Homework 3 **CS157A**

Total Points: **20**
Each SQL query is 1 point

Part 1:
Load the 'census-summary.sql' data into SQLite (use .read census-summary.sql)

Write SQL to answer the following questions:

1. Show the workclass and education of people under 20?
    a. select workclass, education from census where age < 20;
2. Show the sex of people who are over 80 and have never married?
    a. select sex from census where age > 80 and marital_status = 'Never_married';
3. show the sex, age, and marital status for people in the armed forces
    a. select sex, age, marital_status from census where occupation = 'Armed_Forces';
4. show the marital status of people of age 50 with relationship 'Not_in_family'
    a. select marital_status from census where age = 50 and relationship = 'Not_in_family';
5. show the occupation of women under the age of 40 with a Doctorate degree
    a. select occupation from census where sex = 'Female' and age < 40 and education = 'Doctorate';
6. show all columns for people under the age of 21 with a Masters degree
    a. select * from census where age < 21 and education = 'Masters';
7. show the age of females with either a bachelors or a masters degree
    a. select age from census where (education = 'Bachelors' or education = 'Masters') where sex = 'Female';
8. which native countries have "land" in their name
    a. select distinct native_country from census where native_country like '%land%';
9. what is the average education years for people having a native country that is not the US
    a. select avg(education_num) from census where native_country not like '%United_States';
    b. 9.317
10. how many different native countries are found in the data set
    a. select count(distinct native_country) from census not like '%NA'; (assuming 'NA' is not counted)
    b. 41
    c. select count(distinct native_country) from census not like '%NA'; (assuming 'NA' is counted)
    d. 42

Part 2:

Read the 'courses-ddl.sql' and 'courses-small.sql' files into SQLite. Write SQL to answer the following questions. **Use Simple Join for questions 11-13 and Natural Join for 14-20.**

11. Show the names of all students who have taken course "CS-190", as well as the year in which they took the course.
    a. select name, year from (select * from student, takes on student.id = takes.id) where course_id = 'CS-190';
12. For every course taught by an instructor, show the instructor's name and the course that is taught.
    a. select name, course_id from (select * from instructor, teaches on instructor.ID = teaches.ID);
13. Do the same as in the previous question, but do not show duplicates and sort by instructor name.
    a. select distinct name, course_id from (select * from instructor, teaches on instructor.ID = teaches.ID) order by name;
14. what are the names of all students who have taken some course? Don't show duplicates.
    a. select distinct name from student natural join takes;
15. what are the names of departments that offer 4-credit courses? Don't list duplicates.
    a. select distinct dept_name from department natural join course where credits = 4;
16. How many B grades have been given to physics majors
    a. select count(grade) from student natural join takes where dept_name = 'Physics' and grade = 'B';
17. What is the average total credits of students who have taken CS-319
    a. select avg(tot_cred) from student natural join takes where course_id = 'CS-319';
18. What is the average total credits of students who have taken CS-101
    a. select avg(tot_cred) from student natural join takes where course_id = 'CS-101'; (assuming counting the student who failed)
    b. select avg(distinct tot_cred) from student natural join takes where course_id = 'CS-101'; (assuming not counting the student who failed)
19. What are the course IDs of courses taught by instructor Katz
    a. select course_id from instructor natural join teaches where name = 'Katz';
20. What are the course IDs of all courses offered by instructor Crick's department
    a. select course_id from course natural join department where dept_name = (select dept_name from instructor where name = 'Crick');