CSE 4/560
Databases and Query Languages
Homework 2
Total Marks 100

Your Name:
Your email ID:
Your UB Person ID:

1.[10] Write the following queries in SQL. They refer to the database schema of HW1:

```
Classes(class, type, country, numGuns, bore, displacement)
Ships(name, class, launched)
Battles(name, date)
Outcomes(ship, battle, result)
```

1. Find the names of all ships launched prior to 1900, but call the resulting column shipName
2. Find all ships that have the same name as their class.
3. Find the names of all ships that begin with the letter "R."
4. Find the names of ships sunk in battle and the name of the battle in which they were sunk.
5. Find the names of all ships whose name consists of three or more words (e.g., King George V).

2.[8] What is a foreign key constraint? What is its difference with primary Key? Why are such constraints important?

3.[10] Specify the foreign keys for the below schemas, stating any assumptions you make.

1.

SALESPERSON(Ssn, Name, Start_year, Dept_no)

TRIP(Ssn, From_city, To_city, Departure_date, Return_date, Trip_id)

EXPENSE(Trip_id, Account#, Amount)

2.

STUDENT(Ssn, Name, Major, Bdate)

COURSE(Course#, Cname, Dept)

ENROLL(Ssn, Course#, Quarter, Grade)

BOOK_ADOPTION(Course#, Quarter, Book_isbn)

TEXT(Book_isbn, Book_title, Publisher, Author)

4. [36] Consider the following relations:

Suppliers(sid:integer,sname:string,address:string)
Parts(pid:integer,pname:string,color:string)
Catalog(sid:integer,pid:integer,cost:real)

Write the following queries in SQL.
a. Find the names of suppliers who supply some red part.

b. Find the sids of suppliers who supply some red or green part.

c. Find the sids of suppliers who supply some red part or are at 221 Packer Street.

d. Find the sids of suppliers who supply some red part and some green part.

e. Find the sids of suppliers who supply every part.

f. Find the sids of suppliers who supply every red part.

g. Find the sids of suppliers who supply every red or green part.

h. Find the sids of suppliers who supply every red part or supply every green part.

i. Find pairs of sids such that the supplier with the first sid charges more for some part than the supplier with the second sid.

j. Find the pids of parts supplied by at least two different suppliers.

k. Find the pids of the most expensive parts supplied by suppliers named Yosemite Sham.

l. Find the pids of parts supplied by every supplier at less than $200. (If any supplier either does not supply the part or charges more than $200 for it, the part is not selected.)

5. [36] Consider the following relations:

Flights(flno:integer,from:string,to:string,distance:integer,departs:time,arrives:time)
Aircraft(aid:integer,aname:string,cruisingrange:integer)
Certified(eid:integer,aid:integer)
Employees(eid:integer,ename:string,salary:integer)

a. Find the eids of pilots certified for some Boeing aircraft.

b. Identify the flights that can be piloted by every pilot whose salary is more than $100,000.

c. Find the names of pilots who can operate planes with a range greater than 3,000 miles but are not certified on any Boeing aircraft.

d. Find the eids of employees who make the second highest salary.

e. Find the eids of employees who are certified for the largest number of aircraft.

f. Find the eids of employees who are certified for exactly three aircraft.

g. For each pilot who is certified for more than three aircraft, find the eid and the maximum cruising range of the aircraft for which she or he is certified.

h. Find the aids of all aircraft that can be used on routes from Los Angeles to Chicago.

i.Print the name and salary of every non pilot whose salary is more than the average salary for pilots.