Name: Yash Dani

UTA ID: 1001707349

Course: CSE 6331-004 Cloud Computing

Assignment 2

Clound link: - [https://yashnew24.mybluemix.net/](https://nam05.safelinks.protection.outlook.com/?url=https%3A%2F%2Fyashnew24.mybluemix.net%2F&data=02%7C01%7Cyash.dani%40mavs.uta.edu%7Cd39c11191b7948dceb8608d6ff0903a7%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C636976811511841324&sdata=%2BJVafKOB%2FmlNoGCjr21iuAEHuYExtsbefV6FbMpJcGQ%3D&reserved=0)

**Importing Libraries**

from flask import Flask, render\_template, request, redirect

import os

import datetime

import ibm\_db

import math

import datetime

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

port = int(os.getenv("PORT", 5000))

**Database Credentials**

db2cred = {

"hostname": "dashdb-txn-sbox-yp-dal09-03.services.dal.bluemix.net",

"password": "7c4r31g+3bwb6fxf",

"https\_url": "https://dashdb-txn-sbox-yp-dal09-03.services.dal.bluemix.net",

"port": 50000,

"ssldsn": "DATABASE=BLUDB;HOSTNAME=dashdb-txn-sbox-yp-dal09-03.services.dal.bluemix.net;PORT=50001;PROTOCOL=TCPIP;UID=vft79804;PWD=7c4r31g+3bwb6fxf;Security=SSL;",

"host": "dashdb-txn-sbox-yp-dal09-03.services.dal.bluemix.net",

"jdbcurl": "jdbc:db2://dashdb-txn-sbox-yp-dal09-03.services.dal.bluemix.net:50000/BLUDB",

"uri": "db2://rzg77856:7z9pm-zzgm26ftsj@dashdb-txn-sbox-yp-dal09-03.services.dal.bluemix.net:50000/BLUDB",

"db": "BLUDB",

"dsn": "DATABASE=BLUDB;HOSTNAME=dashdb-txn-sbox-yp-dal09-03.services.dal.bluemix.net;PORT=50000;PROTOCOL=TCPIP;UID=vft79804;PWD=7c4r31g+3bwb6fxf;",

"username": "vft79804",

"ssljdbcurl": "jdbc:db2://dashdb-txn-sbox-yp-dal09-03.services.dal.bluemix.net:50001/BLUDB:sslConnection=true;"

}

**Q. Search for and count all earthquakes that occurred with a magnitude greater than 5.0**

**Main.py**

@app.route('/')

def index():

return render\_template('countall.html')

# This function will retrieve all data for specific magnitude

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

def getnames(name=None):

try:

if request.method == "POST":

mag = request.form['mag']

#connect to db

conn = ibm\_db.connect("DATABASE="+db2cred['db']+";HOSTNAME="+db2cred['hostname']+";PORT="+str(db2cred['port'])+";UID="+db2cred['username']+";PWD="+db2cred['password']+";","","")

if conn:

print("in if loop")

sql='select \* from RZG77856.ALL\_MONTH where "MAG">?'

prep = ibm\_db.prepare(conn,sql)

ibm\_db.bind\_param(prep, 1, mag)

ibm\_db.execute(prep)

rows = []

count = 0

print("conn 2")

# fetching the result

result = ibm\_db.fetch\_assoc(prep)

while result != False:

count = count + 1

rows.append(result.copy())

result = ibm\_db.fetch\_assoc(prep)

# close database connection

ibm\_db.close(conn)

print("conn 3")

return render\_template('cresult.html', rows=rows, count=count)

else:

print("no connection established")

return render\_template('main.html')

except Exception as e:

print(e)

return "<html><body><p>In Exception</p></body></html>"

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

app.run(host='0.0.0.0', port=port)

**Countall.html**

<!doctype html>

<html>

<body>

<center>

<h1>Yash Dani 1001707349</h1>

<br>

<h3>Search for and count all earthquakes that occurred with a magnitude Entered</h3>

<form method="post" align="center" action="/countall">

<br><br>

Enter Magnitiude<br><br>

<input type="text" name="mag" id="mag" >

<br><br>

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

<br>

<h3> <a href = "/">Home</a> </h3>

</form>

</body>

</html>

**Cresult.html**

<!doctype html>

<html>

<body>

<center>

<header>

<title>Yash Dani 1001707349</title></header>

<br><br>

<table border = 1 align="center">

<h2>Yash Dani 1001707349</h2>

<h3> Count of Earthquakes is {{count}} </h3>

<tr>

<td>ID</td>

<td>DATE</td>

<td>TIME</td>

<td>LATITUDE</td>

<td>LONGITUDE</td>

<td>DEPTH</td>

<td>MAG</td>

<td>PLACE</td>

</tr>

{% for row in rows %}

<tr>

<td>{{row['ID']}}</td>

<td>{{row['DATE']}}</td>

<td>{{row['TIME']}}</td>

<td>{{row['LATITUDE']}}</td>

<td>{{row['LONGITUDE']}}</td>

<td>{{row['DEPTH']}}</td>

<td>{{row['MAG']}}</td>

<td>{{row['PLACE']}}</td>

</tr>

{% endfor %}

<h2> <a href = "/">Home</a></h2>

</table>

<br>

</body>

</html>

**Q. Search for 2.0 to 2.5, 2.5 to 3.0, etc magnitude quakes for a one week, a range of days or the whole 30 days.**

**Main.py**

@app.route('/')

def index():

return render\_template('countall.html')

#Function for Specified range of magnitudes in given range of days

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

def getrange():

try:

if request.method == "POST":

uppermag = request.form['uppermag']

lowermag = request.form['lowermag']

startdate = request.form['startdate']

enddate = request.form['enddate']

#connect to db

conn = ibm\_db.connect("DATABASE="+db2cred['db']+";HOSTNAME="+db2cred['hostname']+";PORT="+str(db2cred['port'])+";UID="+db2cred['username']+";PWD="+db2cred['password']+";","","")

if conn:

print("in if loop")

sql='select \* from RZG77856.ALL\_MONTH where mag between ? and ? and date >=? and date <=?'

prep = ibm\_db.prepare(conn,sql)

ibm\_db.bind\_param(prep, 1, lowermag)

ibm\_db.bind\_param(prep, 2, uppermag)

ibm\_db.bind\_param(prep, 3, startdate)

ibm\_db.bind\_param(prep, 4, enddate)

ibm\_db.execute(prep)

rows = []

count = 0

print("conn 2")

# fetching the result

result = ibm\_db.fetch\_assoc(prep)

print(result)

while result != False:

count = count + 1

rows.append(result.copy())

result = ibm\_db.fetch\_assoc(prep)

# close database connection

ibm\_db.close(conn)

print(len(rows))

return render\_template('rangeresult.html', rows=rows, count=count)

else:

print("no connection established")

return render\_template('main.html')

except Exception as e:

print(e)

return "<html><body><p>In Exception</p></body></html>"

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

app.run(host='0.0.0.0', port=port)

**Countall.html**

<!doctype html>

<html>

<body>

<center>

<h1>Yash Dani 1001707349</h1>

<br>

<h3>Search for magnitude quakes for a one week, a range of days or the whole 30 days</h3>

<form method="post" align = "center" action="/getrange">

<br><br>

Enter Magnitiude-

<br><br>

<input type="text" name="uppermag" id="uppermag" value="upper value">

<br><br>

<input type="text" name="lowermag" id="lowermag" value="lower value">

<br><br>

<br>

Select Dates

<br><br>

<input type="date" name="startdate" id="startdate" value="Start Date">

<br><br>

<input type="date" name="enddate" id="enddate" value="End date">

<br><br>

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

<br>

<br>

<h3> <a href = "/">Home</a> </h3>

</form>

<br>

</body>

</html>

**Rangeresult.html**

<!doctype html>

<html>

<body>

<center>

<header>

<title>Yash Dani 1001707349</title></header>

<br><br>

<table border = 1 align="center">

<h2>Yash Dani 1001707349</h2>

<h3> Count of Earthquakes is {{count}} </h3>

<tr>

<td>ID</td>

<td>DATE</td>

<td>TIME</td>

<td>LATITUDE</td>

<td>LONGITUDE</td>

<td>DEPTH</td>

<td>MAG</td>

<td>PLACE</td>

</tr>

{% for row in rows %}

<tr>

<td>{{row['ID']}}</td>

<td>{{row['DATE']}}</td>

<td>{{row['TIME']}}</td>

<td>{{row['LATITUDE']}}</td>

<td>{{row['LONGITUDE']}}</td>

<td>{{row['DEPTH']}}</td>

<td>{{row['MAG']}}</td>

<td>{{row['PLACE']}}</td>

</tr>

{% endfor %}

<h2> <a href = "/">Home</a></h2>

</table>

<br>

</body>

</html>

**Q. Find earthquakes that were near (20 km, 50 km?) of a specified location.**

**Main.py**

@app.route('/')

def index():

return render\_template('countall.html')

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

def getdistance(name=None):

try:

if request.method == "POST":

lati = request.form['lati']

longi = request.form['longi']

dis = request.form['dis']

#connect to db

conn = ibm\_db.connect("DATABASE="+db2cred['db']+";HOSTNAME="+db2cred['hostname']+";PORT="+str(db2cred['port'])+";UID="+db2cred['username']+";PWD="+db2cred['password']+";","","")

if conn:

print("in if loop")

sql='select \* from RZG77856.ALL\_MONTH'

prep = ibm\_db.prepare(conn,sql)

#ibm\_db.bind\_param(prep, 1, lati)

#ibm\_db.bind\_param(prep, 2, longi)

ibm\_db.execute(prep)

rows = []

r1 = []

count = 0

distance = 0

radius = 6371

print("conn 2")

# fetching the result

result = ibm\_db.fetch\_assoc(prep)

while result != False:

rows.append(result.copy())

result = ibm\_db.fetch\_assoc(prep)

# close database connection

ibm\_db.close(conn)

for row in rows:

lat1 = float(lati)

lon1 = float(longi)

lat2 = float(row['LATITUDE'])

lon2 = float(row['LONGITUDE'])

dlat = math.radians(lat2 - lat1)

dlon = math.radians(lon2 - lon1)

a = math.sin(dlat/2) \* math.sin(dlat/2) + math.cos(math.radians(lat1)) \

\* math.cos(math.radians(lat2)) \* math.sin(dlon/2) \* math.sin(dlon/2)

c = 2 \* math.atan2(math.sqrt(a), math.sqrt(1-a))

d = radius \* c

if(d < float(dis)):

count = count + 1

r1.append(row)

print(count)

return render\_template('distance.html', r1=r1, count = count )

else:

print("no connection established")

return render\_template('main.html')

except Exception as e:

print(e)

return "<html><body><p>In Exception</p></body></html>"

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

app.run(host='0.0.0.0', port=port)

**Countall.html**

<!doctype html>

<html>

<body>

<center>

<h1>Yash Dani 1001707349</h1>

<br>

<h3>Earthquakes that were near to your location</h3>

<form method="post" align = "center" action="/getdistance">

<br><br>

Enter Latitude and Longitude

<br><br>

<input type="text" name="lati" id="lati" value="Latitude">

<br><br>

<input type="text" name="longi" id="longi" value="Longitude">

<br><br>

<input type="text" name="dis" id="dis" value="Distance">

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

<br>

<br>

<h3> <a href = "/">Home</a> </h3>

</form>

</body>

</html>

**Distance.html**

<!doctype html>

<html>

<body>

<center>

<header>

<title>Yash Dani 1001707349</title></header>

<br><br>

<table border = 1 align="center">

<h2>Yash Dani 1001707349</h2>

<h3> Count of Earthquakes is {{count}} </h3>

<tr>

<td>ID</td>

<td>DATE</td>

<td>TIME</td>

<td>LATITUDE</td>

<td>LONGITUDE</td>

<td>DEPTH</td>

<td>MAG</td>

<td>PLACE</td>

</tr>

{% for row in r1 %}

<tr>

<td>{{row['ID']}}</td>

<td>{{row['DATE']}}</td>

<td>{{row['TIME']}}</td>

<td>{{row['LATITUDE']}}</td>

<td>{{row['LONGITUDE']}}</td>

<td>{{row['DEPTH']}}</td>

<td>{{row['MAG']}}</td>

<td>{{row['PLACE']}}</td>

</tr>

{% endfor %}

<h2> <a href = "/">Home</a></h2>

</table>

<br>

</body>

</html>

**Q. Find clusters of earthquakes.**

**Main.py**

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

port = int(os.getenv("PORT", 5000))

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

def clustring(name=None):

if request.method == "POST":

lati1 = request.form['lati1']

long1 = request.form['long1']

lati2 = request.form['lati2']

long2 = request.form['long2']

kcul = request.form['kcul']

#latlon = []

lati1 = int(float(lati1))

lati2 = int(float(lati2))

long1 = int(float(long1))

long2 = int(float(long2))

kcul = int(kcul)

#connect to db

conn = ibm\_db.connect("DATABASE="+db2cred['db']+";HOSTNAME="+db2cred['hostname']+";PORT="+str(db2cred['port'])+";UID="+db2cred['username']+";PWD="+db2cred['password']+";","","")

if conn:

print("in if loop")

latrange = []

lonrange = []

countl = []

counter = 0

for i in range(lati1, lati2, -kcul):

print("1st Loop")

for j in range(long1,long2, kcul):

nolat = i - kcul

nolon = j + kcul

sql='select count(\*) from RZG77856.ALL\_MONTH where latitude between ? and ? and longitude between ? and ?'

prep = ibm\_db.prepare(conn,sql)

ibm\_db.bind\_param(prep, 1, nolat)

ibm\_db.bind\_param(prep, 2, i)

ibm\_db.bind\_param(prep, 3, j)

ibm\_db.bind\_param(prep, 4, nolon)

ibm\_db.execute(prep)

result = ibm\_db.fetch\_assoc(prep)

count = result.copy()

countl.append(int(count['1']))

latrange.append(i)

lonrange.append(j)

ibm\_db.close(conn)

lengthcounter = len(latrange)

print("outside loop")

return render\_template('clustering.html', lengthcounter = lengthcounter, latrange = latrange, lonrange = lonrange, countl = countl )

else:

print("no connection established")

return render\_template('main.html')

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

app.run(host='0.0.0.0', port=port)

**Countall.html**

<!doctype html>

<html>

<body>

<center>

<h1>Yash Dani 1001707349</h1>

<br>

<h3>Find Clusters of data</h3>

<form method="post" align = "center" action="/clustring">

<br><br>

Enter First Latitude and Longitude

<br><br>

<input type="text" name="lati1" id="lati1">

<br><br>

<input type="text" name="long1" id="long1">

<br><br>

Enter Second Latitude and Longitude

<br><br>

<input type="text" name="lati2" id="lati2">

<br><br>

<input type="text" name="long2" id="long2">

<br><br>

Enter No. of Slabs

<br><br>

<input type="text" name="kcul" id="kcul" >

<br><br>

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

<br>

<h3> <a href = "/">Home</a> </h3>

<br>

</form>

</body>

</html>

**Clustering.html**

<!doctype html>

<html>

<body>

<center>

<header>

<title>Yash Dani 1001707349</title></header>

<br><br>

<table border = 1 align="center">

<h2>Yash Dani 1001707349</h2>

<h3> Count of Earthquakes is {{counter}} </h3>

<tr>

<td>LATITUDE</td>

<td>LONGITUDE</td>

<td>COUNT</td>

</tr>

{% for i in range(lengthcounter)%}

<tr>

<td>{{latrange[i]}}</td>

<td>{{lonrange[i]}}</td>

<td>{{countl[i]}}</td>

</tr>

{% endfor %}

<h2> <a href = "/">Home</a></h2>

</table>

<br>

</body>

</html>

**Q. Do large (>4.0 mag) occur more often at night?**

**Main.py**

@app.route('/')

def index():

return render\_template('countall.html')

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

def night(name=None):

if request.method == "POST":

magni = request.form['magni']

#connect to db

conn = ibm\_db.connect("DATABASE="+db2cred['db']+";HOSTNAME="+db2cred['hostname']+";PORT="+str(db2cred['port'])+";UID="+db2cred['username']+";PWD="+db2cred['password']+";","","")

if conn:

print("in if loop")

sql='select \* from RZG77856.ALL\_MONTH where mag > ? '

prep = ibm\_db.prepare(conn,sql)

ibm\_db.bind\_param(prep, 1, magni)

ibm\_db.execute(prep)

rows = []

N = 0

D = 0

print("conn 2")

# fetching the result

result = ibm\_db.fetch\_assoc(prep)

while result != False:

rows.append(result.copy())

result = ibm\_db.fetch\_assoc(prep)

# close database connection

ibm\_db.close(conn)

for row in rows:

currtime = row['TIME']

currdate = row['DATE']

longit = float(row['LONGITUDE'])

tdiff = (int(longit\*24)/360)

diff = datetime.datetime.combine(currdate, currtime) - datetime.timedelta(hours=tdiff)

if(diff.time().hour < 8 or diff.time().hour > 20):

N = N + 1

else:

D = D + 1

return render\_template('daynight.html', N = N, D = D )

else:

print("no connection established")

return render\_template('main.html')

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

app.run(host='0.0.0.0', port=port)

**Countall.html**

<!doctype html>

<html>

<body>

<center>

<h1>Yash Dani 1001707349</h1>

<br>

<h3>Total No. of Earthquakes occuring at Day and Night</h3>

<form method="post" align="center" action="/night">

<br><br>

Enter Magnitiude<br><br>

<input type="text" name="magni" id="magni" >

<br><br>

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

<br>

<h3> <a href = "/">Home</a> </h3>

</form>

</body> </html>

**Daynight.html**

<!doctype html>

<html>

<body>

<center>

<header>

<title>Yash Dani 1001707349</title></header>

<br><br>

<table border = 1 align="center">

<h2>Yash Dani 1001707349</h2>

<br>

<h2> Total no. of earthquakes at Day time:{{D}}</h2>

<br>

<h2> Total no. of earthquakes at Night time:{{N}}</h2>

<h2> <a href = "/">Home</a></h2>

</table>

<br>

</body>

</html>