

Section 2

1: SQL Practice

Schema

```
CREATE TABLE Population (  
rank INTEGER,  
country VARCHAR(30) PRIMARY KEY, population DOUBLE,  
percentage FLOAT  
);
```

```
CREATE TABLE GDP (  
rank INTEGER,  
country VARCHAR(30) PRIMARY KEY, gdp DOUBLE  
);
```

```
CREATE TABLE Airport (  
code VARCHAR(30) PRIMARY KEY, name VARCHAR(30),  
country VARCHAR(30)  
);
```

Problems

-- What is the total population of earth?

Total_Population
6778067375

-- What is the percentage of the population from the top 10 populated countries?

Top_Sum
58.9241749607129

-- How many countries do have less than 1,000,000 population?

Small_Countries
68

-- How many countries have airports?

Airport_Count
247

-- Top 10 countries with most airports, in descending order

country	Count
United States	2238
Australia	617
Canada	533
Papua New Gui	380
Brazil	288
Indonesia	205
China	187
Colombia	167
United Kingdo	151
France	144

-- Order the top 10 countries by total GDP per capita (gdp / population)

country	GDP_per_capita
Seychelles	0.282666666666667
Saint Kitt	0.256076923076923
Antigua an	0.196681818181818
Luxembourg	0.158883485309017
Dominica	0.152507462686567
Brunei	0.119825
Iceland	0.118570005575638
Grenada	0.102855769230769
Saint Vinc	0.092908256880733
Barbados	0.087

2. Join & Aggregation

Schema

```
CREATE TABLE Class ( dept VARCHAR(6),  
  
number INTEGER,  
title VARCHAR(75),  
PRIMARY KEY (dept, number)  
  
);
```

```
CREATE TABLE Instructor ( username VARCHAR(8),  
  
fname VARCHAR(50), lname VARCHAR(50), started_on CHAR(10), PRIMARY KEY  
(username)  
  
);
```

```
CREATE TABLE Teaches ( username VARCHAR(8),  
  
dept VARCHAR(6),  
number INTEGER,  
PRIMARY KEY (username, dept, number),  
FOREIGN KEY (username) REFERENCES Instructor(username), FOREIGN KEY  
(dept, number) REFERENCES Class(dept, number)  
  
);
```

Problems

/* Review of joins */

-- Who teaches CSE 451?

fname	lname
Tom	Anderson
John	Zahorjan
Hank	Levy

-- What courses does zahorjan teach?

dept	number
CSE	378
CSE	451
CSE	461

-- Which courses do both levy and zahorjan teach?

dept	number	title
CSE	451	Introduction to Operating Systems

/* Queries using aggregation functions */

-- How many classes are there in the course catalog?

COUNT(*)

3

-- What are the highest and lowest class numbers?

MIN(number)	MAX(number)
378	461

/* Queries with both grouping and aggregation */

-- How many instructors teach each class?

dept	number	teacher_count
CSE	378	1
CSE	451	3
CSE	461	3

-- Order the instructors by who teaches in the most departments

username	Department_Count
djw	1
levy	1
tom	1
zahorjan	1