv4 address of our EC2 server to access our website.

23. **Now copy the IPv4 address of your EC2 server and paste it in another browser**. But **before pressing Enter add a colon (:)** and then **mention the Port No.** mentioned in the index.js file. For our case it is 4000. **In our case the full address resulted in the one in the screenshot below**.

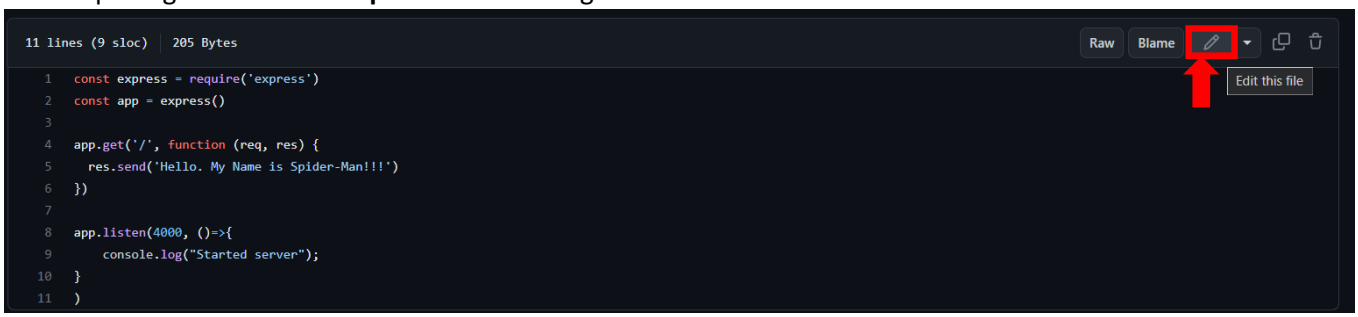
```
43.205.140.84:4000
```

24. Now press **Enter** to load the website.

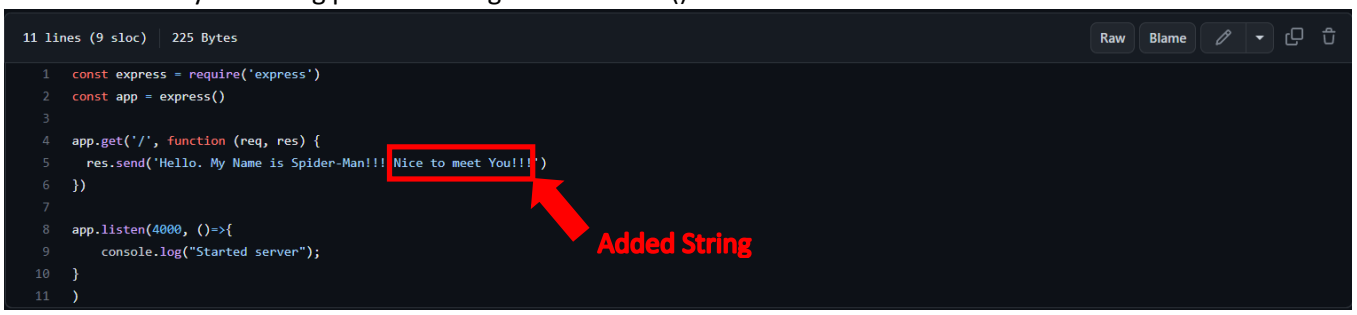
25. **We have successfully deployed our project from GitHub to our EC2 server.**

Now **if we want to change something** in our project or file or code we will follow these general steps:

26. **Suppose we want to modify the displayed message**. So **open** the **index.js** file in **GitHub**.
27. After opening we **click** on the **pen** icon on the right corner side of the code viewer.



28. We then modify the string passed through the res.send() method.



29. Now **after editing**, **scroll-down** and **click** the **Commit changes** button.
30. Our **changes** have finally been commited in our Repository in GitHub.
However our changes have not been reflected in our Remote Server. For that we have to '**pull**' the **new updated files** into the **repository directory in our Remote Server**.
31. We have to **Close our already running Server**. For this, **go to** the **Terminal** which we have been working with. Then press <**CTRL + C**> **shortcut** to **close the server**.

```
Started server
^C
ubuntu@ip-172-31-38-127:~/myRepoV1$
```

Our server has been stopped.

32. Now type:-

➔ **git pull**

(Enter the username when asked)
(Enter your account Token as your Password when asked for password)
(Right click once to paste, then press Enter)

```
ubuntu@ip-172-31-38-127:~/myRepoV1$ git pull
Username for 'https://github.com': DebrupPramanik
Password for 'https://DebrupPramanik@github.com':
remote: Enumerating objects: 5, done.
remote: Counting objects: 100% (5/5), done.
remote: Compressing objects: 100% (3/3), done.
remote: Total 3 (delta 2), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), 685 bytes | 228.00 KiB/s, done.
From https://github.com/DebrupPramanik/myRepoV1
   c367e05..188da63  master     -> origin/master
Updating c367e05..188da63
Fast-forward
 index.js | 2 +-
 1 file changed, 1 insertion(+), 1 deletion(-)
ubuntu@ip-172-31-38-127:~/myRepoV1$
```

Now we have to **restart** the server.

➔ **node index.js**

(We restarted the server)

33. We now have to **Refresh our browser** where we have our website open.

The changes have been successfully reflected. This is how we have to edit and update our project if required.

We have successfully completed our task of Deploying our project from GitHub to our EC2 server.