1. **Perform Inner Join Sailor and Reserve table and display all the attributes.**

SQL> select \* from sailor inner join reserve on sailor.sid=reserve.sid ;

SID SNAME RATING AGE SID BID RDAY

---- ------------ ------- ----- ---- ----- ----------

22 DUSTIN 7 45.0 22 101 10-OCT-98

22 DUSTIN 7 45.0 22 102 10-OCT-98

22 DUSTIN 7 45.0 22 103 08-OCT-98

22 DUSTIN 7 45.0 22 104 07-OCT-98

31 LUBBER 8 55.5 31 102 10-NOV-98

31 LUBBER 8 55.5 31 103 06-NOV-98

31 LUBBER 8 55.5 31 104 12-NOV-98

64 HORATIO 7 35.0 64 101 05-SEP-98

64 HORATIO 7 35.0 64 102 08-SEP-98

74 HORATIO 9 35.0 74 103 08-SEP-98

10 rows selected.

1. **Perform Inner Join Sailor and Reserve table and display only Sid and Sname from sailors table and Bid and Rday from Reserve table.**

SQL> SELECT sailor.sid, sailor.sname, reserve.bid, reserve.rday

2 FROM sailor

3 INNER JOIN reserve ON sailor.sid = reserve.sid;

SID SNAME BID RDAY

---- ------------ ----- ----------

22 DUSTIN 101 10-OCT-98

22 DUSTIN 102 10-OCT-98

22 DUSTIN 103 08-OCT-98

22 DUSTIN 104 07-OCT-98

31 LUBBER 102 10-NOV-98

31 LUBBER 103 06-NOV-98

31 LUBBER 104 12-NOV-98

64 HORATIO 101 05-SEP-98

64 HORATIO 102 08-SEP-98

74 HORATIO 103 08-SEP-98

10 rows selected.

1. **Perform Equi Join Sailor and Reserve table and display only Sid and Sname from sailors table and Bid and Rday from Reserve table. The reservation month should be November and SID should be 74.**
2. **Perform Theta join Sailor, Reserve and Boat. The reservation month should be August and BID should not be 101**

SQL> select \* from sailor join reserve on reserve.sid=sailor.sid join boat on reserve.bid=boat.bid where boat.bid<>101 and TO\_CHAR(rday,'MON')='OCT';

SID SNAME RATING AGE SID BID RDAY BID BNAME COLOR

---- ------------ ------- ----- ---- ----- ---------- ----- ------------ --------

22 DUSTIN 7 45.0 22 102 10-OCT-98 102 INTERLAKE RED

22 DUSTIN 7 45.0 22 103 08-OCT-98 103 CLIPPER GREEN

22 DUSTIN 7 45.0 22 104 07-OCT-98 104 MARINE RED

3 rows selected.

1. **Perform Left Outer Join on Sailor1 and Sailor2 and tuples to be ordered by SID of sailor1 and sailor2.**

SQL> SELECT \* FROM SAILOR1 LEFT OUTER JOIN SAILOR2 ON SAILOR1.SID=SAILOR2.SID ORDER BY SAILOR1.SID,SAILOR2.SID;

SID SNAME RATING AGE SID SNAME RATING AGE

---- ------------ ------- ----- ---- ------------ ------- -----

22 DUSTIN 7 45.0

29 BRUTUS 1 33.0

31 LUBBER 8 55.5 31 LUBBER 8 55.5

32 ANDY 8 25.5 32 ANDY 8 25.5

58 RUSTY 10 35.0

95 BOB 3 63.5

6 rows selected.

1. **Perform Right Outer Join on Sailor1 and Sailor2 and tuples to be ordered by SID of sailor1 and sailor2.**

SQL> SELECT \* FROM SAILOR1 RIGHT OUTER JOIN SAILOR2 ON SAILOR1.SID=SAILOR2.SID ORDER BY SAILOR1.SID,SAILOR2.SID;

SID SNAME RATING AGE SID SNAME RATING AGE

---- ------------ ------- ----- ---- ------------ ------- -----

31 LUBBER 8 55.5 31 LUBBER 8 55.5

32 ANDY 8 25.5 32 ANDY 8 25.5

64 HORATIO 7 35.0

71 ZORBA 10 16.0

74 HORATIO 9 35.0

5 rows selected.

1. **Perform Full Outer Join on Sailor1 and Sailor2 and tuples to be ordered by SID of sailor1 and sailor2.**

SQL> SELECT \* FROM SAILOR1 FULL OUTER JOIN SAILOR2 ON SAILOR1.SID=SAILOR2.SID ORDER BY SAILOR1.SID,SAILOR2.SID;

SID SNAME RATING AGE SID SNAME RATING AGE

---- ------------ ------- ----- ---- ------------ ------- -----

22 DUSTIN 7 45.0

29 BRUTUS 1 33.0

31 LUBBER 8 55.5 31 LUBBER 8 55.5

32 ANDY 8 25.5 32 ANDY 8 25.5

58 RUSTY 10 35.0

95 BOB 3 63.5

64 HORATIO 7 35.0

71 ZORBA 10 16.0

74 HORATIO 9 35.0

1. rows selected.
2. **Execute Natural Join on Sailor and Reserve**

SQL> SELECT \* FROM SAILOR NATURAL JOIN RESERVE;

SID SNAME RATING AGE BID RDAY

---- ------------ ------- ----- ----- ----------

22 DUSTIN 7 45.0 101 10-OCT-98

22 DUSTIN 7 45.0 102 10-OCT-98

22 DUSTIN 7 45.0 103 08-OCT-98

22 DUSTIN 7 45.0 104 07-OCT-98

31 LUBBER 8 55.5 102 10-NOV-98

31 LUBBER 8 55.5 103 06-NOV-98

31 LUBBER 8 55.5 104 12-NOV-98

64 HORATIO 7 35.0 101 05-SEP-98

64 HORATIO 7 35.0 102 08-SEP-98

74 HORATIO 9 35.0 103 08-SEP-98

10 rows selected.

1. **Perform Cross Join on Sailor3 and Reserve2**

SQL> SELECT \* FROM SAILOR3 CROSS JOIN RESERVE2;

SID SNAME RATING AGE SID BID RDAY

---- ------------ ------- ----- ---- ----- ----------

22 DUSTIN 7 45.0 31 102 10-NOV-98

32 ANDY 8 25.5 31 102 10-NOV-98

74 HORATIO 9 35.0 31 102 10-NOV-98

85 ART 3 25.5 31 102 10-NOV-98

22 DUSTIN 7 45.0 31 103 06-NOV-98

32 ANDY 8 25.5 31 103 06-NOV-98

74 HORATIO 9 35.0 31 103 06-NOV-98

RT 3 25.5 31 103 06-NOV-98

USTIN 7 45.0 31 104 12-NOV-98

32 ANDY 8 25.5 31 104 12-NOV-98

4 HORATIO 9 35.0 31 104 12-NOV-98

85 ART 3 25.5 31 104 12-NOV-98

USTIN 7 45.0 74 103 08-SEP-98 32 ANDY 8 25.5 74 103 08-SEP-98

74 HORATIO 9 35.0 74 103 08-SEP-98

85 ART 3 25.5 74 103 08-SEP-98

16 rows selected.

1. **Find the names of sailors who have reserved boat 103. [Perform using Natural Join and Inner Join]**

SQL> SELECT DISTINCT SNAME FROM SAILOR,RESERVE WHERE BID=103;

SNAME

------------

LUBBER

BOB

ANDY

HORATIO

ART

DUSTIN

RUSTY

ZORBA

BRUTUS

9 rows selected.

1. **Find the names of sailors who have reserved a red boat. [Perform using Natural Join and Inner Join]**

SQL> SELECT SAILOR.SNAME FROM SAILOR INNER JOIN RESERVE ON SAILOR.SID=RESERVE.SID INNER JOIN BOAT ON RESERVE.BID=BOAT.BID WHERE BOAT.COLOR='RED';

SNAME

------------

DUSTIN

LUBBER

HORATIO

1. **Find the colors of boats reserved by Lubber**

SQL> SELECT COLOR FROM BOAT NATURAL JOIN RESERVE NATURAL JOIN SAILOR WHERE SAILOR.SNAME='LUBBER';

COLOR

--------

RED

GREEN

1. **Find the colors of boats reserved by Dustin**

SQL> SELECT COLOR FROM BOAT NATURAL JOIN RESERVE NATURAL JOIN SAILOR WHERE SAILOR.SNAME='DUSTIN';

COLOR

--------

BLUE

RED

GREEN

4 rows selected.

1. **Find the names of sailors who have reserved at least one boat.**

SQL> select distinct sname from sailor natural join reserve;

SNAME

------------

LUBBER

HORATIO

DUSTIN

3 rows selected.

1. **Find the names of sailors who have reserved either a red or a green boat.**

SQL> select distinct sname from sailor natural join reserve natural join boat where boat.color='RED' OR boat.color='GREEN';

SNAME

------------

LUBBER

HORATIO

DUSTIN

3 rows selected.

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

SQL> select distinct sname from sailor natural join reserve natural join boat where boat.color='RED' and boat.color='GREEN';

no rows selected

1. **Find all sailor id’s of sailors who have a rating of at least 8 or reserved boat 103.**

SQL> select sid from sailor natural join reserve where sailor.rating>=8 or reserve.bid=103;

SID

----

74

rows selected.

1. **Find the names of sailors who have reserved a boat whose name contains ‘U’ and Order the names in ascending order.**

SQL> select sname from sailor natural join boat natural join reserve where boat.bname like '%U%' order by boat.bname;

no rows selected

1. **Find the sailor id’s and name of sailors with age over 20 who have reserved a boat whose name includes the string “lake”.**

SQL> select sid,sname from sailor natural join boat natural join reserve where boat.bname like '%LAKE%' and sailor.age>=20;

SID SNAME

---- ------------

22 DUSTIN

64 HORATIO

22 DUSTIN

31 LUBBER

64 HORATIO

5 rows selected.

1. **Find the sailor id’s of sailors whose rating is better than some sailor called Bob**

SQL> select s1.sid from sailor s1 join sailor s2 on s1.rating>s2.rating and s2.sname='BOB';

SID

----

22

31

32

58

71

74

1. rows selected
2. **For each boat which was reserved by at least 5 sailors with age >= 40, find the boat id and the average age of such sailors.**

SQL>SELECT b1.bid, AVG(s.age) FROM r, s (SELECT bid FROM b, r r2, s s2 WHERE

b.bid=r2.bid AND s2.sid=r.sid AND s.age&gt;=40 GROUP BY bid HAVING

5&lt;=COUNT(DISTINCT r2.sid)) b1 WHERE b1.bid=r.bid AND r.sid=s.sid GROUP BY

b1.bid