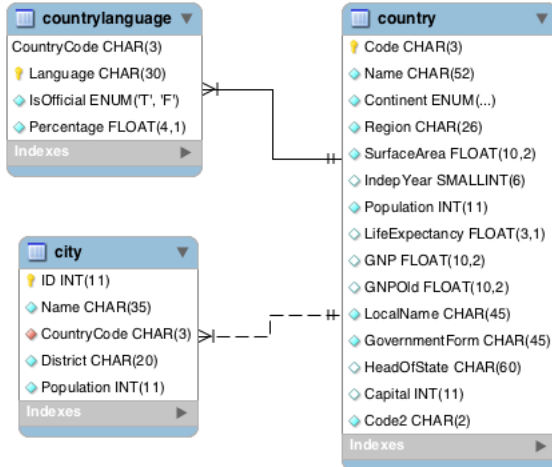# CSCI-UA.60-1 – World Cities, languages and countries
Worksheet


```
-- TABLES: city, country, countrylanguage
-- Based on Oracle:
-- https://dev.mysql.com/doc/world-setup/en/world-setup-installation.html
-- Class page: https://cs.nyu.edu/courses/fall18/CSCI-UA.0060-001/notes/oracle_world_cities.sql.txt

DROP TABLE IF EXISTS city;
DROP TABLE IF EXISTS countrylanguage;
DROP TABLE IF EXISTS country;

CREATE TABLE country (
  Code CHAR(3) NOT NULL DEFAULT '',
  Name CHAR(52) NOT NULL DEFAULT '',
  Continent enum('Asia','Europe','North America','Africa','Oceania','Antarctica','South America') NOT NULL DEFAULT 'Asia',
  Region CHAR(26) NOT NULL DEFAULT '',
  SurfaceArea FLOAT(10,2) NOT NULL DEFAULT '0.00',
  IndepYear SMALLINT(6) DEFAULT NULL,
  Population INT(11) NOT NULL DEFAULT '0',
  LifeExpectancy FLOAT(3,1) DEFAULT NULL,
  GNP FLOAT(10,2) DEFAULT NULL,
  GNPOld FLOAT(10,2) DEFAULT NULL,
  LocalName CHAR(45) NOT NULL DEFAULT '',
  GovernmentForm CHAR(45) NOT NULL DEFAULT '',
  HeadOfState CHAR(60) DEFAULT NULL,
  Capital INT(11) DEFAULT NULL,
  Code2 CHAR(2) NOT NULL DEFAULT '',
  PRIMARY KEY (Code)
) CHARACTER SET latin1 COLLATE latin1_swedish_ci;
```

```
CREATE TABLE countrylanguage (
  CountryCode CHAR(3) NOT NULL DEFAULT '',
  Language CHAR(30) NOT NULL DEFAULT '',
  IsOfficial enum('T','F') NOT NULL DEFAULT 'F',
  Percentage FLOAT(4,1) NOT NULL DEFAULT '0.0',
  PRIMARY KEY (CountryCode,Language),
  KEY CountryCode (CountryCode),
  CONSTRAINT countryLanguage_ibfk_1 FOREIGN KEY (CountryCode) REFERENCES country (Code)
) CHARACTER SET latin1 COLLATE latin1_swedish_ci;

CREATE TABLE city (
  ID INT(11) NOT NULL AUTO_INCREMENT,
  Name CHAR(35) NOT NULL DEFAULT '',
  CountryCode CHAR(3) NOT NULL DEFAULT '',
  District CHAR(20) NOT NULL DEFAULT '',
  Population INT(11) NOT NULL DEFAULT '0',
  PRIMARY KEY (ID),
  KEY CountryCode (CountryCode),
  CONSTRAINT city_ibfk_1 FOREIGN KEY (CountryCode) REFERENCES country (Code)
) AUTO_INCREMENT=4080  CHARACTER SET latin1 COLLATE latin1_swedish_ci;
```

SAMPLE DATA:
```
INSERT INTO country VALUES ('ABW','Aruba','North America','Caribbean',193.00,NULL,103000,78.4,828.00,793.00,'Aruba','Nonmetropolitan
  Territory of The Netherlands','Beatrix',129,'AW');
INSERT INTO country VALUES ('AFG','Afghanistan','Asia','Southern and Central
  Asia',652090.00,1919,22720000,45.9,5976.00,NULL,'Afganistan/Afqanestan','Islamic Emirate','Mohammad Omar',1,'AF');
INSERT INTO country VALUES ('AGO','Angola','Africa','Central
  Africa',1246700.00,1975,12878000,38.3,6648.00,7984.00,'Angola','Republic','José Eduardo dos Santos',56,'AO');

INSERT INTO countrylanguage VALUES ('ABW','Dutch','T',5.3);
INSERT INTO countrylanguage VALUES ('ABW','English','F',9.5);
INSERT INTO countrylanguage VALUES ('ABW','Papiamento','F',76.7);
INSERT INTO countrylanguage VALUES ('ABW','Spanish','F',7.4);
INSERT INTO countrylanguage VALUES ('AFG','Balochi','F',0.9);
INSERT INTO countrylanguage VALUES ('AFG','Dari','T',32.1);

INSERT INTO city VALUES (1,'Kabul','AFG','Kabol',1780000);
INSERT INTO city VALUES (2,'Qandahar','AFG','Qandahar',237500);
INSERT INTO city VALUES (3,'Herat','AFG','Herat',186800);
INSERT INTO city VALUES (4,'Mazar-e-Sharif','AFG','Balkh',127800);
INSERT INTO city VALUES (5,'Amsterdam','NLD','Noord-Holland',731200);
INSERT INTO city VALUES (6,'Rotterdam','NLD','Zuid-Holland',593321);
INSERT INTO city VALUES (7,'Haag','NLD','Zuid-Holland',440900);
INSERT INTO city VALUES (8,'Utrecht','NLD','Utrecht',234323);
```

CSCI-UA.60-1 – World Cities, languages and countries
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Questions for class discussion
NOTE: You may assume that these tables comply with referential integrity.

(1) Describe the countrylanguage table primary key. How is that reflected in the E-R diagram?

(2) Write the following queries:

   List all of the languages in alphabetical order without listing duplicates.

   How many records are in the table?

   How many languages are in the table without counting duplicates?

(3) How is the attribute enum() used in the CREATE TABLE country query and why?

(4) Which are the five largest countries in the world as measured by surface area?

   The five smallest?

(5) Which five countries have the highest population density in the world?

   The five lowest?

(6) List the country code, language and country name for all of the official languages in the world.

(7) List the country code, country name and number of official languages for all countries (e.g. Canada) that have two or more official languages.

(8) How many (if any) languages in the countrylanguage table are not associated with a country in the country table?

(9) What is the total urban (city) population in each of the 10 countries with the highest urban population totals? List the country code, the country name and the total urban population.

(10) List the country name, urban population total for that country, total population of that country and the ratio of urban to total population as a percentage in descending order by urban population.

What other sorts for this result might be interesting to review?

(11) List the Language, country code and country name for all official languages in order by language.

(12) Are there any countries on file that do not have a city listed? If so, list those countries in alphabetical order.

For class discussion: What else might you want to study from this database?