Assignment 1: Testing PostgreSQL

The goal of this assignment is to become familiar with PostgreSQL and to write some queries basic SQL.

Consider the following relation schemas for a database that maintains sailors, boats, and reservations of boats by sailors.

Sailor(Sid: INTEGER, Sname: VARCHAR(20), Rating: INTEGER, Age: INTEGER)
Boat(Bid: INTEGER, Bname VARCHAR(15), Color VARCHAR(15))
Reserves(Sid: INTEGER, *Bid*: Integer, Day: VARCHAR(10))

You should assume that Sid in Reserves is a foreign key that references the primary key Sid in Sailor, and that Bid in Reserves is a foreign key that references the primary key Bid in Boat.

Note the attached text files sailor.txt, boat.txt, and reserves.txt that contain the relation instances for the Sailor, Boat, and Reserves relations, respectively.

1. Create a database in PostgreSQL that stores these relations. Make sure to specify primary and foreign keys.
2. Provide examples that illustrate how the presence of primary and foreign keys affects insert and deletes in these relations.
3. Write SQL statements for the following queries:
   (a) Find the Sid and rating of each sailor.
   (b) Find the name of each red boat.
   (c) Find the color of each boat.
   (d) Find the name of each sailor who reserved a red boat.
   (e) Find the name of each boat that was reserved by a sailor older than 25 years.
   (f) Find the name of each sailor who reserved a boat whose color is not red or not green.
   (g) Find the name of each boat that was reserved by a sailor who has reserved a blue and a green boat.
   (h) Find the Bid's of boats that were not reserved.
   (i) Find the name each boat that was reserved by at least two sailors.
   (j) Find the Sid's of sailors who reserved exactly one boat.

Submit your solutions in a file called assignment1.sql that contains a series of SQL statements with your solutions for these problems. We should be able to take your file and run it through PostgreSQL.