**Assignment 3 - Introduction to Google App Engine (Web)**

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**Section: 1:00 to 3:00**

**Description of the web interface:**

User will be able to select the range of the magnitude of the earthquakes and also filter the results according to the place.

The results will display the total number of earthquakes weekly and also the time of needed for retrieval queries.

Earthquakes with magnitude 2.0 – 2.99 are more frequent.

**References:**

1. <https://cloud.google.com/appengine/docs/whatisgoogleappengine>
2. <https://cloud.google.com/appengine/docs/python/>
3. <https://cloud.google.com/appengine/docs/python/cloudsql/>
4. <http://stackoverflow.com/questions/372885/how-do-i-connect-to-a-mysql-database-in-python>

**Code:**

**Main.py:**

import cgi

import webapp2

from google.appengine.ext.webapp.util import run\_wsgi\_app

import MySQLdb

import os

import csv

import time

import cloudstorage

import jinja2

from google.appengine.api import app\_identity

from cloudstorage import storage\_api

# Configure the Jinja2 environment.

JINJA\_ENVIRONMENT = jinja2.Environment(

loader=jinja2.FileSystemLoader(os.path.dirname(\_\_file\_\_)),

autoescape=True,

extensions=['jinja2.ext.autoescape'])

# Define your production Cloud SQL instance information.

\_INSTANCE\_NAME = 'adv-database-1:assginment2'

class MainPage(webapp2.RequestHandler):

def get(self):

# Connecting to MySQLdb cloud database

if (os.getenv('SERVER\_SOFTWARE') and

os.getenv('SERVER\_SOFTWARE').startswith('Google App Engine/')):

db = MySQLdb.connect(unix\_socket='/cloudsql/' + \_INSTANCE\_NAME, db='earthquakes', user='root', charset='utf8', passwd='root1234')

else:

db = MySQLdb.connect(host='76.183.83.23', port=3306, db='earthquakes', user='root', charset='utf8', passwd='root1234')

# Create a list of earthquake entries to render with the HTML.

earthquake\_data1 = [2,3,4,5,6,7]

earthquake\_data2 = [2.99,3.99,4.99,5.99,6.99,7.99]

place = ['California', 'Nepal', 'Washington', 'India', 'Chile', 'Hawaii', 'Japan']

variables = {'earthquake\_data1': earthquake\_data1,'earthquake\_data2':earthquake\_data2,'place':place}

template = JINJA\_ENVIRONMENT.get\_template('main.html')

self.response.write(template.render(variables))

db.commit()

db.close()

class Guestbook(webapp2.RequestHandler):

def post(self):

magnitude1 = self.request.get("mag\_data1")

magnitude2 = self.request.get("mag\_data2")

place = self.request.get("place")

# Handle the post to create a new guestbook entry.

if (os.getenv('SERVER\_SOFTWARE') and

os.getenv('SERVER\_SOFTWARE').startswith('Google App Engine/')):

db = MySQLdb.connect(unix\_socket='/cloudsql/' + \_INSTANCE\_NAME, db='earthquakes', user='root', charset='utf8', passwd='root1234')

else:

db = MySQLdb.connect(host='76.183.83.23', port=3306, db='earthquakes', user='root', charset='utf8')

cursor = db.cursor()

query(str(magnitude1),str(magnitude2),place,cursor,self)

application = webapp2.WSGIApplication([('/', MainPage),

('/sign', Guestbook)],

debug=True)

def query(mag1,mag2,place,cursor,self):

self.response.write("<html></body>")

self.response.write("<br>")

self.response.write("\nWeek1\n")

self.response.write("<br>")

s1 = time.clock()

cursor.execute("select \* from all\_month where mag between '"+mag1+"' and '"+mag2+"' and time between '2015-05-14T00:00:00Z' and '2015-05-21T23:59:00Z' and type='earthquake' and place like '%"+place+"%'")

self.response.write("Number of earthquakes for the magnitude :\n" +mag1+"and "+mag2)

self.response.write("<br>")

row1 = cursor.fetchall()

self.response.out.write(len(row1))

e1 = time.clock()

t1 = e1-s1

self.response.write("<br>")

self.response.write("\nTime taken to execute :\n")

self.response.write(t1)

self.response.write("<br>")

self.response.write("\nWeek2\n")

s2 = time.clock()

cursor.execute("select \* from all\_month where mag between '"+mag1+"' and '"+mag2+"' and time between '2015-05-22T00:00:00Z' and '2015-05-28T23:59:00Z' and type ='earthquake' and place like '%"+place+"%'")

self.response.write("<br>")

self.response.write("Number of earthquakes for the magnitude :\n" +mag1+"and "+mag2)

row2 = cursor.fetchall()

self.response.write("<br>")

self.response.out.write(len(row2))

e2 = time.clock()

t2 = e2-s2

self.response.write("<br>")

self.response.write("\nTime taken to execute :\n")

self.response.write(t2)

self.response.write("<br>")

self.response.write("\nWeek3\n")

s3 = time.clock()

self.response.write("<br>")

cursor.execute("select \* from all\_month where mag between '"+mag1+"' and '"+mag2+"' and time between '2015-05-29T00:00:00Z' and '2015-06-04T23:59:00Z' and type='earthquake' and place like '%"+place+"%'")

self.response.write("Number of earthquakes for the magnitude :\n" +mag1+"and "+mag2)

self.response.write("<br>")

row3 = cursor.fetchall()

self.response.out.write(len(row3))

e3 = time.clock()

t3 = e3-s3

self.response.write("<br>")

self.response.write("\nTime taken to execute :\n")

self.response.write(t3)

self.response.write("<br>")

self.response.write("\nWeek4\n")

s4 = time.clock()

self.response.write("<br>")

cursor.execute("select \* from all\_month where mag between '"+mag1+"' and '"+mag2+"' and time between '2015-06-05T00:00:00Z' and '2015-06-13T23:59:00Z' and type='earthquake' and place like '%"+place+"%'")

self.response.write("Number of earthquakes for the magnitude :\n" +mag1+"and "+mag2)

self.response.write("<br>")

row4 = cursor.fetchall()

self.response.out.write(len(row4))

e4 = time.clock()

t4 = e4-s4

self.response.write("<br>")

self.response.write("\nTime taken to execute :\n")

self.response.write(t4)

self.response.write("</body></html>")

def main():

application = webapp2.WSGIApplication([('/', MainPage),

('/sign', Guestbook)],

debug=True)

run\_wsgi\_app(application)

if \_\_name\_\_ == "\_\_main\_\_":

main()

**Main.html:**

<!DOCTYPE html>

<html>

<head>

<title>Earthquakes data</title>

</head>

<body>

<h1>Earthquakes data from last 30 days </h1>

<form action="/sign" method="post">

<br>

<div>

<b>Select the magnitude :</b>

<select name="mag\_data1">

{% for data in earthquake\_data1 %}

<option>{{data}}</option>

{% endfor %}

</select>

<select name="mag\_data2">

{% for d in earthquake\_data2 %}

<option>{{d}}</option>

{% endfor %}

</select>

<br><br>

<b>Select the place :</b>

<select name ="place">

{% for p in place %}

<option>{{p}}</option>

{% endfor %}

</select>

<br><br>

<input type="submit" value="Get Results"></div>

</form>

</body>

</html>

**App.yaml:**

application: adv-database-1

version: 1

runtime: python27

api\_version: 1

threadsafe: yes

handlers:

- url: /favicon\.ico

static\_files: favicon.ico

upload: favicon\.ico

- url: .\*

script: main.application

libraries:

- name: webapp2

version: "2.5.2"

- name: MySQLdb

version: "latest"

- name: jinja2

version: "latest"

**Time-Magnitude relationship: (Time in seconds)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Week | Mag = 2 – 2.99 | Mag = 3-3.99 | Mag = 4-4.99 | Mag = 5-5.99 | Mag = 6-6.99 | Mag = 7-7.99 |
| 14th May to 21st May | 0.03 | 0.01 | 0.01 | 0.01 | 0.0 | 0.0 |
| 22nd May to 28th May | 0.02 | 0.0 | 0.01 | 0.0 | 0.0 | 0.0 |
| 29th May to 4th June | 0.02 | 0.01 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5th June to 13th June | 0.03 | 0.01 | 0.0 | 0.01 | 0.0 | 0.0 |

The results above may wary depending on the range of magnitude selected.