An

Industrial Training Report

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Bachelor of Technology Computer Engineering

in

By

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Bardoli – 394350

Company profile

Biz-Insights is an IT solutions company providing innovative, best-in-class consulting, IT solutions and Outsourcing services to local and global businesses. Biz-Insights brings together a deep understanding of the business and technology dimensions of an organization to harness information to improve decision-making, financial management, regulatory compliance and customer service.

We are a boutique digital transformation development company, offering a information technology services and offshore outsourcing services to clients such as Web Development, Mobile Application, UI/UX Designing, Data Warehousing, Data Mining, Data Analytics and other Data Science & Analytics services. End-to-end solutions are provided to our clients' business needs by combining business domain experience, technical expertise, top-grade knowledge of industry trends and the best methodology this is achieved with the help of a sound team of skilled professionals who utilize their expertise and experience in helping the business reach new heights.

ACKNOWLEDGEMENT

The internship opportunity we had with **Biz-Insights IT Solutions Surat** was a great chance for learning and professional development. Therefore, we consider ourselves very lucky as we were provided with an opportunity to be a part of it. We are also grateful for having a chance to meet so many wonderful people and professionals who led us through this internship period.

Bearing in mind previous we are using this opportunity to express our deepest gratitude and special thanks to the **Co-founder of the company Mr. Kunal Shah** who despite being extraordinarily busy with their duties, took time out to hear, guide and keep us on the correct path and allowing us to carry out the project at their esteemed organization and extending during the training.

We also extend our sincere appreciation to **Ms. Purvi Tandel** who provided his valuable suggestions and precious time in accomplishing our project report.

We perceive this opportunity as a big milestone in our career development. We will strive to use gained skills and knowledge in the best possible way and we will continue to work on their improvement, to attain desired career objectives.

The Director **Dr. R. V. Patil** and the Head of Computer Department **Dr. Devendra V. Thakor** and **all other faculty members** involved in making IDP as a part of the academic assessment to enable students to gain the aspiring work experience before graduating. Furthermore, distinguished appreciation also goes to the **Training and Placement Cell** of Uka Tarsadia University.

Lastly, we would like to thank the almighty and our parents for their moral support and our friends with whom we shared our day-to-day experience and received lots of suggestions that improved our quality of work.

Harshita Kakadiya (201603100910017)

ABSTRACT

During our industrial training at Biz Insights IT solutions, we have worked on different projects and various training activities by gaining knowledge with practical implementation. Overview of all the works as follows:

***"Web Scraping with Python"** initiates with the scraping of product details from ecommerce websites Amazon and Flipkart for price comparison. After gaining knowledge of practical implementation next is the client project where we scrapped the address and contact details of sample data with 80+ car dealers of USA, then the most important and major project was the scraping of the reviews and ratings of 4200+ car dealers of different cities from the websites such as Google, Facebook, BBB.org, Cars.com, DealerRater, Yelp where we made python scraper for each of the websites and obtain the required results successfully.*

***"COVID-19 Patient Prediction System with Machine Learning"** is the model that predicts if a person can have a probability or not of having COVID-19. With this, the person can self-assess and don't panic and be at home. It can also help prioritize the patients who really have coronavirus and help the health care workers who really have it and save kits for the needed and the system implementation includes the deployment of the machine learning model on Flask and further hosting the website on AWS EC2 instance.*

***"AWS (Amazon Web Services)"** incorporates majorly with the five tasks where we worked with various AWS services such as AWS Lambda, AWS S3, AWS Kinesis, AWS Dynamo DB, AWS Cloud Trails, AWS Athena, API Gateway and practically implemented all the required services in each task.*

*Further in the training activities we have provided various prototype implementation for the major project modules such as **"Django Hotel Management System Modules"**, **"Flutter Quiz Application and Login Registration App"**, **"Web Scraping of Data and its Geocoding with the Awesome Table Visualizations"**, **"Daily Bible verse API Development in Node.js and Go language"** and extension with **"AWS RDS service"**, **"Python string processing mini-project "** which is a prototype of the client system and **"Web RTC"** for video conferencing.*

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CHAPTER 1 INTRODUCTION TO INTERNSHIP AREAS

Various learning areas during the IDP internship as below:

• Data Science and Analysis with Python • Web Scraping with Python • AWS Services • Python mini project of string Processing • API with various language such as Node.js, Go lang • Django Python Framework • Machine Learning • Flutter Framework • Web Scraping with Awesome tables visualization • WebRTC for Video Conferencing

1.1 Overview of all the Learning Areas

- **Data Science and Analytics with Python:** Data Science is a detailed study of the flow of information from the colossal amounts of data present in an organization's repository. It involves obtaining meaningful insights from raw and unstructured data which is processed through analytical, programming, and business skills. Data Analytics refers to the techniques to analyze data to enhance productivity and business gain. Data is extracted from various sources and is cleaned and categorized to analyze different behavioral patterns. The techniques and the tools used vary according to the organization or individual.

- **Web Scraping with Python:** Web Scraping is a technique employed to extract large amounts of data from websites whereby the data is extracted and saved to a local file in your computer or to a database in table (spreadsheet) format.

- **AWS (Amazon Web Services):** AWS is a well-established cloud platform that offers reliable, scalable, and inexpensive cloud computing services. AWS is already commercially used by some globally recognized organizations such as

Netflix, Unilever, Samsung, MI, etc. Whether you are using Cloud to run applications that share photos to millions of mobile users or to support businesscritical operations, a cloud services platform provides rapid access to flexible and low cost IT resources.

- **Django Python Framework for Hotel Management System:** Django is an open-source python web framework used for rapid development, pragmatic, maintainable, clean design, and secures websites. A web application framework is a toolkit of all components need for application development.

- **API with various languages such as Node.js, Go Lang:** Node.js is a JavaScript runtime environment that runs the server-side. Within that environment, we can use JavaScript to build our software, our REST APIs and invoke external services through their APIs. Go language is a programming language initially developed at Google is a statically-typed language having syntax similar to that of C. It provides garbage collection, type safety, dynamic-typing capability, many advanced built-in types such as variable-length arrays and key-value maps. It also provides a rich standard library.

- **Machine Learning:** Machine learning is a tool for turning information into knowledge. In the past 50 years, there has been an explosion of data. This mass of data is useless unless we analyze it and find the patterns hidden within. Machine learning techniques are used to automatically find the valuable underlying patterns within complex data that we would otherwise struggle to discover. The hidden patterns and knowledge about a problem can be used to predict future events and perform all kinds of complex decision making.

- **Flutter Framework:** Flutter is an open-source UI software development kit created by Google. It is used to develop applications for Android, iOS, Windows, Mac, Linux, Google Fuchsia, and, the web. The first version of Flutter was known as codename "Sky" and ran on the Android operating system.

1.2 Scope/Application of all the Learning Areas

- Data Science is an umbrella term that covers several tools and technologies. It emerges in the application of systems such as internet search, gaming, recommendation systems, image, and data analytics is used to describe everything for online analytical processing.

- Web Scraping with Python describes our minor project where we have analyzed the data by scraping the product details between two E-commerce websites Amazon and Flipkart for the price comparison. Another was the client project where initially we have scrapped the address and contact details of the Car Dealers of the USA

provided the list in sample CSV files. One of the major and crucial main project tasks was the Scraping of the reviews and ratings of the 4200 car dealers of USA from the various website such as Google, Dealer Rater, BBB.org, cars.com, and Facebook.

- AWS (Amazon Web Services) we were assigned various tasks such as customer activity tracker where we have used the AWS services such as Lambda, S3, Athena for analysis, etc. Further, the AWS kinesis was used to read the data from firebase to kinesis and AWS Cloud Log Trails were generated which are to be stored on the S3 bucket for further analysis.

- With the Django Framework of Python we have given a road map of the Hotel Management system by developing the various prototype as per client requirements like Registration/Login with OTP, Payment Gateway with stripe,
  CRUD operation for content management, Schema for the ORM Database, EmailReset Password Feature.

- API with Node.js and Go Lang, as developed for the Bible verse Application as per the client requirement to get data using API in JSON from the appropriate MYSQL database and AWS RDS Database.

- In this COVID-19 pandemic while learning the basics in machine learning we came up with an idea to develop a system for patients' prediction as a victim of coronavirus to help them take necessary prevention measures based on the symptoms provided and developed the COVID-19 Patient Predictor System with machine learning.

- Flutter Framework is the Hybrid Mobile Application development tool that we are exploring and made the application such as Registration/ Login and Quiz App.

- Awesome Table Transform any data into beautiful, dynamic, and functional apps with our Awesome Table web app. This article is an introduction that presents how to simply and easily create interactive apps using data stored in Google Sheets and

Microsoft Excel 365. Awesome Table is a web application that displays data from a Google Spreadsheet into various types of nice views (cards, maps, table, Gantt view…). It's also possible to add different filters and styles to the view to customize it.

- Web Real-Time Communications (WebRTC) is a specification for a protocol implementation that enables web apps to transmit video, audio, and data streams between the client (typically a web browser) and server (usually a web server).

CHAPTER 2 TRAINING ACTIVITIES

2.1 Data Science and Analysis

We have work with various tools available for Data Analytics as shown below with examples:

- Tableau is a visual analytics solution that allows people to explore and analyze data with simple drag and drop operations.

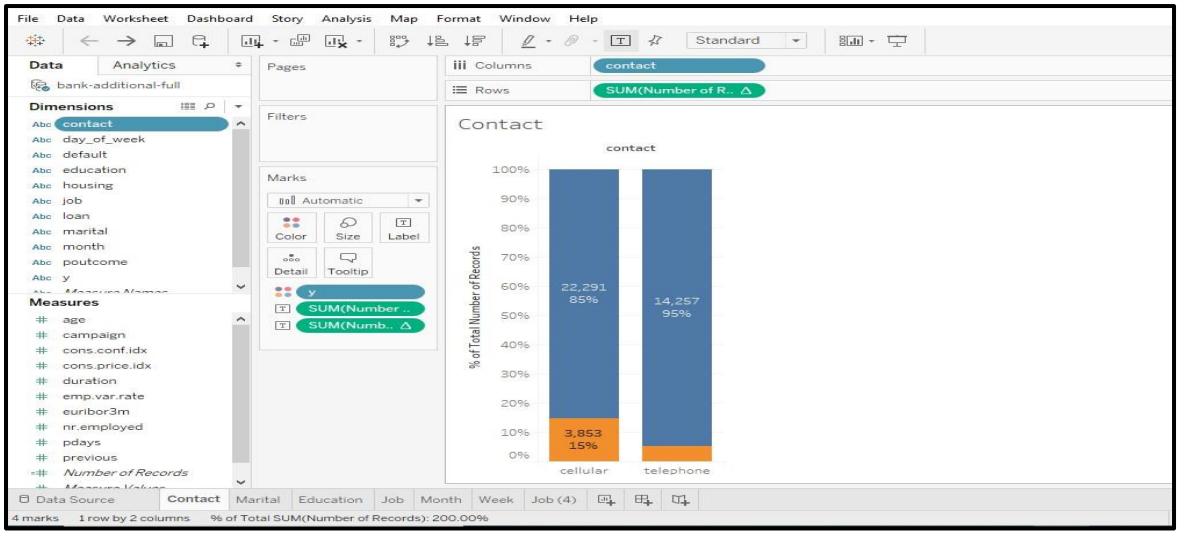


Figure 2.1 (a) Visualization with Tableau

- Jupyter Notebook is an open-source web application that allows you to create and share documents that contain live code, equations, visualizations, and narrative text.

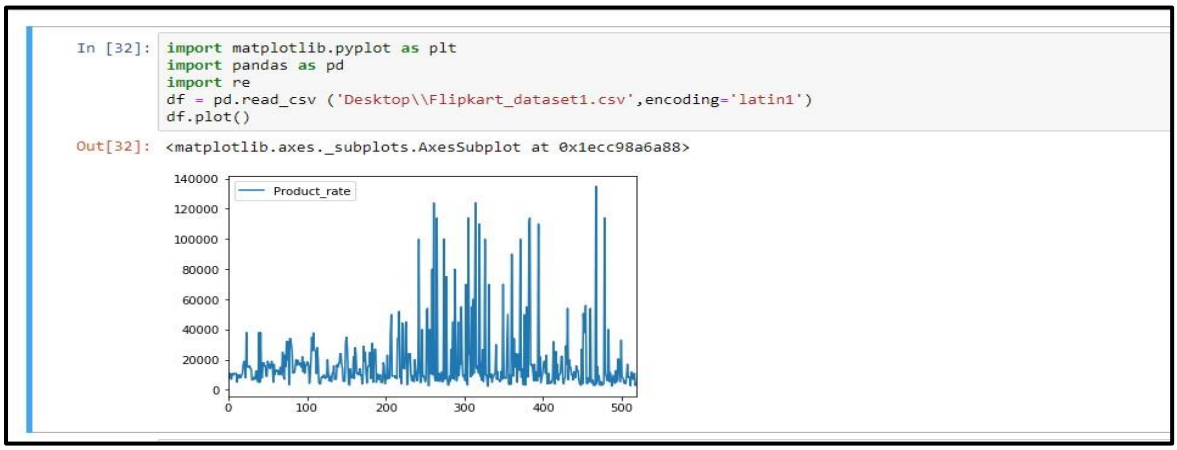


Figure 2.1 (b) Jupyter Notebook for testing and visualize

- Jupyter Notebook should be an integral part of any Python data scientist's toolbox. It's great for prototyping and sharing notebooks with visualizations and our working of further projects is with this tool and was very beneficial for learning for performing analysis in the professional world.

2.2 Web Scraping with Python

After gaining the theoretical knowledge of web scraping by following the various courses and video tutorials to experiment with the practical approach and implementation of web scraping with python we started working on the idea for scraping the product details from the **Amazon and Flipkart** we made the Amazon product scraper with python and Flipkart

product scraper with python and the product data scraped from each of site will be stored on the separate CSV file. Now as for the comparison the main parameter we selected was price comparison which will help all the customers to a larger extent with their favorite choice for buying products from both the websites. Also next we were assigned the Web scraping client project to scrape the reviews and ratings of around 4200+ car dealers of the USA will be discussed further.

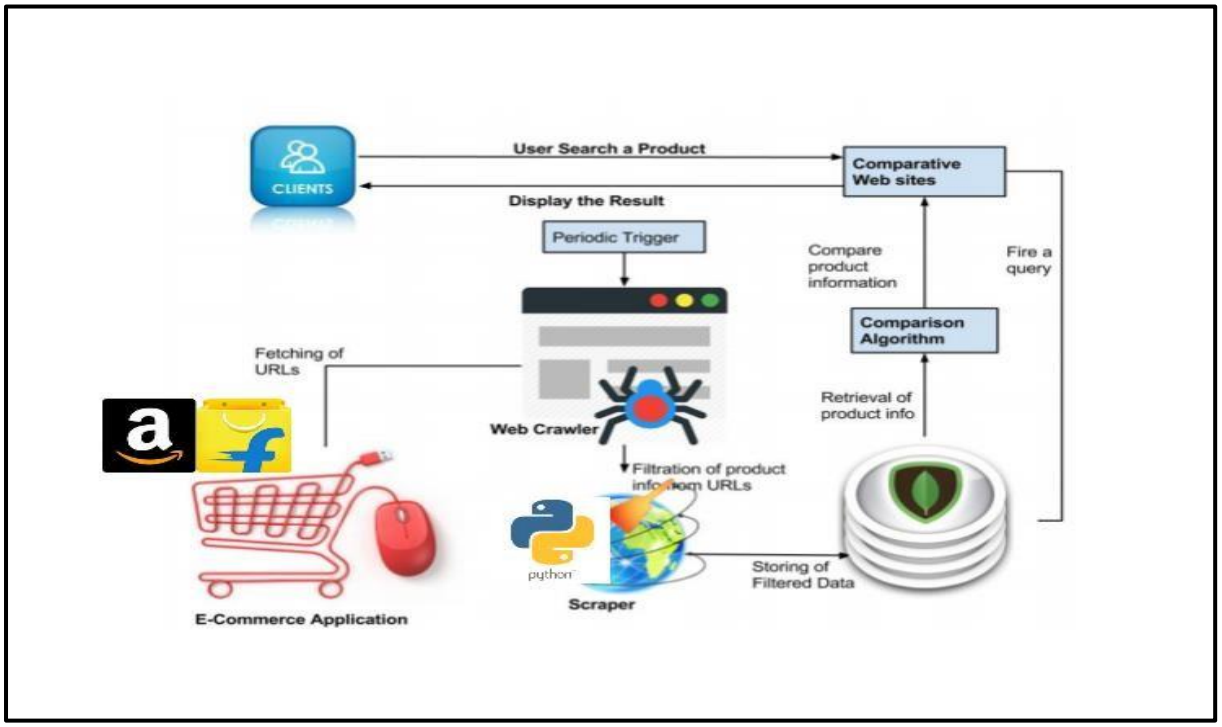


Figure 2.2 Architecture for web scraping with E-commerce websites

2.3 AWS (Amazon Web Services)

2.3.1 Task:1 Customer Activity Tracker

Here we need to read data from the customer form and through AWS lambda which contains the core function act as API Gateway and stores the data in AWS S3 and the Dynamo DB.

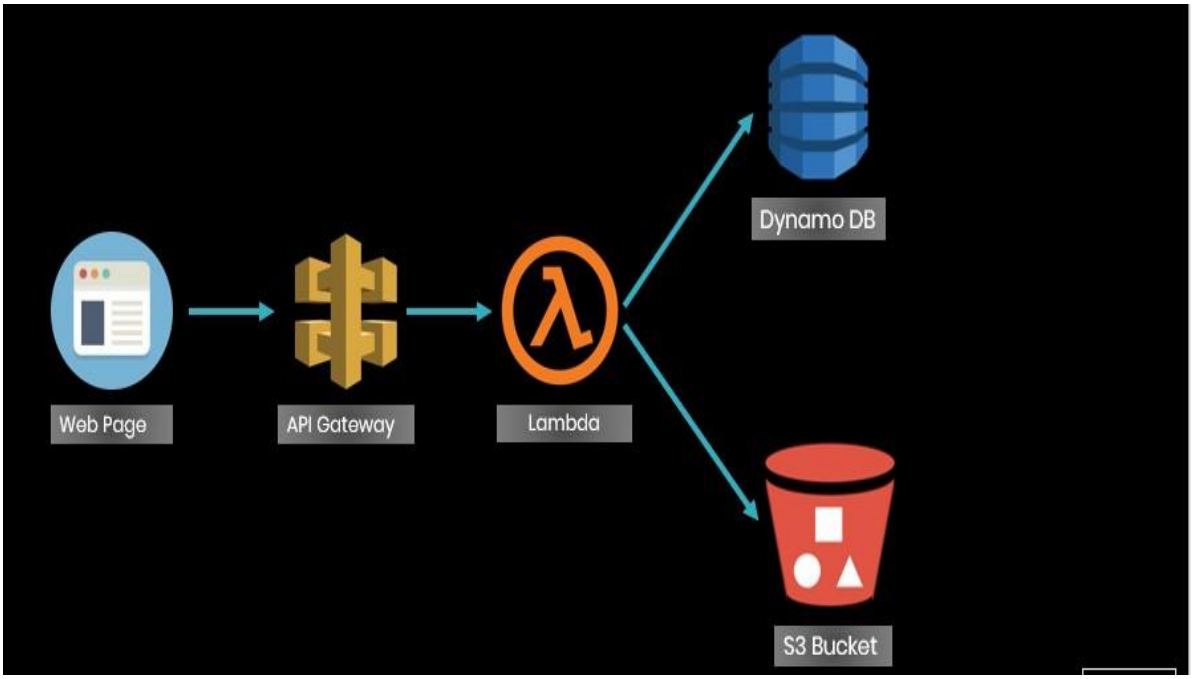


Figure 2.3.1 Customer Activity Tracker workflow-1

2.3.2 Task:2 Customer Activity Tracker

Here we need to read data from the CSV file stored in the S3 bucket and through AWS lambda which contains the core function act as API Gateway and stores the data in AWS S3 in compressed parquet format and the Dynamo DB.

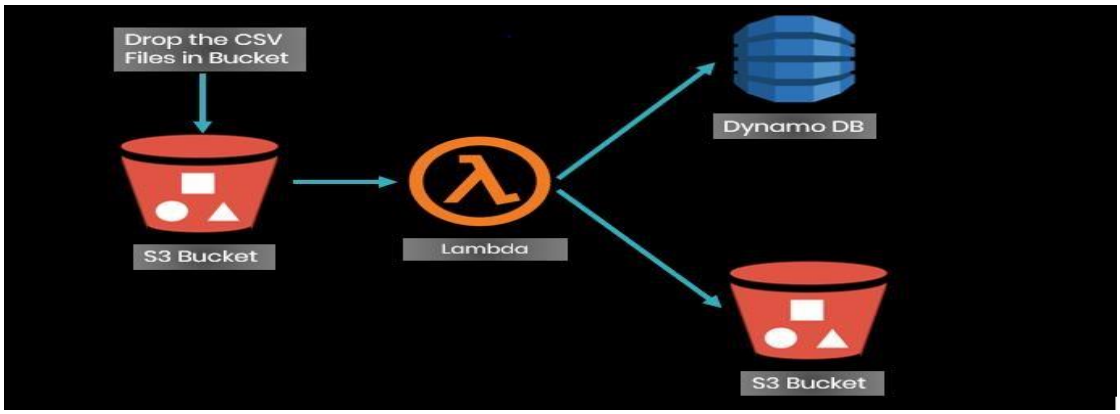


Figure 2.3.2 Customer Activity Tracker flow-2

2.3.3 Task:3 AWS CloudTrail

CloudTrail is a service that provides a record of actions taken by a user, role, or an AWS service. CloudTrail captures API calls as events. For an ongoing record of events in our AWS account, we create a trail. A trail enables CloudTrail to deliver log files of events to an Amazon S3 bucket and take advantage of Amazon S3's bucket notification feature and direct Amazon S3 to publish object-created events to AWS Lambda. Whenever CloudTrail

writes logs to our S3 bucket, Amazon S3 can then invoke our Lambda function by passing the Amazon S3 object-created event as a parameter. The S3 event provides information, including the bucket name and key name of the log object that CloudTrail created. Our Lambda function code can read the log object and process the access records logged by CloudTrail and finally stored the result in the S3 bucket in the form of a compressed parquet format.

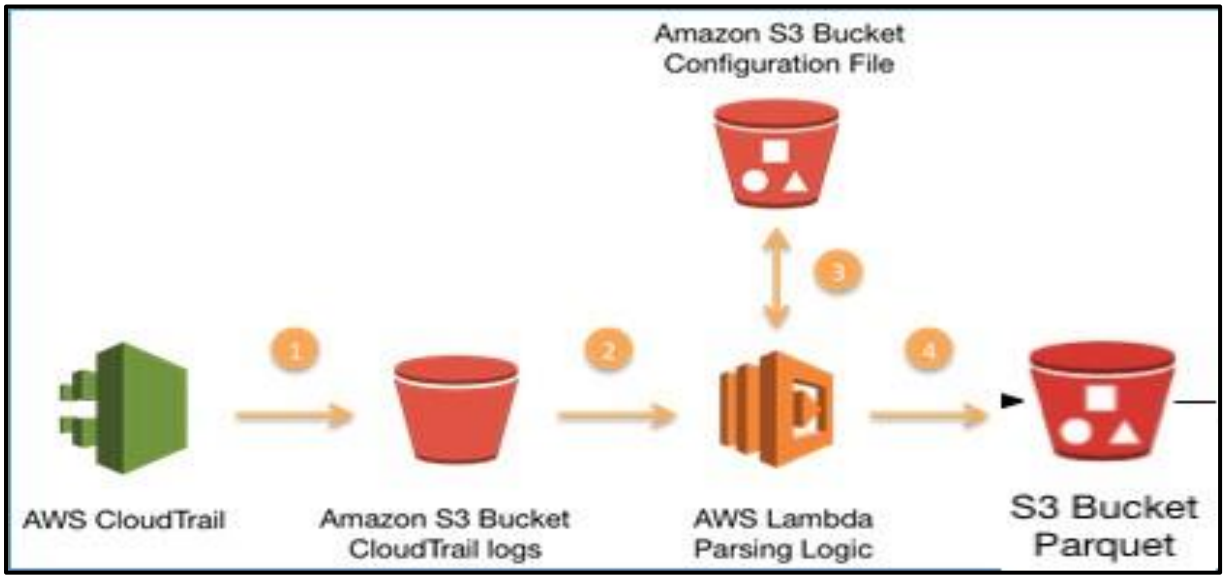


Figure 2.3.3 AWS CloudTrail system flow

2.3.4 Task:4 Amazon Athena

Athena is an interactive query service that makes it easy to analyze data in Amazon S3 using standard SQL. Athena is serverless, so there is no infrastructure to manage. Athena is easy to use. Simply point to our data in Amazon S3, define the schema and we start querying using standard SQL. Most results are delivered within seconds and we analyze the various CSV files and parquet files for future use.

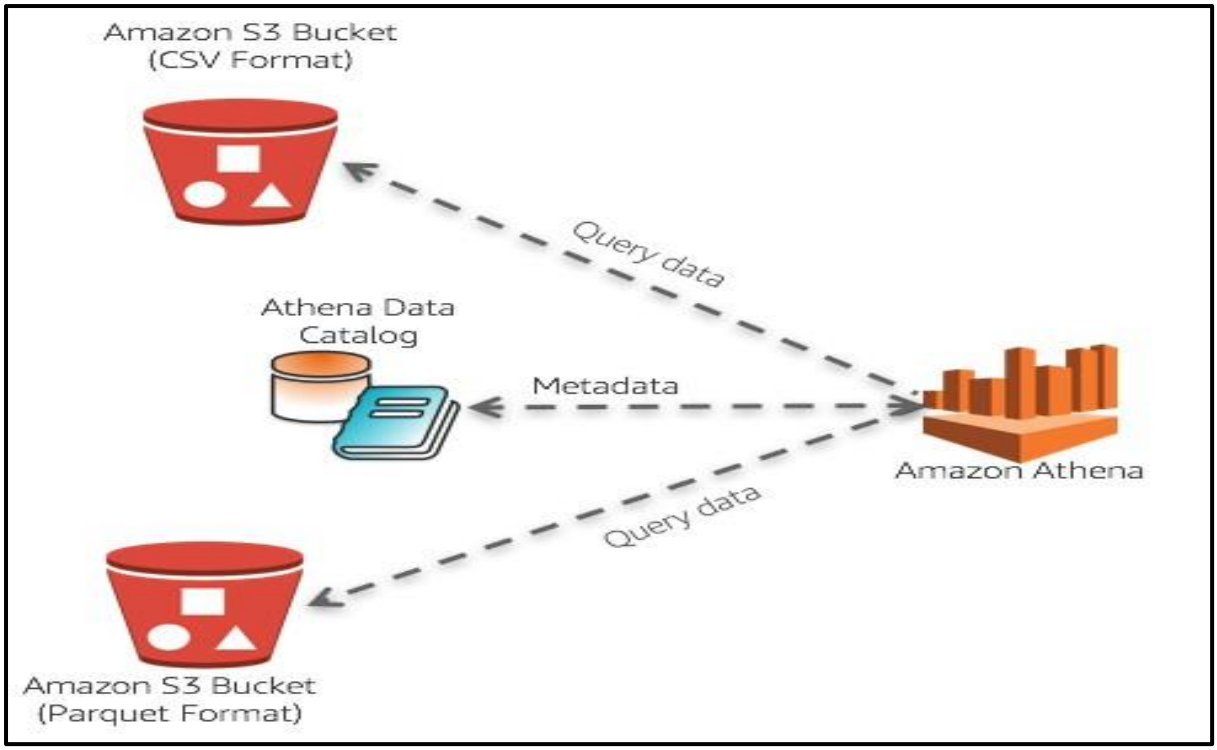


Figure 2.3.4 AWS Athena Analysis flow

2.3.5 Task:5 AWS Kinesis with Firebase

The task was quite challenging to complete as we need to merge the two cloud services from different platform one is the firebase from Google and AWS Kinesis from the AWS. The task is to read the data from the firebase real-time database and write the record to the AWS kinesis data stream and S3 using the AWS Lambda containing the core functionality that triggers to get the record and stores the data at the required destination.

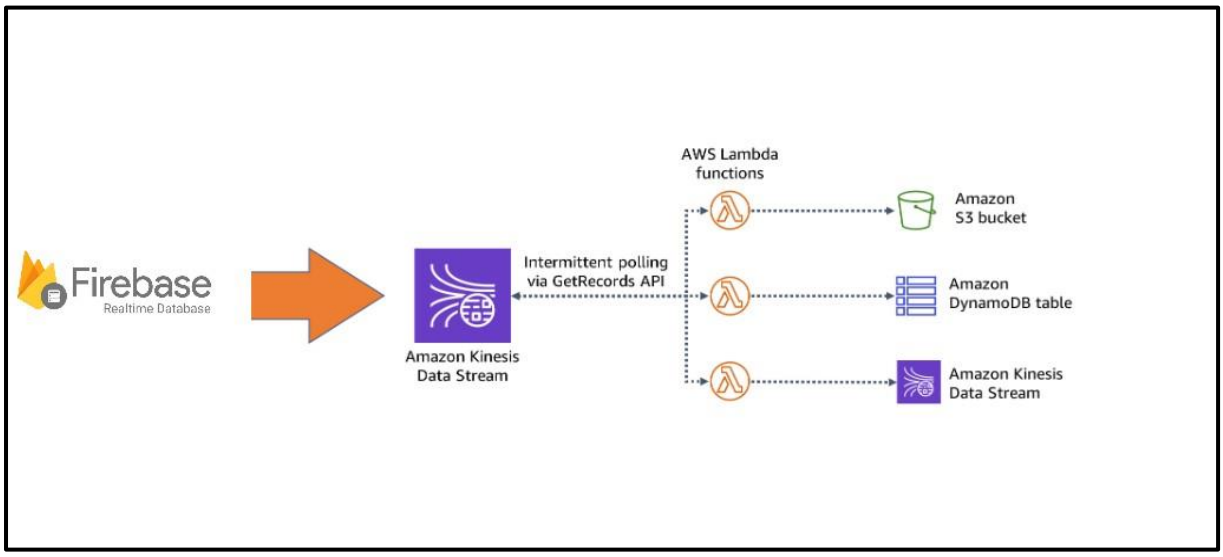


Figure 2.3.5 AWS Kinesis with Firebase flow

2.4 Django Framework of Python for Hotel Management System

As per client project requirement, we were asked to give the road map and basic POC implementation of major modules from group discussions for the Hotel Management System to be developed with Django:-

Module 1:- Registration and Login is the basic module for implementation of any system hence we firstly develop the forms using crispy forms which is the package readily available in Django for the form design and further for secure and authentication we used the Twilio OTP service that generate the random OTP with the hash algorithm at backend and send the OTP notification to the user via, SMS.

Module 2:- Email Reset Password feature that helps the user when they forget their password. We have modified the app.py file and URLs .py file which is auto-generated in the Django project structure. Hence this feature helps the user at the time they forget the password by sending the Email password reset link so that they can again log in to the system after creating a new password for their account with recovering personal details.

Module 3:- Payment Gateway with stripe this module describes the secure payment method provided to the user. For the hotel management system, it plays a vital role in booking the hotels, reservation, and other services provided to the customers by various hotels so we have given prototype that user and pay securely by using stripe payment gateway.

Module 4:- Database Schema for the Hotel Management System includes the use of the Django ORM database which is more efficient than the traditional method of storing the user data. An ORM allows for simple manipulation of data without having to write complex SQL. In Django, the model is the object that is mapped to the database. When you create a model, Django executes SQL to create a corresponding table in the database without you having to write a single line of SQL. Django prefixes the table name with the name of the Django application for the Hotel Management System. After analyzing various databases we found that the Postgre database is compatible with Django in web development hence we used for the prototype of this module which stores all the user details and hotel details and easily provide help in managing the content.

Module 4:- CRUD operations this module plays a major role in any management system development hence considering it we provide the API that performs the CRUD operations such

as create, update, delete, search thus helps in the content management in the website. The content management helps the admin team to develop the system more efficiently for their users so this prototype plays a vital role in the Django Hotel Management System.

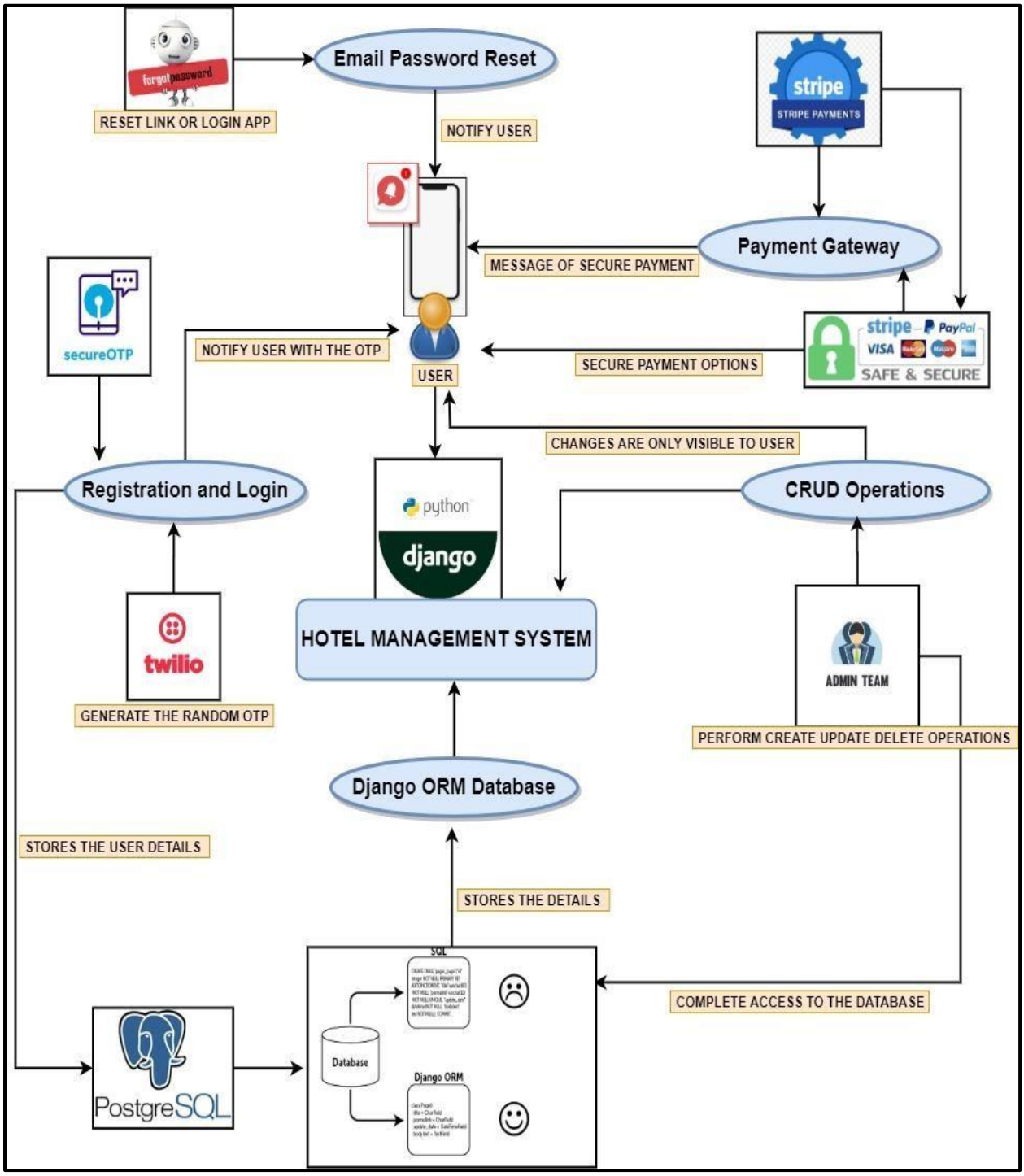


Figure 2.4 Road Map for Django Hotel Management System

2.5 Python string processing mini project

- **Step:1** To process the input string using the Python script as it was initially developed the script in Nodejs takes a long time so the first step is for optimization.

```
import pandas as pd
strb = "sufyan"
# bad_chars = [';', ':', '!', "*","."]
# stra = "sufyan"
# test_string = filter(lambda i: i not in bad_chars, strb)
# stra = str(test_string)
# strb = "nayfus"
# stra = re.sub('[\W\_]','',strb)
# stra = re.sub(r"[^a-zA-Z0-9]", "", strb)
stra = re.sub(r"[?|$|.|!]", "", strb)
# stra = ''.join(e for e in strb if e.isalpha())
str_comp = ''.join(reversed(stra))
temp_str = str_comp
new_str = ""

new_str_list = []
positive_index = -1
negative_index = 0

list_of_string = []
list_of_string.append(str_comp)
counter = 1
switch_count = 0

while new_str != temp_str:
  for i in range(0,len(stra)):
    switch_count = switch_count + 1
    if(i%2 == 0):
      positive_index = positive_index + 1
      new_str_list.append(temp_str[positive_index])
    else:
      negative_index = negative_index - 1
      new_str_list.append(temp_str[negative_index])

  new_str = ''.join(reversed(new_str_list))

  if new_str == str_comp:
    list_of_string.append(new_str)
    break
  else:
    counter = counter + 1
    temp_str = new_str
    new_str_list.clear()
    positive_index = -1
    negative_index = 0
    list_of_string.append(new_str)
    new_str = ""

print("Total Rows: "+str(counter))
print("Total Count: "+str(switch_count))
```

Figure 2.5 (a) Python string process script

- **Step:2** Python script developed for string processing further needs to be converted in the tabular structure to meet the Client requirements output below:

6	5	4	3	2	1	0	نمبر شمار
n	a	y	f	u	s	1	اساس
f	y	u	a	s	n	2	گردش
a	u	s	y	n	f	3	گردش
y	s	n	u	f	a	4	گردش
u	n	f	s	a	y	5	گردش
s	f	a	n	y	u	6	زمام
n	a	y	f	u	s	7	میزان

Figure 2.5 (b) Client Required Output

- **Step:3** Python script developed for string processing to for converting in the tabular structure using the data frame to meet the Client requirements and final result obtained as below:

```
#Converting to DataFrame
def split(word):
    return list(word)

splitted=[]
reverse_column=[]
last_column=[]



#for splitting of Strings
for i in list_of_string:
  splitted.append(split(i))

#for column
for i in range(0,len(list_of_string)):
  reverse_column.append(i)

#for last column
for i in range(1,len(list_of_string)+1):
  last_column.append(i)

df_last_col=pd.DataFrame(last_column)
reverse_column.sort(reverse=True)
reverse_column.pop()


df = pd.DataFrame(splitted,columns=reverse_column)
df['0']=df_last_col

df_without_index=df.to_string(index=False)
```

```
Total Rows: 6
Total Count: 36
```

Out[3]:

	6	5	4	3	2	1	0
0	n	a	y	f	u	s	1
1	f	y	u	a	s	n	2
2	a	u	s	y	n	f	3
3	y	s	n	u	f	a	4
4	u	n	f	s	a	y	5
5	s	f	a	n	y	u	6
6	n	a	y	f	u	s	7

Figure 2.5 (c) Python script and Output

2.6 Daily Bible Verse API in Node.js and GO Lang

We have all the bible verses in our MySQL database and our Bible API gives an easy way to access the data for the Daily Verse Bible application.

(Note: The common database used is MySQL to store and retrieve the data for both languages API)

2.6.1 API with Node.js

- **Step 1: -** To create the database in MySQL as shown in the figure below:

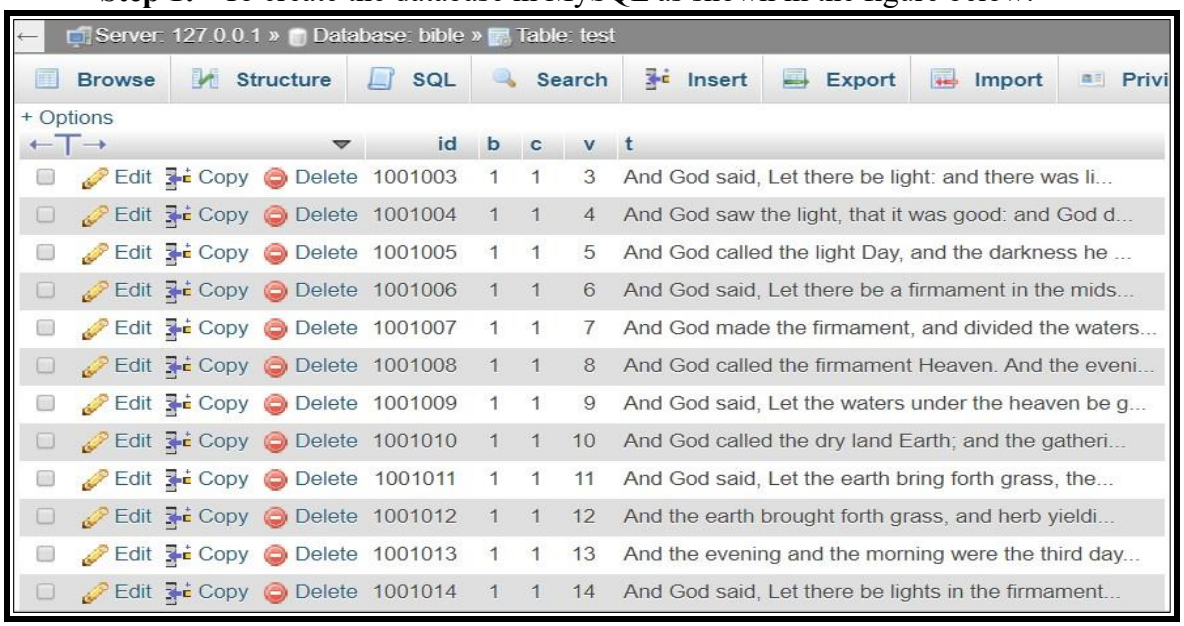


Figure 2.6.1 (a) MYSQL Database

- **Step 2: -** Building the Bible verse API in node.js to retrieve records from the database bible created above.

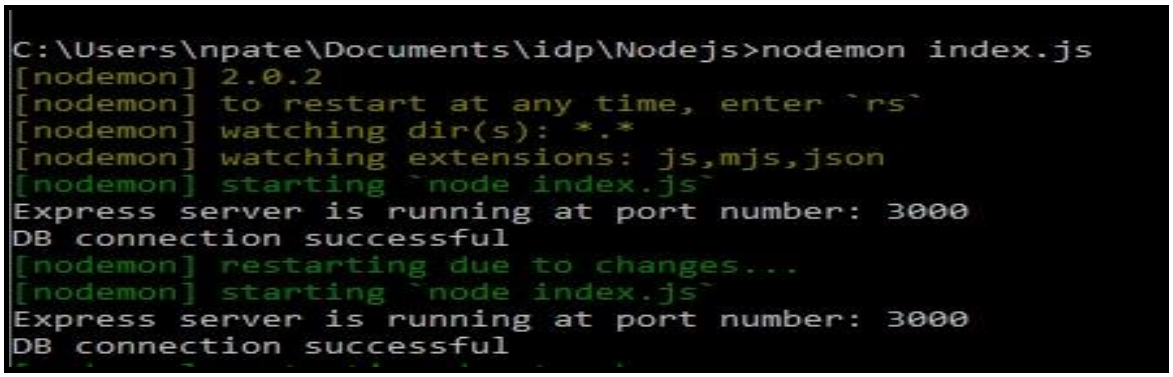


Figure 2.6.1 (b) Node.js API on localhost

- **Step 3:-** Testing the API which successfully fetches the verses randomly on localhost port 3000.

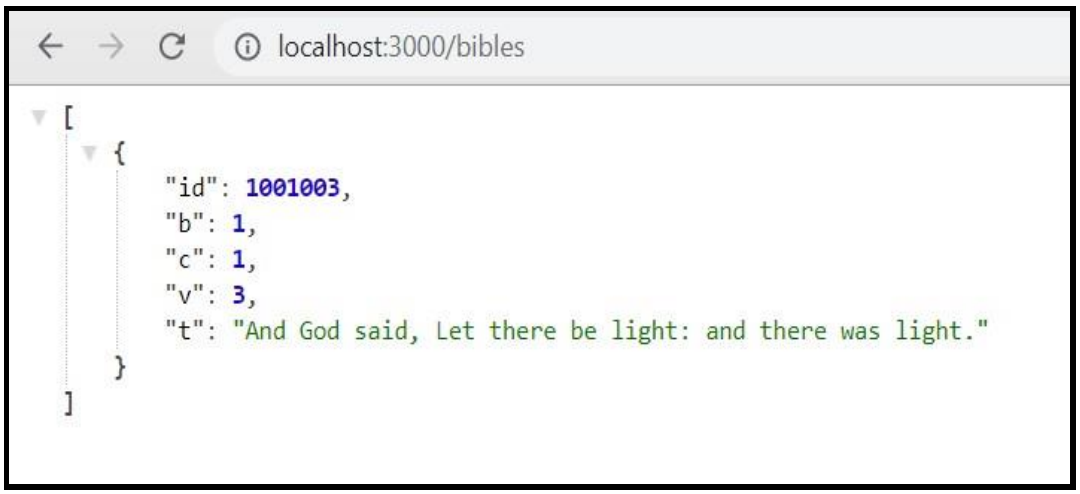


Figure 2.6.1 (c) Output with Node.js API

2.6.2 API with GO Language

- **Step 1:-** Refer to the database in MySQL as shown in the figure above.

- **Step 2:-** Building the Bible verse API in Go language to retrieve records from the database bible.

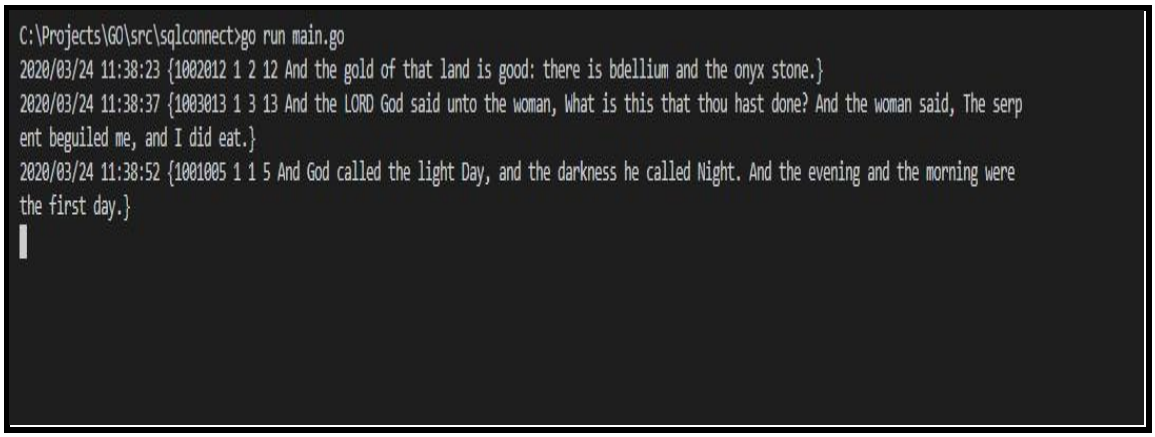


Figure 2.6.2 (a) API with GO Lang on localhost

- **Step 3**: - Testing the Go API in Postman which successfully fetches the record randomly as shown in the snapshot below and gives the required result.

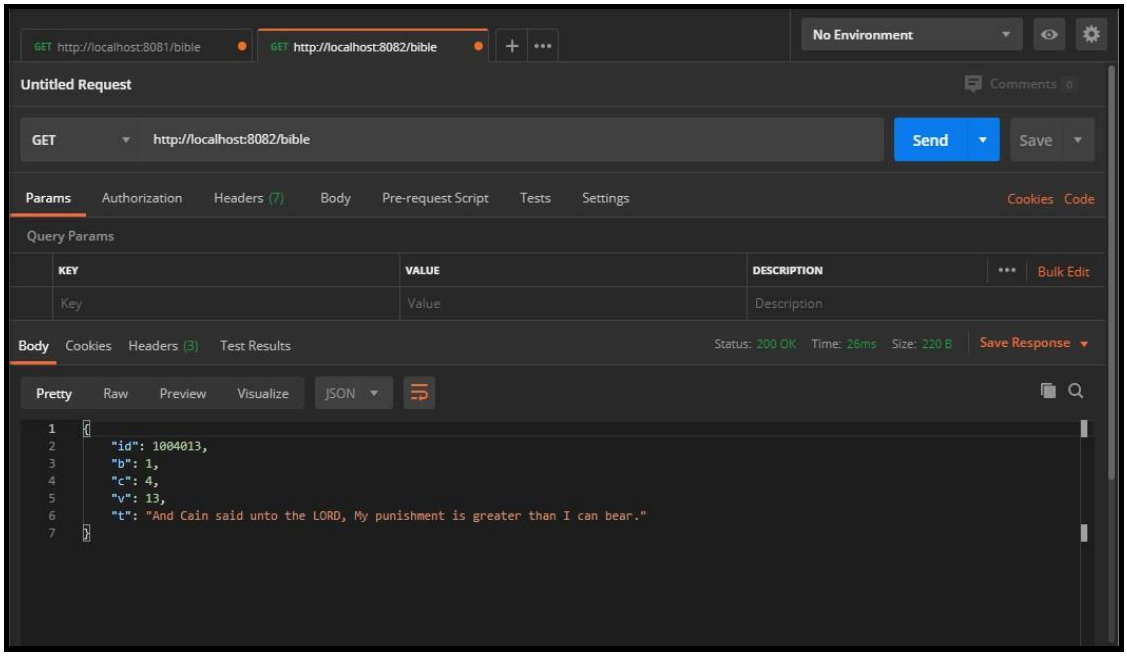


Figure 2.6.2 (b) Testing API with GO Lang

2.6.3 Daily Bible Verse API with AWS RDS

The bible verse API developed using both the above language and after testing was successful we have stored on the cloud service AWS RDS so the data are easily accessible to any user of the application using API with the cloud database.

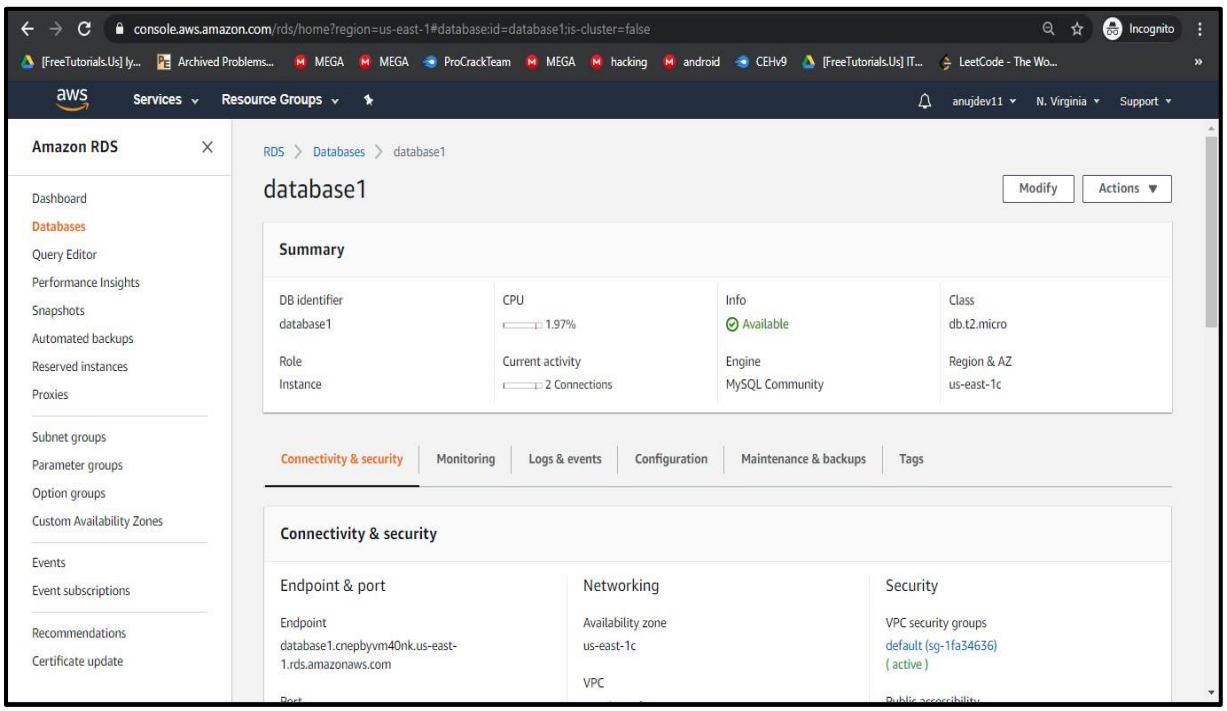


Figure 2.6.3 (a) AWS RDS Database

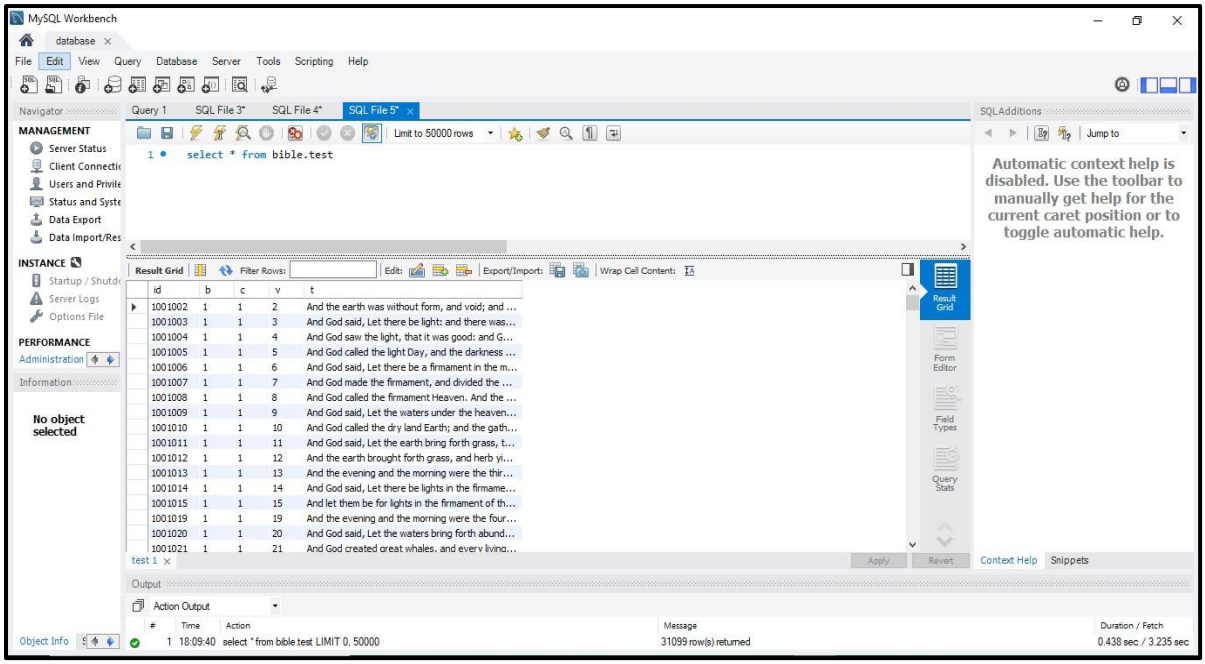


Figure 2.6.3 (b) Daily Bible Verse in RDS Database

2.7 Flutter Framework for Mobile Application

After exploring and gaining knowledge of the Flutter framework for the mobile application we have designed and implemented the two applications where the flow can be shown as below:

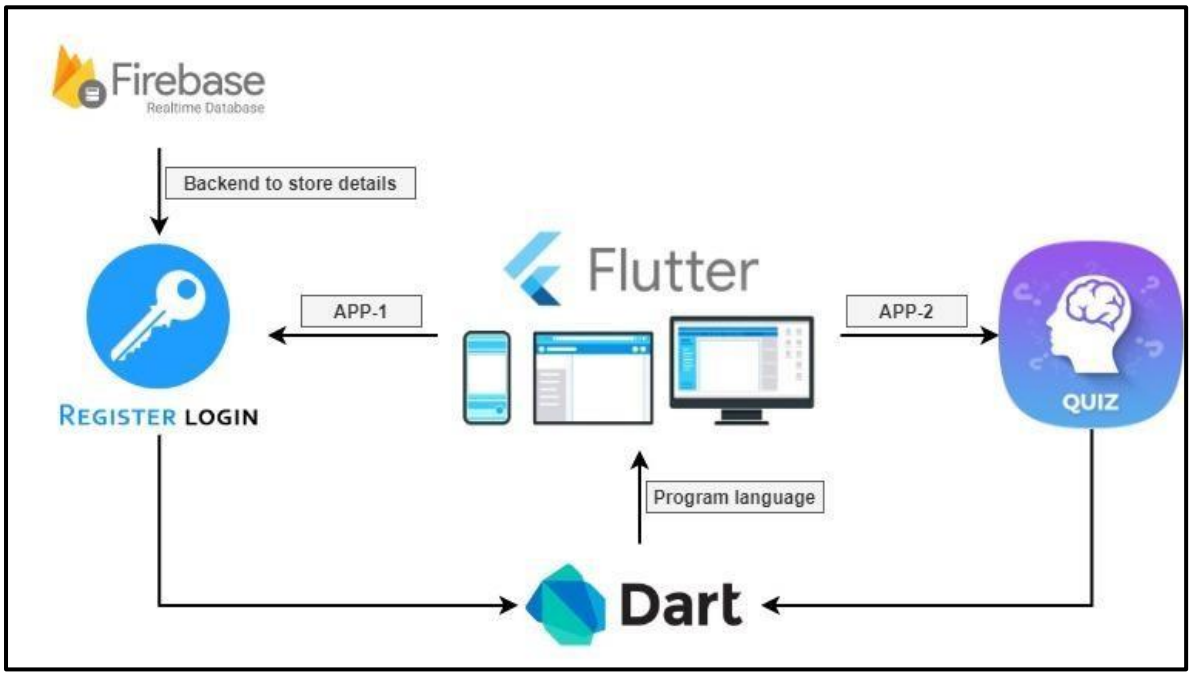


Figure 2.7 Flutter app development flow

2.8 Web scraping and Visualization with Awesome Table

Any data can be transformed into beautiful, dynamic, and functional apps with the Awesome Table web app. We have installed the add-ons directly within the Google Sheets user interface. Add-ons answer to specific needs like geocoding addresses, listing files or folders from Google Drive, and listing Google Sites on a G Suite domain. Hence using this interesting feature we get the following result for the patient's list of COVID19 of Surat.

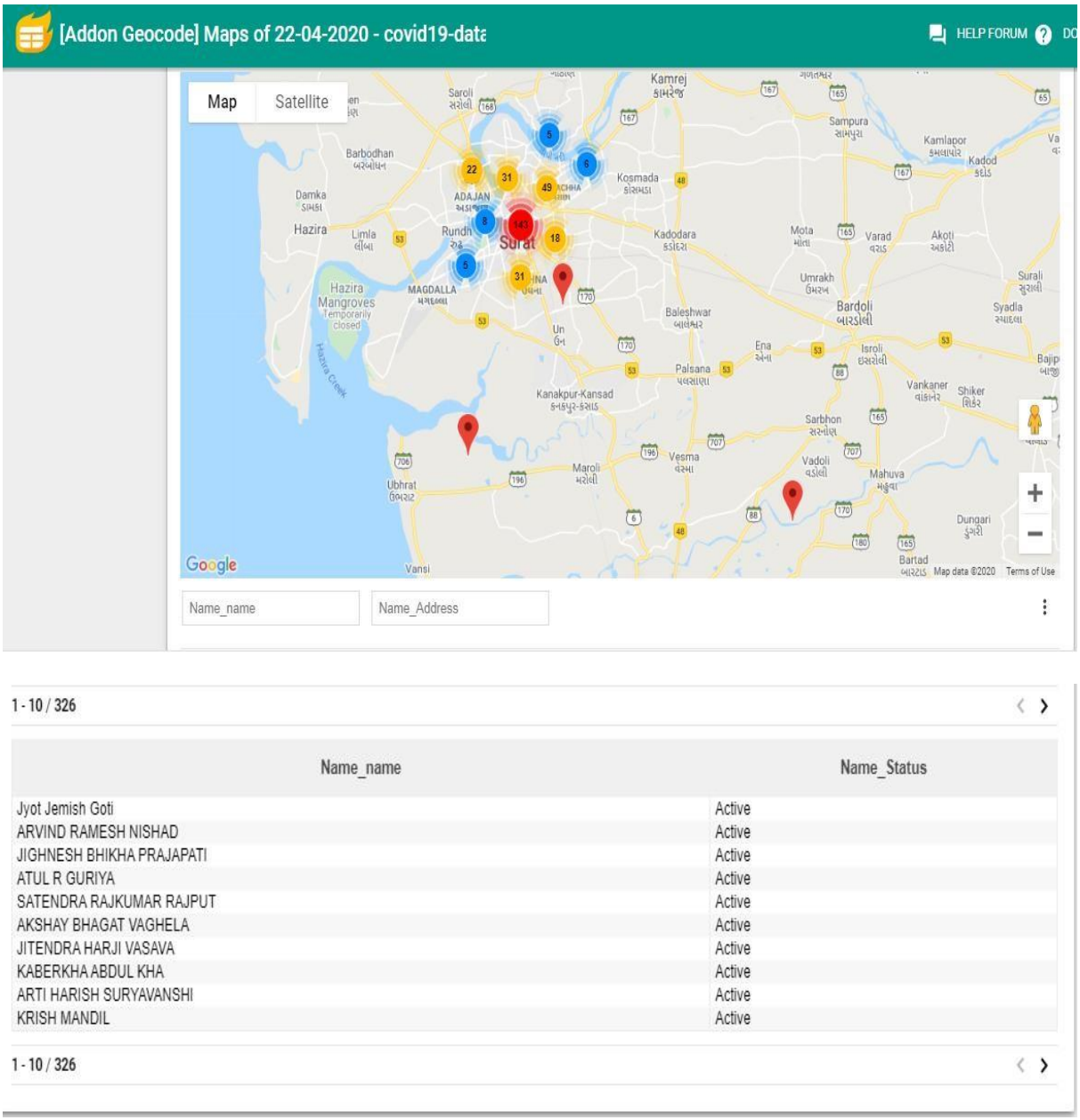
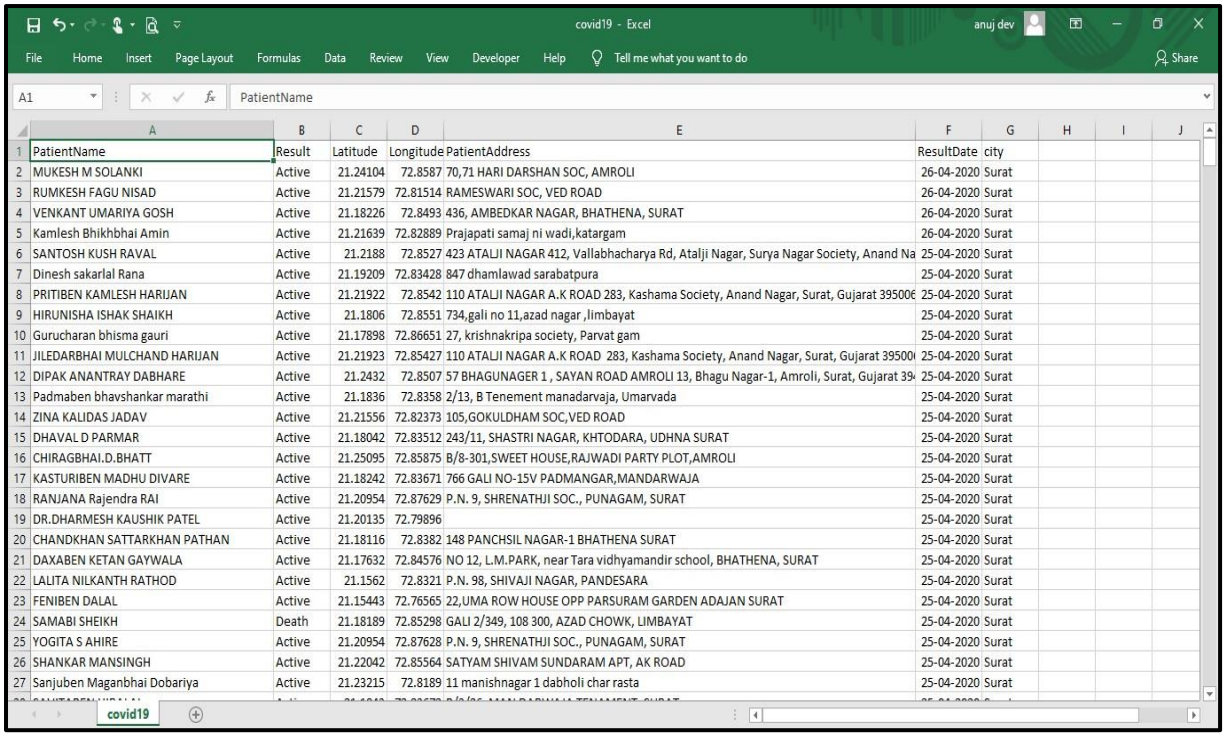


Figure 2.8 (a) Awesome table Visualization



covid19 - Excel

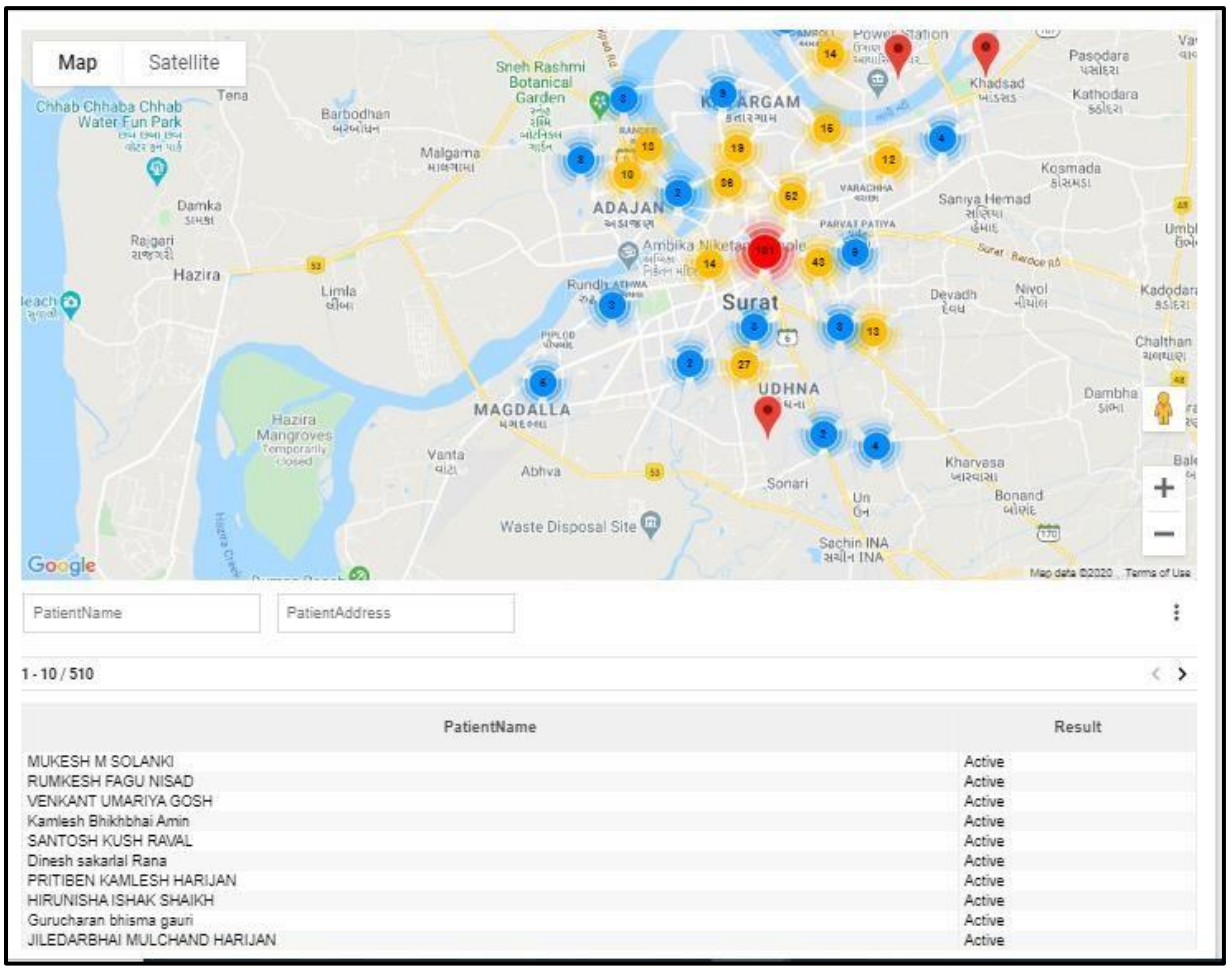
anuj dev

File Home Insert Page Layout Formulas Data Review View Developer Help Tell me what you want to do Share

A1 PatientName

	A	B	C	D	E	F	G	H	I	J
1	PatientName	Result	Latitude	Longitude	PatientAddress	ResultDate	city			
2	MUKESH M SOLANKI	Active	21.24104	72.8587	70,71 HARI DARSHAN SOC, AMROLI	26-04-2020	Surat			
3	RUMKESH FAGU NISAD	Active	21.21579	72.81514	RAMESWARI SOC, VED ROAD	26-04-2020	Surat			
4	VENKANT UMARIYA GOSH	Active	21.18226	72.8493	436, AMBEDKAR NAGAR, BHATHENA, SURAT	26-04-2020	Surat			
5	Kamlesh Bhikhbhai Amin	Active	21.21639	72.82889	Prajapati samaj ni wadi,katargam	26-04-2020	Surat			
6	SANTOSH KUSH RAVAL	Active	21.2188	72.8527	423 ATALJI NAGAR 412, Vallabhacharya Rd, Atalji Nagar, Surya Nagar Society, Anand Na	25-04-2020	Surat			
7	Dinesh sakarlal Rana	Active	21.19209	72.83428	847 dhamlawad sarabatpura	25-04-2020	Surat			
8	PRITIBEN KAMLESH HARIJAN	Active	21.21922	72.8542	110 ATALJI NAGAR A.K ROAD 283, Kashama Society, Anand Nagar, Surat, Gujarat 39500(	25-04-2020	Surat			
9	HIRUNISHA ISHAK SHAIKH	Active	21.1806	72.8551	734,gali no 11,azad nagar ,limbayat	25-04-2020	Surat			
10	Gurucharan bhisma gauri	Active	21.17898	72.86651	27, krishnakripa society, Parvat gam	25-04-2020	Surat			
11	JILEDARBHAI MULCHAND HARIJAN	Active	21.21923	72.85427	110 ATALJI NAGAR A.K ROAD 283, Kashama Society, Anand Nagar, Surat, Gujarat 39500(	25-04-2020	Surat			
12	DIPAK ANANTRAY DABHARE	Active	21.2432	72.8507	57 BHAGUNAGER 1 , SAYAN ROAD AMROLI 13, Bhagu Nagar-1, Amroli, Surat, Gujarat 39(	25-04-2020	Surat			
13	Padmaben bhavshankar marathi	Active	21.1836	72.8358	2/13, B Tenement manadarvaja, Umarvada	25-04-2020	Surat			
14	ZINA KALIDAS JADAV	Active	21.21556	72.82373	105,GOKULDHAM SOC,VED ROAD	25-04-2020	Surat			
15	DHAVAL D PARMAR	Active	21.18042	72.83512	243/11, SHASTRI NAGAR, KHTODARA, UDHNA SURAT	25-04-2020	Surat			
16	CHIRAGBHAI.D.BHATT	Active	21.25095	72.85875	B/8-301,SWEET HOUSE,RAJWADI PARTY PLOT,AMROLI	25-04-2020	Surat			
17	KASTURIBEN MADHU DIVARE	Active	21.18242	72.83671	766 GALI NO-15V PADMANGAR,MANDARWAJA	25-04-2020	Surat			
18	RANJANA Rajendra RAI	Active	21.20954	72.87629	P.N. 9, SHRENATHJI SOC., PUNAGAM, SURAT	25-04-2020	Surat			
19	DR.DHARMESH KAUSHIK PATEL	Active	21.20135	72.79896		25-04-2020	Surat			
20	CHANDKHAN SATTARKHAN PATHAN	Active	21.18116	72.8382	148 PANCHSIL NAGAR-1 BHATHENA SURAT	25-04-2020	Surat			
21	DAXABEN KETAN GAYWALA	Active	21.17632	72.84576	NO 12, L.M.PARK, near Tara vidhyamandir school, BHATHENA, SURAT	25-04-2020	Surat			
22	LALITA NILKANTH RATHOD	Active	21.1562	72.8321	P.N. 98, SHIVAJI NAGAR, PANDESARA	25-04-2020	Surat			
23	FENIBEN DALAL	Active	21.15443	72.76565	22,UMA ROW HOUSE OPP PARSURAM GARDEN ADAJAN SURAT	25-04-2020	Surat			
24	SAMABI SHEIKH	Death	21.18189	72.85298	GALI 2/349, 108 300, AZAD CHOWK, LIMBAYAT	25-04-2020	Surat			
25	YOGITA S AHIRE	Active	21.20954	72.87628	P.N. 9, SHRENATHJI SOC., PUNAGAM, SURAT	25-04-2020	Surat			
26	SHANKAR MANSINGH	Active	21.22042	72.85564	SATYAM SHIVAM SUNDARAM APT, AK ROAD	25-04-2020	Surat			
27	Sanjuben Maganbhai Dobariya	Active	21.23215	72.8189	11 manishnagar 1 dabholi char rasta	25-04-2020	Surat			

covid19



PatientName PatientAddress

1 - 10 / 510

PatientName	Result
MUKESH M SOLANKI	Active
RUMKESH FAGU NISAD	Active
VENKANT UMARIYA GOSH	Active
Kamlesh Bhikhbhai Amin	Active
SANTOSH KUSH RAVAL	Active
Dinesh sakarlal Rana	Active
PRITIBEN KAMLESH HARIJAN	Active
HIRUNISHA ISHAK SHAIKH	Active
Gurucharan bhisma gauri	Active
JILEDARBHAI MULCHAND HARIJAN	Active

Figure 2.8 (b) Awesome table visualization and CSV file

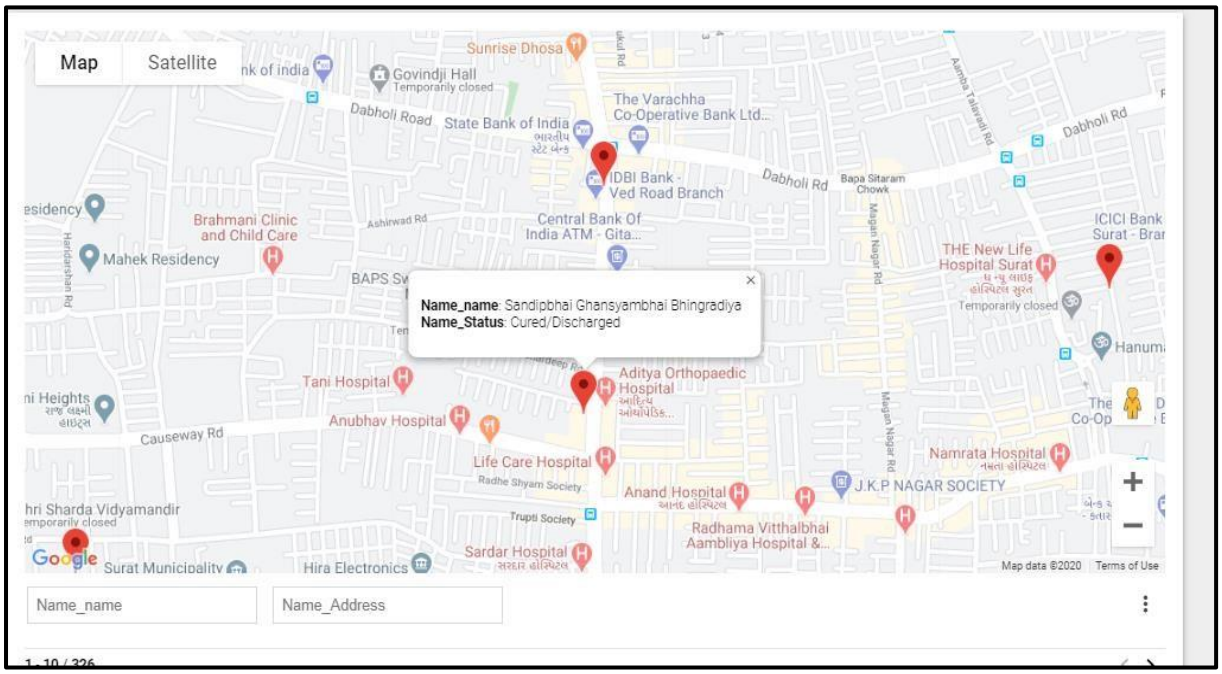


Figure 2.8 (c) Mapping Visualization

2.9 WebRTC for video conference

As coronavirus lockdowns have moved many in-person activities online, the use of videoconferencing solutions is being increased day by day and one solution to videoconferencing is WebRTC. With WebRTC, you can add real-time communication capabilities to your application that works on top of an open standard. It supports video, voice and generic data to be sent between peers, allowing developers to build powerful voice- and video communication solutions. The technology is available on all modern browsers as well as on native clients for all major platforms.

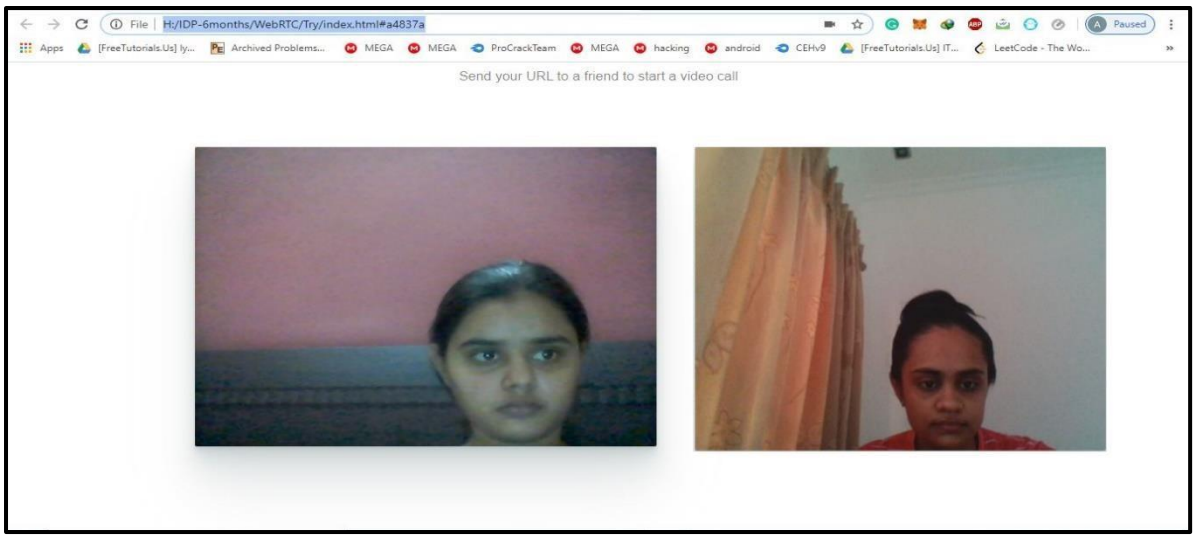


Figure 2.9 WebRTC video chat

2.10 Website Development like Bark.com

Bark.com instantly finds the best local service professionals for you - fast & free. Save time & money and get your job done fast. So we were supposed in this training activity to develop the frontend UI template and make the core functionality works in backend by using the API for location and services with respective frequent questions, also to store the user response in the Database MYSQL using the API. Furthermore, the website is still under development phase.

2.10.1 UI Template Frontend Development of the website

The UI was designed using the HTML, CSS and, Bootstrap and JavaScript and screenshots of the template as shown below

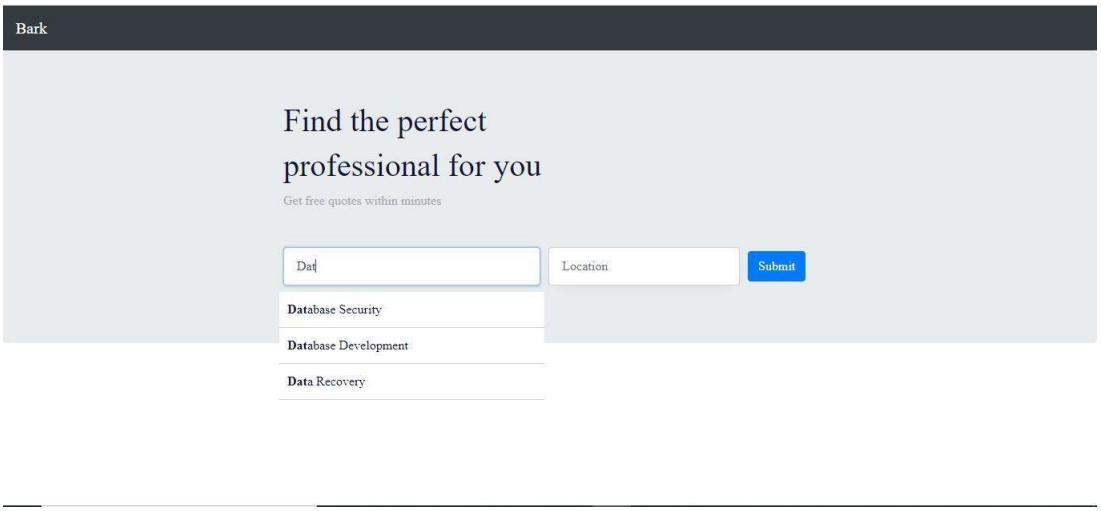


Figure 2.10.1 (a) Homepage Display the Services

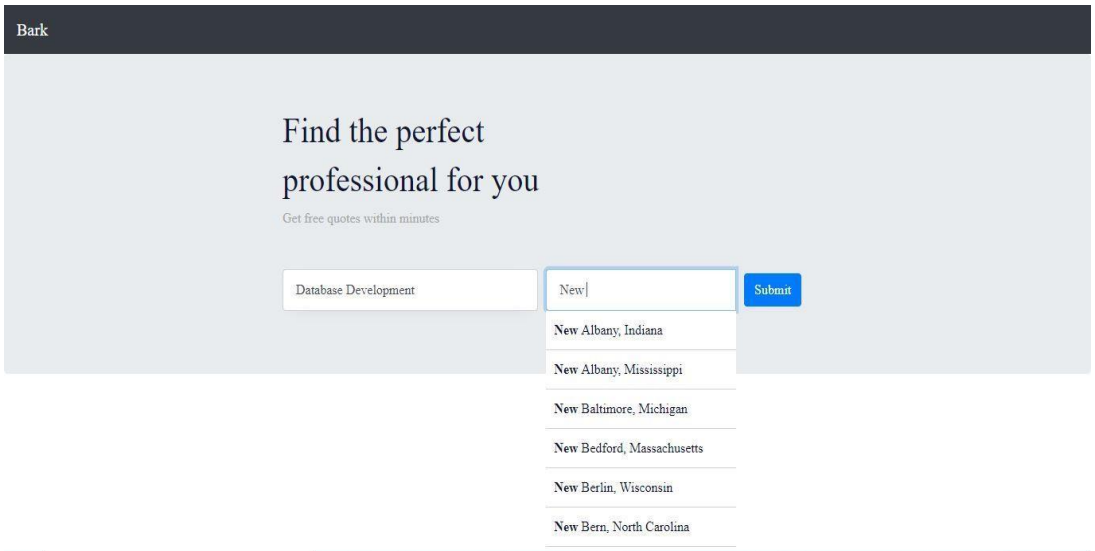


Figure 2.10.1 (b) Homepage Display the Locations

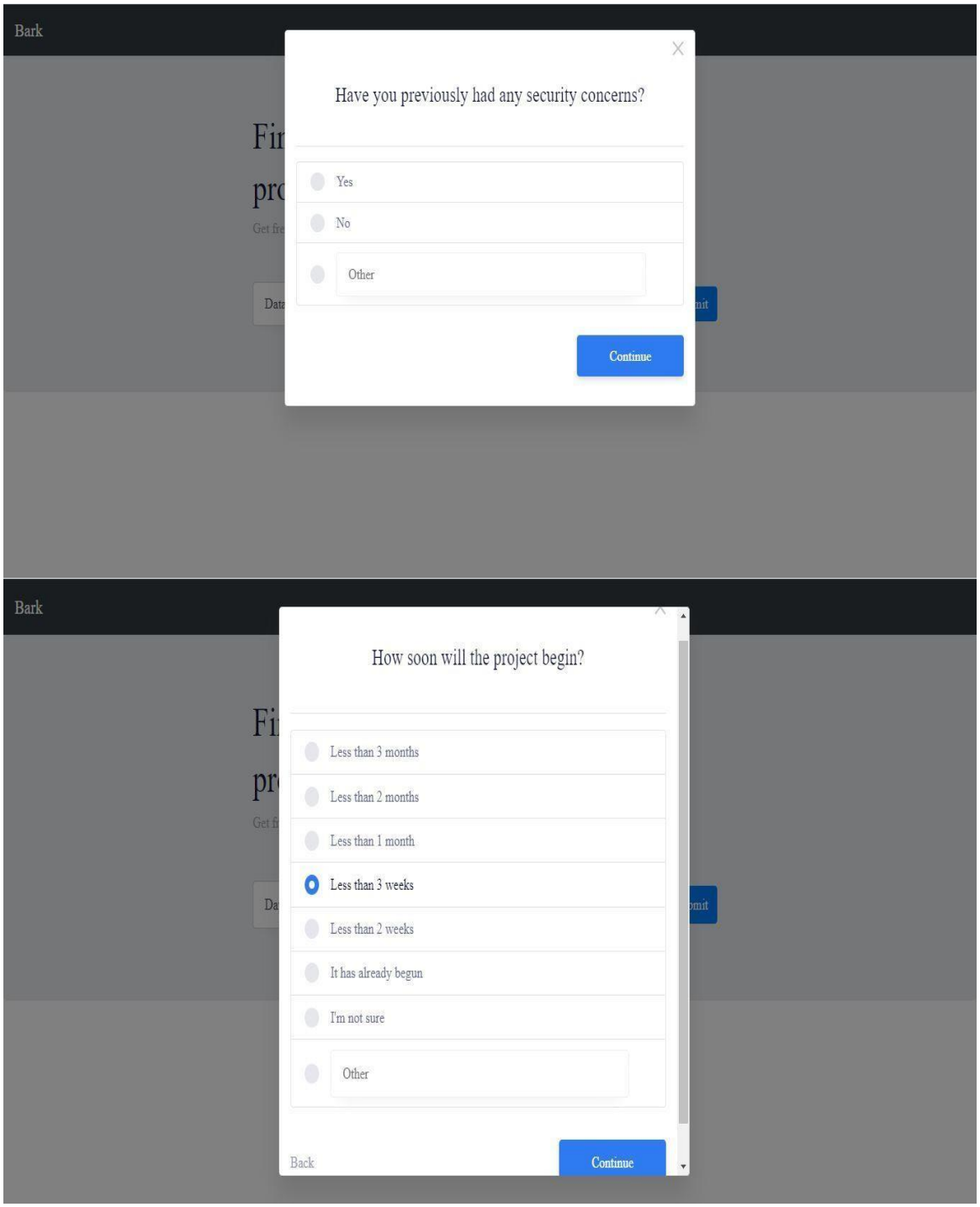


Figure 2.10.1 (c) Frequent Questions with respective Services

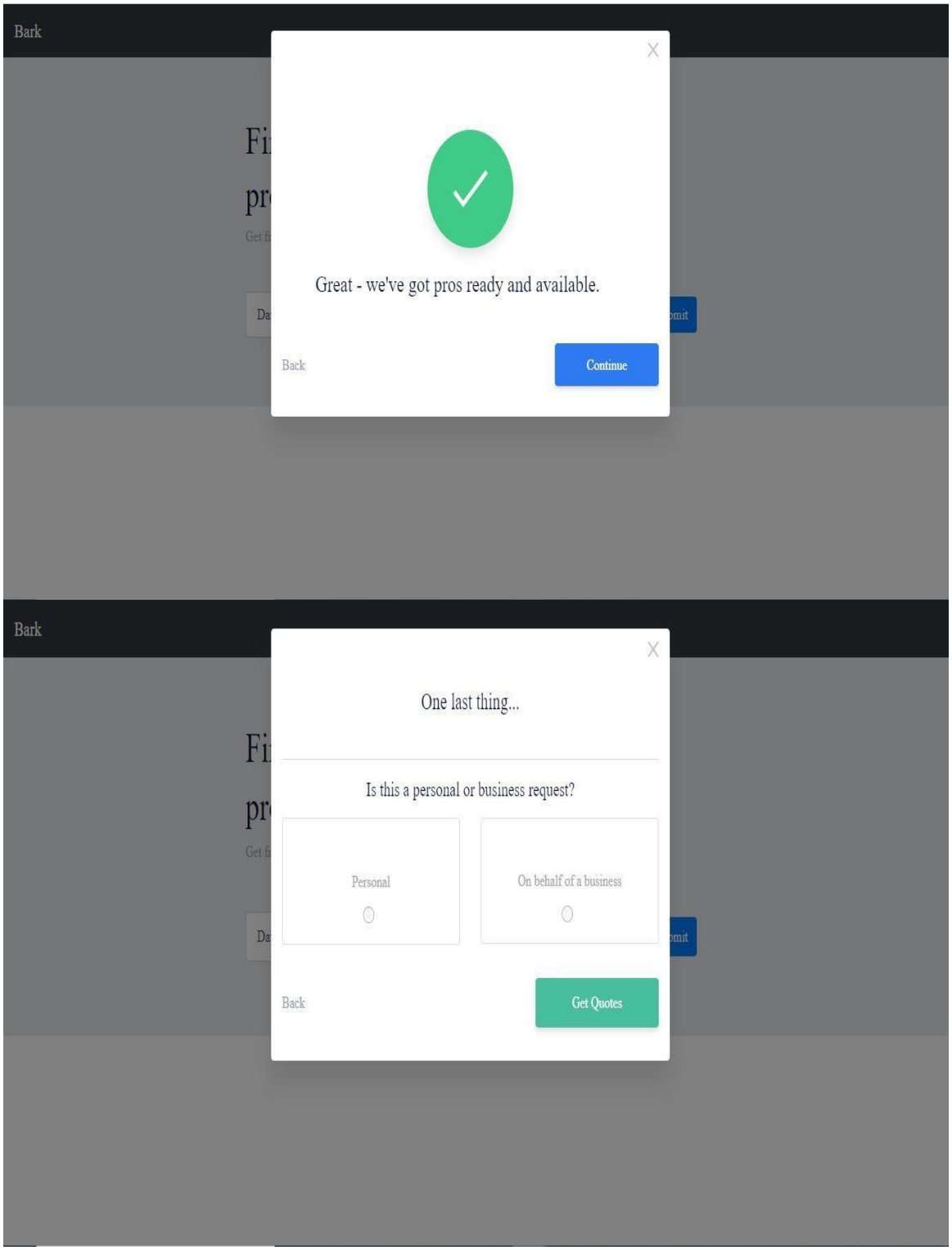


Figure 2.10.1 (d) Final Response message and Request Question to User

2.10.2 Backend Development with MYSQL Database and API

We have developed the API for core functionality working such as for the location and the various services as well as to store the user input to MYSQL Database.

API developed for the location and various services loads JSON data when it receives API call request as a result response all the service and location are loaded. Also API for user input stores the final data in MYSQL Database.

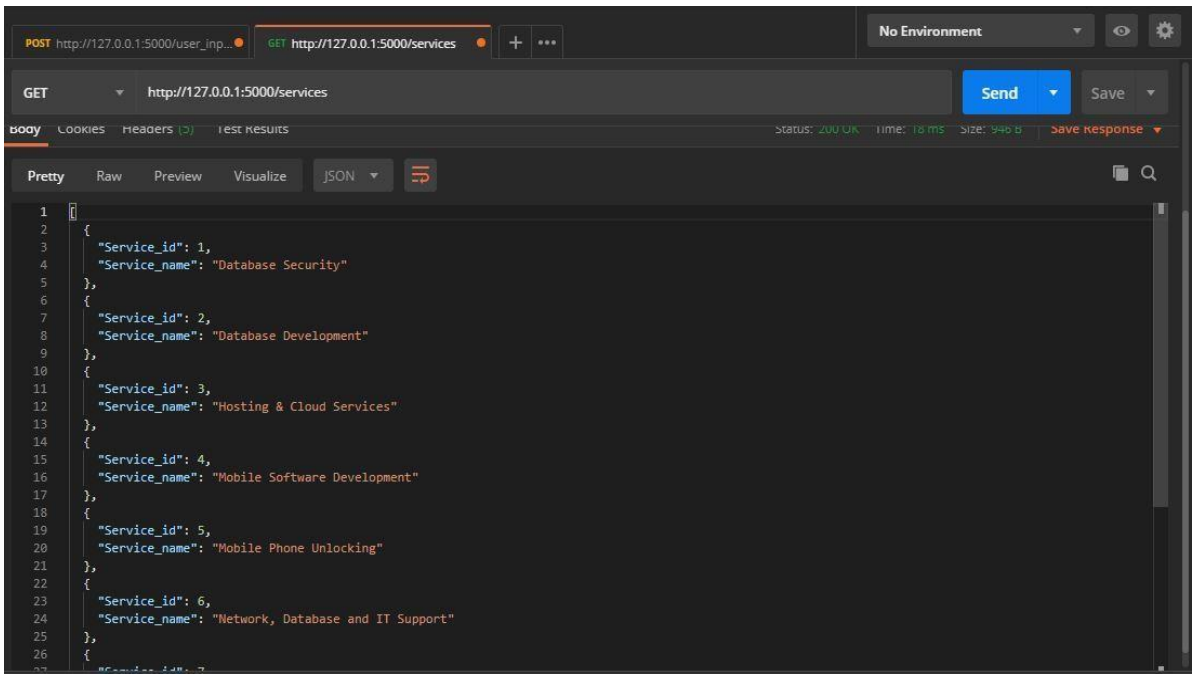


Figure 2.10.2 (a) API for various Services

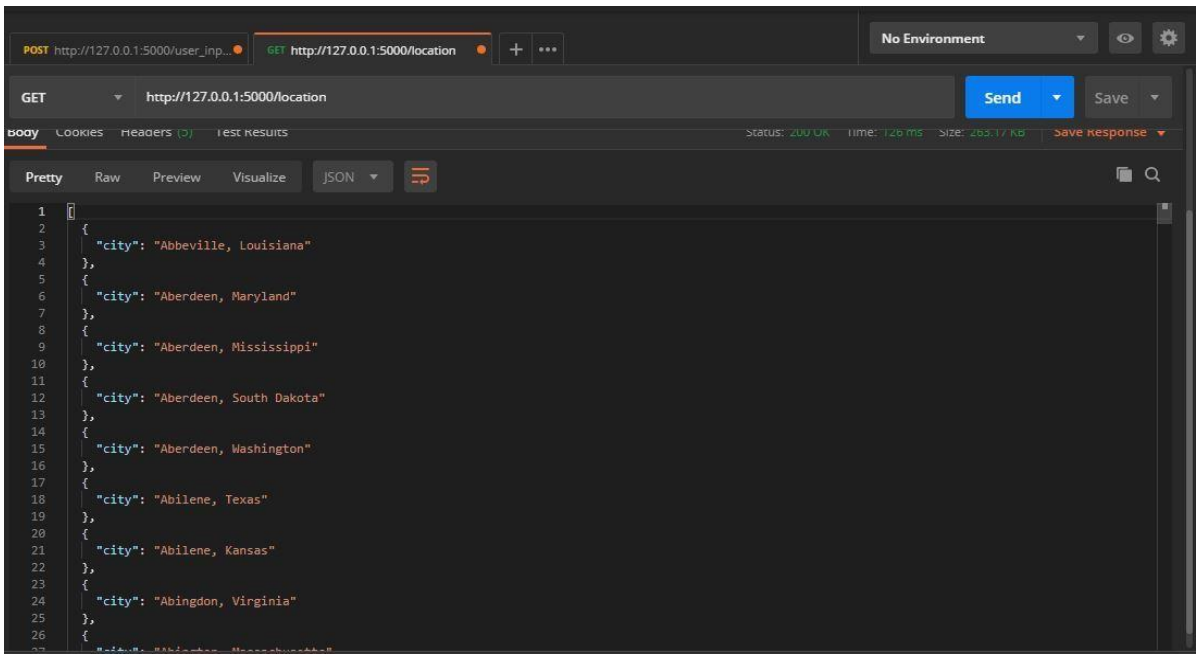


Figure 2.10.2 (b) API for Locations

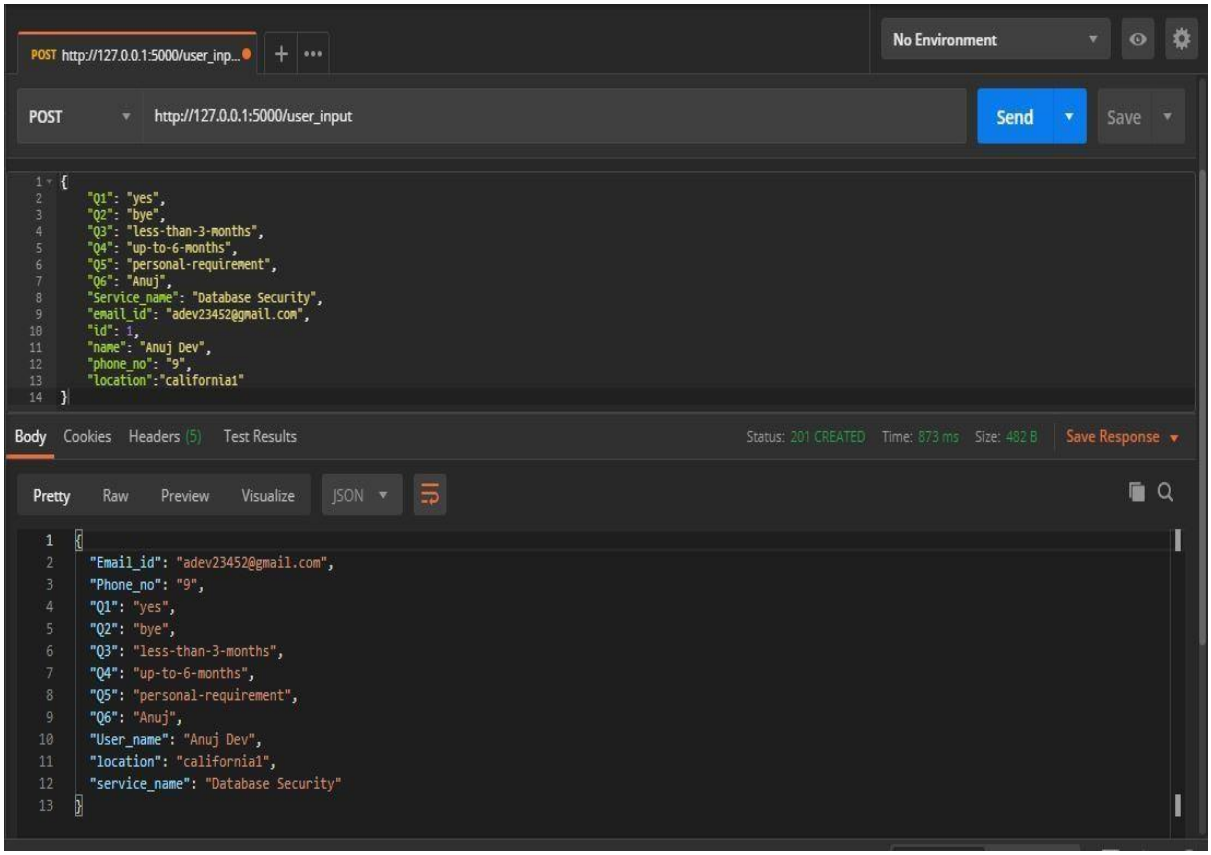


Figure 2.10.2 (c) API for storing the User Response to MYSQL Database

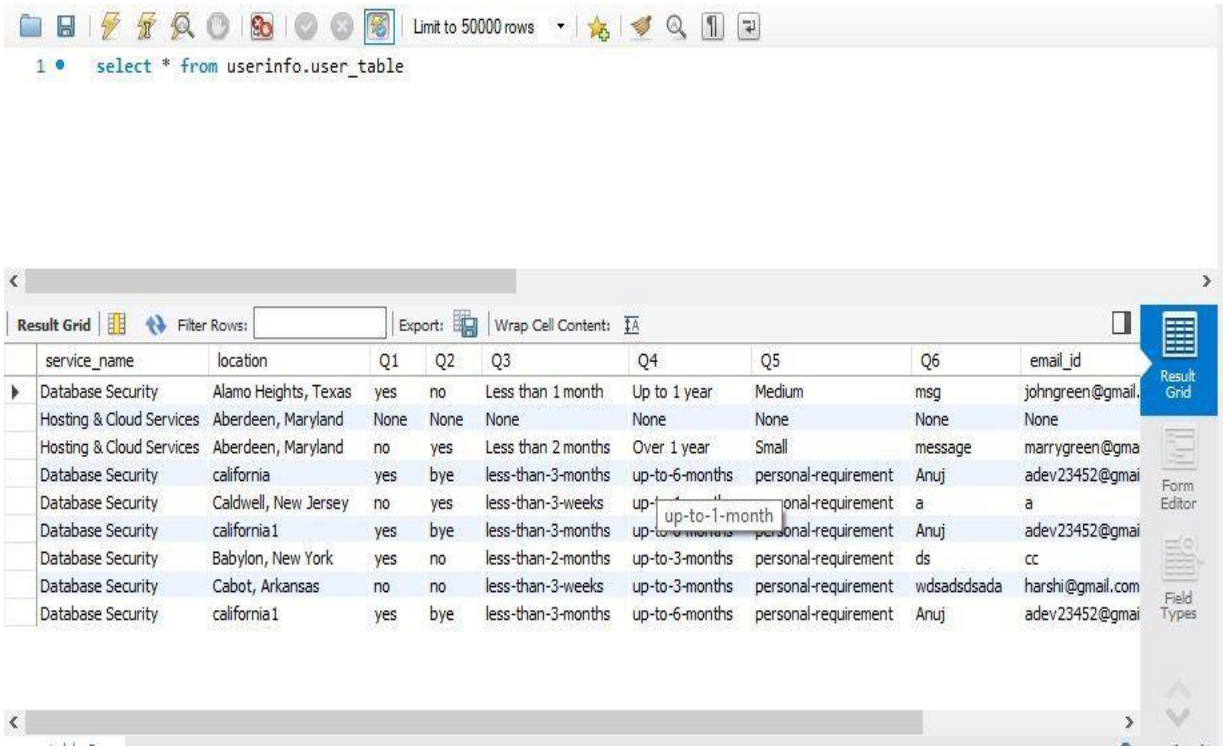


Figure 2.10.2 (d) MYSQL Database stores User Response

CHAPTER 3 SYSTEM PLANNING

3.1 Web Scraping with Python of 4200+ car dealers

3.1.1 System planning and software model for web scraping

CRISP-DM (cross-industry standard process for data mining) is a robust and well-proven methodology that provides a structured approach to solve virtually any analytics problem in any industry. It provides anyone from novices to data mining experts with a complete blueprint for conducting a data mining project.

Process of CRISP-DM framework:

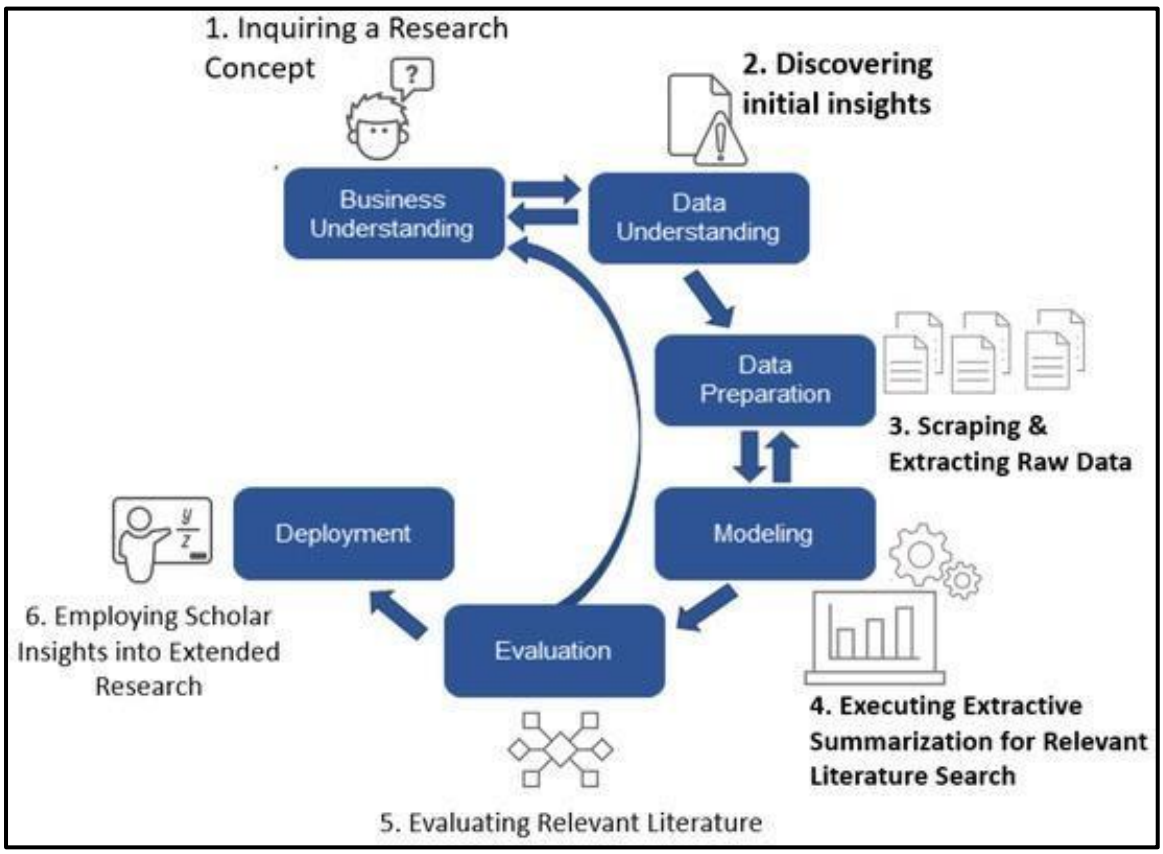


Figure 3.1.1 CRISP- DM model lifecycle

Advantages of the model:

- CRISP-DM framework provides a uniform framework for Guidelines and experience documentation
- CRISP-DM is flexible to account for different business/agency problems and different data.

3.1.2 Functional Requirements (Software Requirement Specification)

Table 3.1.2 Functional Requirements

Sr.no	Name of Functional Requirements	Description
FR#0	Juypter Notebook Spyder	It should be an integral part of any Python data scientist's toolbox. It's great for prototyping and sharing notebooks with visualizations
FR#1	Python language	Python is an interpreted, highlevel, general-purpose language
FR#2	Python language packages and libraries	**BeautifulSoup4** for handling all of the HTML processing and **requests** for performing your HTTP requests

3.1.3 Modules of the system

We were given the client project initially to scrap the address and contact details of the sample data containing the 80 car dealers and after that the main project of scraping the reviews and ratings of 4200+ car dealers from different websites and both of the modules as below

3.1.3.1 Module-1:-Web Scraping with Python Beautiful Soap

In the sample data CSV file where it contains the 80+ car-dealer names and we have done the Address and Contact Scraping and then we were provided with the actual data which contains the 4200+ car dealers details and we need to do the ratings and review scraping from different sites such as Google, Facebook, BBB.org, Yelp, Cars.com and dealer rater where we used the Beautiful Soap and requests library in Python and HTML parsers.

3.1.3.2 Module-2:-Data Selection

In both the above-mentioned projects after scraping the required data and storing them at appropriate column values in the CSV file the next step includes the selection of the data which are useful in data mining and analysis purpose.

3.1.3.3 Module-3:-Data Pre-processing and Tidying

In this module of the project after the data selection, we found that many of the data are missing, having null values, some includes the inconsistent data which points to the noisy data or incorrect values than such values must be removed is carried in this process which makes the data more accurate.

3.1.3.4 Module-4:-Data Transformation

In this module the processing of data refers to its transformation where we have removed all the unwanted data and further transforming data to make it precisely work with the mining process and the analysis purpose for future use, We have removed here the unwanted and missing values found in google and yelp and repeated values are also replaced with the correct values on the same.

3.1.3.5 Module-5:-Data Mining

In this module, all the data in CSV files are accurate and without any errors on that where we have applied the data mining process by recognizing various patterns in reviews and ratings and address and contact details.

3.1.3.6 Module-6:-Interpretation

The final step after all the processing includes the interpretation of data in an understandable format to all the viewers including the technical and non-technical where we formed the visualization diagrams and the format patterns.

3.2 COVID-19 Patient Predictor System with Machine Learning

3.2.1 System planning and model for the machine learning

Machine learning has given the computer systems the ability to automatically learn without being explicitly programmed. But how does a machine learning system work? So, it can be

described using the life cycle of machine learning. The machine learning life cycle is a cyclic process to build an efficient machine learning project. The main purpose of the life cycle is to find a solution to the problem or project.

Machine learning life cycle involves seven major steps:

- **Gathering Data, Data preparation, Data Wrangling, Analyse Data, Train the model, Test the model, Deployment**

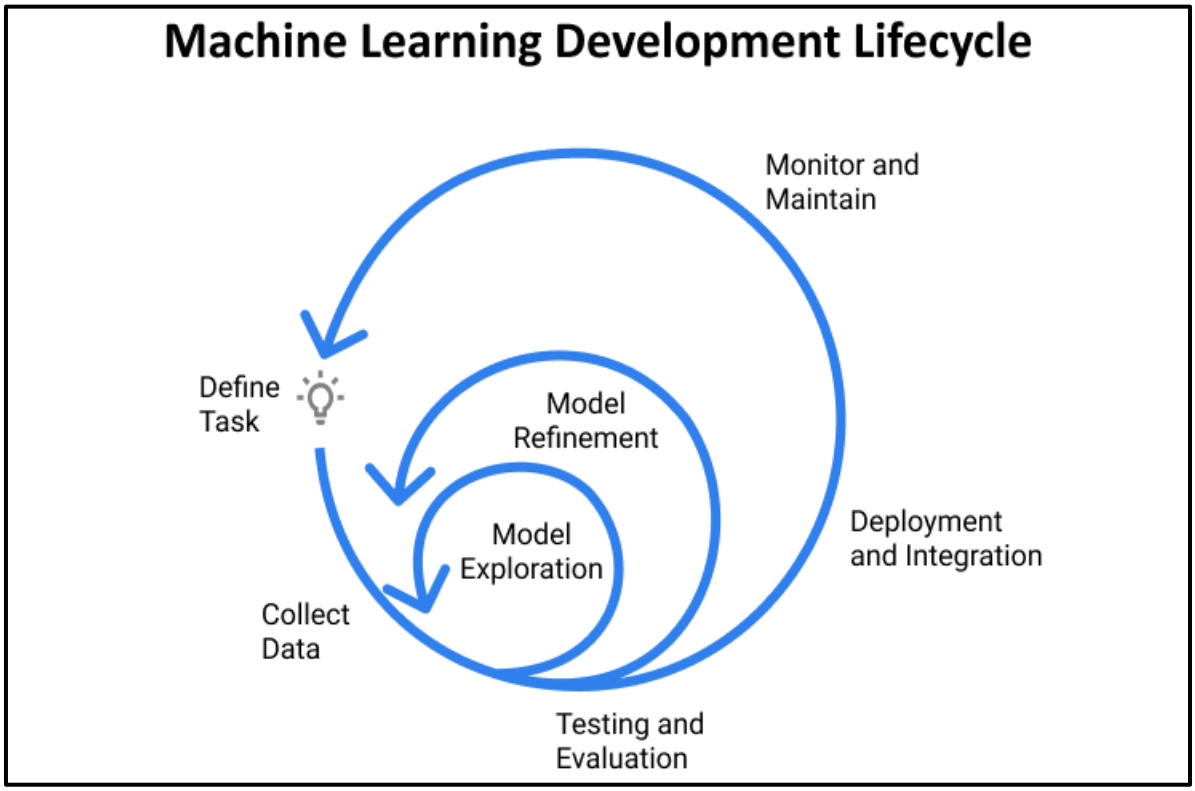


Figure 3.2.1 (a) Machine Learning Deployment Cycle

The figure depicts tests implemented throughout the development of the model such as data quality tests, model performance tests, and machine learning infrastructure tests. None of these tests, however, will be the focus of this blog post, though they are very important as well. The testing and monitoring processes need to continue running even after full deployment to ensure that the model continues providing value even after some time has

passed. Compared to software testing, testing machine learning models in deployment is an underdeveloped area of exploration. Most organizations don't understand what to test exactly to truly validate a model

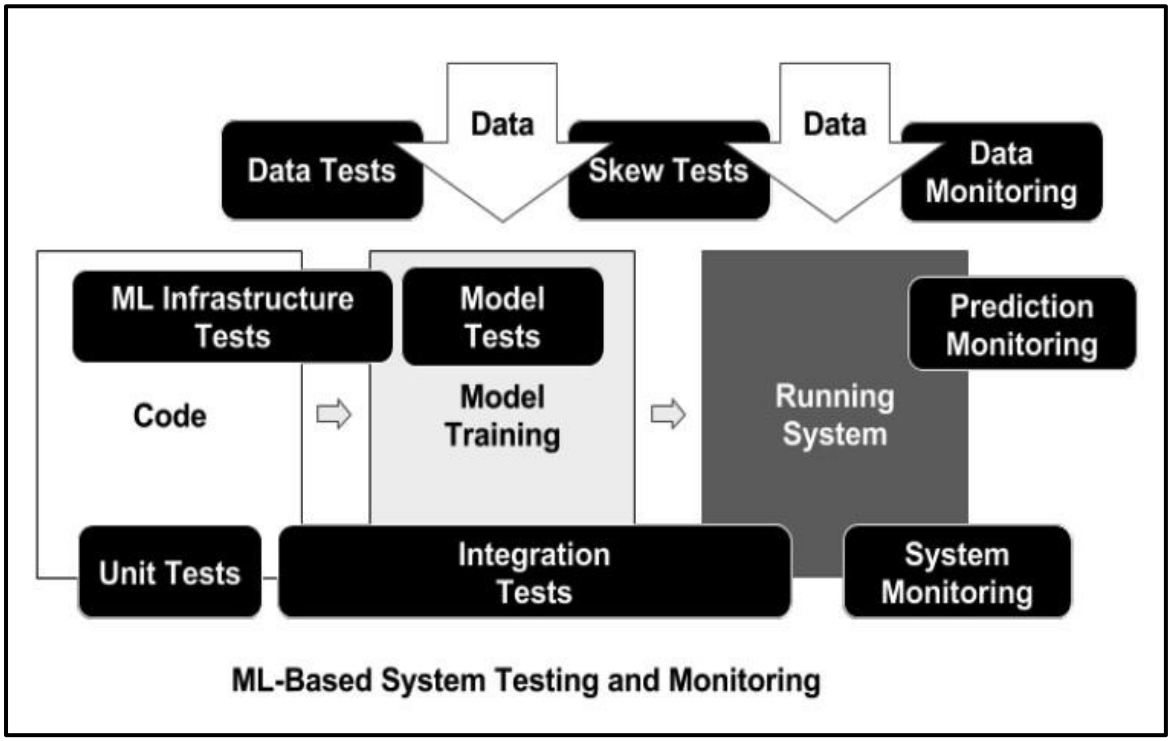


Figure 3.2.1 (b) Testing and Monitoring Cycle

Advantages of Machine Learning model:-

The machine learning life cycle is important because it delineates the role of every person in a company in data science initiatives, ranging from business to engineering personnel. It takes every project from inception to completion and gives a high-level perspective of how an entire data science project should be structured in order to result in real, practical business value. Failing to accurately execute on any one of these steps will result in misleading insights or models with no practical value.

3.2.2 Functional Requirements (Software Requirement Specification)

Table 3.2.2 Functional Requirements

Sr.no	Name of Functional Requirements	Description

FR#0	Juypter Notebook Spyder	It should be an integral part of any Python data scientist's toolbox. It's great for prototyping and sharing notebooks with visualizations
FR#1	Python language	Python is an interpreted, highlevel, general-purpose language
FR#2	Python language packages and libraries	Various machine learning python library such as numpy, pandas, scipy, Keras, etc
FR#3	Python Flask	Flask is a microframework in python for designing a web app.

3.2.3 Modules of the COVID-19 Patient Predictor System

Machine learning model which predicts if a person can have a probability or not of having COVID-19. With this, the person can self-assess and don't panic and be at home. It can also help prioritize the patients who really have Coronavirus and help the health care workers who really have it and save kits for the needed.

3.2.3.1 Module-1:- Gathering of COVID-19 Symptoms

After referring various sites and tutorials we gathered the symptoms for the project as in machine learning the preparation of data is the first and most important step and we listed the following:- Age, Fever, Fatigue, Runny Nose, Difficulty in breathing and Infection probability act as our project parameters and created the CSV file format for the data.

3.2.3.2 Module-2: - Model Training and Requirement

The process of training an ML model involves providing an ML algorithm (that is, the learning algorithm) with training data to learn from hence in this module we started to write our algorithm with the python based on above-selected parameters in python. The training data must contain the correct answer, which is known as a target or target attribute and our targeted attribute is Infection probability where 1 is for yes and 0 is no. Our learning algorithm finds patterns in the training data that map the input data attributes to the target

and it outputs an ML model that captures these patterns which help in the prediction of COVID-19 symptoms in the patient.

3.2.3.3 Module-3:- Webapp with Flask

Flask is a Python-based microframework used for developing small scale websites. Flask is very easy to make Restful API's using python. It includes various HTML and CSS files for designing the web app

In this module, we have designed the web app with a microframework of Python Flask. This web app asks for the input to the user and finally displays the probability of a patient being affected by the patient due to coronavirus.

3.2.3.4 Module-4:- Deploying the machine learning model to the flask

In this module, we have integrated the Flask app with our machine learning model and finally implemented the system with good accuracy algorithm. Also, we have hosted our web app on AWS ec2 instance.

CHAPTER 4 SYSTEM DESIGN

4.1 Web Scraping with Python of 4200+ car dealers

4.1.1 System Process Flow Diagram

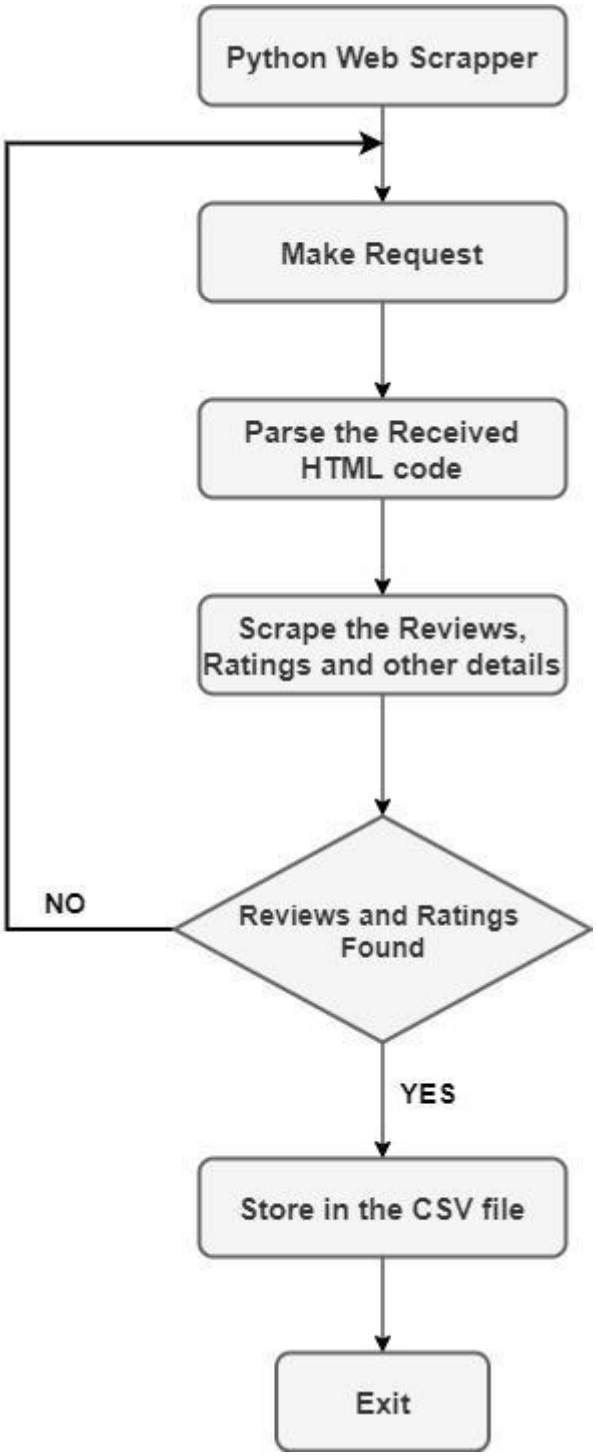


Figure 4.1.1 System Process Flow Diagram

4.1.2 System Workflow Diagram

A flowchart is a type of diagram that represents a workflow or process. A flowchart can also be defined as a diagrammatic representation of an algorithm, a step-by-step approach to solving a task.

The below flow diagram represents the working of the web scrapper of python that checks URL using the car dealer name and then gets the required details of review and rating and stores it in the CSV format.

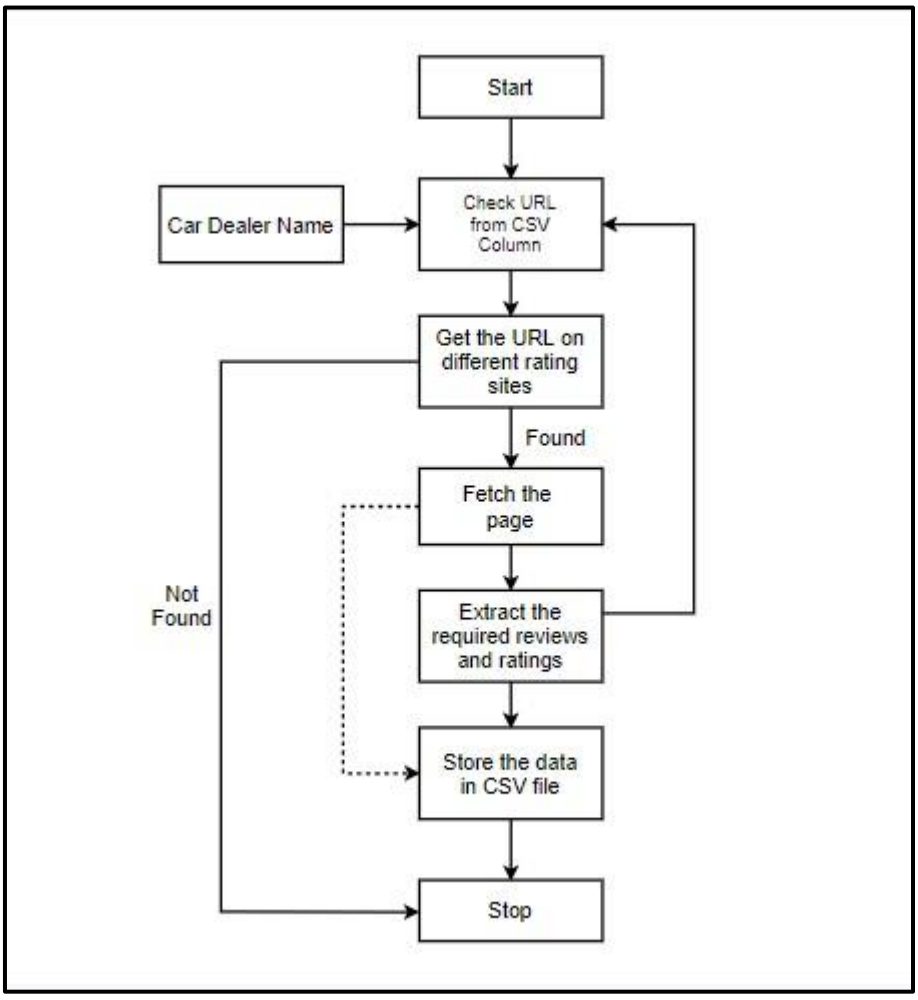


Figure 4.1.2 System Workflow Diagram

4.1.3 Activity Diagram

An activity diagram is a behavioral diagram i.e. it depicts the behavior of a system. The below activity diagram portrays the control flow from a start point to a finish point showing the various

decision paths that exist while the activity is being executed for our web scraping system with python.

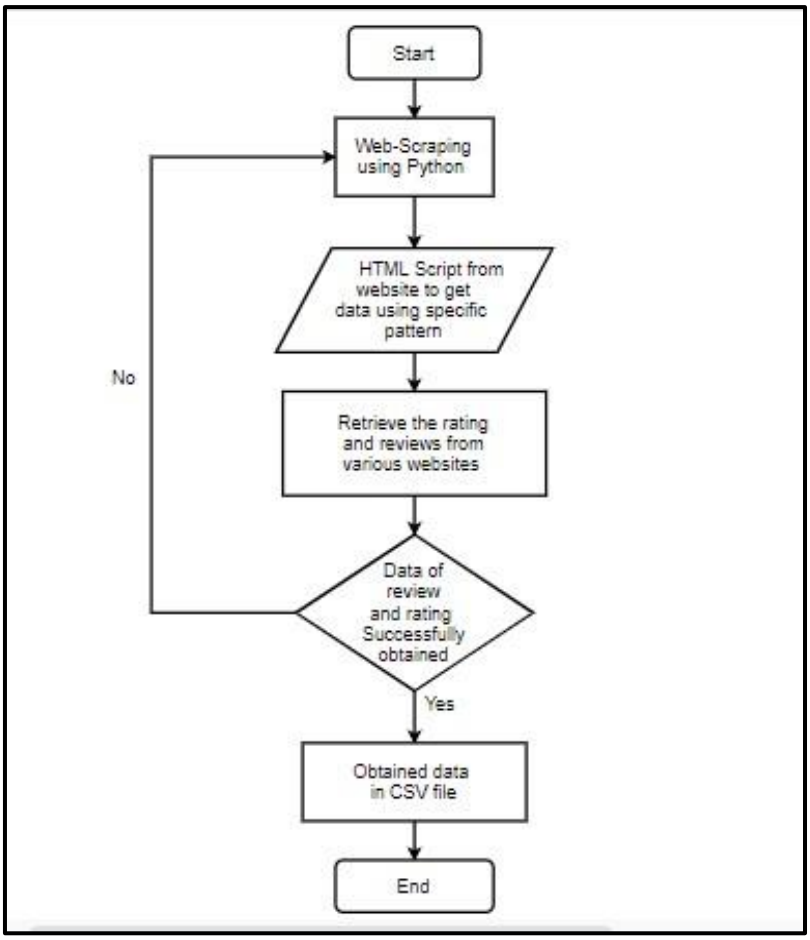


Figure 4.1.3 Activity Diagram

4.1.4 Data Flow Diagram (DFD)

A data-flow diagram is a way of representing a flow of data of a process or a system. The DFD also provides information about the outputs and inputs of each entity and the process itself. A data-flow diagram has no control flow, there are no decision rules and no loops.

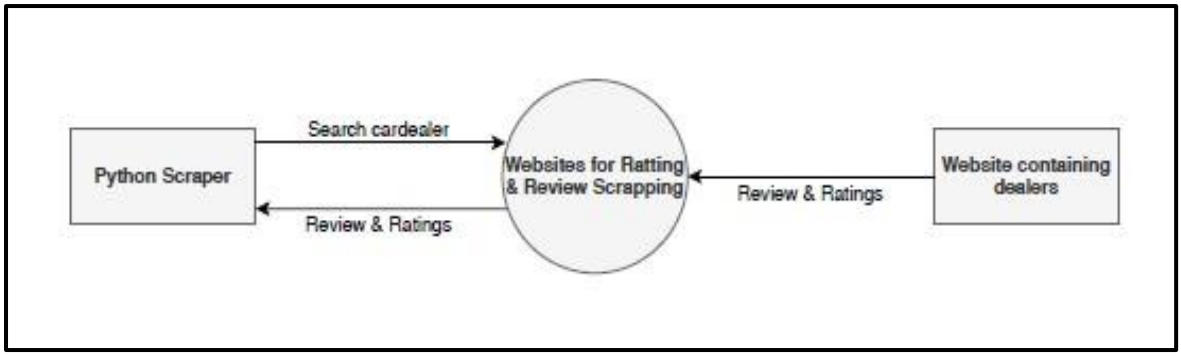


Figure 4.1.4 (a) DFD LEVEL-0

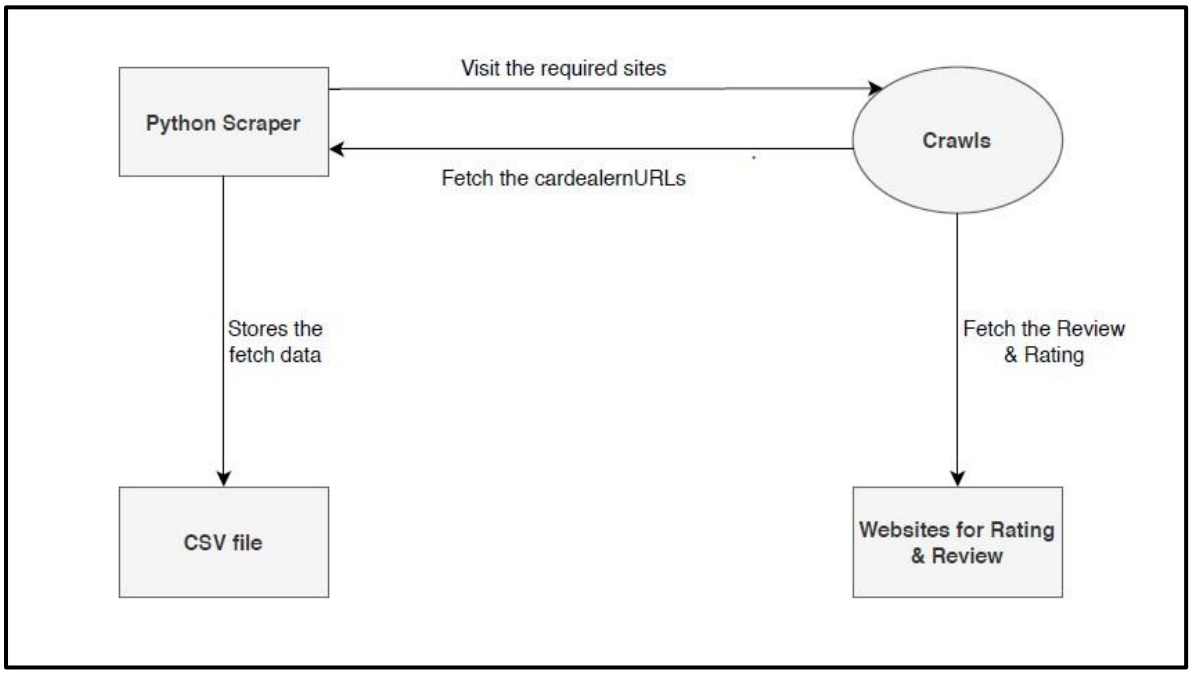


Figure 4.1.4 (b) DFD LEVEL-1

4.1.5 Timeline for Address and Contact Scraping

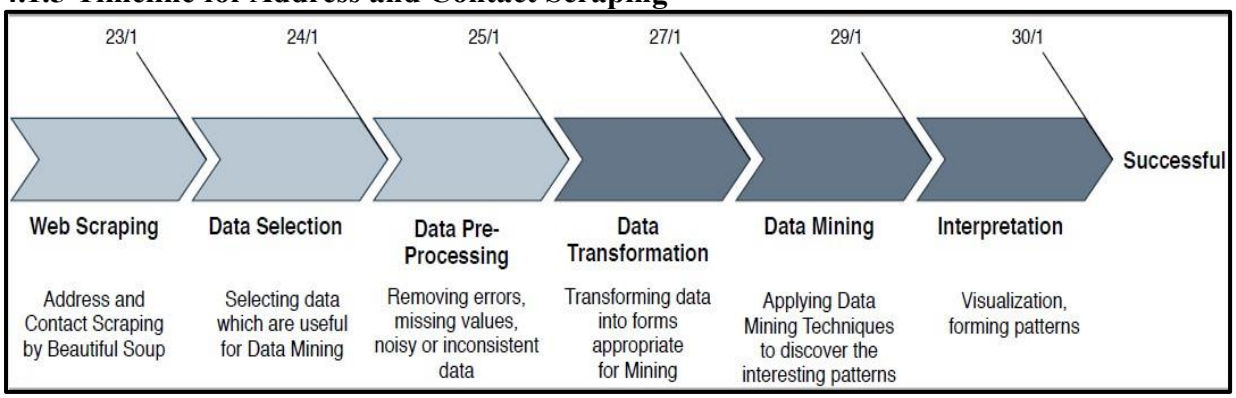


Figure 4.1.5 Timeline chart

4.1.6 Timeline for Reviews and Rating Scarping

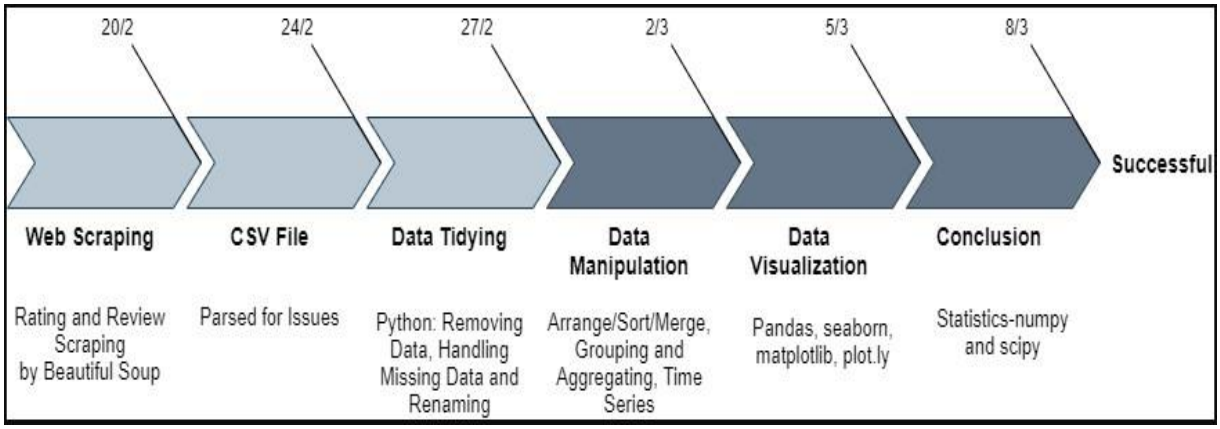


Figure 4.1.6 Timeline chart

4.2 COVID-19 Patient Predictor System with Machine Learning

4.2.1 Timeline Chart

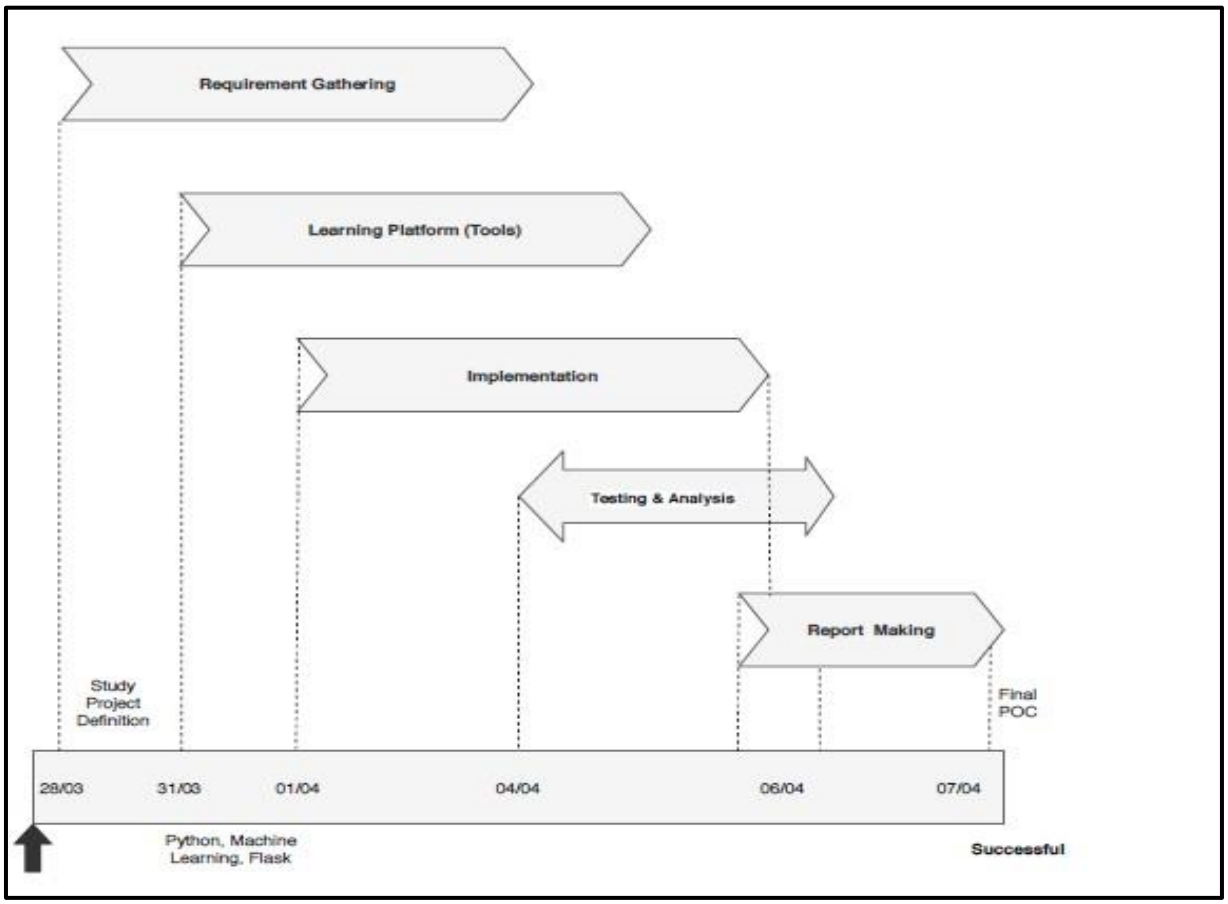


Figure 4.2.1 Timeline chart

4.2.2 Sequential Workflow Diagram

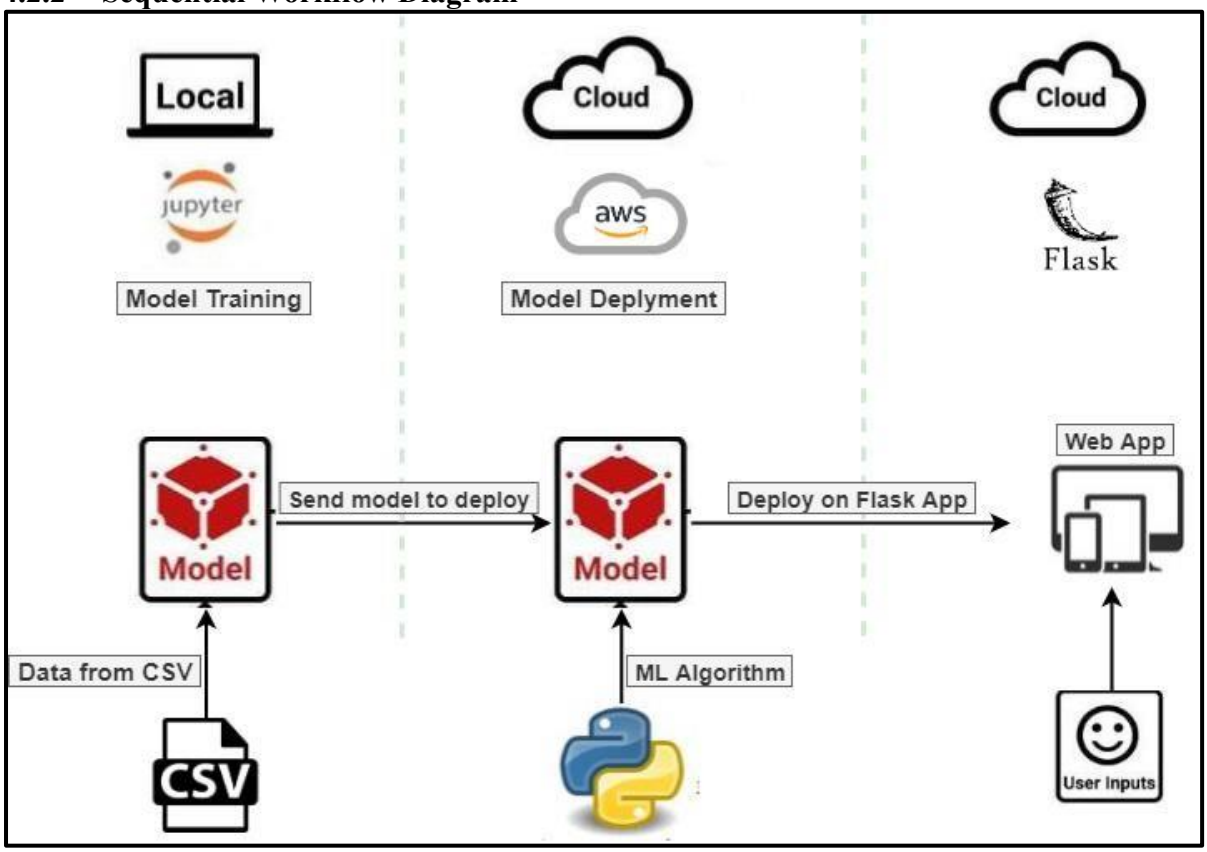


Figure 4.2.2 Sequential Workflow Diagram

4.2.3 System Architecture Diagram

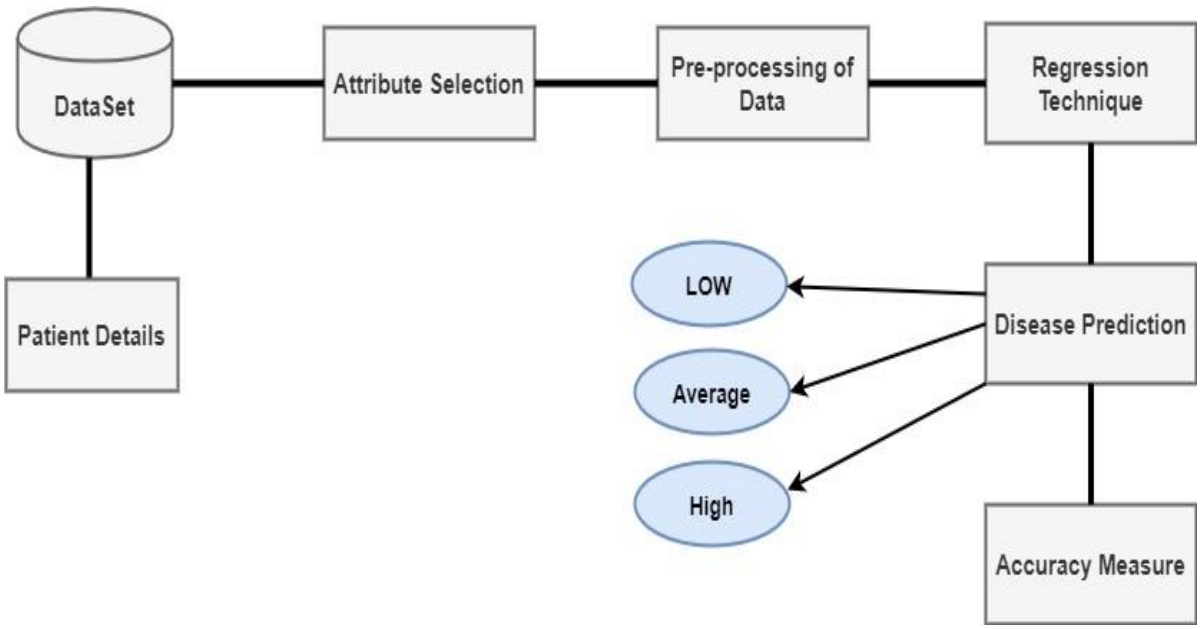


Figure 4.2.3 System Architecture

4.2.4 System Processing Workflow Diagram

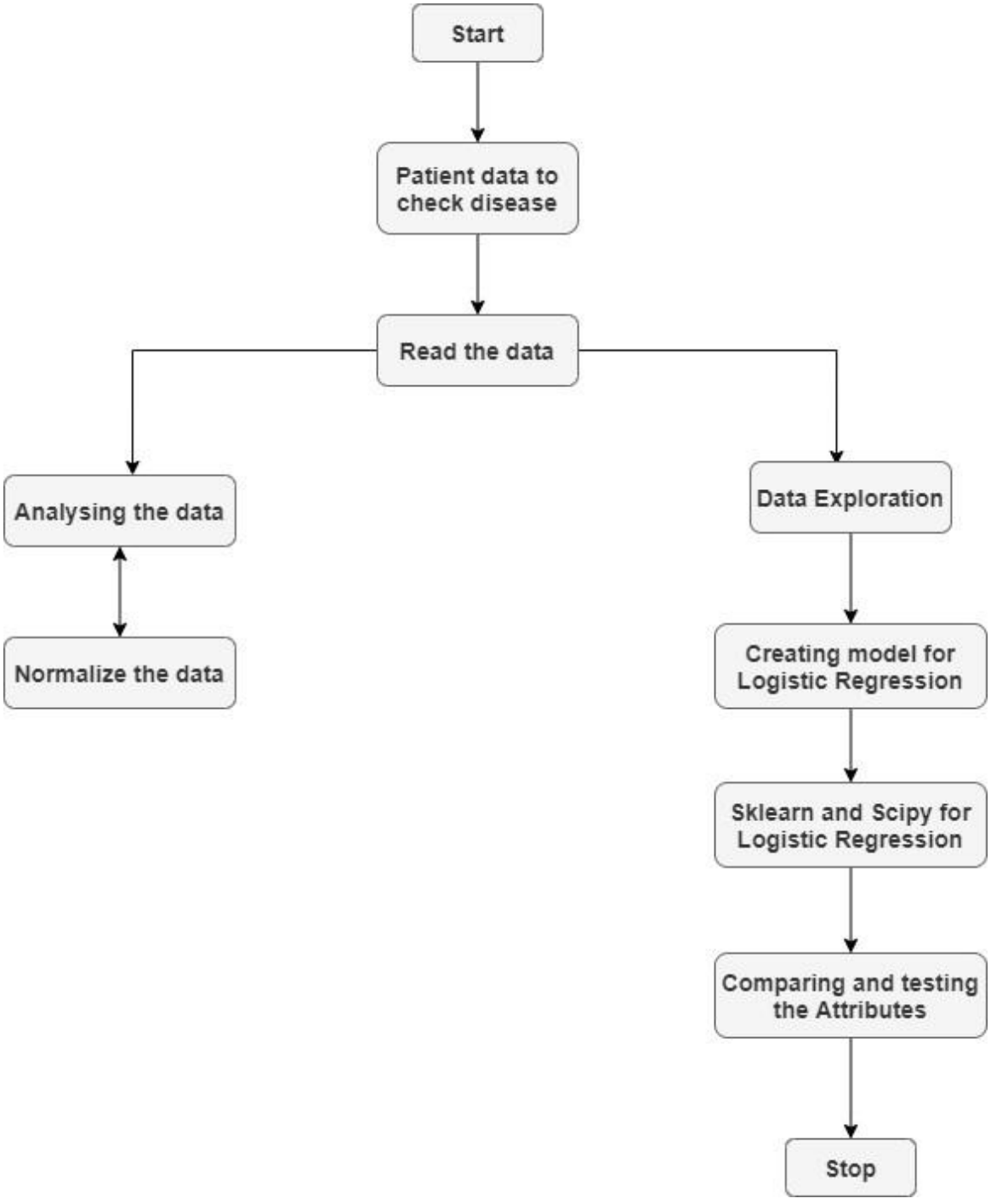


Figure 4.2.4 Processing Workflow Diagram

4.3 AWS (Amazon Web Services)

4.3.1 Timeline Chart

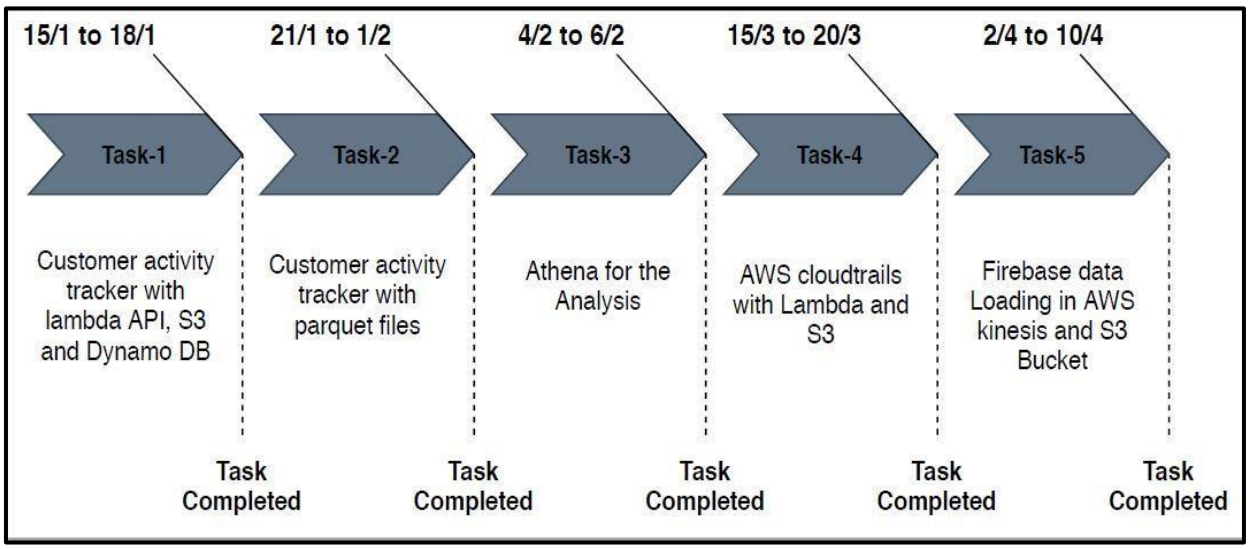


Figure 4.3.1 Timeline chart

CHAPTER 5 IMPLEMENTATION AND TESTING

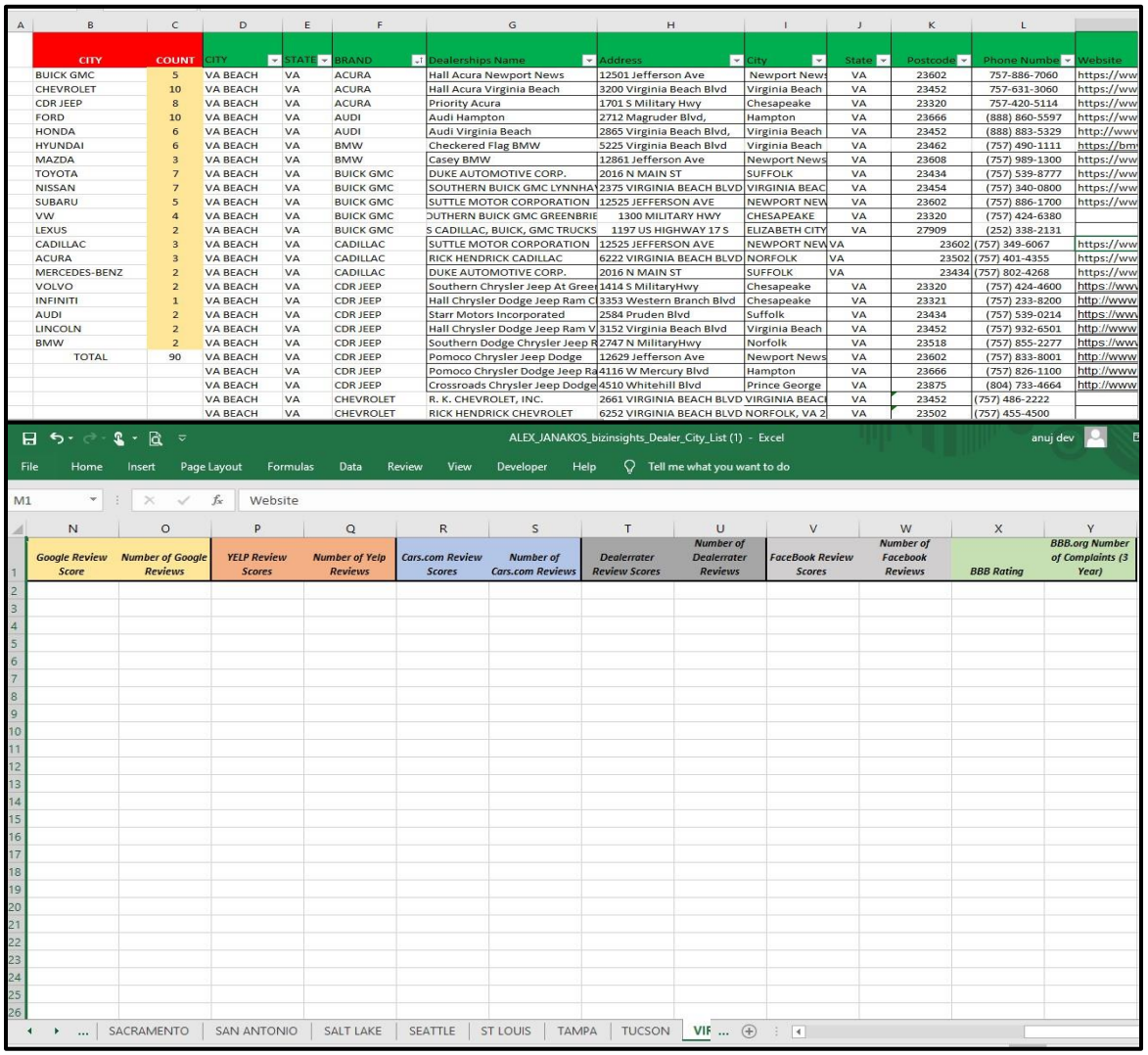
5.1 Web Scraping with Python of 4200+ car dealers

5.1.1 Software Requirements

- Python language and its libraries such as beautiful soap for HTML parser to scrape data from websites and requests module for HTTP request and panda's library to deal with CSV as a data frame.
- Juypter notebook for testing and running the scrapper

5.1.2 Snapshots

- **CSV data file from Client**



CITY	COUNT
BUICK GMC	5
CHEVROLET	10
CDR JEEP	8
FORD	10
HONDA	6
HYUNDAI	6
MAZDA	3
TOYOTA	7
NISSAN	7
SUBARU	5
VW	4
LEXUS	2
CADILLAC	3
ACURA	3
MERCEDES-BENZ	2
VOLVO	2
INFINITI	1
AUDI	2
LINCOLN	2
BMW	2
TOTAL	90

CITY	STATE	BRAND	Dealerships Name	Address	City	State	Postcode	Phone Numbe	Website
VA BEACH	VA	ACURA	Hall Acura Newport News	12501 Jefferson Ave	Newport News	VA	23602	757-886-7060	https://ww
VA BEACH	VA	ACURA	Hall Acura Virginia Beach	3200 Virginia Beach Blvd	Virginia Beach	VA	23452	757-631-3060	https://ww
VA BEACH	VA	ACURA	Priority Acura	1701 S Military Hwy	Chesapeake	VA	23320	757-420-5114	https://ww
VA BEACH	VA	AUDI	Audi Hampton	2712 Magruder Blvd,	Hampton	VA	23666	(888) 860-5597	https://ww
VA BEACH	VA	AUDI	Audi Virginia Beach	2865 Virginia Beach Blvd,	Virginia Beach	VA	23452	(888) 883-5329	http://www
VA BEACH	VA	BMW	Checkered Flag BMW	5225 Virginia Beach Blvd	Virginia Beach	VA	23462	(757) 490-1111	https://bm
VA BEACH	VA	BMW	Casey BMW	12861 Jefferson Ave	Newport News	VA	23608	(757) 989-1300	https://ww
VA BEACH	VA	BUICK GMC	DUKE AUTOMOTIVE CORP.	2016 N MAIN ST	SUFFOLK	VA	23434	(757) 539-8777	https://ww
VA BEACH	VA	BUICK GMC	SOUTHERN BUICK GMC LYNNHA	2375 VIRGINIA BEACH BLVD	VIRGINIA BEAC	VA	23454	(757) 340-0800	https://ww
VA BEACH	VA	BUICK GMC	SUTTLE MOTOR CORPORATION	12525 JEFFERSON AVE	NEWPORT NEW	VA	23602	(757) 886-1700	https://ww
VA BEACH	VA	BUICK GMC	OUTHERN BUICK GMC GREENBRIE	1300 MILITARY HWY	CHESAPEAKE	VA	23320	(757) 424-6380	
VA BEACH	VA	BUICK GMC	S CADILLAC, BUICK, GMC TRUCKS	1197 US HIGHWAY 17 S	ELIZABETH CITY	VA	27909	(252) 338-2131	
VA BEACH	VA	CADILLAC	SUTTLE MOTOR CORPORATION	12525 JEFFERSON AVE	NEWPORT NEW	VA	23602	(757) 349-6067	https://ww
VA BEACH	VA	CADILLAC	RICK HENDRICK CADILLAC	6222 VIRGINIA BEACH BLVD	NORFOLK	VA	23502	(757) 401-4355	https://ww
VA BEACH	VA	CADILLAC	DUKE AUTOMOTIVE CORP.	2016 N MAIN ST	SUFFOLK	VA	23434	(757) 802-4268	https://ww
VA BEACH	VA	CDR JEEP	Southern Chrysler Jeep At Greer	1414 S MilitaryHwy	Chesapeake	VA	23320	(757) 424-4600	https://ww
VA BEACH	VA	CDR JEEP	Hall Chrysler Dodge Jeep Ram C	3353 Western Branch Blvd	Chesapeake	VA	23321	(757) 233-8200	http://www
VA BEACH	VA	CDR JEEP	Starr Motors Incorporated	2584 Pruden Blvd	Suffolk	VA	23434	(757) 539-0214	https://ww
VA BEACH	VA	CDR JEEP	Hall Chrysler Dodge Jeep Ram V	3152 Virginia Beach Blvd	Virginia Beach	VA	23452	(757) 932-6501	http://www
VA BEACH	VA	CDR JEEP	Southern Dodge Chrysler Jeep R	2747 N MilitaryHwy	Norfolk	VA	23518	(757) 855-2277	https://ww
VA BEACH	VA	CDR JEEP	Pomoco Chrysler Jeep Dodge	12629 Jefferson Ave	Newport News	VA	23602	(757) 833-8001	http://www
VA BEACH	VA	CDR JEEP	Pomoco Chrysler Dodge Jeep Ra	4116 W Mercury Blvd	Hampton	VA	23666	(757) 826-1100	http://www
VA BEACH	VA	CDR JEEP	Crossroads Chrysler Jeep Dodge	4510 Whitehill Blvd	Prince George	VA	23875	(804) 733-4664	http://www
VA BEACH	VA	CHEVROLET	R. K. CHEVROLET, INC.	2661 VIRGINIA BEACH BLVD	VIRGINIA BEAC	VA	23452	(757) 486-2222	
VA BEACH	VA	CHEVROLET	RICK HENDRICK CHEVROLET	6252 VIRGINIA BEACH BLVD	NORFOLK, VA 2	VA	23502	(757) 455-4500	

ALEX_JANAKOS_bizinsights_Dealer_City_List (1) - Excel — anuj dev

File Home Insert Page Layout Formulas Data Review View Developer Help Tell me what you want to do

M1 Website

Google Review Score	Number of Google Reviews	YELP Review Scores	Number of Yelp Reviews	Cars.com Review Scores	Number of Cars.com Reviews	Dealerrater Review Scores	Number of Dealerrater Reviews	FaceBook Review Scores	Number of Facebook Reviews	BBB Rating	BBB.org Number of Complaints (3 Year)

SACRAMENTO | SAN ANTONIO | SALT LAKE | SEATTLE | ST LOUIS | TAMPA | TUCSON | VIF ...

Figure 5.1.2 (a) CSV file Input Data

- **Designing Python Scrapper for all the websites to get reviews and rating**

```
for i in range(0,df_cities["Range"][c]):
    google=str(df["Google Review Score"][i])
    if google == "nan":
        try:
            params = {
                "q": df["Dealerships Name"][i] + " " + df["Address"][i],
                "hl": "en",
                "gl": "us",
                "google_domain": "google.com",
                "api_key": "cdf70a41c71298320361b1a743622db220a213cc4878fc16b1032d36d38510f2"
            }
            client = GoogleSearchResults(params)
            results = client.get_dict()
            print(df["Dealerships Name"][i] + " " + df["Address"][i])
            for j in range(0,3):
                try:
                    df["Google Review Score"][i]=results['knowledge_graph']['rating']
                    df["Number of Google Reviews"][i]=results['knowledge_graph']['review_count']
                    print("Rating and Review of Google")
                    print(df["Google Review Score"][i],df["Number of Google Reviews"][i])
                    break
                except:
                    df["Google Review Score"][i]=""
                    df["Number of Google Reviews"][i]=""
        except:
            print("error in something")
            df["Google Review Score"][i]=""
            df["Number of Google Reviews"][i]=""
```

Figure 5.1.2 (b) Scrapper for Google Ratings and Review

```
                check=soup.findAll("div",{"class":"MuiPaper-root MuiCard-root styles__Rollup-y1p2dl-0 dgAmri MuiPaper-elevation1
MuiPaper-rounded"})
                if len(check) == 0:
                    review=soup.findAll("div",{"class":"MuiPaper-root MuiCard-root Card-sc-14y8sbi-0 TallCard-sc-1017v0f-0 fMyzR
Z MuiPaper-elevation1 MuiPaper-rounded"})
                    rating = soup.findAll("div",{"class":"MuiPaper-root MuiCard-root Card-sc-14y8sbi-0 elDRbn dtm-complaint-list
MuiPaper-elevation1 MuiPaper-rounded"})
                    try:
                        df["BBB.org Number of Complaints (3 Year)"][i]=rating[0].find("p",{"class":"MuiTypography-root MuiTypogr
aphy-body1"}).text
                        if review[1].find("span",{"class":"LetterGrade-sc-1exw0et-0 bQtLRW"}) == None:
                            tags = review[1].find("span",{"class":"LetterGrade-sc-1exw0et-0 bQtLRW dtm-rating"}).text
                        else:
                            tags = review[1].find("span",{"class":"LetterGrade-sc-1exw0et-0 bQtLRW"}).text

                        df["BBB Rating"][i]=tags
                        print(df["BBB Rating"][i],df["BBB.org Number of Complaints (3 Year)"][i])
                    except:
                        df["BBB Rating"][i]=""
                        df["BBB.org Number of Complaints (3 Year)"][i]=""
                        print("Not Available Reviews and Complaints")
                else:
                    review = soup.findAll("div",{"class":"MuiGrid-root MuiGrid-container MuiGrid-spacing-xs-1 MuiGrid-align-item
s-xs-center"})
                    rating = soup.findAll("div",{"class":"MuiPaper-root MuiCard-root styles__Rollup-y1p2dl-0 dgAmri MuiPaper-ele
vation1 MuiPaper-rounded"})
                    try:
                        df["BBB Rating"][i]=rating[0].div.span.text
                        df["BBB.org Number of Complaints (3 Year)"][i]=review[0].div.span.text
                        print(df["BBB Rating"][i],df["BBB.org Number of Complaints (3 Year)"][i])
                    except:
                        print("Not Available Reviews and Complaints")
                        df["BBB Rating"][i]=""
                        df["BBB.org Number of Complaints (3 Year)"][i]=""
            except:
                print("error in something")
                df["BBB Rating"][i]=""
```

Figure 5.1.2 (c) Scrapper for bbb.org Ratings and Review

```
from serpapi.google_search_results import GoogleSearchResults
df["Cars.com Review Scores"].fillna("No Data", inplace = True)
for i in range(0,df_cities["Range"][c]):
    if df["Cars.com Review Scores"][i] == "No Data":
        count=count+1
        try:
            params = {
                "q": df["Dealerships Name"][i] + " " + df["City"][i] + " Cars.com",
                "hl": "en",
                "gl": "us",
                "google_domain": "google.com",
                "api_key": "cdf70a41c71298320361b1a743622db220a213cc4878fc16b1032d36d38510f2"
            }

            client = GoogleSearchResults(params)
            results = client.get_dict()
            print("Cars.com")
            print(df["Dealerships Name"][i] + " "+df["City"][i] + " Cars.com")
            for j in range(0,3):
                try:
                    df["Cars.com Review Scores"][i]=results['organic_results'][j]['rich_snippet']['top']['detected_extension
']['rating']
                    df["Number of Cars.com Reviews"][i]=results['organic_results'][j]['rich_snippet']['top']['detected_exten
ions']['reviews']
                    print(df["Dealerships Name"][i])
                    print("Rating and Review of Dealer Rater")
                    print(df["Cars.com Review Scores"][i],df["Number of Cars.com Reviews"][i])
                    break
                except:
                    df["Cars.com Review Scores"][i]=""
                    df["Number of Cars.com Reviews"][i]=""
        except:
            print("error in something")
            df["Cars.com Review Scores"][i]=""
```

Figure 5.1.2 (d) Scrapper for cars.com Ratings and Review

```
for i in range(0,df_cities["Range"][c]):
    dealer_rater=str(df["Dealerrater Review Scores"][i])
    if dealer_rater == "nan":
        try:
        params = {
            "q": df["Dealerships Name"][i] + df["City"][i] + "Dealer Rater",
            "hl": "en",
            "gl": "us",
            "google_domain": "google.com",
            "api_key": "Key"
        }
        client = GoogleSearchResults(params)
        results = client.get_dict()

        for j in range(0,4):
            try:
                df["Dealerrater Review Scores"][i]=results['organic_results'][j]['rich_snippet']['top']['detected_extension
s']['rating']
                df["Number of Dealerrater Reviews"][i]=results['organic_results'][j]['rich_snippet']['top']['detected_extens
ions']['reviews']
                print(df["Dealerships Name"][i])
                print("Rating and Review of Dealer Rater")
                print(df["Dealerrater Review Scores"][i],df["Number of Dealerrater Reviews"][i])
                break
            except:
                df["Dealerrater Review Scores"][i]=""
                df["Number of Dealerrater Reviews"][i]=""
    except:
        print("error in something")
        df["Dealerrater Review Scores"][i]=""
```

Figure 5.1.2 (e) Scrapper for Dealer -Rater Ratings and Review

```
    from serpapi.google_search_results import GoogleSearchResults
    df["FaceBook Review Scores"].fillna("No Data", inplace = True)
    for i in range(0,df_cities["Range"][c]):
        if df["FaceBook Review Scores"][i] == "No Data":
            count=count+1
            try:
                print("Facebook")
                url ="https://serpapi.com/search?engine=yahoo&p=" + df["Dealerships Name"][i] + " "+df["City"][i] + "Facebook" +
"&api_key=0b0f0784f2ab0c290db9d97a5dd6bd8903fbba06a478bcb2eb14d4fe0be9daf0"
                response = requests.request('GET', url)
                e=response.json()
                for j in range(0,5):
                    try:
                        df["FaceBook Review Scores"][i]=e['organic_results'][j]['rich_snippet']['rating']
                        df["Number of Facebook Reviews"][i]=e['organic_results'][j]['rich_snippet']['reviews']
                        print(df["Dealerships Name"][i])
                        print("Rating and Review of Facebook")
                        print(df["FaceBook Review Scores"][i],df["Number of Facebook Reviews"][i])
                        break
                    except:
                        df["FaceBook Review Scores"][i]=""
                        df["Number of Facebook Reviews"][i]=""
            except:
                print("error in something")
                df["FaceBook Review Scores"][i]=""
                df["Number of Facebook Reviews"][i]=""
```

Figure 5.1.2 (f) Scrapper for Facebook Ratings and Review

```
        url = 'https://api.yelp.com/v3/businesses/search'
        headers = {'Authorization': 'Bearer {}'.format(API_KEY)}



        url_params = {
            'term': DEFAULT_TERM,
            'location': DEFAULT_LOCATION,
            'limit': SEARCH_LIMIT
            }
        response = requests.request('GET', url, headers=headers, params=url_params)

        for business in response.json()["businesses"]:
            if len(business)==0:
                df["YELP Review Scores"][i] = "No Data"
                df["Number of Yelp Reviews"][i] = "No Data"
            else:
                df["Number of Yelp Reviews"][i]=business["review_count"]
                df["YELP Review Scores"][i]=business["rating"]
                print(business["review_count"])
                print(business["rating"])

    print()
```

Figure 5.1.2 (g) Scrapper for YELP Ratings and Review

- **Final output CSV file with scrapped data**

City	State	Postcode	Phone Number	Website	Google Review Score	Number of Google Reviews	Number of Yelp Reviews	YELP Review Scores	Cars.com Review Scores	Number of Cars.com
San Antonio	TX	78230	877-934-5933	https://www.gunnacura.com/	4.7	1668	23	4.5	4.8	659
NORTH SELMA	TX	78154	(844) 846-6947		4.4	274	135	4.5	4.8	5
San Antonio		78257	(888) 710-3466		4.3	837	586	4	4.2	300
San Antonio	TX	78249	(210) 732-7121		4.4	2105	218	4	4.5	506
BOERNE	TX	78006	(830) 981-9000	https://www.ancirabuickgmc.com/	4.8	431	188	4.5	4.9	55
PLEASANTON	TX	78064	(830) 569-2241	https://www.purschmotors.net/	4.3	95	26	4	5	22
NORTH SELMA	TX	78154	(210) 599-5600	https://www.gunnbuickgmc.com/	4.5	1550	19	5	4.6	203
SEGUIN	TX	78155	(830) 303-4546	https://www.soechtingmotors.net/	4.6	87	36	4.5		
SAN ANTONIO	TX	78232	(210) 490-2000	https://www.cavenderbuickgmc281.com/	4.7	1776	1	5	4.5	39
SAN ANTONIO	TX	78254	(210) 819-4444	https://www.cavenderbuickgmcwest.com/	4.7	2088	21	5	4.5	35
SAN ANTONIO	TX	78230	(210) 263-3657	https://www.kenbatchelorcadillac.com/	4.5	521	89	4.5	3.9	37
SAN ANTONIO	TX	78233	(210) 265-6096	https://www.cavendercadillac.com/	4.7	535	162	3.5	4.5	38
Boerne	TX	78006	(830) 755-8001	http://www.boernedodgechryslerjeep.com/	4.3	1288	188	4.5	4.2	70
Castroville	TX	78009	(210) 890-6989	https://www.nylemaxwellcastroville.com/	4.9	147	38	4.5		
Devine	TX	78016	(830) 665-6401	https://www.browndodgechryslerjeep.com/	4.1	147	21	5	5	302
Pleasanton	TX	78064	(830) 281-2244	https://www.allwaysautogroup.com	4	202	26	4		
Floresville	TX	78114	(830) 216-4216	https://www.pricechryslerdodgejeep.com/	4.9	170	4.9	26	3.9	8
Braunfels	TX	78130	(830) 606-8500	https://www.bbmotors.com	4.4	23	32	4.5	4.3	45
Seguin	TX	78155	(830) 372-3444	http://www.yaklincdjr.com/	3.9	259	36	4.5	4.7	42
San Antonio	TX	78211	(210) 828-1515	https://www.lonestarchryslerdodgejeepsanantonio.com	3.8	697	629	4	3.8	20
San Antonio	TX	78216	(210) 249-7500	https://www.northstardodge.net/	3.8	1018	9	4	3.7	48
San Antonio	TX	78230	(210) 558-1500	https://www.anciracjd.com/	4.4	1983	356	4.5	4.8	112
San Antonio	TX	78233	(210) 967-2000	https://www.sanantoniododgechryslerjeepram.com/			254	4.5	4.4	1437
San Antonio	TX	78238	(210) 684-6610	https://www.ingramparkcj.net/	4.3	1943	27	3.5	4.8	1259
Pearland	TX	77581	(281) 485-1495	http://chevrolet.com/	4.1	625	57	3.5	4.8	127
Boerne	TX	78006	(210) 477-8300	http://www.cavenderchevrolet.com/Service	4.8	1117	188	4.5	4.3	26
Devine	TX	78016	(830) 665-4435	http://www.brownchevrolet.com/	4.5	172	247	4.5	5	1
Floresville	TX	78114	(830) 216-4216	http://www.chevydeal.com/			33	4	4.5	11
La Vernia	TX	78121	(830) 253-8000	http://koeppchevy.com/	4.2	133	90	3.5	4.7	27
New Braunfels	TX	78130	(830) 606-3451	http://www.valmarkchevy.com/	4.1	19	376	4.5	4.3	29
Selma	TX	78154	(210) 599-5000	http://www.gunnchevrolet.com/	4.6	2734	3	5	4.5	1163

Cars.com Review Scores	Number of Cars.com	Dealerrater Review Score	Number of Dealerrater Reviews	FaceBook Review Score	Number of Facebook Reviews	BB Rating	BB.org Number of Complaints (3 Year)
4.8	659	4.8	653	3	64	A+	8
4.8	5	4.8	315	4.4	33	F	7
4.2	300	4.2	193	4.2	249	A+	5
4.5	506	4.6	394	4.3	450	A+	19
4.9	55	3.5	20	4.8	42	A+	5
5	22	4.9	12	4.6	127		
4.6	203	4.6	148	4.2	107	A+	0
		3.5	5	4.8	13	A+	0
4.5	39	2.7	68	4.8	230	A-	8
4.5	35	1.2	4	4.7	254	B+	4
3.9	37	3.9	37	4.6	195	C-	6
4.5	38	5	77	4.5	106	A-	5
4.2	70	4.5	467	4.4	317	F	9
		5	4			A+	14
5	302	3.9	1224	4.2	36	B-	16
		4.7	479	4.2	53	A+	1
3.9	8	4.9	31	4.9	26	NR	0
4.3	45	4.4	110	4.2	198	A+	4
4.7	42	2	39	4.3	41	A+	1
3.8	20	4	28	3.2	46	A-	5
3.7	48	3.1	20	3.8	30	A+	17
4.8	112	4.5	552	4.4	225	A+	3
4.4	1437	4.5	1102	2	158	F	33
4.8	1259	4.8	1207	3.9	78	A+	25
4.8	127	1	3951	4.4	236	NR	3
4.3	26	3.5	10	4.3	122	A+	0
5	1	4.8	445	4.6	66	A+	5
4.5	11	4.7	192	4.1	51	A+	1
4.7	27	4.7	121	4.7	121	A+	2
4.3	29	5	373			A+	2
4.5	1163	4.6	514	4.5	434	A+	5

N ANTONIO | SEATTLE | ST LOUIS | TAMPA | TUCSON | VIRGINIA BEACH

```
sum=0
import requests
import pandas as pd
for c in range(0,40):
    count=0
    df_cities=pd.read_csv( The file path with name cities )
    print(df_cities["City"][c])
    df=pd.read_csv( The Path all Data" + df_cities["City"][c] )
    df[ The Field You want to check "].fillna("No Data", inplace = True)
    for i in range(0,df_cities["Range"][c]):
        if df["The Filed You want to check"][i] == "No Data":
            count=count+1
    print("count:",count)
    sum=sum+count
print(sum)
```

Figure 5.1.2 (h) Final Output with Script to check missing values

- We have achieved **97% of data accuracy** and some data are missing because of issues in dealership names and some are not registered on the website or not registered with the same dealership name and we **got 67412 data from 69612**.

5.2 Flutter Applications

5.2.1 Registration and Login Application with Flutter and Firebase

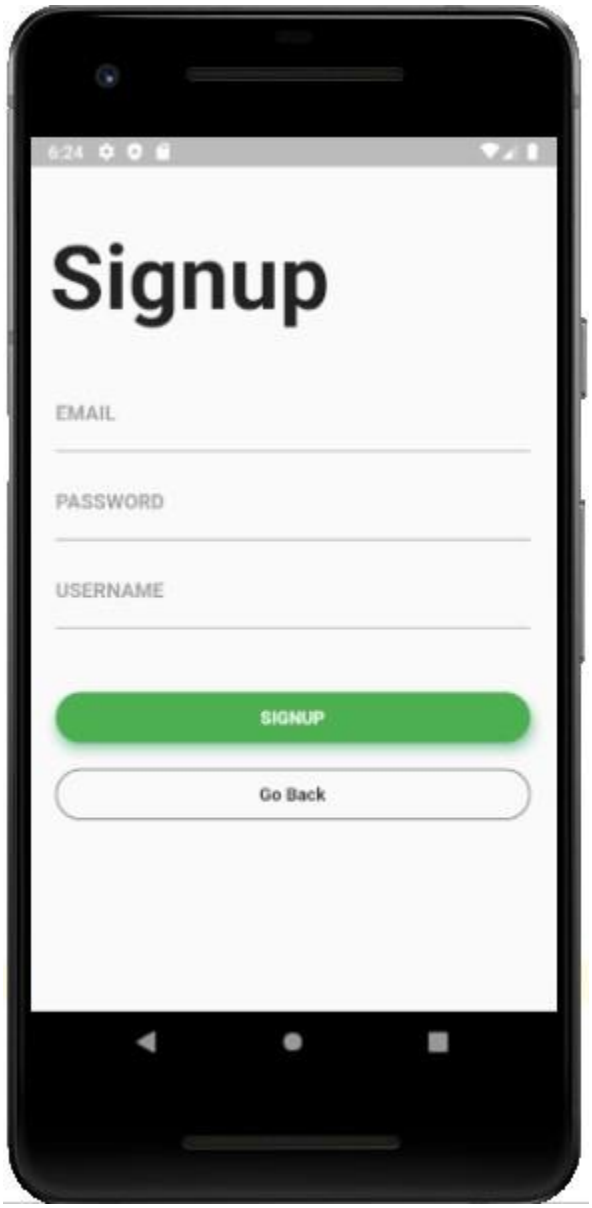


Figure 5.2.1 (a) Registration Form Flutter

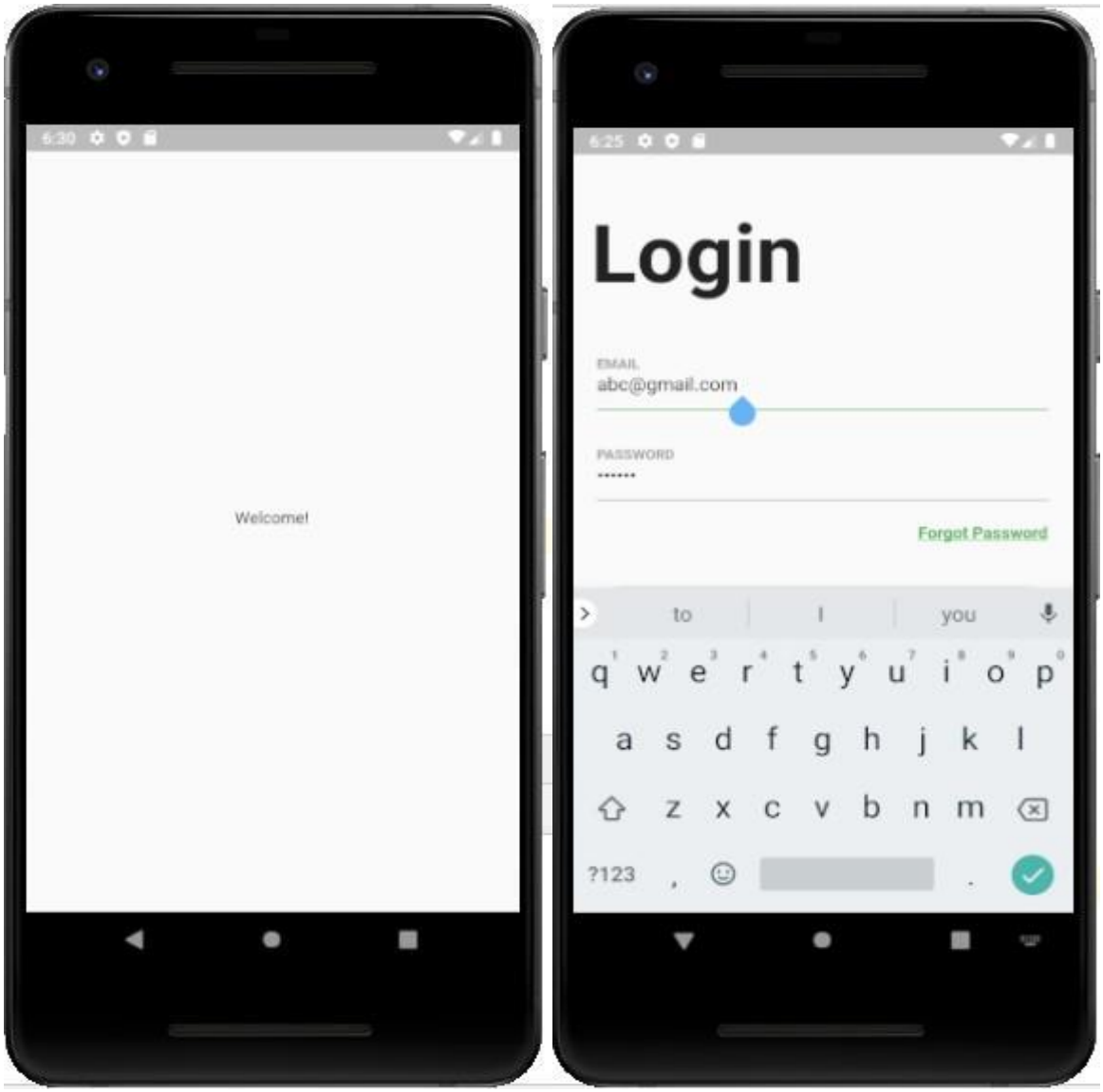


Figure 5.2.1 (b) Login Form Flutter

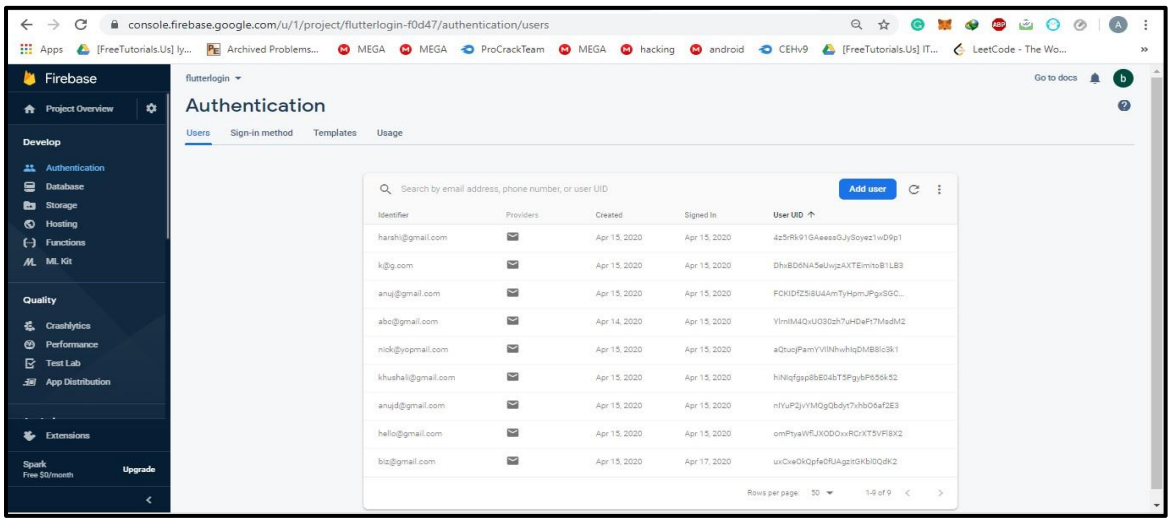


Figure 5.2.1 (c) Firebase Database

5.2.2 Quiz Application with Flutter

- Quiz App Home Page

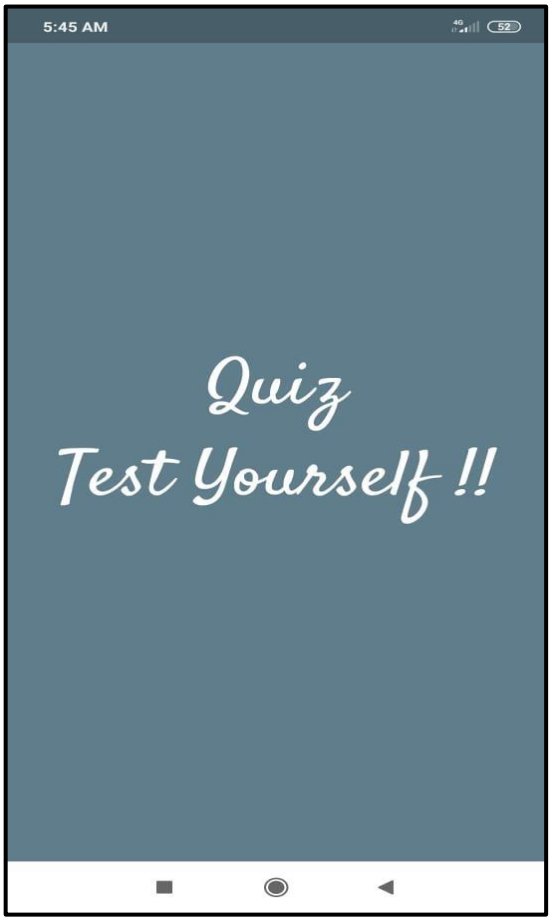


Figure 5.2.2 (a) Quiz App Home Page

- Questions in various languages with Timer and Display Result

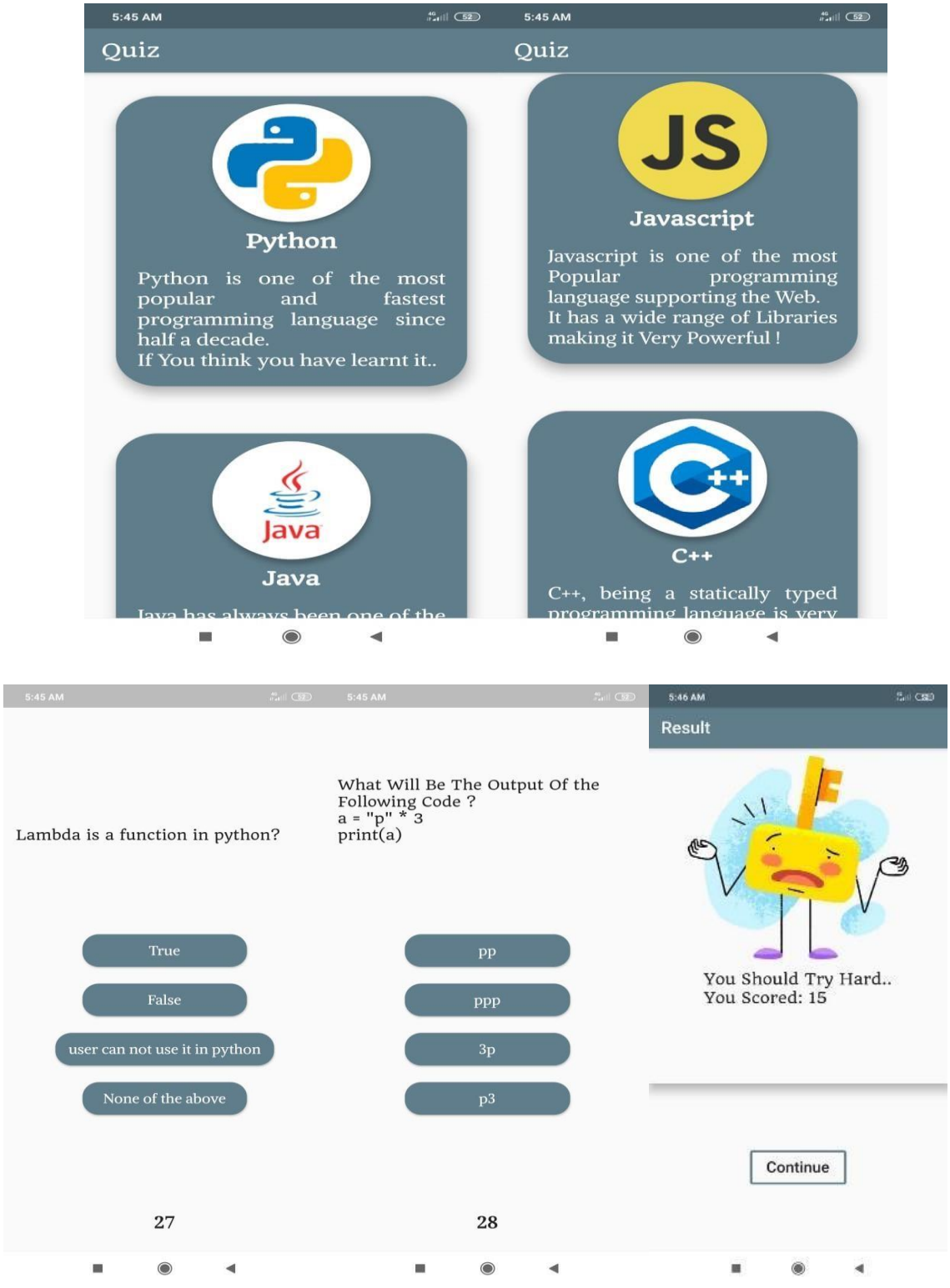


Figure 5.2.2 (b) Quiz App Testing

5.3 COVID-19 Patient Prediction System with Machine Learning

5.3.1 Module:1 Parameter selection and Final Input data

Age	Fever	Fatigue	Runny_Nose	Difficulty_in_breath	Infection_probability
23	101.29224029999999	0	1	0	1.0
2	98.71632562	1	0	0	0.0
43	99.47179211	0	0	1	0.0
48	98.33631064	0	1	0	0.0
70	101.9665676	1	0	0	1.0
52	100.1072293	1	0	0	1.0
30	99.51858222	1	1	0	0.0
97	98.07185085	1	1	0	0.0
28	98.95834761	1	1	0	0.0
12	101.11537940000001	1	0	0	1.0
71	101.6030552	1	1	0	1.0
82	98.12270966	0	0	0	0.0
49	100.388933	1	1	0	1.0
81	99.36682977	1	0	0	0.0
29	98.18366367	1	1	1	1.0
69	98.65370215	1	0	0	0.0
11	99.74278819999999	1	1	0	0.0
6	99.95122959	0	0	1	0.0

5.3.2 Module:2 Developing training model algorithm in Python

```
import pandas as pd
import numpy as np
from sklearn.linear_model import LogisticRegression
import pickle
def data_split(data,ratio):
    shuffled= np.random.permutation(len(data))
    test_set_size=int(len(data)* ratio)
    test_indices=shuffled[:test_set_size]
    train_indices=shuffled[test_set_size:]
    return data.iloc[train_indices],data.iloc[test_indices]

if __name__ == "__main__":
    df=pd.read_csv("Symptoms_Data.csv")
    train,test=data_split(df,0.2)
    X_train=train[["Age","Fever","Fatigue","Runny_Nose","Difficulty_in_breath"]].to_numpy()
    X_test=test[["Age","Fever","Fatigue","Runny_Nose","Difficulty_in_breath"]].to_numpy()
    Y_train=train[["Infection_probability"]].to_numpy().reshape(4000,)
    Y_test=test[["Infection_probability"]].to_numpy().reshape(999,)
    clf = LogisticRegression()
    clf.fit(X_train,Y_train)
    # open a file, where you ant to store the data
    file = open('model.pkl', 'wb')

    # dump information to that file
    pickle.dump(clf, file)
```

5.3.3 Flask Web app development

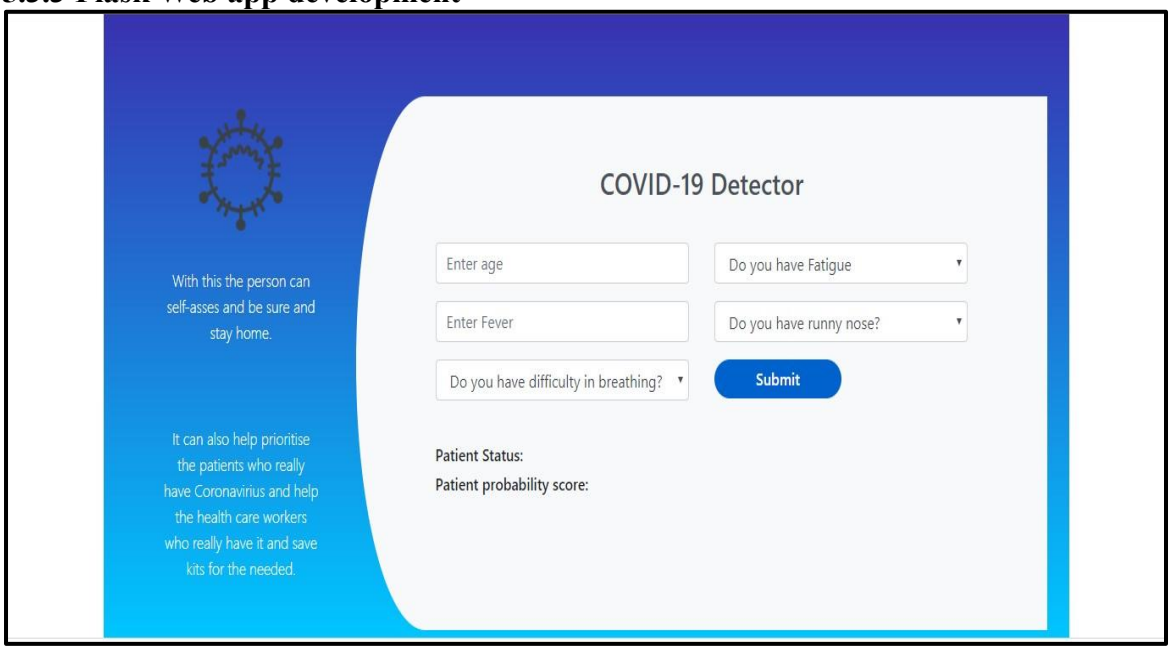


Figure 5.3.3 Flask Webapp

5.3.4 Deployment of application and testing

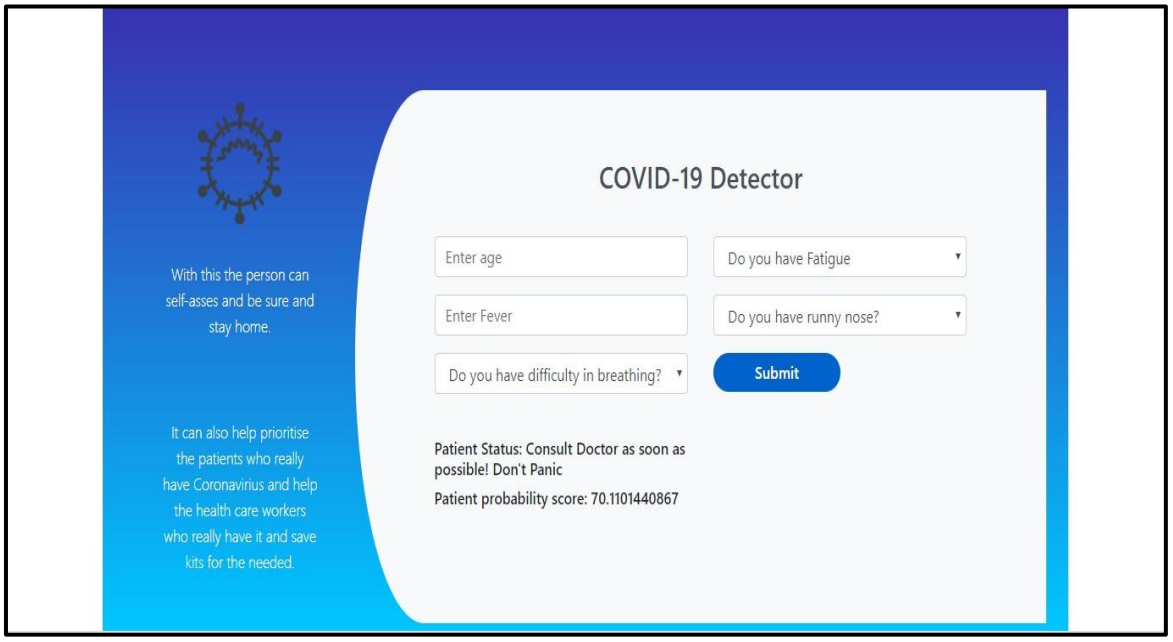


Figure 5.3.4 (a) Test Results in app

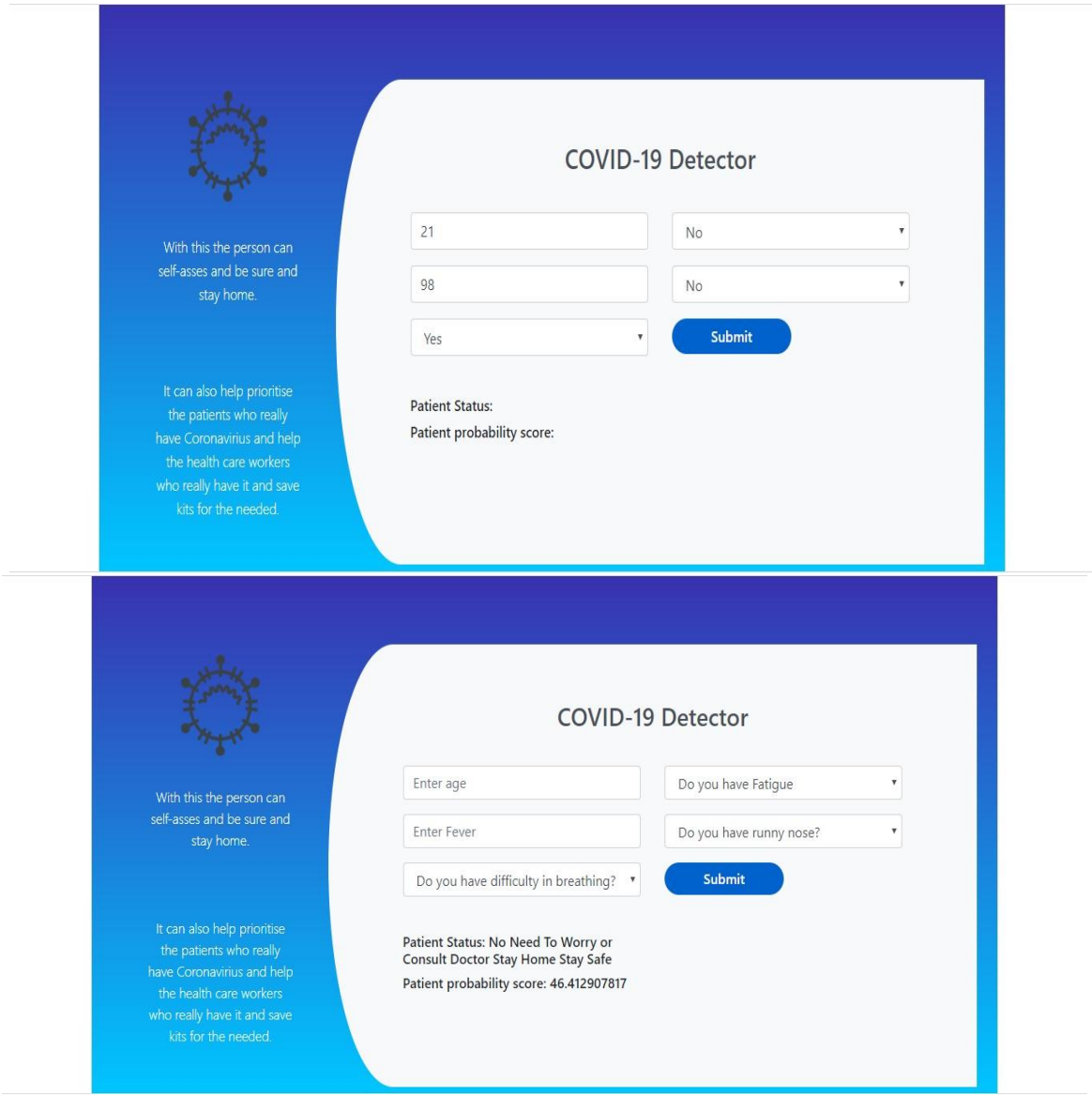


Figure 5.3.4 (b) Display results

AWS EC2 for hosting the application:

Link of web app hosted:- http://ec2-34-235-168-245.compute-1.amazonaws.com/

5.4 Django Hotel Management System Prototype for all Modules

5.4.1 Module-1 Registration Login with Twilio OTP

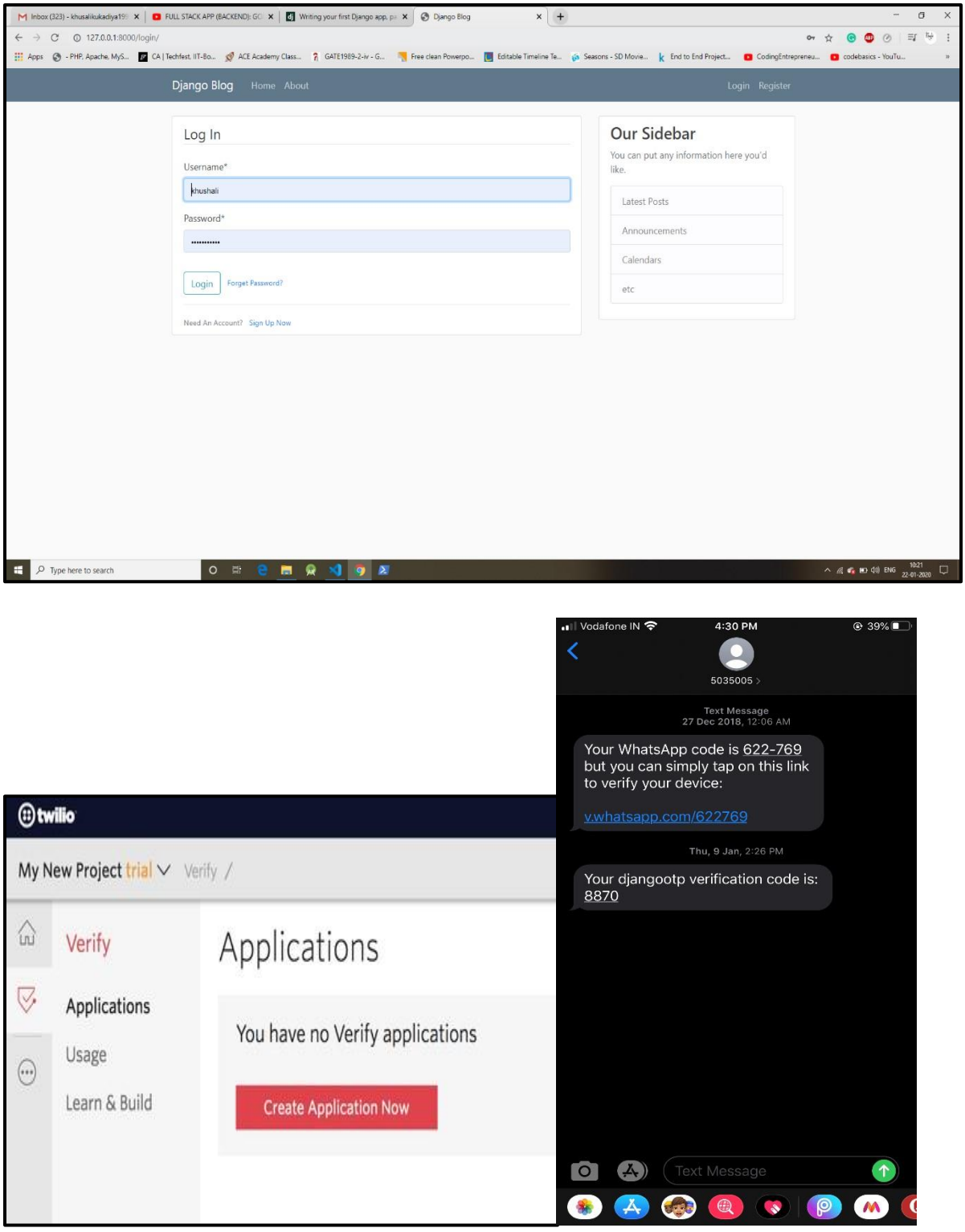
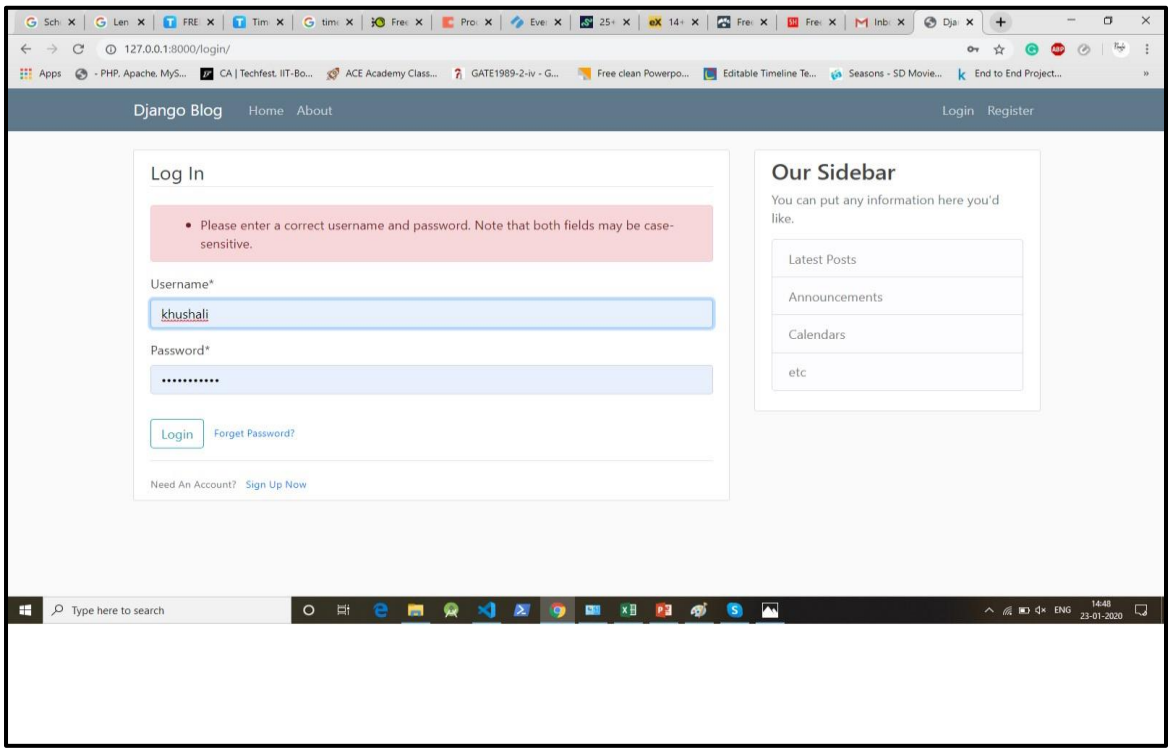


Figure 5.4.1 Django Register Login with OTP

5.4.2 Module:2 Email Password Reset



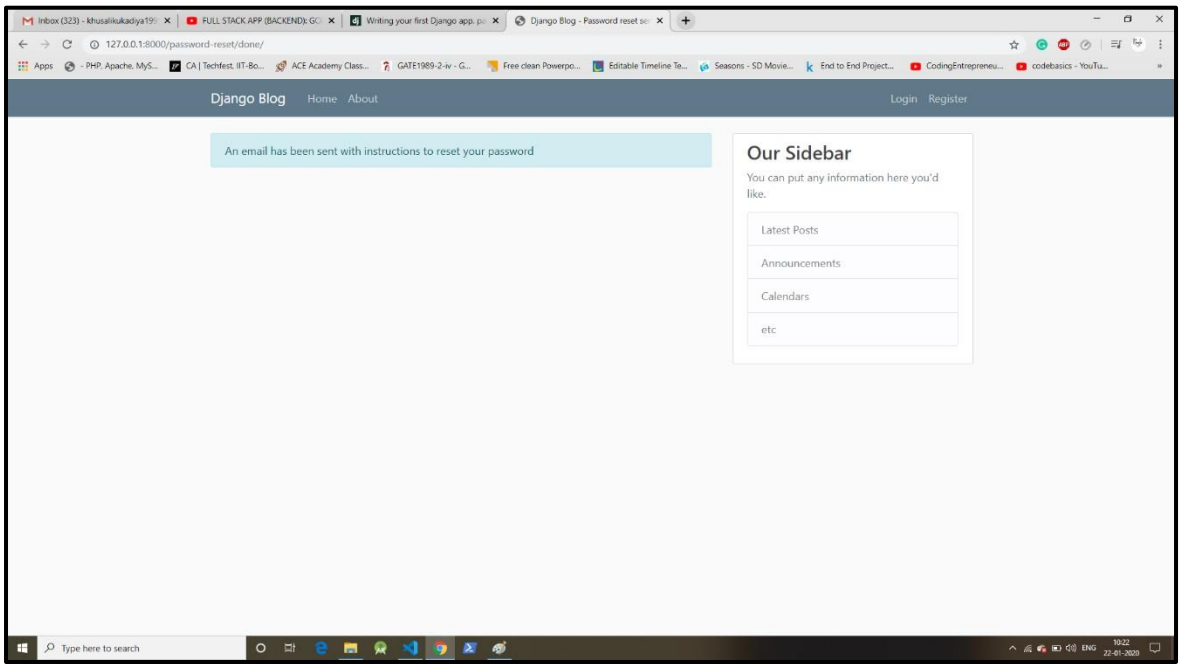


Figure 5.4.2 (a) Login Form reset password link

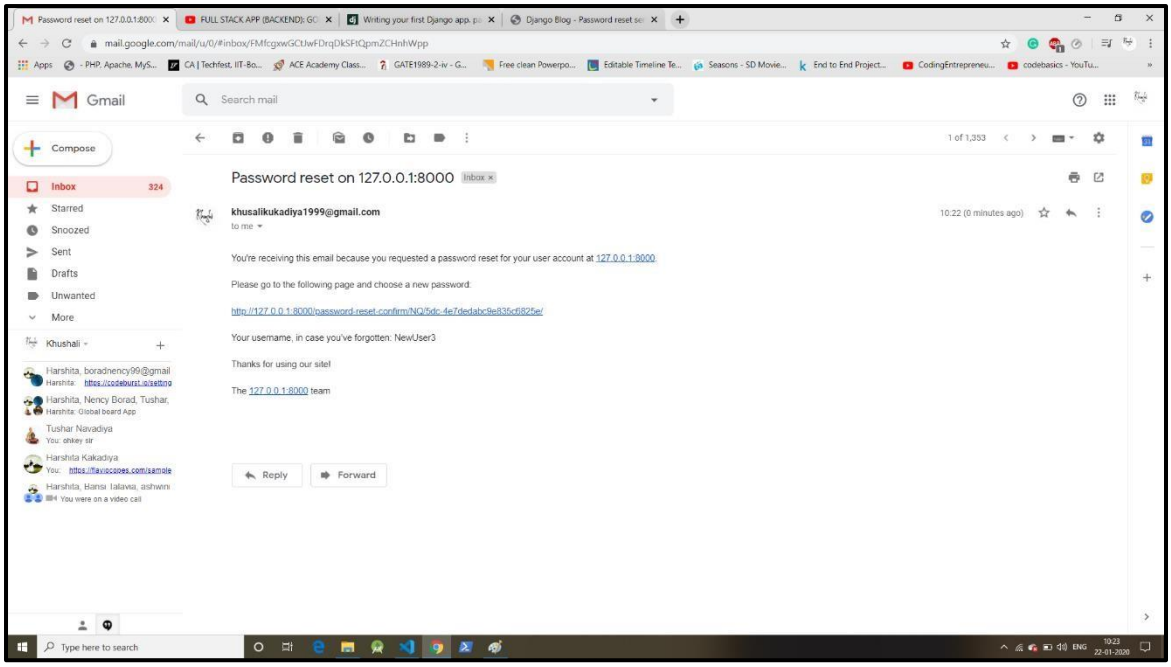
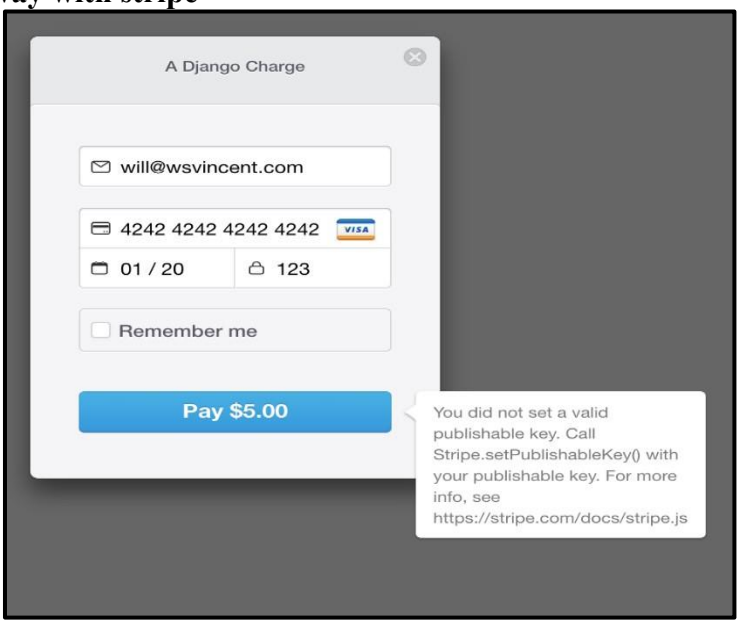


Figure 5.4.2 (b) An email password reset link

5.4.3 Payment Gateway with stripe



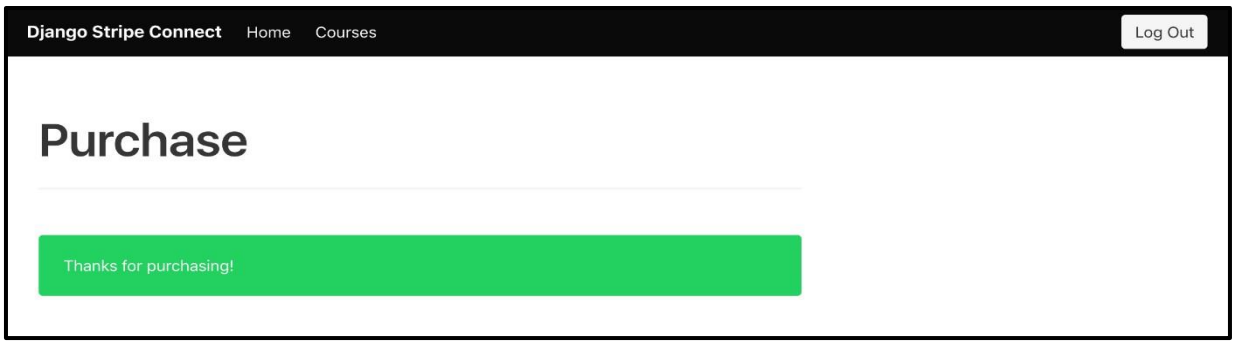
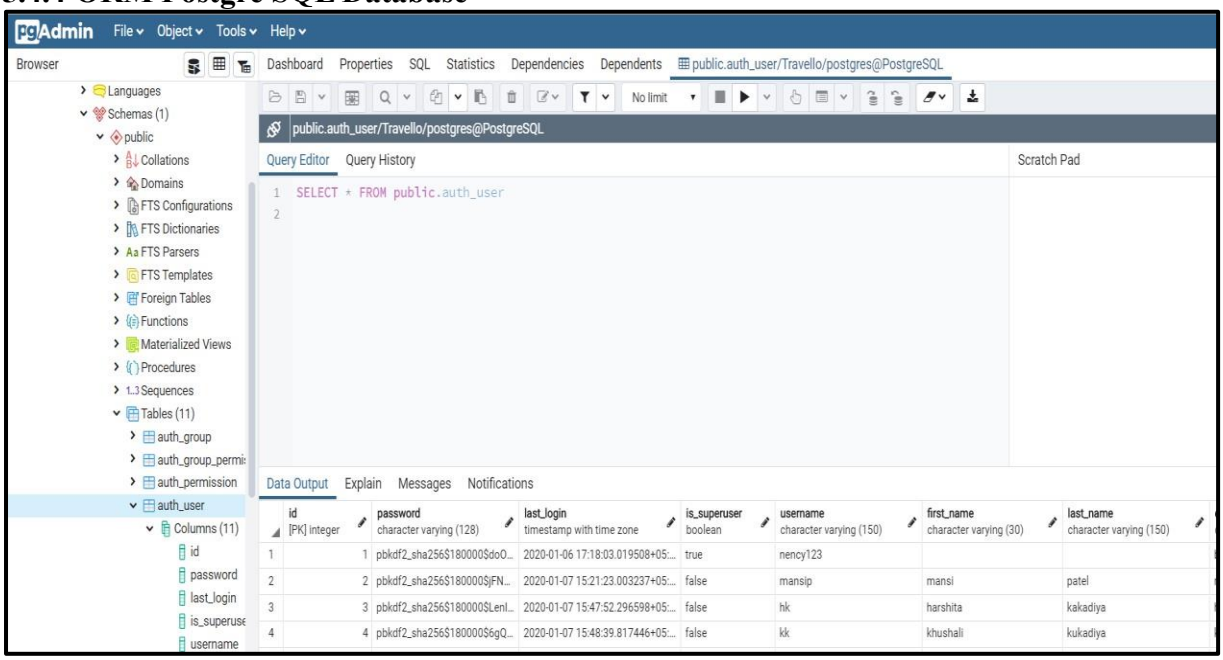


Figure 5.4.3 Stripe Payment Gateway

5.4.4 ORM Postgre SQL Database



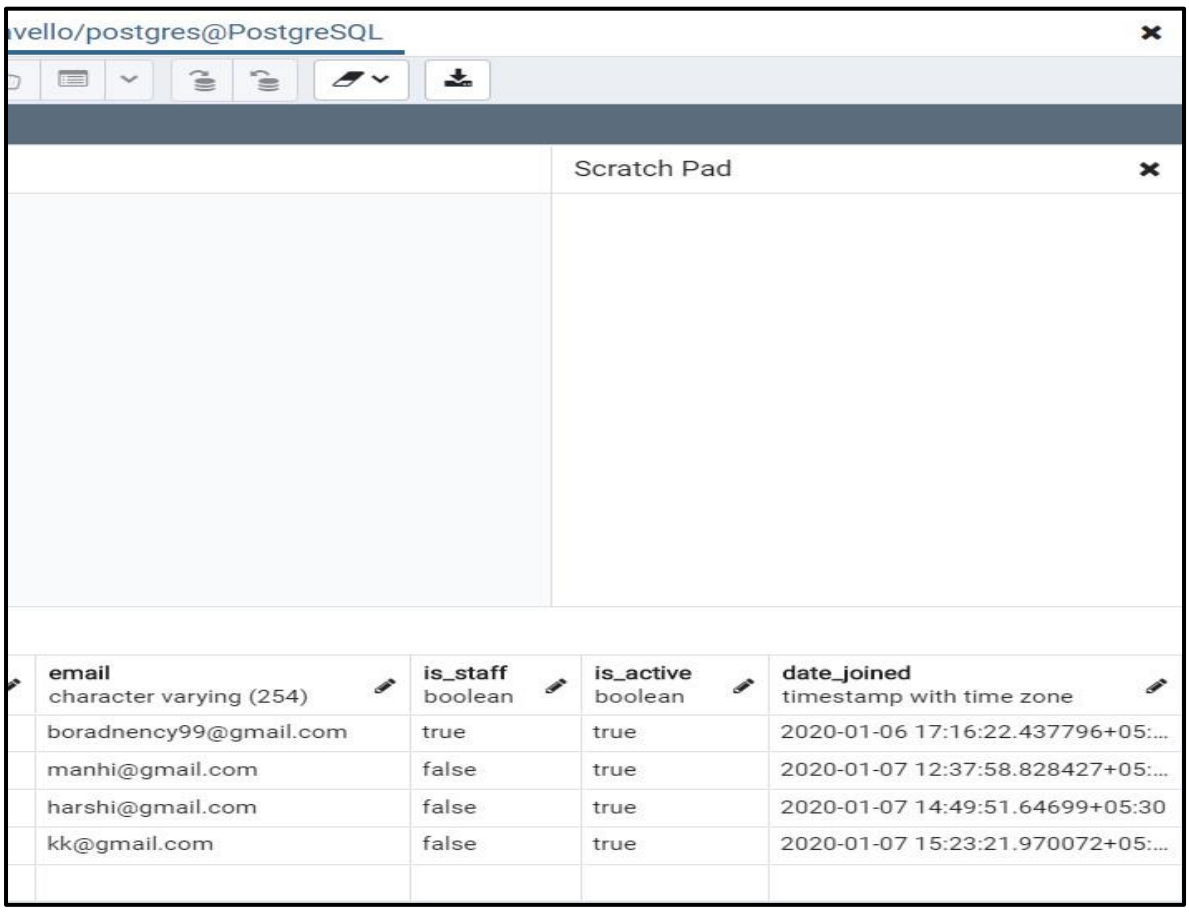
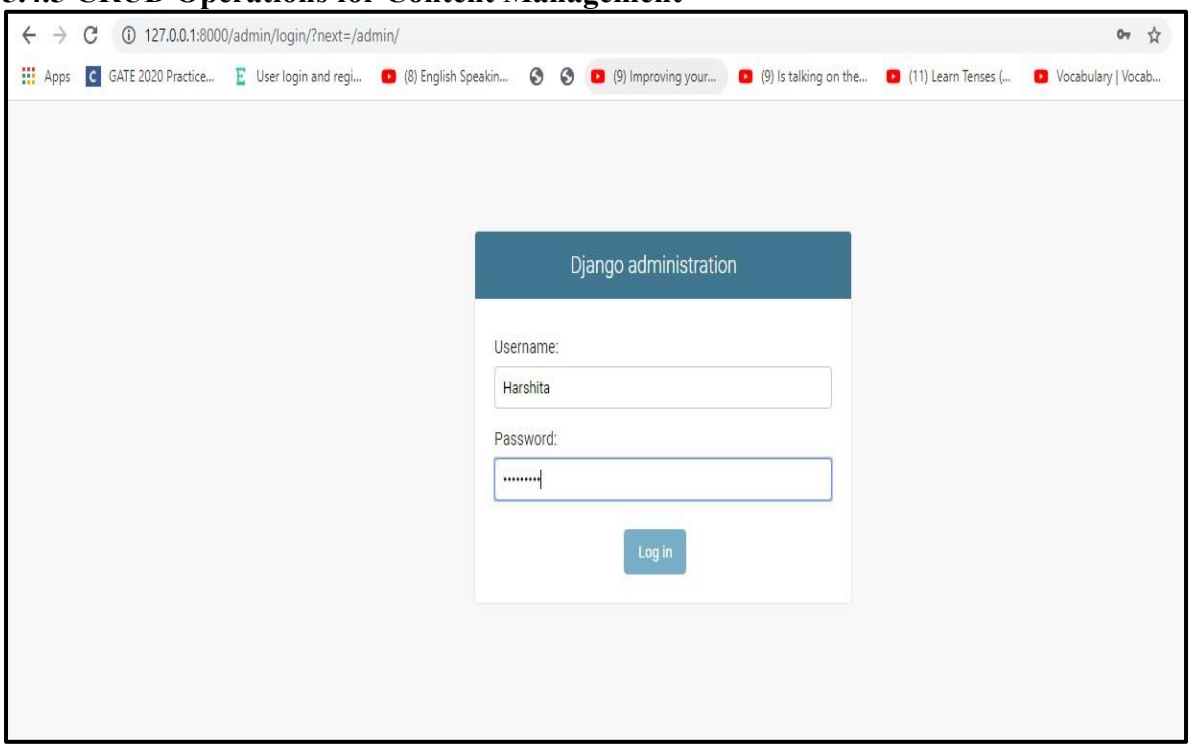
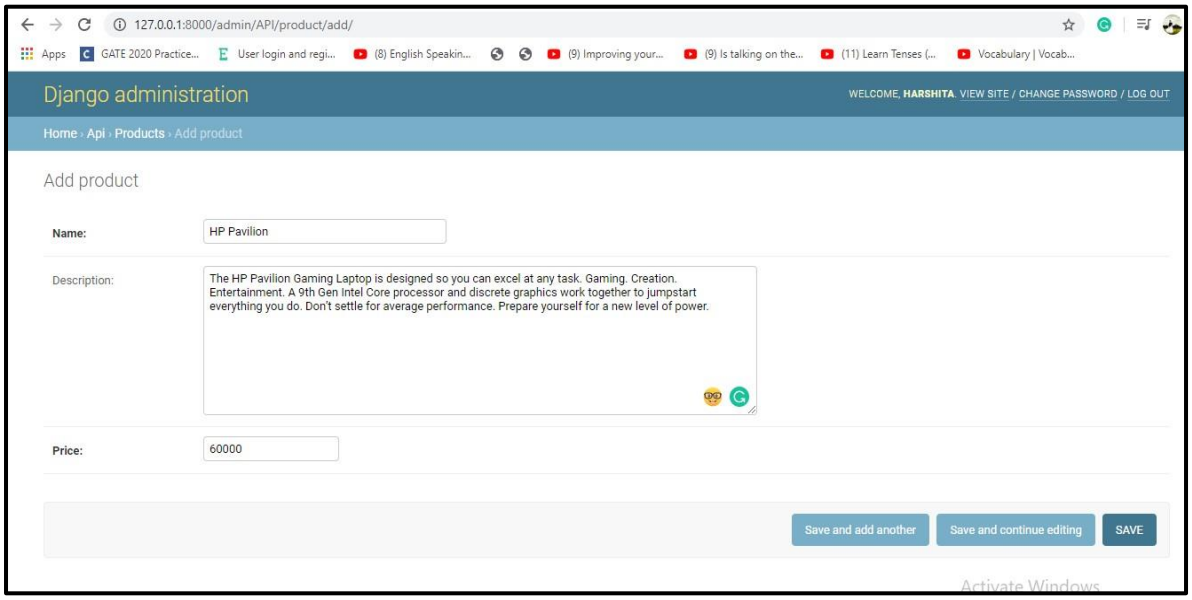


Figure 5.4.4 Django ORM Database

5.4.5 CRUD Operations for Content Management





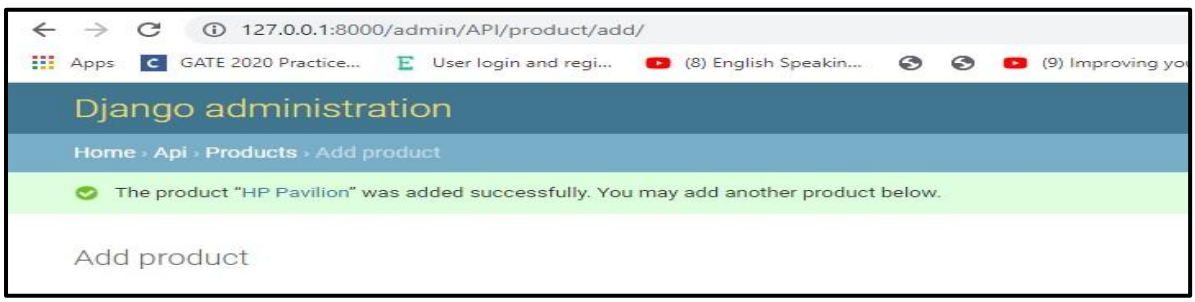


Figure 5.4.5 (a) Create Operation in HMS

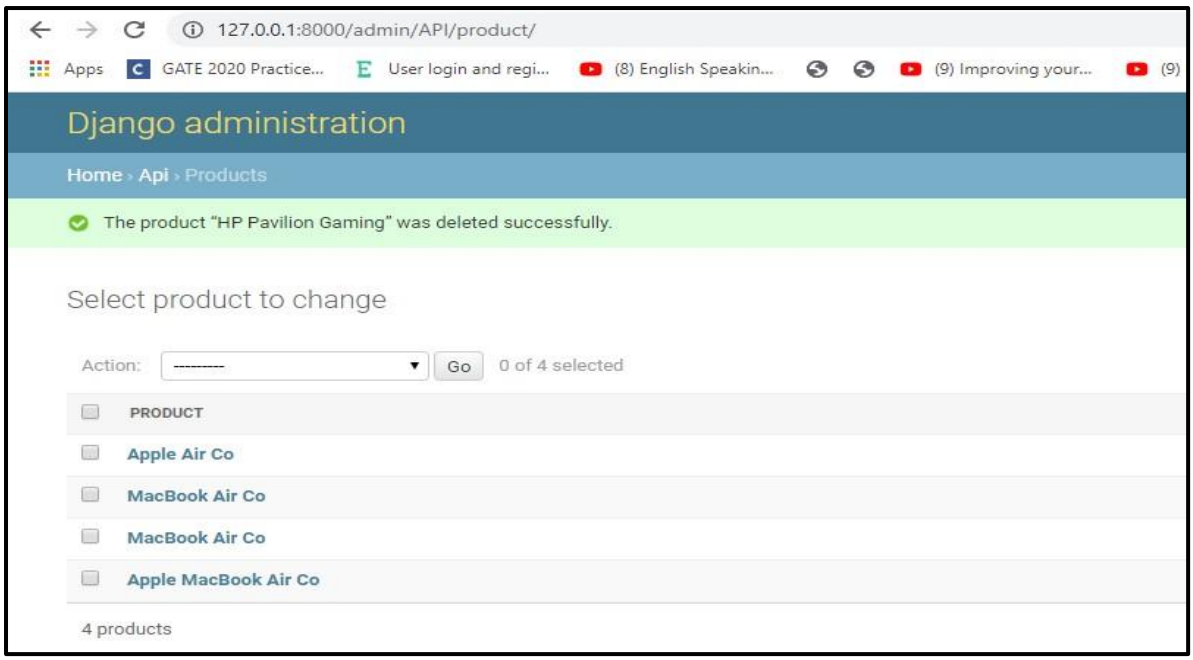


Figure 5.4.5 (b) Delete Operation in HMS

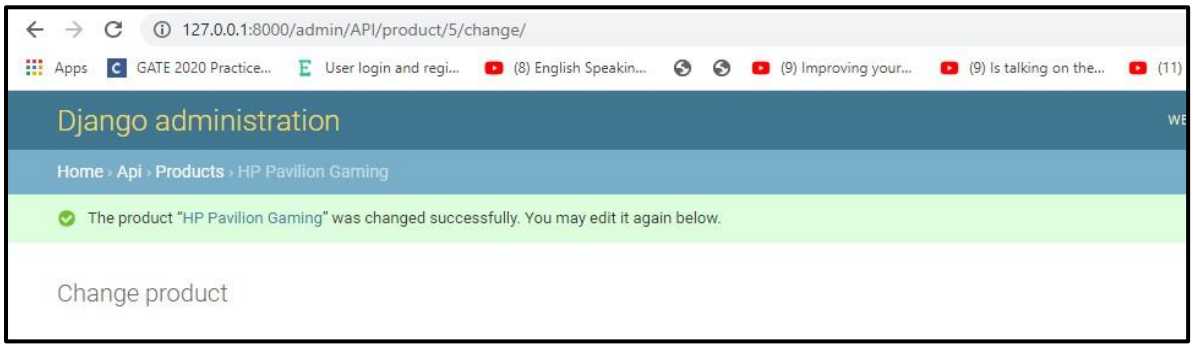


Figure 5.4.5 (c) Update Operation in HMS

	id [PK] integer	created timestamp with time zone	name character varying (20)	description text	price numeric (10,2)
1	1	2020-01-04 13:00:35.505+05:30	Apple MacBook Air Co	It is fun to use, i...	61990.00
2	2	2020-01-04 17:05:38.717+05:30	MacBook Air Co	It is fun to use, i...	65990.00
3	3	2020-01-04 18:21:37.13+05:30	MacBook Air Co	It is fun to use, i...	65990.00
4	4	2020-01-04 18:23:58.848+05:30	Apple Air Co	It is fun to use, i...	61990.00
5	5	2020-01-23 17:57:25.971493+05:...	HP Pavilion Gaming	The HP Pavilion...	95000.00

Figure 5.4.5 (d) Search Operation in HMS

5.5 AWS (Amazon Web Services) all task Implementation

5.5.1 Task-1:-Customer activity Tracker

- Flask application form for Customer for Input

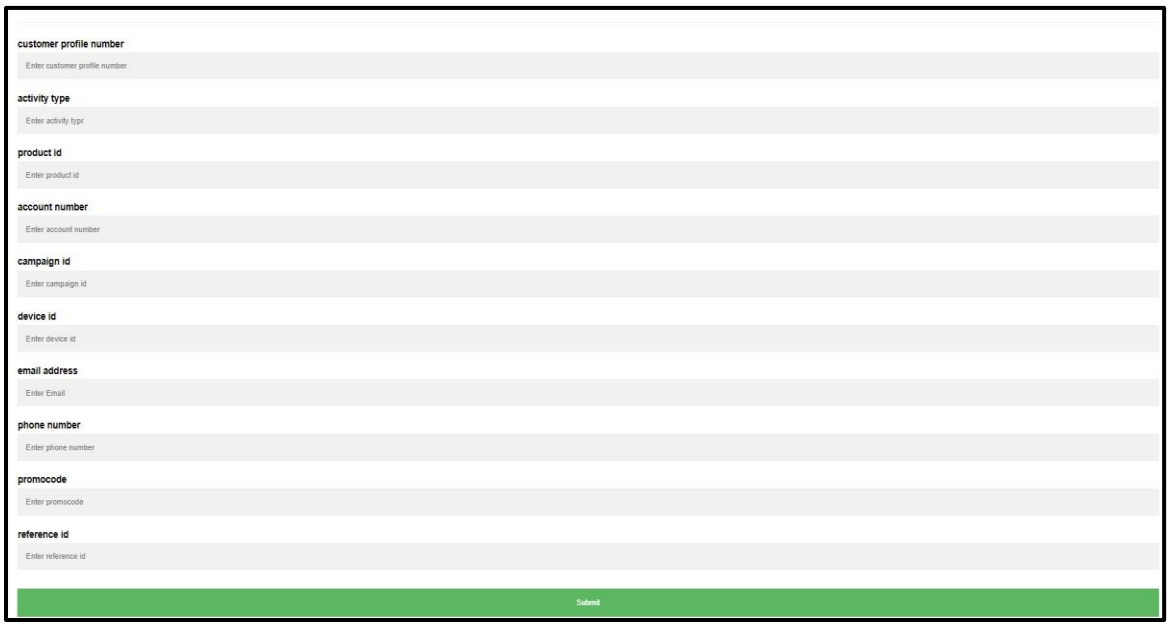


Figure 5.5.1 (a) Flask app input form

- AWS Lambda function in Python

lambda_function

```
import boto3
import urllib
from datetime import datetime,date
import datetime
from botocore.errorfactory import ClientError
import botocore
s3_client =boto3.client("s3")

s3 =boto3.client("s3")
dynamodb = boto3.resource('dynamodb')
table = dynamodb.Table('try1')
def lambda_handler(event, context):
    bucket_name_for_read=event['Records'][0]['s3']['bucket']['name']
    s3_file_name=event['Records'][0]['s3']['object']['key']
    resp=s3_client.get_object(Bucket=bucket_name_for_read, Key=s3_file_name)
    data=resp['Body'].read().decode("utf-8")

    bucket_name_for_write = "activitytrackertry"
    today = str(date.today())
    directory_name = today

    ts = datetime.datetime.now().timestamp()
    filename="/"+str(ts)+".csv"
    s3.put_object(Bucket=bucket_name_for_write, Key=(directory_name+filename),Body=data)

    data2=data.split("\n")
    for x in data2:
        print(x)
        x_data=x.split(",")
        #Adding the information to Dynamo Db
        table.put_item(
        Item={
            'customerprofilenumber':x_data[0],
            'activitytype':x_data[1],
            'activitydate':x_data[2],
            'productid':x_data[3],
            'accountnumber':x_data[4],
            'campaignid':x_data[5],
            'deviceid':x_data[6],
            'emailaddress':x_data[7],
            'insertdate':x_data[8],
            'lastupdatedate':x_data[9],
            'phonenumber':x_data[10],
            'promocode':x_data[11],
            'referenceid':x_data[12],
        }
    )
```

Figure 5.5.1 (b) AWS Lambda Function

- API Gateway with AWS Lambda

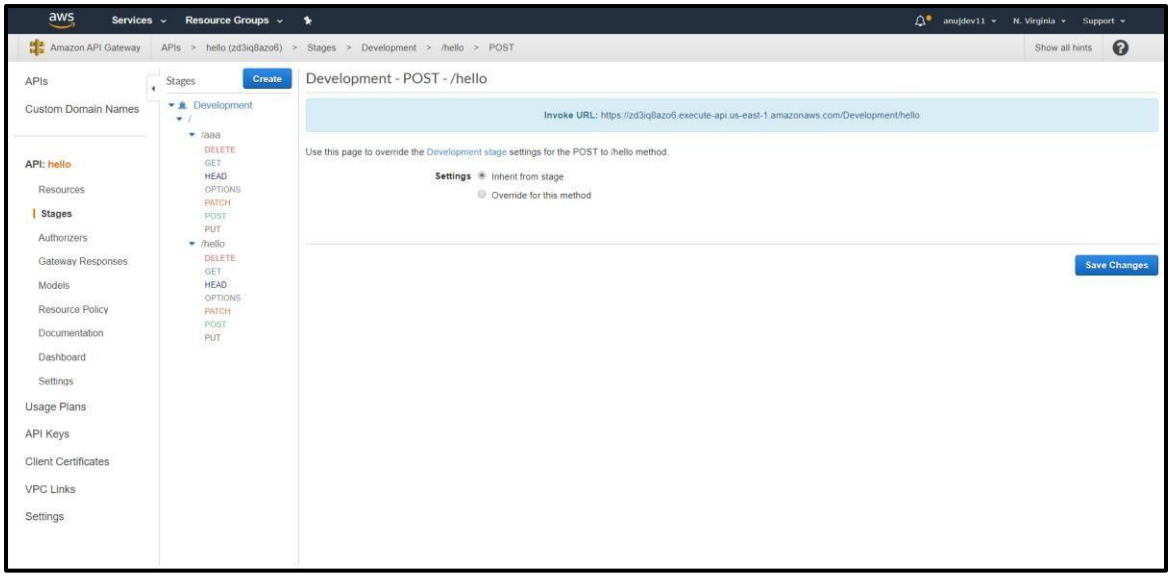
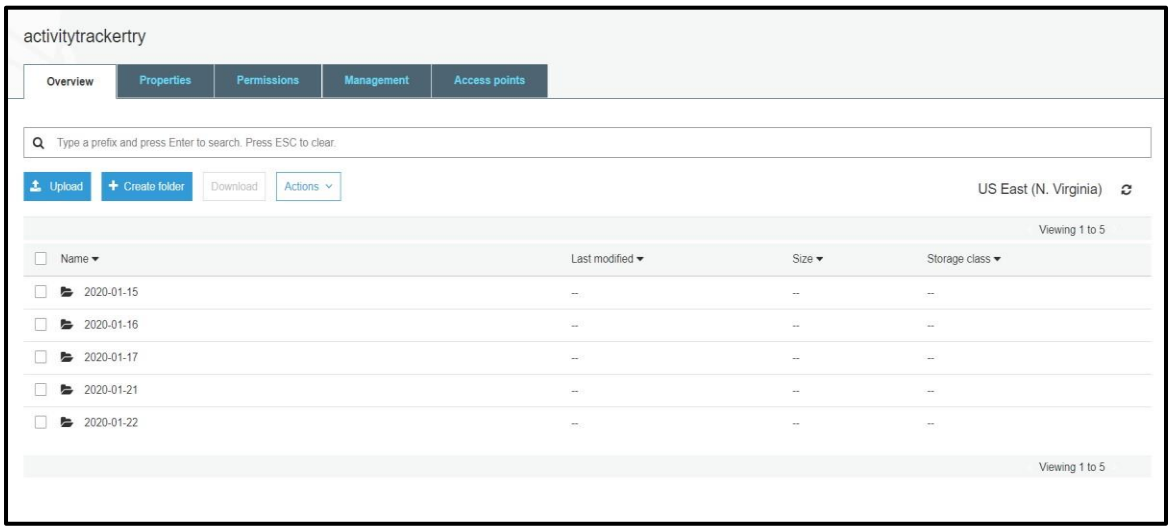
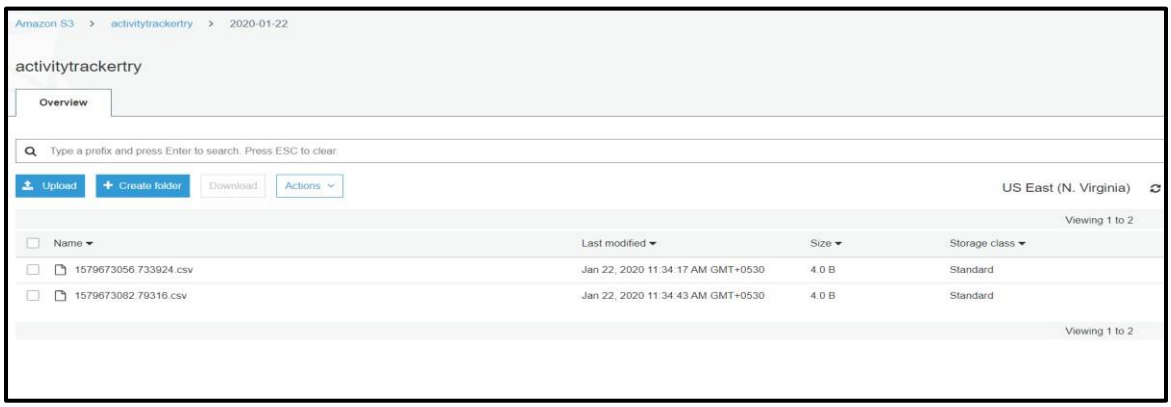


Figure 5.5.1 (c) API Gateway

- Store Output in S3 Bucket





- Store the Output in Dynamo DB

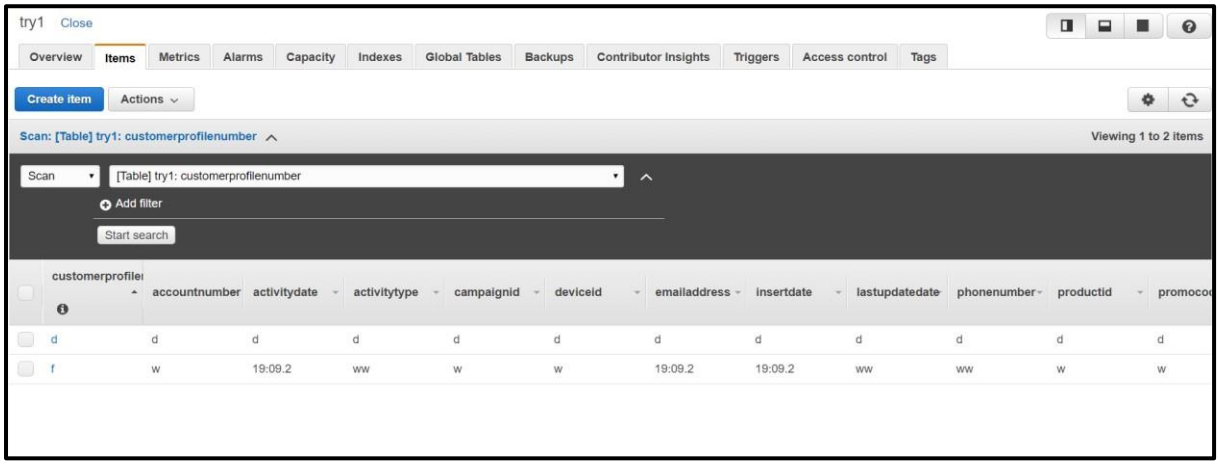


Figure 5.5.1 (d) Output in S3 and Dynamo DB

5.5.2 Task-2: Customer Activity Tracker

- Dropped the CSV input file in the S3 bucket

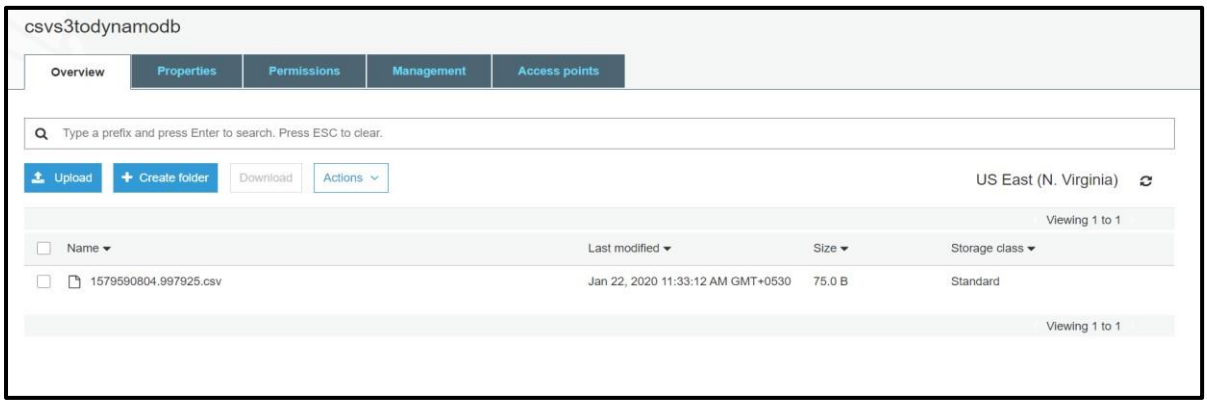
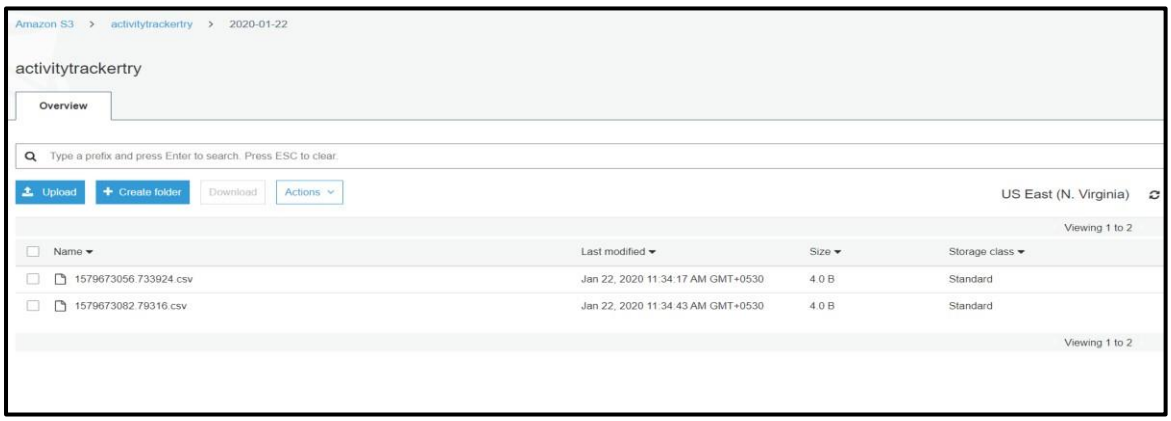


Figure 5.5.2 (a) Input CSV file in S3

- Making AWS Lambda Trigger when a new file arrives in input in the S3 bucket



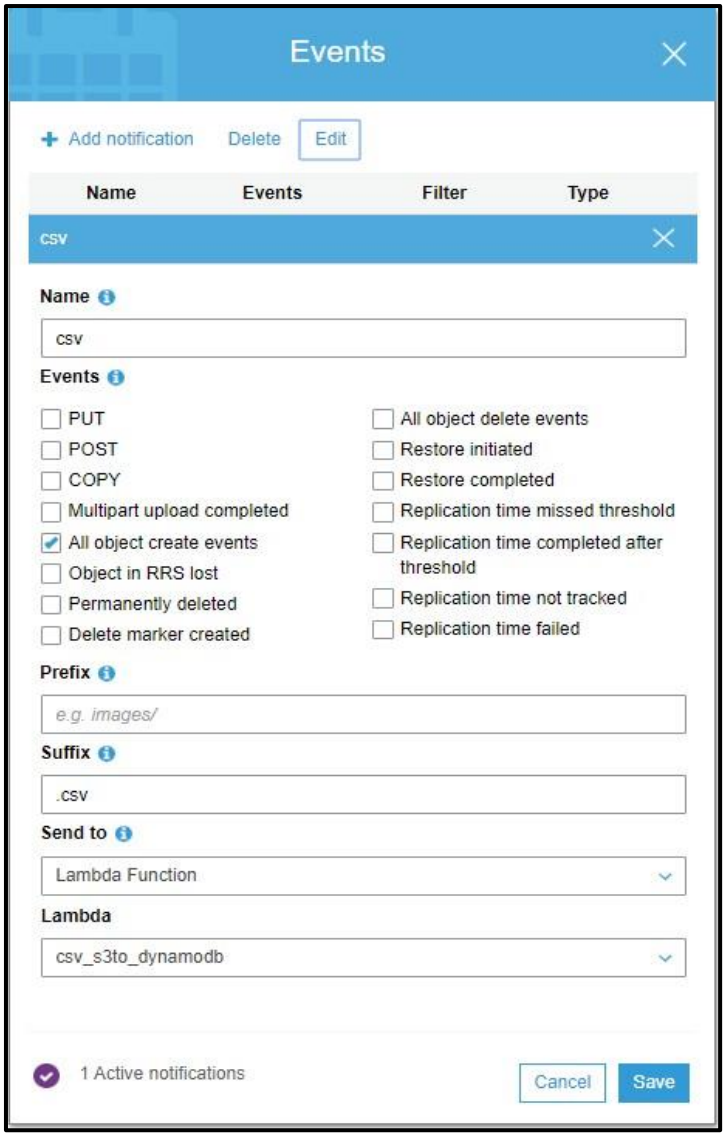


Figure 5.5.2 (b) AWS Lambda Trigger Event

5.5.3 Task-3 AWS Athena for Analysis

- Dropping CSV file as input in the S3 bucket

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	customerprofi	activitytype	activitydate	productid	accountnum	campaignid	deviceid	emailaddress	insertdate	lastupdatedate	phonenumber	promocode	referenceid
2	f	ww	22-12-2020	w	w	w	w	gjgjgj	22-12-2020	22-12-2020	ww	w	w
3	dshjfg	hgfjh	22-12-2020	jgjh	gjhg	jhg	jhg	jg	22-12-2020	22-12-2020	kj	hkh	kh
4	fdgfd	jhgj	22-12-2020	gbhj	JBjbJ	vj	vjh	jhj	22-12-2020	22-12-2020	j	vj	vj
5	HHHH	BJHGHGFH	22-12-2020	dfhgf	gfg	kjk	kjk	kb	22-12-2020	22-12-2020	jnk	nnk	knn
6	hj	gjg	22-12-2020	gj	gjhg	ch	fh	gjgjgj	22-12-2020	22-12-2020	gj	gj	jgj
7	jg	jg	22-12-2020	jgjh	JBjbJ	jgk	jhg	jk	22-12-2020	22-12-2020	gj	hj	hj
8	jg	jhgj	22-12-2020	kh	gjhg	gjhjghj	gjgjg	jhf	22-12-2020	22-12-2020	hjg	jg	jgj
9													
10													

Figure 5.5.3 (a) Input CSV file in S3

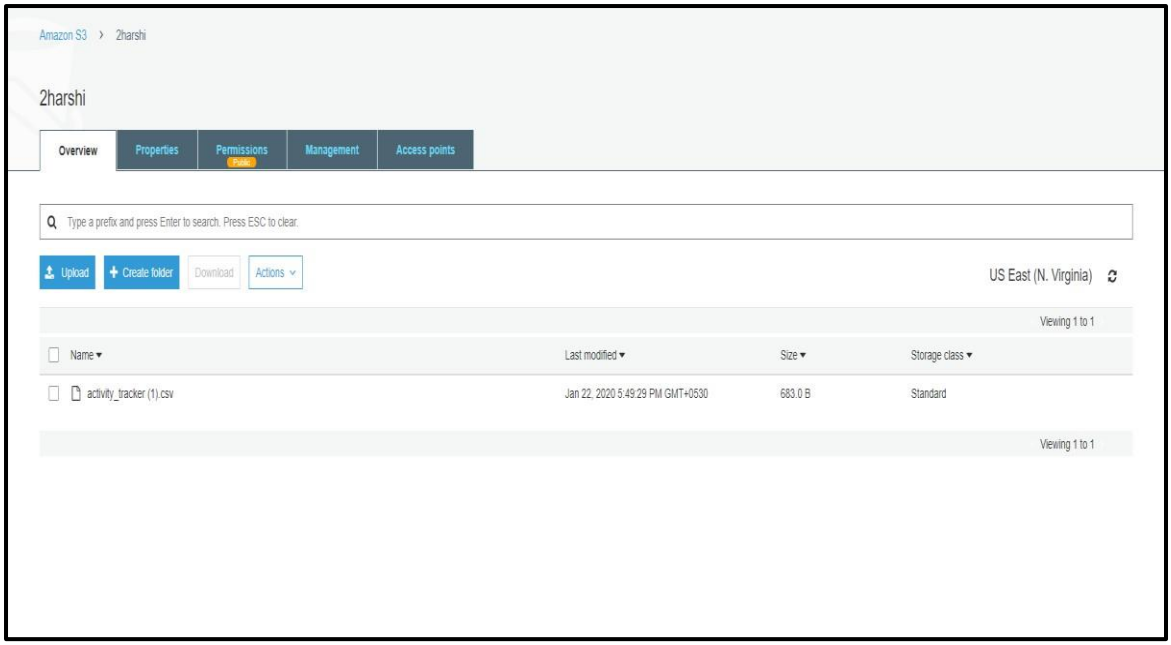


Figure 5.5.3 (b) Input CSV file in S3

- Writing Query in Athena to load the CSV file data

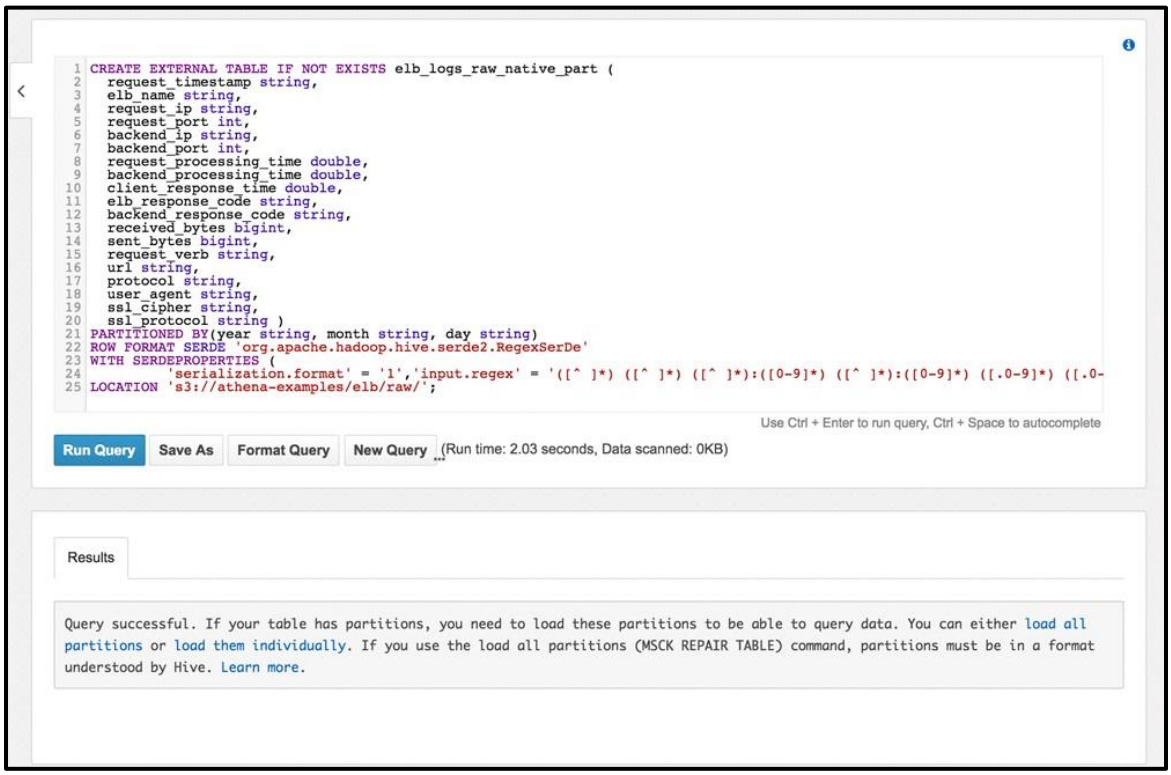


Figure 5.5.3 (c) Athena Query

- Successfully data loaded in Athena

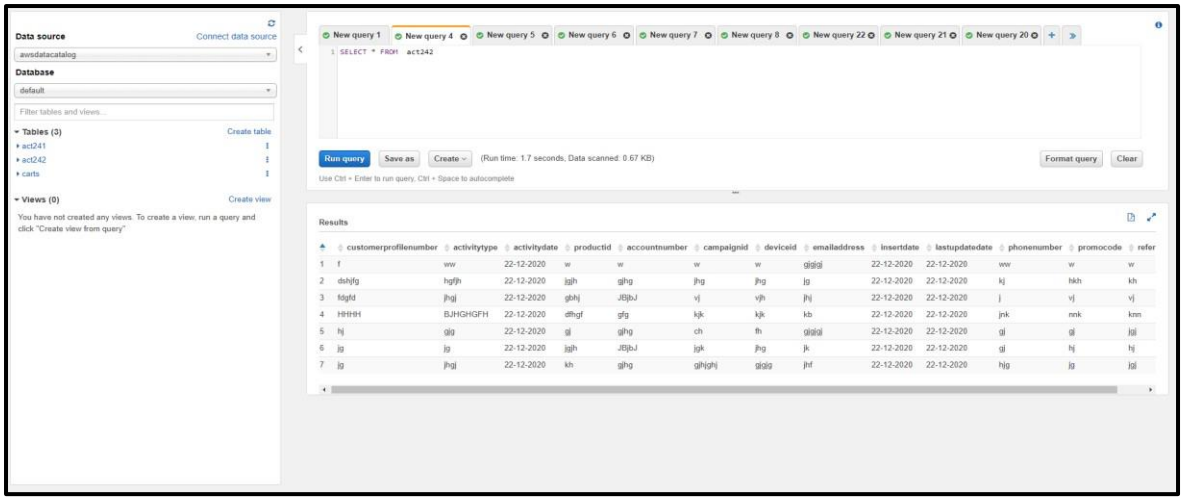


Figure 5.5.3 (d) Query Result

5.5.4 Task-4 AWS Cloud Trail with AWS Lambda and S3 Bucket

- Creating the AWS cloud trail Logs and turn it on

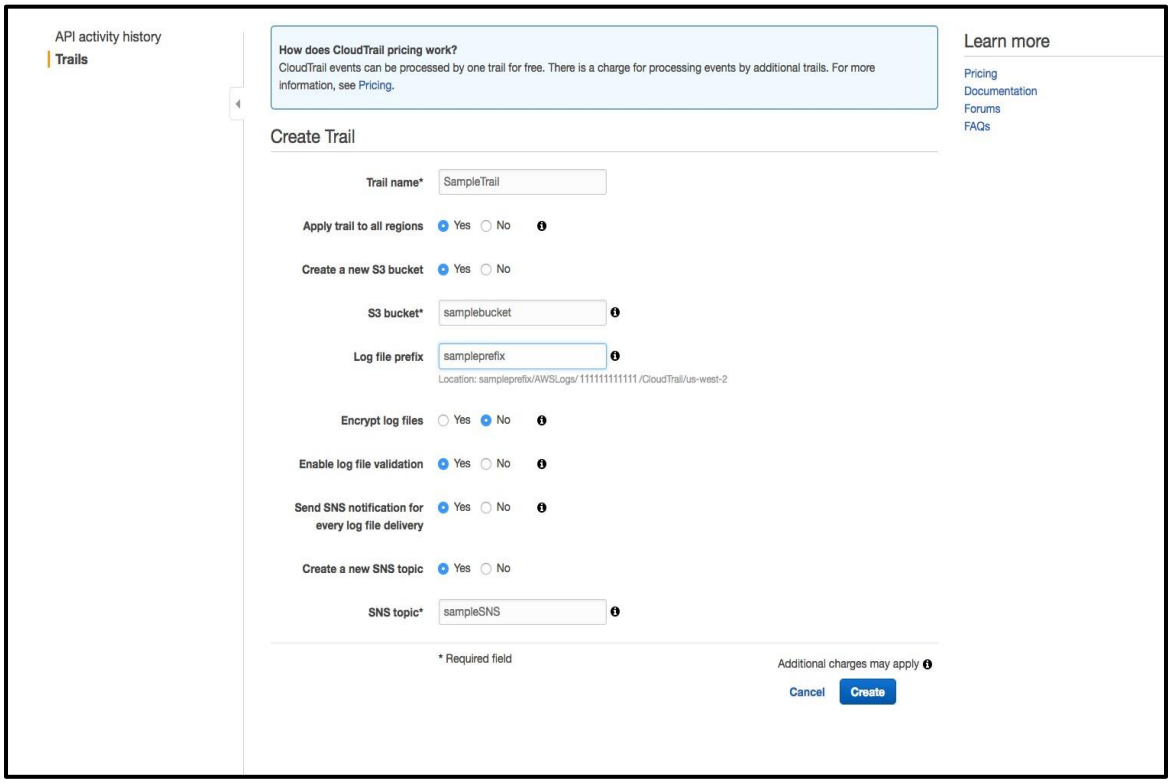


Figure 5.5.4 (a) Creating AWS Cloud Trail

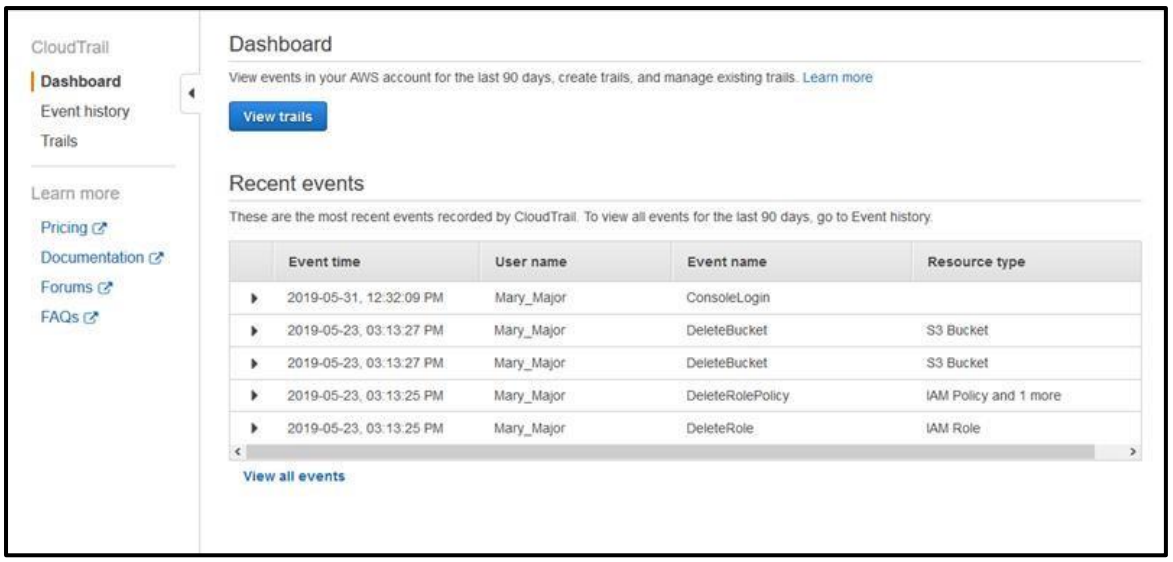


Figure 5.5.4 (b) View the Cloud Trails

- Cloud Trail Logs in S3 Bucket

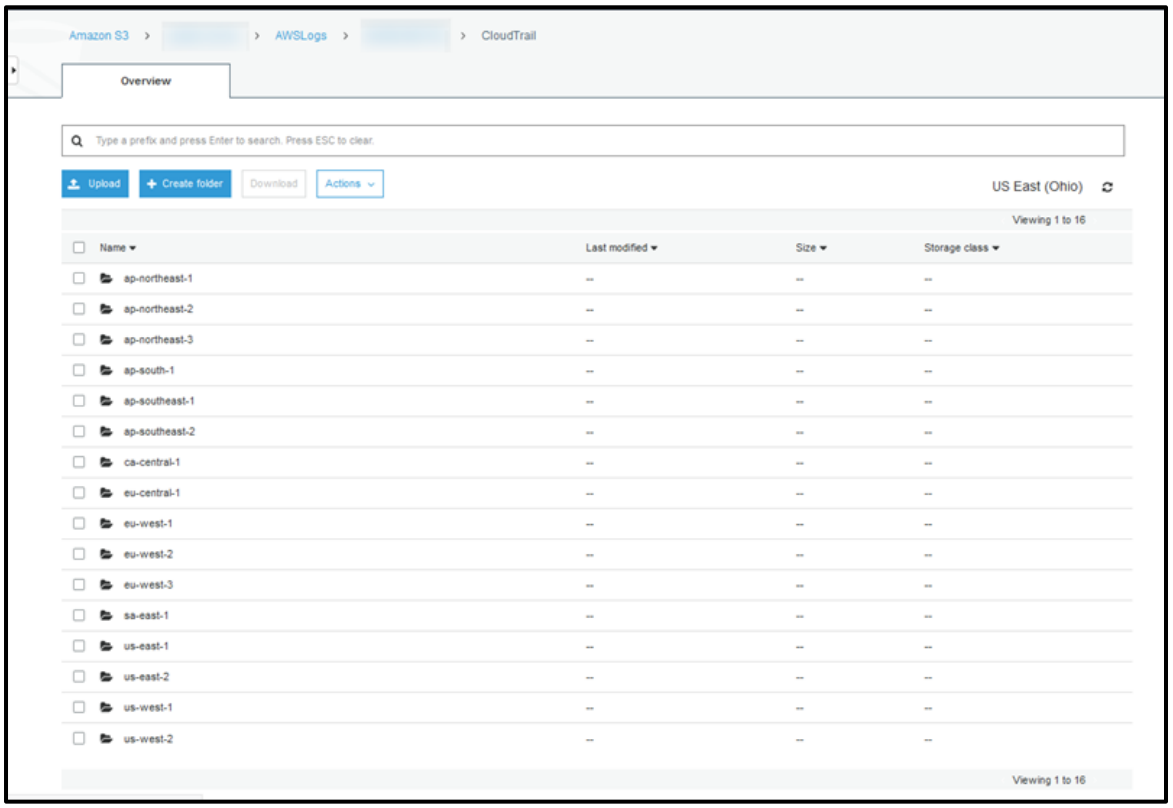


Figure 5.5.4 (c) S3 Bucket with Trails

- AWS Lambda Function to read File from S3 Bucket

```
import boto3
import gzip
import json
import pandas as pd
from datetime import datetime,date
import datetime
from pathlib import Path


def csv(event, context):
    global reduced_item
    def to_string(s):
        try:
            return str(s)
        except:
            return s.encode('utf-8')
    def reduce_item(key, value):
        global reduced_item
        if type(value) is list:
            i=0
            for sub_item in value:
                reduce_item(key+'_'+to_string(i), sub_item)
                i=i+1
        elif type(value) is dict:
            sub_keys = value.keys()
            for sub_key in sub_keys:
                reduce_item(key+'_'+to_string(sub_key), value[sub_key])
        else:
            reduced_item[to_string(key)] = to_string(value)

    s3 = boto3.resource("s3")
    s3_client=boto3.client('s3')
```

- Normalize the nested JSON file with Python

```
    for object_summary in bucket.objects.filter(Prefix="AWSLogs/792091115303/CloudTrail/"):
        print(object_summary.key)
        try:
            obj = s3.Object("trailforlambda",object_summary.key)
            with gzip.GzipFile(fileobj=obj.get()["Body"]) as gzipfile:
                raw_data = gzipfile.read()
            # print(raw_data)
            raw_data = json.loads(raw_data)
            print(raw_data)
            node = "Records"
            try:
                data_to_be_processed = raw_data[node]
            except:
                data_to_be_processed = raw_data
            processed_data = []
            header = []
            for item in data_to_be_processed:
                reduced_item={}
                reduce_item(node, item)
                header += reduced_item.keys()
                processed_data.append(reduced_item)
            header = list(set(header))
            header.sort()
            dfObj = pd.DataFrame(processed_data)
            # filename = Path(object_summary.key).stem
            filename = object_summary.key
            filename=filename.split(".")
            print(filename[0])
            dfObj.to_parquet('s3://cloudtrailresultfromlambda/' + filename[0] +'.parquet'  ,engine='pyarrow'
            print ("Just completed writing csv file with %d columns" % len(header))
        except:
            pass
```

- Storing the Output File in Parquet compressed format in S3 Bucket in the date wise folder in the respected regions. Nested Folder Structure in AWS S3 Bucket as:

AWSLogs❼user_id_folder❼CloudTrails❼regions_folder❼date_folder❼file

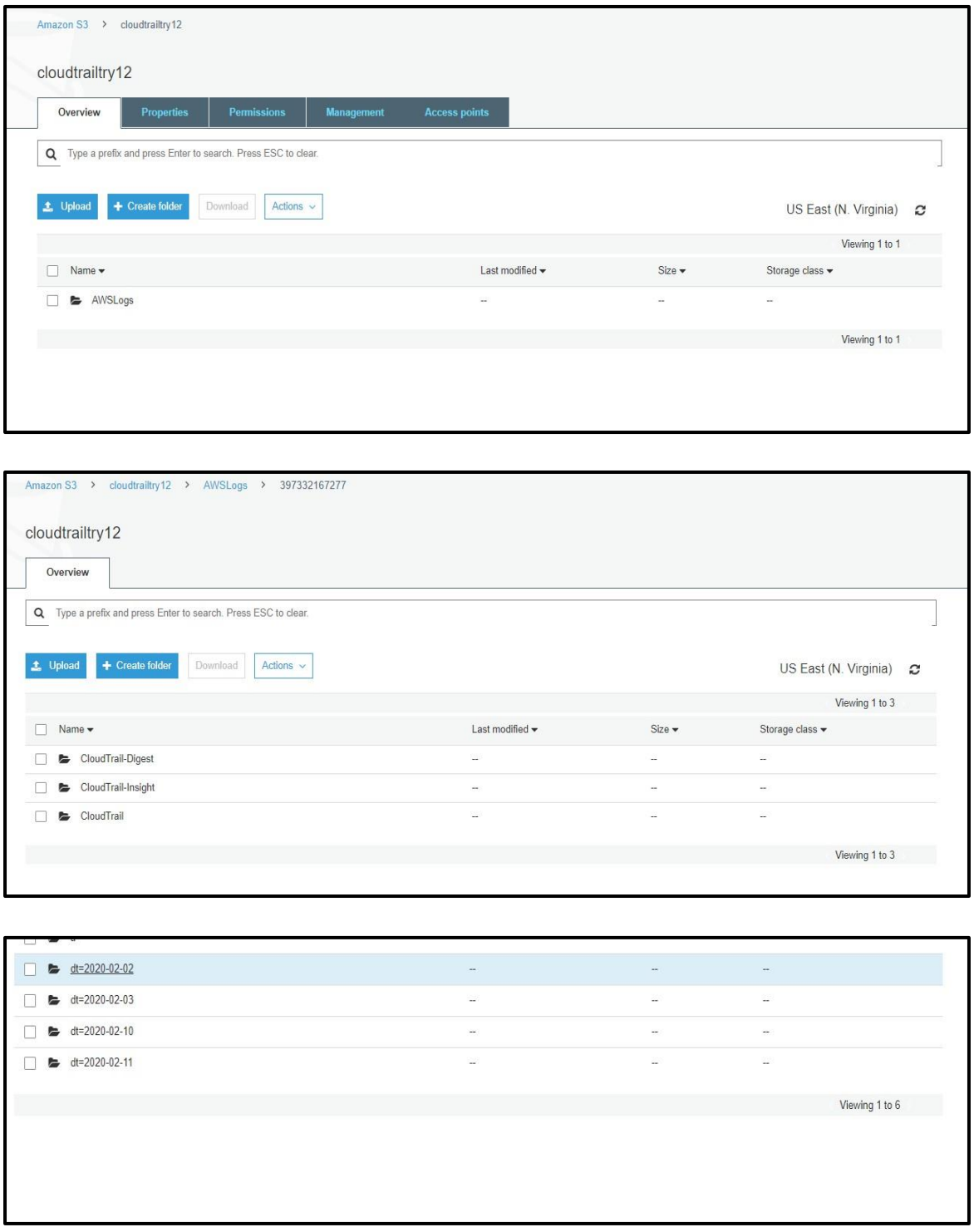


Figure 5.5.4 (d) Output nested folders in S3

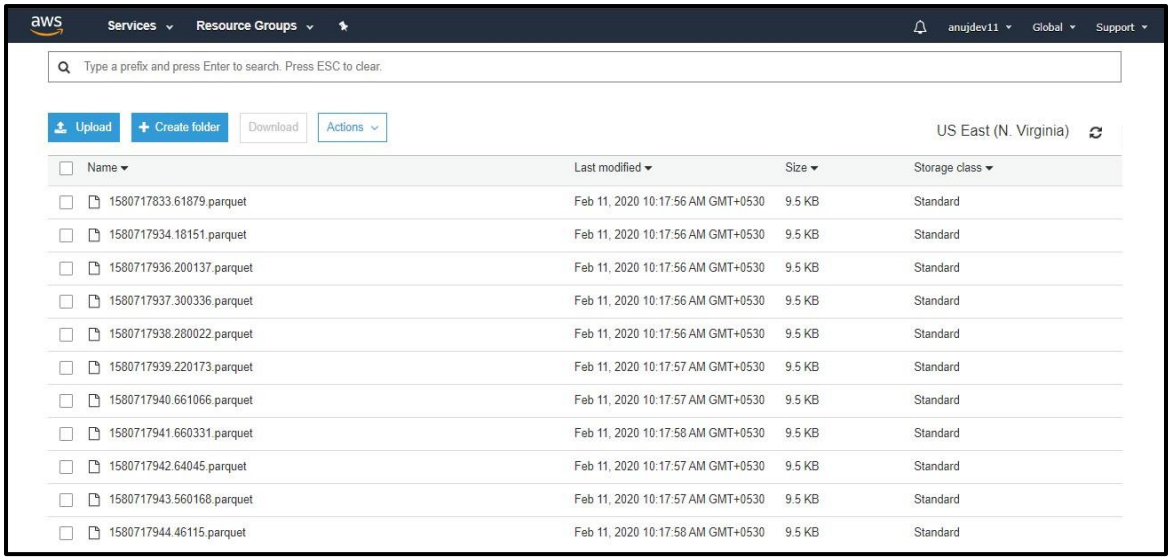


Figure 5.5.4 (e) Output parquet file in S3

5.5.5 AWS Kinesis with Firebase.

- Firebase Real-time Database to read the input data to kinesis

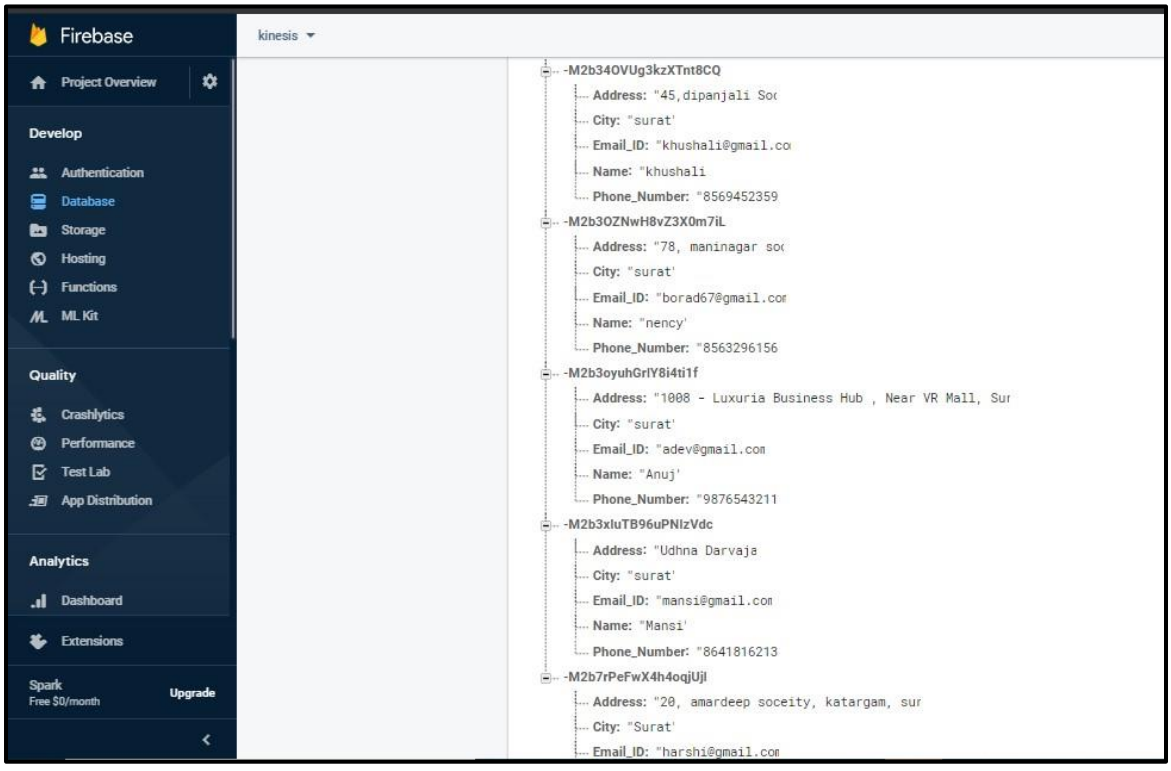


Figure 5.5.5 (a) Input data in Firebase

- AWS Lambda Python Function to read data from firebase and write to AWS kinesis data stream

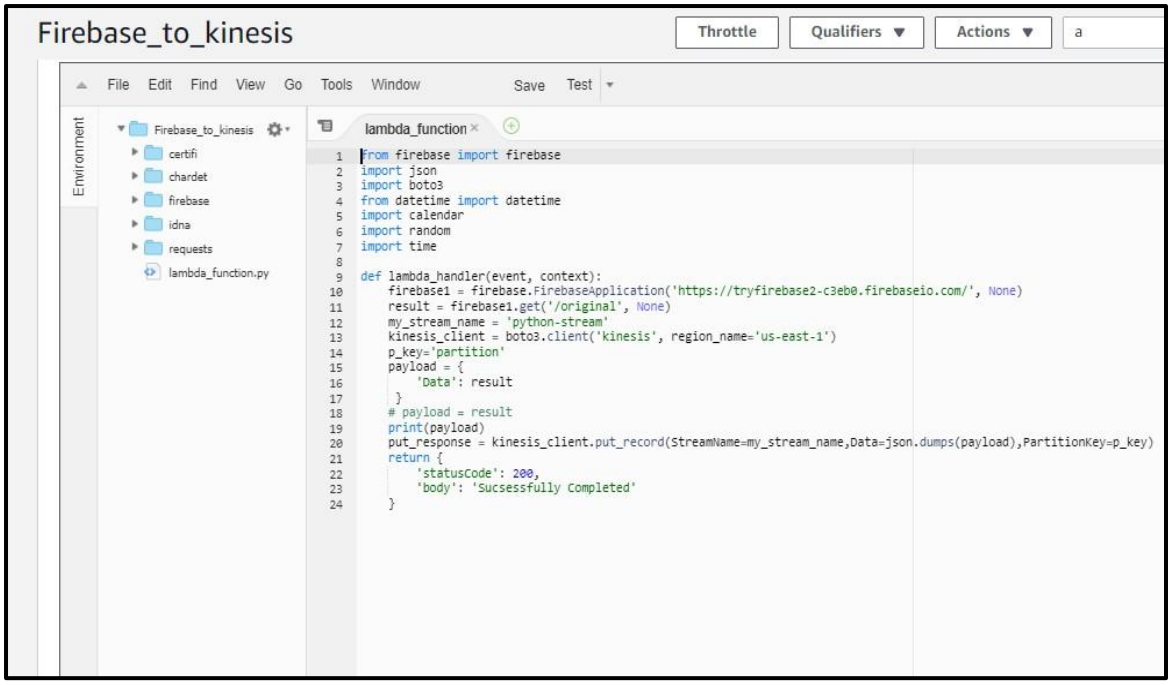


Figure 5.5.5 (b) AWS Lambda Function

- Output file stored in S3 in CSV format by reading the required data

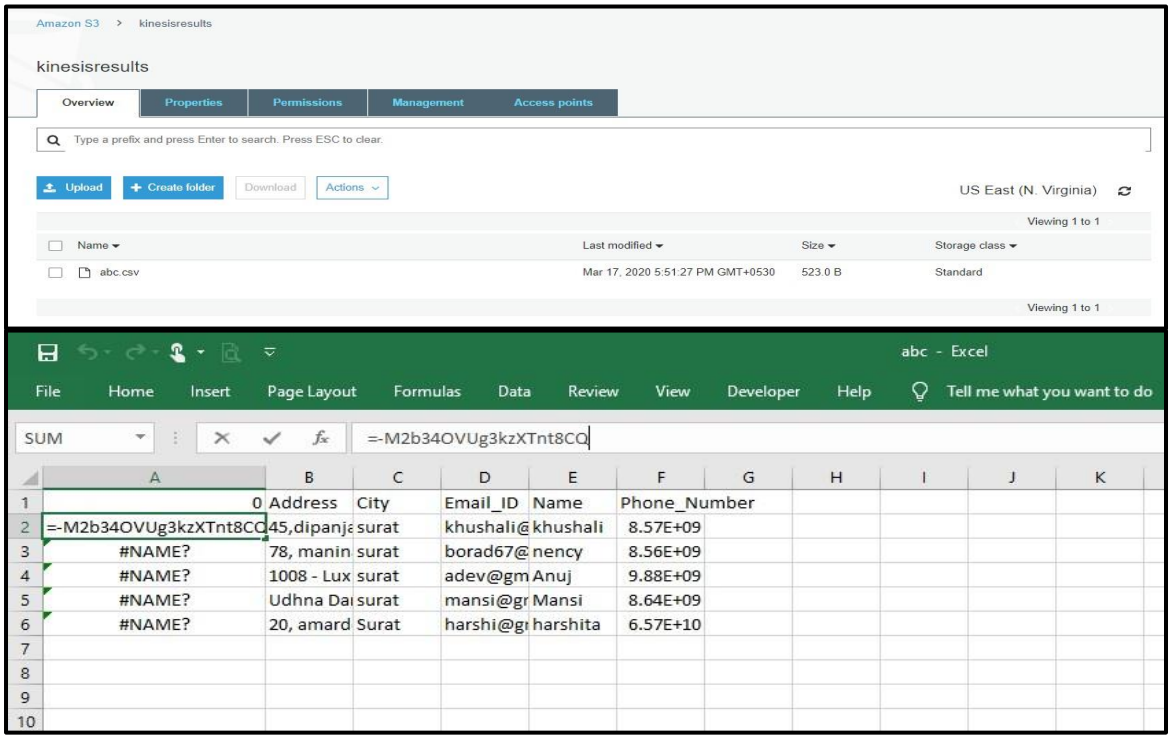


Figure 5.5.5 (c) Output CSV file in S3

5.6 Test Cases

Test cases for all the activities of projects required are given below in:

Table 5.6 Test Cases

Case	Test Data	Expected Result	Actual Result	Pass/Fail
Flutter Login and Registration	- Internet Connectivity - Email ID - Password	If Email ID & password is empty or invalid and No Internet connectivity then display Error message otherwise login successfully	If E-mail ID & password is empty or invalid and no Internet connectivity then displays the error message.	Pass
AWS Customer Activity Tracker	-FlaskForm - CSV file	In both, the task the data need to be read and store successfully at destination	The data were stored in the required format successfully	Pass
AWS Kinesis with Firebase	Firebase Realtime Database	In the task, the data need to be read and write successfully at destination	The data are read from the firebase and written to kinesis stream	Pass
Django Forgot password	Email Id	If email-id is valid & authorized then a new password is set by received email.	Password is reset if the email-id is authorized and valid.	Pass
Flutter Quiz App	Questions of various language	The user should be able to get the results as per the quiz selected without error	The user gets the required results as expected	Pass

Table 5.6 Test Cases

Case	Test Data	Expected Result	Actual Result	Pass/Fail

Flutter Registration	- Internet Connectivity - Email ID - Password - User Name	If Email ID & password or username empty or invalid and No Internet connectivity then display Error message otherwise register successfully	If E-mail ID & password and username is empty or invalid and no Internet connectivity then displays the error message.	Pass
AWS Cloudtrail trails	-Create Cloud Trails -JSON file	In the task, the data need to be read and store successfully at destination	The data were stored in the required format successfully	Pass
AWS Athena	-CSV File	In the task, the data need to be read from the CSV file and load in the Athena for analysis	the data to be read from CSV file and load in the Athena for analysis done successfully	Pass
Django Registration Login	-Email Id -Password -Username	If the user name and email id are not valid than OTP is not sent or OTP is invalid no login	Email id are not valid than OTP is not sent or OTP is invalid no login of an unauthorized user	Pass

CHAPTER 6 CONCLUSION AND FUTURE SCOPE

This internship report stresses on the work experience we have gathered as an Intern at Biz Insights IT Solutions Surat started in December 2019. In this report, we have incorporated our experiences where we worked on various Data Science and Analysis Projects, providing the prototype for Django Hotel Management System also performing the various task with AWS Services such as Lambda, S3, Dynamo DB, API gateway, AWS Kinesis, AWS Athena and other various activities includes Flutter App development, Firebase under our mentor and Co-founder of the Company Mr. Kunal Shah for 6 months.

We can honestly say that our time spent interning with the company resulted in one of the best working experiences of our life. Not only did we gain practical skills but we also had the opportunity to meet many fantastic people. The atmosphere at the office was always welcoming which made us feel right at home. Additionally, we felt like we were able to contribute to the company by working on the projects as well as writing documents as per client requirements on each of the modules performed in the project or training activities.

Whether it was the project proposed to us of the Web Scraping of the 4200+ car dealers of reviews and ratings which was crucial and important client project for the company and believe us that we can work on such new innovative concept and under his guidance we were able to learn the bunch of AWS services and finally implementing the task as mentioned for various project modules. Further, we also worked and deal with various other areas such as web and mobile app development technologies like Django and Flutter Framework and also in the COVID-19 pandemic designing the COVID-19 Patient Prediction System with Machine Learning to help the patients and for future use. Lastly, we all will like to mention that also upcoming the challenges and errors in all the training activities and projects help us to grow in order to get the final results even better. So it was the privilege to gain knowledge and finding the future aspects of many such new areas and technologies in the real-world through this opportunity offered to us.

Overall, our internship at Biz Insights IT Solutions Surat has been a success. We were able to gain practical skills, work in a fantastic environment and, making connections for a lifetime. We are very much thankful to all.

CHAPTER 7 REFERENCES

Web references

[1] [Online]:https://www.youtube.com/watch?v=XQgXKtPSzUI for web scraping [Date Accessed: 26 Dec 2019].

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