COVID BASE

June 10, 2021

DEPLOYING AN END TO END WEBSITE ON (A.W.S)

MINOR PROJECT REPORT

SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR

THE AWARD OF THE DEGREE OF

BACHELOR OF TECHNOLOGY

Information Technology

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Abstract

The Covidbase is a platform to be designed aimed at providing users a facility to put their details about covid. The website have simple user interface so a simple and reliable so person having less knowledge about technology can also use it. The Main aim behind this project is to show use of Amazon Web Services(A.W.S). The data uploaded by people is precious and can only be seen by developers of this project. in this project we can know covid status of our known ones plus the other person who fills data on website is also important as we get more and more information.

ACKNOWLEDGEMENT

We are highly grateful to Dr. Sehijpal Singh, Principal, Guru Nanak Dev Engineering College (GNDEC), Ludhiana, for providing this opportunity to carry out the minor project work at making ‘Deploying An End To End Website On Amazon Web Services(A.W.S)’. The constant guidance and encouragement received from Dr. K.S. Mann, H.O.D., IT Department, GNDEC Ludhiana has been of great help in carrying out the project work and is acknowledged with reverential thanks. We would like to express a deep sense of gratitude and thanks profusely to DR. Kamaljit Kaur Dhillon , without his wise counsel and able guidance, it would have been impossible to complete the project in this manner. We express gratitude to other faculty member of computer science and engineering department of GNDEC for their intellectual support throughout the course of this work Finally, we are indebted to all whosoever have contributed in this report work.

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1 Introduction

1.1 Introduction to Project

Covidbase is a project developed in this hard time of corona virus to help people. This project is based on medical field. The main motive behind making this project is to get data about people who was positive or never had corona before, persons who are vaccinated can upload vaccination.jpg in it for more information. In this project the main technology used is Amazon Web Services (A.W.S).

1.2 Objectives

1. People will connect to website and give their persona details and covid status vaccination report.
2. The data given by people can later be analysed so that we can know about how many got vaccinated..
3. From the data we can know who had faced covid once or many times so that it can be further classified and used for other case studies..

1.3 Unique Features of the System

Some of the features of covidbase are:

- Unique Concept
- Data of users can be used for further study
- Data can be used in machine learning to see future results.

2 Requirement Analysis and System Specification

2.1 Software Requirements

- PyCharm
- CHROME (for using A.W.S website)
- Putty
- Puttygen

2.2 Hardware Requirements

- A system with 8gb ram.
- At least i5 Processor or equivalent.
- Internet Connection.

2.3 Amazon Services to be used

- Amazon Simple Storage Service (Amazon S3)

Amazon Simple Storage Service (Amazon S3) is an object storage service that offers industry-leading scalability, data availability, security, and performance. This means customers of all sizes and industries can use it to store and protect any amount of data for a range of use cases, such as data lakes, websites, mobile applications, backup and restore, archive, enterprise applications, IoT devices, and big data analytics. Amazon S3 provides easy-to-use management features so you can organize your data and configure finely-tuned access controls to meet your specific business, organizational, and compliance requirements. Amazon S3 is designed for 99.999999999 percent (11 9's) of durability, and stores data for millions of applications for companies all around the world.

- Amazon Relational Database Service (Amazon RDS) :

Amazon Relational Database Service (Amazon RDS) makes it easy to set up, operate, and scale a relational database in the cloud. It provides cost-efficient and resizable capacity while automating time-consuming administration tasks such as hardware provisioning, database setup, patching and backups. It frees you to focus on your applications so you can give them the fast performance, high availability, security and compatibility they need.

- Route 53 :

Amazon Route 53 is a highly available and scalable cloud Domain Name System (DNS) web service. It is designed to give developers and businesses an extremely reliable and cost effective way to route end users to Internet applications by translating names like www.example.com into the numeric IP addresses like 192.0.2.1 that computers use to connect to each other. Amazon Route 53 is fully compliant with IPv6 as well.

- Amazon Elastic Compute Cloud (Amazon EC2)-SERVER :

Amazon Elastic Compute Cloud (Amazon EC2) is a web service that provides secure, resizable compute capacity in the cloud. It is designed to make web-scale cloud computing easier for developers. Amazon EC2's simple web service interface allows you to obtain and configure capacity with minimal friction. It provides you with complete control of your computing resources and lets you run on Amazon's proven computing environment

2.4 Other Services

- Github- central repository :

GitHub, Inc. is a provider of Internet hosting for software development and version control using Git. It offers the distributed version control and source code management functionality of Git, plus its own features

- Freenom- for domain :

Freenom is a free domain provider from where we got our freedomain with nameservers which can be used to connect to amazon route 53 services

2.5 Expected Hurdles :

Sometimes it does not connect to its nameserver so it can be accessed by using IP address of our ec2 instance.

3 System Design

3.1 System Design using various structured analysis and design tools such as:

- Activity Diagram

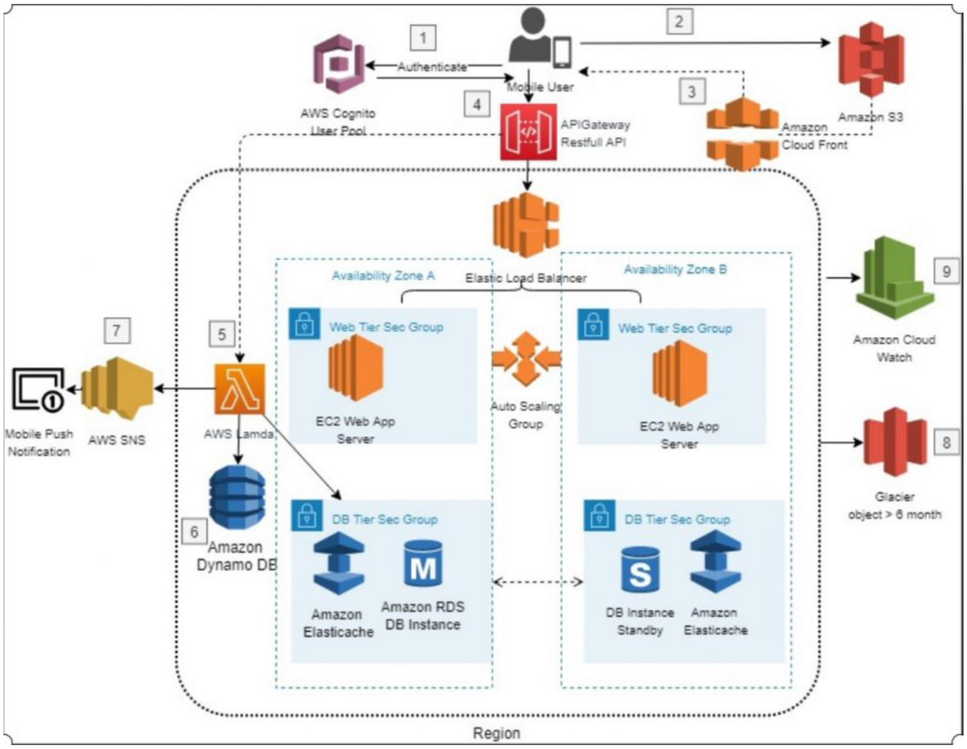


Figure 1:

- Data Flow Diagram -

3.2 Methodology

1. Planning of frontend of website in html and connecting it to website made using flask in python.
2. Planning of getting a free domain from website named freenom
3. Planning of use of AWS services such as EC2, RDS, ROUTE 53, S3 etc
4. Using EC2 for getting a ubuntu server on AWS
5. Using RDS for database made in MySQL

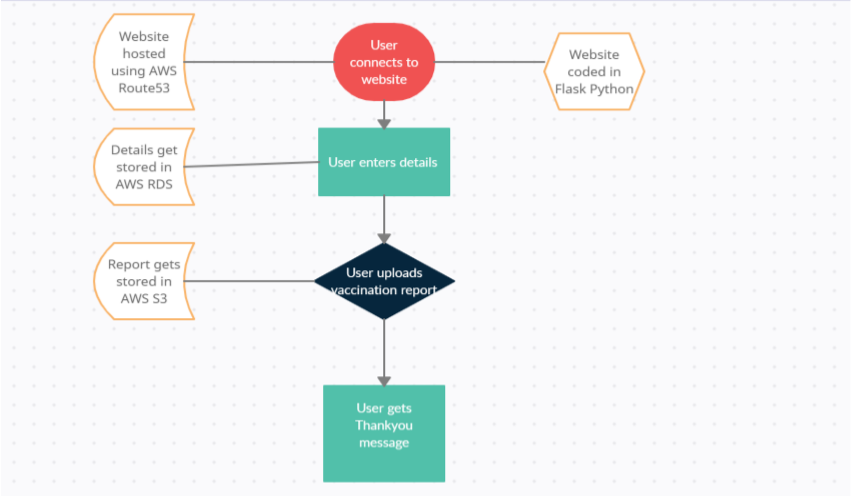

Website hosted using AWS Route53
User connects to website
Website coded in Flask Python
Details get stored in AWS RDS
User enters details
Report gets stored in AWS S3
User uploads vaccination report
User gets Thankyou message

Figure 2:

6. Using ROUTE 53 service by AWS for creating a hosted zone.

7. Using S3 for storing vaccination report in any format.

4 Implementation

4.1 Introduction to Languages, IDE's, Tools and Technologies used for Implementation

- Language

Flask : Flask is a web application framework written in Python. It was developed by Armin Ronacher, who led a team of international Python enthusiasts called Poocco. Flask is based on the Werkzeg WSGI toolkit and the Jinja2 template engine.Both are Pocco projects.

WSGI The Web Server Gateway Interface (Web Server Gateway Interface, WSGI) has been used as a standard for Python web application development. WSGI is the specification of a common interface between web servers and web applications.

Werkzeug is a WSGI toolkit that implements requests, response objects, and utility functions. This enables a web frame to be built on it. The Flask framework uses Werkzeg as one of its bases.

jinja2 is a popular template engine for Python.A web template system combines a template with a specific data source to render a dynamic web page.

Being a full-fledged programming language, Python is a great tool to implement algorithms for production use. There are several Python packages for basic data analysis and machine learning.

- IDE's Used

PyCharm : PyCharm is one of the most popular Python IDEs. There is a multitude of reasons for this, including the fact that it is developed by JetBrains, the developer behind the popular IntelliJ IDEA IDE that is one of the big 3 of Java IDEs and the "smartest JavaScript IDE" WebStorm. Having the support for web development by leveraging Django is yet another credible reason. There are a galore of factors that make PyCharm one of the most complete and comprehensive integrated development environments for working with the Python programming language.

The main reason Pycharm for the creation of this IDE was for Python programming, and to operate across multiple platforms like Windows, Linux, and macOS. The IDE comprises code analysis tools, debugger, testing tools, and also version control options. It also assists developers in building Python plugins with the help of various APIs available. The IDE allows us to work with several databases directly without getting it integrated with other tools. Although it is specially designed for Python, HTML, CSS, and Javascript files can also be created with this IDE. It also comes with a beautiful user interface that can be customized according to the needs using plugins.

- Tools Used :

1. **PuTTY :** PuTTY is a free and open-source terminal emulator, serial console and network file transfer application. It supports several network protocols, including SCP, SSH, Telnet, rlogin, and raw socket connection. It can also connect to a serial port. The name "PuTTY" has no official meaning.

2. **PuTTYgen** :PuTTYgen is an key generator tool for creating SSH keys for PuTTY. It is analogous to the ssh-keygen tool used in some other SSH implementationsThe basic function is to create public and private key pairs. PuTTY stores keys in its own format in .ppk files. However, the tool can also convert keys to and from other formats.It is a graphical tool.

3. **PyCharm :** PyCharmis a hybrid-platform developed by JetBrains as an IDE for Python. It is commonly used for Python application development. Some of the unicorn organizations such as Twitter, Facebook, Amazon, and Pinterest use PyCharm as their Python IDE!

- Technology Used:

1. **AWS(Amazon Web Services) :**AWS (Amazon Web Services) is a comprehensive, evolving cloud computing platform provided by Amazon that includes a mixture of infrastructure as a service (IaaS), platform as a service (PaaS) and packaged software as a service (SaaS) offerings. AWS services can offer an organization tools such as compute power, database storage and content delivery services.AWS launched in 2006 from the internal infrastructure that Amazon.com built to handle its online retail operations. AWS was one of the first companies to introduce a pay-as-you-go cloud computing

model that scales to provide users with compute, storage or throughput as needed.AWS offers many different tools and solutions for enterprises and software developers that can be used in data centers in up to 190 countries. Groups such as government agencies, education institutions, nonprofits and private organizations can use AWS services.

2. **How AWS works :** AWS is separated into different services; each can be configured in different ways based on the user's needs. Users should be able to see configuration options and individual server maps for an AWS service.

Steps for implementation-

AWS is one of the most popular cloud services available today, providing amazing solutions for many different problems which businesses face.

Overview of the steps

Step 1: Create an Ubuntu EC2 on AWS the first step would be to create the EC2 to deploy our application.

- Log in to AWS Console.
- Go to EC2 Section and select Ubuntu 18.4 AMI
- Select t2.micro if you want to stay in free tier or any other instance type you want.
- Press Next until Security Groups.
- Allow HTTP (Port 80), SSH (Port 22), HTTPS (Port 443) inbound traffic and press next.
- Create/Reuse Key-pair for connecting with your instance.

Step 2: SSH into Ubuntu EC2

- Open a terminal
- Type $ ssh -i <your key name>.pem ubuntu@<Public DNS of your EC2>.
- If you encounter an error message, run $ chmod 400 <your key name>.pem then try Step 2 again.

Step 3: Create/Clone Flask Website inside EC2

If you already have a flask proect on a Git Repository, clone your website into the EC2.

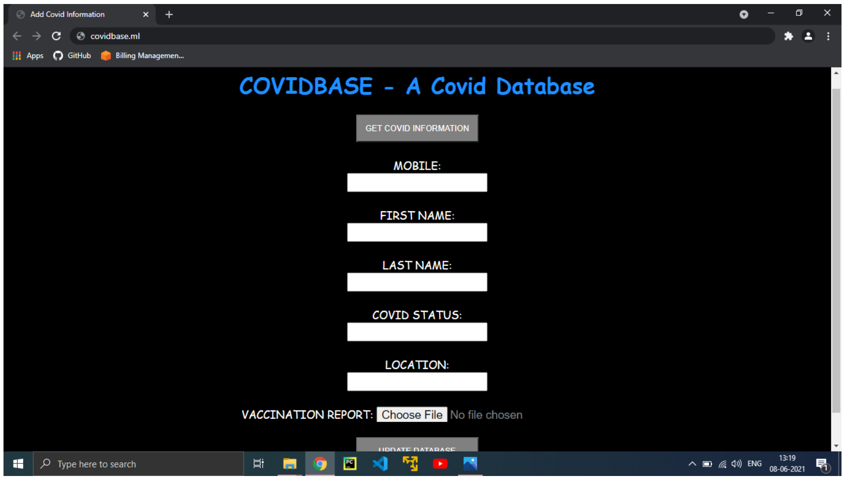
- Install Python Virtualenv
- Activate the new virtual environment in a new directory
- Create a Simple Flask API

5 Results and Discussions

5.1 Snapshots of system with brief detail of each

5.1.1 Clients Side

- **Step 1 :** User need to visit and our Home Page and have to fill the required information.Home page Can be visted by Browsing to **Http://covidbase.ml** Following Webpage Will be Displayed to User:



COVIDBASE - A Covid Database

GET COVID INFORMATION

MOBILE:

FIRST NAME:

LAST NAME:

COVID STATUS:

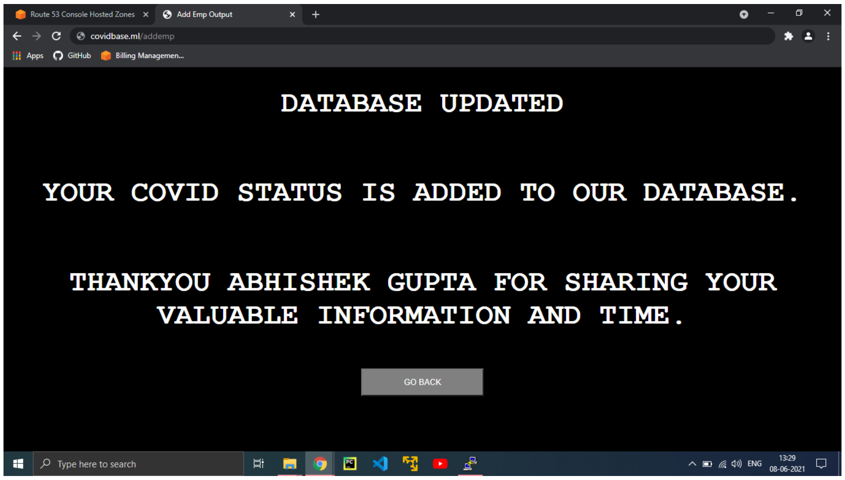
LOCATION:

VACCINATION REPORT: Choose File No file chosen

UPDATE DATABASE

Figure 3: Home Page

- **Step 2 :** After filling the required Information the user will be displayed the following Message shown to the user



DATABASE UPDATED

YOUR COVID STATUS IS ADDED TO OUR DATABASE.

THANKYOU ABHISHEK GUPTA FOR SHARING YOUR VALUABLE INFORMATION AND TIME.

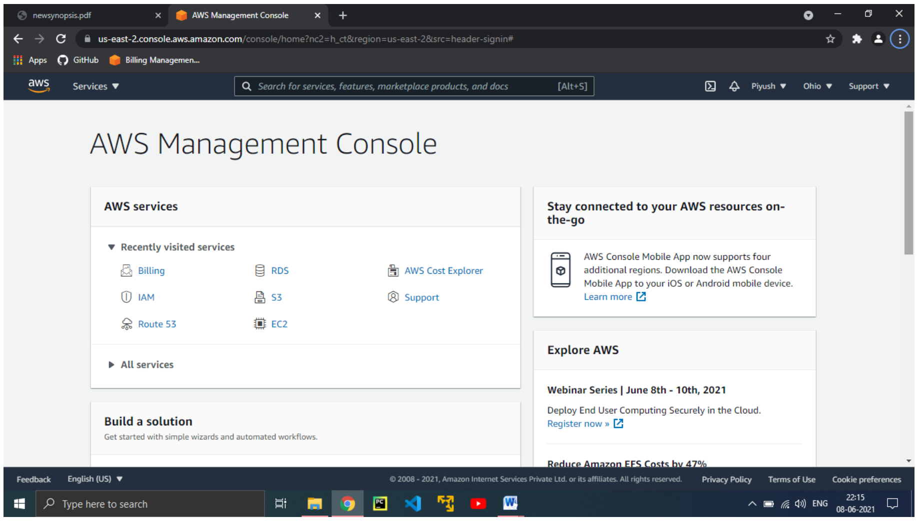
GO BACK

Figure 4: Message

5.1.2 Admin Side

- **AWS Management Console**

The console makes it easy to find new AWS services, configure services, view service usage, and so much more. From updating user groups to building applications you can take action quickly.



us-east-2.console.aws.amazon.com/console/home?nc2=h_ct&region=us-east-2&src=header-signin#

AWS Management Console

AWS services

Stay connected to your AWS resources on-the-go

AWS Console Mobile App now supports four additional regions. Download the AWS Console Mobile App to your iOS or Android mobile device.

Explore AWS

Webinar Series | June 8th - 10th, 2021

Deploy End User Computing Securely in the Cloud.

Reduce Amazon EFS Costs by 47%

Build a solution

Get started with simple wizards and automated workflows.

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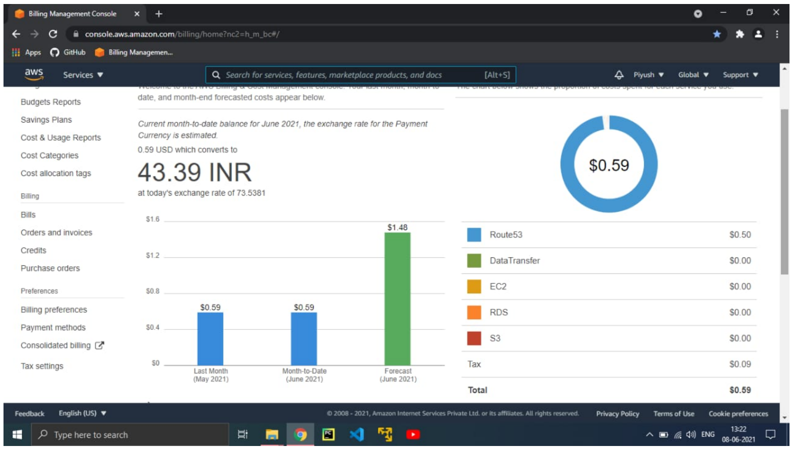
Figure 5: AWS Management Console

- **AWS Billing Dashboard**

AWS Billing and Cost Management is the service that you use to pay your AWS bill, monitor your usage, and analyze and control your costs.



console.aws.amazon.com/billing/home?nc2=h_m_bc#/

date, and month-end forecasted costs appear below.

Current month-to-date balance for June 2021, the exchange rate for the Payment Currency is estimated.

0.59 USD which converts to

43.39 INR

at today's exchange rate of 73.5381

🟦 Route53	$0.50
🟩 DataTransfer	$0.00
🟨 EC2	$0.00
🟧 RDS	$0.00
🟥 S3	$0.00
Tax	$0.09
Total	**$0.59**

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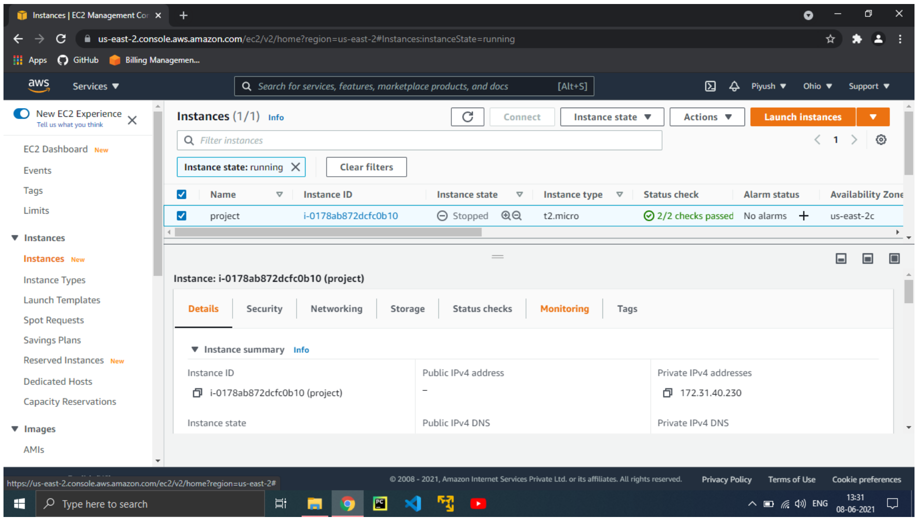
Figure 6: AWS Billing Console

- **AWS EC-2 Instance Server**

Amazon Elastic Compute Cloud (Amazon EC2) is a web service that provides secure, resizable compute capacity in the cloud. It is designed to make web-scale cloud computing easier for developers. Amazon EC2's simple web service interface allows you to obtain and configure capacity with minimal friction. It provides you with complete control of your computing resources and lets you run on Amazon's proven computing environment.



us-east-2.console.aws.amazon.com/ec2/v2/home?region=us-east-2#Instances:instanceState=running

Instances (1/1)

Instance state: running

☑	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
☑	project	i-0178ab872dcfc0b10	Stopped	t2.micro	2/2 checks passed	No alarms	us-east-2c

Instance: i-0178ab872dcfc0b10 (project)

▼ Instance summary

Instance ID: i-0178ab872dcfc0b10 (project)

Public IPv4 address: –

Private IPv4 addresses: 172.31.40.230

Instance state

Public IPv4 DNS

Private IPv4 DNS

https://us-east-2.console.aws.amazon.com/ec2/v2/home?region=us-east-2#

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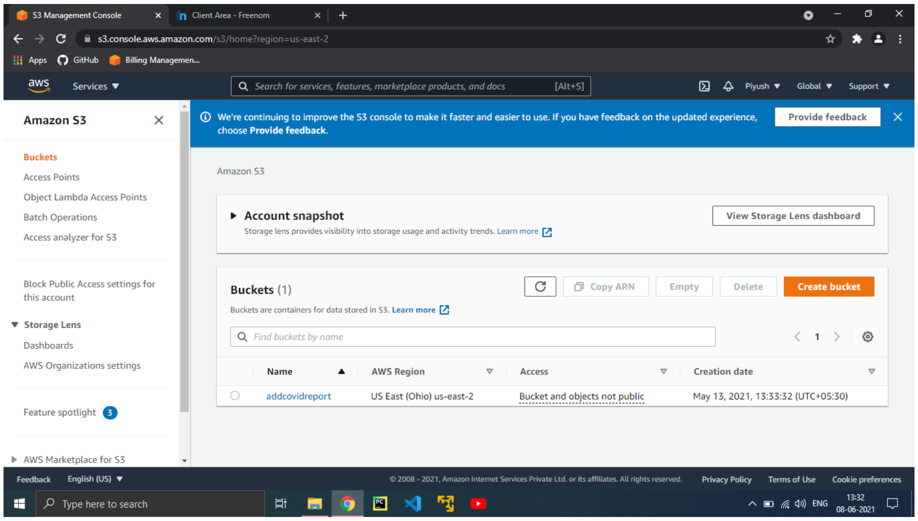
13:31
08-06-2021

Figure 7: EC-2 Management Console

- **AWS S3-bucket**

Amazon Simple Storage Service (Amazon S3) is an object storage service that offers industry-leading scalability, data availability, security, and performance.



We're continuing to improve the S3 console to make it faster and easier to use. If you have feedback on the updated experience, choose **Provide feedback**.

Account snapshot

Storage lens provides visibility into storage usage and activity trends. Learn more

Buckets (1)

Buckets are containers for data stored in S3. **Learn more**

	Name	AWS Region	Access	Creation date
○	addcovidreport	US East (Ohio) us-east-2	Bucket and objects not public	May 13, 2021, 13:33:32 (UTC+05:30)

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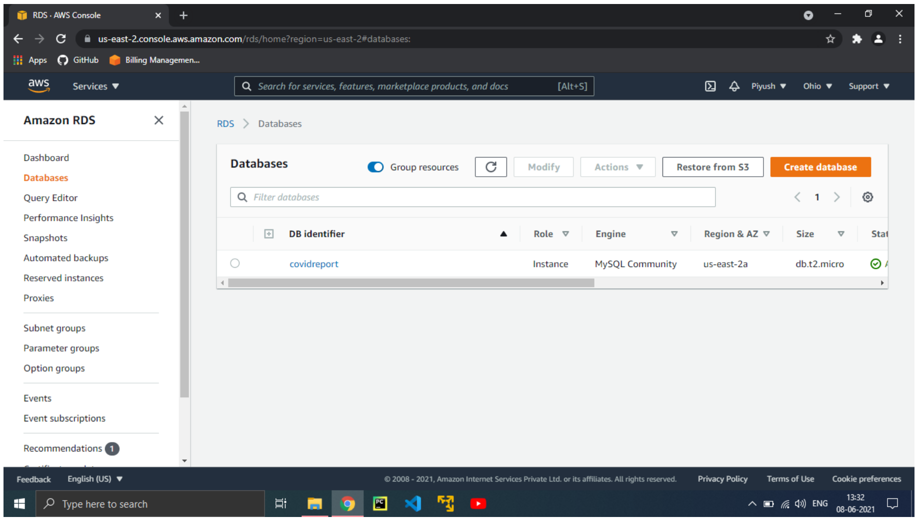
Figure 8: Amazon S3

- **AWS RDS Database**

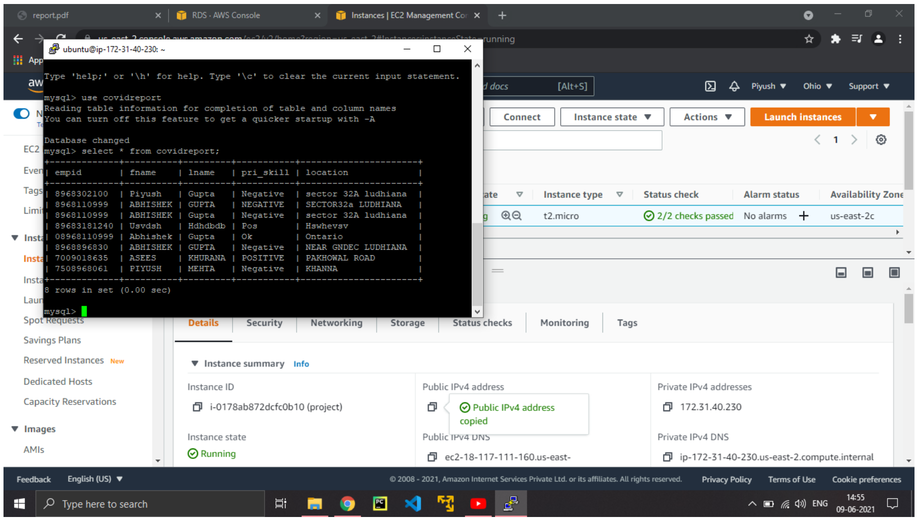
Amazon Relational Database Service (Amazon RDS) makes it easy to set up, operate, and scale a relational database in the cloud. It provides cost-efficient and resizable capacity while automating time-consuming administration tasks such as hardware provisioning, database setup, patching and backups



Databases

	DB identifier	Role	Engine	Region & AZ	Size	Stat
○	covidreport	Instance	MySQL Community	us-east-2a	db.t2.micro	✓

Figure 9: AWS RDS Database



```
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> use covidreport
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> select * from covidreport;
+-------------+----------+---------+-----------+----------------------+
| empid       | fname    | lname   | pri_skill | location             |
+-------------+----------+---------+-----------+----------------------+
| 8968302100  | Piyush   | Gupta   | Negative  | sector 32A ludhiana  |
| 8968110999  | ABHISHEK | GUPTA   | NEGATIVE  | SECTOR32a LUDHIANA   |
| 8968110999  | ABHISHEK | Gupta   | Negative  | sector 32A ludhiana  |
| 89683181240 | Usvdsh   | Hdhdbdb | Pos       | Hswhevsv             |
| 08968110999 | Abhishek | Gupta   | Ok        | Ontario              |
| 8968896830  | ABHISHEK | GUPTA   | Negative  | NEAR GNDEC LUDHIANA  |
| 7009018635  | ASEES    | KHURANA | POSITIVE  | PAKHOWAL ROAD        |
| 7508968061  | PIYUSH   | MEHTA   | Negative  | KHANNA               |
+-------------+----------+---------+-----------+----------------------+
8 rows in set (0.00 sec)

mysql>
```

Instance ID
i-0178ab872dcfc0b10 (project)

Public IPv4 address
Public IPv4 address copied

Public IPv4 DNS
ec2-18-117-111-160.us-east-

Private IPv4 addresses
172.31.40.230

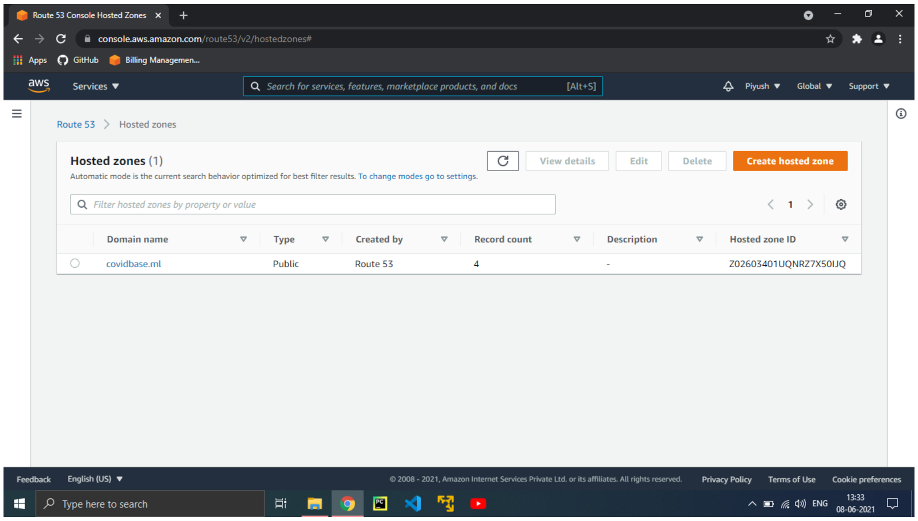
Private IPv4 DNS
ip-172-31-40-230.us-east-2.compute.internal

Instance state
Running

Figure 10: Data Base of the Website

- **AWS Route 53**

Amazon Route 53 is a highly available and scalable cloud Domain Name System (DNS) web service. It is designed to give developers and businesses an extremely reliable and cost effective way to route end users to Internet applications by translating names like www.example.com into the numeric IP addresses like 192.0.2.1 that computers use to connect to each other. Amazon Route 53 is fully compliant with IPv6 as well.



Hosted zones (1)

Automatic mode is the current search behavior optimized for best filter results. To change modes go to settings.

	Domain name	Type	Created by	Record count	Description	Hosted zone ID
○	covidbase.ml	Public	Route 53	4	-	Z02603401UQNRZ7X50IJQ

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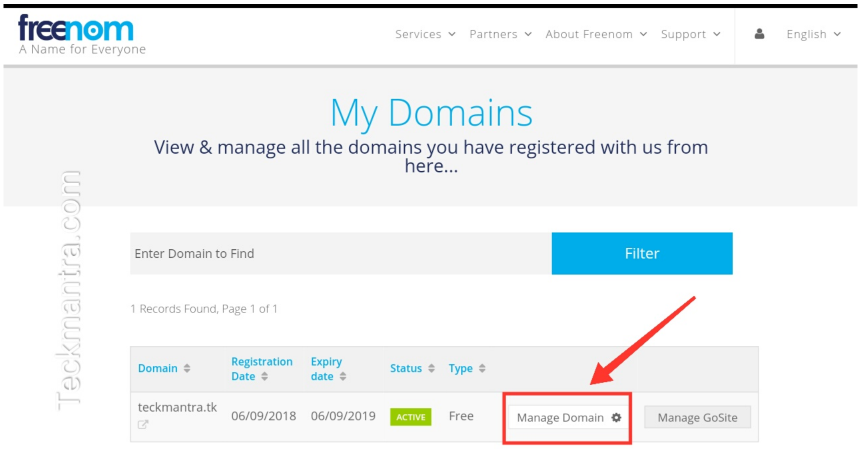
Figure 11: AWS Route 53

- **Freenom Website Hosting Dashboard**



My Domains

View & manage all the domains you have registered with us from here...

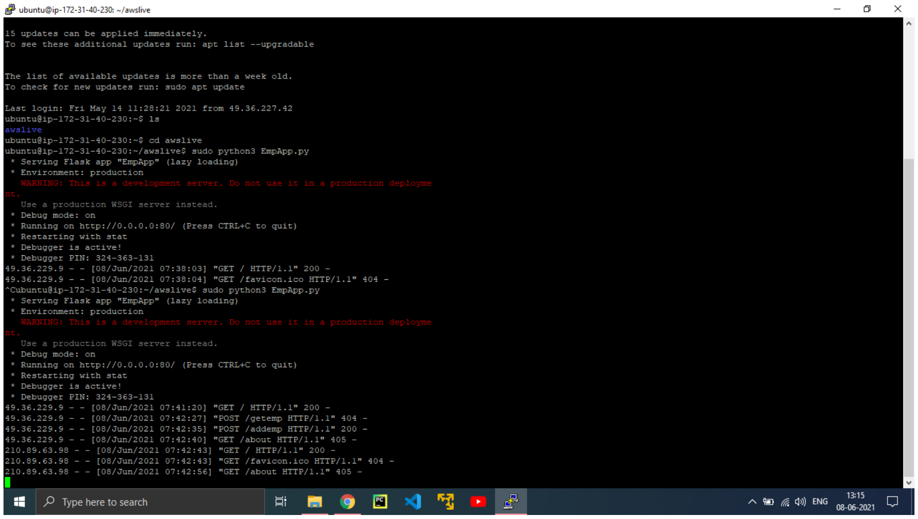
1 Records Found, Page 1 of 1

Domain	Registration Date	Expiry date	Status	Type		
teckmantra.tk	06/09/2018	06/09/2019	ACTIVE	Free	Manage Domain	Manage GoSite

Figure 12: Freenom Dashboard

5.1.3 Some Other Snapshots

Ubuntu Server using AWS EC-2



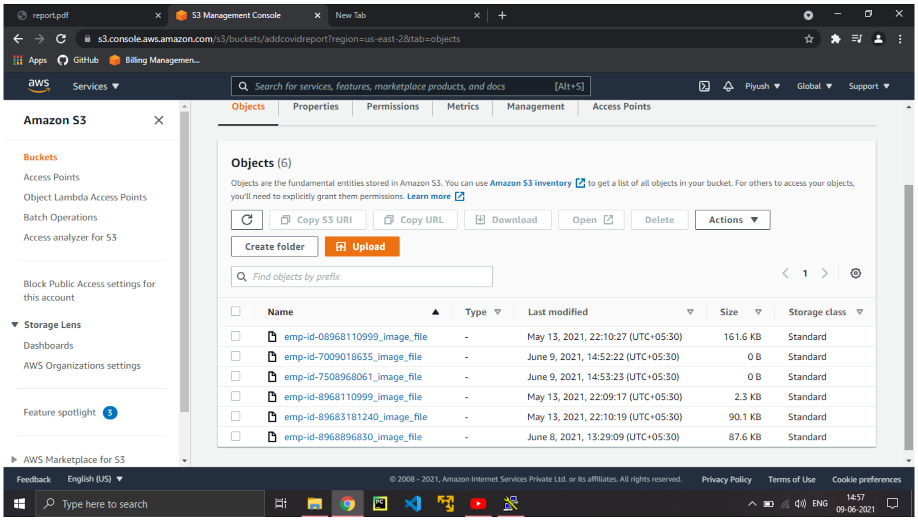
```
15 updates can be applied immediately.
To see these additional updates run: apt list --upgradable


The list of available updates is more than a week old.
To check for new updates run: sudo apt update

Last login: Fri May 14 11:28:21 2021 from 49.36.227.42
ubuntu@ip-172-31-40-230:~$ ls
awslive
ubuntu@ip-172-31-40-230:~$ cd awslive
ubuntu@ip-172-31-40-230:~/awslive$ sudo python3 EmpApp.py
 * Serving Flask app "EmpApp" (lazy loading)
 * Environment: production
   WARNING: This is a development server. Do not use it in a production deployme
nt.
   Use a production WSGI server instead.
 * Debug mode: on
 * Running on http://0.0.0.0:80/ (Press CTRL+C to quit)
 * Restarting with stat
 * Debugger is active!
 * Debugger PIN: 324-363-131
49.36.229.9 - - [08/Jun/2021 07:38:03] "GET / HTTP/1.1" 200 -
49.36.229.9 - - [08/Jun/2021 07:38:04] "GET /favicon.ico HTTP/1.1" 404 -
^Cubuntu@ip-172-31-40-230:~/awslive$ sudo python3 EmpApp.py
 * Serving Flask app "EmpApp" (lazy loading)
 * Environment: production
   WARNING: This is a development server. Do not use it in a production deployme
nt.
   Use a production WSGI server instead.
 * Debug mode: on
 * Running on http://0.0.0.0:80/ (Press CTRL+C to quit)
 * Restarting with stat
 * Debugger is active!
 * Debugger PIN: 324-363-131
49.36.229.9 - - [08/Jun/2021 07:41:20] "GET / HTTP/1.1" 200 -
49.36.229.9 - - [08/Jun/2021 07:42:27] "POST /getemp HTTP/1.1" 404 -
49.36.229.9 - - [08/Jun/2021 07:42:35] "POST /addemp HTTP/1.1" 200 -
49.36.229.9 - - [08/Jun/2021 07:42:40] "GET /about HTTP/1.1" 405 -
210.89.63.98 - - [08/Jun/2021 07:42:43] "GET / HTTP/1.1" 200 -
210.89.63.98 - - [08/Jun/2021 07:42:43] "GET /favicon.ico HTTP/1.1" 404 -
210.89.63.98 - - [08/Jun/2021 07:42:56] "GET /about HTTP/1.1" 405 -
```

Figure 13: Ubumtu

Covid Information Stored on the Server



Objects (6)

Objects are the fundamental entities stored in Amazon S3. You can use Amazon S3 inventory to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. Learn more

□	Name	Type	Last modified	Size	Storage class
□	emp-id-08968110999_image_file	-	May 13, 2021, 22:10:27 (UTC+05:30)	161.6 KB	Standard
□	emp-id-7009018635_image_file	-	June 9, 2021, 14:52:22 (UTC+05:30)	0 B	Standard
□	emp-id-7508968061_image_file	-	June 9, 2021, 14:53:23 (UTC+05:30)	0 B	Standard
□	emp-id-8968110999_image_file	-	May 13, 2021, 22:09:17 (UTC+05:30)	2.3 KB	Standard
□	emp-id-89683181240_image_file	-	May 13, 2021, 22:10:19 (UTC+05:30)	90.1 KB	Standard
□	emp-id-8968896830_image_file	-	June 8, 2021, 13:29:09 (UTC+05:30)	87.6 KB	Standard

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Figure 14: Database

6 Conclusion and Future Scope

6.1 Conclusion

Covid-19 is a big issue and in this hard time this project can be used to sore data of our known ones and we can know who is positive and negative in our known or even unknown ones. We can know who has been vaccinated or not with the vaccination report he/she will upload.

6.2 Future Scope

- Various features can be added in the future like map to see people around us.
- Push notifications can be added which will notify users whenever a person recent positive is near us.
- This website can be convertedto made as an app in ios and android.
- Wide information can be extracted data.
- Information Derived can be further used for data analyzation.

7 References

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