Internship Report
On
"Web & App Development
@
The Sparks Foundation - Singapore"

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1 Certificate Of Selection

Figure 1: Selection Certificate

2 Certificate Of Internship Completion

Figure 2: Internship Certificate

3 Recommendation Letter from the Managing Director of TSF, Singapore for outstanding performance in GRIP

Figure 3: Recommendation Letter

4 The Sparks Foundation

Sparks Foundation is a Singapore based IT company. It runs a Graduate Rotational Internship Programme every year. In this internship programme they hire STEM students for technical tasks.

In the month of May'21, I got selected to work as a **Web & App Development Intern** for one month. Tasks which I completed during my entire tenure are summarized below:

4.1 Task 1: Payment Gateway Integration

- Create a simple website where payment gateway is integrated.
- There will be a simple donate button on homepage. On clicking the donate button, the user will land on the payment page where user can select the amount to be paid and the payment type, e.g. credit card, Paypal, etc.
- Once the payment is done and invoice will be generated and email will be sent to the user for the payment received. The invoice will contain the amount.
- On any page / email, only basic information is needed.
- Create your own temporary / sandbox / testing accounts with 3rd party for integrations.
- Host the website at 000webhost, github.io, heroku app or any other free hosting provider. Check in code in gitlab.

4.2 Task 2: Social Media Integration

- Create a mobile app, where user can login through at least two social media from such as Facebook and Google.
- After login, display all the details (e.g. Name, profile photo, email, etc.) on the second page.
- Take help of online tutorials and You tube videos.

- No backend / server-side programming required.
- Very good-looking UI and responsive UI, which should work for mobiles as well as tablets.
- Clean code is a must.
- Upload video demo of your application on you tube and submit the url.

4.3 Task 3: CI/CD: Cloud Computing

- Read up about AWS or Azure.
- Write up about the steps of setup and essentials of AWS EC2 or Azure VM (one page step by step).
- Create an EC2 or azure VM instance and access it through ssh from your pc over internet.
- In the EC2, deploy and run any application (a website with tomcat/spring boot) or python-based project.
- Use at least one service apart from EC2 or VM, i.e. Database service, or MQ, ML, Mobile or any other services provided by AWS or Azure.
- Submit the URL of the application which is running on EC2.
- Your video should show that you are able to run applications on cloud.

5 Works Carried Out In Task 1:

Designed an animal donation website named 'Saving Paws' and then integrated a payment gateway page in it. There is a donate button on home page, just by tapping the same user is directed to the payment page. Once the payment is done, an invoice is generated and email is sent to the user for the payment received. The invoice contains the amount. [Figure 4, 7, 8, 9]

5.1 Home Page:

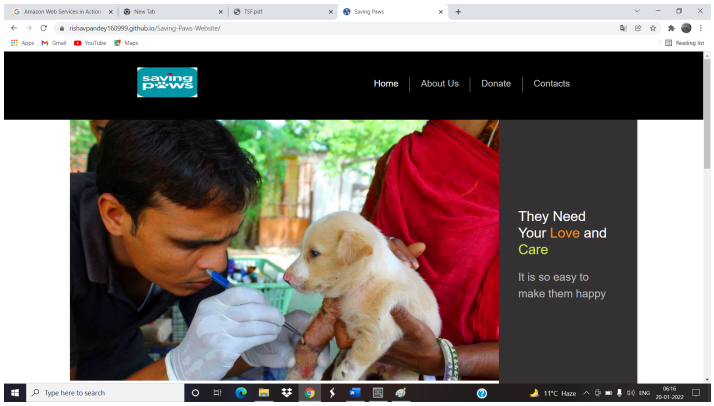


Figure 4: Home Page (i)

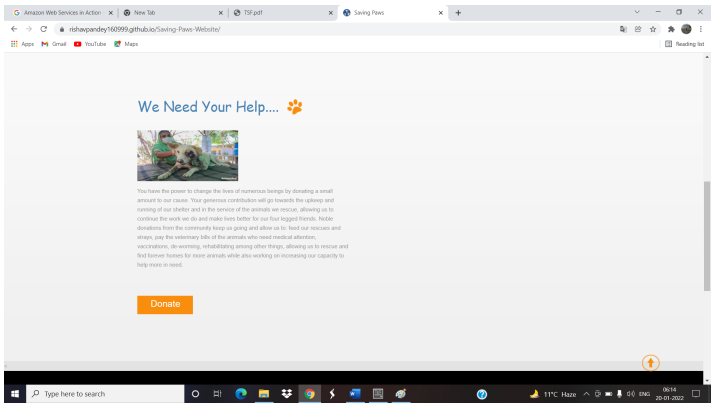


Figure 5: Home Page (ii)

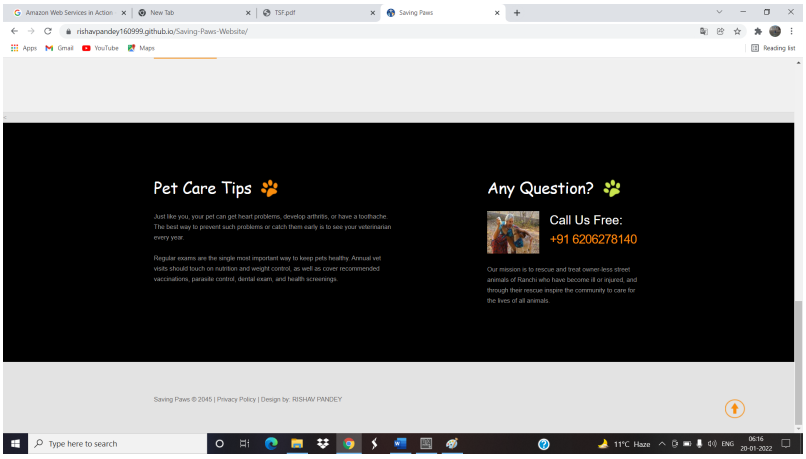


Figure 6: Home Page (iii)

5.2 About Us Page:

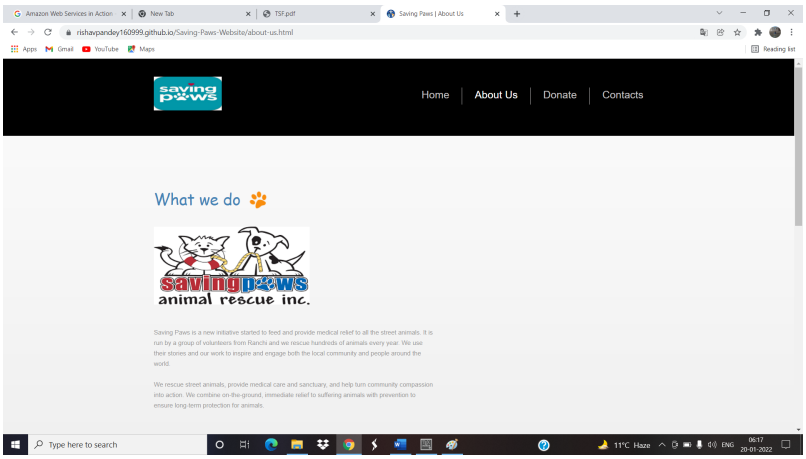


Figure 7: About Us Page

5.3 Donate Page:

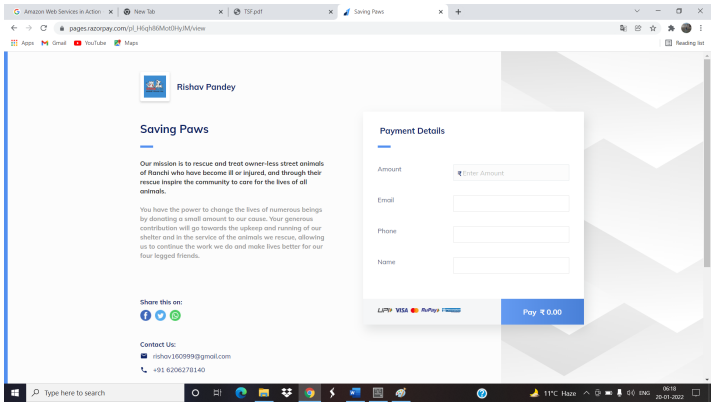


Figure 8: Donate Page

5.4 Contact Us Page:

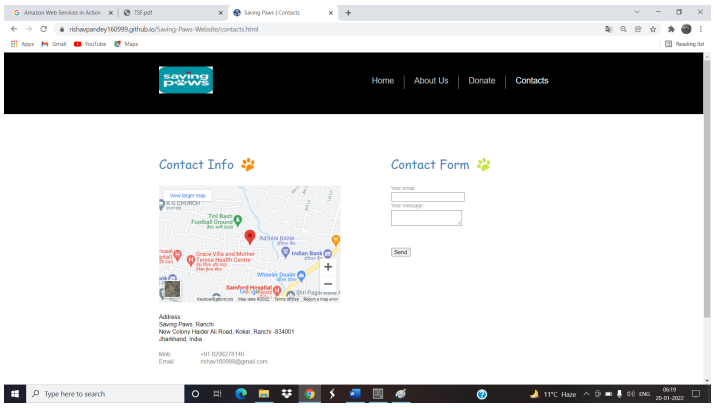


Figure 9: Contact Us Page

Link of the website

GitHub Repo

Presentation

6 Works Carried Out In Task 2:

Designed an android app named "Euro 2 INR Converter" which converts a given amount in Euro into INR. For creating the same I used JAVA and tool like Android Studio. I've integrated Google and Facebook Sign-in in it, so that a user can sign in by any of the two ways. Once the user is signed in, their name, email, and profile picture is displayed on the next screen. User can further continue to the next interface i.e. "Euro 2 INR Converter" page. [Figure 10, 11, 12, 13]

6.1 Splash Screen:

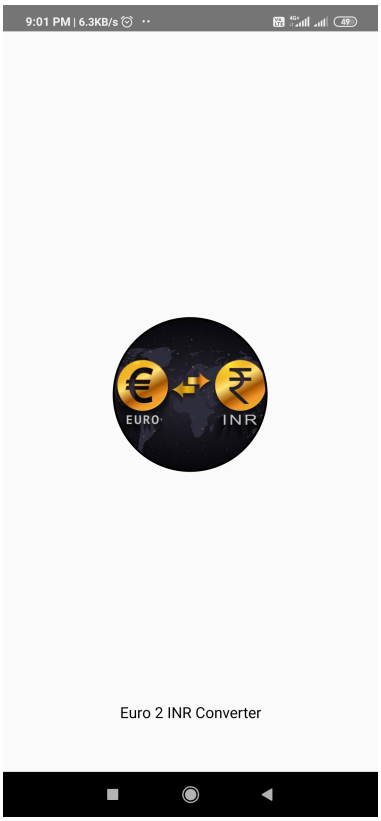
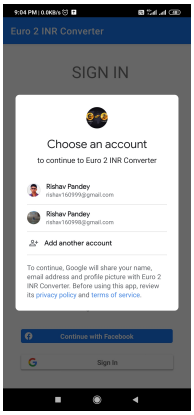


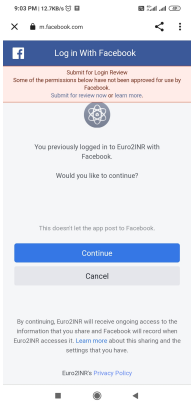
Figure 10: Splash Screen

6.2 Sign-in Page:

(a) SignIn Page (i)



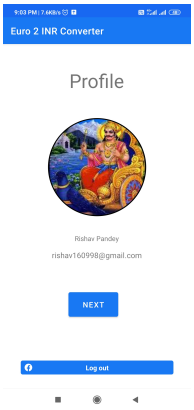
(b) SignIn Page (ii)



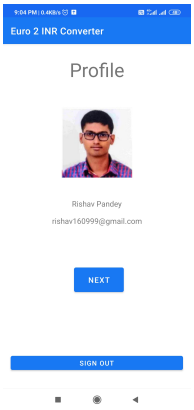
(c) SignIn Page (iii)

Figure 11: SignIn Page

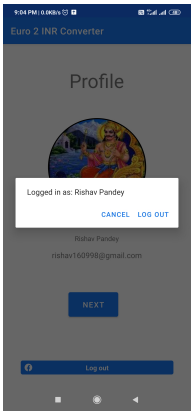
6.3 Profile Page:



(a) Profile Page (i)



(b) Profile Page (ii)



(c) Profile Page (iii)

Figure 12: Profile Page

6.4 Euro-2-INR Convertor Page:

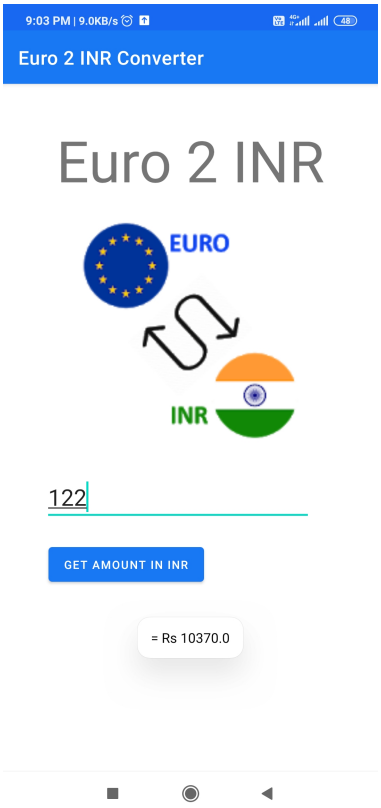


Figure 13: Euro 2 INR Convertor Page

GitHub Repo

Presentation

7 Works Carried Out In Task 3:

Learnt about all the services offered by an extremely secure cloud service provider Amazon Web Services (AWS) and implemented practically by launching an AWS EC2 Instance. I even used other services of AWS like storage services (AWS S3) and security services (IAM).

After launching the instance, I secure shelled into the same and further hosted my portfolio website on that virtual server. [Figure 25]

7.1 Steps to host a website on AWS EC2 Instance:

(Mishra, 2017)

Step 1: Choose an Amazon Machine Image (AMI).

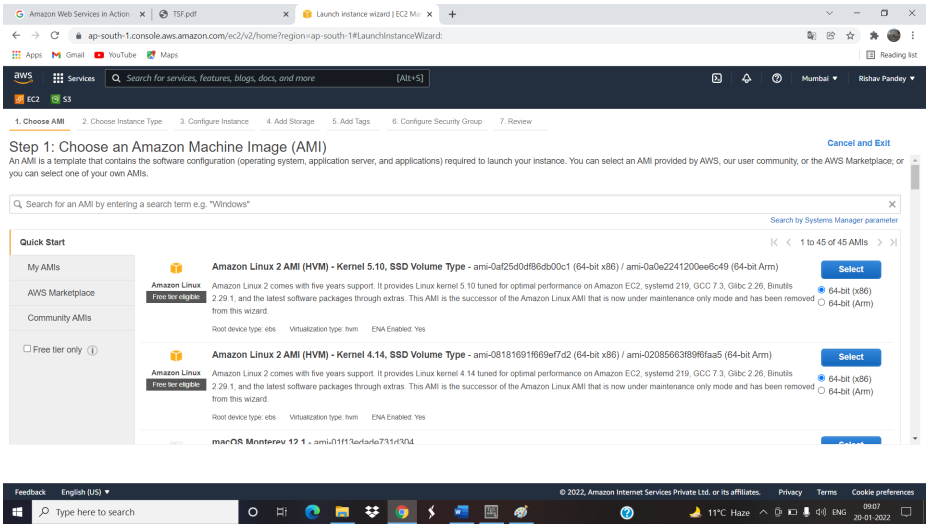


Figure 14: Choose an Amazon Machine Image

Step 2: Choose an Instance Type.

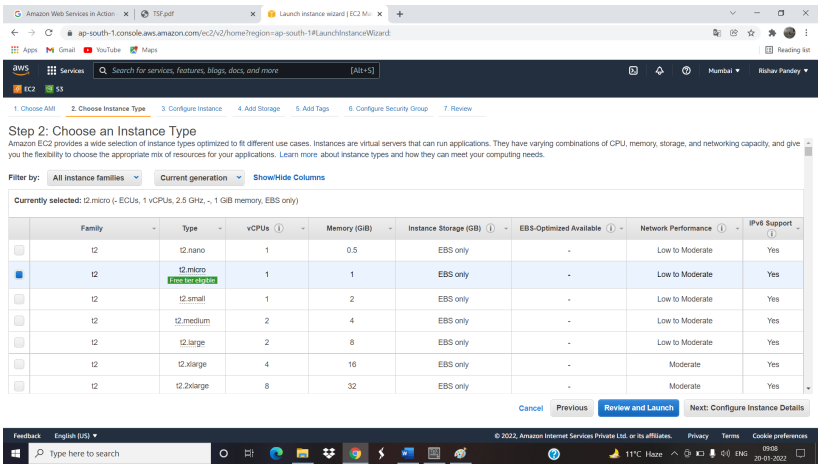


Figure 15: Choose an Instance Type

Step 3: Configure Instance Details.

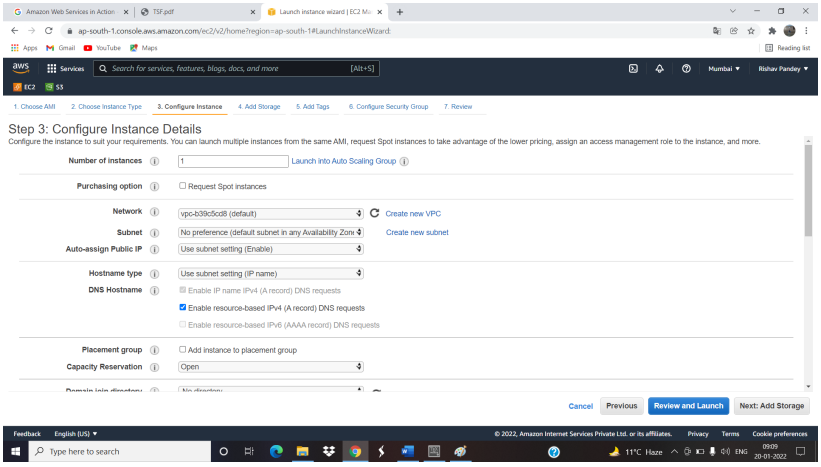


Figure 16: Configure Instance Details

Step 4: Add Storage.

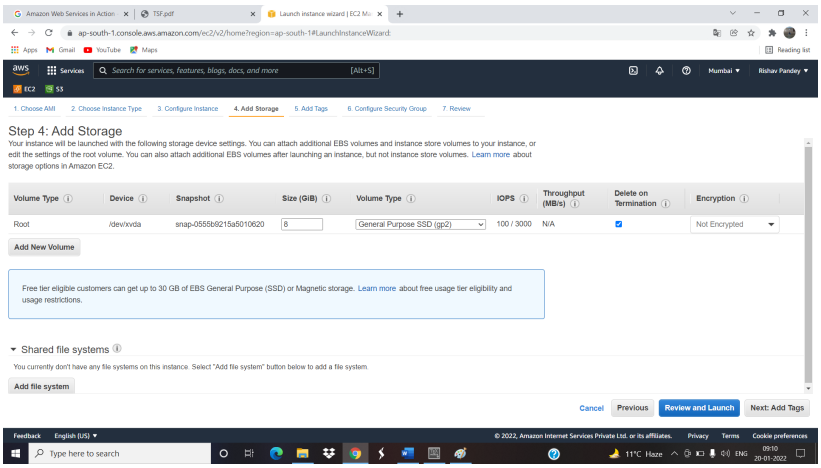


Figure 17: Add Storage

Step 5: Add Tags.

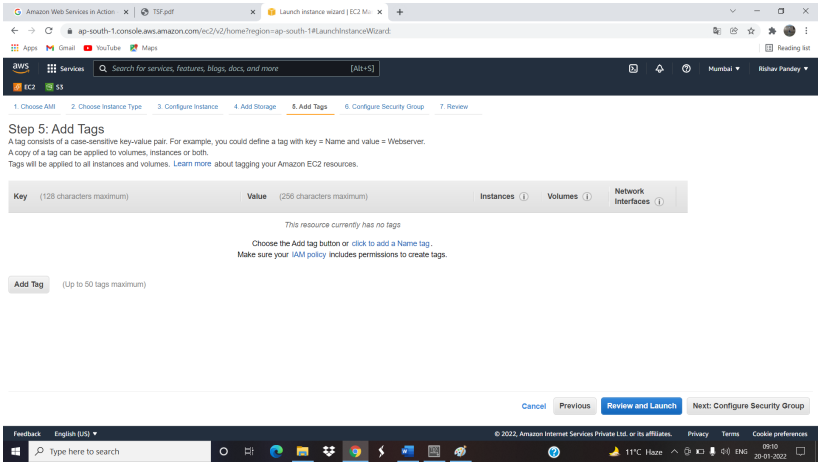


Figure 18: Add Tags

Step 6: Configure Security Group.

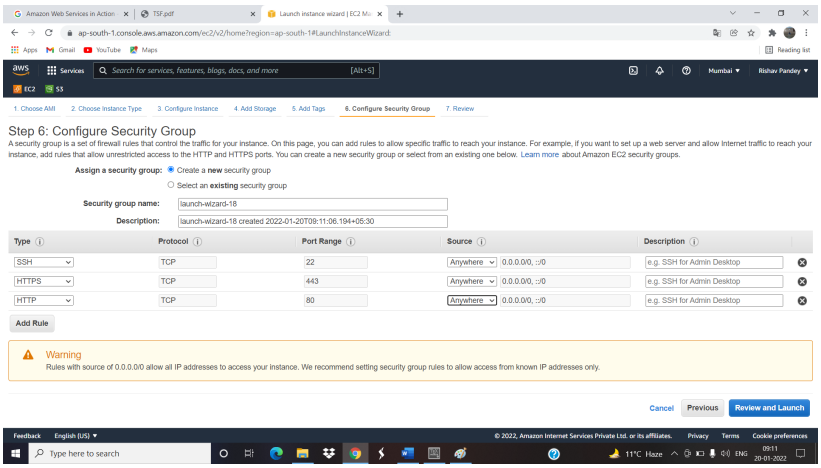


Figure 19: Configure Security Group

Step 7: Review Instance Launch.

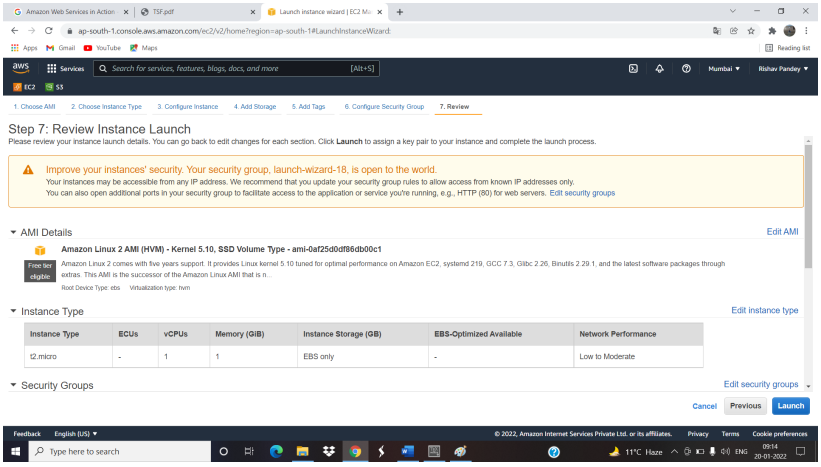


Figure 20: Review Instance Launch

Step 8: Select an existing keypair or create a new key pair.

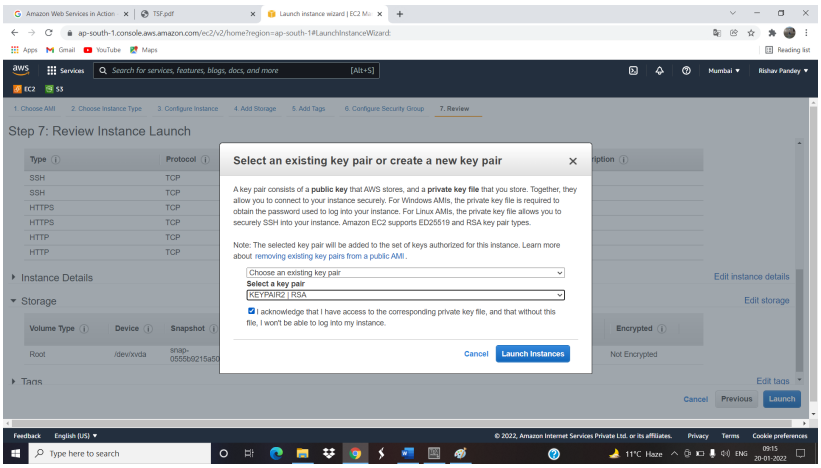


Figure 21: Select an existing keypair or create a new key pair

Step 9: Connect to instance.

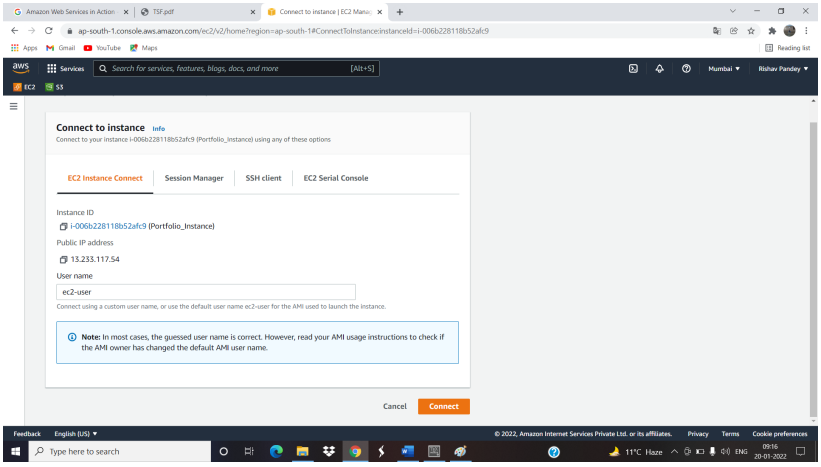


Figure 22: Connect to instance (i)

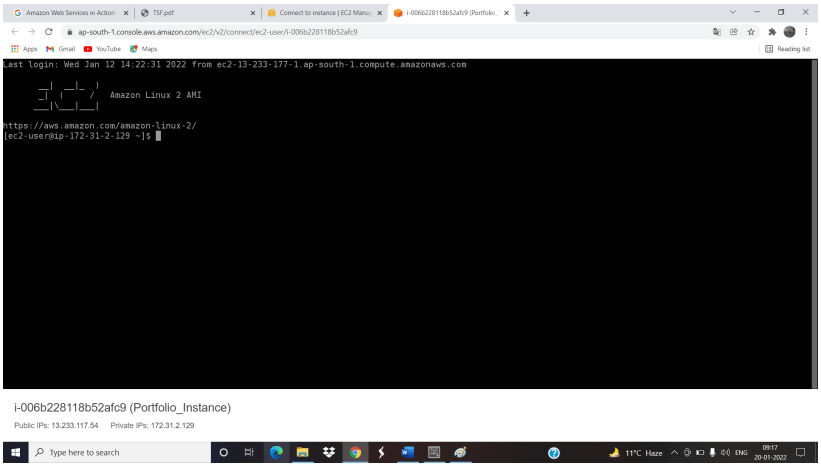


Figure 23: Connect to instance (ii)

Step 10: Run the below mentioned SSH commands one by one.

1. sudo su
2. yum update -y
3. yum install httpd -y
4. chkconfig httpd on
5. cd /var/www/html
6. aws s3 sync s3://BucketName /var/www/html
7. service httpd start

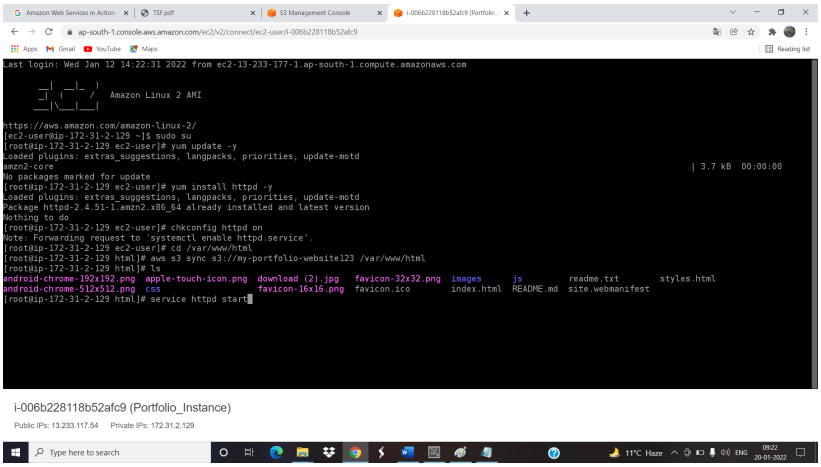


Figure 24: Commands being ran

Step 11: Copy the public IPv4 address and paste it in a new tab.

Your website will be live. I Just hosted my portfolio website :-)

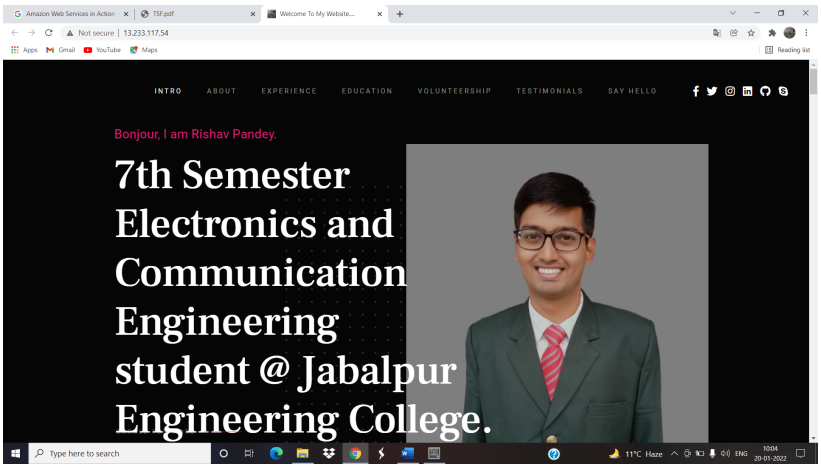


Figure 25: Website live on AWS EC2

8 Essentials of AWS EC2

- **Scalability:** We can scale up or scale down the storage depending upon the traffic server. If there is a low traffic in our server then we can decrease it's storage and vice versa.(Varia, Mathew, et al., 2014)
- **Flexibility:** In terms of flexibility, AWS is highly flexible. Suppose, if we want to host our website or an application for only 1 hour then we have to pay for only one hour.(Mishra, 2017)
- **Security:** AWS takes care of our stored data & also eliminates suspicious activities.(Mathew & Varia, 2014)
- **Cost Effective:** AWS has something called 'Free Tier Account' where we can use all the features of AWS free for whole one year. It also has a feature 'Pay as you go model' i.e. we have to pay only for those services which we have taken at lease.(Wittig & Wittig, 2018)

Link of the website running on AWS EC2 Instance

GitHub Repo

Presentation

References

Mathew, S., & Varia, J. (2014). Overview of amazon web services. *Amazon Whitepapers*.

Mishra, A. (2017). *Amazon web services for mobile developers: Building apps with aws*. John Wiley & Sons.

Varia, J., Mathew, S., et al. (2014). Overview of amazon web services. *Amazon Web Services*, *105*.

Wittig, M., & Wittig, A. (2018). *Amazon web services in action*. Simon and Schuster.