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Database Management System

5 February 2023

*Sailors(sid: integer, sname: string, rating: integer, age: real)*

*Boats(bid: integer, bname: string, color: string)*

*Reserves(sid: integer, bid: integer, day: date)*

1. List only the name and rating for all Sailors. **(4 points)**

**π sname,rating(S)**

1. List all sailor information for sailors with a rating>8).  **(4 points)**

**σrating>8(S)**

1. List the boat id for boats all red boats.  **(4 points)**

**π bid (σcolor=’red’(B))**

1. List the boat id for all red boats and all green boats.  **(4 points)**

**π bid (σcolor=’red’ v color=’green’ (B))**

1. List the name of every sailor who is aged 16 or under.  **(4 points)**

**π sname((σage≤16 (S))**

1. List the name and rating for all sailors who have a rating of 7 and below.  **(4 points)**

**c sname,rating(σrating≤7**(S))

1. Count the number of reservations for boat number 4.  **(4 points)**

**ℑ COUNT (σbid=4(R))**

1. Find the names of sailors who have reserved boat 103.  **(4 points)**

**π sname((σbid=103**(R)**)⋈(S))**

1. Find the names of sailors who have reserved a red boat.  **(4 points)**

**π sname((σcolor=’red’**(B)**)⋈(R) ⋈(S))**

1. Find the colors of the boats reserved by Lubber.  **(4 points)**

**π color((σsname=’Lubber’**(S)**)⋈(R) ⋈(B))**

1. Find the names of sailors who have reserved a red and green boat.  **(5 points)**

**π sname((σcolor=’red’**(B)**)⋈(R) ⋈(S)) ∩ π sname((σcolor=’green’**(B)**)⋈(R) ⋈(S))**

1. Find the names of sailors with age over 20 who have not reserved a red boat.  **(5 points)**

**π sid(σage>20(S)) - π sid((σcolor=’red’** (B)) **⋈ (R))**