

A Project on

Real Time Indian Railways Twitter Complaint Administration System

Submitted for fulfillment of award of

Bachelor of Technology

In

Information Technology

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AJAY KUMAR GARG ENGINEERING COLLEGE, GHAZIABAD

YEAR: 2019-2020



**AJAY KUMAR GARG ENGINEERING COLLEGE,
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CERTIFICATE

Certified that “Aryan Chaudhary, Ashna Arora, Harsh Gupta and Mudit Mehrotra” have carried out the Project work entitled “Real Time Indian Railways Twitter Complaint Administration System” for the award of Bachelor of Technology from Ajay Kumar Garg Engineering College, Ghaziabad under our supervision.

To the best of our knowledge, this work has not been submitted earlier to any university for the award of any degree.

Dr.Sushil Kumar

()

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We would like to express our sincerest gratitude to all the people who have contributed towards the successful completion of our project.

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- 4. Mudit Mehrotra**

DECLARATION

We hereby declare that the “**Real Time Indian Railways Twitter Complaint Administration System**” submitted to the department of Information technology, Ajay Kumar Garg Engineering College Ghaziabad is a record of an original work done by us under the guidance of “**Dr.Sushil Kumar,**” Department of Information Technology, Ajay Kumar Garg Engineering College Ghaziabad and this project work is submitted as a part of fulfillment of award of the degree of Bachelor of Technology under AKTU.

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TABLE OF CONTENTS

<u>Chapters</u>	<u>Page No.</u>
Chapter I: Introduction	1-2
1.1 Background	1
1.2 Purpose	1
1.3 Scope of the project	2
1.4 Significance	2
Chapter II: Requirements Analysis and Feasibility Study	3-6
2.1 Requirements Analysis	3
2.1.1 Information Gathering	3
2.1.2 Functional requirement	3
2.1.3 Non-functional requirement	3
2.1.3.1 Essential requirement	3
2.1.3.2 Optimal requirement	4
2.1.3.3 Software quality attributes	4
2.2 Feasibility Study	5
2.2.1 Operational Feasibility	5
2.2.2 Technical Feasibility	5
2.2.3 Economic Feasibility	6
2.2.4 Behavioral Feasibility	6
Chapter III: System Analysis and Design	7-24
3.1 System Analysis	7
3.1.1 Existing system description	7
3.1.2 Proposed system description	7
3.2 System Design	8
3.2.1 E-R Diagram	8
3.2.2 Data flow Diagram	9
3.2.3 Use Case Diagram	12
3.2.4 Sequence Diagram	12

3.3	Snap Shots with details (Screen Output)	13
3.3.1	Data and machine learning pipeline	13
3.3.2	Database	19
3.3.3	App Module	19
3.3.4	Web module	22
3.3.5	Deployment on cloud	23

Chapter IV: Coding and Testing **25-35**

4.1	Coding	25
4.1.1	Kafka	25
4.1.2	Spark	26
4.1.2.1	TF-IDF	26
4.1.2.2	Machine learning	27
4.1.3	Zookeeper	27
4.1.4	HTML	29
4.1.5	CSS	29
4.1.6	PHP	29
4.1.7	Javascript	30
4.1.8	Flutter	30
4.1.9	MySql	31
4.1.10	Cloud	32
4.2	Testing	33
4.2.1	Unit Testing	33
4.2.2	Integration Testing	34
4.2.3	Regression Testing	34

Chapter V: Implementation **36-52**

5.1	Implementation Activities	36
5.1.1	AWS EC2 setup	36
5.1.2	Xampp installation	42
5.1.3	Zookeeper installation	45
5.1.4	Kafka installation	45
5.1.5	Spark installation	46

5.1.6 Other libraries installation	48
5.1.7 Create Twitter api	48
5.1.8 Flutter installation	49
5.2 Documentation (User's Manual)	50
5.2.1 How to execute the System	50
5.2.2 How to enter the data	52
5.2.3 How to process the data (processing details)	52
5.2.4 How to take out the reports	52
Chapter VI: Maintenance features	53
6.1 Project maintenance plan	53
6.2 Dependencies of maintenance features	53
Chapter VII: Advantages and Limitations of Developed System	55
7.1 Advantages of Developed System	55
7.2 Limitations	55
Chapter VIII: Conclusion and Suggestions for further work	56
8.1 Conclusion	56
8.2 Suggestions for further work	56
References	56
Appendix (for source code and any other relevant material)	58-95
Appendix-A Source Code	

Figure Number	Figure Name	Page No
Figure 3.2.1	ER-Diagram	8
Figure 3.2.2.1	Level 0 Data Flow Diagram	9
Figure 3.2.2.2	Level 1 Data Flow Diagram	10
Figure 3.2.2.3	Level 2 Data Flow Diagram	11
Figure 3.2.3	Use Case Diagram	12
Figure 3.2.4	Sequence Diagram	13
Figure 3.3.1.1	Data and machine learning pipeline snapshots	13
Figure 3.3.1.2	Data and machine learning pipeline snapshots	14
Figure 3.3.1.3	Data and machine learning pipeline snapshots	14
Figure 3.3.1.4	Data and machine learning pipeline snapshots	15
Figure 3.3.1.5	Data and machine learning pipeline snapshots	16
Figure 3.3.1.6	Data and machine learning pipeline snapshots	17
Figure 3.3.1.7	Data and machine learning pipeline snapshots	17
Figure 3.3.1.8	Data and machine learning pipeline snapshots	18
Figure 3.3.1.9	Data and machine learning pipeline snapshots	18
Figure 3.3.2	Database	19
Figure 3.3.3.1	App Module snapshots	20
Figure 3.3.3.2	App Module snapshots	20
Figure 3.3.3.3	App Module snapshots	21
Figure 3.3.3.4	App Module snapshots	21
Figure 3.3.4.1	Web Module snapshots	22
Figure 3.3.4.2	Web Module snapshots	22

Figure 3.3.4.3	Web Module snapshots	22
Figure 3.3.4.4	Web Module snapshots	22
Figure 3.3.5.1	Deployment on Cloud snapshots	23
Figure 3.3.5.2	Deployment on Cloud snapshots	24
Figure 4.1.1	Kafka Image	25
Figure 5.1.1.1	AWS EC2 Instance snapshots	36
Figure 5.1.1.2	AWS EC2 Instance snapshots	36
Figure 5.1.1.3	AWS EC2 Instance snapshots	37
Figure 5.1.1.4	AWS EC2 Instance snapshots	37
Figure 5.1.1.5	AWS EC2 Instance snapshots	38
Figure 5.1.1.6	AWS EC2 Instance snapshots	38
Figure 5.1.1.7	AWS EC2 Instance snapshots	39
Figure 5.1.1.8	AWS EC2 Instance snapshots	39
Figure 5.1.2.1	Xampp snapshots	43
Figure 5.1.2.2	Xampp snapshots	45
Figure 5.2.4	Report of the Data	52

Chapter I: Introduction

The project reduces the work complexity of scanning through thousands of useless data to find particular information but from here we can directly find the relevant tweets that needs attention. To solve the problem, we will be using a Machine Learning (Naive Bayes) model. In machine learning, Naïve Bayes classifiers are a family of simple "probabilistic classifiers" based on applying Bayes' theorem with strong (naïve) independence assumptions between the features. They are among the simplest Bayesian network models. Naïve Bayes has been studied extensively since the 1960s. It was introduced (though not under that name) into the text retrieval community in the early 1960s, and remains a popular (baseline) method for text categorization, the problem of judging documents as belonging to one category or the other (such as spam or legitimate, sports or politics, etc.) with word frequencies as the features. With appropriate pre-processing, it is competitive in this domain with more advanced methods including support vector machines. It also finds application in automatic medical diagnosis. Also, the machine learning model will be flexible and can be applied on various other local authorities like Nagar Nigam, State electricity board and various other authorities. To do that we just have to filter the tweets on the basis of that particular authority. It will reduce the operational time.

1.1 Background

The Indian Railways currently receives close to 5,000 Tweets a day. The Tweets are monitored 24×7 and responded to by their level of seriousness or urgency. By this logic a complaint of sexual harassment or threat to personal safety feature on top as do medical emergencies and dealt with very quickly. Second come complaints against the Railway management, uncooperative personnel, meals, hygiene or matters that need immediate attention within trains or in stations. Last come complaints and requests that are not of immediate importance and can be solved later.

1.2 Purpose

- We try to implement and improve the current working model to a better machine learning model in the future development and also try to work with new cutting edge technology stack.
- We have tried to achieve increased fault-tolerance. We also want to increase the accuracy and reliability of the current Indian Railway Twitter Complaint Registration System.
- By the use of machine learning, we have tried to increase the operational efficiency as the tweets that were not attended due to lack of manual labour, will now be addressed as our model will not skip any tweet, and will classify the tweet into feedback and emergency, which will lead to better decision making by the Indian Railway.
- We have also increased Data Security as manual labour is not involved so no unwanted user can read all such information.
- We tried to automate all this process so that the human resource of the government can be saved and same resource can be utilized in a better way on something else.

- This software package can be readily used by non-programming personal avoiding human handled chance of error.

1.3 Scope of the project

This project has a large scope as it has the following features which help in making it easy to use, understand and modify it:

- Automation of Feedback and complaint addressing. No Need to do Paper Work.
- To save the environment by using paper free work.
- To increase the accuracy and efficiency of the complaint addressing procedure.
- Management of passenger data.
- This software package can be readily used by non-programming personal avoiding human handled chance of error.

1.4 Significance

- Simplified Management of complaint addressing.
- Job Posting.
- Feedback and Emergency Results.
- Real-time Information Publishing through system alerts

CHAPTER II: Requirement Analysis and Feasibility Study

2.1 Requirement Gathering

In this phase, we try to find out what are the requirements that need to be fulfilled by the proposed system, what all aspects we need to cover so as to make this system worth of usage.

2.1.1 Information Gathering

To collect all the information related to the project we have to specify that what is required and what are the specifications of the project. What we want to done with our project means what are the functionalities we want to provide. Information gathering is done in order to understand the problem statement and collect the useful information. Now for our project, we collect all the necessary information that is tweets. We also collect basic information about our user, PNR number of the train, tweet id.

2.1.2 Functional Requirements

User: The user should have a twitter account. If the user do not have a twitter account he/she can signup by filling the some particular details like name, mail id, etc. The user can tweet with @RailMinIndia if he/she have can complain or feedback regarding Indian Railway.

Dataset:

A data set (or dataset, although this spelling is not present in many contemporary dictionaries) is a collection of data. Most commonly a data set corresponds to the contents of a single database table, or a single statistical data matrix, where every column of the table represents a particular variable, and each row corresponds to a given member of the data set in question. The dataset lists values for each of the variables, such as height and weight of an object, for each member of the data set. Each value is known as a datum. The data set may comprise data for one or more members, corresponding to the number of rows.

App module: This module contain admin module, login module, reply module.

Admin module- The person who reply for the tweets.

Login module- The admin can only login into the app with particular login id and password.

Reply Module- To reply the tweets in real time.

Web module: This module contain admin module, login module, reply module.

Admin module- The person who reply for the tweets.

Login module- The admin can only login into the app with particular login id and password.

Reply Module- To reply the tweets in real time.

2.1.3 Non Functional Requirements

2.1.3.1 Essential Requirement

- The system should have 97 percentage of reliability.
- The system should have a backup schedule every day.
- The data in the system should provide security using encryption method.
- The system should update the scheme availabilities real time.

2.1.3.2 Optional Requirement

- The system should be able to process each request within 2 seconds.
- The system can retrieve the data since created.

2.1.3.3 Software Quality Attributes

Scalability

When designing for scalability the primary goal is to ensure efficient resource management. Designing for scalability is not limited to any particular tier or component of an application. Application architects must consider scalability at all levels, from the user interface to the data store. Following are the factors which need to be considered when designing for Scalability.

- 1) Prioritization of services- In initial roll out the main services or the services which are immediately required are introduced with the system rollout and remaining services will be plugged in to system in phased manner as and when required. The Architectural framework should be designed to cater this aspect.
- 2) Classes of service - As stated above the Architecture should also accommodate to increase or decrease the number of classes, in order to achieve more services.
- 3) Dynamic change support- The system architecture should be capable to support the dynamic change into the system.
- 4) Transparent resource addition - The system architecture should be capable to support the transparent resource addition with the system.

Reliability

Reliability of a system is a measure of the ability of a system to keep operating overtime. It is typically measured as its mean time between failures (MTBF), expected type of system. Delivery of data to intended recipient (notification to sender by email or message). Reliability service – notify user – if delivery fail. Together TCP & IP provide reliable service. Vaccinate has the ability to behave consistently in a user acceptable manner when operating within the environment for which the system was intended.

Availability

It is apt that resources that should be available to authorized user actually are available (Safety & dependability).

A faulty associate with availability is denial of service attack degree to which system is in specified operable and committable state at the start. It will operate satisfactorily at given point in time. Ideal support environment includes corrective maintenance downtime.

Maintainability

Following are the factors which need to be considered while require time to add a Component /Service / Module to an Existing Application.

- i. Architecture and Component Framework - The Architecture is based on open standards take less time to add the Component / Service / Module to an Existing Application.
- ii. Classes and services- It is very important to understand how the classes and services has been developed and configured in the application framework. These should be created in such a way that any future requirement or addition of services etc helps to introduce new services easily.
- iii. Access and Roles- This service must be compatible enough to take care of the whole hierarchy of the departments which are going to be included. In case the flexibility in design has not been taken in cognizance it may create the problem at later stage and take longer time to add the service into the architecture.

2.2 Feasibility Study

Here, we have studied all the feasibility aspects of the project under consideration to check out if the project is feasible with the decided requirements and availability of information, technologies, and budget.

2.2.1 Operational Feasibility

Operational feasibility refers to the measure of solving problems with the help of a new proposed system. It helps in taking advantage of the opportunities and fulfills the requirements as identified during the development of the project. It takes care that the management and the users support the project. The proposed Real time Indian Railways twitter Complaint Administration System is capable identifying the emergency tweets more quickly and is more flexible and efficient than the existing systems. The machine learning and bid data has made the system more congenial to end user.

2.2.2 Technical Feasibility

The system as mentioned is developed using the latest technologies which include Kafka ,Spark ,Zookeeper ,Xampp ,Cloud, Flutter, Big data. It uses a Machine Learning model trained with the dataset extracted from various sources. Furthermore, the Navie Bayes Algorithm is used for the classification of data into emergency and feedback .

2.2.3 Economic Feasibility

Cost-benefit analysis is very important in deciding whether the project is economically feasible or not. It is alone sufficient to save time and money. Through cost-benefit analysis, it is quite evident that the benefits of this system outweigh costs and thus the project is economically feasible.

2.2.4 Behavioral Feasibility

Behavioral feasibility determines how much effort will go into educating, selling and training the user staff on a candidate system. This project is evaluated to be behaviorally feasible as it is very user-friendly and hardly needs any extra efforts to educate user for its facility and functioning. This is a one-time setup project and once initially installed, requires no intervention of the user.

CHAPTER III: System Analysis and Design

3.1 System Analysis

Systems analysis is a problem solving technique that decomposes a system into its component pieces for the purpose of studying how well those component parts work and interact to accomplish their purpose". According to the Merriam-Webster dictionary, systems analysis is "the process of studying a procedure or business in order to identify its goals and purposes and create systems and procedures that will achieve them in an efficient way". Analysis and synthesis, as scientific methods, always go hand in hand; they complement one another. Every synthesis is built upon the results of a preceding analysis, and every analysis requires a subsequent synthesis in order to verify and correct its results.

3.1.1 Existing System Description

The Indian Railways currently receives close to 5,000 Tweets a day. The Tweets are monitored 24×7 and responded to by their level of seriousness or urgency. By this logic a complaint of sexual harassment or threat to personal safety feature on top as do medical emergencies and dealt with very quickly. Second come complaints against the Railway management, uncooperative personnel, meals, hygiene or matters that need immediate attention within trains or in stations. Last come complaints and requests that are not of immediate importance and can be solved later.

Whenever a passenger (Twitter user) tweets with the required tags, The application at Indian Railways receives a request. This request is automated by twitter and sent to Indian Railways. Once the application (A software) receives such request, it generates a 'Ticket' in the support team. There is a whole big team sitting in front of their Computers to help you resolve your complaints. So this Ticket gets assigned to one of the support team members (Let us call him 'A') and it pops up on his computer. As soon as the person 'A' receives the ticket, he has to act on it within a particular amount of time.

3.1.2 Proposed System

The project reduces the work complexity of scanning through thousands of useless data to find particular information but from here we can directly find the relevant tweets that needs attention. To solve the problem, we will be using a Machine Learning (Naive Bayes) model. In machine learning, Naïve Bayes classifiers are a family of simple "probabilistic classifiers" based on applying Bayes' theorem with strong (naïve) independence assumptions between the features.

The proposed system will divide the tweets in two catogery that is emergency and feedback. The manual work done by the employes will be reduced .The tweets will be replied in the reat time.

This system will improve the –
Accuracy and reliability

Reduced operational time
Fault-tolerance

3.2 System Design

Systems design is the process of defining the architecture, modules, interfaces, and data for a system to satisfy specified requirements. Systems design could be seen as the application of systems theory to product development. System Analysis is the process that decomposes a system into its component pieces for the purpose of defining how well those components interact to accomplish the set requirements. The purpose of the System Design process is to provide sufficient detailed data and information about the system and its system elements to enable the implementation consistent with architectural entities as defined in models and views of the system architecture.

3.2.1 ER -Diagram

An entity–relationship model (or ER model) describes interrelated things of interest in a specific domain of knowledge. A basic ER model is composed of entity types (which classify the things of interest) and specifies relationships that can exist between entities (instances of those entity types). It is usually drawn in a graphical form as boxes (*entities*) that are connected by lines (*relationships*) which express the associations and dependencies between entities. An entity-relationship diagram is a data modelling technique that graphically illustrates an information system's entities and the relationships between those entities. An ERD is a conceptual and representational model of data used to represent the entity framework infrastructure. While useful for organizing data that can be represented by a relational structure, an entity-relationship diagram can't sufficiently represent semi-structured or unstructured data, and an ERD is unlikely to be helpful on its own in integrating data into pre-existing information system. Three main components of an ERD are the entities, which are objects or concepts that can have data stored about them, the relationship between those entities, and the cardinality, which defines that relationship in terms of numbers.

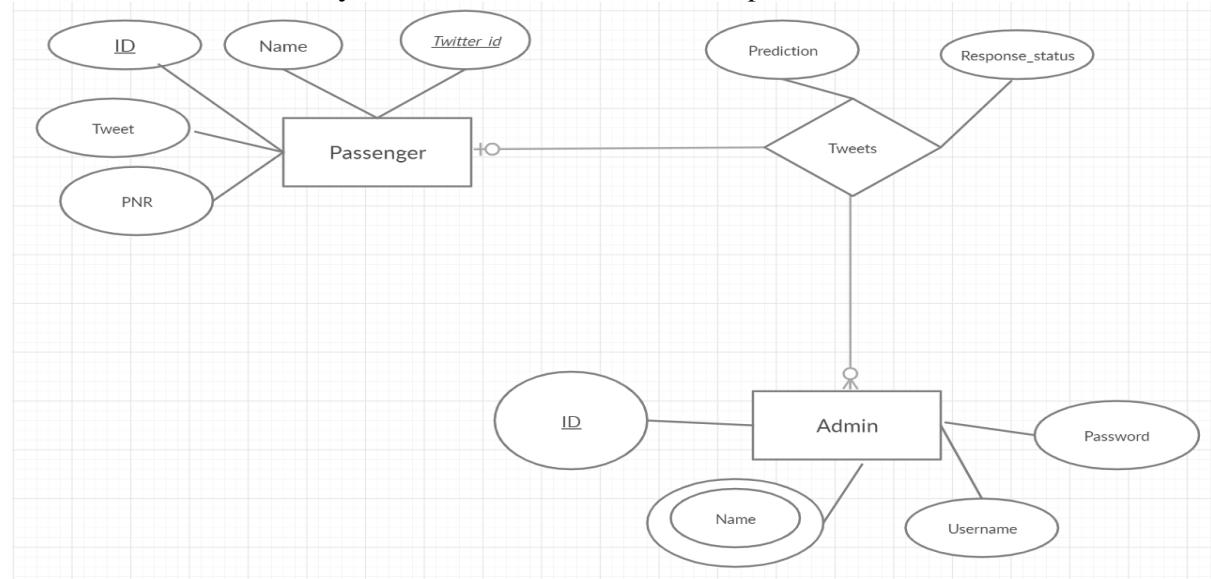


Figure 3.2.1:ER-diagram

3.2.2 Data Flow Diagram

A data flow diagram (DFD) maps out the flow of information for any process or system. It uses defined symbols like rectangles, circles and arrows, plus short text labels, to show data inputs, outputs, storage points and the routes between each destination.

Level 0 DFD:

Its shows the abstract view of the system. Context Diagrams and DFD Layers and Levels. A context diagram is a top level (also known as "Level 0") data flow diagram. It only contains one process node ("Process 0") that generalizes the function of the entire system in relationship to external entities.

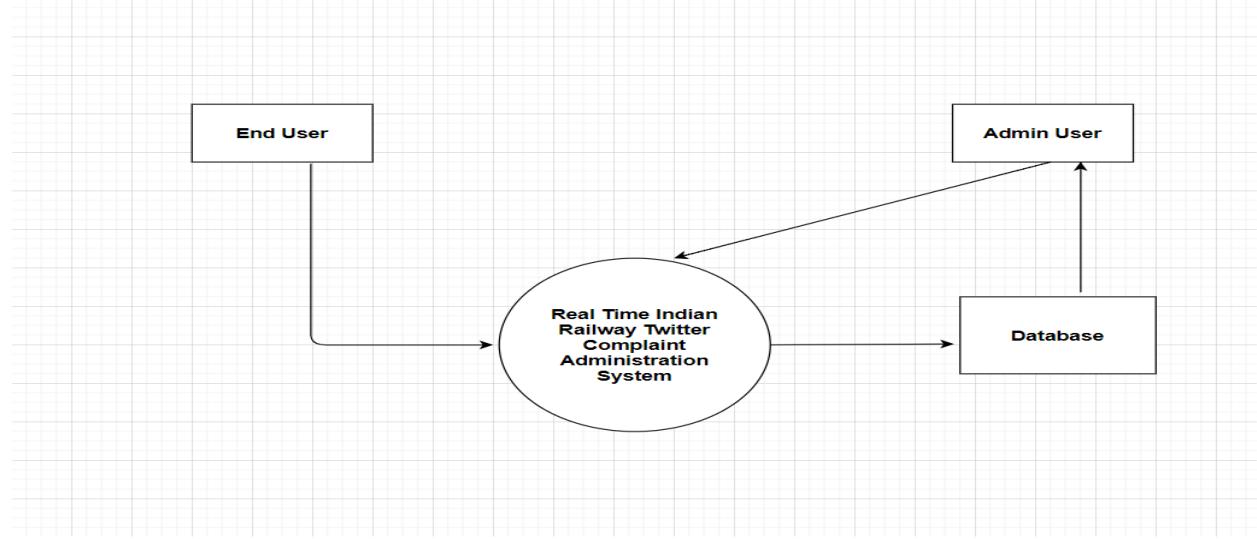


Figure.3.2.2.1:Level 0 DFD

Level 1 DFD:

The next stage is to create the Level 1 Data Flow Diagram. This highlights the main functions carried out by the system. As a rule, we try to describe the system using between two and seven functions - two being a simple system and seven being a complicated system. This enables us to keep the model manageable on screen or paper.

It explains the system in detailed view. When drawing Context Level DFD's, we must first identify the process, all the external entities and all the data flows. We must also state any assumptions we make about the system. It is advised that we draw the process in the middle of the page. We then draw our external entities in the corners and finally connect our entities to our process with the data flows.

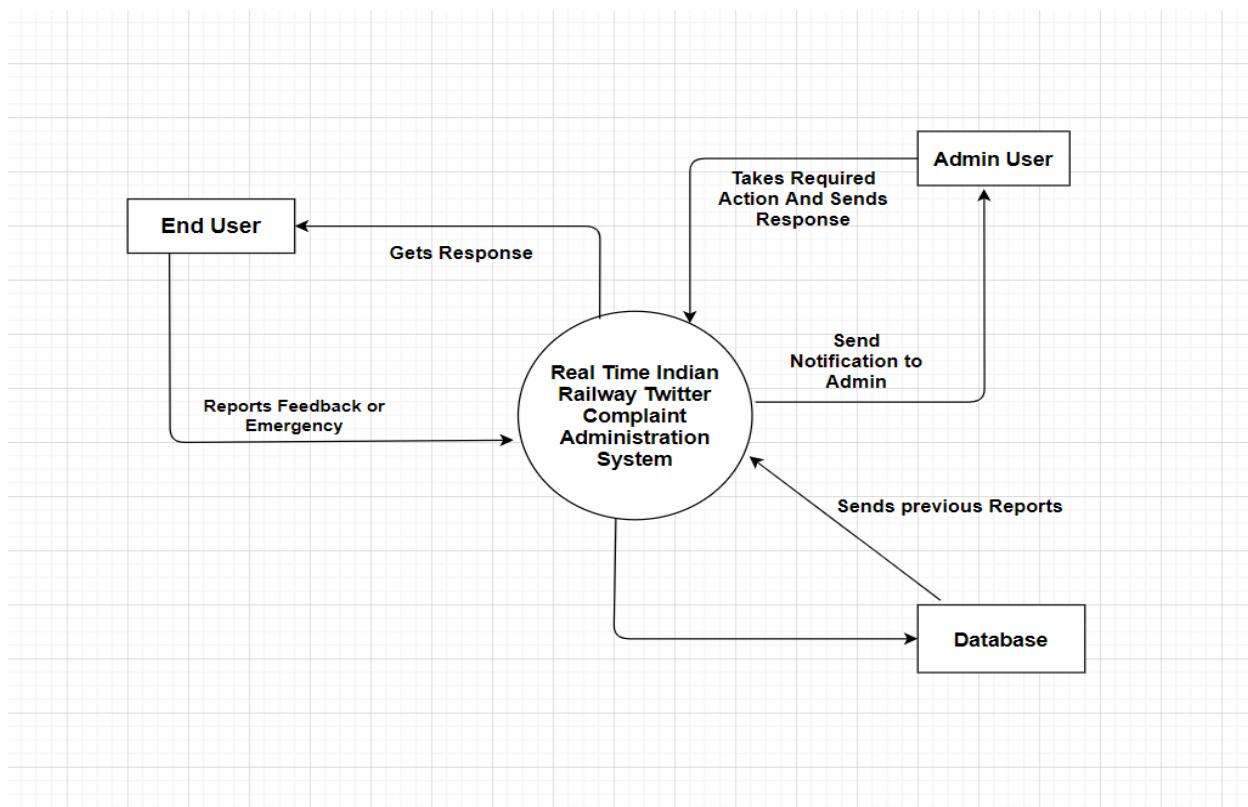


Figure.3.2.2.2:Level 1 DFD

Level 2 DFD:

2-level DFD goes one step deeper into parts of 1-level DFD. It can be used to plan or record the specific/necessary detail about the system's functioning.

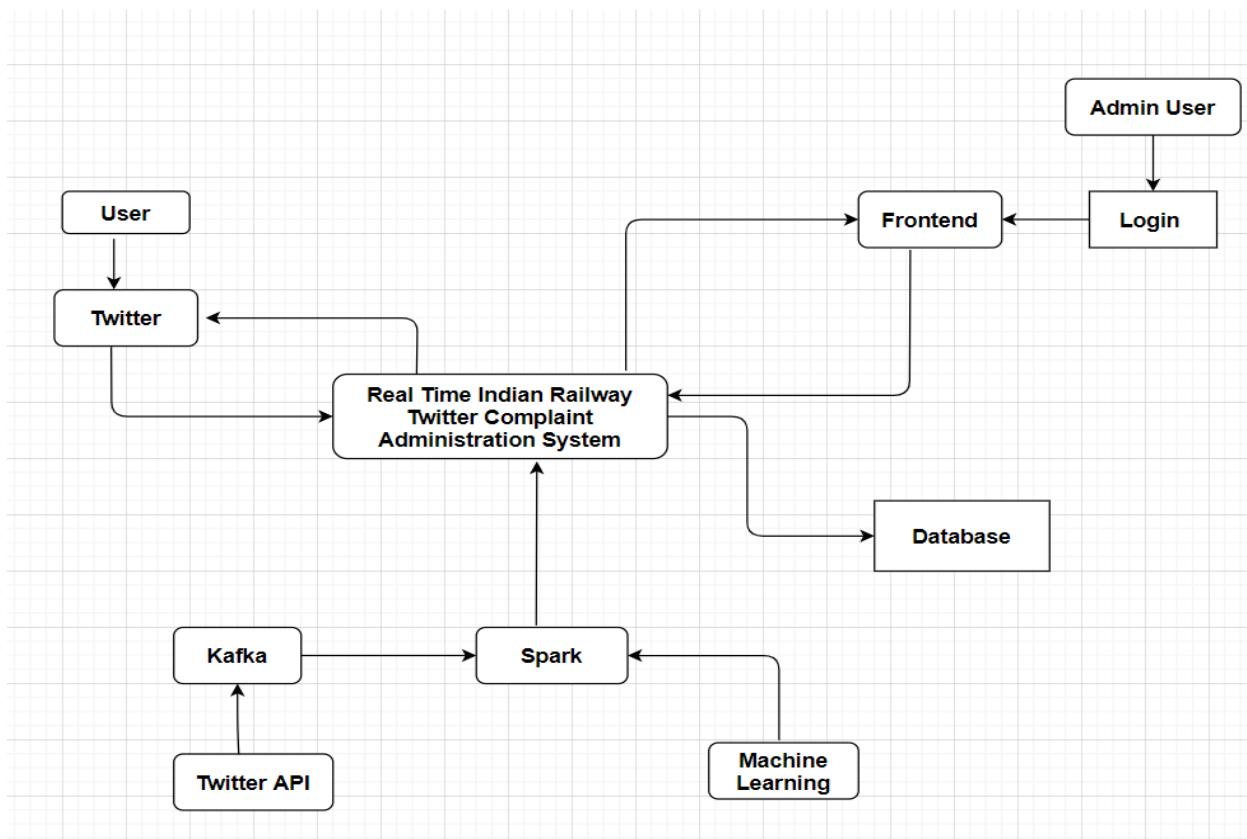


Figure.3.2.2.3: Level 2 DFD

3.2.3 Use case Diagram

A use case diagram at its simplest is a representation of a user's interaction with the system that shows the relationship between the user and the different use cases in which the user is involved. A use case diagram can identify the different types of users of a system and the different use cases and will often be accompanied by other types of diagrams as well. The use cases are represented by either circles or ellipses. A use case is a methodology used in system analysis to identify, clarify, and organize system requirements. Simplest representation of a user's interaction that shows the relationship between the user and the different use cases in which user involved.

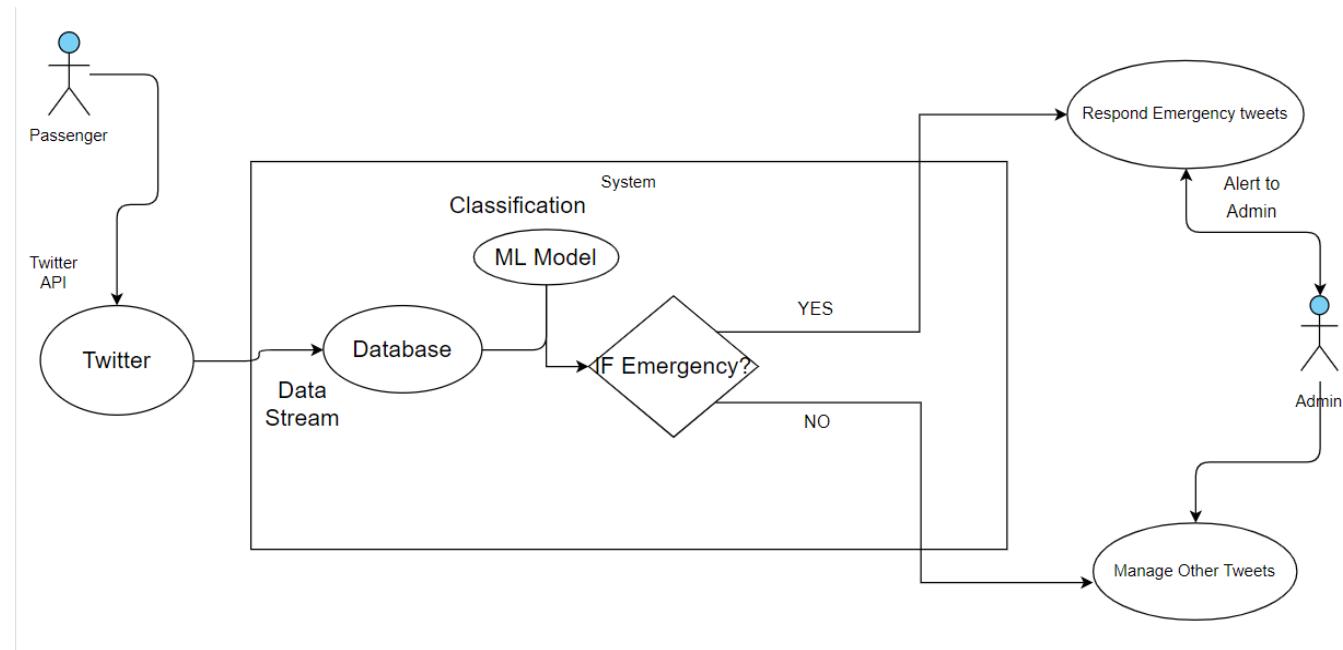


Figure.3.2.3: Use Case Diagram

3.2.4 Sequence Diagram

Sequence diagram is an interaction diagram that shows how processes operate with one another

and in what order. It is a construct of a Message Sequence Chart. A sequence diagram shows object interactions arranged in time sequence. It depicts the objects and classes involved in the scenario and the sequence of messages exchanged between the objects needed to carry out the functionality of the scenario. A sequence diagram shows, as parallel vertical lines (*lifelines*), different processes or objects that live simultaneously, and, as horizontal arrows, the messages exchanged between them, in the order in which they occur. This allows the specification of simple runtime scenarios in a graphical manner.

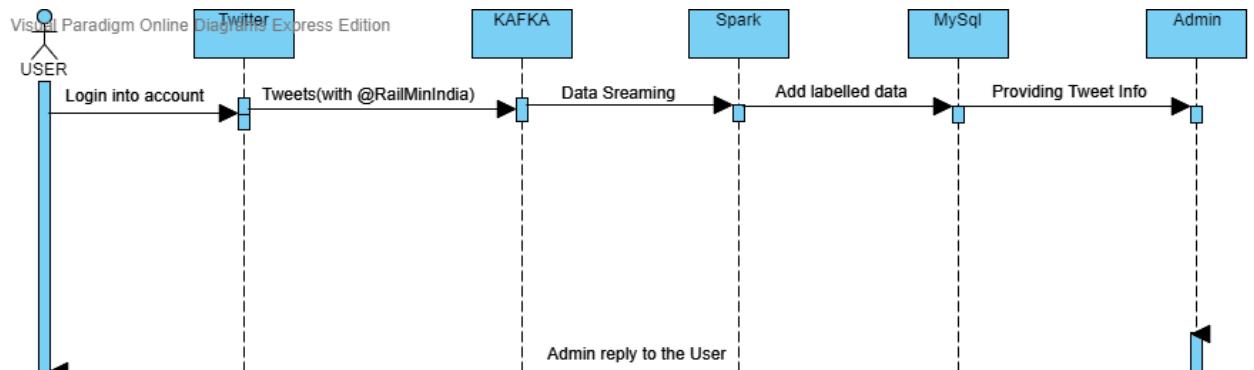


Figure.3.2.4:Sequence Diagram

3.3 Snapshots

3.3.1 Data and machine learning pipeline

A screenshot of a Linux terminal window titled "Terminal". The window shows the command `zkServer.sh start` being run by the user `ryan@Schrodinger`. The output indicates that Zookeeper JMX is enabled by default, using configuration file `/usr/local/zookeeper/bin/../conf/zoo.cfg`, and that the zookeeper service has started successfully. The terminal also shows a small blue icon and the text "hmm".

```

Activities Terminal ▾ Sun 23:35 ●
ryan@Schrodinger: ~
File Edit View Search Terminal Help
ryan@Schrodinger: ~$ zkServer.sh start
ZooKeeper JMX enabled by default
Using config: /usr/local/zookeeper/bin/../conf/zoo.cfg
Starting zookeeper ... STARTED
ryan@Schrodinger: ~$ [ ]

```

Figure.3.3.1.1

```

ryan@Schrodinger:~$ cd /usr/local/kafka/
ryan@Schrodinger:/usr/local/kafka$ bin/kafka-server-start.sh config/server.properties
[2020-02-23 23:34:53,169] INFO Registered/kafka:type=kafka.Log4jController MBean (kafka.utils.Log4jControllerRegistration$)
[2020-02-23 23:34:54,530] INFO starting (kafka.server.KafkaServer)
[2020-02-23 23:34:54,531] INFO Connecting to zookeeper on localhost:2181 (kafka.server.KafkaServer)
[2020-02-23 23:34:54,635] INFO [ZooKeeperClient] Initializing a new session to localhost:2181. (kafka.zookeeper.ZooKeeperClient)
[2020-02-23 23:34:54,642] INFO Client environment:zookeeper.version=3.4.13-2d71af4dbe22557fda74f9a9b4309b15a7487f03, built on 06/29/2018 00:39 GMT (or g.apache.zookeeper.ZooKeeper)
[2020-02-23 23:34:54,643] INFO Client environment:host.name=Schrodinger (org.apache.zookeeper.ZooKeeper)
[2020-02-23 23:34:54,643] INFO Client environment:java.version=1.8.0_181 (org.apache.zookeeper.ZooKeeper)
[2020-02-23 23:34:54,643] INFO Client environment:java.vendor=Oracle Corporation (org.apache.zookeeper.ZooKeeper)
[2020-02-23 23:34:54,643] INFO Client environment:java.home=/usr/lib/jvm/java-8-oracle/jre (org.apache.zookeeper.ZooKeeper)
[2020-02-23 23:34:54,644] INFO Client environment:java.class.path=/usr/local/kafka/bin/../libs/activation-1.1.1.jar:/usr/local/kafka/bin/../libs/aopal-liance-repackaged-2.5.0-b42.jar:/usr/local/kafka/bin/../libs/argparse4j-0.7.0.jar:/usr/local/kafka/bin/../libs/audience-annotations-0.5.0.jar:/usr/local/kafka/bin/../libs/commons-lang3-3.5.jar:/usr/local/kafka/bin/../libs/connect-api-2.0.0.jar:/usr/local/kafka/bin/../libs/connect-basic-auth-extensio-n-2.0.0.jar:/usr/local/kafka/bin/../libs/connect-file-2.0.0.jar:/usr/local/kafka/bin/../libs/connect-json-2.0.0.jar:/usr/local/kafka/bin/../libs/conne-ct-runtime-2.0.0.jar:/usr/local/kafka/bin/../libs/connect-transforms-2.0.0.jar:/usr/local/kafka/bin/../libs/guava-20.0.jar:/usr/local/kafka/bin/../libs/hk2-api-2.5.0-b42.jar:/usr/local/kafka/bin/../libs/hk2-locator-2.5.0-b42.jar:/usr/local/kafka/bin/../libs/hk2-utils-2.5.0-b42.jar:/usr/local/kafka/b-in/../libs/jackson-annotations-2.9.6.jar:/usr/local/kafka/bin/../libs/jackson-core-2.9.6.jar:/usr/local/kafka/bin/../libs/jackson-databind-2.9.6.jar:/usr/local/kafka/bin/../libs/jackson-jaxrs-base-2.9.6.jar:/usr/local/kafka/bin/../libs/jackson-jaxrs-provider-2.9.6.jar:/usr/local/kafka/bin/../li-bs/jackson-module-jaxb-annotations-2.9.6.jar:/usr/local/kafka/bin/../libs/javassist-3.22.0-CR2.jar:/usr/local/kafka/bin/../libs/javax.annotation-api-1.2.jar:/usr/local/kafka/bin/../libs/javax.inject-1.jar:/usr/local/kafka/bin/../libs/javax.inject-2.5.0-b42.jar:/usr/local/kafka/bin/../libs/javax.serv-let-api-3.1.0.jar:/usr/local/kafka/bin/../libs/javax.ws.rs-api-2.1.jar:/usr/local/kafka/bin/../libs/jaxb-api-2.3.0.jar:/usr/local/kafka/bin/../libs/je-rsey-client-2.27.jar:/usr/local/kafka/bin/../libs/jersey-common-2.27.jar:/usr/local/kafka/bin/../libs/jersey-container-servlet-2.27.jar:/usr/local/kaf-ka/bin/../libs/jersey-container-servlet-core-2.27.jar:/usr/local/kafka/bin/../libs/jersey-hk2-2.27.jar:/usr/local/kafka/bin/../libs/jersey-media-jaxb-2.27.jar:/usr/local/kafka/bin/../libs/jersey-server-2.27.jar:/usr/local/kafka/bin/../libs/jetty-client-9.4.11.v20180605.jar:/usr/local/kafka/bin/../li-bs/jetty-continuation-9.4.11.v20180605.jar:/usr/local/kafka/bin/../libs/jetty-http-9.4.11.v20180605.jar:/usr/local/kafka/bin/../libs/jetty-io-9.4.11.v20180605.jar:/usr/local/kafka/bin/../libs/jetty-security-9.4.11.v20180605.jar:/usr/local/kafka/bin/../libs/jetty-server-9.4.11.v20180605.jar:/usr/loc-1/kafka/bin/../libs/jetty-servlet-9.4.11.v20180605.jar:/usr/local/kafka/bin/../libs/jopt-simple-5.0.4.jar:/usr/local/kafka/bin/../libs/kafka_2.11-2.0.0.jar:/usr/local/kafka/b-in/../libs/kafka_2.11-2.0.0-sources.jar:/usr/local/kafka/bin/../libs/kafka-clients-2.0.0.jar:/usr/local/kafka/bin/../libs/kafka-log4j-appender-2.0.0.jar:/usr/local/kafka/bin/../libs/kafka-streams-2.0.0.jar:/usr/local/kafka/bin/../libs/kafka-streams-examples-2.0.0.jar:/usr/local/kafka/bin/../libs/kaf-ka-streams-scala-2.11-2.0.0.jar:/usr/local/kafka/bin/../libs/kafka-streams-test-utils-2.0.0.jar:/usr/local/kafka/bin/../libs/kafka-tools-2.0.0.jar:/us-r/local/kafka/bin/../libs/log4j-1.2.17.jar:/usr/local/kafka/bin/../libs/lz4-java-1.4.1.jar:/usr/local/kafka/bin/../libs/maven-artifact-3.5.3.jar:/usr/local/kafka/bin/../libs/metrics-core-2.2.0.jar:/usr/local/kafka/bin/../libs/osgi-resource-locator-1.0.1.jar:/usr/local/kafka/bin/../libs/plexus-utlis-3.1.0.jar:/usr/local/kafka/bin/../libs/reflections-0.9.11.jar:/usr/local/kafka/bin/../libs/rocksdbjni-5.7.3.jar:/usr/local/kafka/bin/../libs/scalalibr-ry-2.11.12.jar:/usr/local/kafka/bin/../libs/scalalogging-2.11-3.9.0.jar:/usr/local/kafka/bin/../libs/scalareflect-2.11.12.jar:/usr/local/kafka/bin/..../libs/slf4j-api-1.7.25.jar:/usr/local/kafka/bin/..../libs/slf4j-log4j12-1.7.25.jar:/usr/local/kafka/bin/..../libs/snappy-java-1.1.7.1.jar:/usr/local/ka

```

Figure. 3.3.1.2

```

ryan@Schrodinger:~$ bin/kafka-console-consumer.sh --bootstrap-server localhost:2181 --topic twitterstream --from-beginning
which means from beginning, or
'latest' which means from end
(default: latest)
--partition <Integer> partition: The partition to consume from.
Consumption starts from the end of
the partition unless '--offset' is
specified.
--property <String: prop> The properties to initialize the
message formatter. Default
STEP-1: Start zookeeper:
The properties to initialize the
message formatter. Default
properties include:
print.timestamp=true|false
print.key=true|false
print.value=true|false
key.separator=<key.separator>
line.separator=<line.separator>
key.deserializer=<key.deserializer>
value.deserializer=<value.deserializer>
$ bin/zookeeper-server-start.sh config/zookeeper.properties
Users can also pass in customized
properties for their formatter; more
specifically, users can pass in
properties keyed with 'key.
deserializer.' and 'value.
deserializer.' prefixes to configure
their deserializers.
--skip-message-on-error If there is an error when processing a
message, skip it instead of halt.
--timeout-ms <Integer: timeout_ms> Start kafka If specified, exit if no message is
available for consumption for the
specified interval.
--topic <String: topic> $ bin/kafka-console-consumer.sh --bootstrap-server localhost:2181 --topic twitterstream --from-beginning
--value-deserializer <String:
deserializer for values>
--whitelist <String: whitelist>5: Run stream Whitelist of topics to include for con-umption.
$ bin/kafka-console-consumer.sh --bootstrap-server localhost:2181 --topic twitterstream --from-beginning
$ python kafka_file/stream_data.py

```

Figure. 3.3.1.3

```

Activities Terminal ▾ Sun 23:39 ●
ryan@Schrodinger: ~/IR-Complaint-Feedback-Management-System
File Edit View Search Terminal Help
.lz4 lz4-1.3.0.jar with timestamp 1582481336460 dinger: ~
20/02/23 23:38:56 INFO Utils: Copying /home/ryan/.ivy2/jars/net.jpountz.lz4_lz4-1.3.0.jar to /tmp/spark-364d48fd-7348-4106-b960-6bfb9cd9c3c9/userFiles-e8ac5e0d-2d38-4e24-a081-9012724c9a9c/net.jpountz.lz4_lz4-1.3.0.jar
20/02/23 23:38:56 INFO SparkContext: Added file file:///home/ryan/.ivy2/jars/org.xerial.snappy_snappy-java-1.1.2.6.jar at file:///home/ryan/.ivy2/jars/org.xerial.snappy_snappy-java-1.1.2.6.jar with timestamp 1582481336478
20/02/23 23:38:56 INFO Utils: Copying /home/ryan/.ivy2/jars/org.xerial.snappy_snappy-java-1.1.2.6.jar to /tmp/spark-364d48fd-7348-4106-b960-6bfb9cd9c3c9/userFiles-e8ac5e0d-2d38-4e24-a081-9012724c9a9c/org.xerial.snappy_snappy-java-1.1.2.6.jar
20/02/23 23:38:56 INFO Executor: Starting executor ID driver on host localhost
20/02/23 23:38:56 INFO Utils: Successfully started service 'org.apache.spark.network.netty.NettyBlockTransferService' on port 35961.
20/02/23 23:38:56 INFO NettyBlockTransferService: Server created on 30.31.0.151:35961
20/02/23 23:38:56 INFO BlockManager: Using org.apache.spark.storage.RandomBlockReplicationPolicy for block replication policy
20/02/23 23:38:56 INFO BlockManagerMaster: Registering BlockManager BlockManagerId(driver, 30.31.0.151, 35961, None)
20/02/23 23:38:56 INFO BlockManagerMasterEndpoint: Registering block manager 30.31.0.151:35961 with 366.3 MB RAM, BlockManagerId(driver, 30.31.0.151, 35961, None)
20/02/23 23:38:56 INFO BlockManagerMaster: Registered BlockManager BlockManagerId(driver, 30.31.0.151, 35961, None)
20/02/23 23:38:56 INFO BlockManager: Initialized BlockManager: BlockManagerId(driver, 30.31.0.151, 35961, None)
Processing data ... STEP-7: Create database in MySQL as 'twitter' and table with schema:
Empty RDD !!!
Processing data ...
[[{'@RailMinIndia @WesternRly @PiyushGoyal sir booked a senior citizen ticket of tomorrow.. Pnr no. 2755741205. How ca\xe2\x80\xa6 https://t.co/F0Zp2sufWJ', u'ketan_bagrecha', 1231642119992942592, 0.0}]]
Database insertion SUCCESSFUL!!!
Processing data ...
[[{'RT @RailMinIndia: 52 Km Bairabi-Sairang Rail line in Mizoram, slated completion by 2022, is inspected by CRB Shri V K Yadav.\n\nProject has 3\xe2\x80\x99s', u'aksk8213', 1231642142034059265, 0.0}, {'@RailMinIndia @drmlko25 It should be some refund for this type of waiting/late.\nTotal wasting time .', u'brijutwtt', 1231642144877662208, 0.0}]]
Database insertion SUCCESSFUL!!!
Database insertion SUCCESSFUL!!!
Processing data ...
Empty RDD !!!
STEP-9: Finally open php_files/index.php file to interact with UI and manage tweets in real-time.
Processing data ...
[{"@phantendra45 @mumbairailusers @RailMinIndia sorry it's not a private run rail ways .kindly bear with us", u'shravan_THADANI', 1231642243397832705, 0.0}]
Database insertion SUCCESSFUL!!!
Processing data ...
Empty RDD !!!

```

Figure. 3.3.1.4

```
[{"u'quote_count': 0, 'u'contributors': None, 'u'truncated': False, 'u'text': '@sbhavin91183 @RailMinIndia Please look into the matter @DrAjmer', 'u'is_quote_status': False, 'u'in_reply_to_status_id': 936823135726268416, 'u'reply_count': 0, 'u'id': 936824197887619072, 'u'favorite_count': 0, 'u'entities': {'u'user_mentions': [{u'id': 212569336, 'u'indices': [0, 13], 'u'id_str': 'u'212569336', 'u'screen_name': 'sbhavin91183', 'u'name': 'Bhavin Shah'}, {u'id': 2602959463, 'u'indices': [14, 27], 'u'id_str': 'u'2602959463', 'u'screen_name': 'RailMinIndia', 'u'name': 'Ministry of Railways'}, {u'id': 3274778629, 'u'indices': [56, 65], 'u'id_str': 'u'3274778629', 'u'screen_name': 'DrAjmer', 'u'name': 'drm ajmer Puneet'}], 'u'symbols': [], 'u'hashtags': [], 'u'urls': []}, 'u'rettweet_count': 0, 'u'in_reply_to_screen_name': 'sbhavin91183', 'u'id_str': 'u'936824197887619072', 'u'display_text_range': [28, 65], 'u'retwinet_count': 0, 'u'in_reply_to_user_id': 212569336, 'u'favorited': False, 'u'user': {'u'follow_request_sent': None, 'u'profile_use_background_image': True, 'u'id': 3379962305, 'u'default_profile': False, 'u'verified': False, 'u'profile_image_url_https': 'https://pbs.twimg.com/profile_images/621931771433721858/t6y-H8sc_normal.jpg', 'u'profile_sidebar_full_color': '000000', 'u'profile_text_color': '000000', 'u'followers_count': 8546, 'u'profile_sidebar_border_color': '000000', 'u'id_str': 'u'3379962305', 'u'profile_background_color': '1A1B1F', 'u'listed_count': 45, 'u'profile_background_image_url_https': 'https://abs.twimg.com/images/themes/theme9/bg.gif', 'u'utc_offset': 19800, 'u'statuses_count': 31525, 'u'description': 'Official Account of Divisional Railway Manager, Ahmedabad Division, Western Railway.', 'u'friends_count': 4, 'u'location': 'Ahmedabad City, India', 'u'profile_link_color': '2FC2EF', 'u'profile_image_url': 'http://pbs.twimg.com/profile_images/621931771433721858/t6y-H8sc_normal.jpg', 'u'following': None, 'u'geo_enabled': True, 'u'profile_background_tile': True, 'u'favourites_count': 106, 'u'screen_name': 'drmadiw', 'u'notifications': None, 'u'url': 'http://www.wr.indianrailways.gov.in/view_section.jsp?lang=0&id=0,5,574', 'u'created_at': 'Fri Jul 17 06:33:50 +0000 2015', 'u'contributors_enabled': False, 'u'time_zone': 'Mumbai', 'u'protected': False, 'u'translator_type': 'none', 'u'is_translator': False, 'u'geo': None, 'u'in_reply_to_user_id_str': 'u'212569336', 'u'lang': 'en', 'u'created_at': 'Sat Dec 02 05:07:48 +0000 2017', 'u'filter_level': 'low', 'u'in_reply_to_status_id_str': 'u'936823135726268416', 'u'place': None}, 'u'quote_count': 0, 'u'contributors': None, 'u'truncated': False, 'u'text': '@RailMinIndia @MehulTh48784426 @rdmadiw kindly look into this matter', 'u'is_quote_status': False, 'u'in_reply_to_status_id': 936822984462843904, 'u'reply_count': 0, 'u'id': 936824242649251841, 'u'favorite_count': 0, 'u'entities': {'u'user_mentions': [{u'id': 2602959463, 'u'indices': [0, 13], 'u'id_str': 'u'2602959463', 'u'screen_name': 'RailMinIndia', 'u'name': 'Ministry of Railways'}, {u'id': 923921447398993920, 'u'indices': [14, 30], 'u'id_str': 'u'923921447398993920', 'u'screen_name': 'MehulTh48784426', 'u'name': 'Mehul Thakkar'}, {u'id': 3379962305, 'u'indices': [31, 40], 'u'id_str': 'u'3379962305', 'u'screen_name': 'drmadiw', 'u'name': 'DRM Ahmedabad'}, {u'id': 732116226407727105, 'u'indices': [41, 52], 'u'id_str': 'u'732116226407727105', 'u'screen_name': 'srdcnfrdli', 'u'name': 'SrDCN/Freight'}], 'u'symbols': [], 'u'hashtags': [], 'u'urls': []}, 'u'rettweet_count': 0, 'u'in_reply_to_screen_name': 'RailMinIndia', 'u'id_str': 'u'936824242649251841', 'u'display_text_range': [41, 81], 'u'retwinet_count': 0, 'u'in_reply_to_user_id': 2602959463, 'u'favorited': False, 'u'user': {'u'follow_request_sent': None, 'u'profile_use_background_image': False, 'u'id': 3282247526, 'u'default_profile': False, 'u'verified': False, 'u'profile_image_url_https': 'https://pbs.twimg.com/profile_images/91507057789672640/eEUd4ArU_normal.jpg', 'u'profile_sidebar_fill_color': '000000', 'u'profile_text_color': '000000', 'u'followers_count': 16603, 'u'profile_sidebar_border_color': '000000', 'u'id_str': 'u'3282247526', 'u'profile_background_color': '000000', 'u'listed_count': 46, 'u'profile_background_image_url_https': 'https://abs.twimg.com/images/themes/theme1/bg.png', 'u'utc_offset': -28800, 'u'statuses_count': 60437, 'u'description': 'The Official Twitter Account of Delhi Division, Northern Railway', 'u'friends_count': 132, 'u'location': 'New Delhi, Delhi', 'u'profile_link_color': '3B94D9', 'u'profile_image_url': 'http://pbs.twimg.com/profile_images/91507057789672640/eEUd4ArU_normal.jpg', 'u'following': None, 'u'geo_enabled': True, 'u'profile_banner_url': 'https://pbs.twimg.com/images/themes/theme1/bg.png', 'u'profile_background_image_url': 'http://abs.twimg.com/images/themes/theme1/bg.png', 'u'name': 'The Official Twitter Account of Delhi Division, Northern Railway'}]
```

Figure. 3.3.1.5

Activities		LibreOffice Calc	Sun 23:50 •
tweets_formatted_data.csv - LibreOffice Calc			
File Edit View Insert Format Styles Sheet Data Tools Window Help A1 B			
Liberation San:	10	A % 0.0	Σ = emergency
26	emergency	train is at halt for the last 4.5 hrs amidst of jungle, wt the fk is happening??? pnr 4512791357	
27	emergency	pregnant lady needs the help of some lady doctor immediately, her pnr 4512791357	
28	emergency	charger points of the complete bogie malfunctioning, need immediate attention pnr 4512791357	
29	emergency	a sweeper supposed to be thief but the matter is out of the passengers control pnr 4512791357	
30	emergency	window pane jammed after winter, bone freezing cold pnr 4512791357	
31	emergency	fan's speed not decreasing , we need help pnr 4512791357	
32	emergency	acs not working ,pnr 4512791357, it not responding positivelt, what do we pay for	
33	emergency	berth env is quite unhygenic, insects wandering here n there pnr 4512791357	
34	emergency	unremoved heavy bedrolls , stinky smell pnr 4512791357, emergency cleanup reqd	
35	emergency	two copassengers fought brutally. 1 got a head injury/emergency! His pnr 4512791357	
36	feedback	@SBKULAL @Bkugne @riyaj1712 @FAZALALAM234 @phanipeddapall1 @ratneshtakur86 @railmitraa @drmnnd @drmgtl... https://t.co/ZxsjnoOQLd	
37	emergency	@dmrko25 @RailMinIndia @RailwayNorthern Kindly send anyone railway staff to attend 14203	
38	emergency	@RailMinIndia plz continue train no 14307-14308	
39	feedback	RT @IndiaBTL: Why is @RailMinIndia procuring Congress mouthpiece National Herald (priced a hefty Rs. 20/piece) & amp	
40	emergency	@RailMinIndia Dear Sir, my father is a senior citizen and is a patient too.Travelling alone and his seat is not confirmed but is having RAC.	
41	feedback	@NitinSubudhi @RailMinIndia @PliyushGoyal 4 paise legally sahi daam pe bech ke bhi kamay jaa sakte hai.	
42	feedback	@RailMinIndia @PiyushGoyal If a person buys ticket online and if its not confirmed then why that ticket is not a v... https://t.co/fgalcVcm6C	
43	feedback	@RailMinIndia @drmnnd Img @IR_ENHM till now no action has been taken	
44	feedback	@RailMinIndia @pk_9451 In such cases what is the way out. Please suggest solutions	
45	feedback	RT @carole_mortimer: #PNR #fantasy #BookBoost #ARTG #ASMSG #IAN1 #mgtab #tw4rw #NewRelease DERYK (Dragon Hearts 2)...	
46	feedback	@RailMinIndia @RailwayNorthern @PiyushGoyalOff this winter no fog now days, still so late trains. It looks staff... https://t.co/x0AtY1F028	
47	emergency	@RailMinIndia train no 12551 , b10.23 .here water is leaking from AC. Please do the needful.	
48	emergency	@RailMinIndia Train has departed Varanasi and will be reaching Chunar in few minutes and then Mirzapur.	
49	emergency	@RailMinIndia Thanks for the reply ..). PNR-4138201979.	
50	feedback	RT @RailMinIndia: All commodities have registered robust growth with steel at 16%, cement 10%, containers 13%, iron ore 5% and coal 2...	
51	emergency	@DRMbhupal @RailMinIndia @sanjaygupta2012 sorry for inconvenience ,matter noted to @OPTGBSL	
52	emergency	@RailMinIndia please help. His PNR number is 2820176609	
53	feedback	Check out Thief Catcher on The Prolific Reader! #instafreebie #freebook #whattoread #pnr https://t.co/B0Hts5o8J https://t.co;brSUxmByu	
54	emergency	#NTES National Train enquiry system is not updating #Mumbai Localtrain running info properly @Central_Railway... https://t.co/8C0robxMP9	
55	emergency	@ahamardali222 Kindly share PNR number. Matter forwarded to the concerned officials @Dmrdelhi @IR_FDMFCHG @CRSF CHG NR	

Figure. 3.3.1.6

```

Activities Terminal Sun 23:58 •
ryan@Schrodinger:~/IR-Complaint-Feedback-Management-System
File Edit View Search Terminal Help
ryan@Schrodinger:~$ cd IR-Complaint-Feedback-Management-System/
ryan@Schrodinger:~/IR-Complaint-Feedback-Management-System$ spark-submit train_model.py
20/02/23 23:37:55 WARN Utils: Your hostname, Schrodinger resolves to a loopback address: 127.0.1.1; using 30.31.0.151 instead (on interface wlo1)
20/02/23 23:37:55 WARN Utils: Set SPARK_LOCAL_IP if you need to bind to another address
20/02/23 23:37:56 WARN NativeCodeLoader: Unable to load native-hadoop library for your platform... using builtin-java classes where applicable
Using Spark's default log4j profile: org/apache/spark/log4j-defaults.properties
20/02/23 23:38:00 INFO SparkContext: Running Spark version 2.4.5
20/02/23 23:38:00 INFO SparkContext: Submitted application: IRApp
20/02/23 23:38:01 INFO SecurityManager: Changing view acls to: ryan
20/02/23 23:38:01 INFO SecurityManager: Changing modify acls to: ryan
20/02/23 23:38:01 INFO SecurityManager: Changing view acls groups to:
20/02/23 23:38:01 INFO SecurityManager: Changing modify acls groups to:
20/02/23 23:38:01 INFO SecurityManager: SecurityManager: authentication disabled; ui acls disabled; users with view permissions: Set(ryan); groups with view permissions: Set(); users with modify permissions: Set(ryan); groups with modify permissions: Set()
20/02/23 23:38:02 INFO Utils: Successfully started service 'sparkDriver' on port 4678.
20/02/23 23:38:02 INFO SparkEnv: Registering MapOutputTracker
20/02/23 23:38:02 INFO SparkEnv: Registering BlockManagerMaster
20/02/23 23:38:02 INFO BlockManagerMasterEndpoint: Using org.apache.spark.storage.DefaultTopologyMapper for getting topology information
20/02/23 23:38:02 INFO BlockManagerMasterEndpoint: BlockManagerMasterEndpoint up
20/02/23 23:38:03 INFO DiskBlockManager: Created local directory at /tmp/blockmgr-9f98458f-318d-4f5f-8349-60990941bc42
20/02/23 23:38:03 INFO MemoryStore: MemoryStore started with capacity 366.3 MB
20/02/23 23:38:03 INFO SparkEnv: Registering OutputCommitCoordinator
20/02/23 23:38:03 INFO Utils: Successfully started service 'SparkUT' on port 4040.
20/02/23 23:38:04 INFO SparkUI: Bound SparkUI to 0.0.0.0, and started at http://30.31.0.151:4040
20/02/23 23:38:04 INFO Executor: Starting executor ID driver on host localhost
20/02/23 23:38:04 INFO NettyBlockTransferService: Server created on 30.31.0.151:43933
20/02/23 23:38:04 INFO BlockManager: Using org.apache.spark.storage.RandomBlockReplicationPolicy for block replication policy
20/02/23 23:38:04 INFO BlockManagerMaster: Registering BlockManager BlockManagerId(driver, 30.31.0.151, 43933, None)
20/02/23 23:38:04 INFO BlockManagerMasterEndpoint: Registering block manager 30.31.0.151:43933 with 366.3 MB RAM, BlockManagerId(driver, 30.31.0.151, 43933, None)
20/02/23 23:38:04 INFO BlockManagerMaster: Registered BlockManager BlockManagerId(driver, 30.31.0.151, 43933, None)
20/02/23 23:38:04 INFO BlockManager: Initialized BlockManager: BlockManagerId(driver, 30.31.0.151, 43933, None)
20/02/23 23:38:06 INFO MemoryStore: Block broadcast_0 stored as values in memory (estimated size 236.7 KB, free 366.1 MB)
20/02/23 23:38:06 INFO MemoryStore: Block broadcast_0_piece0 stored as bytes in memory (estimated size 22.9 KB, free 366.0 MB)
20/02/23 23:38:06 INFO BlockManagerInfo: Added broadcast_0_piece0 in memory on 30.31.0.151:43933 (size: 22.9 KB, free: 366.3 MB)
20/02/23 23:38:06 INFO SparkContext: Created broadcast 0 from textfile at NativeMethodAccessorImpl.java:0
20/02/23 23:38:07 INFO FileInputFormat: Total input paths to process : 1

```

Figure. 3.3.1.7

```

Activities Terminal Sun 23:38 •
ryan@Schrodinger: ~/IR-Complaint-Feedback-Management-System
File Edit View Search Terminal Help
20/02/23 23:38:35 INFO Executor: Running task 74.0 in stage 21.0 (TID 211)
20/02/23 23:38:35 INFO ShuffleBlockFetcherIterator: Getting 0 non-empty blocks including 0 local blocks and 0 remote blocks
20/02/23 23:38:35 INFO ShuffleBlockFetcherIterator: Started 0 remote fetches in 0 ms
20/02/23 23:38:35 INFO Executor: Finished task 74.0 in stage 21.0 (TID 211). 3067 bytes result sent to driver
20/02/23 23:38:35 INFO TaskSetManager: Starting task 41.0 in stage 21.0 (TID 212, localhost, executor driver, partition 166, ANY, 7767 bytes)
20/02/23 23:38:35 INFO Executor: Running task 41.0 in stage 21.0 (TID 212)
20/02/23 23:38:35 INFO TaskSetManager: Finished task 74.0 in stage 21.0 (TID 211) in 6 ms on localhost (executor driver) (74/75)
20/02/23 23:38:35 INFO ShuffleBlockFetcherIterator: Getting 1 non-empty blocks including 1 local blocks and 0 remote blocks
20/02/23 23:38:35 INFO ShuffleBlockFetcherIterator: Started 0 remote fetches in 0 ms
20/02/23 23:38:35 INFO Executor: Finished task 41.0 in stage 21.0 (TID 212). 3108 bytes result sent to driver
20/02/23 23:38:35 INFO TaskSetManager: Finished task 41.0 in stage 21.0 (TID 212) in 9 ms on localhost (executor driver) (75/75)
20/02/23 23:38:35 INFO TaskSchedulerImpl: Removed TaskSet 21.0, whose tasks have all completed, from pool
20/02/23 23:38:35 INFO DAGScheduler: ResultStage 21 (showString at NativeMethodAccessorImpl.java:0) finished in 0.604 s
20/02/23 23:38:35 INFO DAGScheduler: Job 15 finished: showString at NativeMethodAccessorImpl.java:0, took 0.614131 s
+-----+-----+
|label|prediction|count|
+-----+-----+
| 1.0|      1.0| 215|
|  0.0|      1.0|  29|
| 1.0|      0.0|  36|
|  0.0|      0.0| 309|
+-----+-----+
20/02/23 23:38:35 INFO SparkContext: Invoking stop() from shutdown hook
20/02/23 23:38:35 INFO SparkUI: Stopped Spark web UI at http://39.31.0.151:4040
20/02/23 23:38:35 INFO MapOutputTrackerMasterEndpoint: MapOutputTrackerMasterEndpoint stopped!
20/02/23 23:38:35 INFO MemoryStore: MemoryStore cleared
20/02/23 23:38:35 INFO BlockManager: BlockManager stopped
20/02/23 23:38:35 INFO BlockManagerMaster: BlockManagerMaster stopped
20/02/23 23:38:35 INFO OutputCommitCoordinator$OutputCommitCoordinatorEndpoint: OutputCommitCoordinator stopped!
20/02/23 23:38:35 INFO SparkContext: Successfully stopped SparkContext
20/02/23 23:38:35 INFO ShutdownHookManager: Shutdown hook called
20/02/23 23:38:35 INFO ShutdownHookManager: Deleting directory /tmp/spark-acb8552c-d91d-454e-b77e-6b7658e543e7/pyspark-c5e76156-07b7-4ed1-82c9-8d9ed637c56
20/02/23 23:38:35 INFO ShutdownHookManager: Deleting directory /tmp/spark-25c12b65-7a19-4a85-823d-1d97e622fcfd
20/02/23 23:38:35 INFO ShutdownHookManager: Deleting directory /tmp/spark-acb8552c-d91d-454e-b77e-6b7658e543e7
ryan@Schrodinger:~/IR-Complaint-Feedback-Management-System$ 

```

Figure. 3.3.1.8

```

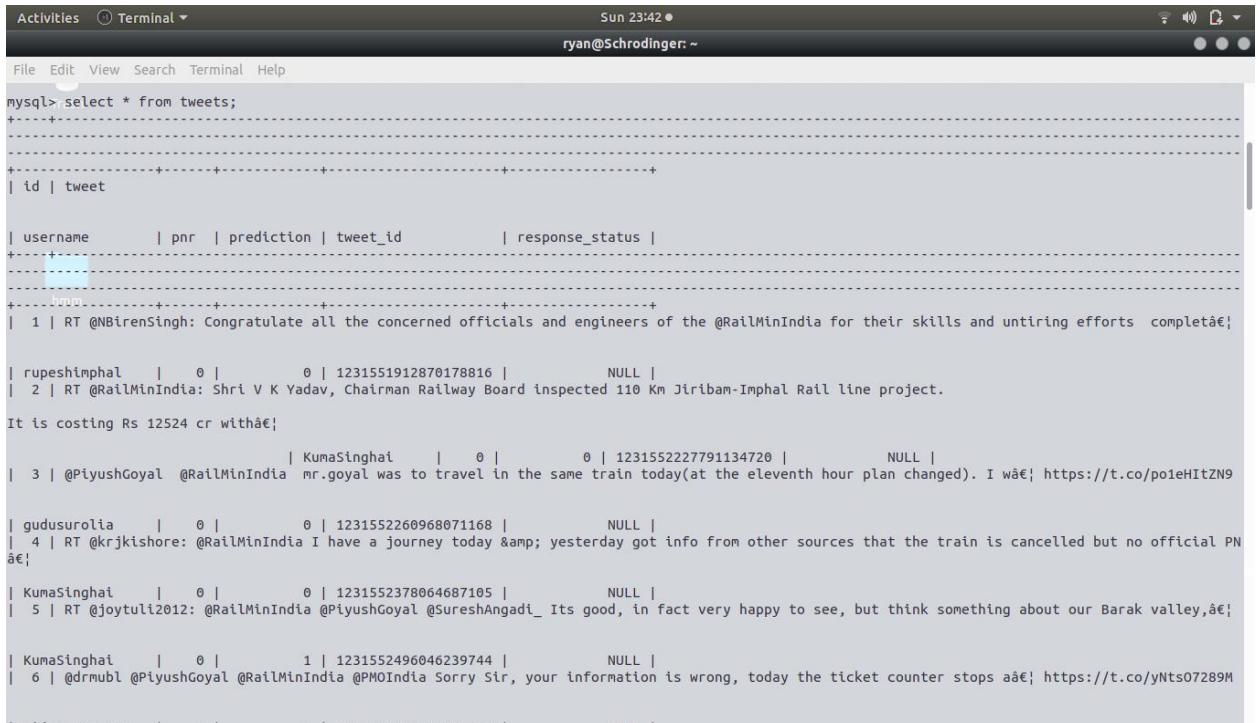
Activities Terminal Sun 23:39 •
ryan@Schrodinger: ~/IR-Complaint-Feedback-Management-System
File Edit View Search Terminal Help
lza4_lz4-1.3.0.jar with timestamp 1582481336460 dinger ~
20/02/23 23:38:56 INFO Utils: Copying /home/ryan/.ivy2/jars/net.jpountz.lz4_lz4-1.3.0.jar to /tmp/spark_364d48fd-7348-4106-b960-6fbfb9cd9c3c9/userFiles-e8ac5e0d-2d38-4e24-a081-9012724c9a9c/net.jpountz.lz4_lz4-1.3.0.jar
20/02/23 23:38:56 INFO SparkContext: Added file file:///home/ryan/.ivy2/jars/org.xerial.snappy-snappy-java-1.1.2.6.jar at file:///home/ryan/.ivy2/jars/org.xerial.snappy-snappy-java-1.1.2.6.0.jar with timestamp 1582481336478
20/02/23 23:38:56 INFO Utils: Copying /home/ryan/.ivy2/jars/org.xerial.snappy-snappy-java-1.1.2.6.jar to /tmp/spark-364d48fd-7348-4106-b960-6fbfb9cd9c3c9/userFiles-e8ac5e0d-2d38-4e24-a081-9012724c9a9c/org.xerial.snappy-snappy-java-1.1.2.6.jar
20/02/23 23:38:56 INFO Executor: Starting executor ID driver on host localhost
20/02/23 23:38:56 INFO Utils: Successfully started service 'org.apache.spark.network.netty.NettyBlockTransferService' on port 35961.
20/02/23 23:38:56 INFO NettyBlockTransferService: Server created on 30.31.0.151:35961
20/02/23 23:38:56 INFO BlockManager: Using org.apache.spark.storage.RandomBlockReplicationPolicy for block replication policy
20/02/23 23:38:56 INFO BlockManagerMaster: Registering BlockManager BlockManagerId(driver, 30.31.0.151, 35961, None)
20/02/23 23:38:56 INFO BlockManagerMasterEndpoint: Registering block manager 30.31.0.151:35961 with 366.3 MB RAM, BlockManagerId(driver, 30.31.0.151, 35961, None)
20/02/23 23:38:56 INFO BlockManagerMaster: Registered BlockManager BlockManagerId(driver, 30.31.0.151, 35961, None)
20/02/23 23:38:56 INFO BlockManager: Initialized BlockManager: BlockManagerId(driver, 30.31.0.151, 35961, None)
Processing data ...
Empty RDD !!
Processing data ...
[['RT @RailMinIndia: 52 Km Bairabi-Sairang Rail line in Mizoram, slated completion by 2022, is inspected by CRB Shri V K Yadav.\n\nProject has 3\r\n80\r\nDatabase insertion SUCCESSFUL!!\r\nProcessing data ...'
Database insertion SUCCESSFUL!!
Empty RDD !!!
STEP-9: Finally open php_files/index.php file to interact with UI and manage tweets in real-time.
Processing data ...
[['@phaniendra45 @mumbairailusers @RailMinIndia sorry it's not a private run rail ways kindly bear with us", "u'shravan_THADANI', 1231642243397832705, 0.0]]
Database insertion SUCCESSFUL!!
Processing data ...
Empty RDD !!!

```

Figure. 3.3.1.9

3.3.2 Database

SQL stands for Structured Query Language. SQL lets you access and manipulate databases. MySQL is an Oracle-backed open source relational database management system (RDBMS) based on Structured Query Language (SQL). MySQL runs on virtually all platforms, including Linux, UNIX and Windows. Although it can be used in a wide range of applications, MySQL is most often associated with web applications and online publishing.



```
Activities Terminal ▾ Sun 23:42 ●
ryan@Schrodinger: ~
File Edit View Search Terminal Help
mysql> select * from tweets;
+-----+-----+
| id | tweet
+-----+-----+
| 1 | RT @NBirenSingh: Congratulate all the concerned officials and engineers of the @RailMinIndia for their skills and untiring efforts compleatly!
| rupeshimphal | 0 | 0 | 1231551912870178816 | NULL |
| 2 | RT @RailMinIndia: Shri V K Yadav, Chairman Railway Board inspected 110 Km Jiribam-Imphal Rail line project.
It is costing Rs 12524 cr with
| KumaSinghai | 0 | 0 | 1231552227791134720 | NULL |
| 3 | @PiyushGoyal @RailMinIndia mr.goyal was to travel in the same train today(at the eleventh hour plan changed). I w! https://t.co/poieHItZN9
| gudusurolia | 0 | 0 | 1231552260968071168 | NULL |
| 4 | RT @krjkishore: @RailMinIndia I have a journey today & yesterday got info from other sources that the train is cancelled but no official PN
| KumaSinghai | 0 | 0 | 1231552378064687105 | NULL |
| 5 | RT @joytuli2012: @RailMinIndia @PiyushGoyal @SureshAngadi_ Its good, in fact very happy to see, but think something about our Barak valley,!
| KumaSinghai | 0 | 1 | 1231552496046239744 | NULL |
| 6 | @drmUBL @PiyushGoyal @RailMinIndia @PMOIndia Sorry Sir, your information is wrong, today the ticket counter stops a! https://t.co/yNts07289M
```

Figure.3.3.2:Database

3.3.3 App Module

There are Mainly three sub-modules present:

1. Authentication Module
2. Notification Module
3. Dashboard Module

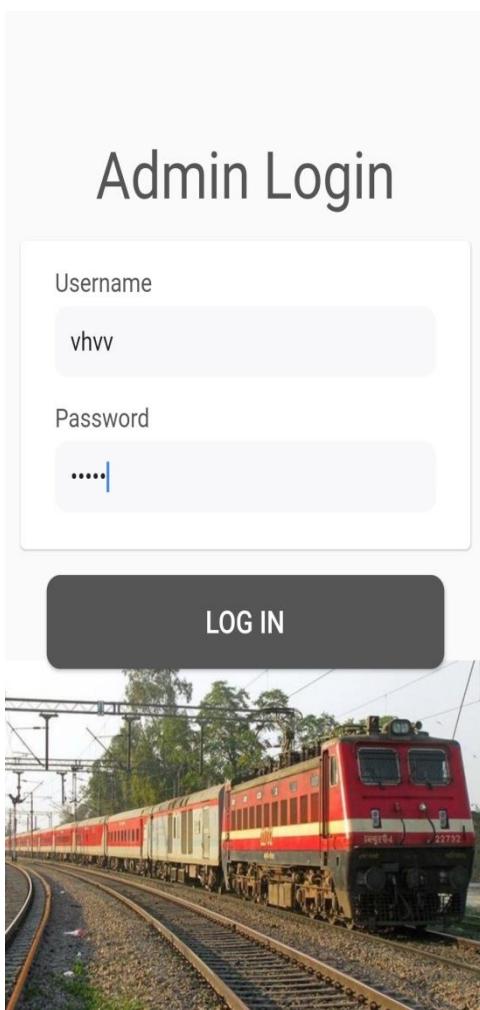


Figure.3.3.3.1 :App login page

This image displays a screenshot of a mobile application titled "IR Complaint And Management". At the top, there's a header image of a red locomotive. Below the header, the title "IR Complaint And Management" is displayed. Underneath the title, there are two buttons: "Emergency" on the left and "Feedback" on the right. The main content area contains two tweets. The first tweet is from "@drmUBL" (@PiyushGoyal @RailMinIndia @PMOIndia) and reads: "Sorry Sir, your information is wrong, today the ticket counter stops a... https://t.co/yNts07289M". The second tweet is from "RT @joytuli2012: @RailMinIndia @PiyushGoyal @SureshAngadi_ Its good, in fact very happy to see, but think something about our Barak valley,...".

Emergency Feedback

@drmUBL @PiyushGoyal @RailMinIndia
@PMOIndia Sorry Sir, your information
is wrong, today the ticket counter stops
a... https://t.co/yNts07289M

RT @joytuli2012: @RailMinIndia
@PiyushGoyal @SureshAngadi_ Its
good, in fact very happy to see, but think
something about our Barak valley,...

Figure: 3.3.3.2: Tweets done by user



Emergency Feedback

RT @tulsikumar24: @RailMinIndia @PiyushGoyal @SureshAngadi_ Thank you very much for such extraordinary railway line.. Pls start a direct ex...

RT @Shivam7692: @RailMinIndia @PiyushGoyal @SureshAngadi_ Dear si we are travelling in train number 12975 and pnr number 4723292155 and m...

@RailwaySeva Very Funny!
@RailMinIndia @WesternRly lodged a online complain on Rail_Madad and issued a complain no...
<https://t.co/6UGZhGCdZr>

@drmsambalpur @eastcoastrail
@RailMinIndia Why is train 20810 stuck at Titilagarh station since more than an hour? <https://t.co/2RHMvpXGHW>

Figure. 3.3.3.3: Tweets done by the user

← Send Response to Passenger

Current Tweet

@drmUBL @PiyushGoyal @RailMinIndia @PMOIndia Sorry Sir, your information is wrong, today the ticket counter stops a... <https://t.co/yNtsO7289M>

Your Response:

this is a sample response which is being typed and shown simultaneously.

This is being typed and shown simultaneously. |

Send Tweet

Figure. 3.3.3.4: Response by admin

3.3.4 Web module

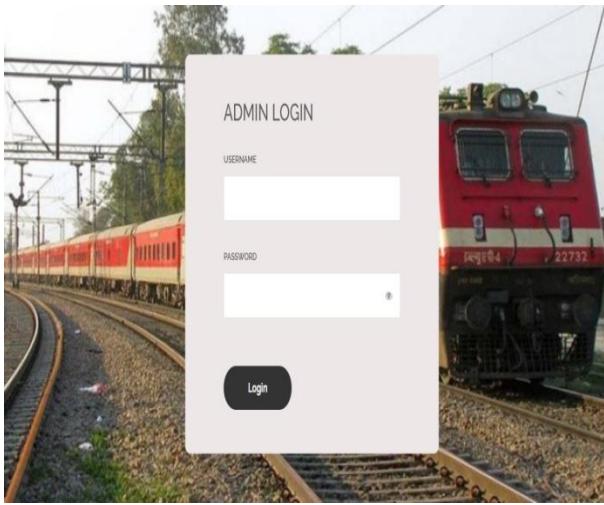


Figure 3.3.4.1: Website login page

Emergency Feedback Tweets Analysis

@RailwaySeva @RailMinIndia @PiyushGoyalOftc thanks for the support. But the technician was very rude and was saying .. <https://t.co/5pClug4vnI>

@drmbct kind action please [Reply](#)

RT @RailInIndia Solar Water Coder installed at CSMT Asangan Roja Aptा, Pan,Neral,Lonavala & Talaon stations of Mumbai/Pune div. Zero.. [Reply](#)

RT @RAILYATRIDBZ: Rail ministry only listen to rajasthan MP Letters of hayana MP are thrown in dustbin. Dungarpur is imp then once asia... [Reply](#)

Closing ceremony of 20th All India Police Band Competition in Secunderabad #Police #Band #Competition #Music... <https://t.co/Y96QnPcGS> [Reply](#)

RT @RailInIndia: New Delhi - Varanasi the first semi high speed train set of India 'Vande Bharat' express completed first successful year... [Reply](#)

Type your response...

[Reply](#)

Figure. 3.3.4.2: Feedback tweet analysis

Emergency Feedback Tweets Analysis

Does train exist? This train didn't come on Shegaon platform but its showing running forward on which railway t... <https://t.co/5hkglyJyD> [Reply](#)

Does this train exist? This train didn't come on Shegaon platform but its showing running forward on which railway t... <https://t.co/5hkglyJyD> [Reply](#)

@RailMinIndia TTE took Rs 500 and allowed 4 passengers with general ticket to accommodate in sleeper coach. He didn't. <https://t.co/0nTPoV1K> [Reply](#)

@PiyushGoyal @RailMinIndia there is no use of booking when people travel without tickets and we book tickets in advance. [Reply](#)

@Yogi2105 @ShobhaJP @JP4India @narandramodi @AmiShah @JPreddy @JP4Karnataka @amitabhchander @MeenakshiNarayanan... <https://t.co/1WtsLgmoL> [Reply](#)

@RCOOfficial @SureshAngad_ @SIRRALY @SW_Help @dmbsoc @SureshAngad_ @RailMinIndia @hospitailUsers @GMSNR @dmubl... <https://t.co/VCPfrENWV> [Reply](#)

Type your response...

[Reply](#)

Figure. 3.3.4.3: Emergency Tweet analysis

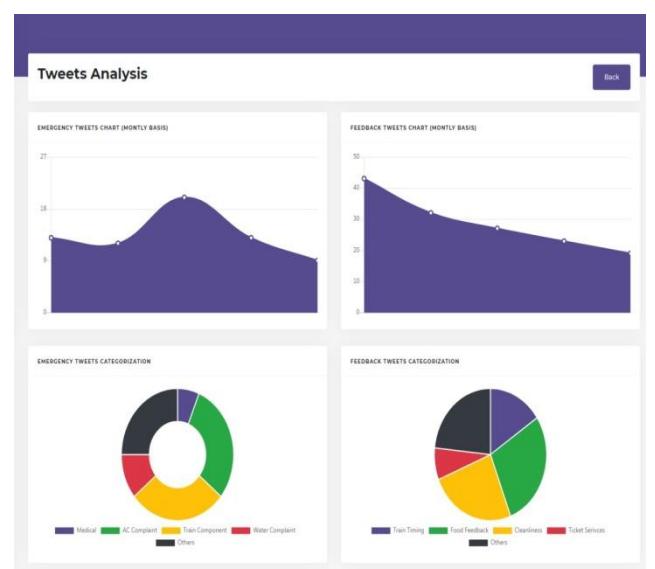


Figure. 3.3.4.4:Graph for Tweet analysis

3.3.5 Deployment on Cloud

- Amazon Elastic Compute Cloud (Amazon EC2) is a web service that provides secure, resizable compute capacity in the cloud. It is designed to make web-scale cloud computing easier for developers.
- Amazon EC2 presents a true virtual computing environment, allowing you to use web service interfaces to launch instances with a variety of operating systems, load them with your custom application environment, manage your network's access permissions, and run your image using as many or few systems as you desire.

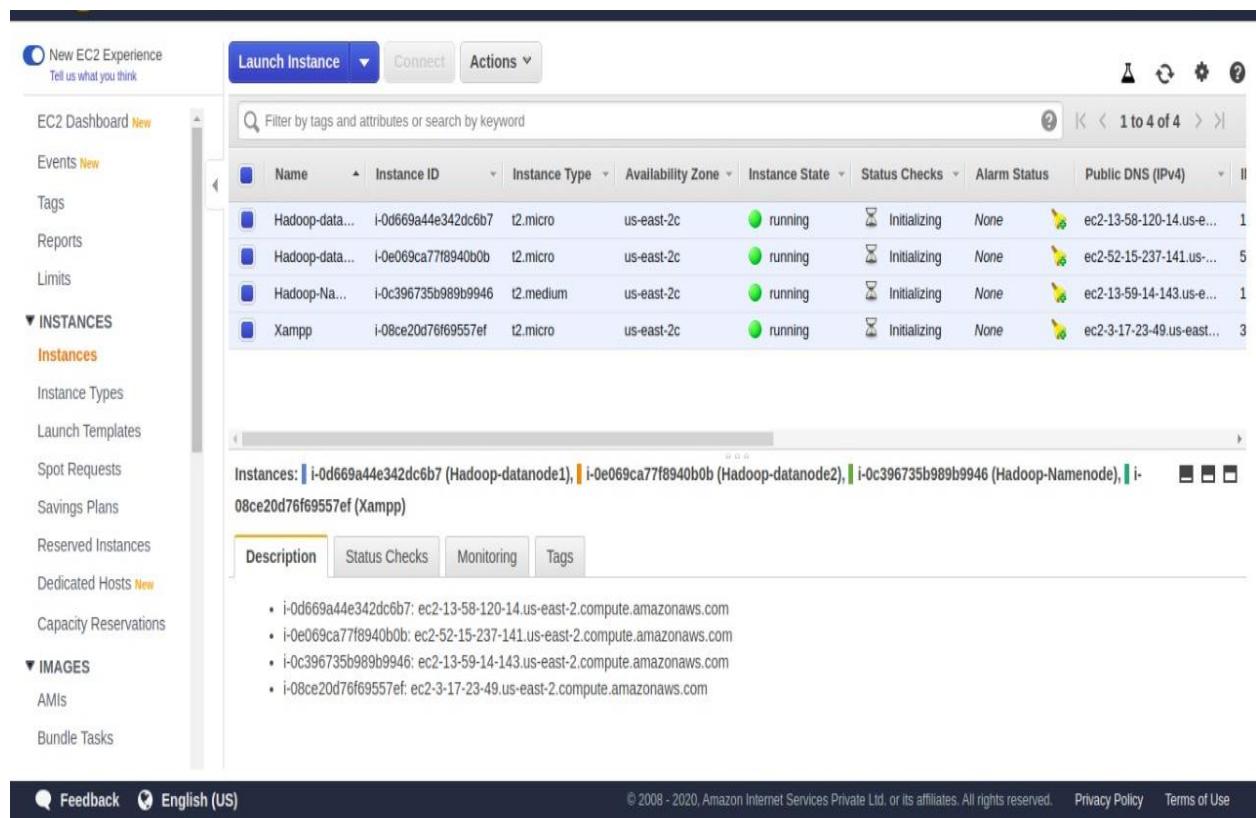


Figure.3.3.5.1: EC2 instance

- **Amazon Relational Database Service** (Amazon RDS) makes it easy to set up, operate, and scale a relational database in the cloud.
- It provides cost-efficient and resizable capacity while automating time-consuming administration tasks .
- It frees you to focus on your applications so you can give them the fast performance, high availability, security and compatibility they need.
- Amazon RDS makes it easy to use replication to enhance availability and reliability for production workloads

The screenshot shows the Amazon RDS console interface. On the left, there's a sidebar with navigation links like Dashboard, Databases (which is selected), Query Editor, Performance Insights, Snapshots, Automated backups, Reserved Instances, Proxies, Subnet groups, Parameter groups, Option groups, Events, Event subscriptions, Recommendations, and Certificate update. The main area shows a database named 'database-1'. At the top right, there are 'Modify' and 'Actions' buttons. Below the title 'database-1', there are two tabs: 'Summary' (selected) and 'Connectivity & security' (highlighted in orange). The 'Summary' tab displays various metrics and configurations:

DB identifier	CPU	Info	Class
database-1	-	Stopped	db.t2.micro
Role	Current activity	Engine	Region & AZ
Instance		MySQL Community	us-east-2c

Below the summary, there are tabs for Monitoring, Logs & events, Configuration, Maintenance & backups, and Tags. The 'Connectivity & security' tab is active and shows the following details:

Endpoint & port	Networking	Security
Endpoint database-1.ctrbpvenwkxn.us-east-2.rds.amazonaws.com	Availability zone us-east-2c	VPC security groups default (sg-8c3bd7f4) (active)

At the bottom, there are links for Feedback, English (US), and various legal notices.

Figure.3.3.5.2: Amazon RDS

Chapter IV: Coding and Testing

4.1 Coding

About the technology used:

4.1.1 Kafka

Apache Kafka is an open-source stream-processing software platform developed by LinkedIn and donated to the Apache Software Foundation, written in Scala and Java. The project aims to provide a unified, high-throughput, low-latency platform for handling real-time data feeds. Kafka can connect to external systems (for data import/export) via Kafka Connect and provides Kafka Streams, a Java stream processing library. Kafka uses a binary TCP-based protocol that is optimized for efficiency and relies on a "message set" abstraction that naturally groups messages together to reduce the overhead of the network roundtrip. This "leads to larger network packets, larger sequential disk operations, contiguous memory blocks [...] which allows Kafka to turn a bursty stream of random message writes into linear writes.

Machine Learning and the Apache Kafka Ecosystem are an excellent combination for training and deploying scalable analytical models. Here, Kafka becomes the central nervous system in the ML architecture, feeding analytical models with data, training them, using them for forecasting and monitoring them. This yields enormous advantages:

- Data pipelines are simplified
- The implementation of analytical models is separated from their maintenance
- Real time or batch can be used as needed
- Analytical models can be applied in a high-performance, scalable and business-critical environment

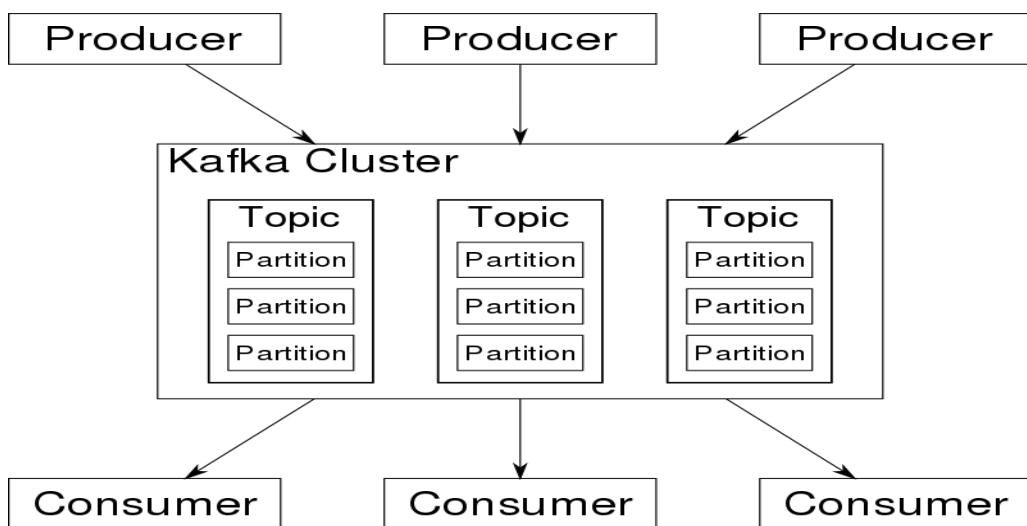


Figure.4.1.1: Kafka

4.1.2 Spark

Spark is a general-purpose distributed data processing engine that is suitable for use in a wide range of circumstances. On top of the Spark core data processing engine, there are libraries for SQL, machine learning, graph computation, and stream processing, which can be used together in an application. Programming languages supported by Spark include: Java, Python, Scala, and R. Application developers and data scientists incorporate Spark into their applications to rapidly query, analyze, and transform data at scale. Tasks most frequently associated with Spark include ETL and SQL batch jobs across large data sets, processing of streaming data from sensors, IoT, or financial systems, and machine learning tasks.

Apache Spark has following features.

- Speed – Spark helps to run an application in Hadoop cluster, up to 100 times faster in memory, and 10 times faster when running on disk. This is possible by reducing number of read/write operations to disk. It stores the intermediate processing data in memory.
- Supports multiple languages – Spark provides built-in APIs in Java, Scala, or Python. Therefore, you can write applications in different languages. Spark comes up with 80 high-level operators for interactive querying.
- Advanced Analytics – Spark not only supports ‘Map’ and ‘reduce’. It also supports SQL queries, Streaming data, Machine learning (ML), and Graph algorithms.

4.1.2.1 TF-IDF

Term frequency-inverse document frequency (TF-IDF) is a feature vectorization method widely used in text mining to reflect the importance of a term to a document in the corpus. Denote a term by t , a document by d , and the corpus by D . Term frequency $TF(t,d)$ is the number of times that term t appears in document d , while document frequency $DF(t,D)$ is the number of documents that contains term t . If we only use term frequency to measure the importance, it is very easy to over-emphasize terms that appear very often but carry little information about the document, e.g., “a”, “the”, and “of”. If a term appears very often across the corpus, it means it doesn’t carry special information about a particular document. Inverse document frequency is a numerical measure of how much information a term provides:

$$IDF(t,D) = \log_{10} |D| + 1 / DF(t,D) + 1,$$

where $|D|$ is the total number of documents in the corpus. Since logarithm is used, if a term appears in all documents, its IDF value becomes 0. Note that a smoothing term is applied to avoid dividing by zero for terms outside the corpus. The TF-IDF measure is simply the product of TF and IDF:

$$TFIDF(t,d,D) = TF(t,d) \cdot IDF(t,D).$$

There are several variants on the definition of term frequency and document frequency. In spark.mllib, we separate TF and IDF to make them flexible.

Our implementation of term frequency utilizes the hashing trick. A raw feature is mapped into an index (term) by applying a hash function. Then term frequencies are calculated based on the mapped indices. This approach avoids the need to compute a global term-to-index map, which can be expensive for a large corpus, but it suffers from potential hash collisions, where different raw features may become the same term after hashing. To reduce the chance of collision, we can increase the target feature dimension, i.e., the number of buckets of the hash table.

4.1.2.2 Machine learning

In machine learning, naïve Bayes classifiers are a family of simple "probabilistic classifiers" based on applying Bayes' theorem with strong (naïve) independence assumptions between the features. They are among the simplest Bayesian network models.^[1] But they could be coupled with Kernel density estimation and achieve higher accuracy levels.

Naive Bayes is a simple multiclass classification algorithm with the assumption of independence between every pair of features. Naive Bayes can be trained very efficiently. Within a single pass to the training data, it computes the conditional probability distribution of each feature given label, and then it applies Bayes' theorem to compute the conditional probability distribution of label given an observation and use it for prediction.

spark.mllib supports multinomial naive Bayes and Bernoulli naive Bayes. These models are typically used for document classification. Within that context, each observation is a document and each feature represents a term whose value is the frequency of the term (in multinomial naive Bayes) or a zero or one indicating whether the term was found in the document (in Bernoulli naive Bayes). Feature values must be nonnegative. The model type is selected with an optional parameter “multinomial” or “bernoulli” with “multinomial” as the default. Additive smoothing can be used by setting the parameter λ (default to 1.01.0). For document classification, the input feature vectors are usually sparse, and sparse vectors should be supplied as input to take advantage of sparsity. Since the training data is only used once, it is not necessary to cache it.

4.1.3 Zookeeper

Apache ZooKeeper is an effort to develop and maintain an open-source server which enables highly reliable distributed coordination. ZooKeeper is a centralized service for maintaining configuration information, naming, providing distributed synchronization, and providing group services. All of these kinds of services are used in some form or another by distributed applications. Each time they are implemented there is a lot of work that goes into fixing the bugs and race conditions that are inevitable. Because of the difficulty of implementing these kinds of services, applications initially usually skimp on them, which make them brittle in the presence of change and difficult to manage. Even when done correctly, different implementations of these services lead to management complexity when the applications are deployed.

Apache ZooKeeper is a software project of Apache Software Foundation. It is an open-source technology that maintains configuration information and provides synchronized as well as group services which are deployed on Hadoop cluster to administer the infrastructure. The ZooKeeper framework was originally built at Yahoo! for easier accessing of applications but, later on, ZooKeeper was used for organizing services used by distributed frameworks like Hadoop, HBase, etc., and Apache ZooKeeper became a standard. It was designed to be a vigorous service that enabled application developers to focus mainly on their application logic rather than coordination.

In a distributed environment, coordinating and managing a service has become a difficult process. Apache ZooKeeper was used to solve this problem because of its simple architecture, as well as API, that allows developers to implement common coordination tasks like electing a master server, managing group membership, and managing metadata. Apache ZooKeeper is used for maintaining centralized configuration information, naming, providing distributed synchronization, and providing group services in a simple interface so that we don't have to write it from scratch. Apache Kafka also uses ZooKeeper to manage configuration. ZooKeeper allows developers to focus on the core application logic, and it implements various protocols on the cluster so that the applications need not implement them on their own.

4.1.4 HTML

HTML is a computer language devised to allow website creation. These websites can then be viewed by anyone else connected to the Internet. It is relatively easy to learn, with the basics being accessible to most people in one sitting; and quite powerful in what it allows you to create. It is constantly undergoing revision and evolution to meet the demands and requirements of the growing Internet audience.

HTML is Hypertext Markup Language.

The definition of HTML is Hypertext Markup Language:

- Hypertext is the method by which you move around on the web — by clicking on special text called hyperlinks which bring you to the next page. The fact that it is hyper just means it is not linear — i.e. you can go to any place on the Internet whenever you want by clicking on links — there is no set order to do things in.
- Markup is what HTML tags do to the text inside them. They mark it as a certain type of text.
- HTML is a Language, as it has code-words and syntax like any other language.

HTML consists of a series of short codes typed into a text-file. The text is then saved as a html file, and viewed through a browser, like Internet Explorer. The tags are what separate normal text from HTML code. You might know them as the words between the <angle-brackets>. The tags themselves don't appear when you view your page through a browser, but their effects do. The simplest tags do nothing more than apply formatting to some text

Web browsers receive HTML documents from a web server or from local storage and render the documents into multimedia web pages. HTML elements are the building blocks of HTML pages. With HTML constructs, images and other objects such as interactive forms may be embedded into the rendered page. HTML can embed programs written in a scripting language such as JavaScript, which affects the behavior and content of web pages. Inclusion of CSS defines the look and layout of content.

4.1.5 CSS

HTML was originally designed as a simple way of presenting information, with the aesthetics of a web page being far less important than the content (and largely being left up to the web browser). Of course, now that the web has become as popular as it has, the presentation of your content has become almost critical to a site's success. CSS is the key presentational technology that is used to design websites. Cascading Style Sheets (CSS) is a style sheet language used for describing the presentation of a document written in a markup language like HTML.

CSS is designed to enable the separation of presentation and content, including layout, colors, and fonts. This separation can improve content accessibility, provide more flexibility and control in the specification of presentation characteristics, enable multiple web pages to share formatting by specifying the relevant CSS in a separate .css file, and reduce complexity and repetition in the structural content. CSS has a simple syntax and uses a number of English keywords to specify the names of various style properties. A style sheet consists of a list of rules. Each rule or rule-set consists of one or more selectors, and a declaration block.

Well-authored CSS *improves the accessibility of web content*, allowing access through myriad devices (handheld PDAs for example) and ensuring that web users with disabilities are still able to receive it. It also eliminates the need for browser-specific hacks and tags, which means your site has a better chance of working across all major browsers. Another of CSS's boons is that you define things once, making it far more efficient than defining everything in HTML on every page. This means: Pages download faster, sometimes by as much as 50%

You have to type less code, and your pages are shorter and neater. The look of your site is kept consistent throughout all the pages that work off the same style sheet. Updating your design and general site maintenance are made much easier, and errors caused by editing multiple HTML pages occur far less often. CSS files are termed "cascading" style sheets because of two reasons: one style sheet can cascade, or have influence over, multiple pages.

4.1.6 PHP

PHP is a server side scripting language. that is used to develop Static websites or Dynamic websites or Web applications. PHP scripts can only be interpreted on a server that has PHP installed. The client computers accessing the PHP scripts require a web browser only. A PHP file contains PHP tags and ends with the extension ".php".

- PHP is an acronym for "PHP: Hypertext Preprocessor"
- PHP is a widely-used, open source scripting language
- PHP scripts are executed on the server
- PHP is free to download and use
- PHP runs on various platforms (Windows, Linux, Unix, Mac OS X, etc.)
- PHP is compatible with almost all servers used today (Apache, IIS, etc.)
- PHP supports a wide range of databases
- PHP can generate dynamic page content
- PHP can create, open, read, write, delete, and close files on the server
- PHP can collect form data
- PHP can send and receive cookies
- PHP can add, delete, modify data in your database
- PHP can be used to control user-access
- PHP can encrypt data

4.1.7 Javascript

JavaScript often abbreviated as JS, is a programming language. Alongside HTML and CSS, JavaScript is one of the core technologies of the World Wide Web. JavaScript enables interactive web pages and is an essential part of web applications. The vast majority of websites use it for client-side page behavior, and all major web browsers have a dedicated JavaScript engine to execute it.

It was originally developed by Netscape as a means to add dynamic and interactive elements to websites. While JavaScript is influenced by Java, the syntax is more similar to C. JavaScript is a client-side scripting language, which means the source code is processed by the client's web browser rather than on the web server. This means JavaScript functions can run after a webpage has loaded without communicating with the server. Like server-side scripting languages, such as PHP and ASP, JavaScript code can be inserted anywhere within the HTML of a webpage. However, only the output of server-side code is displayed in the HTML, while JavaScript code remains fully visible in the source of the webpage. It can also be referenced in a separate .JS file, which may also be viewed in a browser.

JavaScript functions can be called within <script> tags or when specific events take place. Examples include onClick, onMouseDown, onMouseUp, onKeyDown, onKeyUp, onFocus, onBlur, onSubmit, and many others. While standard JavaScript is still used for performing basic client-side functions, many web developers now prefer to use JavaScript libraries like jQuery to add more advanced dynamic elements to websites.

4.1.8 Flutter

Google has introduced us Flutter technology which is the new open source library to create mobile applications. This technology may be the solution to create a cross-platform mobile application with a beautiful user interface. The way of designing views are similar to the web application and you can find many analogies to CSS and HTML.

Basically, Flutter technology is the mobile app SDK to build high performance, high fidelity, apps for iOS and android both platforms from the single codebase. The major goal of this app is to enable the developers to deliver the high-performance apps which feel natural on different platforms. This difference exists in scrolling behaviors, typography, icons and many more. Unlike other major solutions, this technology is not the framework as it completes the SDK software development kit which already contains everything that the users need to build cross platforms applications. This technology falls with many major benefits in the mobile app development process as:

Faster mobile app

The mobile apps developed by using the flutter app development are one of the easiest and faster ways in comparison to the applications built on other app development platform. These apps are quite a smooth functioning as they provide great users experience without cutting or hanging and continuously scrolling.

Great for MVP

MVP plays an important role as the foundation for mobile and web application development, therefore if you want your digital products to be developed at the quicker face, and then you must go for flutter app development platform. This will help them to reduce the app development cost at the same time speed up their development processes.

Hot Reload

Hot reload is considered as one of the greatest advantages that flutter technology provide, because of this the app developers are able to look at all the required changes which include minor ones in the code right away. With the help of hot read, the developers can also make quick fixes in the app's code for its smooth functioning.

Less testing efforts

In flutter app development, the user need not really have to create two separate apps for the different platforms like Android or iOS, because this technology provides the single codebase that can be used in more than one platform. This ultimately decreases the testing efforts as the quality assurance team does not need to run the same test on the different platform again and again.

Native features access

Setting up the flutter development is very easy and can be initiated on low-end machines where the app developers can access the native features like geolocation and camera. This cross-platform mobile app development platform allows you to reuse the existing code for both the platforms.

4.1.9 MySql

MySQL is an Oracle-backed open source relational database management system (RDBMS) based on Structured Query Language (SQL). MySQL runs on virtually all platforms,

including Linux, UNIX and Windows. Although it can be used in a wide range of applications, MySQL is most often associated with web applications and online publishing.

MySQL is based on a client-server model. The core of MySQL is MySQL server, which handles all of the database instructions (or commands). MySQL operates along with several utility programs which support the administration of MySQL databases. Commands are sent to MySQL server via the MySQL client, which is installed on a computer. MySQL enables data to be stored and accessed across multiple storage engines. MySQL users aren't required to learn new commands; they can access their data using standard SQL commands.

MySQL is written accessible and available across in C and C++ and over 20 platforms, including Mac, Windows, Linux and Unix. MySQL is offered in two different editions: the open-source MySQL Community Server and the proprietary Enterprise Server. For security, MySQL uses an access privilege and encrypted password system that enables host-based verification. MySQL clients can connect to MySQL Server using several protocols, including TCP/IP sockets on any platform. MySQL also supports a number of client and utility programs, command-line programs and administration tools such as MySQL Workbench.

MySQL was originally developed to handle large databases quickly. Although MySQL is typically installed on only one machine, it is able to send the database to multiple locations, as users are able to access it via different MySQL client interfaces. These interfaces send SQL statements to the server and then display the results. Today, MySQL is the RDBMS behind many of the top websites in the world and countless corporate and consumer-facing web-based applications, including Facebook, Twitter and YouTube.

MySQL was designed to be compatible with other systems. It supports deployment in virtualized environments. Users can transfer their data to a SQL Server database by using database migration tools. The database object semantics between SQL Server and MySQL are similar, but not identical. There are architectural differences that must be considered when migrating from SQL Server to MySQL. In MySQL, there is no difference between a database and a schema, while SQL Server treats the two as separate entities.

4.1.10 Cloud

The cloud is a virtual space that exists on the internet. It is a storage space where people can place their digital resources such as software, applications and files. So in simplified terms, we can say that the cloud is a virtual storage space on the internet.

A lot of people do get the cloud mixed up with the internet. However, the cloud is only one part of the internet and not the whole thing.

So how does cloud technology work? Cloud computing technology allows people to use the digital resources stored in the virtual space by way of networks – often satellite networks. It

allows people to share information and applications across the internet without being the restriction of their physical location.

There are some major benefits that cloud computing

BETTER STORAGE

Cloud storage is not limited by the capacity of any physical device. Unlike the previous storage solutions, there are no limitations of capacity. This means we get better and higher storage and don't have to worry about upgrading the memory of a device.

BETTER SCALABILITY

There are a lot of companies that have fluctuating bandwidth requirements. Cloud is a beneficial tool for them since it allows them to scale up when needed by drawing on the remote servers. Similarly, you can scale down easily when needed. This scalability is often referred to as the 'operational agility' by CIOs of growing brands and credited for the success.

BETTER COLLABORATION WITH REMOTE USERS

Today's economy requires workers to have the knowledge to work with colleagues from multiple remote locations. Cloud computing makes it easy to share and access digital resources from any part of the globe. This leads to better collaboration between global teams.

HIGHLY AFFORDABLE

Cloud computing eliminates the need for physical hardware for storage purposes. This, in turn, reduces the capital expenditure for companies. These funds can then be appropriated towards innovation or research and development to pave new pathways of success.

For small companies that are still trying to find their footing, purchasing a software can be expensive. Instead, such companies can use the software on a pay-per-use basis from the cloud. It is more like leasing out a service instead of purchasing it.

DISASTER RECOVERY

It is imperative for businesses of all sizes to invest in disaster recovery protocols. However, it requires money and expertise, which is often lacking with small companies. The cloud gives them the ability to implement backup and recovery solutions in cost-effective and hassle-free manner.

4.2 Testing

The aim of testing process was to determine all defects in our project. The program was subjected to a set of inputs and various observations were made and based on these observations it will be decided whether the program behaves as expected or not.

Our Project went through three levels of testing:-

1. Unit Testing
2. Integration Testing
3. Regression Testing

4.2.1 Unit Testing

Unit testing is undertaken when a module has been created and successfully reviewed. In order to test a single module we need to provide a complete environment ie besides the module we would require

- The procedures belonging to other modules that the module under test calls.
- Non Local data structures that module accesses.
- A procedure to call the functions of the module under test with appropriate parameters.

Unit testing was done on each and every module that is described under module description.

1. Test for Login module for app- This form is used for log in of existing user. In this we enter the username and password if both are correct then, account will open otherwise if any data is wrong it will redirected back to login page and again ask for username and password.
2. Test for Login module for app- This form is used for log in of existing user. In this we enter the username and password if both are correct then, account will open otherwise if any data is wrong it will redirected back to login page and again ask for username and password.
3. Test for sending reply in real-time – The reply for tweet will be send by the admin in the real time or not will be checked.
4. Test for Checking the categorization of tweets into feedback and emergency.

4.2.2 Integration Testing

The second step is integration testing. In this type of testing we test various integration of the project module by providing the input. The primary objective is to test the module interfaces in order to ensure that no errors are occurring when one module invokes the another module. Integration Testing is testing in which modules are combined and tested as a group. Modules are typically code modules, individual applications, client and server applications on a network, etc. Integration Testing follows unit testing and precedes system testing.

There are fundamentally 2 approaches for doing Integration testing:

- Bottom up testing, as the name suggests starts from the lowest or the innermost unit of the application, and gradually moves up. The Integration testing starts from the lowest module and gradually progresses towards the upper modules of the application. This integration continues till all the modules are integrated and the entire application is tested as a single unit.
- This technique starts from the top most module and gradually progress towards the lower modules. Only the top module is unit tested in isolation. After this, the lower modules are integrated one by one. The process is repeated until all the modules are integrated and tested.

4.2.3 Regression Testing

Any time you modify an implementation within a program, you should also do regression testing. You can do so by rerunning existing tests against the modified code to determine whether the changes break anything that worked prior to the change and by writing new tests where necessary. Adequate coverage without wasting time should be a primary consideration when conducting regression tests. Try to spend as little time as possible doing regression testing without reducing the probability that you will detect new failures in old, already tested code.

Some strategies and factors to consider during this process include the following:

- Test fixed bugs promptly. The programmer might have handled the symptoms but not have gotten to the underlying cause.
- Watch for side effects of fixes. The bug itself might be fixed but the fix might create other bugs.
- Write a regression test for each bug fixed.
- If two or more tests are similar, determine which is less effective and get rid of it.
- Identify tests that the program consistently passes and archive them.
- Focus on functional issues, not those related to design.
- Make changes (small and large) to data and find any resulting corruption.
- Trace the effects of the changes on program memory.
- The most effective approach to regression testing is based on developing a library of tests made up of a standard battery of test cases that can be run every time you build a new version of the program. The most difficult aspect involved in building a library of test cases is determining which test cases to include. The most common suggestion from authorities in the field of software testing is to avoid spending excessive amounts of time trying to decide and err on the side of caution. Automated tests, as well as test cases involving boundary conditions and timing almost definitely belong in your library. Some software development companies include only tests that have actually found bugs. The problem with that rationale is that the particular bug may have been found and fixed in the distant past.
- Periodically review the regression test library to eliminate redundant or unnecessary tests. Do this about every third testing cycle. Duplication is quite common when more than one person is writing test code. An example that causes this problem is the concentration of tests that often develop when a bug or variants of it are particularly persistent and are present across many cycles of testing. Numerous tests might be written and added to the regression test library. These multiple tests are useful for fixing the bug, but when all traces of the bug and its variants are eliminated from the program, select the best of the tests associated with the bug and remove the rest from the library.

Chapter V: Implementation

5.1 Implementation Activities

5.1.1 AWS EC2 startup

We will now create 4 instances of Ubuntu Server 16.04 LTS using Amazon EC2.

Select Instance

Go to your AWS Console, Click on Launch Instance and select Ubuntu Server 16.04 LTS.

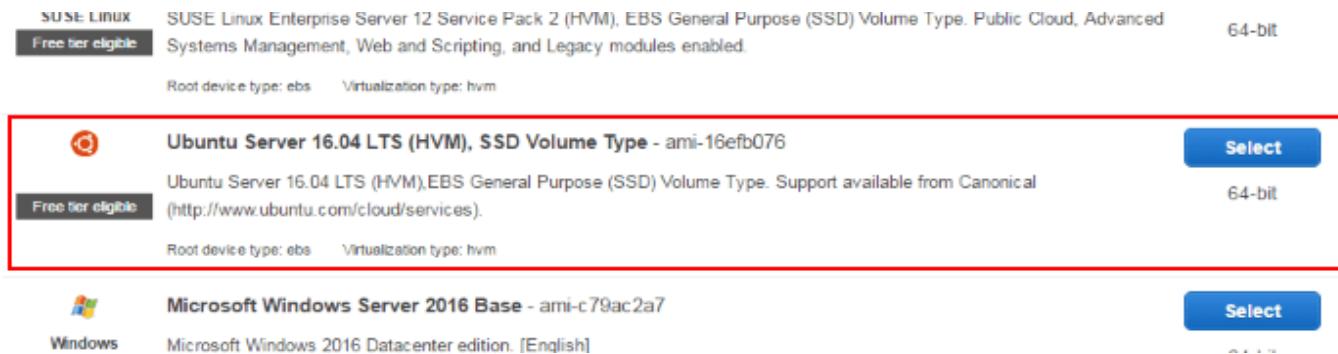


Figure.5.1.1.1

Instance Type

For the instance type, we choose t2.micro since that is sufficient for the purposes of the demo. If you have a need for a high-memory or high-cpu instance, you can select one of those.

	General purpose	t2.nano	1	0.5	EBS only
<input checked="" type="checkbox"/>	General purpose	t2.micro Free tier eligible	1	1	EBS only
<input type="checkbox"/>	General purpose	t2.small	1	2	EBS only
<input type="checkbox"/>	General purpose	t2.medium	2	4	EBS only

Figure.5.1.1.2

Click Next to Configure Instance Details

Instance Details

Here, we request 4 instances of the selected machine type. We also choose a subnet (us-west-1b) just so we can launch into the same location if we need more machines.

Number of instances Launch into Auto Scaling Group [\(i\)](#)

You may want to consider launching these Instances into an Auto Scaling Group to help you maintain application availability scaling in the future. [Learn how Auto Scaling can help your application stay healthy and cost effective.](#)

Purchasing option [\(i\)](#) Request Spot instances

Network [\(i\)](#) vpc-212eec44 (default) [\(i\)](#) Create new VPC

Subnet [\(i\)](#) subnet-91845ef4 | Default in us-west-1b [\(i\)](#) Create new subnet
1091 IP Addresses available

Auto-assign Public IP [\(i\)](#) Use subnet setting (Enable)

IAM role [\(i\)](#) None [\(i\)](#) Create new IAM role

Shutdown behavior [\(i\)](#) Stop

Enable termination protection [\(i\)](#) Protect against accidental termination

Monitoring [\(i\)](#) Enable CloudWatch detailed monitoring
Additional charges apply.

Tenancy [\(i\)](#) Shared - Run a shared hardware instance [\(i\)](#)
Additional charges will apply for dedicated tenancy.

Figure. 5.1.1.3

Click Next to Add Storage

Storage

For our purpose, the default instance storage of 8GB is sufficient. If you need more storage, either increase the size or attach a disk by clicking “Add Volume”. If you add a volume, you will need to attach the volume to your instance, format it and mount it. Since this is a beginner tutorial, these steps are not covered here.

Volume Type (i)	Device (i)	Snapshot (i)	Size (GiB) (i)	Volume Type (i)	IOPS (i)	Throughput (MB/s) (i)
Root	/dev/sda1	snap-0d553b777dbb9ce13	<input type="text" value="8"/>	General Purpose SSD (GP2)	100 / 3000	N/A
Add New Volume						

Figure. 5.1.1.4

Click Next to Add Tags to your instances.

Instance Tags

A tag allows you to identify your instance with a name you can choose.

Click Add Tag, set the Key to “Name” and value to “Hadoop”. We will use this tag to re-label our instances as “namenode”, “datanode1” and so on later on. For now leave the value of all the instances as “Hadoop”.

Key	(127 characters maximum)	Value	(255 characters maximum)
Name	Hadoop		
Add another tag		(Up to 50 tags maximum)	

Figure. 5.1.1.5

Click Next to configure Security Group for the instances.

Security Group

For the security group, we create a completely open security group for the purposes of testing.

Assign a security group:			
<input checked="" type="radio"/> Create a new security group <input type="radio"/> Select an existing security group			
Security group name:	allopen		
Description:	launch-wizard-1 created 2017-03-29T09:00:07.417+05:30		
Type	Protocol	Port Range	Source
All traffic	All	0 - 65535	Anywhere ▾ 0.0.0.0/0, ::/0
<input type="button" value="Add Rule"/>			
⚠ Warning Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.			

Figure. 5.1.1.6

Finally we get to the Launch screen.

Launch Instances

Review the information again and click Launch to start the instances. You will need to create a key pair or use an existing key pair. Follow the instructions on the Launch Wizard to create a new key pair. Then click “I acknowledge ..” and then Launch Instances.

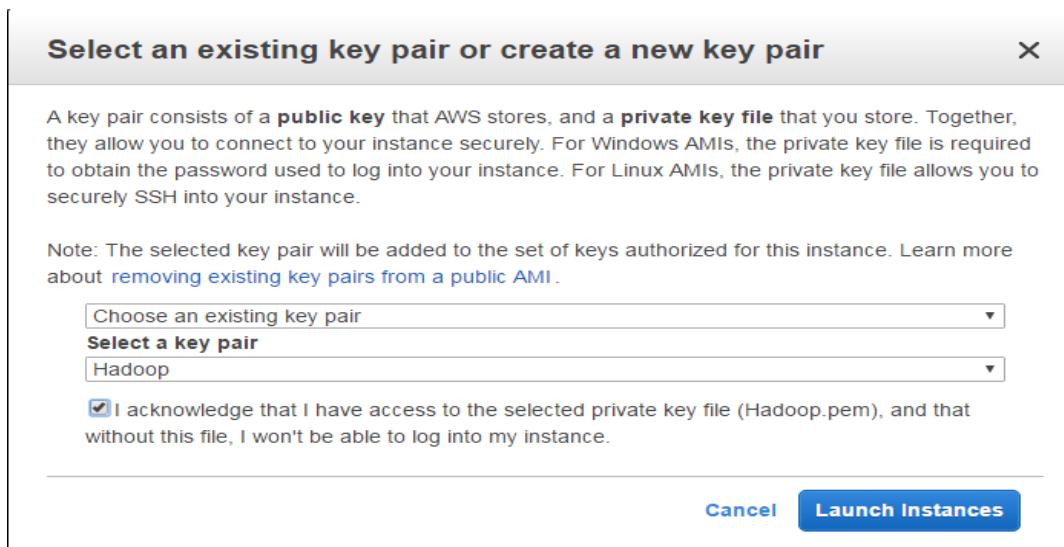


Figure. 5.1.1.7

You can now go to the instances page and check on the status of the instances.

Naming the Instances

On the instances page, let us setup the names of the instances. These are not DNS names, but names we assign to help us distinguish between them.

Click the pencil icon next to the name and setup the names as shown.

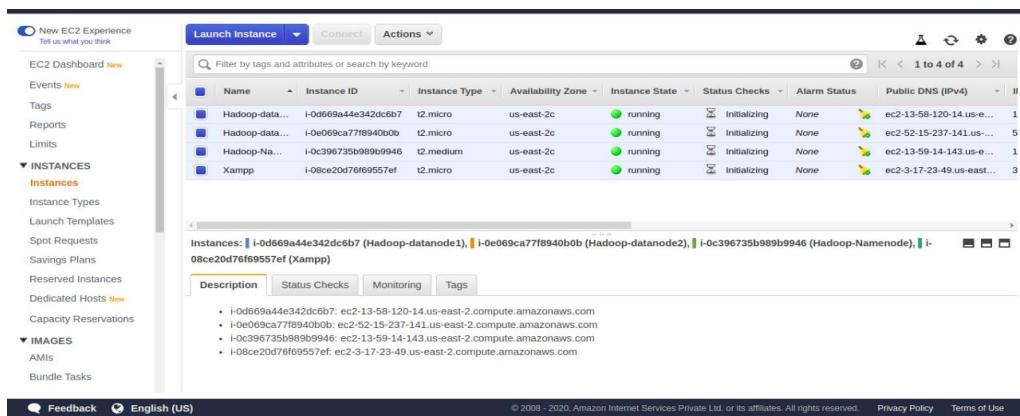


Figure. 5.1.1.8

Linux & MAC connection

Executing following command with Linux or MAC terminal, you can directly access your box.

```
ssh -i keyname.pem ubuntu@IP_ADDRESS
```

Give only READ permission for *.pem* file, then execute SSH command again

```
sudo chmod 400 keyname.pem
```

Setting Up Instances

Once the instances are up and running, it is time to set them up for our purpose. This includes the following:

Setup password-less login between the namenode, the datanodes and Xampp.

Install java.

Copy Instance Public DNS Name

We now need to copy the Public DNS Name of each node (1 namenode and 3 datanodes). These names are used in the configuration steps below. Since the DNS is specific to each setup, we refer to the names as follows.

For example, in the description below, if you see <nnode>, substitute with the value of <NameNode Public DNS>. Similarly for <dnode1> and so on.

Nnode	<NameNode Public DNS>
dnode1	<DataNode1 Public DNS>
dnode2	<DataNode2 Public DNS>
dnode3	<xampp Public DNS>

Common Setup on All Nodes

Some setup is common to all the nodes: NameNode and DataNodes. This is covered in this section.

All Nodes: Update the instance

Let us update the OS with latest available software patches.

```
sudo apt-get update && sudo apt-get -y dist-upgrade
```

After the updates, the system might require a restart. Perform a Reboot from the EC2 Instances page.

All Nodes: Install Java

Let us now install Java. We install the package: openjdk-8-jdk-headless on all the nodes.

```
sudo apt-get -y install openjdk-8-jdk-headless
```

All Nodes: Setup JAVA_HOME

On each of the nodes, edit `~/server/hadoop-2.7.3/etc/hadoop/hadoop-env.sh`.

Replace this line:

```
export JAVA_HOME=${JAVA_HOME}
```

With the following line:

```
export JAVA_HOME=/usr/lib/jvm/java-8-openjdk-amd64
```

Configuring NameNode

After performing configuration common to all nodes, let us now setup the NameNode.

Namenode: Password Less SSH

As mentioned before, we need password-less SSH between the name nodes and the data nodes. Let us create a public-private key pair for this purpose on the namenode.

```
namenode> ssh-keygen
```

Use the default (`/home/ubuntu/.ssh/id_rsa`) for the key location and hit enter for an empty passphrase.

Datanodes: Setup Public Key

The public key is saved in `/home/ubuntu/.ssh/id_rsa.pub`. We need to copy this file from the namenode to each data node and append the contents to `/home/ubuntu/.ssh/authorized_keys` on each data node.

```
datanode1> cat id_rsa.pub >> ~/.ssh/authorized_keys
```

```
datanode2> cat id_rsa.pub >> ~/.ssh/authorized_keys
```

```
xampp> cat id_rsa.pub >> ~/.ssh/authorized_keys
```

Namenode: Setup SSH Config

SSH uses a configuration file located at `~/.ssh/config` for various parameters. Set it up as shown below. Again, substitute each node's Public DNS for the HostName parameter (for example, replace `<nnode>` with EC2 Public DNS for NameNode).

```
Host nnode
  HostName <nnode>
  User ubuntu
  IdentityFile ~/.ssh/id_rsa
```

```
Host dnode1
  HostName <dnode1>
  User ubuntu
  IdentityFile ~/.ssh/id_rsa
```

```
Host dnode2
  HostName <dnode2>
  User ubuntu
  IdentityFile ~/.ssh/id_rsa
```

```
Host dnode3
  HostName <xampp>
  User ubuntu
  IdentityFile ~/.ssh/id_rsa
```

At this point, verify that password-less operation works on each node as follows (the first time, you will get a warning that the host is unknown and whether you want to connect to it. Type *yes* and hit enter. This step is needed once only):

```
namenode> ssh nnode

namenode> ssh dnode1

namenode> ssh dnode2

namenode> ssh xampp
```

5.1.2 XAMPP Installation

Download XAMPP for 64 bit

```
wget https://www.apachefriends.org/xampp-files/7.0.23/xampp-linux-x64-7.0.23-0-installer.run
```

Make Execute Installation

```
sudo chmod +x xampp-linux-x64-7.0.23-0-installer.run
```

Run Installation

```
sudo ./xampp-linux-x64-7.0.23-0-installer.run
```

XAMPP instructions

Select the components you want to install; clear the components you do not want to install.

Click Next when you are ready to continue.

XAMPP Core Files : Y (Cannot be edited)

XAMPP Developer Files [Y/n] : Y

Is the selection above correct? [Y/n]: Y

Installation Directory

XAMPP will be installed to /opt/lampp

Press [Enter] to continue:

Do you want to continue? [Y/n]: Y

Run XAMPP

```
sudo /opt/lampp/lampp start
```

XAMPP Access Forbidden

Open your browser and access *http://IP-ADDRESS/* you will find this Access forbidden screen.

Access forbidden!

New XAMPP security concept:

Access to the requested object is only available from the local network.

This setting can be configured in the file "httpd-xampp.conf".

If you think this is a server error, please contact the [webmaster](#).

Figure.5.1.2.1

XAMPP Configurations

Edit XAMPP configurations.

```
vi /opt/lampp/etc/extrahtdp-xampp.conf
```

```
<LocationMatch "^(?:xampp|security|licenses|phpmyadmin|webalizer|server-status|server-info)">
```

```
Require local
```

```
ErrorDocument 403 /error/XAMPP_FORBIDDEN.html.var
```

```
</LocationMatch>
```

to

```
<LocationMatch "^/(?:xampp|security|licenses|phpmyadmin|webalizer|server-status|server-info))">
Order deny,allow
Allow from all
Allow from ::1 127.0.0.0/8 \
fc00::/7 10.0.0.0/8 172.16.0.0/12 192.168.0.0/16 \
fe80::/10 169.254.0.0/16
ErrorDocument 403 /error/XAMPP_FORBIDDEN.html.var
</LocationMatch>
```

Restart XAMPP

sudo /opt/lampp/lampp restart

Security Settings

sudo /opt/lampp/xampp security

XAMPP: Your XAMPP pages are NOT secured by a password.

XAMPP: Do you want to set a password? [yes]

XAMPP: Your XAMPP pages are NOT secured by a password.

XAMPP: Do you want to set a password? [yes] **no**

XAMPP: MySQL is accessible via network.

XAMPP: Normally that's not recommended. Do you want me to turn it off? [yes] **yes**

XAMPP: Turned off.

XAMPP: Stopping MySQL...ok.

XAMPP: Starting MySQL...ok.

XAMPP: The MySQL/phpMyAdmin user pma has no password set!!!

XAMPP: Do you want to set a password? [yes] **yes**

XAMPP: Password:*****

XAMPP: Password (again):*****

XAMPP: Setting new MySQL pma password.

XAMPP: Setting phpMyAdmin's pma password to the new one.

XAMPP: MySQL has no root password set!!!

XAMPP: Do you want to set a password? [yes] **yes**

XAMPP: Write the password somewhere down to make sure you won't forget it!!!

XAMPP: Password:*****

XAMPP: Password (again):*****

XAMPP: Setting new MySQL root password.

XAMPP: Change phpMyAdmin's authentication method.

XAMPP: The FTP password for user 'daemon' is still set to 'xampp'.

XAMPP: Do you want to change the password? [yes] **no**

XAMPP: Done.

PhpMyAdmin

Access PhyMyAdmin at <http://IP-Address/phpmyadmin/>



Figure. 5.1.2.2

5.1.3 Zookeeper Installation

Installation

```
cd /home/ec2-user
wget http://www-eu.apache.org/dist/zookeeper/zookeeper-3.4.9/zookeeper-3.4.9.tar.gz
tar -xvf zookeeper-3.4.9.tar.gz
mv zookeeper-3.4.9 zookeeper
rm -rf zookeeper-3.4.9.tar.gz
```

Configuration

```
cd zookeeper
cp conf/zoo_sample.cfg conf/zoo.cfg
cd /opt
sudo mkdir zookeeper
cd zookeeper/
sudo vi myid --> set a different number for each server
cd ~/zookeeper
vi conf/zoo.cfg
    Add the below parameters in the file
    dataDir=/opt/zookeeper
    maxClientCnxns=100
    server.1=0.0.0.0:2888:3888 (For the current server)
    server.2=<Private IP of server 2>:2888:3888
    server.3=<Private IP of server 3>:2888:3888
sudo bin/zkServer.sh start
sudo bin/zkServer.sh status
```

You should do these steps in at least 3 servers that is master, slave 1, slave 2. This is for the master server which is server.1. Similarly in server 2,3 the particular server will be current server and the rest two will have the private ip of server. For one server you will get the status as Mode: Leader and for the rest you will get Mode: follower

5.1.4 Kafka installation

Log in to each EC2 Instance and update the packages.

```
$ sudo apt-get update
```

Then repeat the following steps on each of the instances.

1: Download the Kafka latest build.

```
$ wget http://mirrors.estointernet.in/apache/kafka/2.1.0/kafka_2.11-2.1.0.tgz
```

2: Extract the Kafka tar file.

```
$ tar xzf kafka_2.11-2.1.0.tgz
```

Now, we need to configure each server. First, run the zookeeper in each server. Make sure you have read this article and configured the zookeeper server.

Assuming you have started the Zookeeper in each instance. Let's configure Kafka.

Switch to the Kafka folder and open the config file.

```
$ vi config/server.properties
```

On the first server, add this configuration.

```
# The id of the broker. This must be set to a unique integer for each broker.
```

For 1st server broker.id=10

For 2nd server broker.id=20

For 3rd server broker.id=30

The following steps will be same in all the 3 servers. We have to repeat these steps each time in different server with unique broker id.

```
# A comma seperated list of directories under which to store log files
```

```
log.dirs=/tmp/kafka-logs
```

```
advertised.host.name=<ip address of host>
```

```
log.dirs=/tmp/kafka-logs
```

```
# add all 3 zookeeper instances ip here
```

```
zookeeper.connect=<i>:2181,<ip>:2181,<ip>:2181
```

```
zookeeper.connection.timeout.ms=6000
```

To check the proper installation of kafka run this command `$ bin/kafka-topics.sh`. If the command is executed without any error then the setup is done.

5.1.5 Spark Installation

Step 0: Pre-requisite setup

We also need to install Scala in all of our machines.

```
$ sudo apt install scala
...
...
Setting up scala-parser-combinators (1.0.3-3) ...
Setting up libhawtjni-runtime-java (1.15-2) ...
Setting up scala-library (2.11.12-4~18.04) ...
Setting up scala-xml (1.0.3-3) ...
Setting up libjansi-native-java (1.7-1) ...
Setting up libjansi-java (1.16-1) ...
Setting up libjline2-java (2.14.6-1) ...
Setting up scala (2.11.12-4~18.04) ...
update-alternatives: using /usr/share/scala-2.11/bin/scala to provide /usr/bin/scala (scala) in auto mode$ scala -version
Scala code runner version 2.11.12 -- Copyright 2002-2017, LAMP/EPFL
```

Step 1: Installing Spark

On each machine (both master and worker) install Spark using the following commands. You can configure your version by visiting here.

```
$ wget http://apache.claz.org/spark/spark-2.4.3/spark-2.4.3-bin-hadoop2.7.tgz
```

Extract the files and move them to /usr/local/spark and add the spark/bin into PATH variable.

```
$ tar xvf spark-2.4.3-bin-hadoop2.7.tgz
$ sudo mv spark-2.4.3-bin-hadoop2.7/ /usr/local/spark
$ vi ~/.bash_profile
export PATH=/usr/local/spark/bin:$PATH
$ source ~/.bash_profile
```

Step 2: Configuring Master to keep track of its workers

Now that we have Spark installed in all our machines we need to let the Master instance know about the different workers that is available. We will be using a standalone cluster manager for demonstration purposes. You can also use something like YARN or Mesos to handle the cluster. Spark has detailed notes on the different cluster managers that you can use.

We need to modify /usr/local/spark/conf/spark-env.sh file by providing information about Java location and the master node's IP. This will be added to the environment when running Spark jobs.

```
# contents of conf/spark-env.sh
export SPARK_MASTER_HOST=<master-private-ip>
export JAVA_HOME=/usr/lib/jvm/java-11-openjdk-amd64/
We will also add all the IPs where the worker will be started. Open
the /usr/local/spark/conf/slaves file and paste the following.
```

```
# contents of conf/slaves
<worker-private-ip1>
<worker-private-ip2>
```

To check the proper installation of spark run this command `sh /usr/local/spark/sbin/start-all.sh`. If the command is executed without any error then the setup is done.

5.1.6 Other libraries installation

Python installation

```
sudo apt-get update
```

```
sudo apt-get install python3.6
```

Pip installation

```
get-pip.py
```

Tweepy installation

```
pip install tweepy
```

Numpy installation

```
pip install numpy
```

kafka-python installation

```
pip install kafka-python
```

Requests installation

```
pip install requests
```

Regex installation

```
pip install regex
```

MySQL installation

```
pip install MySQL-python
```

5.1.7 CreateTwitterApi

Go to <https://dev.twitter.com/apps/new> and log in, if necessary

Enter your Application Name, Description and your website address. You can leave the callback URL empty.

Accept the TOS, and solve the CAPTCHA.

Submit the form by clicking the Create your Twitter Application

Copy the consumer key (API key) and consumer secret from the screen into your application

After creating your Twitter Application, you have to give the access to your Twitter Account to use this Application.

To do this, click the Create my Access Token.

In order to access the Twitter, that is to get recent tweets and twitter followers count, you need the four keys such as Consumer Key, Consumer Secret, Acess token, Access Token Secret.

5.1.8 Flutter installation

1. Install JDK 6 or later

First, we will install Oracle JDK 8. Run the following commands on the terminal in Ubuntu.

```
sudo add-apt-repository ppa:webupd8team/java  
sudo apt-get update  
sudo apt-get install oracle-java8-installer  
sudo apt-get install oracle-java8-set-default
```

To make sure, it's installed successfully, open a terminal and type

```
java -version
```

2. Download and install Android Studio

SYSTEM REQUIREMENTS

Tested on Ubuntu® 16.04 LTS

64-bit distribution capable of running 32-bit applications

3 GB RAM minimum, 8 GB RAM recommended; plus 1 GB for the Android Emulator

2 GB of available disk space minimum,4 GB Recommended (500 MB for IDE + 1.5 GB for Android SDK and emulator system image)

1280 x 800 minimum screen resolution

Download the Android Studio package for Linux and extract it somewhere (e.g home directory).

To launch Android Studio, open a terminal, navigate to the android-studio/bin/ directory, and execute studio.sh.

```
cd android-studio/bin  
./studio.sh
```

Select whether you want to import previous Android Studio settings or not, then click OK

3. Download and install Flutter

You can download the Flutter SDK from flutter.io for Linux version.

You've to have a 64 bit os to install it , so at first confirm that you have the 64 bit version of Linux.

After downloading the Flutter SDK, you should extract the file in the desired location, for example:

```
cd ~/Documents  
$ tar xf ~/Downloads/flutter_linux_v1.2.1-stable.tar.xz
```

By running the above commands, you will extract the Flutter SDK at Documents folder.

Now you need to update the PATH to add the Flutter SDK.

Open a terminal and go to the home directory and then to current user directory by typing the following command.

```
cd /home/{current_user}
```

Type the following commands to update the path.

```
gedit .bashrc
```

A file opens for editing. Be careful while dealing with this file as this is the file which contains the system configurations.

At the end of this file add the path of the Flutter SDK.

```
export PATH={path-of-sdk}/flutter/bin:$PATH
```

Save and close the file and then also close the terminal.

Then run echo\$PATH in another terminal to see the updated path.

This will show you the updated path which contains the Flutter SDK.

Now run flutter doctor in the terminal. If no errors were there then flutter doctor will run successfully.

4. Download and install Flutter plugin in Android Studio

Now you just need to install Flutter plugin in Android Studio. You can do this by going into File->Settings->Plugins and then search for Flutter in ‘Search in repositories’ and from there you will install Flutter and Dart plugin for Android Studio.

5.2 Documentation(*User's Manual*)

5.2.1 How to execute the System

To run project once everything is installed:

Run command on ec2master

login into database remote database

```
> mysql -h database-1.ctrbpvenwkxn.us-east-2.rds.amazonaws.com -P 3306 -u ghost -p
```

create a database:

```
>create twitter;  
>use twitter;
```

create tweet table :

```
>CREATE TABLE tweets (id int AUTO_INCREMENT PRIMARY KEY, tweet  
varchar(280), username varchar(50), pnr bigint(10), prediction int(1), tweet_id  
bigint(10),latitude decimal(10,8) ,longitude decimal(11,8) ,time TIMESTAMP ,  
response_status int(1), response varchar(280));
```

Then create admin database table

Start zookeeper:

```
>zookeeper-server-start.sh  
on ec2slave1:  
>zookeeper-server-start.sh  
on ec2slave2:  
>zookeeper-server-start.sh
```

on ec2master

start kafka:

nohup is used for terminal to not hang up! important when accessing remote system using local terminal

cd kafka folder (cd means change directory to kafka folder)
>nohup bin/kafka-server-start.sh config/server.properties

on ec2slave1 and ec2slave2:

```
cd kakfa folder  
bin/kafka-server-start.sh config/server.properties &
```

on ec2master:

create topic only once

cd kafka folder:

```
bin/kafka-topics.sh --create --zookeeper --partitions 1 --topic twitterstream localhost:2181 --  
replication-factor 1
```

on ec2master ,ec2slave1,ec2slave2 in same order:

```

start kafka consumer
cd to where kafka is installed
>bin/kafka-console-consumer.sh --bootstrap-server localhost:2181 --topic twitterstream --
from-beginning &

on ec2master:
change directory into IR..... folder
> python kafka_file/stream_data.py &
job submit on spark for training
>spark-submit train_model.py
job submit on spark for prediction
>spark-submit --packages org.apache.spark:spark-streaming-kafka-0-8_2.11:2.1.0
live_processing3.py
on xampp:
> sudo /opt/lampp/lampp start

```

Finally open railways/index.php file to interact with UI and manage tweets in real-time.

5.2.2 How to enter the Data

The user should have a twitter account. The data is collected by the Tweets done by the people.

The data that will be collected will be the PNR number of the train (if tweeted) and the complaint or feedback done by the user.

5.2.3 How to process the data (processing details)

The tweets which contain @RailMinIndia will be processed .The Tweets done by the people will be classified into two categories that is feedback and emergency by the machine learning model.The data and machine pipeline wil do the streamimg of data and add the labelled data into the database.

5.2.4 How to take out the reports

We will do the tweet analysis of both feedback and emergeny tweets.



Figure.5.2.4: Report of the data

CHAPTER VI: Maintenance Features

6.1 Project Maintenance Plan

A guideline for planning ahead for the work that happens after releasing a product or system to its customers, and an annotated outline for writing a maintenance Plan. The guideline information includes an introduction to what Maintenance is, types of maintenance, and how maintenance planning fits within the development of the system or product to be maintained. Although the development project may be done and released, the deliverable from the project simply enters a new phase of its lifecycle. Whether hardware, software or system, the major project deliverables require ongoing support from the company. That support will include activities such as responding to user issues, maintaining the system physically, incorporating enhancements, and performing preventative maintenance. For the success of the product or system in the field, planning ahead thoroughly for proper maintenance support will be crucial.

We can maintain the app and website module –

- Getting the Latest Versions of the Operating Systems
- Can Provide Financial Benefits in the Long Run
- The Improvement in Software Libraries
- Offers an Updated User Interface (UI)
- Getting a Better User Experience (UX)
- Incorporating Technical Enhancements
- App maintenance also allows your developer team to improve the app's security time to time against internet security threats.
- Frequent app monitoring will also allow you to keep your app in-check, this is very helpful when you don't have the resources to go under-maintenance. In such cases, monitoring the app will allow you to check the app's performance and avoid such expenses.
- Check that all of your pages are loading without errors
- Run a backup and make sure a previous version of your site is stored
- Make updates to website software and plugins
- Check that all of your forms are running properly
- Remove any spam comments from pages and posts
- Check your pages to see if there are any broken links
- Search for 404 errors and fix or redirect

6.2 Dependencies of maintenance features

The best deal with this software is it has very less maintenance requirements. All you need to do is keep using the software in order to improve its quality. As of now, some of the maintenance features are

- Need of providing the training dataset for the machine to learn before using it in real

world scenarios. This training dataset will further help in improving the accuracy of the software. Larger the dataset, higher will be the accuracy.

- Another check required for the smooth functioning of the software is to keep it up-to-date as per the User Interface of the websites whosoever are used for emotion analysis. This is necessary for the successful parsing of the extracted data.
- Need to update the code with the newer version of the libraries

Chapter VII: Advantages and Limitations of the developed system

7.1 Advantages

- The project reduces the work complexity of scanning through thousands of useless data to find particular information but from here we can directly find the relevant tweets that needs attention
- Reduced operational time
- Increase fault-tolerance.
- Increased accuracy and reliability.
- This software package can be readily used by non-programming personal avoiding human handled chance of error.
- Automation of Feedback and complaint addressing.
- No Need to do Paper Work.
- Management of passenger data
- The whole project is deployed on the cloud therefore
 - i. Better Storage
 - ii. Disaster recovery
 - iii. Highly affordable
 - iv. Better collaboration with remote users
- Manual work reduced
- Reply is given in the real-time
- Simplified Management of complaint addressing.
- Our system is capable of running on the least configuration computer systems in just a few seconds unlike other deep learning applications that require a whole lot of computation power as well as time.
- Uses software which is open source.
- Easy to understand
- This Application has low cost of maintenance.

7.2 Limitations

- The most significant limitation is that complete project depends on tweets done by the users, thus if tweets are not available the following system cannot be implemented.
- Internet connection is required.

CHAPTER VIII: Conclusion and Suggestions for Further Work

8.1 Conclusion

With the advent of Artificial Intelligence, it is not so far that in near future the AI Assistants will be doing most of human tasks with much more efficiency and accuracy. With the help of machine learning model we have classify the tweets in two major catogeries – Feedback and Emergency.

We have made a app and website also. The user can directly complain any issue related to railway by log and they will receive the reply in real time. This project will reduce the manual work and the actions against the complain can be taken fast.

We believe this project if properly utilized will save time, reduce the amount of work the administration has to do. It will replace the stationery material with electronic apparatus. The system should also serve as a major tool in improving the efficiency of action taken against the complain . Hence a system with expected results has been developed but there is still room for improvement.

In terms of experience gained through the duration of this project study, we have been able to acquire broader knowledge about the management of complains in railway and how the actions are taken. We believe this project will serve the customers efficiently.

8.2 Suggestions for further work

- The machine learning model will be flexible and can be applied on various other local authorities like Nagar Nigam, State electricity board and various other authorities. We just have to filter the tweets on the basis of that particular authority.

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Appendix (for source code and any other relevant material)

Appendix-A(source code)

Source code for machine learning model

new_live_proceesing.py

```
from pyspark import SparkConf, SparkContext
from pyspark.mllib.classification import NaiveBayesModel
from pyspark.streaming import StreamingContext
from pyspark.streaming.kafka import KafkaUtils
from pyspark.mllib.feature import HashingTF
from pyspark.mllib.feature import IDF
from pyspark.mllib.regression import LabeledPoint

import operator
import pickle
import json
import MySQLdb

import re
def insert_tweet(tweet,username,pnr,prediction,tweet_id,latitude,longitude):
    HOST = "database-1.ctrbpvenwkxn.us-east-2.rds.amazonaws.com"
    PORT = 3306
    USER = "ghost"
    PASSWORD = "rishitosh"
    DB = "twitter2"

    query = 'INSERT INTO
tweets(tweet,username,pnr,prediction,tweet_id,latitude,longitude,time) VALUES
("%s","%s",%s,%s,%s,%s,CURRENT_TIMESTAMP);' %
(tweet,username,str(pnr),str(int(prediction)),str(tweet_id),str(latitude),str(longitude))
    try:
        conn =
MySQLdb.connect(host=HOST,port=PORT,user=USER,passwd=PASSWORD,db=DB)
        cursor = conn.cursor()
        cursor.execute(query)
        print("Database insertion SUCCESSFUL!!")
        conn.commit()
    except MySQLdb.Error as e:
        print(e)
        print("Database insertion unsuccessful!!")
    finally:
        conn.close()

from pyspark.streaming import StreamingContext
```

```

conf = SparkConf().setMaster("local[2]").setAppName("Streamer")
sc = SparkContext(conf=conf)
sc.setLogLevel("ERROR")
val = sc.parallelize("abd")

ssc = StreamingContext(sc, 10)
ssc.checkpoint("checkpoint")
kstream = KafkaUtils.createDirectStream(
    ssc, topics = ['twitterstream'], kafkaParams = { "metadata.broker.list": 'localhost:9092' })
tweets = kstream.map(lambda x: json.loads(x[1]))

with open('IRModel', 'rb') as f:
    loadedModel = pickle.load(f)

bc_model = sc.broadcast(loadedModel)

def process_data(data):
    print("Processing data ...")

    if (not data.isEmpty()):
        nbModel=bc_model.value
        hashingTF = HashingTF(100000)
        tf = hashingTF.transform(data.map(lambda x: x[0].encode('utf-8','ignore')))
        tf.cache()
        idf = IDF(minDocFreq=2).fit(tf)
        tfidf = idf.transform(tf)
        tfidf.cache()
        prediction=nbModel.predict(tfidf)

        temp = []
        i=0
        for p,q,r,s in data.collect():
            temp.append([])
            temp[i].append(p.encode('utf-8','ignore'))
            temp[i].append(q)
            temp[i].append(r)
            temp[i].append(s)
            i+=1
        i=0
        for p in prediction.collect():
            temp[i].append(p)
            i+=1

```

```

print(temp)
for i in temp:

    if re.search("pnr|PNR", i[0]) and re.search("\d{10}", i[0]):
        pnr = re.findall("\d{10}", i[0])
    else:
        pnr = [0]

    if i[3] is not None :
        latitude = i[3][1]
        longitude = i[3][0]
    else:
        latitude=0
        longitude=0

insert_tweet(str(i[0]),str(i[1]),str(pnr[0]),int(i[4]),int(i[2]),float(latitude),float(longitude))
else:
    print("Empty RDD !!!")
    pass

twitter=tweets.map(lambda tweet: tweet['user']['screen_name'])
tweet_text = tweets.map(lambda tweet: tweet['text'])

txt = tweets.map(lambda x: (x['text'], x['user']['screen_name'], x['id'],x['coordinates']))
txt.foreachRDD(process_data)

#text = tweet_text.map(lambda x: x.encode('utf-8','ignore'))
#text.foreachRDD(process_data)

ssc.start()
ssc.awaitTerminationOrTimeout(1000)
ssc.stop(stopGraceFully = True)

```

stream_data.py

```

from tweepy.streaming import StreamListener
from tweepy import OAuthHandler
from tweepy import Stream
from kafka import SimpleProducer, KafkaClient
import json

access_token = "2584490724-ZOEJc5320HRi0fp6VT8uwQfqiNu5Quj6g2oqJm8"
access_token_secret = "mWY1yl3z0wnMa8mhyMvw2wYXODtqB6yvmKtmVOAf2bHIL"
consumer_key = "9EDriEjU65xa7xibG7i0V1pvi"
consumer_secret = "mz73lwClhfAL75OrlwUVzGvJtJaYy75xN8tzFH0c3rmRrKBLry"

```

```

class StdOutListener(StreamListener):
    def on_data(self, data):
        producer.send_messages("twitterstream", data.encode('utf-8','ignore'))
        data=json.loads(data)
    try:
        print (data["text"])
    except:
        print(data["text"])
    return True

kafka = KafkaClient("localhost:9092")
producer = SimpleProducer(kafka)
l = StdOutListener()
auth = OAuthHandler(consumer_key, consumer_secret)
auth.set_access_token(access_token, access_token_secret)
stream = Stream(auth, l)
stream.filter(track=['RailMinIndia','rail minister','suresh prabhu','northern railways'],
stall_warnings=True, languages = ['en'])

```

train_model.py

```

import os
import sys

#This section for Windows users only
"""os.chdir(r"C:\spark\spark-files")
os.curdir

if 'SPARK_HOME' not in os.environ:
    os.environ['SPARK_HOME'] = 'C:\spark'

SPARK_HOME = os.environ['SPARK_HOME']

sys.path.insert(0,os.path.join(SPARK_HOME,"python"))
sys.path.insert(0,os.path.join(SPARK_HOME,"python","lib"))
sys.path.insert(0,os.path.join(SPARK_HOME,"python","lib","pyspark.zip"))
sys.path.insert(0,os.path.join(SPARK_HOME,"python","lib","py4j-0.10.4-src.zip"))"""

from pyspark import SparkContext
from pyspark import SparkConf
from pyspark.mllib.feature import HashingTF
from pyspark.mllib.feature import IDF
import operator

conf=SparkConf()
conf.set("spark.executor.memory", "1g")

```

```

conf.set("spark.cores.max", "2")

conf.setAppName("IRApp")

sc = SparkContext('local', conf=conf)

tweetData = sc.textFile("data/tweets_formatted_data.csv")
tweetData.take(2)
fields = tweetData.map(lambda x: x.split(","))
fields.take(1)
documents = fields.map(lambda x: x[1].lower().split(" "))

documents.take(1)
documentNames = fields.map(lambda x: x[0])
hashingTF = HashingTF(100000)
article_hash_value = hashingTF.transform(documents)
article_hash_value.cache()

idf = IDF().fit(article_hash_value)
tfidf = idf.transform(article_hash_value)

xformedData=tweetData.zip(tfidf)
xformedData.cache()
xformedData.collect()[0]

from pyspark.mllib.regression import LabeledPoint
def convertToLabeledPoint(inVal) :
    origAttr=inVal[0].split(",")
    sentiment = 0.0 if origAttr[0] == "feedback" else 1.0
    return LabeledPoint(sentiment, inVal[1])

tweetLp=xformedData.map(convertToLabeledPoint)
tweetLp.cache()
tweetLp.collect()

from pyspark.mllib.classification import NaiveBayes, NaiveBayesModel
model = NaiveBayes.train(tweetLp, 1.0)
predictionAndLabel = tweetLp.map(lambda p: \
    (float(model.predict(p.features)), float(p.label)))
predictionAndLabel.collect()

#Forming confusion matrix
from pyspark.sql import SQLContext
sqlContext = SQLContext(sc)
predDF = sqlContext.createDataFrame(predictionAndLabel.collect(), \
    ["prediction","label"])

```

```
predDF.groupBy("label","prediction").count().show()
```

```
#saving the model
#model.save(sc,"IRModel")
import pickle
with open('IRModel', 'wb') as f:
    pickle.dump(model, f)
```

Website code

```
<?php
session_start();
include_once('config/database.php');
if(!isset($_SESSION['username'])){
header('location: login.php');
}
else {
$username=$_SESSION['username'];
$get_user="select * from users where username='".$username."'";
$run_user=mysqli_query($con,$get_user);
$row=mysqli_fetch_array($run_user);
$id=$row['id'];
$user_password=$row['password'];
?>
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8">
<meta content="width=device-width, initial-scale=1, maximum-scale=1, user-scalable=no,
shrink-to-fit=no" name="viewport">
<title>Railway Tweets Portal</title>
<link rel="stylesheet" href="dist/modules/bootstrap/css/bootstrap.min.css">
<link rel="stylesheet" href="dist/modules/ionicons/css/ionicons.min.css">
<link rel="stylesheet" href=
"dist/modules/fontawesome/web-fonts-with-css/css/fontawesome-all.min.css">
<!-- <link rel="stylesheet" href="dist/css/demo.css"> -->
<link rel="stylesheet" href="dist/css/style.css">
</head>
<body class="sidebar-gone">
<div id="app">
<div class="main-wrapper">
<div class="navbar-bg "></div>
<nav class="navbar navbar-expand-lg main-navbar ">
</nav>
<div class="main-sidebar">
</div>
<div class="main-content">
```

```
<section class="section">
<div><h3 class="section-header">
Tweets Analysis
<a style="float:right;" href="index.php"><button class="btn btn-primary navbar-right b2">Back</button></a>
</h1>
</div>
<div class="section-body">
<div class="row">
<div class="col-12 col-md-6 col-lg-6">
<div class="card">
<div class="card-header">
<h4>Emergency Tweets Chart (Montly Basis)</h4>
</div>
<div class="card-body">
<canvas id="myChart"></canvas>
</div>
</div>
</div>
<div class="col-12 col-md-6 col-lg-6">
<div class="card">
<div class="card-header">
<h4>Feedback Tweets Chart (Montly Basis)</h4>
</div>
<div class="card-body">
<canvas id="myChart2"></canvas>
</div>
</div>
</div>
<div class="row">
<div class="col-12 col-md-6 col-lg-6">
<div class="card">
<div class="card-header">
<h4>Emergency Tweets Categorization</h4>
</div>
<div class="card-body">
<canvas id="myChart3"></canvas>
</div>
</div>
</div>
<div class="col-12 col-md-6 col-lg-6">
<div class="card">
<div class="card-header">
<h4>Feedback tweets Categorization</h4>
</div>
```

```

<div class="card-body">
<canvas id="myChart4"></canvas>
</div>
</div>
</div>
</div>
</div>
</div>
</div>
</div>
<script src="dist/modules/jquery.min.js"></script>
<script src="dist/modules/popper.js"></script>
<script src="dist/modules/tooltip.js"></script>
<script src="dist/modules/bootstrap/js/bootstrap.min.js"></script>
<script src="dist/modules/nicescroll/jquery.nicescroll.min.js"></script>
<script src="dist/modules/scroll-up-bar/dist/scroll-up-bar.min.js"></script>
<script src="dist/js/sa-functions.js"></script>
<script src="dist/modules/chart.min.js"></script>
<script>
var ctx = document.getElementById("myChart").getContext('2d');
var myChart = new Chart(ctx, {
type: 'line',
data: {
labels: ["11/2019", "12/2019", "01/2020", "02/2020","03/2020"],
datasets: [{

label: 'Emergency',
data: [13, 12, 20, 13,9],
borderWidth: 2,
backgroundColor: 'rgb(87,75,144)',
borderColor: 'rgb(87,75,144)',
borderWidth: 2.5,
pointBackgroundColor: '#ffffff',
pointRadius: 4
}],
options: {
legend: {
display: false
},
scales: {
yAxes: [
ticks: {
beginAtZero: true,
stepSize: 9
}
]
},
}
}
});
```

```

xAxes: [{  

  ticks: {  

    display: false  

  },  

  gridLines: {  

    display: false  

  }  

}],  

},  

});  

var ctx = document.getElementById("myChart2").getContext('2d');  

var myChart = new Chart(ctx, {  

  type: 'line',  

  data: {  

    labels: ["11/2019", "12/2019", "01/2020", "02/2020","03/2020"],  

    datasets: [{  

      label: 'Feedbacks',  

      data: [43, 32, 27, 23, 19],  

      borderWidth: 2,  

      backgroundColor: 'rgb(87,75,144)',  

      borderColor: 'rgb(87,75,144)',  

      borderWidth: 2.5,  

      pointBackgroundColor: '#ffffff',  

      pointRadius: 4  

    }]  

  },  

  options: {  

    legend: {  

      display: false  

    },  

    scales: {  

      yAxes: [{  

        ticks: {  

          beginAtZero: true,  

          stepSize: 10  

        }  

      }],  

      xAxes: [{  

        ticks: {  

          display: false  

        },  

        gridLines: {  

          display: false  

        }  

      }]  

    }
  }
});

```

```

},
}
});
var ctx = document.getElementById("myChart3").getContext('2d');
var myChart = new Chart(ctx, {
type: 'doughnut',
data: {
datasets: [{{
data: [
8,
38,
36,
14,
32,
],
backgroundColor: [
'#574B90',
'#28a745',
'#ffc107',
'#dc3545',
'#343a40',
],
label: 'Dataset 1'
}],
labels: [
'Medical',
'AC Complaint',
'Train Component',
'Water Complaint',
'Others'
],
},
options: {
responsive: true,
legend: {
position: 'bottom',
},
}
});
var ctx = document.getElementById("myChart4").getContext('2d');
var myChart = new Chart(ctx, {
type: 'pie',
data: {
datasets: [{{
data: [
24,

```

```

44,
38,
12,
36,
],
backgroundColor: [
'#574B90',
'#28a745',
'#ffc107',
'#dc3545',
'#343a40',
],
label: 'Dataset 1'
}],
labels: [
'Train Timing',
'Food Feedback',
'Cleanliness',
'Ticket Services',
'Others'
],
},
options: {
responsive: true,
legend: {
position: 'bottom',
},
}
});
</script>
<script src="dist/js/scripts.js"></script>
<script src="dist/js/custom.js"></script>
<!-- <script src="dist/js/demo.js"></script> -->
</body>
</html>
<?php } ?>
<?php
$servername = "database-1 ctrbpvenwkxn.us-east-2.rds.amazonaws.com";
$username = "ghost";
$password = "*****";
$database = "mudit";
$con = new mysqli($servername, $username, $password,$database);
class Database{
// specify your own database credentials
private $host = "database-1 ctrbpvenwkxn.us-east-2.rds.amazonaws.com";
//private $host = "localhost";

```

```

private $db_name = "mudit";
private $username = "ghost";
//private $password = "";
private $password = "rishitosh";
public $conn;
// get the database connection
public function getConnection(){
$this->conn = null;
try{
$this->conn = new PDO("mysql:host=" . $this->host . ";dbname=" . $this->db_name,
$this->username, $this->password);
$this->conn->exec("set names utf8");
} catch(PDOException $exception){
echo "Connection error: " . $exception->getMessage();
}
return $this->conn;
}
}
?>
1 <?php
2
3 $servername = "database-1.ctrbpvenwkxn.us-east-2.rds.amazonaws.com";
4 $username = "ghost";
5 $password = "*****";
6 $database = "mudit";
7
8 $con = new mysqli($servername, $username, $password,$database);
9 class Database{
10
11 // specify your own database credentials
12 private $host = "database-1.ctrbpvenwkxn.us-east-2.rds.amazonaws.com";
13 //private $host = "localhost";
14 private $db_name = "mudit";
15 private $username = "ghost";
16 //private $password = "";
17 private $password = "rishitosh";
18 public $conn;
19
20 // get the database connection
21 public function getConnection(){
22
23 $this->conn = null;
24
25 try{
26 $this->conn = new PDO("mysql:host=" . $this->host . ";dbname=" . $this->
db_name, $this->username, $this->password);

```

```

27 $this->conn->exec("set names utf8");
28 }
29 catch(PDOException $exception){
30 echo "Connection error: " . $exception->getMessage();
31 }
32
33 return $this->conn;
34 }
35 }
36
37 ?>
<?php
session_start();
include_once('config/database.php');
if(!isset($_SESSION['username'])){
header('location: login.php');
}
else {
$username=$_SESSION['username'];
$get_user="select * from users where username='".$username."'";
$run_user=mysqli_query($con,$get_user);
$row=mysqli_fetch_array($run_user);
$id=$row['id'];
$user_password=$row['password'];
?>
<html>
<head>
<title>Railway Tweets Portal</title>
<meta charset="utf-8">
<meta name="viewport" content="width=device-width, initial-scale=1">
<link rel="stylesheet" href="
https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap.min.css">
<script src="https://ajax.googleapis.com/ajax/libs/jquery/3.2.0/jquery.min.js"></script>
<script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/js/bootstrap.min.js"></script>
<style>
tr{
border-bottom: 3px groove;
}
td {
padding:20px;
}
.active{color:white;}
.line{border-right: 2px groove;min-height:98.5vh;overflow-x:hidden;}
.left{
width:70%;
float:left;

```

```

}
.right{
float: left;
width:25%;
}
.navbar-right{
margin-right:40px;
}
</style>
<script>
// window.setInterval(function() {
// if (window.XMLHttpRequest) {
// xmlhttp = new XMLHttpRequest();
// } else {
// xmlhttp = new ActiveXObject("Microsoft.XMLHTTP");
// }
// xmlhttp.onreadystatechange = function() {
// if (this.readyState == 4 && this.status == 200) {
// bind();
// document.getElementById("feedback-content").innerHTML = this.responseText;
// }
// };
// xmlhttp.open("GET","feedback.php",true);
// xmlhttp.send();
// },5000);
window.setInterval(function() {
if (window.XMLHttpRequest) {
xmlhttp = new XMLHttpRequest();
} else {
xmlhttp = new ActiveXObject("Microsoft.XMLHTTP");
}
xmlhttp.onreadystatechange = function() {
if (this.readyState == 4 && this.status == 200) {
bind();
document.getElementById("emergency-content").innerHTML = this.responseText;
}
};
xmlhttp.open("GET","emergency.php",true);
xmlhttp.send();
},5000);
$(document).ready(function bind(){
$('body').on('click','.add',function(){
//... event handler code ....
document.getElementById("selection").innerHTML = "";
var $this = $(this),
myCol = $this.closest("td"),

```

```

myRow = myCol.closest("tr"),
targetArea = $("#selection");
targetArea.append(myRow.children().not(myCol).text() + "<br />");
document.getElementById("idvalue").value = myRow.children(".value").children(
".myval").val();
});
});
};

function sendReply(form){
var tweet_id = form.idvalue.value;
var tweet_reply = form(tweet_reply).value;
console.log("tweet_id="+tweet_id+"&tweet_reply="+tweet_reply);
if(tweet_reply) {
console.log("tweet_id="+tweet_id+"&tweet_reply="+tweet_reply);
if(window.XMLHttpRequest) {
xmlhttp = new XMLHttpRequest();
} else {
xmlhttp = new ActiveXObject("Microsoft.XMLHTTP");
}
xmlhttp.onreadystatechange = function() {
if(this.readyState == 4) {
if(this.status == 200) {
alert('Tweet Sent !');
form(tweet_reply).value= "";
} else {
alert('Tweet Not Sent !');
}
}
}
};

var query = "tweet_id="+tweet_id+"&reply="+tweet_reply;
xmlhttp.open("GET","reply.php?"+query,true);
xmlhttp.send();
}
}

</script>
</head>
<body class="line">
<div class="navbar " style="width:101%; padding-bottom:10px; padding-top:10px;
background-color: #574b90;" id="main">
<ul style="font-size: 29px; margin-top: 5px; cursor: pointer;">
<li class="active" style="display:inline; margin-right: 15px"; data-toggle="tab"
href="#emergency">
Emergency
</li>
<li style="display:inline; margin-right: 15px;" data-toggle="tab" href=
"#feedback">
Feedback

```

```

</li>
<a style="text-decoration: none; color:black" href="chartjs.php">
<li class="" style="display:inline; font-color:black" href="chartjs.html">
Tweets Analysis
</li></a>
<li style="display:inline;">
<a href="logout.php"><button class="btn btn-primary navbar-right b2" > logout
</button></a>
</li>
</ul>
</div>
<div class='tab-content left'>
<div id="emergency" class='tab-pane fade in active'>
<div id='emergency-content' style="width:90%;padding:
50px;margin:auto;background:white; box-shadow: 0 4px 8px 0 rgba(0, 0, 0,
0.2), 0 6px 20px 0 rgba(0, 0, 0, 0.19);">
<table>
<?php
if ($con->connect_error) {
die("Connection failed: " . $con->connect_error);
}
$sql = "select * from tweets where prediction=1 order by id desc;";
$result = $con->query($sql);
$i=1;
if ($result->num_rows > 0) {
while($row = $result->fetch_assoc()) {
echo "<tr><td style='color:black' width='180%'">";
echo $row["tweet"];
echo "</td><td width='20%'><button type='button' class='btn
btn-info add'><b>Reply</b></button></td>";
echo "<td class='value'><input type='hidden' id='tweet_value'
class='myval' name='tweet_value' value='".$row["tweet_id"]'.
"></td></tr>";
$i++;
}
}
?>
</table>
</div>
</div>
<div id="feedback" class='tab-pane fade'>
<div id='feedback-content' style="width:90%;padding:
50px;margin:auto;background:white; box-shadow: 0 4px 8px 0 rgba(0, 0, 0,
0.2), 0 6px 20px 0 rgba(0, 0, 0, 0.19);">
<table>
<?php

```

```

$sql = "select * from tweets where prediction=0 order by id desc;";
$result = $con->query($sql);
$i=1;
if ($result->num_rows > 0) {
while($row = $result->fetch_assoc()) {
echo "<tr><td style='color:black' width='180%>";
echo $row["tweet"];
echo "</td><td width='20%'><button type='button' class='btn
btn-info add'><b>Reply</b></button></td>";
echo "<td class='value'><input type='hidden' id='tweet_value'
class='myval' name='tweet_value' value='".$row["tweet_id"]."
"></td></tr>";
$i++;
}
}
?>
</table>
</div>
</div>
</div>
<div class="container-fluid right">
<div id="selection" style="min-height:200px;box-shadow: 0 4px 8px 0 rgba(0, 0,
0, 0.2), 0 6px 20px 0 rgba(0, 0, 0, 0.19);font-size: 16px;padding:10px;"></div>
<h3 style="color:#c6c6c6;">Type your response...</h3>
<form>
<input type="hidden" name="idvalue" id="idvalue" value="">
<textarea id="tweet_reply" name="tweet_reply" rows="10" style="width:100%;"
></textarea>
<button type="button" class="btn btn-info" style="width:100%;margin-top:
10px;" onclick="sendReply(this.form)">Reply</button>
</form>
</div>
</body>
</html>
<?php
}
?>
<?php
?>
<!DOCTYPE html>
<html lang="en">
<head>
<title>Railways Tweets Portal</title>
<meta charset="UTF-8">
<meta name="viewport" content="width=device-width, initial-scale=1">

```

```
<!--
=====
=====
==-->
<link rel="icon" type="image/png" href="images/icons/favicon.ico"/>
<!--
=====
=====
==-->
<link rel="stylesheet" type="text/css" href="vendor/bootstrap/css/bootstrap.min.css">
<!--
=====
=====
==-->
<link rel="stylesheet" type="text/css" href=
"fonts/font-awesome-4.7.0/css/font-awesome.min.css">
<!--
=====
=====
==-->
<link rel="stylesheet" type="text/css" href=
"fonts/Linearicons-Free-v1.0.0/icon-font.min.css">
<!--
=====
=====
==-->
<link rel="stylesheet" type="text/css" href="vendor/animate/animate.css">
<!--
=====
=====
==-->
<link rel="stylesheet" type="text/css" href="vendor/css-hamburgers/hamburgers.min.css">
<!--
=====
=====
==-->
<link rel="stylesheet" type="text/css" href="vendor/animsition/css/animsition.min.css">
<!--
=====
=====
==-->
<link rel="stylesheet" type="text/css" href="vendor/select2/select2.min.css">
<!--
=====
=====
==-->
```

```
<link rel="stylesheet" type="text/css" href="vendor/daterangepicker/daterangepicker.css">
<!--
=====
=====-->
<link rel="stylesheet" type="text/css" href="css/util.css">
<link rel="stylesheet" type="text/css" href="css/main.css">
<!--
=====
=====-->
</head>
<body>
<div class="limiter">
<div class="container-login100">
<div class="wrap-login100 p-l-85 p-r-85 p-t-55 p-b-55">
<form class="login100-form validate-form flex-sb flex-w" method="POST" action=
"login_code.php">
<span class="login100-form-title p-b-32">
Admin Login
</span>
<span class="txt1 p-b-11">
Username
</span>
<div class="wrap-input100 validate-input m-b-36" data-validate = "Username
is required">
<input class="input100" type="text" name="username" autocomplete="off" >
<span class="focus-input100"></span>
</div>
<span class="txt1 p-b-11">
Password
</span>
<div class="wrap-input100 validate-input m-b-12" data-validate = "Password
is required">
<span class="btn-show-pass">
<i class="fa fa-eye"></i>
</span>
<input class="input100" type="password" name="password" >
<span class="focus-input100"></span>
</div>
<div class="flex-sb-m w-full p-b-48">
<div>
<a href="#" class="txt3">
<!-- Forgot Password? -->
</a>
</div>
```

```
</div>
<div class="container-login100-form-btn">
<button class="login100-form-btn" type="submit" name="submit">
Login
</button>
</div>
</form>
</div>
</div>
</div>
<div id="dropDownSelect1"></div>
<!--
=====
=====
-->
<script src="vendor/jquery/jquery-3.2.1.min.js"></script>
<!--
=====
=====
-->
<script src="vendor/animstion/js/animstion.min.js"></script>
<!--
=====
=====
-->
<script src="vendor/bootstrap/js/popper.js"></script>
<script src="vendor/bootstrap/js/bootstrap.min.js"></script>
<!--
=====
=====
-->
<script src="vendor/select2/select2.min.js"></script>
<!--
=====
=====
-->
<script src="vendor/daterangepicker/moment.min.js"></script>
<script src="vendor/daterangepicker/daterangepicker.js"></script>
<!--
=====
=====
-->
<script src="vendor/countdowntime/countdowntime.js"></script>
<!--
=====
=====
```

```

=====>
<script src="js/main.js"></script>
</body>
</html>
<?php
// required headers
header("Access-Control-Allow-Origin: *");
header("Content-Type: application/json; charset=UTF-8");
include_once '../config/database.php';
include_once 'tweets.php';
// instantiate database and tweet object
$database = new Database();
$db = $database->getConnection();
// initialize object
$tweets = new Tweets($db);
// query for tweets
$stmt = $tweets->read();
$num = $stmt->rowCount();
// check if more than 0 record found
if($num>0){
// tweets array
$tweets_arr=array();
$tweets_arr["records"]=array();
// retrieve our table contents
while ($row = $stmt->fetch(PDO::FETCH_ASSOC)){
// extract row
extract($row);
$tweet_item=array(
"id" => $id,
"tweet" => $tweet,
"username" => $username,
"pnr" => $pnr,
"prediction" => $prediction,
"tweet_id" => $tweet_id
);
array_push($tweets_arr["records"], $tweet_item);
}
// set response code - 200 OK
http_response_code(200);
// show products data in json format
echo json_encode($tweets_arr);
}
?>
<?php
require 'vendor/autoload.php';
use Abraham\TwitterOAuth\TwitterOAuth;

```

```

define('CONSUMER_KEY', '<your-key>');
define('CONSUMER_SECRET', '<your-secret-key>');
define('ACCESS_TOKEN', '<your-token>');
define('ACCESS_TOKEN_SECRET', '<your-secret-token>');
$connection = new TwitterOAuth(CONSUMER_KEY, CONSUMER_SECRET,
ACCESS_TOKEN, ACCESS_TOKEN_SECRET);
$content = $connection->get("account/verify_credentials");
$qtweet = $_REQUEST['reply'];
$tweetid = $_REQUEST['tweet_id'];
$connection->post('statuses/update', array('status' => $qtweet, 'in_reply_to_status_id' =>
$tweetid,'auto_populate_reply_metadata'=>'true'));
var_dump($connection->getLastHttpCode());
?>
<?php
include_once 'database.php';
include_once '../api/tweets.php';
if ($con->connect_error) {
die("Connection failed: " . $con->connect_error);
}
$sql1 = "SELECT COUNT(*) As medical
FROM tweets WHERE prediction=1 AND tweet
LIKE '%Doctor%'
OR LIKE'%Health%'
OR LIKE '%Pain%'
OR LIKE '%Blood%'; ";
$medical = $con->query($sql1);
?>
```

App module

```

import 'package:connectivity/connectivity.dart';
import 'package:mobx/mobx.dart';

part 'connectivity_store.g.dart';

class ConnectivityStore = _ConnectivityStore with _$ConnectivityStore;

abstract class _ConnectivityStore with Store {
  _ConnectivityStore() {
    checkConnectivity();
  }

  @observable
  bool isAppConnected = true;

  @observable
  bool isDialogOpen=false;
```

```

@action
updateAppConnected(bool isConnected) {
    isAppConnected = isConnected;
}

@action
updateDialogOpen(bool isDialog) {
    isDialogOpen = isDialog;
}

checkConnectivity() {
    Connectivity().onConnectivityChanged.listen((ConnectivityResult result) {
        switch (result) {
            case ConnectivityResult.none:
                updateAppConnected(false);
                break;

            default:
                updateAppConnected(true);
        }
    });
}

```

```

abstract class StringValue {
    //APP TITLE
    static const String appTitle = "Railway App";

    //PACKAGE NAME
    static const String packageName = "com.citibot.flutter_citibot";

    //AttributeNames
    static const String emailAttribute = 'email';
    static const String passwordAttribute = 'password';

    // WELCOME PAGE
    static const String welcomeTo = 'Welcome to';

    // NETWORK ERROR PAGE
    static const String retry = "Retry";
    static const String networkError =

```

```

"We are having trouble in connecting to internet.";

//Login Page
static const String userName = "Username";
static const String password = "Password";
static const String logIn = "LOG IN";
static const String adminLogin = "Admin Login";

//Dashboard Page
static const String complaintAndManagement = "IR Complaint And Management";
static const String emergency = "Emergency";
static const String feedback = "Feedback";

//Reply Page
static const String sendResponse = "Send Response to Passenger";
static const String yourResponse = "Your Response: ";
static const String pleaseEnterResponse = "Please Enter Your Response";
static const String tweet = "Current Tweet";
static const String sendTweet = "Send Tweet";

//Globals
static const String somethingWentWrong = 'Something Went Wrong';
}

```

```

import 'package:flutter/material.dart';

abstract class Styles {
// COLORS
    static const Color primaryColor = Color.fromRGBO(85, 85, 85, 1);
    static const Color secondaryColor = Color.fromRGBO(233, 228, 243, 1);
    static const Color whiteColor = Colors.white;
    static const Color greyColor = Colors.grey;
    static const Color textColor = Color.fromRGBO(248, 247, 249, 1);

    static const TextStyle snackTextStyle = TextStyle(color: Styles.whiteColor);

// Default Font
    static const String defaultFontFamily = 'Brandon';

// FONT SIZES
    static double largeFont = 40;
    static double mediumFont = 30;
    static double semiMediumFont = 24;
    static double smallFont = 19;
}
```

```

static double textTagFont = 16;
static double extremeSmall = 13;

// ASSETS
static const String loginBackground = 'assets/login_background.jpeg';
}

import 'dart:async';
import 'dart:convert';
import 'package:flutter/material.dart';
import 'package:http/http.dart' as http;
import 'package:meta/meta.dart';
import 'package:railway_twitter/models/cb_network_error.dart';
import 'package:railway_twitter/utils/globals.dart';

//String BASE_URL = AppConfig.baseUrl;
String BASE_URL = "";

abstract class APIService {
  Future<Map<String, dynamic>> get(String url,
    {Map<String, dynamic> params,
    bool useCookieHeaders = true,
    type = RequestType.JSON}) async {
    var data = await http.get(_getUrlWithParams(url, params: params),
      headers: await _getHeaders(useCookieHeaders: useCookieHeaders));
    return _getResponse(data, url);
  }

  Future<Map<String, dynamic>> post(String url,
    {@required Map<String, dynamic> body,
    bool useCookieHeaders = true,
    type = RequestType.JSON}) async {
    final response = await http.post(_getUrl(url),
      body: type == RequestType.FORM ? body : json.encode(body),
      headers:
        await _getHeaders(useCookieHeaders: useCookieHeaders, type: type));
    return _getResponse(response, url);
  }

  Future<Map<String, dynamic>> put(String url,
    {@required Map<String, dynamic> body,
    bool useCookieHeaders = true,
    type = RequestType.JSON}) async {
    final response = await http.put(_getUrl(url),
      body: type == RequestType.FORM ? body : json.encode(body),
      headers:
        await _getHeaders(useCookieHeaders: useCookieHeaders, type: type));
    return _getResponse(response, url);
  }
}

```

```

    type = RequestType.JSON})) async {
final response = await http.put(_getUrl(url),
    body: type == RequestType.FORM ? body : json.encode(body),
    headers:
        await _getHeaders(useCookieHeaders: useCookieHeaders, type: type));
return _getResponse(response, url);
}

// Helper Methods for API Services
String _getUrl(String url) {
    return BASE_URL + url;
}

Future<Map<String, String>> _getHeaders(
    {bool useCookieHeaders = true, type = RequestType.JSON}) async {
Map<String, String> map = Map();

if (type == RequestType.JSON) {
    map['Content-Type'] = 'application/json';
} else {
    map['Content-Type'] = 'application/x-www-form-urlencoded';
}
if (useCookieHeaders) {
//    map["Authorization"] = "bearer ${await preferenceService.getToken()}";
}

return map;
}

String _getUrlWithParams(String url, {Map<String, dynamic> params}) {
    var absUrl = _getUrl(url);

if (params != null) {
    var paramString = "";
    params.forEach((key, value) {
        paramString += '&$key=$value';
    });
}

    return absUrl + '?' + paramString.substring(1);
}

return absUrl;
}

Map<String, dynamic> _getResponse(http.Response response, String url) {
    print("api service");
}

```

```

print(response.statusCode.toString());
print(response.body.toString());
print(response.request.url.toString());

if (response.statusCode == 204 || response.body.isEmpty) return null;

try {
  final Map<String, dynamic> body = json.decode(response.body);
  if (response.statusCode >= 200 && response.statusCode < 300) {
    body['cookie'] = response.headers['set-cookie'];
    return body;
  } else {
    throw CbNetworkError.fromJson(body);
  }
} catch (e) {
  throw e;
}
}

enum RequestType { JSON, FORM }

```

```

import 'package:flutter/material.dart';
import 'package:railway_twitter/models/screen_arguments.dart';
import 'package:railway_twitter/presentation/reply_page.dart';
import 'package:railway_twitter/utils/string_value.dart';
import 'package:railway_twitter/utils/styles.dart';
import 'package:flutter_screenutil/flutter_screenutil.dart';

class DashBoardPage extends StatefulWidget {
  static const String routeNamed = 'DashBoardPage';

  @override
  _DashBoardPageState createState() => _DashBoardPageState();
}

class _DashBoardPageState extends State<DashBoardPage>
  with TickerProviderStateMixin {
  TabController tabController;

  @override

```

```

void initState() {
  super.initState();
  tabController = TabController(length: 2, vsync: this);
}

@Override
Widget build(BuildContext context) {
  return SafeArea(
    child: Scaffold(
      body: DefaultTabController(
        length: 2,
        child: NestedScrollView(
          headerSliverBuilder:
            (BuildContext context, bool innerBoxIsScrolled) {
          return <Widget>[
            SliverAppBar(
              expandedHeight: ScreenUtil.instance.setHeight(250),
              floating: false,
              pinned: true,
              flexibleSpace: FlexibleSpaceBar(
                centerTitle: true,
                title: Text(
                  StringValue.complaintAndManagement,
                  style: TextStyle(
                    color: Styles.whiteColor,
                  ),
                ),
              ),
              background: Image.asset(
                Styles.loginBackground,
                fit: BoxFit.cover,
              ),
            ),
          ],
        ),
        SliverPersistentHeader(
          delegate: _SliverAppBarDelegate(
            TabBar(
              controller: tabController,
              labelColor: Styles.primaryColor,
              unselectedLabelColor: Styles.greyColor,
              tabs: [
                Tab(text: StringValue.emergency),
                Tab(text: StringValue.feedback),
              ],
            ),
          ),
        ),
      ),
    ),
  );
}

```

```

        ),
    ],
},
body: TabBarView(
    controller: tabController,
    children: <Widget>[
        _emergencyListView(),
        _feedbackListView(),
    ],
),
),
),
),
),
);
}
}

Widget _feedbackListView() {
const array = [
    "RT @tulsikumar24: @RailMinIndia @PiyushGoyal @SureshAngadi_ Thank you very
much for such extraordinary railway line.. Pls start a direct ex...",
    "RT @Shivam7692: @RailMinIndia @PiyushGoyal @SureshAngadi_ Dear sir we are
travelling in train number 12975 and pnr number 4723292155 and m...",
    "@RailwaySeva Very Funny! @RailMinIndia @WesternRly lodged a online complain on
Rail_Madad and issued a complain no... https://t.co/6UGZhGCdZr",
    "@drmsambalpur @eastcoastrail @RailMinIndia Why is train 20810 stuck at Titilagarh
station since more than an hour? https://t.co/2RHMvpXGHW"
];
return ListView.builder(
    shrinkWrap: true,
    padding: EdgeInsets.all(0),
    itemCount: array.length,
    itemBuilder: (BuildContext context, int index) {
        return listItemView(array[index]);
    },
);
}

Widget _emergencyListView() {
const array = [
    "@drmUBL @PiyushGoyal @RailMinIndia @PMOIndia Sorry Sir, your information is
wrong, today the ticket counter stops a... https://t.co/yNtsO7289M",
    "RT @joytuli2012: @RailMinIndia @PiyushGoyal @SureshAngadi_ Its good, in fact
very happy to see, but think something about our Barak valley,..."
];
return ListView.builder(
    shrinkWrap: true,

```

```

padding: EdgeInsets.all(0),
itemCount: array.length,
itemBuilder: (BuildContext context, int index) {
  return listItemView(array[index]);
},
);
}
}

Widget listItemView(String text) {
return Column(
children: <Widget>[
InkWell(
child: Container(
margin: EdgeInsets.symmetric(
horizontal: ScreenUtil.instance.setWidth(10),
vertical: ScreenUtil.instance.setHeight(8),
),
child: Text(text),
),
onTap: () {
_navigateToReplyPage(text);
},
),
Divider(
thickness: 2,
),
],
);
}

_navigateToReplyPage(String text) {
Navigator.pushNamed(context, ReplyPage.routeNamed,
arguments: ScreenArguments(tweet: text));
}

class _SliverAppBarDelegate extends SliverPersistentHeaderDelegate {
_SliverAppBarDelegate(this._tabBar);

final TabBar _tabBar;

@Override
double get minExtent => _tabBar.preferredSize.height;

@Override
double get maxExtent => _tabBar.preferredSize.height;

```

```

@Override
Widget build(
BuildContext context, double shrinkOffset, bool overlapsContent) {
return new Container(
  child: _tabBar,
);
}

@Override
bool shouldRebuild(_SliverAppBarDelegate oldDelegate) {
  return false;
}
}

import 'package:flutter/material.dart';
import 'package:flutter_form_builder/flutter_form_builder.dart';
import 'package:flutter_screenutil/flutter_screenutil.dart';
import 'package:railway_twitter/presentation/customs/cl_raised_button.dart';
import 'package:railway_twitter/presentation/customs/cl_title_text_field.dart';
import 'package:railway_twitter/presentation/dashboard_page.dart';
import 'package:railway_twitter/utils/string_value.dart';
import 'package:railway_twitter/utils/styles.dart';

class LoginPage extends StatefulWidget {
  static const String routeNamed = 'LoginPage';

  @override
  _LoginPageState createState() => _LoginPageState();
}

class _LoginPageState extends State<LoginPage> {
  final GlobalKey<FormBuilderState> _signUpFormKey =
  GlobalKey<FormBuilderState>();

  @override
  Widget build(BuildContext context) {
    return SafeArea(
      child: Scaffold(
        resizeToAvoidBottomInset: false,
        body: Container(
          height: ScreenUtil.instance.setHeight(ScreenUtil.instance.height),

```

```

width: ScreenUtil.instance.setWidth(ScreenUtil.instance.width),
child: Stack(
  children: <Widget>[
    Align(
      alignment: Alignment.bottomCenter,
      child: Image.asset(
        Styles.loginBackground,
        fit: BoxFit.cover,
      ),
    ),
    SingleChildScrollView(
      child: Center(
        child: Column(
          children: <Widget>[
            SizedBox(
              height: ScreenUtil.instance.setHeight(50),
            ),
            loginText(),
            loginCardWidget(),
            SizedBox(
              height: ScreenUtil.instance.setHeight(20),
            ),
            CIRaisedButton(
              width: ScreenUtil.instance.setWidth(260),
              child: Text(
                StringValue.logIn,
                style: TextStyle(fontSize: Styles.smallFont),
              ),
              onTap: _navigateToLoginPage,
            ),
            SizedBox(
              height: ScreenUtil.instance.setHeight(20),
            ),
            ],
          ),
        ),
      ),
    ],
  );
}

Widget loginText() {
  return Container(

```

```

margin: EdgeInsets.only(
    top: ScreenUtil.instance.setHeight(50),
    bottom: ScreenUtil.instance.setHeight(20)),
child: Center(
    child: Text(
       StringValue.adminLogin,
        style: TextStyle(fontSize: Styles.largeFont),
        textAlign: TextAlign.center,
    ),
),
);
}

Widget loginCardWidget() {
    return Card(
        margin:
            EdgeInsets.symmetric(horizontal: ScreenUtil.instance.setWidth(12)),
        child: Container(
            padding: EdgeInsets.symmetric(
                vertical: ScreenUtil.instance.setHeight(15),
                horizontal: ScreenUtil.instance.setWidth(15)),
            margin:
                EdgeInsets.symmetric(horizontal: ScreenUtil.instance.setWidth(12)),
            width: ScreenUtil.instance.setWidth(ScreenUtil.instance.width),
            child: FormBuilder(
                key: _signUpFormKey,
                autovalidate: false,
                child: Column(
                    children: <Widget>[
                        emailAddressWidget(),
                        SizedBox(
                            height: ScreenUtil.instance.setHeight(14),
                        ),
                        passwordWidget(),
                        SizedBox(
                            height: ScreenUtil.instance.setHeight(14),
                        ),
                    ],
                ),
            );
    }
}

Widget emailAddressWidget() {
    List<FormFieldValidator> validators = [

```

```

    FormBuilderValidators.required(),
    FormBuilderValidators.email()
];

return CITitleTextField(
    title: StringValue.userName,
    attributeName: StringValue.emailAttribute,
    TextInputType: TextInputType.emailAddress,
    validators: validators);
}

Widget passwordWidget() {
List<FormFieldValidator> validators = [
    FormBuilderValidators.required(),
    FormBuilderValidators.min(3),
];

return CITitleTextField(
    title: StringValue.password,
    attributeName: StringValue.passwordAttribute,
    TextInputType: TextInputType.text,
    validators: validators,
    obscureText: true,
);
}

_navigateToDashboardPage() {
    Navigator.pushReplacementNamed(context, DashBoardPage.routeNamed);
}
}

import 'package:flutter/cupertino.dart';
import 'package:flutter/material.dart';
import 'package:flutter/widgets.dart';
import 'package:flutter_form_builder/flutter_form_builder.dart';
import 'package:railway_twitter/models/screen_arguments.dart';
import 'package:railway_twitter/presentation/customs/cl_raised_button.dart';
import 'package:railway_twitter/utils/string_value.dart';
import 'package:flutter_screenutil/flutter_screenutil.dart';
import 'package:railway_twitter/utils/styles.dart';

class ReplyPage extends StatefulWidget {

```

```

static const String routeNamed = 'ReplyPage';

@Override
_REPLYPAGESTATE createState() => _ReplyPageState();
}

class _ReplyPageState extends State<ReplyPage> {
ScreenArguments _arguments;

TextEditingController controller = TextEditingController();

@Override
Widget build(BuildContext context) {
    _arguments = ModalRoute.of(context).settings.arguments;
    print('zhds');
    print(controller.value.text);
    print(controller.text);
    return SafeArea(
        child: Scaffold(
            appBar: AppBar(
                title: Text(StringValue.sendResponse),
            ),
            body: Container(
                height: ScreenUtil.instance.setHeight(ScreenUtil.instance.height),
                width: double.infinity,
                margin: EdgeInsets.only(
                    left: ScreenUtil.instance.setWidth(15),
                    right: ScreenUtil.instance.setWidth(15),
                    top: ScreenUtil.instance.setHeight(10),
                ),
                child: SingleChildScrollView(
                    child: Column(
                        mainAxisAlignment: MainAxisAlignment.start,
                        children: <Widget>[
                            Text(
                                StringValue.tweet,
                            ),
                            SizedBox(
                                height: ScreenUtil.instance.setHeight(15),
                            ),
                            Container(
                                margin: EdgeInsets.symmetric(
                                    vertical: ScreenUtil.instance.setHeight(10)),
                                child: Text(_arguments.tweet),
                            ),
                            Divider(),
                        ],
                    ),
                ),
            ),
        ),
    );
}
}

```

```
thickness: 2,  
),  
Text(  
  StringValue.yourResponse,  
,  
SizedBox(  
  height: ScreenUtil.instance.setHeight(15),  
,  
Text(  
  controller.value.text,  
,  
SizedBox(  
  height: ScreenUtil.instance.setHeight(15),  
,  
Container(  
  alignment: Alignment.center,  
  width: double.infinity,  
  constraints: BoxConstraints(  
    minHeight: ScreenUtil.instance.setHeight(55),  
,  
  padding: EdgeInsets.symmetric(  
    horizontal: ScreenUtil.instance.setWidth(12)),  
  decoration: BoxDecoration(  
    borderRadius: BorderRadius.all(  
      Radius.circular(ScreenUtil.instance.setWidth(10))),  
,  
  color: Styles.secondaryColor,  
,  
  child: TextField(  
    controller: controller,  
    decoration: InputDecoration.collapsed(  
      hintText: StringValue.pleaseEnterResponse,  
,  
    onChanged: (_) {  
      setState(() {});  
    },  
,  
,  
  ),  
  SizedBox(  
    height: ScreenUtil.instance.setHeight(20),  
,  
  ),  
  CIRaisedButton(  
    width: ScreenUtil.instance.setWidth(260),  
    child: Text(  
      StringValue.sendTweet,  
      style: TextStyle(fontSize: Styles.smallFont),
```

```
        ),
        onTap: () {},
    ),
    SizedBox(
        height: ScreenUtil.instance.setHeight(20),
    ),
],
),
),
),
),
);
}
}
```

```
import 'package:flutter/material.dart';
import 'package:flutter_screenutil/flutter_screenutil.dart';
import 'package:railway_twitter/presentation/login_page.dart';
import 'package:railway_twitter/utils/globals.dart';

class SplashPage extends StatefulWidget {
    static const String routeNamed = 'SplashPage';

    @override
    _SplashPageState createState() => _SplashPageState();
}

class _SplashPageState extends State<SplashPage> {

    @override
    void initState() {
        super.initState();
        WidgetsBinding.instance.addPostFrameCallback((_) {
            _navigateToLoginPage();
        });
    }

    @override
    Widget build(BuildContext context) {
        ScreenUtil.instance = ScreenUtil(
            width: defaultWidth, height: defaultHeight, allowFontScaling: true)
            ..init(context);
```

```
return SafeArea(
    child: Scaffold(
        body: Container(
            height: ScreenUtil.instance.setHeight(ScreenUtil.instance.height),
            width: ScreenUtil.instance.setWidth(ScreenUtil.instance.width),
            child: SingleChildScrollView(
                ),
                ),
                ),
                );
}

_navigateToLoginPage() {
    Navigator.pushReplacementNamed(context, LoginPage.routeNamed);
}
```