CS 4320/5320: Assignment 1 (70 Points Total)

Consider the database schema created by the following commands:

```
CREATE TABLE Sailors (
sid integer PRIMARY KEY, sname varchar(20), rating integer, age real);
CREATE TABLE Boats (
  bid integer PRIMARY KEY, bname varchar(20), color varchar(20));
CREATE TABLE Reserves (
  sid integer, bid integer, day date, primary key (sid, bid, day));
```

In the following, we ask you to formulate queries on that database. You need to write one or multiple queries per question to implement the specified task. We use automated grading for your queries so please ensure that your submission follows precisely the format outlined below:

The required format is the following:
- you must submit one .zip file (without any sub-directories) that contains five text files,
- each text file contains the answer query/queries for one question,
- the text files must be named “Q1.txt”, …, “Q7.txt”,
- each file contains either one single SQL query or multiple queries, separated by semicolons,
- we run your queries on the Postgres 10.5 database management system - this is important since other database management systems use occasionally a slightly different SQL syntax.

Q1) (10 Points) Write a sequence of queries that insert
- a sailor named “Johannes” with age 40 and rating 10,
- two boats named “Cayuga” and “Bebee” with unknown color,
- and a reservation by Johannes for boat “Cayuga” on the 1th of September 2018.

You can assume that the database into which we insert is initially empty.

Q2) (10 Points) Write a sequence of queries that insert the same entries as in Q1) but this time you cannot assume that the database is initially empty. (Hint: what needs to change to ensure that no inserts are rejected, independently from the initial database content?)

Q3) (10 Points) Write a query that counts the number of reservations per sailor for all sailors with at least three reservations. The output of the query should contain two columns, the first one containing the sailor name and the second one containing the number of reservations (the same sailor name may appear multiple times in the output).

Q4) (10 Points) Write a query retrieving the names of all boats that have been reserved less than three times. The query output should contain one column containing the boat name without duplicates.

Q5) (10 Points) Write a query retrieving all sailors that made the maximal number of reservations (i.e., compared to the number of reservations by other sailors) between 1th and 7th of September 2018 (including reservations on those two dates). The query output should contain only the sailor ID.

Q6) (10 Points) Write a query that counts the number of reservations per sailor for all sailors (including the ones without any reservations!). The query output should contain two columns, the first one containing the sailor name and the second one containing the number of reservations (the same sailor name might appear multiple times in the output).

Q7) (10 Points) Write a query that updates the boats relation by setting the color of each boat with unknown color to “red” by default.