**PSG College of Technology - Coimbatore**

**Department of Applied Mathematics and Computational Sciences**

**3rd Semester MSc SS**

**20XW38 - RDBMS LAB - PROBLEM SHEET – 8**

Consider the database of a sailing club with the following three tables:

Sailor(id,name,rating,age)

Boat(id,name,colour)

Reservation(sid,bid,day)

create table Sailors(sid integer PRIMARY KEY,

sname varchar(20),rating integer,age integer,check(rating>=5 and rating<=10));

insert into Sailors values (1,'Jack Sparrow', 10, 40);

insert into Sailors values (2,'Will Turner', 6, 26);

insert into Sailors values (3,'Horatio', 7, 24);

insert into Sailors values (4,' Gibbs ', 9, 51);

insert into Sailors values (5,'Davey Jones', 10, 42);

insert into Sailors values (6,'Julius',9, 25);

insert into Sailors values (7, 'Dustin', 7, 45);

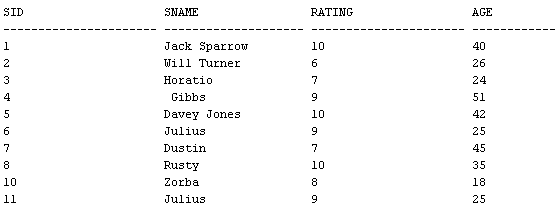
insert into Sailors values (8, 'Rusty', 10, 35);

insert into Sailors values (9, 'Horatio', 5, 35);

insert into Sailors values (10, 'Zorba', 8, 18);

insert into Sailors values (11, 'Julius',9, 25);

select \* from Sailors order by sid;



create table Boats(bid integer primary key,

bname varchar(50),

colour varchar(10),

check(bid>=100 and bid<=110));

insert into Boats values (100,'Black Pearl', 'black');

insert into Boats values (101,'Queen Annes Revenge', 'red');

insert into Boats values (102,'Blackbeards Delight', 'black');

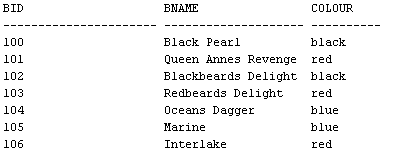
insert into Boats values (103,'Redbeards Delight', 'red');

insert into Boats values (104,'Oceans Dagger', 'blue');

insert into Boats values (105,'Marine', 'blue');

insert into Boats values (106,'Interlake', 'red');

select \* from Boats order by bid;



create table Reserves(sid integer,bid integer,day varchar(20),primary key(sid,bid,day));

insert into Reserves values (2, 101, '11-FEB-2016');

insert into Reserves values (6, 107, '10-JUN-2016');

insert into Reserves values (1, 101, '10-OCT-2016');

insert into Reserves values (1, 101, '10-OCT-2017');

insert into Reserves values (1, 102, '10-OCT-2017');

insert into Reserves values (1, 101, '10-JUL-2017');

insert into Reserves values (2, 102, '11-SEP-2017');

insert into Reserves values (2, 102, '7-NOV-2017');

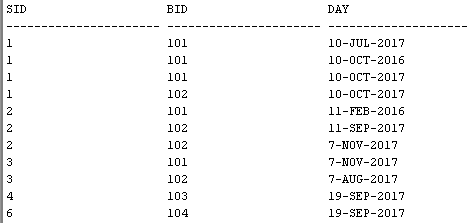
insert into Reserves values (3, 101, '7-NOV-2017');

insert into Reserves values (3, 102, '7-AUG-2017');

insert into Reserves values (4, 103, '19-SEP-2017');

insert into Reserves values (6, 104, '19-SEP-2017');

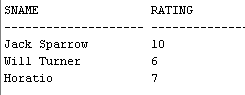
select \* from Reserves order by sid;



19. create table updation as select distinct s.sname,s.rating from sailors s , boats b,reserves r,reserves r1,reserves r2 where s.sid=r1.sid and s.sid=r2.sid and r1.bid<>r2.bid and b.colour='red';

select \* from updation;

update updation set rating=rating+1;



**I] Write DDL statements to create the tables, constraints   and choose suitable types for the attributes.**

Sailor:  id is the primary key. Create a sequence on id for generating sailor ids. Rating should be between 6 and 10.   Name should be capitalized.

Boat: id is the primary key. Set a sequence on id for generating boat ids that begins with 100, increments by 1 and has a bound value 110.

Reservation: (sid, bid, day) is the primary key. Sid and bid are both foreign keys, matching the primary keys of sailor and boat, respectively.

**II] For each of the following queries in English, write TWO SQL QUERIES that are equivalent, but essentially different. Use SQL JOIN, Sub Queries and Set operations.  To ensure the correctness of your query, add appropriate records if necessary**

1. How many black boats does the club own?
2. Find the ids of sailors who have reserved a red boat or a green boat.
3. Find the name and the age of the youngest sailor
4. Find all information of sailors who have reserved boat number 101?
5. Find the names of sailors who have not reserved a boat. Order the names in ascending order
6. Find the colours of boats reserved by Horatio.
7. How many of the red boats have been reserved at some point in time by a sailor of rating 10?
8. Which red boats had the highest number of reservations in 2017?
9. Find the sailor id’s of sailors with the highest rating.
10. Select, for each boat, the sailor who made the highest number of reservations for that boat.
11. List, for every boat, the number of times it has been reserved, including those boats that have never been reserved.  (list the id and the name).
12. List those sailors who have reserved only red boats.
13. Print boat numbers reserved by more than one sailor. Print boat no, sailor no, no. of times reserved by each sailor. You may use a count on this one.
14. For which boat are there the most reservations?
15. List sailors sids whose rating is higher than sailor named ‘Gibbs’.
16. Print sailors who reserved all the boats reserved by sailor 3.  Do not include 3 in the answer and do not use ‘ count’.
17. Select all sailors who have never reserved a red boat.
18. Print the details of same coloured parts
19. For each sailor, who has at least two reservations for red boats, increase the rating by 1.
20. Create a table LastReservation( sid:integer, bid:integer, day:date, sname:string, bname:string) that contains for every sailor the most recent date when the sailor has made a reservation and the boat he/she has reserved.

 Write an insert statement that fills the table with the information that can be inferred from the current state of the   database.

1. Find the names of sailors who have reserved a red boat, and list in the order of age.
2. Find the names of sailors who have reserved at least one boat.
3. Find all sailor id’s of sailors who have a rating of at least 8 or reserved boat 103.
4. Find the ids and names of sailors who have reserved two different boats on the same day.
5. Find the names of sailors who have reserved at least two boats.
6. For each sailor, print the sailor number and how many reservation made.
7. Find the average age of sailors for each rating level that has at least two sailors.
8. Find the sailor id’s of sailors whose rating is better than some sailor called ‘zorba’.
9. List  sailor names, age  who have reserved &not reserved boats along with boat id and boat name .( left outer join)
10. For each boat which was reserved by at least 2 distinct sailors, find the boat id and the average age of sailors who reserved it.
11. Find the sailors who have made, for each boat colour, at least one reservation for a boat with that colour.
12. Find the names of sailors who have reserved all boats.    (division)
13. List those sailors who have reserved every red boat (list the id and the name). (division)
14. Delete the boat which have never been reserved.
15. Create a view called boat\_view that includes the following data.

                                  (Boat\_no, name, color, year, no. of times reserved)

**Note:**

-- Define a table with an auto-increment column (id starts at 100)

   CREATE TABLE airlines

   (

      id INT AUTO\_INCREMENT PRIMARY KEY,

      name VARCHAR(90)

   )

   AUTO\_INCREMENT = 100;

   -- Insert a row, ID will be automatically generated

   INSERT INTO airlines (name) VALUES ('United Airlines');

**sample data**

|  |
| --- |
| insert into Sailors (name, rating, age) values ('Jack Sparrow', 10, 40); |
|  |

|  |
| --- |
| insert into Sailors (name, rating, age) values ('Will Turner', 6, 26); |
|  |

|  |
| --- |
| insert into Sailors (name, rating, age) values (‘Horatio’, 7, 24); |
|  |

|  |
| --- |
| insert into Sailors (name, rating, age) values (' Gibbs ', 9, 51); |
|  |

insert into Sailors (name, rating, age) values ('Davey Jones', 10, 42);

insert into Sailors (name, rating, age) values ('Julius',9, 25);

**insert into Boats (name, color) values ('Black Pearl', 'black');**

**insert into Boats (name, color) values ('Queen Annes Revenge', 'red');**

**insert into Boats (name, color) values ('Blackbeards Delight', 'black');**

**insert into Boats (name, color) values ('Redbeards Delight', 'red');**

**insert into Boats (name, color) values ('Oceans Dagger', 'blue')**

**insert into Boats (name, color) values (‘Marine’, 'blue')**

**insert into Boats (name, color) values(**'Interlake', 'red');

insert into Reserves (sid, bid, day) values (2, 101, '11-FEB-2016');

insert into Reserves (sid, bid, day) values (6, 107, '10-JUN-2016');

insert into Reserves (sid, bid, day) values (1, 101, '10-OCT-2016');

insert into Reserves (sid, bid, day) values (1, 101, '10-OCT-2017');

insert into Reserves (sid, bid, day) values (1, 102, '10-OCT-2017');

insert into Reserves (sid, bid, day) values (1, 101, '10-JUL-2017');

insert into Reserves (sid, bid, day) values (2, 102, '11-SEP-2017');

insert into Reserves (sid, bid, day) values (2, 102, '7-NOV-2017');

insert into Reserves (sid, bid, day) values (3, 101, '7-NOV-2017');

insert into Reserves (sid, bid, day) values (3, 102, '7-AUG-2017');

insert into Reserves (sid, bid, day) values (4, 103, '19-SEP-2017');

insert into Reserves (sid, bid, day) values (6, 104, '19-SEP-2017');

insert into Sailors (sid, name, rating, age) values (1, 'Dustin', 7, 45);

insert into Sailors (sid, name, rating, age) values (2, 'Rusty', 10, 35);

insert into Sailors (sid, name, rating, age) values (3, 'Horatio', 5, 35);

insert into Sailors (sid, name, rating, age) values (4, 'Zorba', 8, 18);

insert into Sailors (sid, name, age) values (5, 'Julius',9, 25);

insert into Boats (bid, name, color) values (101, 'Interlake', 'blue');

insert into Boats (bid, name, color) values (102, 'Interlake', 'red');

insert into Boats (bid, name, color) values (103, 'Clipper', 'green');

insert into Boats (bid, name, color) values (104, 'Marine', 'red');