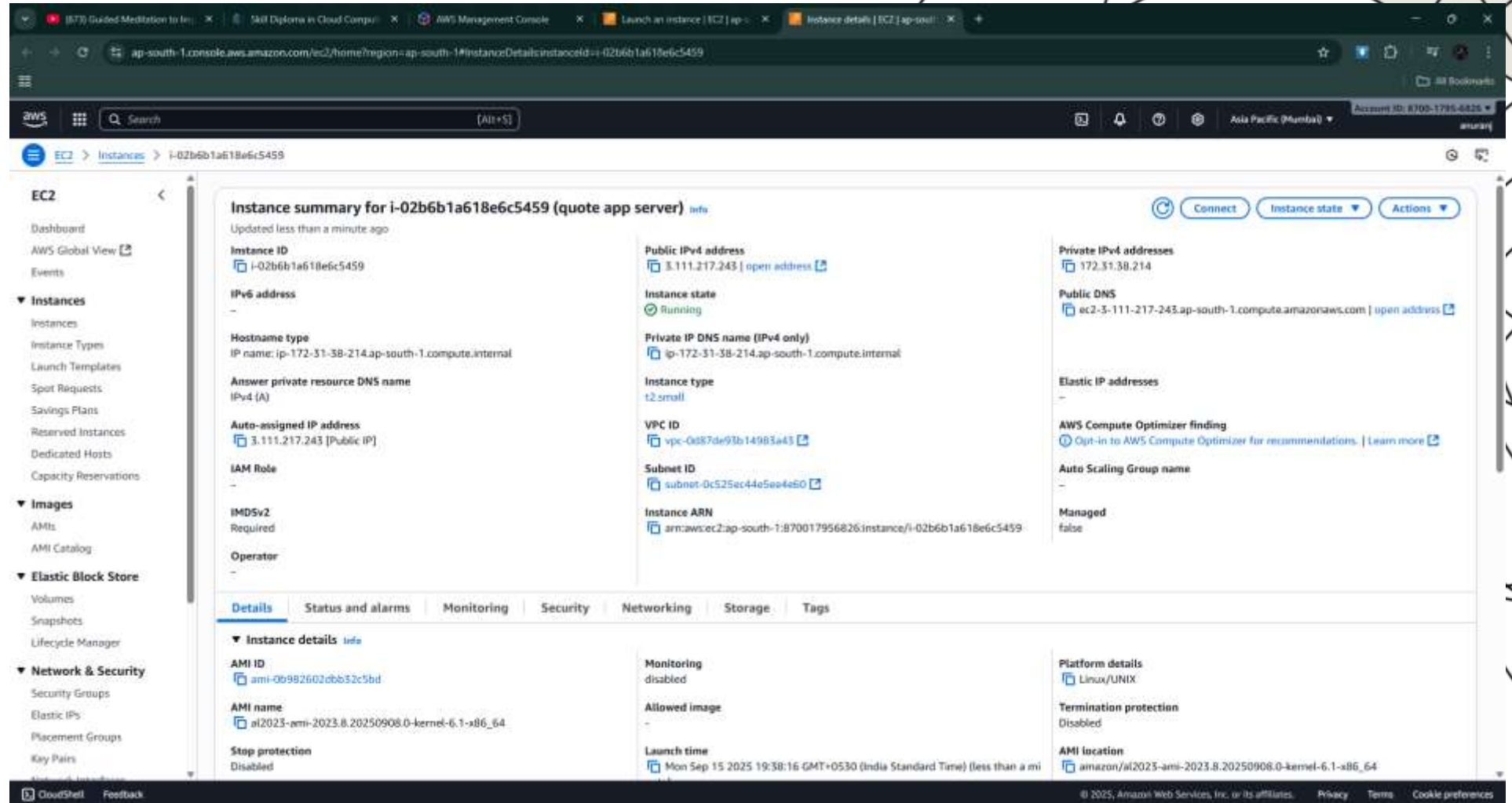




DEPLOY WEBSITE WITH DATABASE IN AWS

I started by
creating an ec2
instance.i chose
amazon linux for it



Then I installed node.js and npm so inorder to install that properly I used nvm (node version manager. >sudo yum update -y

```
> curl -o- https://raw.githubusercontent.com/nvm-sh/nvm/v0.39.1/install.sh | bash
```

Then I ran the script `> . ~/.nvm/nvm.sh`

Then I installed the most stable and latest version of node.js using this command > nvm install --lts

```

ec2-user@ip-172-31-38-214:~ X + v
PowerShell 7.5.3
PS C:\Users\Anuranj K> ssh -i "C:\Users\Anuranj K\Downloads\ajportfolio.pem" ec2-user@ec2-3-111-217-24
3.ap-south-1.compute.amazonaws.com -y
The authenticity of host 'ec2-3-111-217-243.ap-south-1.compute.amazonaws.com (64:ff9b::36f:d9f3)' can'
t be established.
ED25519 key fingerprint is SHA256:GIPeZAMoleQGFSY0DavjkbkgMYFY8olz710SzmmZJNg.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes

#_
~\####_ Amazon Linux 2023
~~\#####\
~~\###|
~~\#/ https://aws.amazon.com/linux/amazon-linux-2023
~~V~' ->
~~~
~~~
~~~
~~~
~/m/'

[ec2-user@ip-172-31-38-214 ~]$ sudo yum update -y
Amazon Linux 2023 Kernel Livepatch repository                214 kB/s | 21 kB    00:00
Dependencies resolved.
Nothing to do.
Complete!
[ec2-user@ip-172-31-38-214 ~]$ curl -o- https://raw.githubusercontent.com/nvm-sh/nvm/v0.39.1/install.s
h | bash
% Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
           Dload  Upload   Total   Spent    Left   Speed
100 15037  100 15037    0     0    702k      0 --:--:-- --:--:-- --:--:--   734k
=> Downloading nvm as script to '/home/ec2-user/.nvm'

=> Appending nvm source string to /home/ec2-user/.bashrc
=> Appending bash_completion source string to /home/ec2-user/.bashrc
=> Close and reopen your terminal to start using nvm or run the following to use it now:

export NVM_DIR="$HOME/.nvm"
[ -s "$NVM_DIR/nvm.sh" ] && \. "$NVM_DIR/nvm.sh" # This loads nvm
[ -s "$NVM_DIR/bash_completion" ] && \. "$NVM_DIR/bash_completion" # This loads nvm bash_completion
[ec2-user@ip-172-31-38-214 ~]$ . ~/.nvm/nvm.sh
[ec2-user@ip-172-31-38-214 ~]$ nvm install --lts
Installing latest LTS version.
Downloading and installing node v22.19.0...
Downloading https://nodejs.org/dist/v22.19.0/node-v22.19.0-linux-x64.tar.xz...
##### 100.0%
Computing checksum with sha256sum
Checksums matched!
Now using node v22.19.0 (npm v10.9.3)
Creating default alias: default -> lts/* (-> v22.19.0)
[ec2-user@ip-172-31-38-214 ~]$

```

Then I tried cloning from my git repo but I faced some problems because the file was in rar file which cannot be extracted in amazon linux without additional tools but my main tool was no longer available for amazon linux so I uploaded a zip file of the source code and proceeded with it. I also found some problems while deleting the previous directory so this is the command I used `> rmdir -rf dir_name`

```
ec2-user@ip-172-31-38-214: ~$  
(7/8): git-core-2.50.1-1.amzn2023.0.1.x86_64.rpm      29 MB/s | 4.9 MB   00:00  
(8/8): perl-lib-0.65-477.amzn2023.0.7.x86_64.rpm    312 kB/s | 15 kB   00:00  
-----  
Total                                              39 MB/s | 7.9 MB   00:00  
Running transaction check  
Transaction check succeeded.  
Running transaction test  
Transaction test succeeded.  
Running transaction  
  Preparing                : 1/1  
  Installing               : git-core-2.50.1-1.amzn2023.0.1.x86_64 1/8  
  Installing               : git-core-doc-2.50.1-1.amzn2023.0.1.noarch 2/8  
  Installing               : perl-lib-0.65-477.amzn2023.0.7.x86_64 3/8  
  Installing               : perl-TermReadKey-2.38-9.amzn2023.0.2.x86_64 4/8  
  Installing               : perl-File-Find-1.37-477.amzn2023.0.7.noarch 5/8  
  Installing               : perl-Error-1:0.17029-5.amzn2023.0.2.noarch 6/8  
  Installing               : perl-Git-2.50.1-1.amzn2023.0.1.noarch 7/8  
  Installing               : git-2.50.1-1.amzn2023.0.1.x86_64 8/8  
Running scriptlet: git-2.50.1-1.amzn2023.0.1.x86_64 8/8  
Verifying         : git-2.50.1-1.amzn2023.0.1.x86_64 1/8  
Verifying         : git-core-2.50.1-1.amzn2023.0.1.x86_64 2/8  
Verifying         : git-core-doc-2.50.1-1.amzn2023.0.1.noarch 3/8  
Verifying         : perl-Error-1:0.17029-5.amzn2023.0.2.noarch 4/8  
Verifying         : perl-File-Find-1.37-477.amzn2023.0.7.noarch 5/8  
Verifying         : perl-Git-2.50.1-1.amzn2023.0.1.noarch 6/8  
Verifying         : perl-TermReadKey-2.38-9.amzn2023.0.2.x86_64 7/8  
Verifying         : perl-lib-0.65-477.amzn2023.0.7.x86_64 8/8  
  
Installed:  
git-2.50.1-1.amzn2023.0.1.x86_64      git-core-2.50.1-1.amzn2023.0.1.x86_64  
git-core-doc-2.50.1-1.amzn2023.0.1.noarch perl-Error-1:0.17029-5.amzn2023.0.2.noarch  
perl-File-Find-1.37-477.amzn2023.0.7.noarch perl-Git-2.50.1-1.amzn2023.0.1.noarch  
perl-TermReadKey-2.38-9.amzn2023.0.2.x86_64 perl-lib-0.65-477.amzn2023.0.7.x86_64  
  
Complete!  
[ec2-user@ip-172-31-38-214 ~]$ git clone https://github.com/anuranjk/sample-web  
Cloning into 'sample-web'...  
remote: Enumerating objects: 15, done.  
remote: Counting objects: 100% (15/15), done.  
remote: Compressing objects: 100% (12/12), done.  
remote: Total 15 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)  
Receiving objects: 100% (15/15), 6.24 MiB | 15.70 MiB/s, done.  
[ec2-user@ip-172-31-38-214 ~]$ ls  
sample-web  
[ec2-user@ip-172-31-38-214 ~]$ cd sample-web  
-bash: cd: too many arguments  
[ec2-user@ip-172-31-38-214 ~]$ cd sample-web  
[ec2-user@ip-172-31-38-214 sample-web]$ ls  
quote-app.rar  
[ec2-user@ip-172-31-38-214 sample-web]$ sudo yum install -y epel-release  
sudo yum install -y unrar
```

```
ec2-user@ip-172-31-38-214: ~$  
inflating: quote-app/node_modules/util-deprecate/History.md  
inflating: quote-app/node_modules/util-deprecate/LICENSE  
inflating: quote-app/node_modules/util-deprecate/node.js  
inflating: quote-app/node_modules/util-deprecate/package.json  
inflating: quote-app/node_modules/util-deprecate/README.md  
  creating: quote-app/node_modules/vary/  
inflating: quote-app/node_modules/vary/HISTORY.md  
inflating: quote-app/node_modules/vary/index.js  
inflating: quote-app/node_modules/vary/LICENSE  
inflating: quote-app/node_modules/vary/package.json  
inflating: quote-app/node_modules/vary/README.md  
  creating: quote-app/node_modules/which/  
  creating: quote-app/node_modules/which/bin/  
inflating: quote-app/node_modules/which/bin/node-which  
inflating: quote-app/node_modules/which/CHANGELOG.md  
inflating: quote-app/node_modules/which/LICENSE  
inflating: quote-app/node_modules/which/package.json  
inflating: quote-app/node_modules/which/README.md  
inflating: quote-app/node_modules/which/which.js  
  creating: quote-app/node_modules/wide-align/  
inflating: quote-app/node_modules/wide-align/align.js  
inflating: quote-app/node_modules/wide-align/LICENSE  
inflating: quote-app/node_modules/wide-align/package.json  
inflating: quote-app/node_modules/wide-align/README.md  
  creating: quote-app/node_modules/wrappy/  
inflating: quote-app/node_modules/wrappy/LICENSE  
inflating: quote-app/node_modules/wrappy/package.json  
inflating: quote-app/node_modules/wrappy/README.md  
inflating: quote-app/node_modules/wrappy/wrappy.js  
  creating: quote-app/node_modules/yallist/  
inflating: quote-app/node_modules/yallist/iterator.js  
inflating: quote-app/node_modules/yallist/LICENSE  
inflating: quote-app/node_modules/yallist/package.json  
inflating: quote-app/node_modules/yallist/README.md  
inflating: quote-app/node_modules/yallist/yallist.js  
inflating: quote-app/package-lock.json  
inflating: quote-app/package.json  
  creating: quote-app/public/  
inflating: quote-app/public/index.html  
inflating: quote-app/public/script.js  
inflating: quote-app/public/styles.css  
inflating: quote-app/quotes.db  
inflating: quote-app/README.md  
inflating: quote-app/READMEcontainer.md  
inflating: quote-app/server.js  
[ec2-user@ip-172-31-38-214 sample-web]$ ls  
quote-app  quote-app.zip  
[ec2-user@ip-172-31-38-214 sample-web]$ rm quote-app.zip  
[ec2-user@ip-172-31-38-214 sample-web]$ ls  
quote-app  
[ec2-user@ip-172-31-38-214 sample-web]$
```


Then I navigated to the app folder and installed necessary npm packages(`npm install`) then I start the server but it failed because I was using the app which was built on another machine coping `node_modules` from another os breaks compatibility. So I fixed it by deleting the `node_modules` folder and `package-lock.json` file and tried (`npm install`) again in the app folder then ran it (`node server.js`)

This "invalid ELF header" error almost always means that a native Node.js module (in this case, `sqlite3`) was compiled for one operating system and architecture (like your Windows machine) and then you tried to run it on another (Amazon Linux).

The `node_modules` folder contains compiled code that is specific to the system where `npm` install was run. You can't just copy it from a Windows machine to a Linux machine and expect it to work.

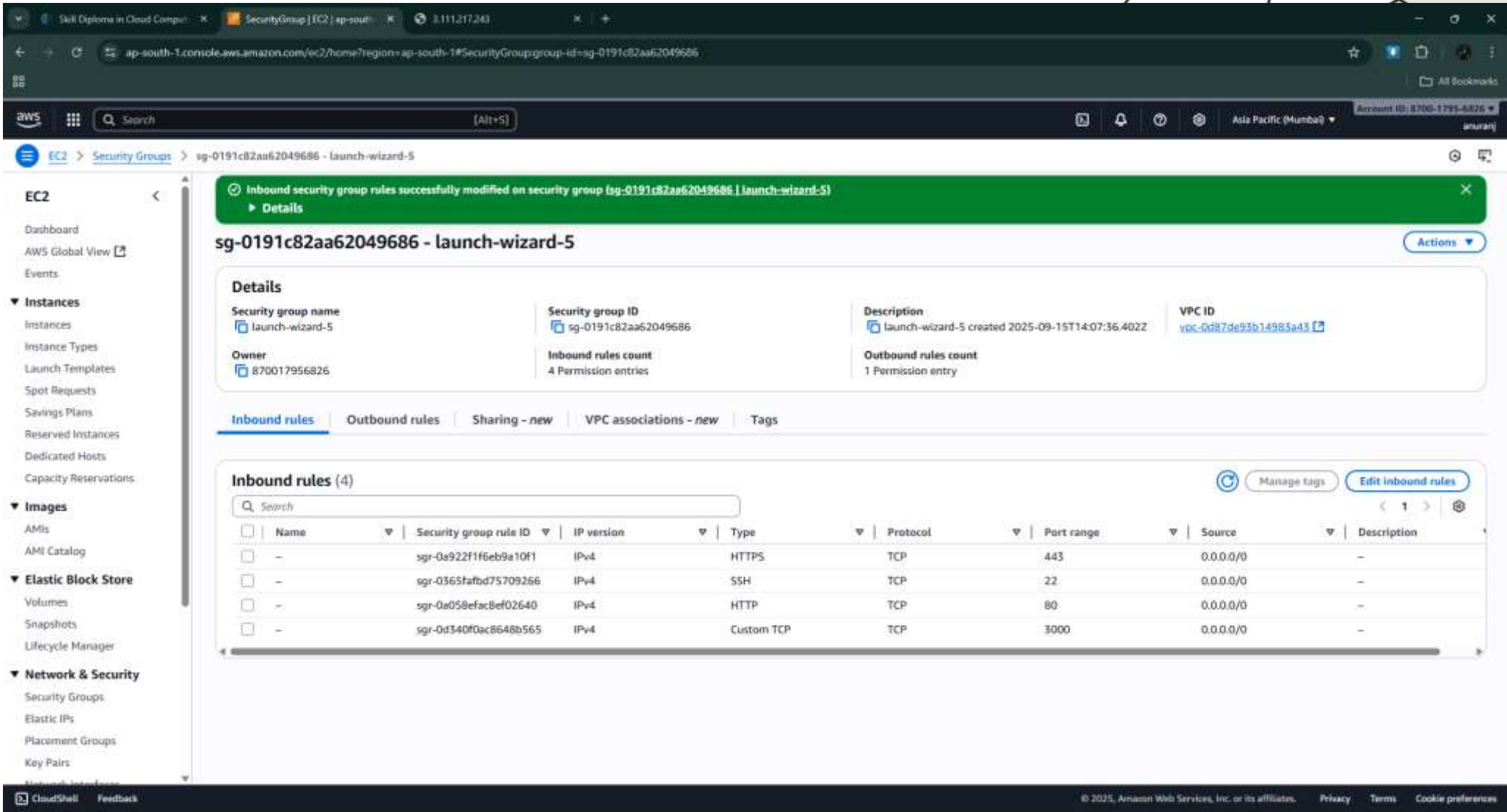
To fix this on your Amazon Linux server, you need to rebuild the `sqlite3` module for the correct environment. Here's what you should do *on the server*:

1. Navigate to your project directory: `cd /home/ec2-user/sample-web/quote-app`
This will download and compile a version of `sqlite3` that is compatible with Amazon Linux.
After that, `node server.js` should work correctly.

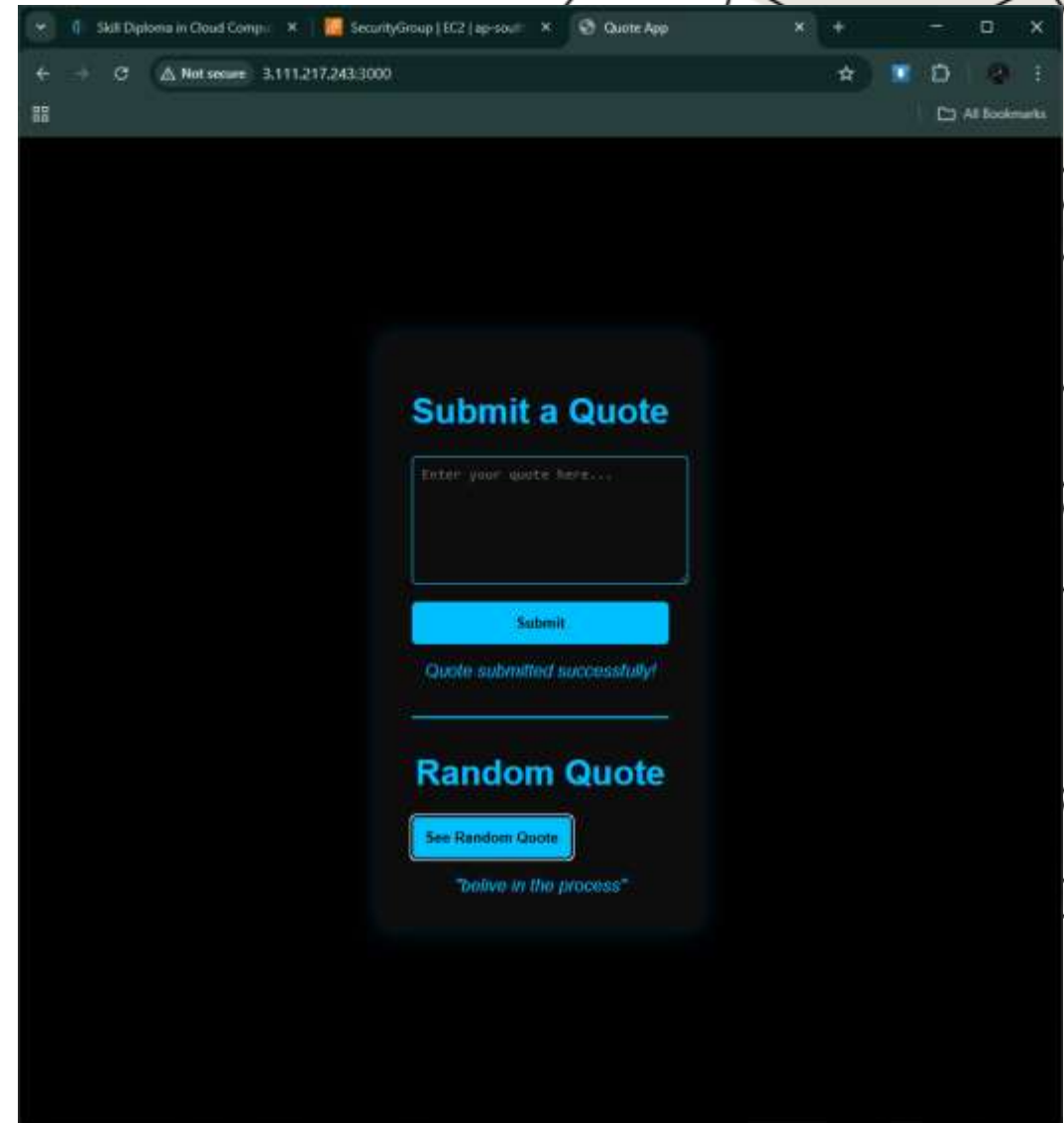
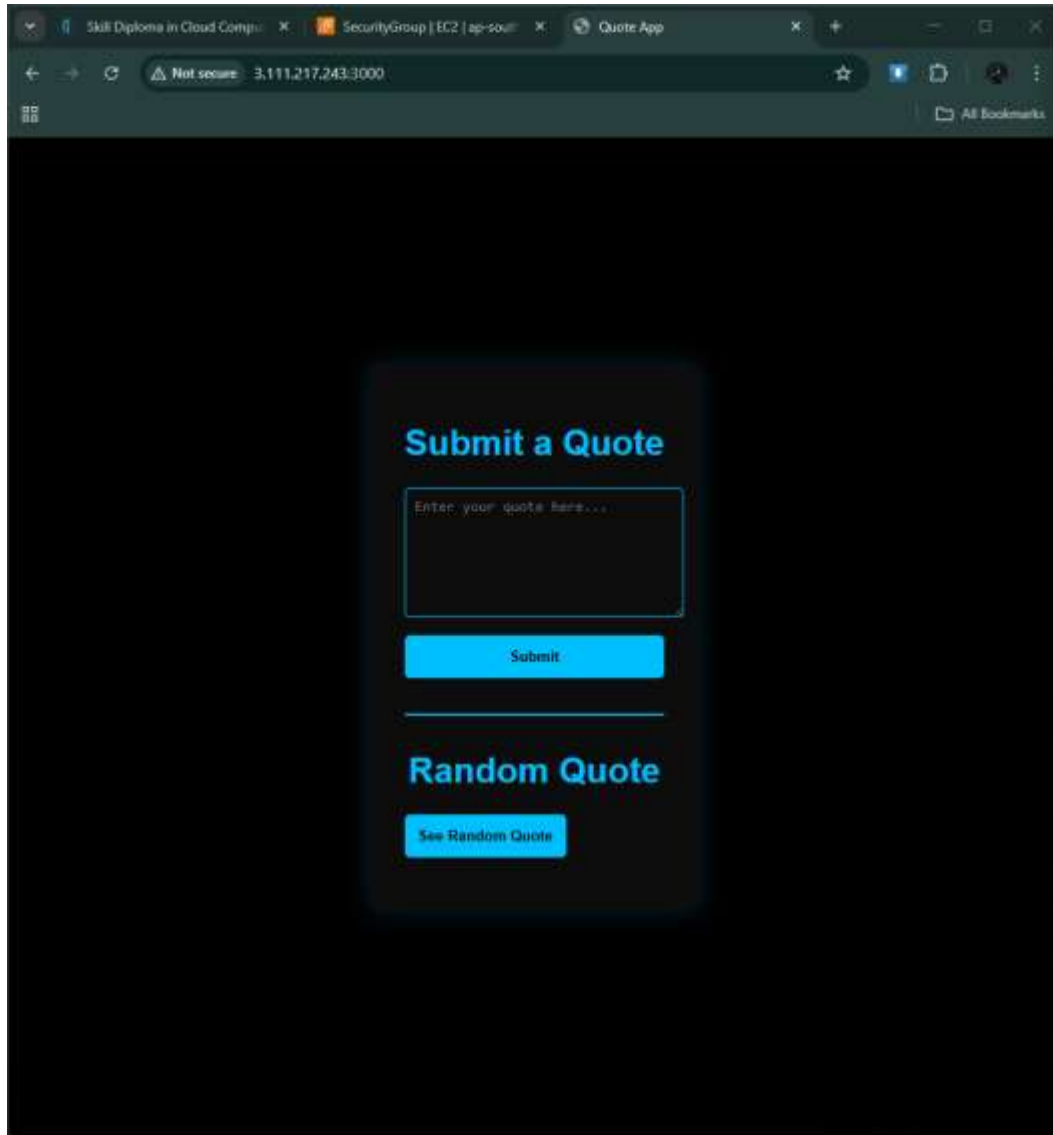
```
ec2-user@ip-172-31-38-214:~  
PS C:\Users\Anuranj K> ssh -i "C:\Users\Anuranj K\Downloads\ajportfolio.pem" ec2-user@ec2-3-111-217-24  
3.ap-south-1.compute.amazonaws.com ~y  
  
#_ Amazon Linux 2023  
~\#####  
nn\_#####\  
nn\_###|  
nn\_#/____ https://aws.amazon.com/linux/amazon-linux-2023  
nn_Vn'__>  
nnn  
nn_-_  
/_/_/  
/_m/'
```

```
Last login: Mon Sep 15 14:43:54 2025 from 157.51.209.184  
[ec2-user@ip-172-31-38-214 ~]$ ls  
sample-web  
[ec2-user@ip-172-31-38-214 ~]$ cd sample-app  
-bash: cd: sample-app: No such file or directory  
[ec2-user@ip-172-31-38-214 ~]$ cd sample-web  
[ec2-user@ip-172-31-38-214 sample-web]$ ls  
quote-app  
[ec2-user@ip-172-31-38-214 sample-web]$ cd quote-app  
[ec2-user@ip-172-31-38-214 quote-app]$ ls  
README.md node_modules package.json quotes.db  
READMEcontainer.md package-lock.json public server.js  
[ec2-user@ip-172-31-38-214 quote-app]$ rm -rf node_modules  
[ec2-user@ip-172-31-38-214 quote-app]$ ls  
README.md READMEcontainer.md package-lock.json package.json public quotes.db server.js  
[ec2-user@ip-172-31-38-214 quote-app]$ rm package-lock.json  
[ec2-user@ip-172-31-38-214 quote-app]$ ls  
README.md READMEcontainer.md package.json public quotes.db server.js  
[ec2-user@ip-172-31-38-214 quote-app]$ npm install  
npm warn deprecated are-we-there-yet@3.0.1: This package is no longer supported.  
npm warn deprecated inflight@1.0.6: This module is not supported, and leaks memory. Do not use it. Che  
ck out lru-cache if you want a good and tested way to coalesce async requests by a key value, which is  
much more comprehensive and powerful.  
npm warn deprecated rimraf@3.0.2: Rimraf versions prior to v4 are no longer supported  
npm warn deprecated npmlog@6.0.2: This package is no longer supported.  
npm warn deprecated @npmcli/move-file@1.1.2: This functionality has been moved to @npmcli/fs  
npm warn deprecated glob@7.2.3: Glob versions prior to v9 are no longer supported  
npm warn deprecated gauge@4.0.4: This package is no longer supported.  
  
added 181 packages, and audited 182 packages in 12s  
  
27 packages are looking for funding  
run `npm fund` for details  
  
found 0 vulnerabilities  
[ec2-user@ip-172-31-38-214 quote-app]$ node server.js  
Server running at http://localhost:3000  
Connected to the quotes database.
```

Then I tried accessing the website using its public ip address but it failed, it was because the node.js use to run the app In **port:3000** and the security group didn't allowed it so I changed it by adding a new inbound rule in sg.

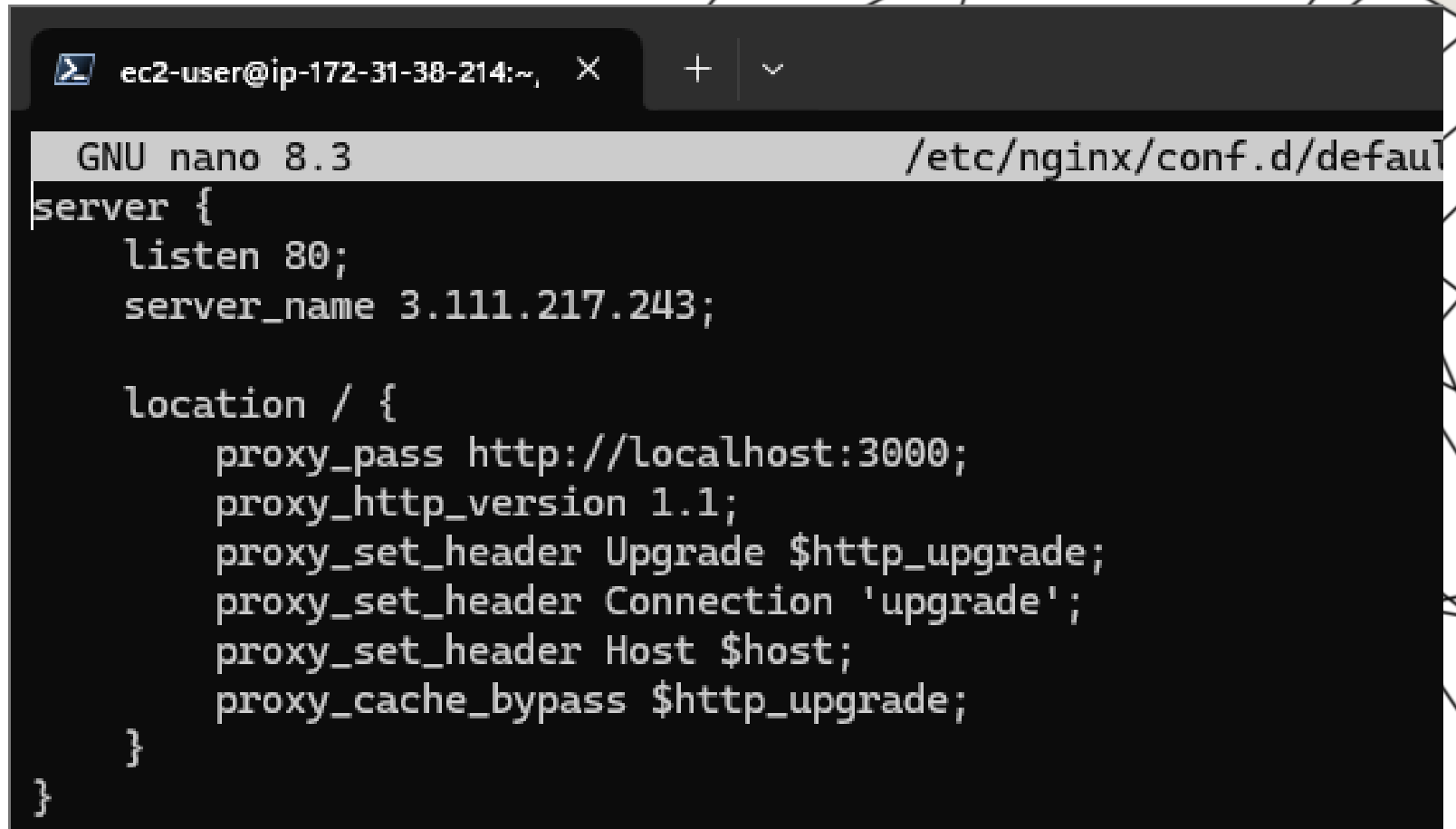


Now the website was accessible through port 3000. and I tested it by uploading some quotes and checking random quotes.



Now it was time to make the website accessible via port 80 so I installed nginx for it (**sudo yum install nginx -y**) and set up reverse proxy by configuring this file(**sudo nano /etc/nginx/conf.d/default.conf**) after saving the config estart nginx (**sudo systemctl restart nginx**)

```
server {  
    listen 80;  
    server_name yourdomain.com  
    www.yourdomain.com;  
  
    location / {  
        proxy_pass  
http://localhost:3000;  
        proxy_http_version 1.1;  
        proxy_set_header Upgrade  
$http_upgrade;  
        proxy_set_header Connection  
'upgrade';  
        proxy_set_header Host $host;  
        proxy_cache_bypass  
$http_upgrade;  
    }  
}
```



```
GNU nano 8.3 /etc/nginx/conf.d/default.conf  
server {  
    listen 80;  
    server_name 3.111.217.243;  
  
    location / {  
        proxy_pass http://localhost:3000;  
        proxy_http_version 1.1;  
        proxy_set_header Upgrade $http_upgrade;  
        proxy_set_header Connection 'upgrade';  
        proxy_set_header Host $host;  
        proxy_cache_bypass $http_upgrade;  
    }  
}
```


Then I installed process manager so that it can run efficiently and restart if fail. (**npm install pm2**)

```
ec2-user@ip-172-31-38-214:~$ npm install pm2
```



Runtime Edition

PM2 is a Production Process Manager for Node.js applications with a built-in Load Balancer.

Start and Daemonize any application:
\$ pm2 start app.js

Load Balance 4 instances of api.js:
\$ pm2 start api.js -i 4

Monitor in production:
\$ pm2 monitor

Make pm2 auto-boot at server restart:
\$ pm2 startup

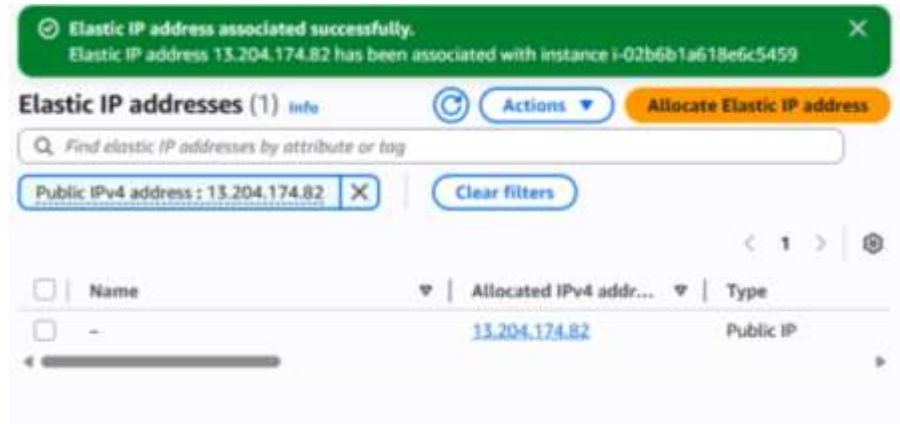
To go further checkout:
<http://pm2.io/>

```
[PM2] Spawning PM2 daemon with pm2_home=/home/ec2-user/.pm2
[PM2] PM2 Successfully daemonized
[PM2] Starting /home/ec2-user/sample-web/quote-app/server.js in fork_mode (1 instance)
[PM2] Done.
```

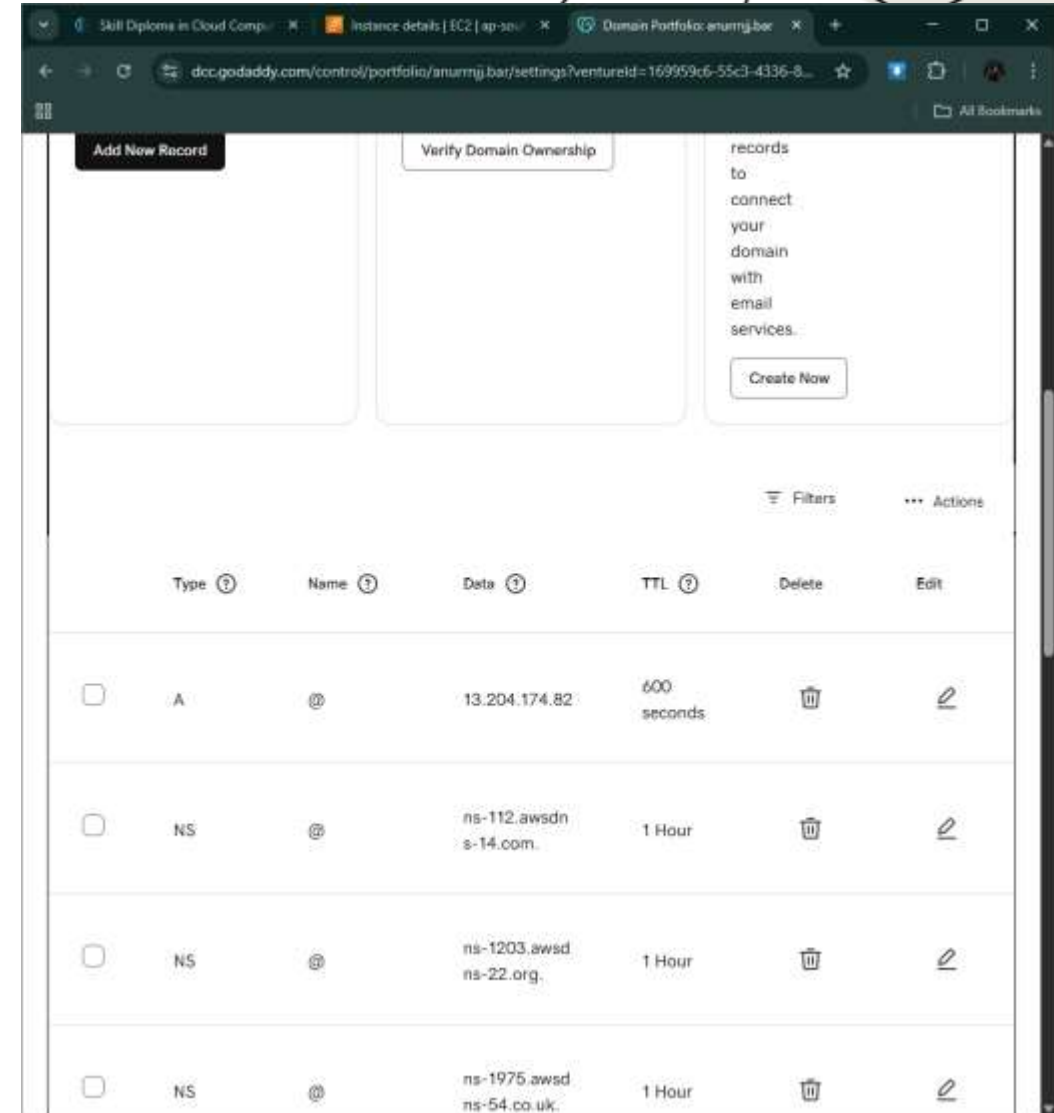
id	name	mode	u	status	cpu	memory
0	server	fork	0	online	0%	22.4mb

```
[PM2] Saving current process list...
[PM2] Successfully saved in /home/ec2-user/.pm2/dump.pm2
[PM2] Init System found: systemd
[PM2] To setup the Startup Script, copy/paste the following command:
sudo env PATH=$PATH:/home/ec2-user/.nvm/versions/node/v22.19.0/bin /home/ec2-user/.nvm/versions/node/v22.19.0/lib/node_modules/pm2/bin/pm2 startup systemd -u ec2-user --hp /home/ec2-user
[ec2-user@ip-172-31-38-214 quote-app]$
```

Then I wanted to add a domain name for the website. First of all I allocated a elastip ip for my server then I changed the nginx config so that my new ip will work. Then I navigated to my already purchased domain and added an **A record** . Then the nginx config was again changed instead of giving ip I entered the domain name there.



```
ec2-user@ip-172-31-38-214:~  
GNU nano 8.3 /etc/nginx/conf  
server {  
    listen 80;  
    server_name anurnjj.bar;  
  
    location / {  
        proxy_pass http://localhost:3000;  
        proxy_http_version 1.1;  
        proxy_set_header Upgrade $http_upgrade;  
        proxy_set_header Connection 'upgrade';  
        proxy_set_header Host $host;  
        proxy_cache_bypass $http_upgrade;  
    }  
}
```



ed by installing certbot with
I ran the certbot to obtain

```

[PM2] Spawning PM2 daemon with pm2_home=/home/ec2-user/.pm2
[PM2] PM2 Successfully daemonized
[PM2] Starting /home/ec2-user/sample-web/quote-app/server.js in fork_mode (1 instance)
[PM2] Done.

```

id	name	mode	u	status	cpu	memory
0	server	fork	0	online	0%	22.4mb

```

[PM2] Saving current process list...
[PM2] Successfully saved in /home/ec2-user/.pm2/dump.pm2
[PM2] Init System found: systemd
[PM2] To setup the Startup Script, copy/paste the following command:
sudo env PATH=$PATH:/home/ec2-user/.nvm/versions/node/v22.19.0/bin /home/ec2-user/.nvm/versions/node/v22.19.0/lib/node_modules/pm2/bin/pm2 startup systemd -u ec2-user --hp /home/ec2-user
[ec2-user@ip-172-31-38-214 ~]$
PS C:\Users\Anuranj K> ssh -i "C:\Users\Anuranj K\Downloads\ajportfolio.pem" ec2-user@ec2-3-111-217-243.ap-south-1.compute.amazonaws.com -y
PS C:\Users\Anuranj K> ssh -i "C:\Users\Anuranj K\Downloads\ajportfolio.pem" ec2-user@ec2-3-111-217-243.ap-south-1.compute.amazonaws.com -y
The authenticity of host 'ec2-3-111-217-243.ap-south-1.compute.amazonaws.com (64:ff9b::dcc:a652)' can't be established.
ED25519 key fingerprint is SHA256:GtPEzAMoIeQGFSYBdVjBkHgMYFY8olz7l8SzmsZJNg.
This host key is known by the following other names/addresses:
C:\Users\Anuranj K\.ssh\known_hosts:23: ec2-3-111-217-243.ap-south-1.compute.amazonaws.com
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes

```

The terminal shows the user's first login to the EC2 instance. It displays the Amazon Linux logo, the OS version (Amazon Linux 2023), and the public URL (https://aws.amazon.com/Linux/amazon-linux-2023). The last login information indicates the user connected from IP 157.51.209.184 on Monday, September 15, 2025 at 10:58:05 AM.

```

Last login: Mon Sep 15 10:58:05 2025 from 157.51.209.184
[ec2-user@ip-172-31-38-214 ~]$ sudo nano /etc/nginx/conf.d/default.conf
[ec2-user@ip-172-31-38-214 ~]$ sudo nano /etc/nginx/conf.d/default.conf
[ec2-user@ip-172-31-38-214 ~]$ sudo nano /etc/nginx/conf.d/default.conf
[ec2-user@ip-172-31-38-214 ~]$ sudo nginx -t
sudo systemctl restart nginx
nginx: the configuration file /etc/nginx/nginx.conf syntax is ok
nginx: configuration file /etc/nginx/nginx.conf test is successful
[ec2-user@ip-172-31-38-214 ~]$ sudo yum install -y certbot python3-certbot-nginx

```

