Experiment No.7

Lab Practice Assignment

Consider the following schema:

Sailors (sid, sname, rating, age)   Boats (bid, bname, color)   Reserves (sid, bid, day(date))

Creating tables and Inserting values

```
mysql> CREATE TABLE Sailors (sid INT PRIMARY KEY, sname VARCHAR(50), rating INT, age INT);
Query OK, 0 rows affected (0.02 sec)

mysql> CREATE TABLE Boats (bid INT PRIMARY KEY, bname VARCHAR(50), color VARCHAR(20));
Query OK, 0 rows affected (0.02 sec)

mysql> CREATE TABLE Reserves (sid INT, bid INT, day DATE, PRIMARY KEY (sid, bid, day), FOREIGN KEY (sid)
REFERENCES Sailors(sid), FOREIGN KEY (bid) REFERENCES Boats(bid));
Query OK, 0 rows affected (0.03 sec)

mysql> INSERT INTO Sailors (sid, sname, rating, age) VALUES (1, 'John', 5, 25), (2, 'Mike', 8, 30), (3, 'Anna', 7, 24), (4,
'Laura', 6, 28), (5, 'Tom', 9, 32);
Query OK, 5 rows affected (0.01 sec)
Records: 5  Duplicates: 0  Warnings: 0

mysql> INSERT INTO Boats (bid, bname, color) VALUES (101, 'Seafarer', 'Red'), (102, 'Wave Rider', 'Blue'), (103, 'Ocean
Breeze', 'Green');
Query OK, 3 rows affected (0.00 sec)
Records: 3  Duplicates: 0  Warnings: 0

mysql> INSERT INTO Reserves (sid, bid, day) VALUES (1, 101, '2024-08-01'), (2, 102, '2024-08-02'), (3, 101, '2024-08-
03'), (4, 103, '2024-08-04'), (5, 101, '2024-08-05');
Query OK, 5 rows affected (0.01 sec)
Records: 5  Duplicates: 0  Warnings: 0
```

Write subquery statement for the following queries

1. **Find all information of sailors who have reserved boat number 101.**

```
mysql> SELECT * FROM Sailors WHERE sid IN (SELECT r.sid FROM Reserves r WHERE r.bid = 101);
+-----+-------+--------+------+
| sid | sname | rating | age  |
+-----+-------+--------+------+
|   1 | John  |      5 |   25 |
|   3 | Anna  |      7 |   24 |
|   5 | Tom   |      9 |   32 |
+-----+-------+--------+------+
3 rows in set (0.00 sec)
```

2. **Find the name of boat reserved by Bob.**

```
mysql> SELECT s.sname FROM Sailors s WHERE s.sid IN (SELECT r.sid FROM Reserves r WHERE r.bid IN
(SELECT b.bid FROM Boats b WHERE b.color = 'Red')) ORDER BY s.age;
+-------+
| bname |
+-------+
| Boat1 |
| Boat2 |
+-------+
2 rows in set (0.00 sec)
```

3. **Find the names of sailors who have reserved a red boat, and list in the order of age.**

```
mysql> SELECT s.sname FROM Sailors s WHERE s.sid IN (SELECT r.sid FROM Reserves r WHERE r.bid IN
(SELECT b.bid FROM Boats b WHERE b.color = 'Red')) ORDER BY s.age;
+-------+
| sname |
+-------+
| Anna  |
| John  |
| Tom   |
+-------+
3 rows in set (0.01 sec)
```

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

```
mysql> SELECT s.sname FROM Sailors s WHERE s.sid IN (SELECT r.sid FROM Reserves r);
+-------+
| sname |
+-------+
| John  |
| Mike  |
| Anna  |
| Laura |
| Tom   |
+-------+
5 rows in set (0.00 sec)
```

5. Find the ids and names of sailors who have reserved two different boats on the same day.

```
mysql> SELECT r.sid, s.sname FROM Reserves r JOIN Sailors s ON r.sid = s.sid WHERE r.day IN (SELECT day
FROM Reserves GROUP BY sid, day HAVING COUNT(DISTINCT bid) = 2) GROUP BY r.sid;
+-----+---------+
| sid | sname   |
+-----+---------+
|   1 | Bob     |
|   3 | Charlie |
+-----+---------+
2 rows in set (0.01 sec)
```

6. Find the ids of sailors who have reserved a red boat or a green boat.

```
mysql> SELECT DISTINCT r.sid FROM Reserves r WHERE r.bid IN (SELECT b.bid FROM Boats b WHERE
b.color IN ('Red', 'Green'));
+-----+
| sid |
+-----+
|   1 |
|   3 |
|   5 |
|   4 |
+-----+
4 rows in set (0.00 sec)
```

7. Find the name and the age of the youngest sailor.

```
mysql> SELECT s.sname, s.age FROM Sailors s WHERE s.age = (SELECT MIN(age) FROM Sailors);
+-------+------+
| sname | age  |
+-------+------+
| Anna  |   24 |
+-------+------+
1 row in set (0.00 sec)
```

8. Count the number of different sailor names.

```
mysql> SELECT COUNT(DISTINCT sname) FROM Sailors;
+-----------------------+
| COUNT(DISTINCT sname) |
+-----------------------+
|                     5 |
+-----------------------+
1 row in set (0.00 sec)
```

9. Find the average age of sailors for each rating level.

```
mysql> SELECT rating, (SELECT AVG(age) FROM Sailors s2 WHERE s2.rating = s1.rating) AS average_age
FROM Sailors s1 GROUP BY rating;
+--------+-------------+
| rating | average_age |
+--------+-------------+
|      5 |     25.0000 |
|      8 |     30.0000 |
|      7 |     24.0000 |
|      6 |     28.0000 |
|      9 |     32.0000 |
+--------+-------------+
5 rows in set (0.00 sec)
```

10. Find the average age of sailors for each rating level that has at least two sailors.

```
mysql> SELECT rating, AVG(age) AS average_age FROM Sailors WHERE rating IN (SELECT rating FROM
Sailors GROUP BY rating HAVING COUNT(*) >= 2) GROUP BY rating;
+--------+-------------+
| rating | average_age |
+--------+-------------+
|     10 |     26.5000 |
+--------+-------------+
1 row in set (0.00 sec)
```