PROJECT REPORT

TEAM ID:PNT2022TMID39485

PROJECT TITLE: DATA ANALYSTICS FOR DHL LOGISTICS FACILITIES

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GOKUL.R

GOKULLAKANNAN.G

GUNALAN.S

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1. INTRODUCTION

1.1 Project Overview

DHL is a German logistics company providing courier, package delivery and express mail service, which is a division of the German logistics firm Deutsche Post. The company was primarily interested in offshore and intercontinental deliveries, but the success of FedEx prompted DHL's own domestic (intra-US) expansion starting in 1983. In 1998, Deutsche Post began to acquire shares in DHL. It reached controlling interest in 2001, and acquired all outstanding shares by December 2002. DHL provides information about Objects, Services, pickups and destination details. We need to analyze the given data to improve the process of business.

1.2 Purpose

To provide Analytics to improve New Marks and grow the business. Visualizing the analyzed charts in the dashboard and Creating the website to display the dashboard. Increase the agility of your domestic ground distribution by leveraging DHL to plan and execute the delivery of your goods to point of storage, use or sale, using fixed, dynamic or pre-scheduled routes

2. LITERATURE SURVEY

2.1 Existing problem

Optimal decisions for operations management of BDAR: A military industrial logistics data analytics perspective. The purpose of this paper is to present a systematic procedure of optimal decisions for operations management of BDAR and form a framework of military industrial logistics data analytics. Developing a systematic procedure of optimal decisions for operations management of BDAR. Difficult to Collection the war statistics from the historical real-world combat data

A data-analytics approach to identifying hidden critical suppliers in supply networks: Development of nexus supplier index. In this study, we explore the identification and categorization of nexus suppliers. Based on the theory of nexus supplier and data envelopment analysis (DEA), we propose a dataanalytics approach to compute what we call Nexus Supplier Index (NSI). It is a measure that combines various network centrality measures.

Data analytics-enable production visibility for Cyber-Physical Production Systems. In this paper, a Cyber-Physical Production System (CPPS) using data analytics is proposed to enable production visibility. Firstly, this study uses data stream processing approaches to clean redundant data efficiently. Secondly, a Bayesian inference engine, which is trained by mining the historical data offline, is employed to identify the accuracy of an RFID-captured event.

Data analytics and performance. The moderating role of intuition-based HR management in major league baseball. We propose that due to the decreased spectrum of available strategies and simplified mechanisms of value creation associated with a greater reliance on data-driven decisions in highly competitive and specialized industries, the positive effects of social capital for data analytics on firm performance will diminish when firms predominantly adopt data-driven decision-making in deploying human resources.

Data analytic approach for bankruptcy prediction. Bankruptcy prediction problem has been intensively studied over the past decades. In this study, we focused on solving the

skewness which is a characteristic of financial data. By solving this problem, we obtained 17% average improvement in AUC over existing models. To address the second shortcoming, we analyze the importance of features identified by the XGBoost model.

Data analytics for oil sands subcool prediction — a comparative study of machine learning algorithms. This work focuses on developing a subcool model based on industrial datasets using deep learning and several other widely-used machine learning methods. Furthermore, this work compares and discusses the outof-sample performance of different machine learning algorithms using industrial datasets.

2.2 References

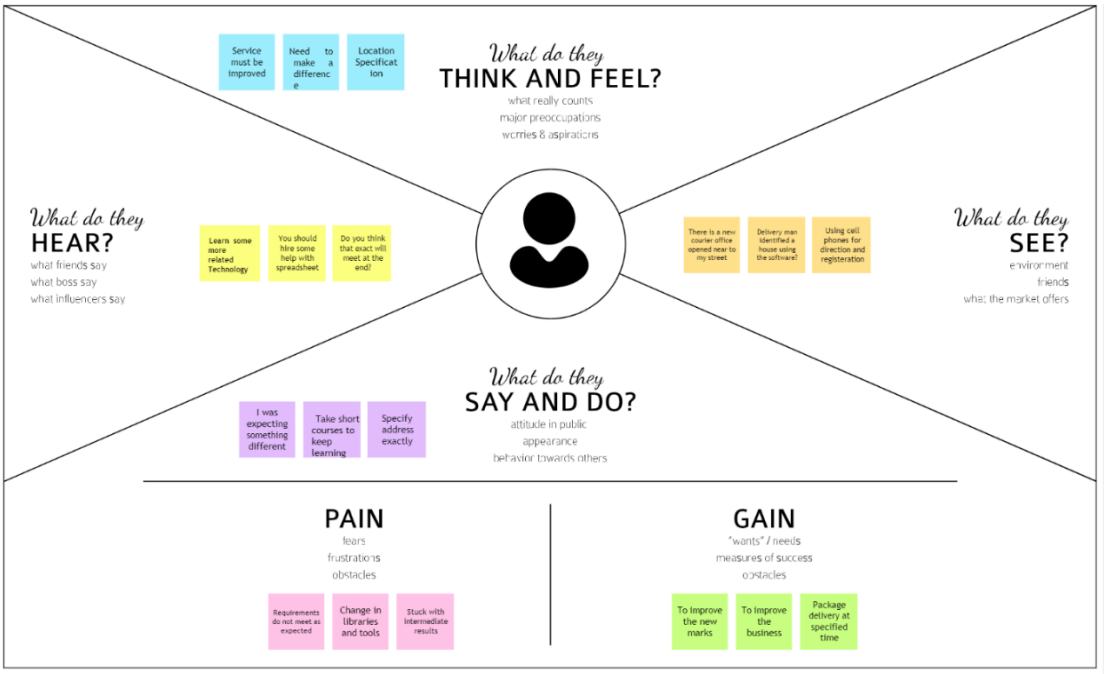
- **1.** Optimal decisions for operations management of BDAR: A military industrial logistics data analytics perspective - XiongLi /2019
- **2.** A data-analytics approach to identifying hidden critical suppliers in supply networks: Development of nexus supplier index – Benjamin B.M /2018
- **3.** Data analytics-enable production visibility for Cyber-Physical Production Systems- Pengcheng Fang, JianjunYang/2020
- **4.** Data analytics and performance: The moderating role of intuition-based HR management in major league baseball – **J**aemin Kim, Clay Dibrell/202
- **5.** Data analytic approach for bankruptcy prediction - H.Son, C.Hyun /2019
- **6.** Data analytics for oil sands subcool prediction — a comparative study of machine learning algorithms - Nabil Magbool Jan, Chaoqun Li /2018

2.3 Problem Statement Definition

DHL is an international Umbrella brand and trademark for the courier, package delivery, and express mail service which is a division of the German logistics firm Deutsche Post. Our goal is to provide analytics to improve the business.

3. IDEATION & PROPOSED SOLUTION

3.1 Empathy Map Canvas



3.2 Ideation & Brainstorming

Step-1: Team Gathering, Collaboration and Select the Problem Statement

Before you collaborate

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

10 minutes

A **Team gathering**
Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.

B **Set the goal**
Think about the problem you'll be focusing on solving in the brainstorming session.

C **Learn how to use the facilitation tools**
Use the Facilitation Superpowers to run a happy and productive session.

Open article →

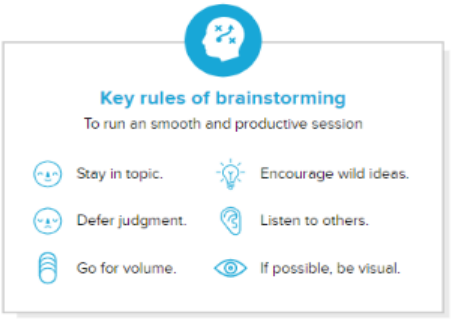
1 Define your problem statement

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

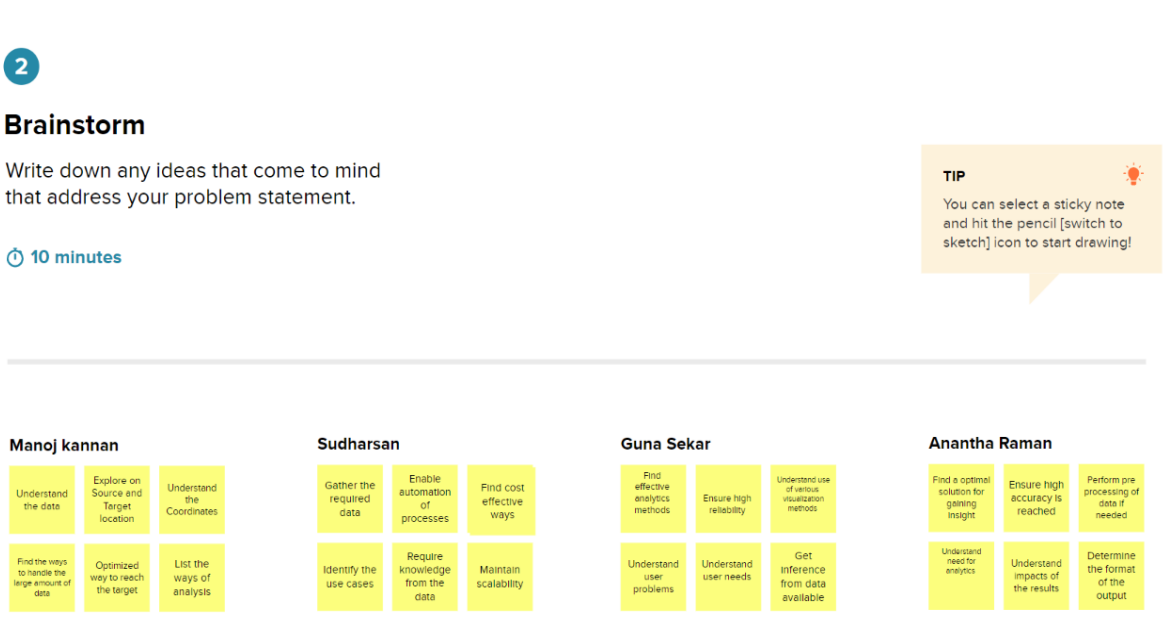
5 minutes

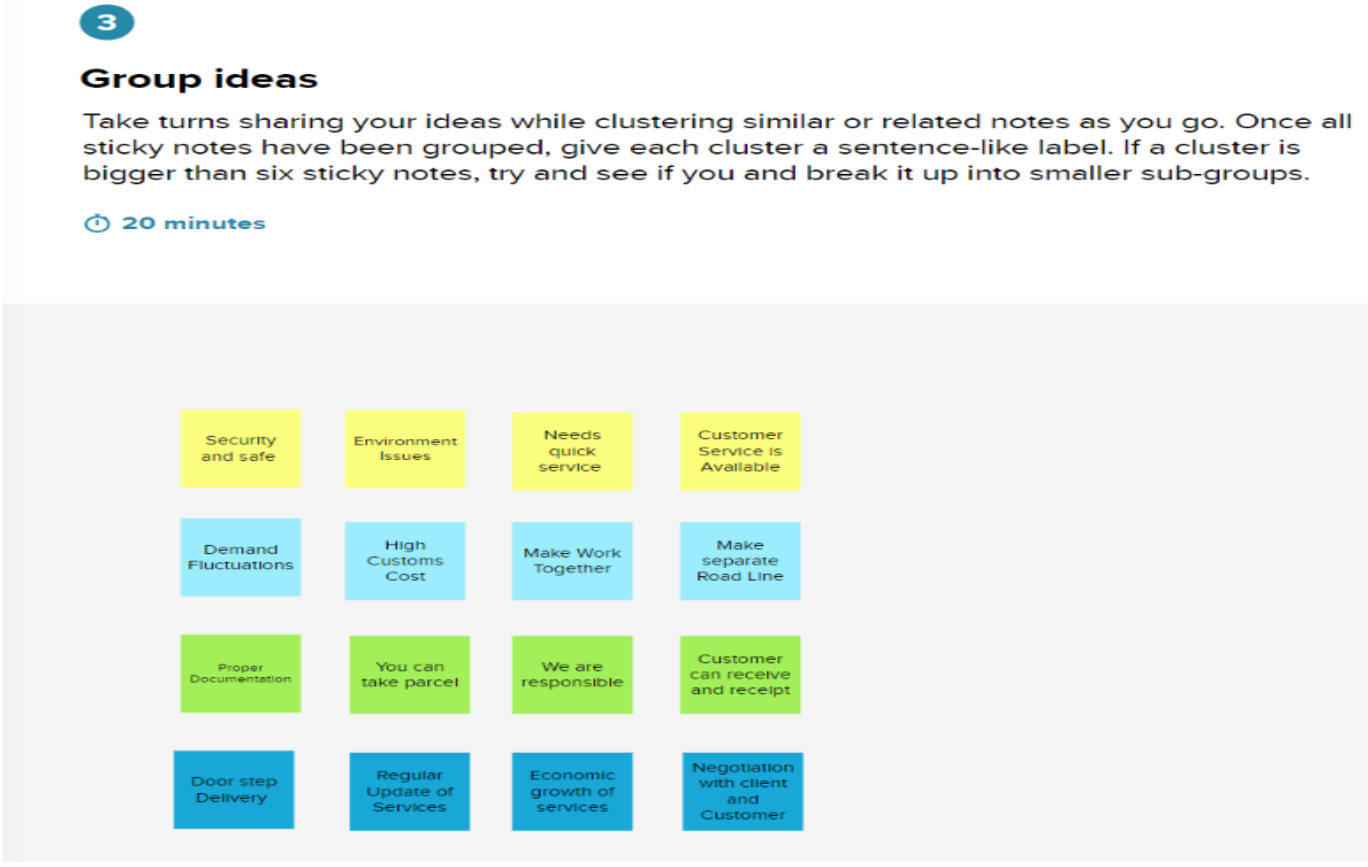
PROBLEM

To Provide analytics to Improve the new marks and grow the business

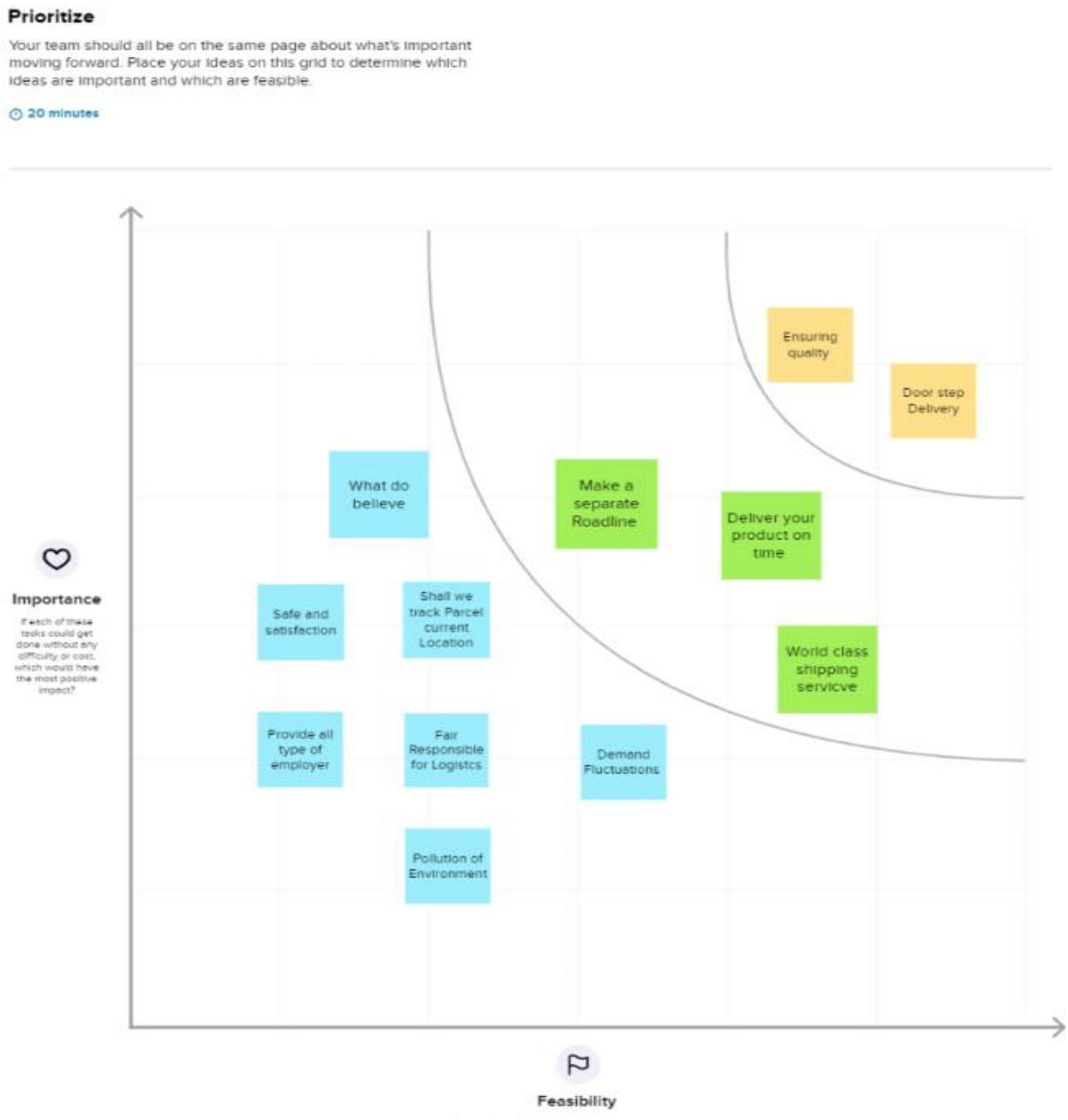


Step-2: Brainstorm, Idea Listing and Grouping





Step-3: Idea Prioritization



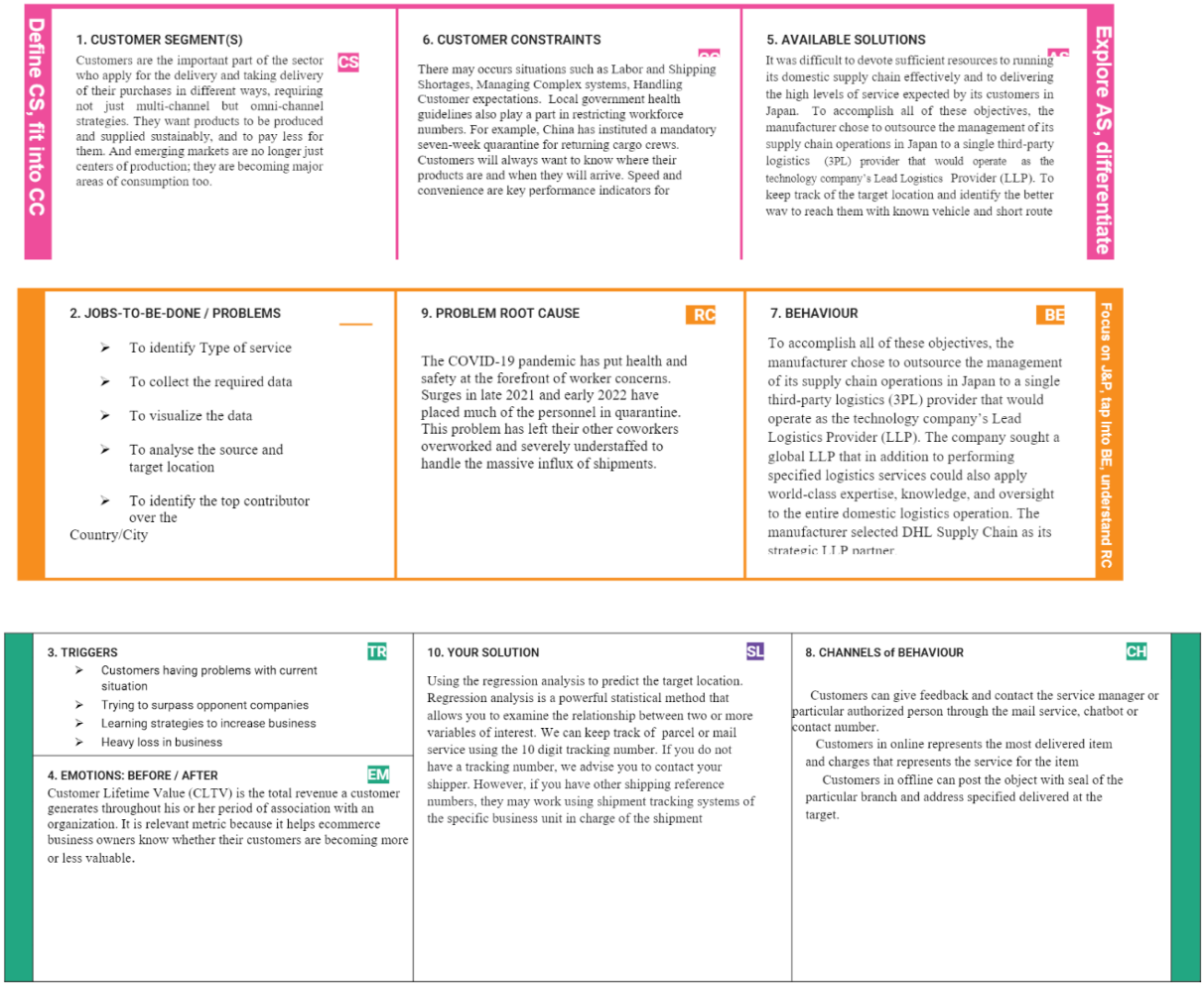
3.3 Proposed Solution

s.no	Parameter	Description
1	Problem Statement (Problem to be solved)	DHL is an international Umbrella brand and trademark for the courier, package delivery, and express mail service which is a division of the German logistics firm Deutsche Post. The company DHL itself was founded in San Francisco, USA, in 1969 and

		expanded its service throughout the world by the late 1970s. The company group delivers over 1.6 billion parcels per year. Our goal is to improve the New marks and grow the business. To provide Analytics to improve New Marks and grow the business.
2	Idea / Solution description	Perform the coding & solutioning, acceptance testing, performance testing based as per the Time limit.
3	Novelty / Uniqueness	Analise the data collected and apply the suitable machine learning model
4	Social Impact / Customer Satisfaction	Optimized way for Domestic and international parcel delivery to Target Location
5	Business Model (Revenue Model)	Sales revenue model that makes money by mail service, product delivery
6	Scalability of the Solution	Providing analysis that provide insights how it meets the user needs

3.4 Problem Solution fit

Project Title: Data analytics for DHL Logistics Facilities **Project Design Phase-I - Solution Fit Template** **Team ID:** PNT2022TMID17919



4. REQUIREMENT ANALYSIS

4.1 Functional requirement

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through any google account or social media accounts.
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	Dataset	The DHL_Facilities.csv record are collected as a dataset and upload to Cognos analytics

FR-4	Prepare/Analyse	The dataset is moved around to prepare and analyse using Cognos
FR-5	Exploration	The data are explored using logistics dataset by Cognos
FR-6	Dashboard	The Prepared and Explored data are Visualize and created in different type of dashboards. i.e., charts, graphs, tree, reports, summary, etc..

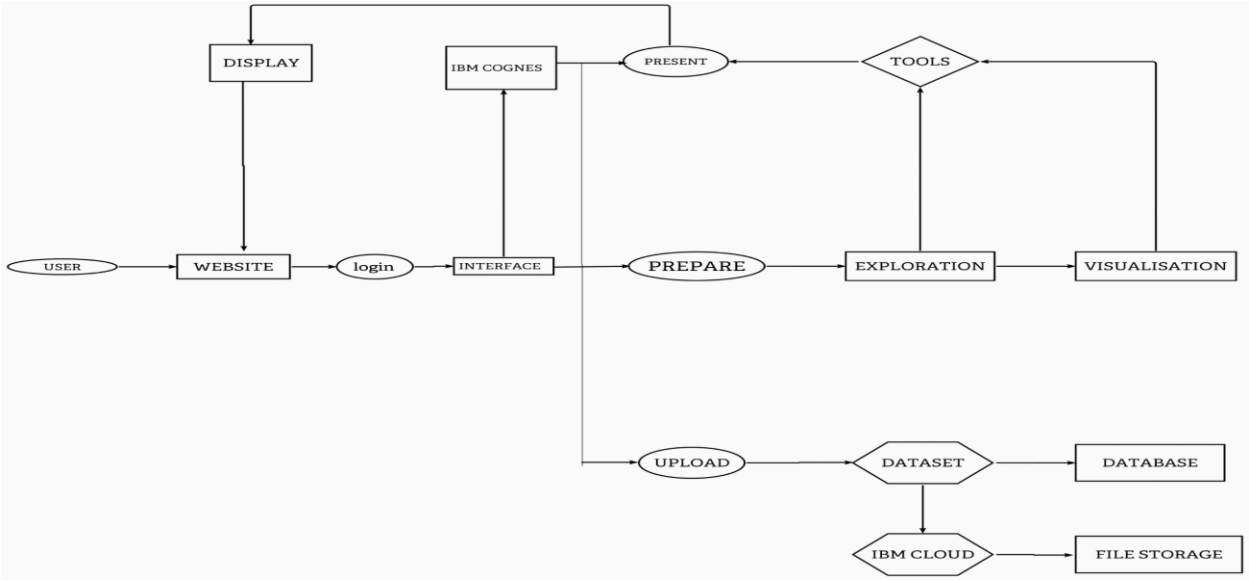
4.2 Non-Functional requirements

FR No.	Non-Functional Requirement	**Description**
NFR-1	Usability	No prior experience required to use the dashboard. People with basic understanding can use the system.
NFR-2	Security	Only registered user can use this application.
NFR-3	Reliability	The Analytics system ensures the reliability
NFR-4	Performance	Gets updated regularly to improve the performance of the application.
NFR-5	Availability	The availability of dataset must be constrained for accurate data.
NFR-6	Scalability	Any kind of data can be explored and the system is quiet expandable.

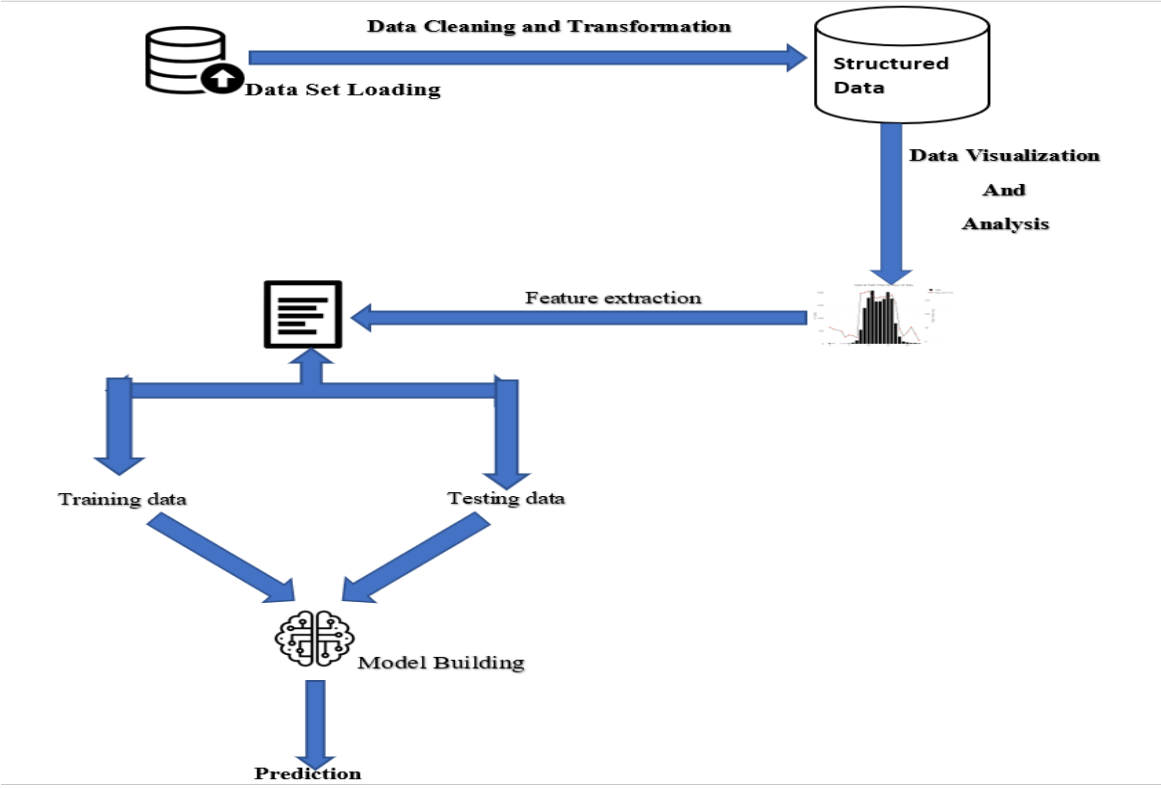
5. PROJECT DESIGN

5.1 Data Flow Diagrams

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored



5.2 Solution Architecture



Technology Architecture:

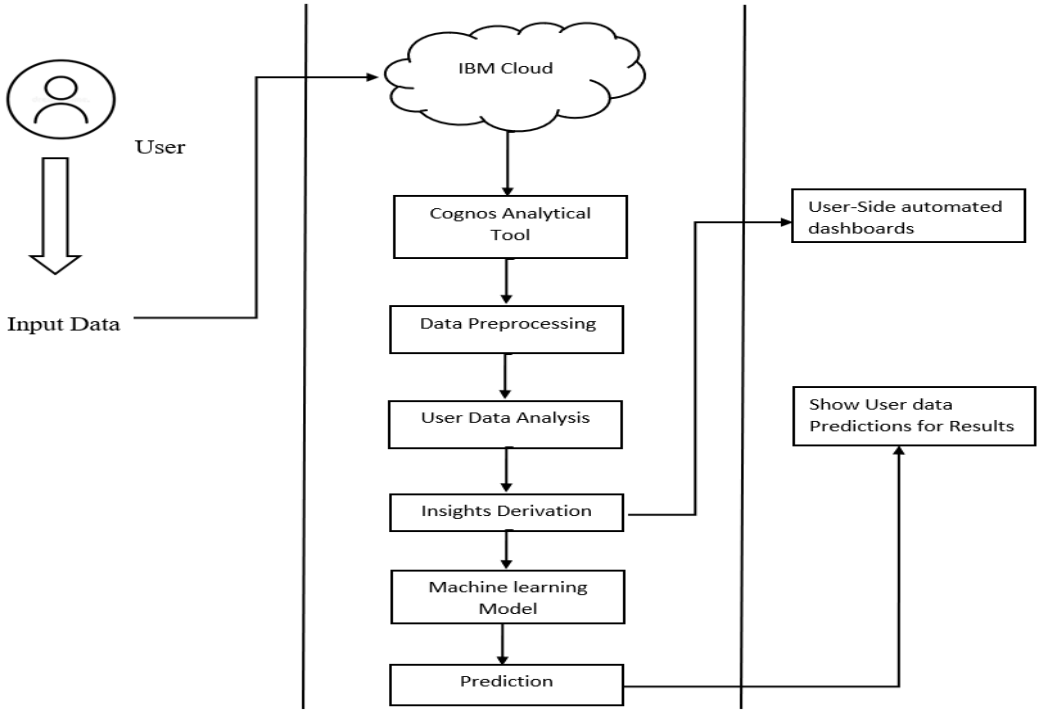


Table-1 : Components & Technologies:

S. No	Component	Description	Technology
1	IBM Cognos Analytics	To perform data analysis(Visualization chart) on the user data	IBM Cognos Tool
2	Data Preprocessing	To prepare the data for the analysis and further process	Python
3	Machine Learning Model	To build the machine learning model for classification	Jupyter Notebook
4	Prediction	To do the predictive analysis on the input data	Analysis Model
5	Dashboard	Graphical User Interface that provides analysis on user data	IBM Cognos Dashboard

Table-2: Application Characteristics:

5.3 User Stories

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirmingmy password.	I can access my account /dashboard	High	Sprint-1
		USN-2	As a user, I will receive confirmation email onceI have registered for the application	I can receive confirmationemail & click confirm	High	Sprint-1
		USN-3	As a user, I can register for the applicationthrough Facebook	I can register & access the dashboard with FacebookLogin	Low	Sprint-2
		USN-4	As a user, I can register for the applicationthrough Gmail	I can register & access the dashboard with Gmail Login	Medium	Sprint-1
	Login	USN-5	As a user, I can log into the application byentering email & password	I can login into the application with Gmail login	High	Sprint-1
	Dashboard	USN-6	As a user I can use the methods provided in the Dashboard.	I can access the dashboardwith various methods	High	Sprint-2
Customer Care Executive	Login	USN-7	As a Customer Care Executive, I can log into the application by entering my Executive email Id & password	I can login with my credentials	Medium	Sprint-1
	Service	USN-8	As a Customer Care Executive, I can answeruser's queries	I can give the solutions tothe user's queries	High	Sprint-3
Administrator	Login	USN-9	As an Administration, I can log into the application by entering my Administer emailId & password	I can login with my credentials	High	Sprint-1
	Access	USN-10	As an admin, I can make changes to theinterface according the needs	I have a full access to theapplication	High	Sprint-3
Customer tools	Tools	USN-11	I can perform analysis by tools (Cognos and with ML)	I have an ease of Accessing tools.	High	Sprint 1

6. PROJECT PLANNING & SCHEDULING

6.1 Sprint Planning & Estimation

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Login	USN-1	As a user, I can register & log into the application by entering email & password	10	High	GUNA SEKAR M
Sprint-1	Verify	USN-2	As a user, I can verify the email with given otpand check for correct subscription access	10	High	GUNA SEKAR M
Sprint-2	Collect Data	USN-3	As an admin I can define questions & goals then collect data & provide the dataset in IBMCognos analytics	10	High	ANANTHA RAMAN
Sprint-2	Prepare & Explore	USN-4	As an admin I can prepare, explore & presentthe dataset in IBM Cognos analytics	10	High	ANANTHA RAMAN B
Sprint-3	Analyze	USN-5	As an admin, I will analyze the given dataset (Data pre-processing)	10	High	SUDHARSAN M
Sprint-3	Predict	USN-6	As an admin, I will predict the length ofstay (Prediction)	10	High	SUDHARSAN M
Sprint-4	Visualization	USN-7	As a user, I can select the visualization type likeReport, Dashboard and story (Creating visualization)	7	Medium	GUNA SEKAR M
Sprint-4	Dashboard	USN-8	As a user, I can upload the datasets to thedashboard and view visualizations	8	High	MANOJ KANNAN S
Sprint-4	Communicate	USN-9	As an admin, I can communicate to the client foruser queries and visualize the best dashboards in any platform as a user expected	5	Low	MANOJ KANNAN S

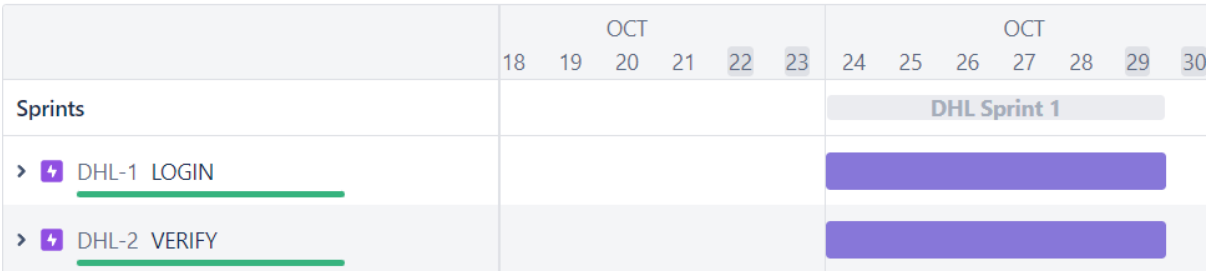
6.2 Sprint Delivery Schedule

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)

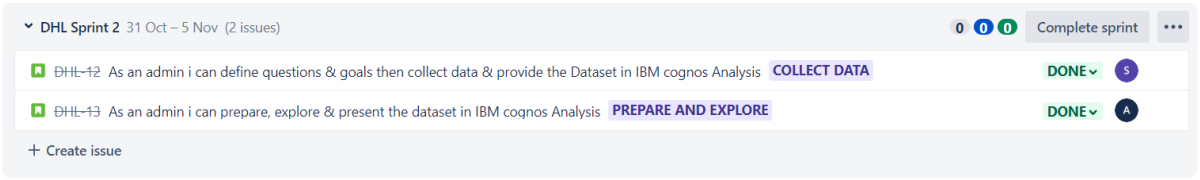
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	20	29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	20	05 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	12 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	19 Nov 2022

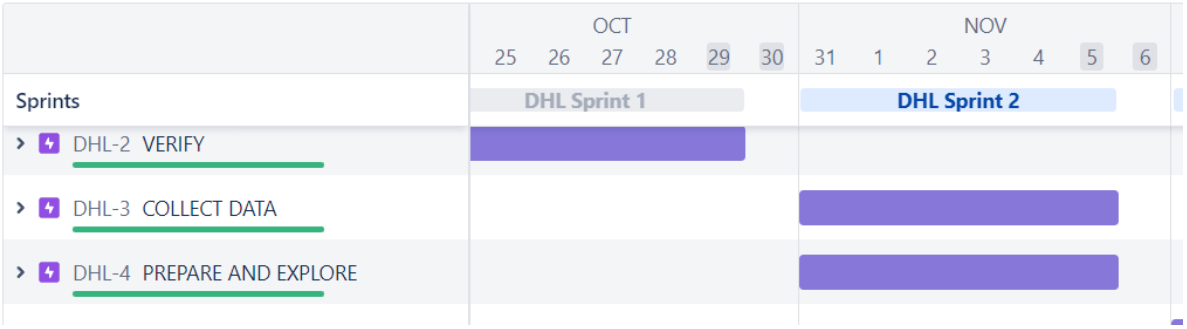
6.3 Reports from JIRA

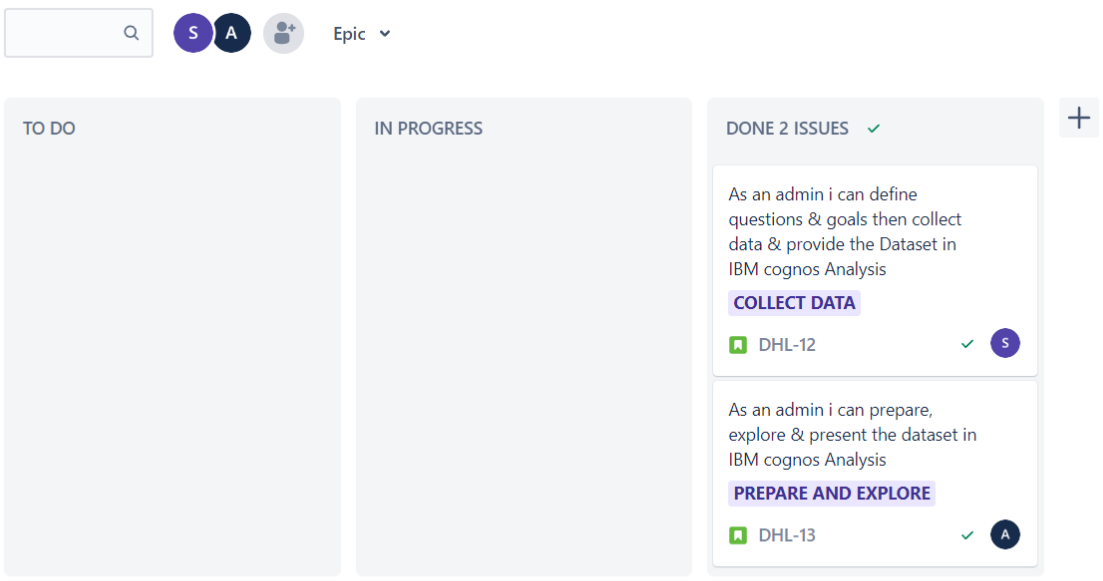
SPRINT 1



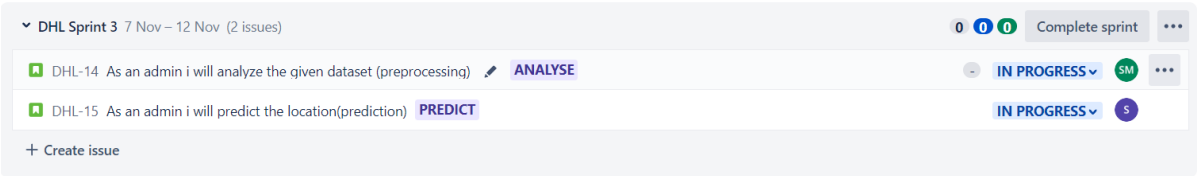
SPRINT 2

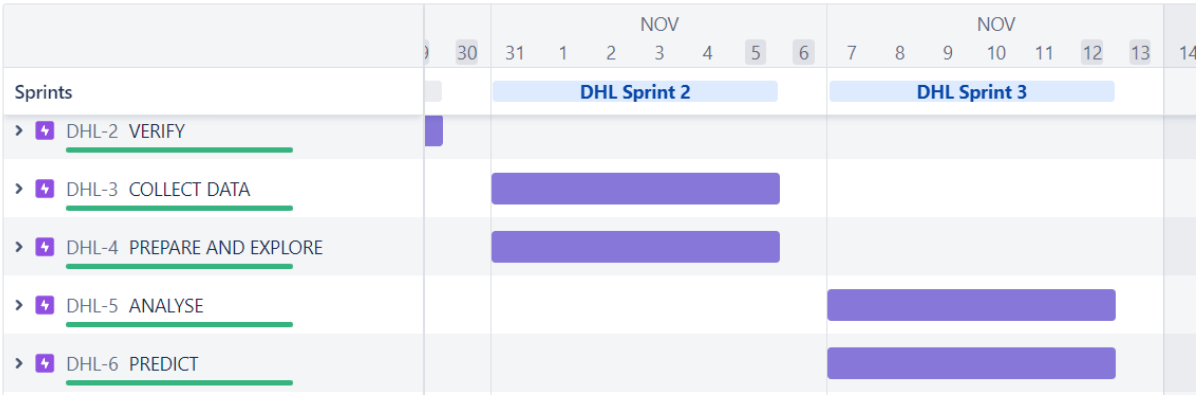




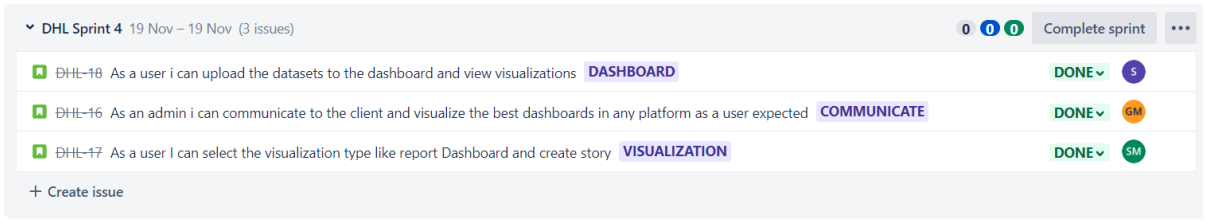


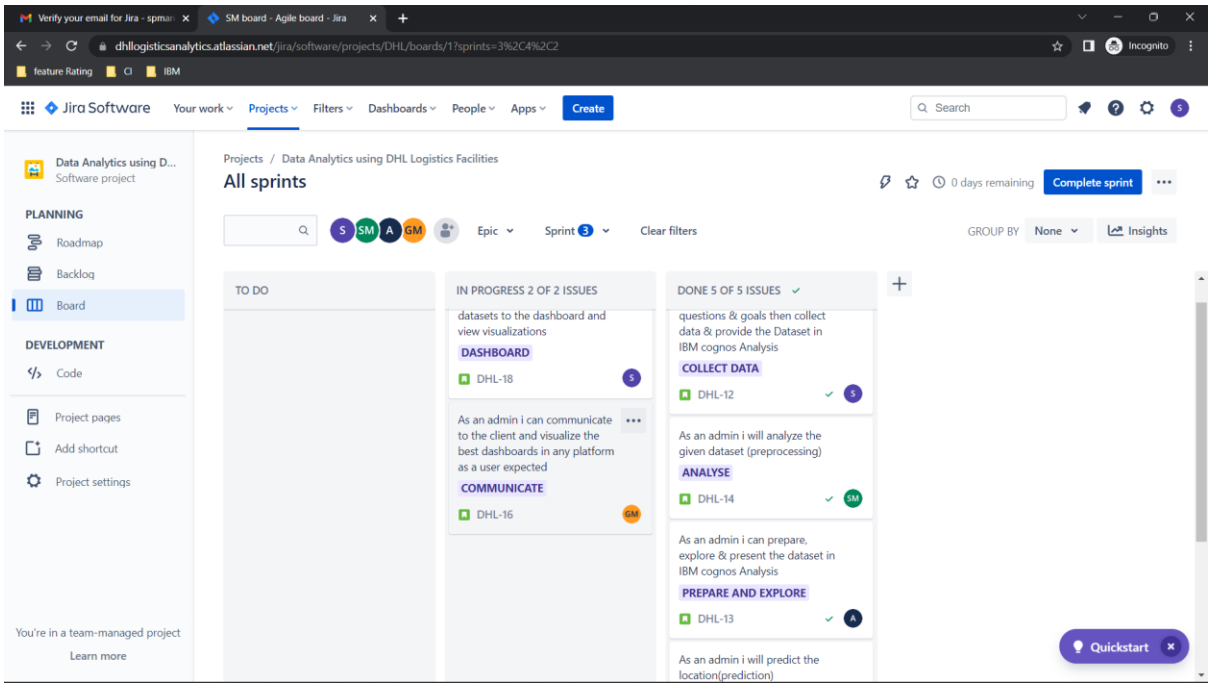
SPRINT 3



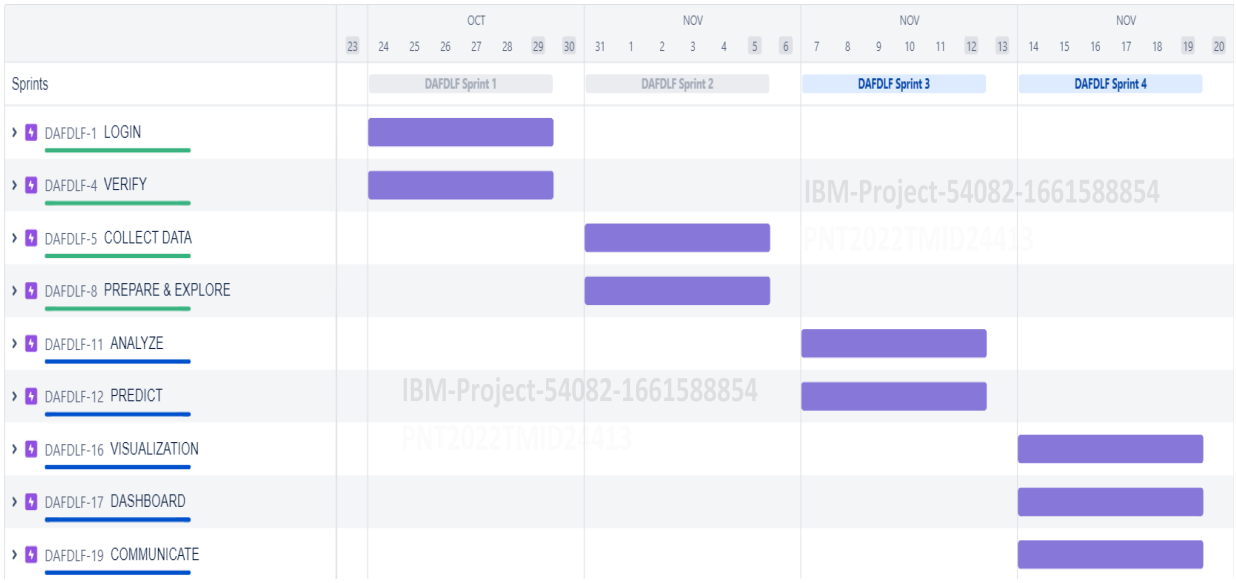


SPRINT 4





Burndown chart:



CODING & SOLUTIONING (Explain the features added in the project along with code)

6.4 Feature 1

```
<!DOCTYPE html>
<html>
<head>
<title>DHL Logistics Facilities</title>
<meta charset="UTF-8">
<meta name="viewport" content="width=device-width, initial-scale=1">
<link rel="stylesheet" href="https://www.w3schools.com/w3css/4/w3.css">
<link rel="stylesheet" href="https://fonts.googleapis.com/css?family=Oswald">
<link rel="stylesheet" href="https://fonts.googleapis.com/css?family=Open Sans">
<link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/4.7.0/css/font-awesome.min.css">
<style>
h1,h2,h3,h4,h5,h6 {font-family: "Oswald"}
body {font-family: "Open Sans"}
</style>
</head>
<body class="w3-light-grey">

<!-- Navigation bar with social media icons -->

<div class="w3-bar w3-black w3-hide-small">
<div align = "left">
  <h2 class = w3-xlarge>DHL Logistics Facilities Analysis</h2></div>
  <div class="w3-right w3-hide-small">
     <a href= "Ind.html" class="w3-bar-item w3-button">Home</a>
     <a href= "data.html" class="w3-bar-item w3-button">Prediction</a>
     <a href= "dashboard.html" class="w3-bar-item w3-button">DashBoard</a>
    </div>
</div>

<!-- w3-content defines a container for fixed size centered content,
and is wrapped around the whole page content, except for the footer in this example -->
<div class="w3-content" style="max-width:1600px">

  <!-- Header -->
  <header class="w3-container w3-center w3-padding-48 w3-white">
    <h6>Welcome to the Analytics of <span class="w3-tag">DHL Logistics Facilities</span></h6>
```

```
</header>

<!-- Grid -->
<div class="w3-row w3-padding w3-border">
  <!-- Blog entries -->
  <div class="w3-col l8 s12">
    <!-- Blog entry -->
    <div class="w3-container w3-white w3-margin w3-padding-large">
      <div class="w3-center">
        <h3>DHL Logistics Facilities Data Visualization</h3>
      </div>

      <div class="w3-justify">
            <iframe
src="https://us3.ca.analytics.ibm.com/bi/?perspective=dashboard&amp;pathRef=.public_folders%2FDHL_Logistics%2FDHL_DashBoard&amp;closeWindowOnLastView=true&amp;ui_appbar=false&amp;ui_navbar=false&amp;shareMode=embedded&amp;action=view&amp;mode=dashboard&amp;subView=model0000018378e9c01e_00000000" width="900" height="500" frameborder="0" gesture="media" allow="encrypted-media" allowfullscreen=""></iframe>
      </div>
    </div>
    <hr>
  <!-- END BLOG ENTRIES -->
  </div>
  <!-- About/Information menu -->
  <div class="w3-col l4">
    <!-- About Card -->
    <div class="w3-white w3-margin">
      <div class="w3-container w3-black">
        <h4>Data Visualization Charts Tab Names : </h4>
        <p>
              <ol>
              <li>Area Chart Showing City Wise DHL Deliveries</li>
              <li>Top N Deliveries By State And City</li>
              <li>Showing Top 3 State Deliveries</li>
              <li>Total Number of Objects IDs Serviced by DHFL - Summary Card</li>
              <ul><li>Zip Code wise Number of Objects Serviced</li>
              <li>Mach Status Filters</li>
              <li>Placement Filters</li></ul>
```

```
            <li>Dashboard Showing Delivery Stats Using Donut Charts</li>
            <ul><li>Placement Filters</li>
            <li>Mach Status Filters</li>
            <li>Location Ty Filters</li>
            <li>Location Th Filters</li></ul>
            <li>Zip Code wise Number of Objects Serviced</li>
            <li>Top Contributor Countries / Cities - Geo Map display</li>
            </ol>
            </p>
      </div>
    </div>
    <hr>
  <!-- END GRID -->
  </div>

<!-- END w3-content -->
</div>
<!-- Footer -->
<footer class="w3-container w3-dark-grey" style="padding:32px">
  <a href="#" class="w3-button w3-black w3-padding-large w3-margin-bottom"><i class="fa
fa-arrow-up w3-margin-right"></i>To the top</a>
  <p>Powered by PNT2022TMID17919</p>
</footer>
</body>
</html>

<!---======Prediction======---!>
<!DOCTYPE html>
<html>
<head>
<title>Data Analytics for DHL Logistics Facilities</title>
<meta charset="UTF-8">
<meta name="viewport" content="width=device-width, initial-scale=1">
<link rel="stylesheet" href="https://www.w3schools.com/w3css/4/w3.css">
<link          href="https://fonts.googleapis.com/css?family=Raleway"          rel="stylesheet"
type="text/css">
<link rel="stylesheet" href="https://www.w3schools.com/w3css/4/w3.css">
<link rel="stylesheet" href="https://fonts.googleapis.com/css?family=Oswald">
<link rel="stylesheet" href="https://fonts.googleapis.com/css?family=Open Sans">
```

```
<link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/4.7.0/css/font-awesome.min.css">
<style>
body {font-family: "Raleway", Arial, sans-serif}
.w3-row img {margin-bottom: -8px}
body {font-family: Arial, Helvetica, sans-serif;}
* {box-sizing: border-box;}

input[type=text], select, textarea {
  width: 100%;
  padding: 12px;
  border: 1px solid #ccc;
  border-radius: 4px;
  box-sizing: border-box;
  margin-top: 6px;
  margin-bottom: 16px;
  resize: vertical;
}

input[type=submit] {
  background-color: #04AA6D;
  color: white;
  padding: 12px 20px;
  border: none;
  border-radius: 4px;
  cursor: pointer;
}

input[type=submit]:hover {
  background-color: #45a049;
}

.container {
  border-radius: 5px;
  background-color: #f2f2f2;
  padding: 20px;
}
</style>
</head>
<body>
```

```
<div class="w3-bar w3-black w3-hide-small">
<div align = "left">
  <h2 class = w3-xlarge>DHL Logistics Facilities Analysis</h2></div>
  <div class="w3-right w3-hide-small">
     <a href= "Ind.html" class="w3-bar-item w3-button">Home</a>
     <a href= "data.html" class="w3-bar-item w3-button">Prediction</a>
     <a href= "dashboard.html" class="w3-bar-item w3-button">DashBoard</a>
      <!--<a href= "Ind.html" class="w3-bar-item w3-button">Home</a>-->
   </div>
</div>
   <div class="container" data-aos="fade-up">
     <div class="predictform">
      <h2>Predict</h2>
     <form action="{{ url_for('result') }}" method="POST" >

        <label for="X-COORDINATE">ENTER THE X : </label>
        <input type="text" name="X" id="X" required><br/><br/>
        <label for="Y-COORDINATE">ENTER THE Y: </label>
        <input type="text" name="Y" id="Y" required><br/><br/>
        <label for="OBJECTID">ENTER THE OBJECTID : </label>
        <input type="text" name="objectid" id="objectid" required><br/><br/>
        <label for="FEATUREID">ENTER THE FEATURE ID : </label>
        <input type="text" name="featureid" id="featureid" required><br/><br/>
        <label for="ZIPCODE">ENTER THE ZIP CODE : </label>
        <input type="text" name="zipcode" id="zipcode" required><br/><br/>
        <label for="LATITUTDE">ENTER THE LATITUDE: </label>
        <input type="text" name="latitude" id="latitude" required><br/><br/>
        <label for="LONGITUDE">ENTER THE LONGITUDE: </label>
        <input type="text" name="longitude" id="longitude" required><br/><br/>
        <label for="CENSUS_CODE">ENTER THE CENSUS CODE: </label>
        <input type="text" name="censuscode" id="censuscode" required><br/><br/>
        <input type="submit" value="predict" align="center" name="predict"/>
     </form>
     </div>
   </div>
   <p  style="position:relative;left:300px;color:red;font-size:larger">Predicted  City  is  :
Austin</p>
  </section>

</body>
```

```
</html>
```

6.5 Prediction

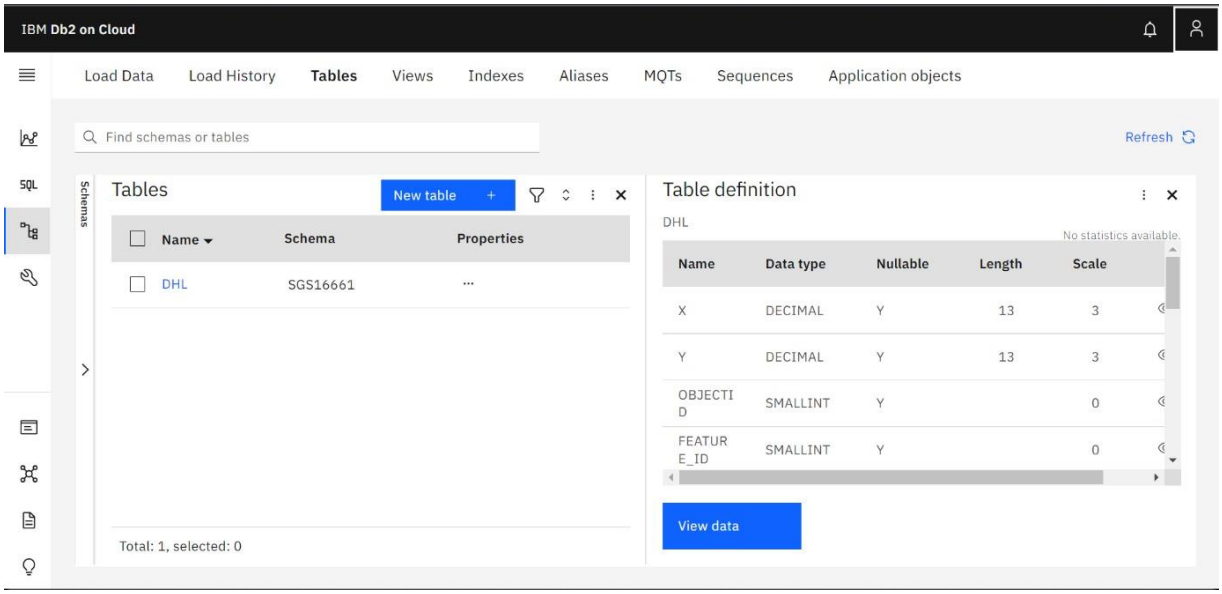
Predict the City based on the X-Coordinate, Y-Coordinate, Objectid, Featureid, Latitude, Longitude, Zipcode using the random forest algorithm.

```
from flask import Flask, render_template, request
app = Flask(__name__)

@app.route('/result',methods = ['POST'])
def result():
   temp=[]
   columns=['X','Y','OBJECTID','FEATURE_ID','LATITUDE','LONGITUDE','ZIP']
   temp.append(int(request.form['X']))
   temp.append(int(request.form['Y']))
   temp.append(int(request.form['objectid']))
   temp.append(int(request.form['featureid']))
   temp.append(int(request.form['latitude']))
   temp.append(int(request.form['longitude']))
   temp.append(int(request.form['zipcode']))
   df = pd.read_csv('DHL_Facilities.csv')
   X = df.iloc[:,0:4] #Geo-Codes, ObjectID, FeatureID
   Y = df.iloc[:,9:12] #Latitude, Longitude
   Z = df.iloc[:,14] #ZipCode
   X = pd.concat([X,Y,Z],axis = 1)
   Y = df.iloc[:,7]
   X = X.replace('Not Available',0)
   X = pd.DataFrame(X)
   df1=pd.DataFrame(columns=columns)
   df1=pd.concat((df,pd.DataFrame(data=[temp],columns=columns)))
   classifier=RandomForestClassifier(n_estimators=50, random_state=0)
   x_train,x_test,y_train,y_test = train_test_split(X,Y,test_size=0.2,random_state = 0)
   scaler = StandardScaler()
   x_train = scaler.fit_transform(x_train)
   classifier.fit(x_train,y_train)
   pred = classifier.predict(df1)
   return render_template("data.html",result = result)


if __name__ == '__main__':
```

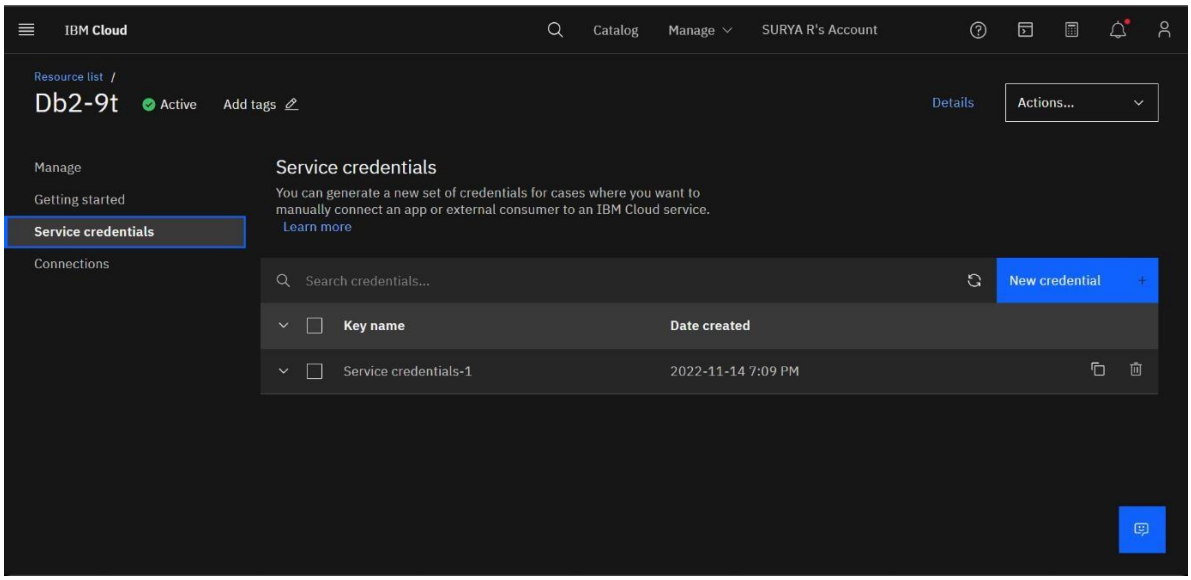
app.run()

6.6 Database Schema (if Applicable)

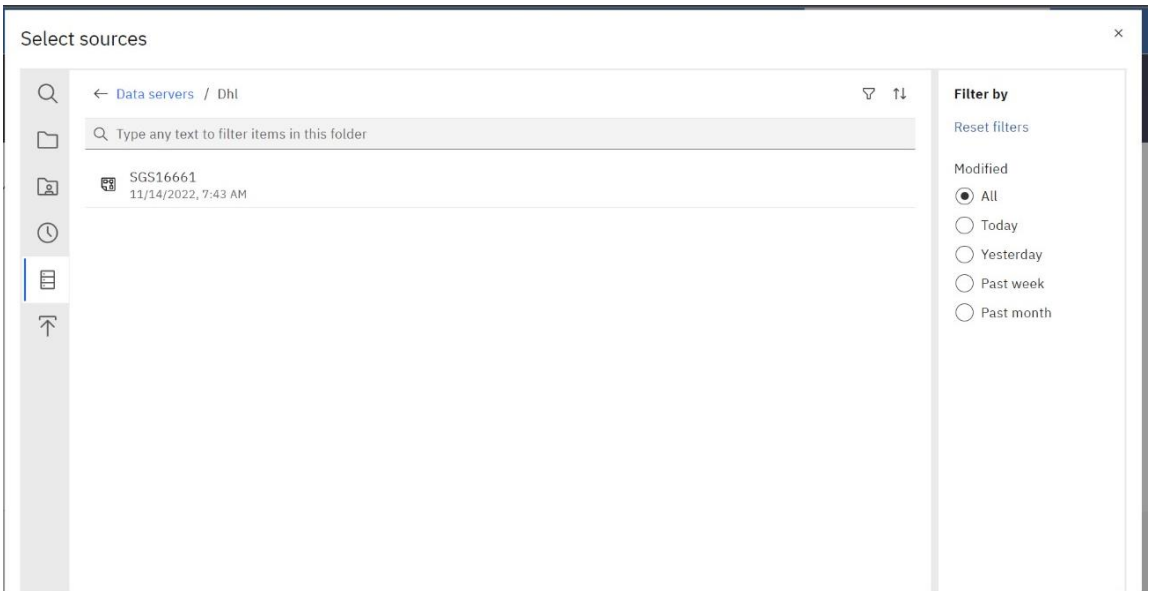
Table Created in DB2



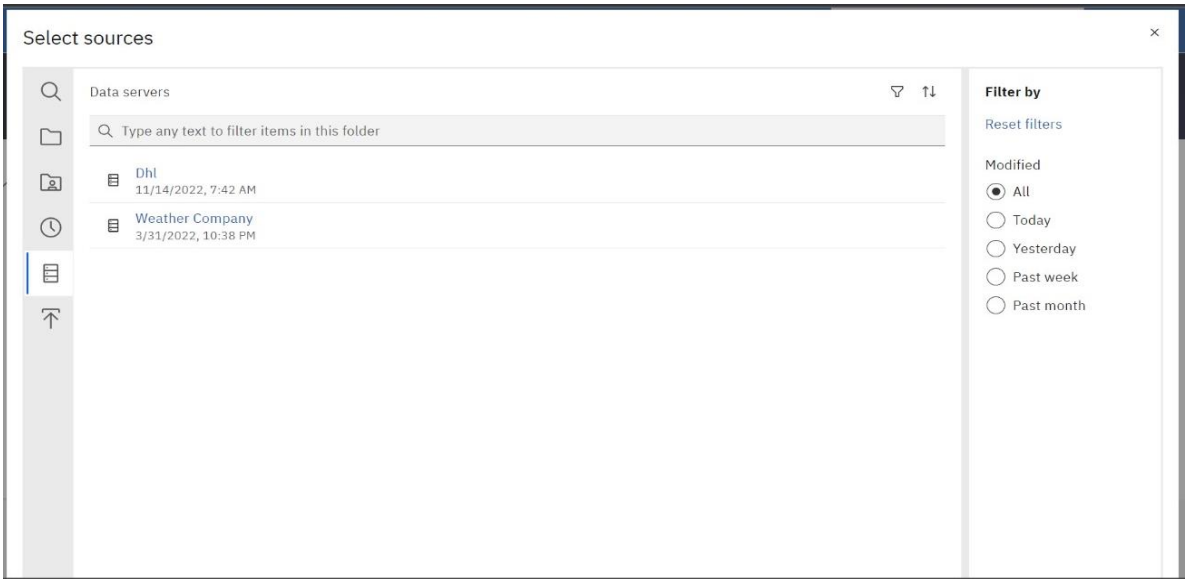
Create Service Credentials



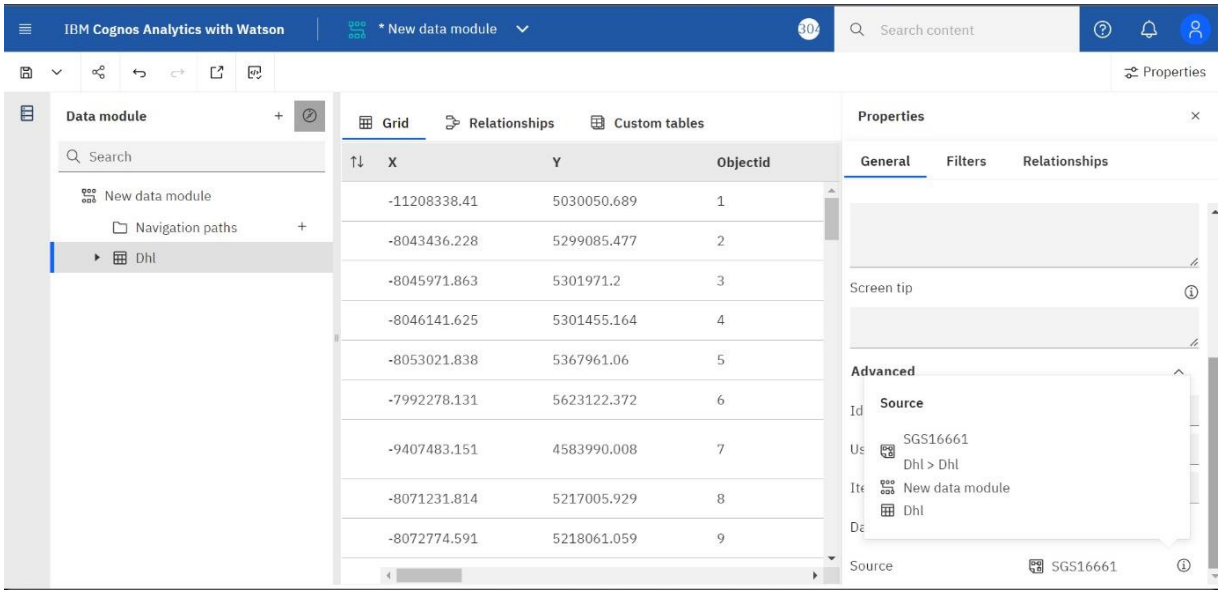
Connected to Cognos: **Select Schema**



Select correct data



Displayed the meta data in Cognos



7. TESTING

7.1 Test Cases

Component	Test Scenario	Test Data	Expected result	Status
Login Page	User enters the name and Password	Username : admin123 Password : admin	User should be navigated to the dashboard	Working as expected
Login Page	User enters incorrect name and Password	Username : adminxyz Password : admin1	Error Message	Working as expected
Main Page	User able to navigate to the dashboard		The Visualizations are displayed	Working as expected
Main Page	User able to navigate to the Prediction page	User enters details about location, objected, featureid and zipcode	Details submitted	Working as expected
Main Page	Prediction result is viewed		City name displayed	Working as expected

7.2 User Acceptance Testing

1. **Purpose of Document:**

The purpose of this document is to briefly explain the test coverage and open issues of analysing the DHL Logistics facilities information

2. **Defect Analysis:**

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Subtotal
By Design	7	5	3	2	17
Duplicate	1	0	2	0	3
External	3	2	0	1	6
Fixed	11	3	5	15	34
Not Reproduced	0	0	0	1	1
Skipped	0	1	0	1	2
Won't Fix	0	3	5	1	9
Totals	22	14	15	21	72

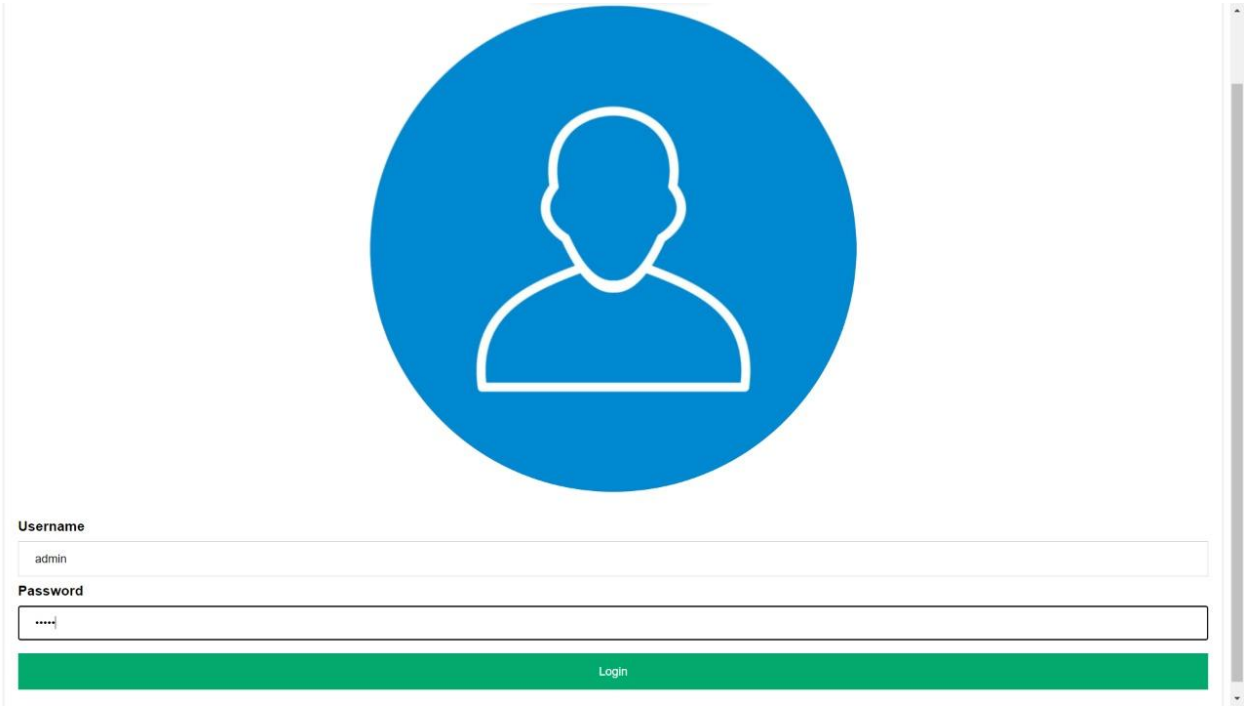
3. **Test Case Analysis:**

Section	Total Cases	Not Tested	Fail	Pass
Print Engine	7	0	0	7
Client Application	40	0	0	40
Security	2	0	0	2
Outsource Shipping	3	0	0	3
Exception Reporting	9	0	0	9
Final Report Output	3	0	0	3
Version Control	1	0	0	1

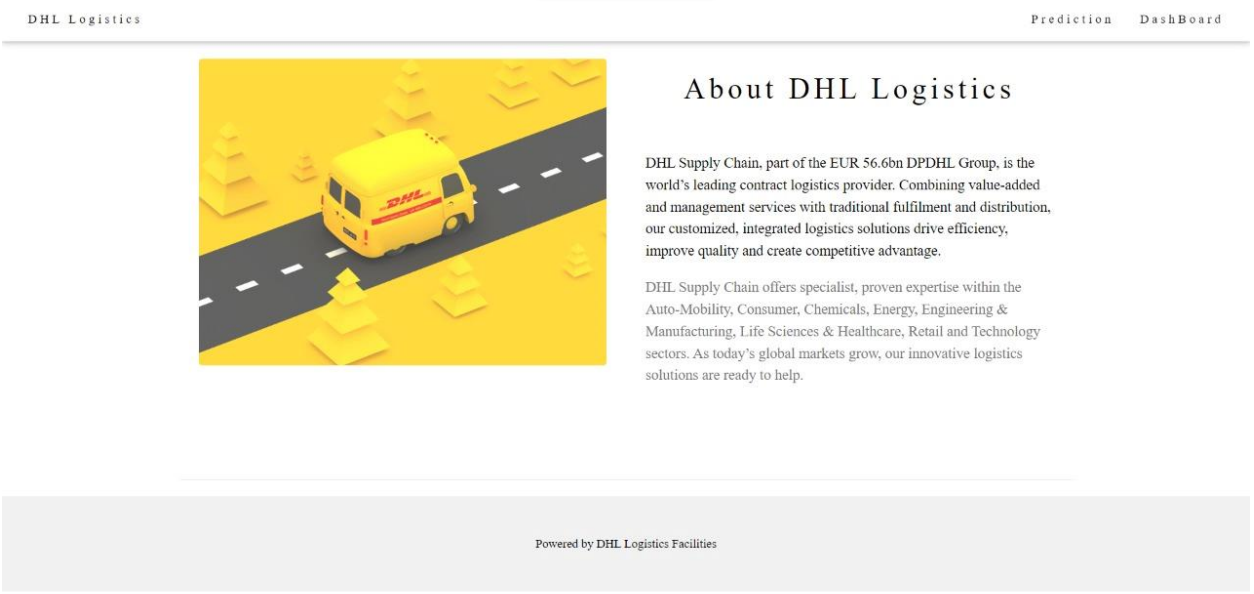
8. RESULTS

8.1 Performance Metrics

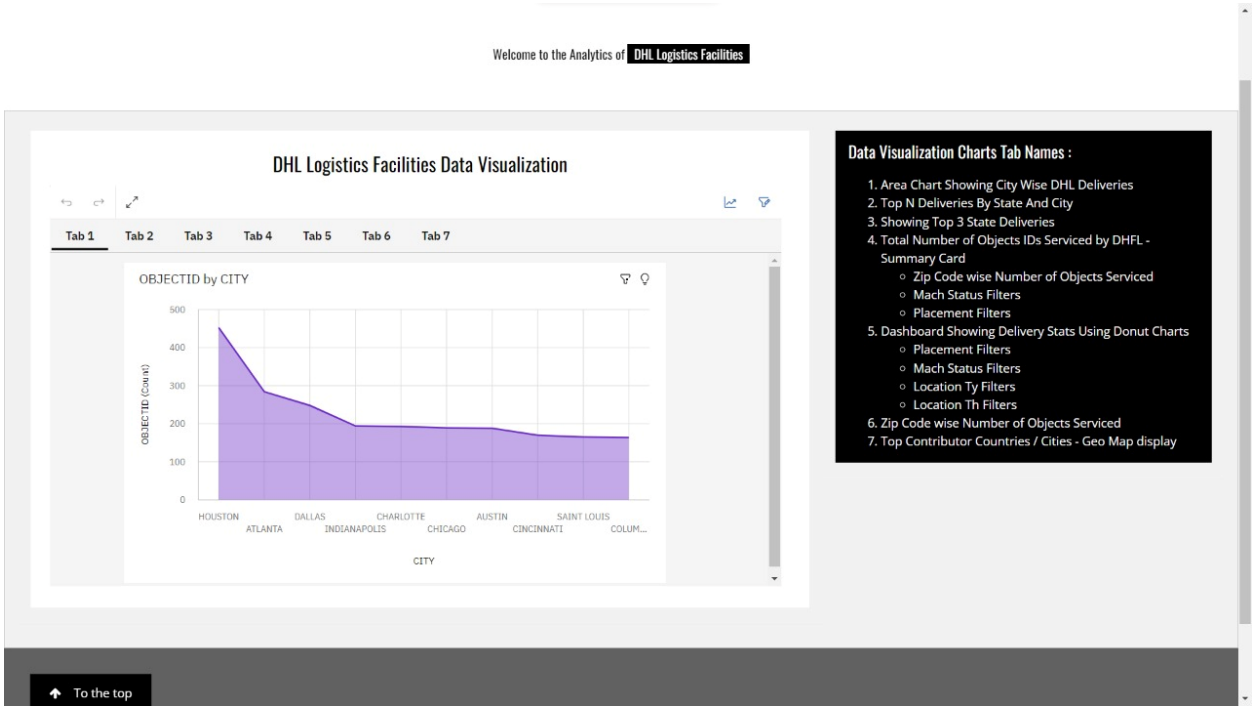
LOGIN PAGE:

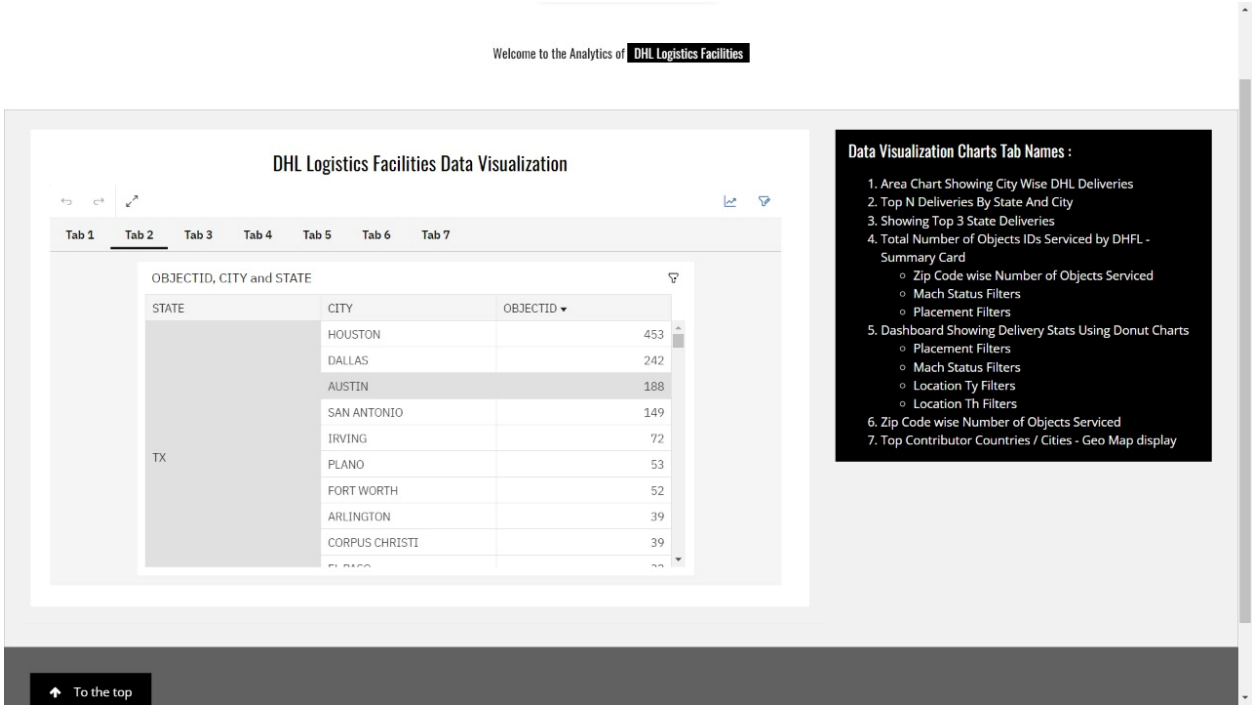


ABOUT: DHL:



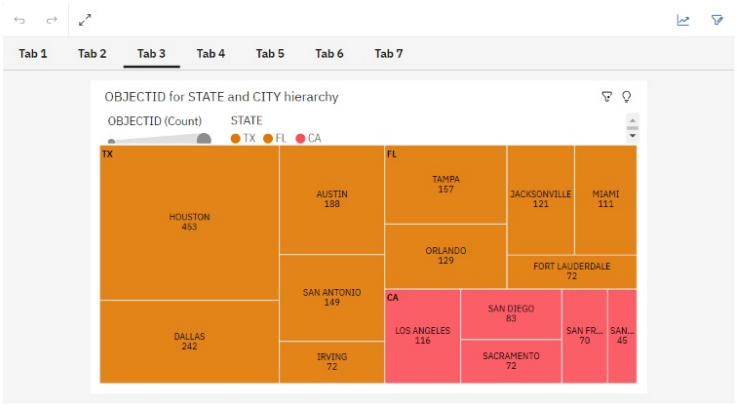
DASHBOARD CHARTS:





Welcome to the Analytics of **DHL Logistics Facilities**

DHL Logistics Facilities Data Visualization



Data Visualization Charts Tab Names :

1. Area Chart Showing City Wise DHL Deliveries
2. Top N Deliveries By State And City
3. Showing Top 3 State Deliveries
4. Total Number of Objects IDs Serviced by DHFL - Summary Card
   - Zip Code wise Number of Objects Serviced
   - Mach Status Filters
   - Placement Filters
5. Dashboard Showing Delivery Stats Using Donut Charts
   - Placement Filters
   - Mach Status Filters
   - Location Ty Filters
   - Location Th Filters
6. Zip Code wise Number of Objects Serviced
7. Top Contributor Countries / Cities - Geo Map display

To the top

Welcome to the Analytics of **DHL Logistics Facilities**

DHL Logistics Facilities Data Visualization

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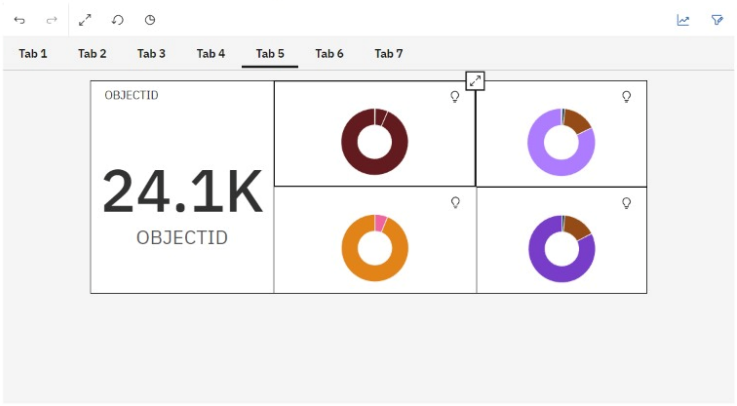
To the top

Welcome to the Analytics of **DHL Logistics Facilities**

DHL Logistics Facilities Data Visualization



Data Visualization Charts Tab Names :

1. Area Chart Showing City Wise DHL Deliveries
2. Top N Deliveries By State And City
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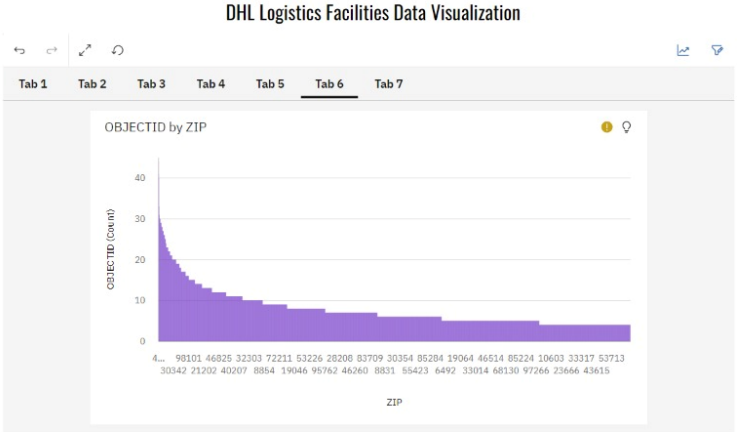
To the top

Welcome to the Analytics of **DHL Logistics Facilities**

DHL Logistics Facilities Data Visualization



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1. Area Chart Showing City Wise DHL Deliveries
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   - Zip Code wise Number of Objects Serviced
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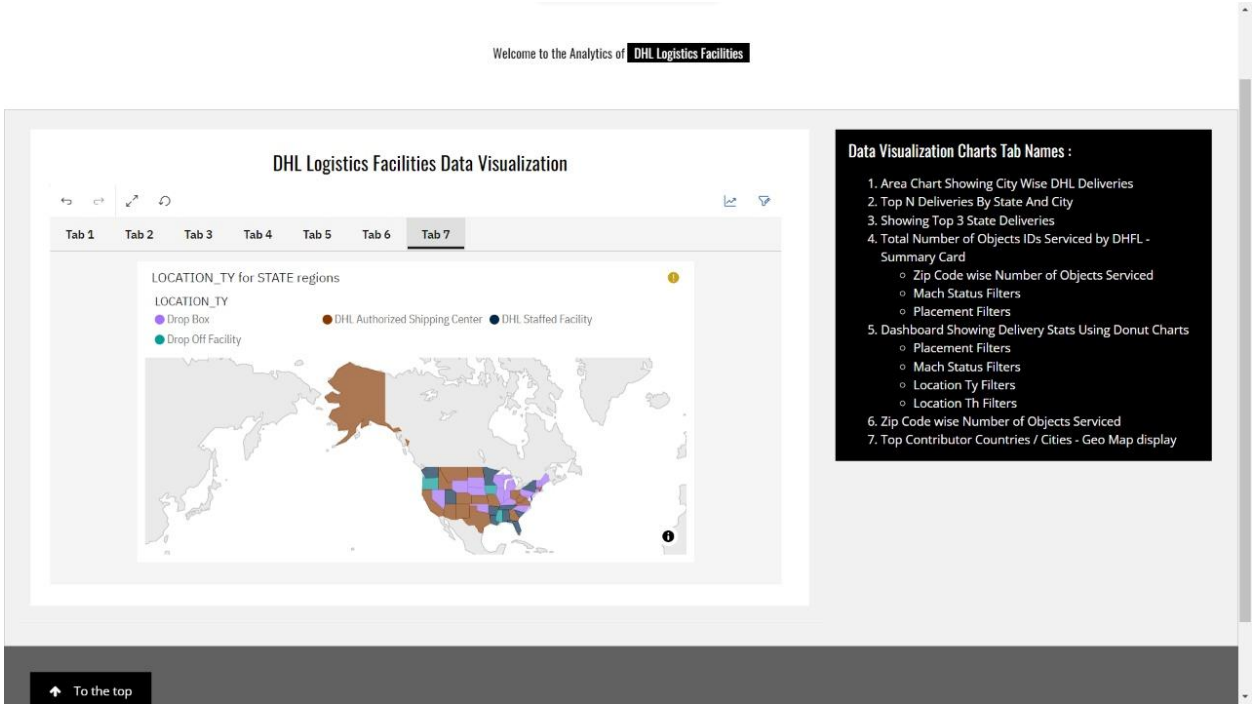
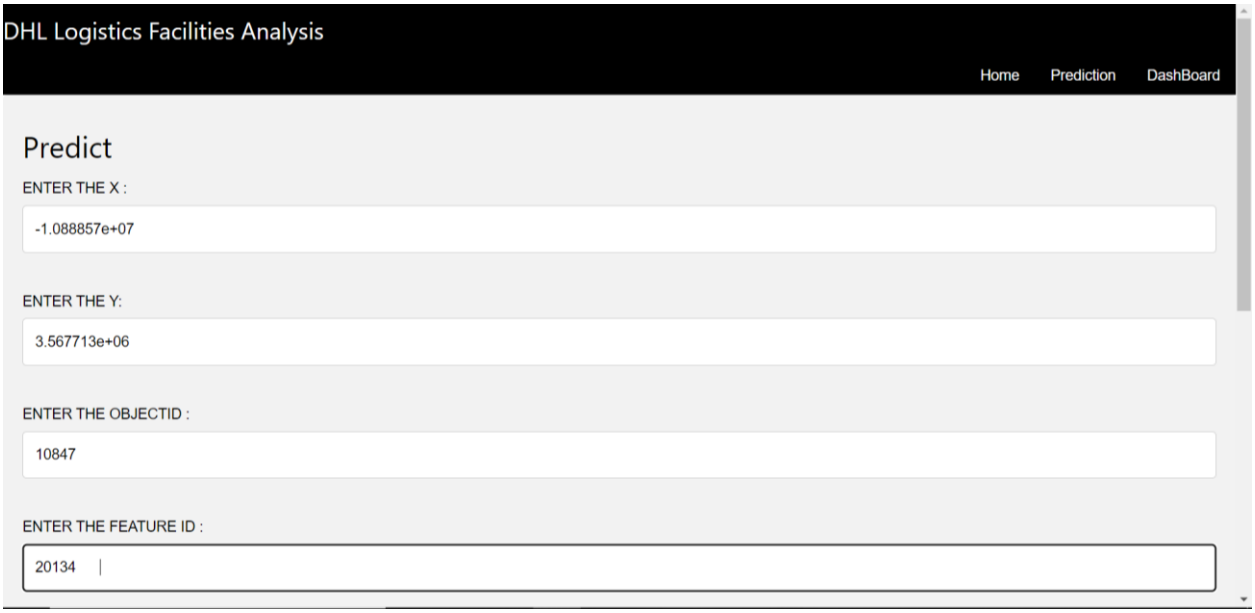
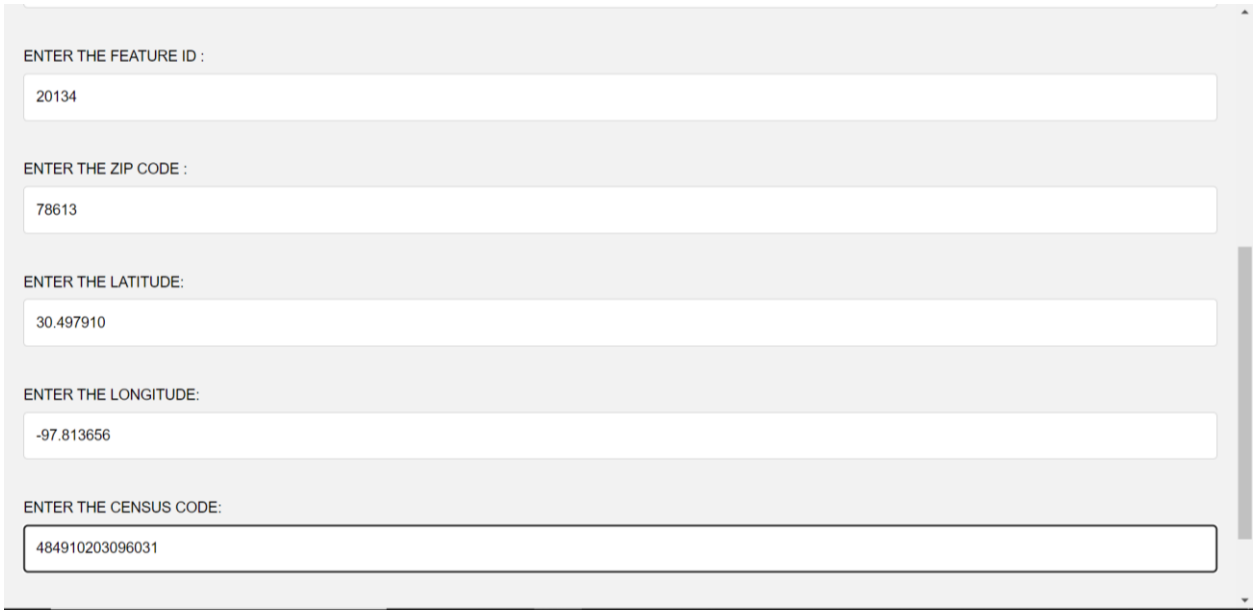
   - Mach Status Filters
   - Location Ty Filters
   - Location Th Filters
6. Zip Code wise Number of Objects Serviced
7. Top Contributor Countries / Cities - Geo Map display

To the top



PREDICTION PAGE:





9. ADVANTAGES & DISADVANTAGES

Advantages:

This application helps the users to get idea about the DHL Logistics facilities information and analysis of services it produces and also to estimate the city name based on the location details.

Disadvantages:

Usage of this application requires prior knowledge about the DHL Logistics.

10. CONCLUSION

This application is designed in such a way that it provides analysis about DHL Logistics facilities to the user and better understanding of product delivery services which helps in process of to provide analytics to improve the business

11. FUTURE SCOPE

The application is designed in such a way that it provides opportunities for making enhancements in the future by adding features like analysis about delivery services , online services, delivery ordering, etc.

12. APPENDIX

SOURCE CODE

myapp.py

```
from sklearn.ensemble import RandomForestClassifier
import pandas as pd
import numpy as np
import pickle
from flask import Flask, request, render_template
from sklearn.metrics import precision_score,recall_score,f1_score
from sklearn.metrics import accuracy_score
from sklearn.preprocessing import StandardScaler
from sklearn.model_selection import train_test_split
app = Flask(__name__)
@app.route("/template")
def home():
```

```
    return render_template("Login.html")

@app.route("/template",methods=["POST","GET"])
def index():
    return render_template("index.html")



@app.route("/template",methods=["POST","GET"])
def result():
    temp=[]

columns=['X','Y','OBJECTID','FEATURE_ID','ZIP','LATITUDE','LONGITUDE','CENSUS_CO
DE']
    temp.append(int(request.form['X']))
    temp.append(int(request.form['Y']))
    temp.append(int(request.form['objectid']))
    temp.append(int(request.form['featureid']))
    temp.append(int(request.form['zipcode']))
    temp.append(int(request.form['latitude']))
    temp.append(int(request.form['longitude']))
    temp.append(int(request.form['censuscode']))
    df = pd.read_csv('DHL_Facilities.csv')
    X = df.iloc[:,0:4] #Geo-Codes, ObjectID, FeatureID
    Y = df.iloc[:,9:12] #Latitude, Longitude
    Z = df.iloc[:,14] #ZipCode
    X = pd.concat([X,Y,Z],axis = 1)
    Y = df.iloc[:,7]
    X = X.replace('Not Available',0)
    X = pd.DataFrame(X)
    df1=pd.DataFrame(columns=columns)
    df2=pd.concat((df1,pd.DataFrame(data=[temp],columns=columns)))
```

```
    classifier=RandomForestClassifier(n_estimators=50, random_state=0)
    x_train,x_test,y_train,y_test = train_test_split(X,Y,test_size=0.2,random_state = 0)
    classifier.fit(x_train,y_train)
    res = classifier.predict(df2)
    return render_template("data.html",result = res)

    if __name__=='__main__':
            app.run()
```

Login.html

```
<!DOCTYPE html>
<html>
<head>
<meta name="viewport" content="width=device-width, initial-scale=1">
<style>
body {font-family: Arial, Helvetica, sans-serif;}
form {border: 3px solid #f1f1f1;}

input[type=text], input[type=password] {
  width: 100%;
  padding: 12px 20px;
  margin: 8px 0;
  display: inline-block;
  border: 1px solid #ccc;
  box-sizing: border-box;
}

button {
  background-color: #04AA6D;
  color: white;
  padding: 14px 20px;
```

```
  margin: 8px 0;
  border: none;
  cursor: pointer;
  width: 100%;
}

button:hover {
  opacity: 0.8;
}

.cancelbtn {
  width: auto;
  padding: 10px 18px;
  background-color: #f44336;
}

.imgcontainer {
  text-align: center;
  margin: 24px 0 12px 0;
}

img.avatar {
  width: 40%;
  border-radius: 50%;
}

.container {
  padding: 16px;
}

span.psw {
```

```
  float: right;
  padding-top: 16px;
}

/* Change styles for span and cancel button on extra small screens */
@media screen and (max-width: 300px) {
  span.psw {
     display: block;
     float: none;
  }
  .cancelbtn {
     width: 100%;
  }
}
</style>
</head>
<body>

<h2>Login Form</h2>

<form action="/Sem 7/Nalaiya thiran/IBM/Ind.html" method="post">
  <div class="imgcontainer">
    <img src="avathar.jpg" alt="Avatar" class="avatar">
  </div>

  <div class="container">
    <label for="uname"><b>Username</b></label>
    <input type="text" placeholder="Enter Username" name="uname" required>

    <label for="psw"><b>Password</b></label>
    <input type="password" placeholder="Enter Password" name="psw" required>
```

```
    <button type="submit">Login</button>
  </div>
</form>
<script src="vendor/jquery/jquery.min.js"></script>
    <script src="vendor/bootstrap/js/bootstrap.bundle.min.js"></script>

    <!-- Core plugin JavaScript-->
    <script src="vendor/jquery-easing/jquery.easing.min.js"></script>

    <!-- Custom scripts for all pages-->
    <script src="js/sb-admin-2.min.js"></script>

    <script type="text/javascript">
        var loginCheck=function(){
        const loginForm = document.getElementById("login-form");
        const loginButton = document.getElementById("login-form-submit");
        // const loginErrorMsg = document.getElementById("login-error-msg");
            const username = loginForm.username.value;
            const password = loginForm.password.value;

            if (username === "admin" && password === "admin123") {
              window.location.replace("Ind.html");
            } else {
                alert("Invalid Username/Password!");
                console.log("login error");
            }
        }
    </script>

</body>
```

```
</html>
```

Dashboard.html

```
<!DOCTYPE html>
<html>
<head>
<title>DHL Logistics Facilities</title>
<meta charset="UTF-8">
<meta name="viewport" content="width=device-width, initial-scale=1">
<link rel="stylesheet" href="https://www.w3schools.com/w3css/4/w3.css">
<link rel="stylesheet" href="https://fonts.googleapis.com/css?family=Oswald">
<link rel="stylesheet" href="https://fonts.googleapis.com/css?family=Open Sans">
<link  rel="stylesheet"  href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/4.7.0/css/font-awesome.min.css">
<style>
h1,h2,h3,h4,h5,h6 {font-family: "Oswald"}
body {font-family: "Open Sans"}
</style>
</head>
<body class="w3-light-grey">

<!-- Navigation bar with social media icons -->

<div class="w3-bar w3-black w3-hide-small">
<div align = "left">
  <h2 class = w3-xlarge>DHL Logistics Facilities Analysis</h2></div>
  <div class="w3-right w3-hide-small">
     <a href= "Ind.html" class="w3-bar-item w3-button">Home</a>
     <a href= "data.html" class="w3-bar-item w3-button">Prediction</a>
     <a href= "dashboard.html" class="w3-bar-item w3-button">DashBoard</a>
   </div>
</div>
```

```
<!-- w3-content defines a container for fixed size centered content,
and is wrapped around the whole page content, except for the footer in this example -->
<div class="w3-content" style="max-width:1600px">

  <!-- Header -->
  <header class="w3-container w3-center w3-padding-48 w3-white">
    <h6>Welcome to the Analytics of <span class="w3-tag">DHL Logistics Facilities</span></h6>
  </header>


  <!-- Grid -->
  <div class="w3-row w3-padding w3-border">

    <!-- Blog entries -->
    <div class="w3-col l8 s12">

      <!-- Blog entry -->
      <div class="w3-container w3-white w3-margin w3-padding-large">
        <div class="w3-center">
          <h3>DHL Logistics Facilities Data Visualization</h3>
        </div>

        <div class="w3-justify">
                    <iframe
src="https://us3.ca.analytics.ibm.com/bi/?perspective=dashboard&amp;pathRef=.public_folders%2FDHL_Logistics%2FDHL_DashBoard&amp;closeWindowOnLastView=true&amp;ui_appbar=false&amp;ui_navbar=false&amp;shareMode=embedded&amp;action=view&amp;mode=dashboard&amp;subView=model0000018378e9c01e_00000000" width="900" height="500" frameborder="0" gesture="media" allow="encrypted-media" allowfullscreen=""></iframe>
```

```
  </div>
 </div>
 <hr>
<!-- END BLOG ENTRIES -->
</div>

<!-- About/Information menu -->
<div class="w3-col l4">
 <!-- About Card -->
 <div class="w3-white w3-margin">
  <div class="w3-container w3-black">
   <h4>Data Visualization Charts Tab Names : </h4>
   <p>
                <ol>
                <li>Area Chart Showing City Wise DHL Deliveries</li>
                <li>Top N Deliveries By State And City</li>
                <li>Showing Top 3 State Deliveries</li>
                <li>Total Number of Objects IDs Serviced by DHFL - Summary Card</li>
                <ul><li>Zip Code wise Number of Objects Serviced</li>
                <li>Mach Status Filters</li>
                <li>Placement Filters</li></ul>
                <li>Dashboard Showing Delivery Stats Using Donut Charts</li>
                <ul><li>Placement Filters</li>
                <li>Mach Status Filters</li>
                <li>Location Ty Filters</li>
                <li>Location Th Filters</li></ul>
                <li>Zip Code wise Number of Objects Serviced</li>
                <li>Top Contributor Countries / Cities - Geo Map display</li>
                </ol>
                </p>
  </div>
```

```
    </div>
    <hr>
  <!-- END GRID -->
  </div>

<!-- END w3-content -->
</div>
<!-- Footer -->
<footer class="w3-container w3-dark-grey" style="padding:32px">
  <a href="#" class="w3-button w3-black w3-padding-large w3-margin-bottom"><i class="fa fa-arrow-up w3-margin-right"></i>To the top</a>
  <p>Powered by PNT2022TMID17919</p>
</footer>
</body>
</html>
```

data.html

```
<!DOCTYPE html>
<html>
<head>
<title>Data Analytics for DHL Logistics Facilities</title>
<meta charset="UTF-8">
<meta name="viewport" content="width=device-width, initial-scale=1">
<link rel="stylesheet" href="https://www.w3schools.com/w3css/4/w3.css">
<link href="https://fonts.googleapis.com/css?family=Raleway" rel="stylesheet" type="text/css">
<link rel="stylesheet" href="https://www.w3schools.com/w3css/4/w3.css">
<link rel="stylesheet" href="https://fonts.googleapis.com/css?family=Oswald">
<link rel="stylesheet" href="https://fonts.googleapis.com/css?family=Open Sans">
<link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/4.7.0/css/font-awesome.min.css">
<style>
```

```
body {font-family: "Raleway", Arial, sans-serif}
.w3-row img {margin-bottom: -8px}
body {font-family: Arial, Helvetica, sans-serif;}
* {box-sizing: border-box;}

input[type=text], select, textarea {
  width: 100%;
  padding: 12px;
  border: 1px solid #ccc;
  border-radius: 4px;
  box-sizing: border-box;
  margin-top: 6px;
  margin-bottom: 16px;
  resize: vertical;
}

input[type=submit] {
  background-color: #04AA6D;
  color: white;
  padding: 12px 20px;
  border: none;
  border-radius: 4px;
  cursor: pointer;
}

input[type=submit]:hover {
  background-color: #45a049;
}

.container {
  border-radius: 5px;
```

```
  background-color: #f2f2f2;
  padding: 20px;
}
</style>
</head>
<body>
<div class="w3-bar w3-black w3-hide-small">
<div align = "left">
  <h2 class = w3-xlarge>DHL Logistics Facilities Analysis</h2></div>
  <div class="w3-right w3-hide-small">
     <a href= "Ind.html" class="w3-bar-item w3-button">Home</a>
     <a href= "data.html" class="w3-bar-item w3-button">Prediction</a>
     <a href= "dashboard.html" class="w3-bar-item w3-button">DashBoard</a>
          <!--<a href= "Ind.html" class="w3-bar-item w3-button">Home</a>-->
   </div>
</div>
   <div class="container" data-aos="fade-up">
     <div class="predictform">
       <h2>Predict</h2>
     <form action="{{ url_for('result') }}" method="POST" >

        <label for="X-COORDINATE">ENTER THE X : </label>
        <input type="text" name="X" id="X" required><br/><br/>
        <label for="Y-COORDINATE">ENTER THE Y: </label>
        <input type="text" name="Y" id="Y" required><br/><br/>
        <label for="OBJECTID">ENTER THE OBJECTID : </label>
        <input type="text" name="objectid" id="objectid" required><br/><br/>
        <label for="FEATUREID">ENTER THE FEATURE ID : </label>
        <input type="text" name="featureid" id="featureid" required><br/><br/>
        <label for="ZIPCODE">ENTER THE ZIP CODE : </label>
        <input type="text" name="zipcode" id="zipcode" required><br/><br/>
```

```
        <label for="LATITUTDE">ENTER THE LATITUDE: </label>
        <input type="text" name="latitude" id="latitude" required><br/><br/>
        <label for="LONGITUDE">ENTER THE LONGITUDE: </label>
        <input type="text" name="longitude" id="longitude" required><br/><br/>
        <label for="CENSUS_CODE">ENTER THE CENSUS CODE: </label>
        <input type="text" name="censuscode" id="censuscode" required><br/><br/>
        <input type="submit" value="predict" align="center" name="predict"/>
    </form>
    </div>
  </div>
  <p style="position:relative;left:300px;color:red;font-size:larger">Predicted City is : Austin</p>
 </section>

</body>
</html>
```

Index.html

```
<!DOCTYPE html>
<html>
<head>
<title>DHL Logistics Facilities</title>
<meta charset="UTF-8">
<meta name="viewport" content="width=device-width, initial-scale=1">
<link rel="stylesheet" href="https://www.w3schools.com/w3css/4/w3.css">
<style>
body {font-family: "Times New Roman", Georgia, Serif;}
h1, h2, h3, h4, h5, h6 {
 font-family: "Playfair Display";
 letter-spacing: 5px;
}
</style>
```

```
</head>
<body>

<!-- Navbar (sit on top) -->
<div class="w3-top">
  <div class="w3-bar w3-white w3-padding w3-card" style="letter-spacing:4px;">
    <a href="#home" class="w3-bar-item w3-button">DHL Logistics</a>
    <!-- Right-sided navbar links. Hide them on small screens -->
    <div class="w3-right w3-hide-small">
      <a href= "data.html" class="w3-bar-item w3-button">Prediction</a>
      <a href= "dashboard.html" class="w3-bar-item w3-button">DashBoard</a>
    </div>
  </div>
</div>


<!-- Page content -->
<div class="w3-content" style="max-width:1100px">

  <!-- About Section -->
  <div class="w3-row w3-padding-64" id="about">
    <div class="w3-col m6 w3-padding-large w3-hide-small">
     <img src="DHL.gif" class="w3-round w3-image w3-opacity-min" alt="Table Setting" width="600" height="750">
    </div>

    <div class="w3-col m6 w3-padding-large">
      <h1 class="w3-center">About DHL Logistics</h1><br>
      <p class="w3-large">DHL Supply Chain, part of the EUR 56.6bn DPDHL Group, is the world’s leading contract logistics provider. Combining value-added and management services
```

```
with traditional fulfilment and distribution, our customized, integrated logistics solutions drive efficiency, improve quality and create competitive advantage.</p>
    <p class="w3-large w3-text-grey w3-hide-medium">DHL Supply Chain offers specialist, proven expertise within the Auto-Mobility, Consumer, Chemicals, Energy, Engineering & Manufacturing, Life Sciences & Healthcare, Retail and Technology sectors. As today's global markets grow, our innovative logistics solutions are ready to help.</p>
   </div>
  </div>

  <hr>
</div>

<!-- Footer -->
<footer class="w3-center w3-light-grey w3-padding-32">
  <p>Powered by DHL Logistics Facilities</p>
</footer>

</body>
</html>
```

GitHub & Project Demo Link

GITHUB PROJECT LINK: **https://github.com/IBM-EPBL/IBM-Project-31160-1660196997**

DEMO LINK : **https://youtu.be/KOEut-XnD1M**
