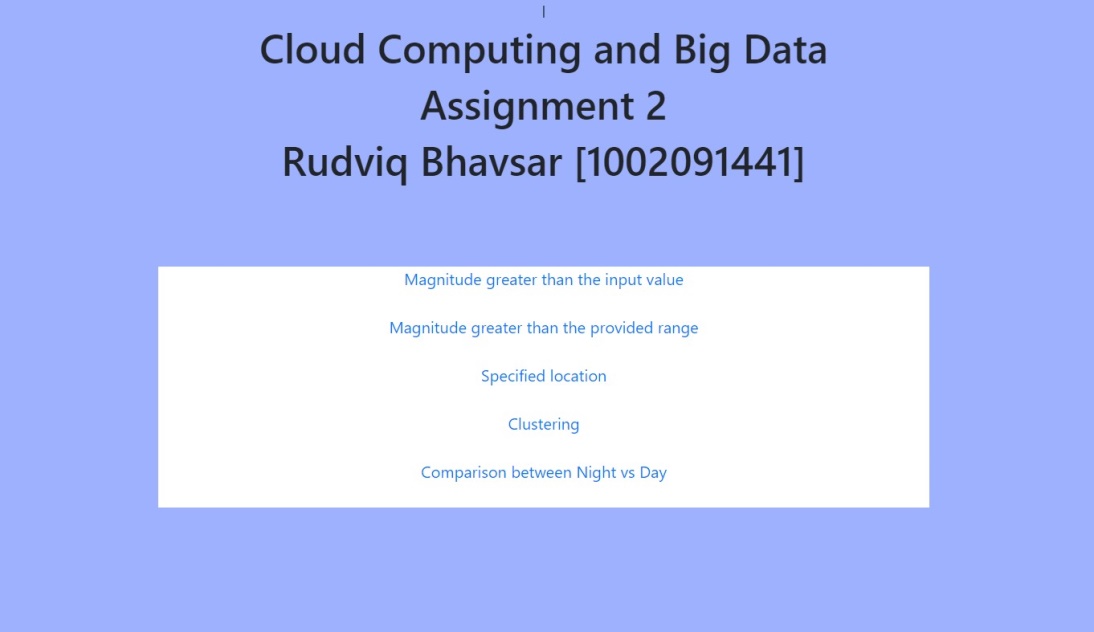
CSE 6332-002 Cloud Computing & Big Data

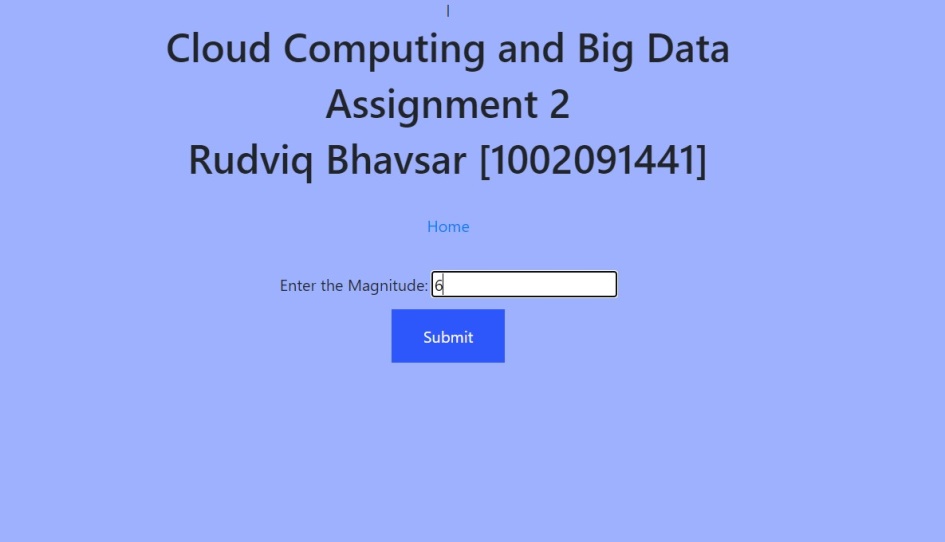
Name – Rudviq Sunil Bhavsar  
UTA ID – 1002091441  
Email – [rsb1441@mavs.uta.edu](mailto:rsb1441@mavs.uta.edu)

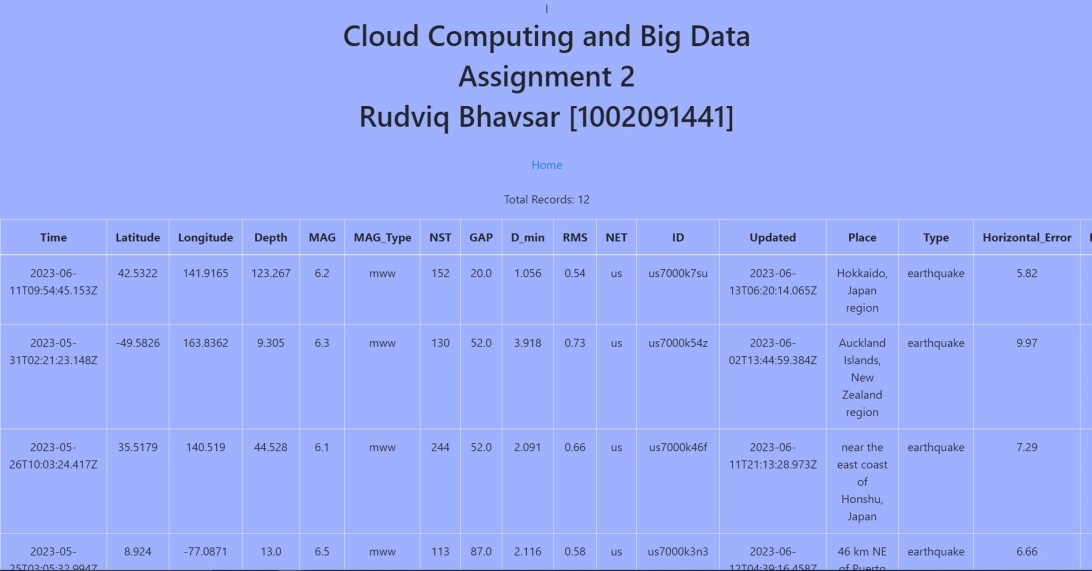
Assignment 2

CODE SNIPPETS-

1. Home page

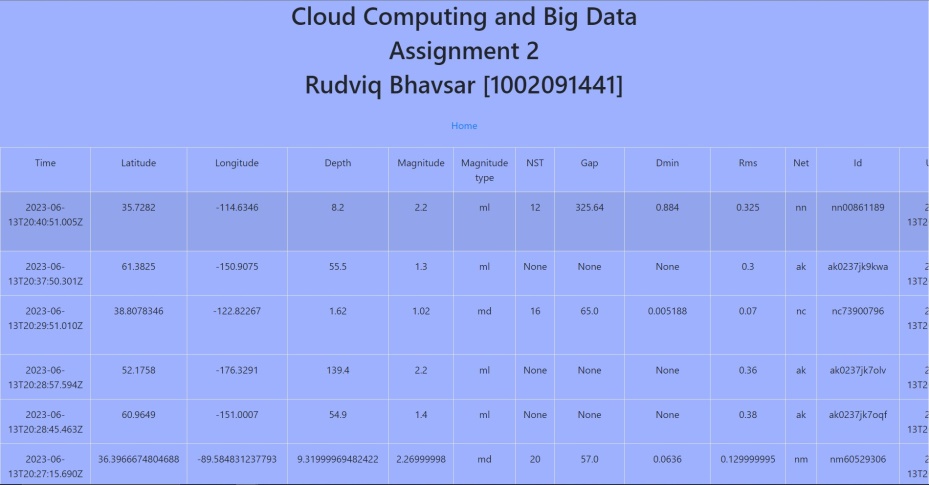


1. Page to display magnitude greater than 5

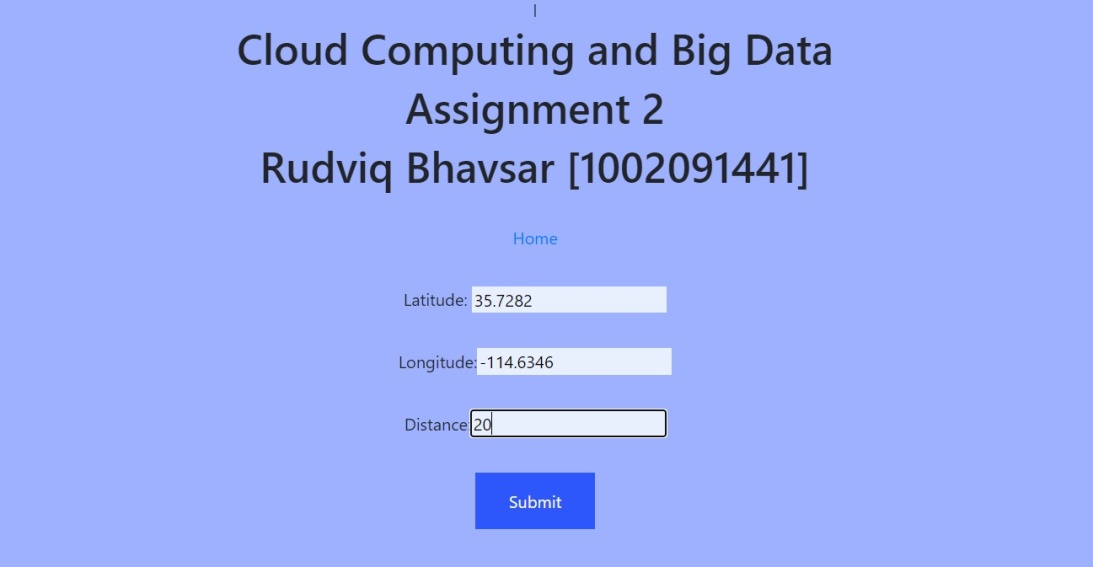


1. Display magnitude between the given range



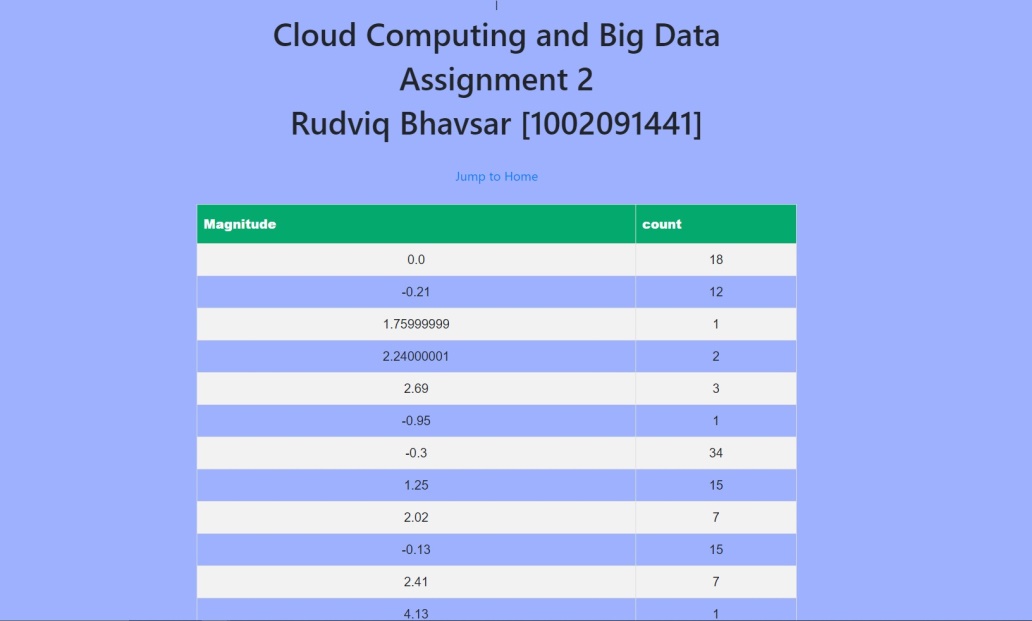


1. Display the specified range using latitude, longitude and the distance

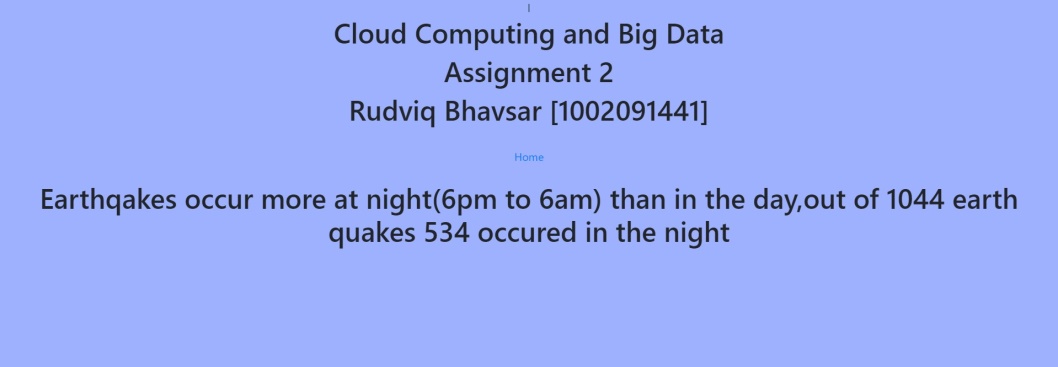




1. Clustering



1. Comparison between night and day data



Source Code –

1. Python file source code

from math import radians,sin,cos,asin,sqrt

from datetime import date, datetime, timedelta

from flask import Flask, render\_template, request

import pyodbc

from flask\_wtf import FlaskForm

from wtforms import StringField, SubmitField

from wtforms.validators import DataRequired

app = Flask(\_\_name\_\_)

app.config['SECRET\_KEY'] = 'rudviqb'

driver = '{ODBC Driver 18 for SQL Server}'

database = 'Database02'

server = 'tcp:rb0212.database.windows.net,1433'

username = "rsb1441"

password = "Rb#azure02"

with pyodbc.connect(

'DRIVER=' + driver + ';SERVER=' + server + ';PORT=1433;DATABASE=' + database + ';UID=' + username + ';PWD=' + password) as conn:

with conn.cursor() as cursor:

temp = []

cursor.execute("SELECT TOP 3 time, id FROM earthquake")

while True:

r = cursor.fetchone()

if not r:

break

print(str(r[0]) + " " + str(r[1]))

temp.append(r)

@app.route("/", methods=['GET', 'POST'])

def toHome():

return render\_template('homePage.html')

class showMag(FlaskForm):

mag = StringField(label='Enter the Magnitude: ', validators=[DataRequired()])

submit = SubmitField(label='Submit')

@app.route('/magcount', methods=['GET', 'POST'])

def magcount():

form = showMag()

cnt = 0

if form.validate\_on\_submit():

try:

magcount = float(form.mag.data)

if magcount <= 5.0:

return render\_template('displayMag.html', form=form, error="value must be > 5.0", temp=1)

cursor.execute("SELECT \* FROM earthquake where mag > ?", magcount)

output = []

while True:

row = cursor.fetchone()

if not row:

break

output.append(row)

cnt += 1

return render\_template('displayMag.html', output=output, cnt=cnt, temp=0)

except ValueError:

return render\_template('displayMag.html', form=form, error="value must be numeric.", temp=1)

return render\_template('displayMag.html', form=form, temp=1)

def distance(lat1, lat2, lon1, lon2):

lon1 = radians(lon1)

lon2 = radians(lon2)

lat1 = radians(lat1)

lat2 = radians(lat2)

# Haversine formula

dlon = lon2 - lon1

dlat = lat2 - lat1

a = sin(dlat / 2)\*\*2 + cos(lat1) \* cos(lat2) \* sin(dlon / 2)\*\*2

c = 2 \* asin(sqrt(a))

# Radius of earth in kilometers. Use 3956 for miles

r = 6371

# calculate the result

return(c \* r)

@app.route('/specLoc',methods=['POST','GET'])

def lsearch():

if request.method =='POST':

lat1=request.form['lat1']

lon1=request.form['lon1']

km=request.form['kms']

querry="Select id,time,latitude,longitude,mag,place from earthquake"

cursor.execute(querry)

lat1=float(lat1)

lon1=float(lon1)

km=float(km)

rows = cursor.fetchall()

bkm=[]

for i in rows:

x=distance(lat1,float(i[2]),lon1,float(i[3]))

if x<=km:

bkm.append(i)

return render\_template("specLoc.html",rows = bkm)

else:

return render\_template('specLoc.html')

@app.route('/magRange', methods = ['GET','POST'])

def magRange():

if request.method =='POST':

Range1 = str(request.form['Range1'])

Range2 = str(request.form['Range2'])

Fromdate = request.form['Fromdate']

Todate = request.form['Todate']

query = "SELECT \* FROM dbo.earthquake where (mag BETWEEN '"+Range1+"' and '"+Range2+"') and (CAST(time as date) BETWEEN CAST('"+Fromdate+"' as date) and CAST('"+Todate+"' as date)) "

cursor.execute(query)

results = cursor.fetchall()

return render\_template("magRange.html", length = len(results), rows = results,temp=0)

else:

return render\_template("magRange.html",temp=1)

@app.route("/clust", methods=['GET', 'POST'])

def cluster():

count =0

query=("SELECT mag,COUNT(\*) FROM earthquake  group by mag")

cursor.execute(query)

result=cursor.fetchall()

return render\_template("cluster.html",msg="completed", rows=result)

@app.route('/nightNDay',methods=['POST','GET'])

def nightdata():

count=0

time1 = "06:00:00.0000000 +00:00"

time2 = "18:00:00.0000000 +00:00"

query = "SELECT place, CAST(time as time) FROM dbo.earthquake where mag > 4.0 and (CAST(time as time) not BETWEEN CAST('"+time1+"' as time) and CAST('"+time2+"' as time)) "

cursor.execute(query)

result = cursor.fetchall()

count1 = len(result)

query1 = "SELECT place, CAST(time as time) FROM dbo.earthquake where mag > 4.0"

cursor.execute(query1)

result1 = cursor.fetchall()

count2 = len(result1)

if(count1>(count2-count1)):

display="Earthqakes occur more at night(6pm to 6am) than in the day,out of "+str(count2)+" earth quakes "+str(count1)+" occured in the night"

else:

display="Earthqakes occur more at day(6am to 6pm) than in the night,out of "+str(count2)+" earth quakes "+str(count2-count1)+" occured in the day time"

return render\_template("newrecord.html",display = display)

if \_\_name\_\_ == '\_\_main\_\_':

app.run(debug=True)

1. Main page -> homepage.html

<!DOCTYPE html>

<html>

<head>

    <meta name="viewport" content="width=device-width, initial-scale=1">

  <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">

  <style>

    h1{text-align: center;}

    div{text-align: center;

        background-color: white;

        width:50%;

        margin: auto;

        margin-top: 50px;}

    body{text-align: center;}

  </style>

</head>

l<body style="background-color:#9eb1ff;">

  <h1> Cloud Computing and Big Data</h1>

  <h1>Assignment 2 </h1>

  <h1 >Rudviq Bhavsar [1002091441] </h1>

   <br>

    <div>

          <!-- <a href="/">Homepage</a><br><br> -->

          <a href="/magcount">Magnitude greater than the input value</a><br><br>

          <a href="/magRange">Magnitude greater than the provided range</a><br><br>

          <a href="/specLoc">Specified location</a><br><br>

          <a href="/clust">Clustering</a><br><br>

          <a href="/nightNDay">Comparison between Night vs Day</a><br><br>

    </div>

</body>

</html>

1. Display magnitude greater than the input value -> displayMag.html

<!DOCTYPE html>

<html>

<head>

    <meta name="viewport" content="width=device-width, initial-scale=1">

  <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">

  <style>

    h1{text-align: center;}

    div{text-align: center;}

    body{text-align: center;}

    form,input[type="text"]{margin-bottom: 5px;

                   font-size: 16px;

                    margin-top: 5px;

                    border: none;

                    height:25px;}

        input[type="submit"]{background-color:#2e57fb;

                            border: none;

                            color: white;

                            padding: 15px 32px;

                            text-align: center;

                            text-decoration: none;

                            display: inline-block;

                            font-size: 16px;

                            margin-top: 5px;}

  </style>

</head>

l<body style="background-color:#9eb1ff;">

    <h1> Cloud Computing and Big Data</h1>

    <h1>Assignment 2 </h1>

    <h1 >Rudviq Bhavsar [1002091441] </h1>

     <br>

  <div>

    <a href="/">Home</a><br><br>

  </div>

{% if error %}

    <p class="">{{ error }}</p>

{% endif %}

{% if temp == 1 %}

    <div class="form-group">

        <form action="/magcount" method="POST">

            {{ form.csrf\_token() }}

            {{ form.mag.label }} {{ form.mag }}<br/>

            {{ form.submit }}

        </form>

    </div>

{% endif %}

{% if temp == 0 %}

    <p class="">Total Records: {{ cnt }}</p>

    <div class="table-responsive">

    <table class="table table-bordered table-hover table-fixed table-wrap">

        <caption>Earthquake Records</caption>

        <thead>

            <tr>

                <th scope="col">Time</th>

                <th scope="col">Latitude</th>

                <th scope="col">Longitude</th>

                <th scope="col">Depth</th>

                <th scope="col">MAG</th>

                <th scope="col">MAG\_Type</th>

                <th scope="col">NST</th>

                <th scope="col">GAP</th>

                <th scope="col">D\_min</th>

                <th scope="col">RMS</th>

                <th scope="col">NET</th>

                <th scope="col">ID</th>

                <th scope="col">Updated</th>

                <th scope="col">Place</th>

                <th scope="col">Type</th>

                <th scope="col">Horizontal\_Error</th>

                <th scope="col">Depth\_Error</th>

                <th scope="col">MAG\_Error</th>

                <th scope="col">MAG\_NST</th>

                <th scope="col">Status</th>

                <th scope="col">Location\_Source</th>

                <th scope="col">MAG\_Source</th>

            </tr>

        </thead>

        <tbody>

            {% for row in output %}

                <tr>

                    <td>{{ row[0] }}</td>

                    <td>{{ row[1] }}</td>

                    <td>{{ row[2] }}</td>

                    <td>{{ row[3] }}</td>

                    <td>{{ row[4] }}</td>

                    <td>{{ row[5] }}</td>

                    <td>{{ row[6] }}</td>

                    <td>{{ row[7] }}</td>

                    <td>{{ row[8] }}</td>

                    <td>{{ row[9] }}</td>

                    <td>{{ row[10] }}</td>

                    <td>{{ row[11] }}</td>

                    <td>{{ row[12] }}</td>

                    <td>{{ row[13] }}</td>

                    <td>{{ row[14] }}</td>

                    <td>{{ row[15] }}</td>

                    <td>{{ row[16] }}</td>

                    <td>{{ row[17] }}</td>

                    <td>{{ row[18] }}</td>

                    <td>{{ row[19] }}</td>

                    <td>{{ row[20] }}</td>

                    <td>{{ row[21] }}</td>

                </tr>

            {% endfor %}

        </tbody>

    </table>

</div>

{% endif %}

</body>

</html>

1. Display Magnitude greater than the given range -> magRange.html

<!DOCTYPE html>

<html>

<head>

    <meta name="viewport" content="width=device-width, initial-scale=1">

  <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">

  <style>

    h1{text-align: center;}

    div{text-align: center;}

    body{text-align: center;}

    form,input[type="text"]{margin-bottom: 5px;

                   font-size: 16px;

                    margin-top: 5px;

                    border: none;

                    height:25px;}

        input[type="submit"]{background-color:#2e57fb;

                            border: none;

                            color: white;

                            padding: 15px 32px;

                            text-align: center;

                            text-decoration: none;

                            display: inline-block;

                            font-size: 16px;

                            margin-top: 5px;}

  </style>

</head>

<body style="background-color:#9eb1ff;">

  <h1> Cloud Computing and Big Data</h1>

  <h1>Assignment 2 </h1>

  <h1 >Rudviq Bhavsar [1002091441] </h1>

   <br>

    <div>

          <a href="/">Home</a><br><br>

{% if temp == 1 %}

<form action="/magRange" method="POST">

    Range1: <input type="text" placeholder="Range1" name="Range1" value="{{ Range1 }}"> <br/><br/>

    Range2:<input type="text" placeholder="Range2" name="Range2" value="{{ Range2 }}"><br/><br/>

    From Date:<input type="date" name="Fromdate" value="{{ Fromdate }}"><br/><br/>

    to Date:<input type="date" name="Todate" value="{{ Todate }}"><br><br>

    <input type="submit" value="Submit">

</form>

{% endif %}

</div>

{% if temp == 0 %}

<div class="table-responsive">

{% if length %}

    <table class="table table-bordered table-hover table-fixed table-wrap">

        <tr>

            <td>Time</td>

            <td>Latitude</td>

            <td>Longitude</td>

            <td>Depth</td>

            <td>Magnitude</td>

            <td>Magnitude type</td>

            <td>NST</td>

            <td>Gap</td>

            <td>Dmin</td>

            <td>Rms</td>

            <td>Net</td>

            <td>Id</td>

            <td>Updated</td>

            <td>Place</td>

            <td>Type</td>

            <td>Horizontal\_Error</td>

            <td>Depth\_Error</td>

            <td>Mag\_error</td>

            <td>Magnst</td>

            <td>Status</td>

            <td>Loc\_source</td>

            <td>Mag\_source</td>

        </tr>

        {% for col in rows %}

        <tr>

            <td>{{col[0]}}</td>

            <td>{{col[1]}}</td>

            <td>{{col[2]}}</td>

            <td>{{col[3]}}</td>

            <td>{{col[4]}}</td>

            <td>{{col[5]}}</td>

            <td>{{col[6]}}</td>

            <td>{{col[7]}}</td>

            <td>{{col[8]}}</td>

            <td>{{col[9]}}</td>

            <td>{{col[10]}}</td>

            <td>{{col[11]}}</td>

            <td>{{col[12]}}</td>

            <td>{{col[13]}}</td>

            <td>{{col[14]}}</td>

            <td>{{col[15]}}</td>

            <td>{{col[16]}}</td>

            <td>{{col[17]}}</td>

            <td>{{col[18]}}</td>

            <td>{{col[19]}}</td>

            <td>{{col[20]}}</td>

            <td>{{col[21]}}</td>

    </tr>

    {% endfor %}

{% endif %}

</table>

{% endif %}

</div>

</body>

</html>

1. Display specified location using latitude and longitude -> specLoc.html

<!DOCTYPE html>

<html lang="en">

<head>

    <meta name="viewport" content="width=device-width, initial-scale=1">

  <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">

</head>

  <style>

    h1{text-align: center;}

    div,form{text-align: center;}

    body{text-align: center;}

    form,input[type="text"]{margin-bottom: 5px;

           font-size: 16px;

          margin-top: 5px;

          border: none;

          height:25px;}

    input[type="submit"]{background-color:#2e57fb;

              border: none;

              color: white;

              padding: 15px 32px;

              text-align: center;

              text-decoration: none;

              display: inline-block;

              font-size: 16px;

              margin-top: 5px;}

    div[class="table-responsive"]{

      margin-top: 250px;

    }

</style>

l<body style="background-color:#9eb1ff;">

  <h1> Cloud Computing and Big Data</h1>

  <h1>Assignment 2 </h1>

  <h1 >Rudviq Bhavsar [1002091441] </h1>

   <br>

    <a href="/">Home</a><br><br>

    <form action="/specLoc" method="POST">

        Latitude: <input type="text" placeholder="Latitude" name="lat1" value="{{ lat1 }}"> <br/><br/>

        Longitude:<input type="text" placeholder="Longitude" name="lon1" value="{{ lon1 }}"><br/><br/>

        Distance:<input type="text" placeholder="in kms" name="kms" value="{{ km }}"><br/><br/>

        <input type="submit" value="Submit">

    </form>

    </div>

    <div class="table-responsive">

    {% if rows %}

        <table class="table table-bordered table-hover table-fixed table-wrap">

            <tr>

                <td>Id</td>

                <td>Time</td>

                <td>Latitude</td>

                <td>Longitude</td>

                <td>Magnitude</td>

                <td>Place</td>

            </tr>

            {% for row in rows %}

            <tr>

                <td>{{row[0]}}</td>

                <td>{{row[1]}}</td>

                <td>{{row[2]}}</td>

                <td>{{row[3]}}</td>

                <td>{{row[4]}}</td>

                <td>{{row[5]}}</td>

        </tr>

          {% endfor %}

        {%endif%}

        </table>

    </div>

</body>

</html>

1. Clustering -> cluster.html

<!DOCTYPE html>

<html>

<head>

   <meta name="viewport" content="width=device-width, initial-scale=1">

   <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">

   <style>

      h1{text-align: center;}

    div{text-align: center;}

    body{text-align: center;}

      #mgtab {

         font-family: Arial, Helvetica, sans-serif;

         border-collapse: collapse;

         width: 50%;

         margin: auto;

      }

      #mgtab td,

      #mgtab th {

         border: 1px solid #ddd;

         padding: 8px;

      }

      #mgtab tr:nth-child(even) {

         background-color: #f2f2f2;

      }

      #mgtab tr:hover {

         background-color: #ddd;

      }

      #mgtab th {

         padding-top: 12px;

         padding-bottom: 12px;

         text-align: left;

         background-color: #04AA6D;

         color: white;

      }

      form,input[type="text"]{margin-bottom: 5px;

               font-size: 16px;

               margin-top: 5px;

               border: none;

               height:25px;}

      input[type="submit"]{background-color:#2e57fb;

                     border: none;

                     color: white;

                     padding: 15px 32px;

                     text-align: center;

                     text-decoration: none;

                     display: inline-block;

                     font-size: 16px;

                     margin-top: 5px;}

   </style>

</head>

l<body style="background-color:#9eb1ff;">

   <h1> Cloud Computing and Big Data</h1>

   <h1>Assignment 2 </h1>

   <h1 >Rudviq Bhavsar [1002091441] </h1>

    <br>

      <div>

         <a href="/">Jump to Home</a><br><br>

      </div>

      <table id='mgtab'>

         <tr>

            <th><b>Magnitude</b></th>

            <th><b>count</b></th>

         </tr>

         {% for col in rows %}

         <tr>

            <td>{{col[0]}}</td>

            <td>{{col[1]}}</td>

         </tr>

         {% endfor %}

      </table>

      <br>

</body>

</html>

1. Comparison b/w night & day -> newrecord.html

<!DOCTYPE html>

<html>

<head>

    <meta name="viewport" content="width=device-width, initial-scale=1">

  <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">

  <style>

    h1{text-align: center;}

    div{text-align: center;}

    body{text-align: center;}

    form,input[type="text"]{margin-bottom: 5px;

           font-size: 16px;

          margin-top: 5px;

          border: none;

          height:25px;}

    input[type="submit"]{background-color:#2e57fb;

              border: none;

              color: white;

              padding: 15px 32px;

              text-align: center;

              text-decoration: none;

              display: inline-block;

              font-size: 16px;

              margin-top: 5px;}

  </style>

</head>

l<body style="background-color:#9eb1ff;">

  <h1> Cloud Computing and Big Data</h1>

  <h1>Assignment 2 </h1>

  <h1 >Rudviq Bhavsar [1002091441] </h1>

   <br>

    </header>

        <div>

        <a href="/">Home</a><br><br>

    <h1>{{display}}</h1>

    </div>

</body>

</html>