# Homework - 2

**Important note:** All homework is to be done individually -- you are not to work with others on it.

Total Points: **15**

1 point per Question

**Part 1**

* 1. Can a relation schema have two primary keys? (yes or no) \_no\_.
  2. Fill in the blank: every operation of relation algebra produces \_table\_\_ as output.
  3. When union is applied to two tables, the tables have to be compatible. In what sense do they have to be compatible?\_\_\_It means the schema of the relation must match exactly and the duplicates will be eliminated.The attribute domains must be compatible. \_
  4. Answer the question “what are the IDs of instructors who teach CS-138” using relational algebra. Use TEACHES relation

SELECT ID FROM TEACHES WHERE Course\_id = “CS-138”;

ΠID(σ Course\_id = “CS-138”(teaches))

* 1. Answer the question “which departments have a budget of over $60,000” using relational. Use DEPARTMENT relation

SELECT dept\_name FROM department where budget >60,000;

Πdept\_name(σbudget>60,000(department));

* 1. In many programming languages there are functions that will append one list to another list. Compare the ‘union’ operation of relational algebra with the append function by giving one way in which they are different. \_\_ The union creates a new table combining one or more relation of the same structure with the duplicate tuples being deleted. whereas the the append function adds the new element to the end of the list in whichever list we are adding and gives the output as a whole as it doesn’t create a new different table like union\_\_.

**Part 2**

Use hospital.sql to answer following SQL queries.

.read hospital.sql

1. what are the first and last names of the female patients?

Select first\_name,last\_name from patient where sex =”F”;

Chris|Wells

Brenda|Brown

1. what are the patient numbers and wards of all patients?

SELECT patient\_no,ward FROM patient;

patient\_no ward

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223 8

234 7

244 6

454 6

597 3

3.what are the first and last names of patients are in either ward 6 or ward 7?

SELECT first\_name,last\_name FROM patient WHERE ward = 6 or ward =7;

first\_name last\_name

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Alan Jenkins

Chris Wells

John Smith

4.what are the last names of patients that are either in ward 3 or are male?

SELECT last\_name FROM patient WHERE ward = 3 or sex = “M”;

last\_name

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Jones

Jenkins

Smith

Brown

**Part 3**

Use census-summary.sql (uploaded under datasets module) to answer following SQL queries.

.read census-summary.sql

1. show the age of the males in the data set

select age from census where sex = "Male";

2. show all columns for the people with a usid between 100 and 120

select \* from census where usid>= 100 and usid <=120;

1. show the workclass and education of people under 20

select workclass,education from census where age<=20;

1. show all columns for people over 80

select \* from census where age>80;

5. show the sex of people who are over 80 and have never married

SELECT sex FROM census WHERE age>=80 and mariatal\_status = “Never\_married”;