PROJECT DEVELOPMENT PHASE

Sprint 4

Date	19TH NOVEMBER 2022
Team ID	PNT2022TMID00047
Project Name	Developing a Flight Delay Prediction Model using Machine Learning

app.py

```
from flask import Flask, render_template, request, redirect, url_for, session
from flask_mysqldb import MySQL
import MySQLdb.cursors
import re


import flask
from flask import request,render_template
from flask_cors import CORS
import numpy as np
import pandas as pd
import requests


import mysql.connector


mydb = mysql.connector.connect(
  host = "localhost",
  user = "root",
  password = "Lokesh@2005",
  database = "userlogin"
)
```

```
app = Flask(__name__)


app.secret_key = 'london'


app.config['MYSQL_HOST'] = 'localhost'
app.config['MYSQL_USER'] = 'root'
app.config['MYSQL_PASSWORD'] = 'Lokesh@2005'
app.config['MYSQL_DB'] = 'userlogin'


mysql = MySQL(app)
CORS(app)


@app.route('/')
@app.route('/login', methods =['GET', 'POST'])
def login():
   msg = ''
   if request.method == 'POST' and 'username' in request.form and 'password' in
request.form:
      username = request.form['username']
      password = request.form['password']
      #cursor = mysql.connection.cursor()
      cursor = mysql.connection.cursor(MySQLdb.cursors.DictCursor)
      cursor.execute('SELECT * FROM accounts WHERE username = % s AND password = % s',
(username, password, ))
      account = cursor.fetchone()
      if account:
         session['loggedin'] = True
         #session['id'] = account['id']
         session['username'] = account['username']
         msg = 'Logged in successfully !'
```

```
            return render_template('mainpage.html', msg = msg)
        else:
            msg = 'Incorrect username / password !'
    return render_template('login.html', msg = msg)


@app.route('/logout')
def logout():
    session.pop('loggedin', None)
    session.pop('id', None)
    session.pop('username', None)
    return redirect(url_for('login'))#change{}
    #return render_template('login.html', msg = msg)


@app.route('/')
@app.route('/register', methods =['GET', 'POST'])
def register():
    msg = ''
    if request.method == 'POST' and 'username' in request.form and 'password' in
request.form and 'email' in request.form :
        username = request.form['username']
        password = request.form['password']
        email = request.form['email']
        print(username)
        cursor = mysql.connection.cursor()
        #cursor = mydb.cursor(MySQLdb.cursors.DictCursor)
        cursor.execute('SELECT * FROM accounts WHERE username = % s;', (username, ))
        #cursor.execute('SELECT * FROM accounts')
        account = cursor.fetchone()
        if account:
            msg = 'Account already exists !'
```

```
        elif not re.match(r'[^@]+@[^@]+\.[^@]+', email):
            msg = 'Invalid email address !'
        elif not re.match(r'[A-Za-z0-9]+', username):
            msg = 'Username must contain only characters and numbers !'
        elif not username or not password or not email:
            msg = 'Please fill out the form !'
        else:
            cursor.execute('INSERT INTO accounts VALUES (NULL, % s, % s, % s);', (username,
password, email, ))
            mysql.connection.commit()
            cursor.close()
            msg = 'You have successfully registered !'
            return render_template('login.html', msg = msg)
    elif request.method == 'POST':
        msg = 'Please fill out the form !'
    return render_template('register.html', msg = msg)


@app.route('/')
@app.route('/mainpage', methods =['GET', 'POST'])
def mainpage():
    msg=''
    return render_template('mainpage.html', msg = msg)


API_KEY = "2AjKeBOMtc_4WMPYUQe2GI-opbRdU3E0q7VEZkBiPUkA"
token_response = requests.post('https://iam.cloud.ibm.com/identity/token',
data={"apikey": API_KEY, "grant_type": 'urn:ibm:params:oauth:grant-type:apikey'})
mltoken = token_response.json()["access_token"]


@app.route('/')
def sendHomePage():
```

```
    return render_template('index.html')


@app.route('/predict', methods=['POST'])
def predict():
    fname = float (request.form['fname'])
    month = float (request.form['month'])
    daymonth = float (request.form['daymonth'])
    dayweek = float (request.form['dayweek'])
    origin = request.form['origin']
    if origin == "msp":
        origin1,origin2,origin3,origin4,origin5 = 0,0,0,0,1
    if origin == "dtw":
        origin1,origin2,origin3,origin4,origin5 = 1,0,0,0,0
    if origin == "jfk":
        origin1,origin2,origin3,origin4,origin5 = 0,0,1,0,0
    if origin == "sea":
        origin1,origin2,origin3,origin4,origin5 = 0,1,0,0,0
    if origin == "alt":
        origin1,origin2,origin3,origin4,origin5 = 0,0,0,1,0

    destination = request.form['destination']
    if destination == "msp":
        destination1,destination2,destination3,destination4,destination5 = 0,0,0,0,1
    if destination == "dtw":
        destination1,destination2,destination3,destination4,destination5 = 1,0,0,0,0
    if destination == "jfk":
        destination1,destination2,destination3,destination4,destination5 = 0,0,1,0,0
    if destination == "sea":
        destination1,destination2,destination3,destination4,destination5 = 0,1,0,0,0
```

```
    if destination == "alt":
        destination1,destination2,destination3,destination4,destination5 = 0,0,0,1,0

    sarrivaltime = float (request.form['sarrivaltime'])
    sdeparttime = float (request.form['sdeparttime'])
    adeparttime = float (request.form['adeparttime'])
    dept15=int(sdeparttime)-int(adeparttime)

    X = [[fname, month, daymonth, dayweek, sarrivaltime, dept15, origin1, origin2, origin3, origin4, origin5, destination1, destination2, destination3, destination4, destination5]]

    payload_scoring = {"input_data": [{"field": [["FL_NUM", "MONTH", "DAY_OF_MONTH", "DAY_OF_WEEK", "CRS_ARR_TIME", "DEP_DEL15", "ORIGIN_0", "ORIGIN_1", "ORIGIN_2", "ORIGIN_3", "ORIGIN_4", "DEST_0", "DEST_1", "DEST_2", "DEST_3", "DEST_4"]], "values": X}]}

    response_scoring = requests.post('https://us-south.ml.cloud.ibm.com/ml/v4/deployments/70ba7f52-fcd7-4553-bc8b-afbc37d1a0be/predictions?version=2022-11-18', json=payload_scoring, headers={'Authorization': 'Bearer ' + mltoken})
    predictions = response_scoring.json()

    pred = predictions['predictions'][0]['values'][0][0]

    if pred == 0:
        ans = "The flight will be on time"
    else :
        ans = "The flight will be delayed"

    return render_template("mainpage.html",predict = ans)

if __name__ == '__main__':
```

```
app.debug = True
app.run()
```

mainpge.html

```
<!--<html>
  <div align="center" class="logbg">
  <head>
    <meta charset="UTF-8">
    <center>
      <table>
        <tr>
      <td><h1><br>Prediction of Flight Delay<br><br></h1></td>

      <td><form action="{{ url_for('logout') }}">
        <input type="submit" class="btn" value="logout"/><br>
      </form></td>
    </tr>
    </table>
    </center>
    <link rel="stylesheet" href="{{ url_for('static', filename='styless.css') }}">
    <style>
      body{
      overflow: hidden;
      margin: 0%;
      padding: 0%;
      }
      .logbg{
        height: 753px;
        width: 1536px;
```

```
        background-image: url("./static/pics/249456.jpg");
        background-size: cover;
      }
    </style>
</head>
<body>
    <form action="" >
      <center>
        <table>
          <tr>
            <td>Enter the flight number:</td>
            <td><input type="text" id="fname"><br></td>
          </tr>
          <tr>
            <td>Month:</td>
            <td><input type="number" id="month"><br></td>
          </tr>
          <tr>
            <td>Day of Month:</td>
            <td><input type="number" id="daymonth"><br></td>
          </tr>
          <tr>
            <td>Day of Week:</td>
            <td><input type="number" id="dayweek"><br></td>
          </tr>
          <tr>
            <td>Origin:</td>
            <td><select id="origin">
              <option value="atl">ATL</option>
```

```
      <option value="dtw">DTW</option>
      <option value="sea">SEA</option>
      <option value="msp">MSP</option>
      <option value="jfk">JFK</option>
    </select></td>
<tr>
<tr>
    <td>Destination:</td>
    <td><select id="destination">
        <option value="atl">ATL</option>
        <option value="dtw">DTW</option>
        <option value="sea">SEA</option>
        <option value="msp">MSP</option>
        <option value="jfk">JFK</option>
    </select></td>
<tr>
<tr>
    <td>Scheduled Departure Time:</td>
    <td><input type="number" id="sdeparttime"><br></td>
</tr>
<tr>
    <td>Scheduled Arrival Time:</td>
    <td><input type="number" id="sarrivaltime"><br></td>
</tr>
<tr>
    <td>Actual Departure Time:</td>
    <td><input type="number" id="adeparttime"><br></td>
</tr>
<tr>
```

```
                <td><br><input type="submit" class="btn" value="SUBMIT"></br>
              </tr>
            </table>
          </center>
        </form>


    </body>
</div>
</html>-->


<html>
    <div align="center" class="log">
    <head>
        <meta charset="UTF-8">
        <center>
            <table>
                <tr>
            <td><h1><br>Prediction of Flight Delay<br><br></h1></td>
            <td><form action="{{ url_for('logout') }}">
                <input type="submit" class="btn" value="logout"/><br>
            </form></td>
        </tr>
        </table>
        </center>
        <link rel="stylesheet" href="{{ url_for('static', filename='style.css') }}">
        <style>
            .log{
                height: 753px;
```

```
        width: 1536px;
        background-image: url("./static/image/249456.jpg");
        background-size: cover;
      }
      body {
        margin: 0%;
        padding: 0%;
        overflow: hidden;
      }
    </style>
</head>
<body>
    <form action="{{ url_for('predict') }}" method="POST" >
      <center>
        <table>
          <tr>
            <td>Enter the flight number:</td>
            <td><input type="text" name="fname" required><br></td>
          </tr>
          <tr>
            <td>Month:</td>
            <td><input type="number" name="month" required><br></td>
          </tr>
          <tr>
            <td>Day of Month:</td>
            <td><input type="number" name="daymonth" required><br></td>
          </tr>
          <tr>
            <td>Day of Week:</td>
```

```
    <td><input type="number" name="dayweek" required><br></td>
  </tr>
  <tr>
    <td>Origin:</td>
    <td><select name="origin" required>
      <option value="alt">ATL</option>
      <option value="dtw">DTW</option>
      <option value="sea">SEA</option>
      <option value="msp">MSP</option>
      <option value="jfk">JFK</option>
    </select></td>
  <tr>
  <tr>
    <td>Destination:</td>
    <td><select name="destination" required>
        <option value="alt">ATL</option>
        <option value="dtw">DTW</option>
        <option value="sea">SEA</option>
        <option value="msp">MSP</option>
        <option value="jfk">JFK</option>
    </select></td>
  <tr>
  <tr>
    <td>Scheduled Arrival Time:</td>
    <td><input type="number" name="sarrivaltime" required><br></td>
  </tr>
  <tr>
    <td>Scheduled Departure Time:</td>
    <td><input type="number" name="sdeparttime" required><br></td>
```

```
            </tr>
            <tr>
              <td>Actual Departure Time:</td>
              <td><input type="number" name="adeparttime" required><br></td>
            </tr>
            <tr>
              <td><br><input type="submit" class="btn" value="SUBMIT"></br>
            </tr>
          </table>
        </center>
      </form>
      <center><h1>{{predict}}</h1></center>

    </body>
</div>
</html>
```