NWEN 241: 2014 Trimester 1
Python Assignment 2

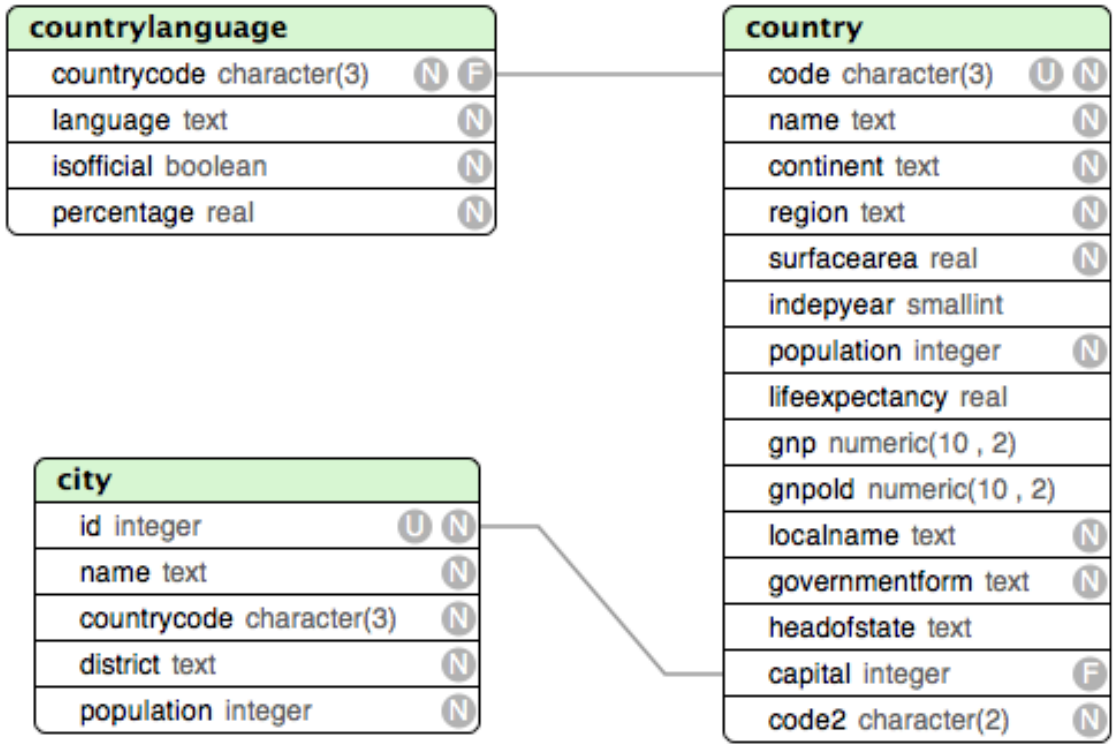
This assignment is worth 2.5 marks overall.

Your answer should be in the form of a report that provides **clear evidence of testing** and presents the information you extract in a clear format. Your code should be **well-commented** – submitting code without comments will result in low marks.

Submit your report via the Submission system as a PDF.

Introduction

We have a server on campus running a database system called PostgreSQL. You can find out more about PostgreSQL at http://www.postgresql.org/about/. The server provides access to a database called **world** that has information on Cities, Countries and what languages they speak. The data is contained in three tables that have these fields and relationships:



Your task will be to connect to this server using code written in Python3 and retrieve information from the database.

Your tasks

Using the supplied template, write code to extract the following information from the database:

1. The percentage of the world's population who live in cities.
2. The top five and the bottom five countries in terms of:
    a. life expectancy
    b. population
3. The surface area of each of the continents.
4. The largest and the smallest capital city.

Your answer should be in the form of a report that provides **clear evidence of testing** and presents the information you extract in a clear format. Your code should be **well-commented** – submitting code without comments will result in low marks.

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Appendix A

```
#!/usr/bin/env python3

import psycopg2

#########################################################
# Connect to the database
#
# Variables that may need changing
#
myHost = "db.ecs.vuw.ac.nz"
myUser = "worldview"
myPass = "LetMeRoam"    # readonly access!
myDB   = "world"
#
#########################################################
#
# Make a connection to the database
#
db = psycopg2.connect(host=myHost, user=myUser,
                      password=myPass, database=myDB)
#
# prepare a cursor object using cursor() method
#
cursor = db.cursor()
#
# show details of the tables in the database
#
#
# build the query
#
sql="""SELECT table_name FROM information_schema.tables
       WHERE table_schema='public'"""
#
# ask the question
#
cursor.execute(sql)
#
# get a list of tables
# use fetchall() to get all the rows returned
#
for row in cursor.fetchall():
    table = row[0]
    #
    # display table properties
    #
    print(("Printing details for table '{0}':".format(table)))
```

```
    sql = """SELECT column_name, data_type, character_maximum_length
             FROM INFORMATION_SCHEMA.COLUMNS
             WHERE table_name = '{0}'""".format(table)
    cursor.execute(sql)

    for row in cursor.fetchall():
        print(row)
    print()
    #
    # print first two rows of table
    #
    sql = """SELECT * FROM {0} LIMIT 2""".format(table)
    print (sql)
    cursor.execute(sql)
    #
    # Use fetchone() to get a row of data
    #
    print((cursor.fetchone()))
    print((cursor.fetchone()))
    print()

#
# extract data from two tables
#
sql = """SELECT co.continent, co.name, ci.name, ci.population
         FROM country co, city ci
         WHERE co.code = ci.countrycode"""
cursor.execute(sql)

for row in cursor.fetchall():
    print(row)

db.close()
```