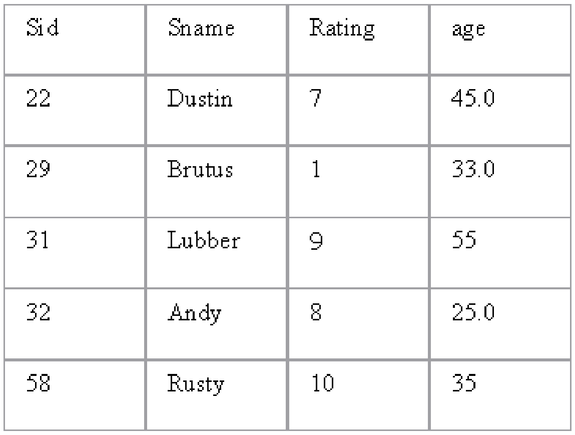
RDBMS Lab Exercises

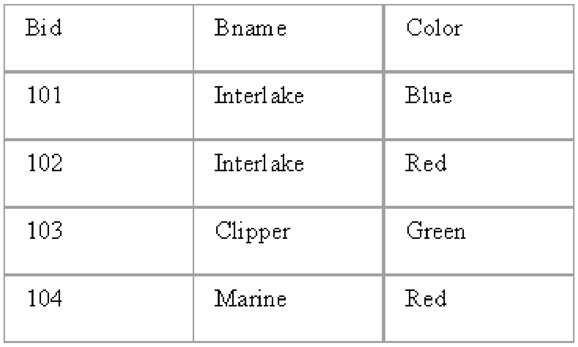
SQL Statements

1. Given three relations- sailors, boats and reserves. Sid, Bid and (Sid, Bid) are the primary keys of sailors, boats and reserves respectively. Sid and Bid are also the foreign keys of reserves which references Sid and Bid of sailors and boats relation respectively. No two sailors have same rating.



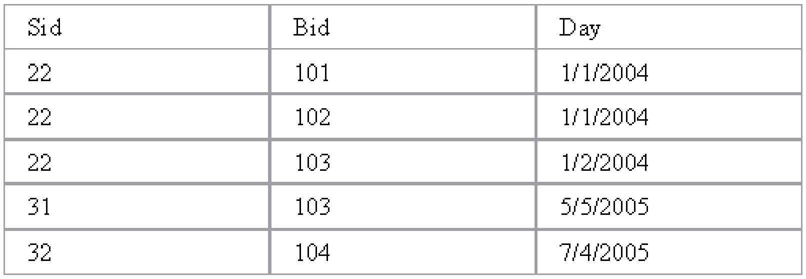
Sid	Sname	Rating	age
22	Dustin	7	45.0
29	Brutus	1	33.0
31	Lubber	9	55
32	Andy	8	25.0
58	Rusty	10	35

sailors



Bid	Bname	Color
101	Interlake	Blue
102	Interlake	Red
103	Clipper	Green
104	Marine	Red

boats

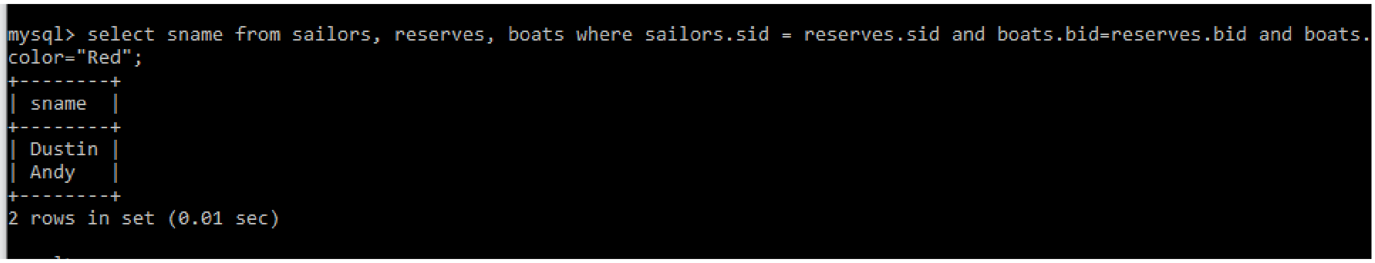


Sid	Bid	Day
22	101	1/1/2004
22	102	1/1/2004
22	103	1/2/2004
31	103	5/5/2005
32	104	7/4/2005

reserves

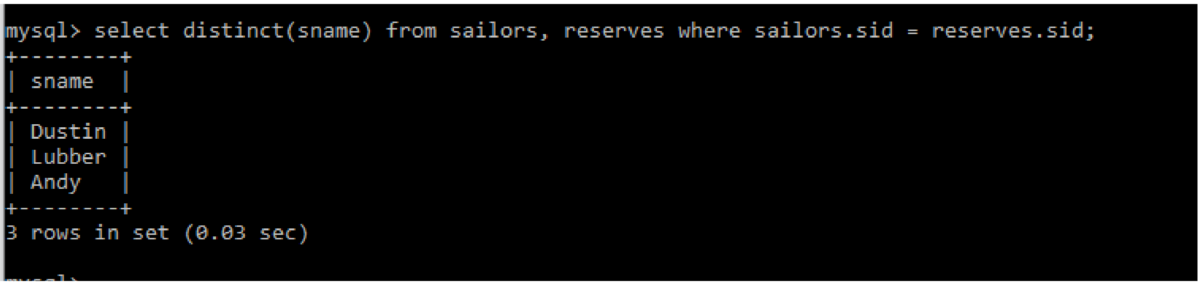
Write SQL queries for the following:

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



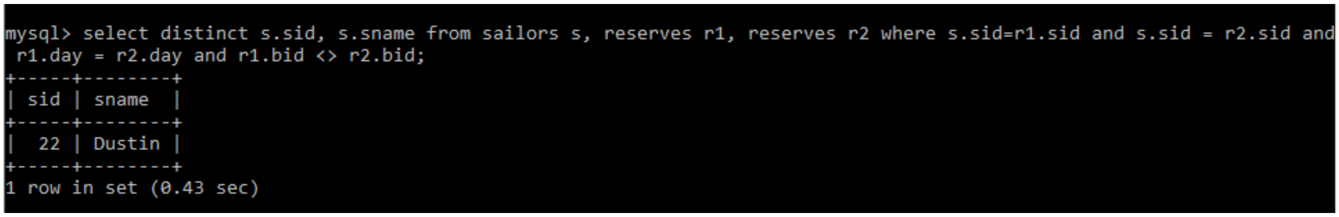
```
mysql> select sname from sailors, reserves, boats where sailors.sid = reserves.sid and boats.bid=reserves.bid and boats.
color="Red";
+--------+
| sname  |
+--------+
| Dustin |
| Andy   |
+--------+
2 rows in set (0.01 sec)
```

2. Find the names of the Sailors who have reserved at least one boat



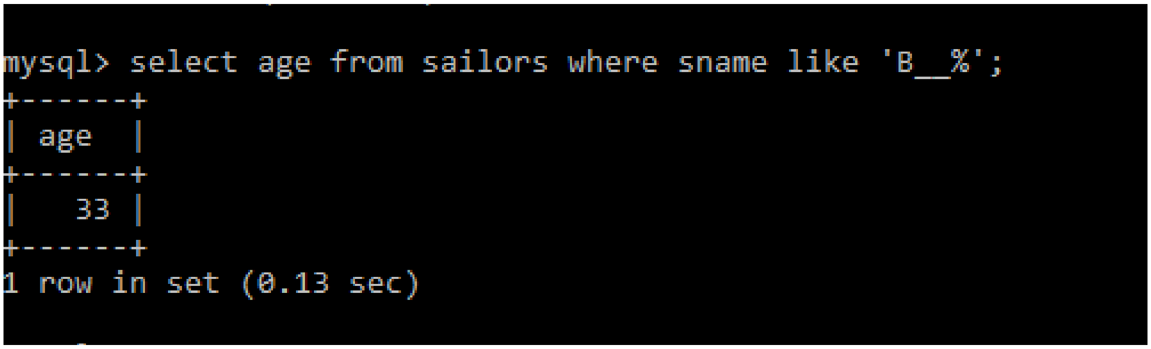
```
mysql> select distinct(sname) from sailors, reserves where sailors.sid = reserves.sid;
+--------+
| sname  |
+--------+
| Dustin |
| Lubber |
| Andy   |
+--------+
3 rows in set (0.03 sec)
```

3. Compute increments for the ratings of persons who have sailed two different boats on the same day.



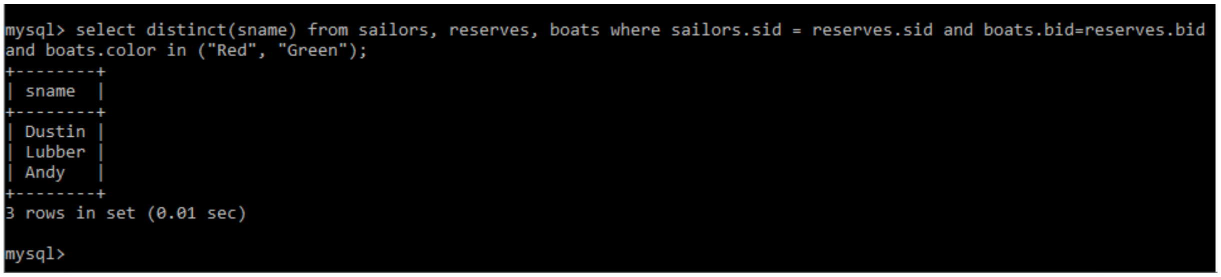
```
mysql> select distinct s.sid, s.sname from sailors s, reserves r1, reserves r2 where s.sid=r1.sid and s.sid = r2.sid and
 r1.day = r2.day and r1.bid <> r2.bid;
+-----+--------+
| sid | sname  |
+-----+--------+
|  22 | Dustin |
+-----+--------+
1 row in set (0.43 sec)
```

4. Find the ages of sailors whose name begins and ends with B and has at least 3 characters.



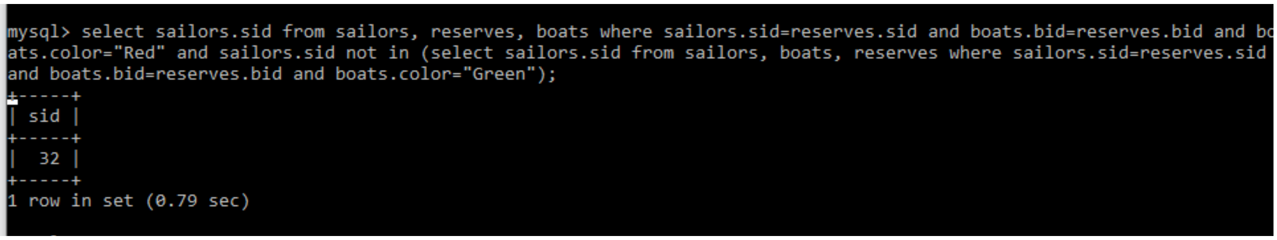
```
mysql> select age from sailors where sname like 'B__%';
+------+
| age  |
+------+
|   33 |
+------+
1 row in set (0.13 sec)
```

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



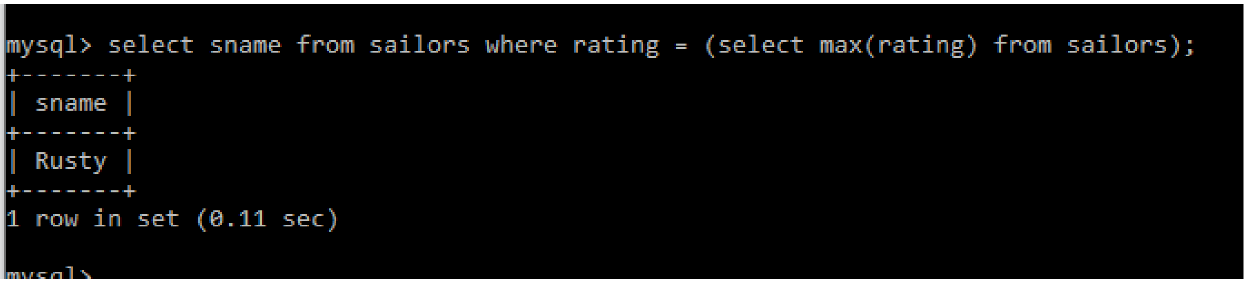
```
mysql> select distinct(sname) from sailors, reserves, boats where sailors.sid = reserves.sid and boats.bid=reserves.bid
and boats.color in ("Red", "Green");
+--------+
| sname  |
+--------+
| Dustin |
| Lubber |
| Andy   |
+--------+
3 rows in set (0.01 sec)

mysql>
```

6. Find the sids of all sailors who have reserved red boats but not green boats.



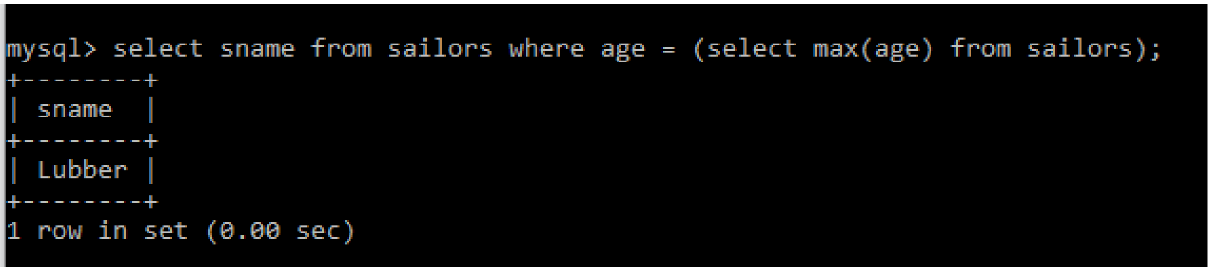
```
mysql> select sailors.sid from sailors, reserves, boats where sailors.sid=reserves.sid and boats.bid=reserves.bid and bo
ats.color="Red" and sailors.sid not in (select sailors.sid from sailors, boats, reserves where sailors.sid=reserves.sid
and boats.bid=reserves.bid and boats.color="Green");
+-----+
| sid |
+-----+
|  32 |
+-----+
1 row in set (0.79 sec)
```

7. Find the sailors with the highest rating



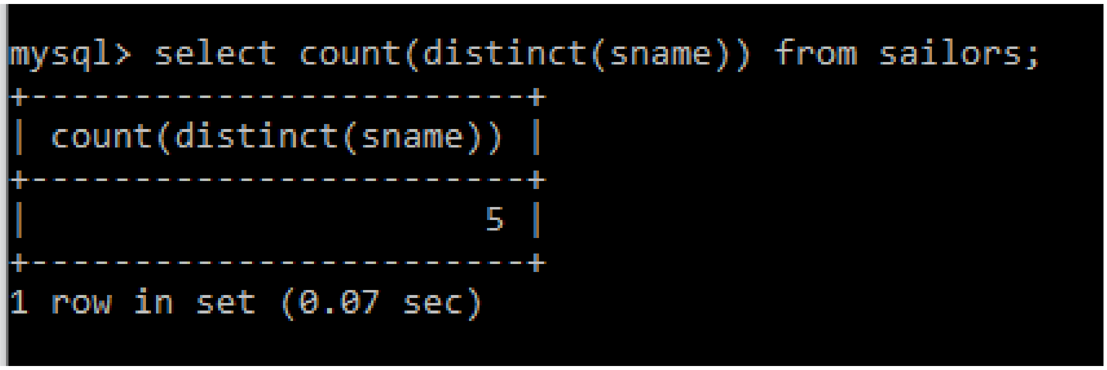
```
mysql> select sname from sailors where rating = (select max(rating) from sailors);
+-------+
| sname |
+-------+
| Rusty |
+-------+
1 row in set (0.11 sec)

mysql>
```

8. Find the name of the oldest sailor.



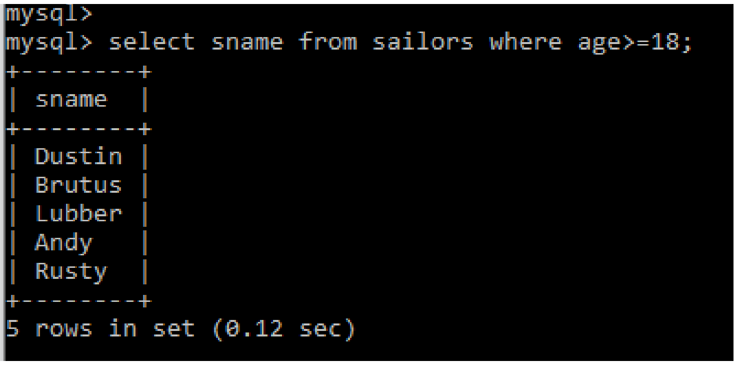
```
mysql> select sname from sailors where age = (select max(age) from sailors);
+--------+
| sname  |
+--------+
| Lubber |
+--------+
1 row in set (0.00 sec)
```

9. Count the number of different sailor names.



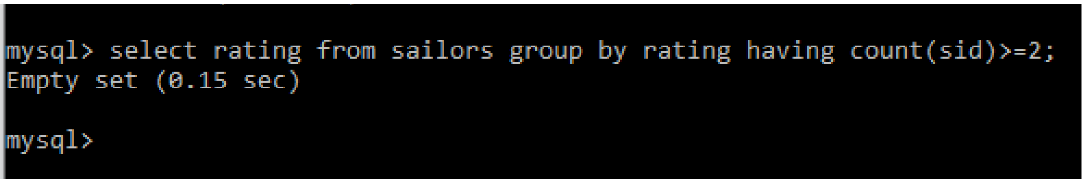
```
mysql> select count(distinct(sname)) from sailors;
+------------------------+
| count(distinct(sname)) |
+------------------------+
|                      5 |
+------------------------+
1 row in set (0.07 sec)
```

10. Find the no. of sailors who is eligible to vote for each rating level.



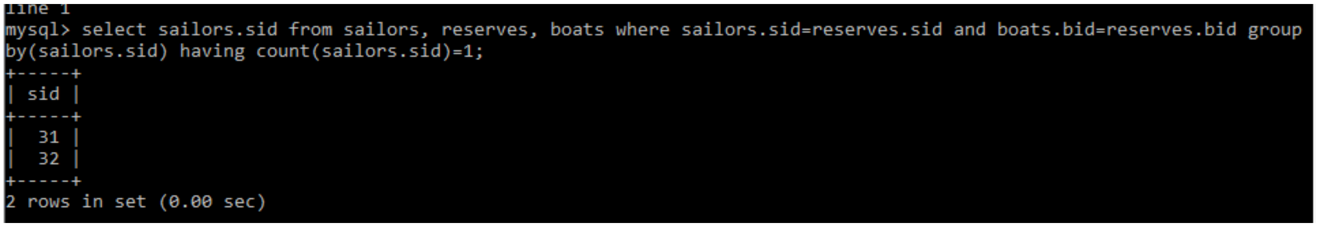
```
mysql>
mysql> select sname from sailors where age>=18;
+---------+
| sname   |
+---------+
| Dustin  |
| Brutus  |
| Lubber  |
| Andy    |
| Rusty   |
+---------+
5 rows in set (0.12 sec)
```

11. Find the no. of sailors who is eligible to vote for each rating level with at least two such sailors.



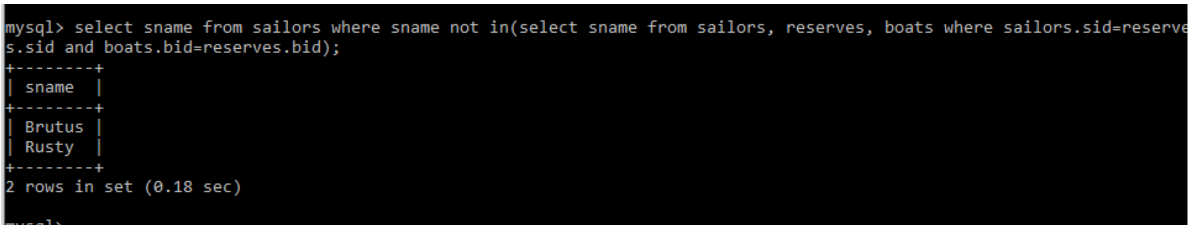
```
mysql> select rating from sailors group by rating having count(sid)>=2;
Empty set (0.15 sec)

mysql>
```

12. Find the sid of the sailors who have sailed exactly one boat.



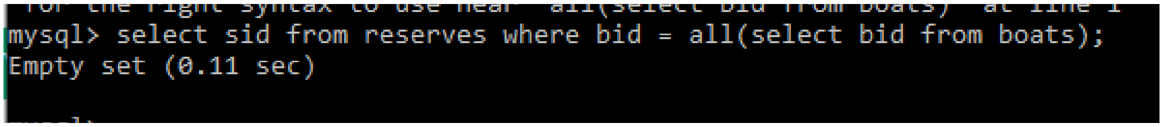
```
line 1
mysql> select sailors.sid from sailors, reserves, boats where sailors.sid=reserves.sid and boats.bid=reserves.bid group
by(sailors.sid) having count(sailors.sid)=1;
+-----+
| sid |
+-----+
|  31 |
|  32 |
+-----+
2 rows in set (0.00 sec)
```

13. Find sailors who have not reserved any boats.



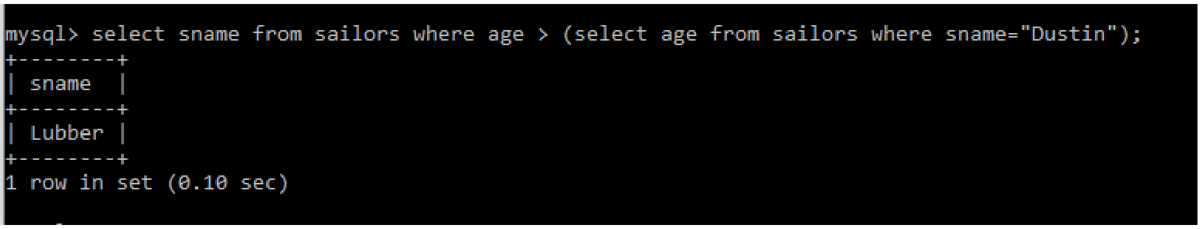
```
mysql> select sname from sailors where sname not in(select sname from sailors, reserves, boats where sailors.sid=reserve
s.sid and boats.bid=reserves.bid);
+--------+
| sname  |
+--------+
| Brutus |
| Rusty  |
+--------+
2 rows in set (0.18 sec)
```

14. Find the Sailors who have reserved all the boats.



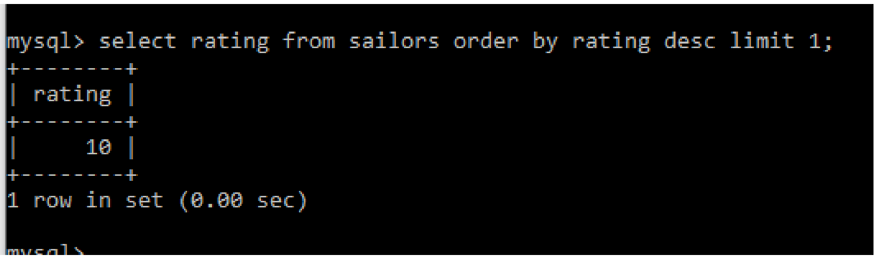
```
 for the right syntax to use near 'all(select bid from boats)' at line 1
mysql> select sid from reserves where bid = all(select bid from boats);
Empty set (0.11 sec)
```

15. Find all the sailors older than Dustin.



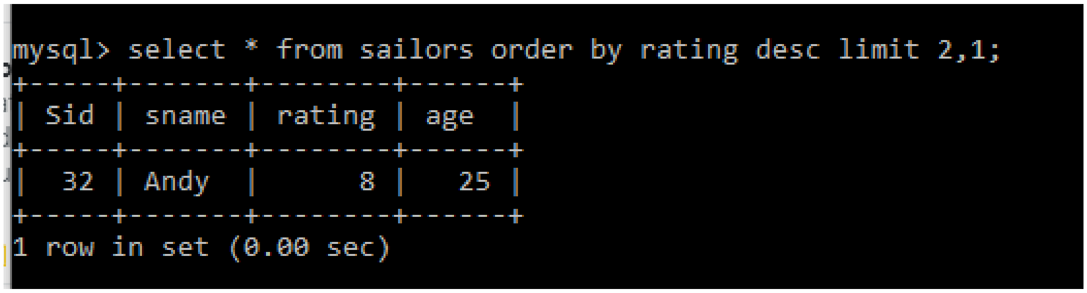
```
mysql> select sname from sailors where age > (select age from sailors where sname="Dustin");
+--------+
| sname  |
+--------+
| Lubber |
+--------+
1 row in set (0.10 sec)
```

16. Find all sailors whose ratings is greater than any others rating without using aggregates like MAX.



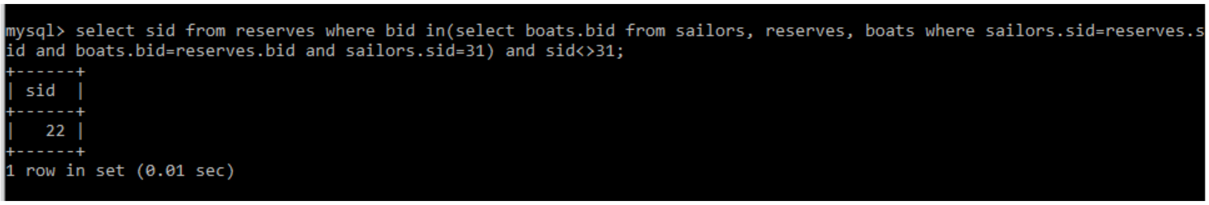
```
mysql> select rating from sailors order by rating desc limit 1;
+--------+
| rating |
+--------+
|     10 |
+--------+
1 row in set (0.00 sec)
```

17. Find the sailors with 3rd highest ratings.



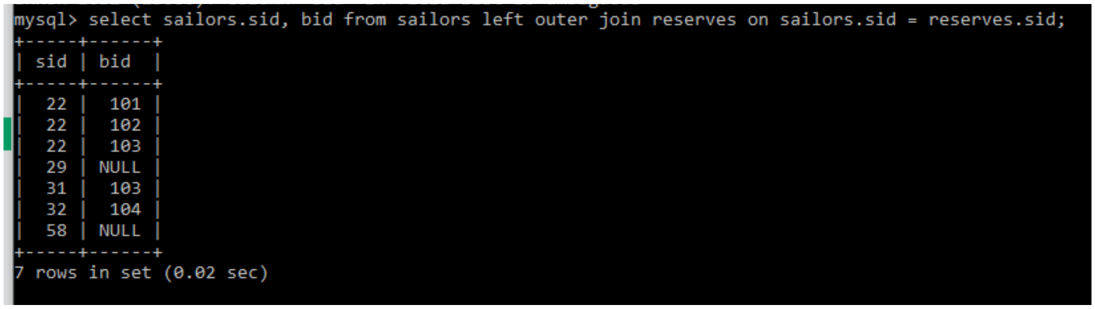
```
mysql> select * from sailors order by rating desc limit 2,1;
+-----+-------+--------+------+
| Sid | sname | rating | age  |
+-----+-------+--------+------+
|  32 | Andy  |      8 |   25 |
+-----+-------+--------+------+
1 row in set (0.00 sec)
```

18. Find sids of the sailors who have reserved all the boats reserved by the sailor with sid =’31’.



```
mysql> select sid from reserves where bid in(select boats.bid from sailors, reserves, boats where sailors.sid=reserves.s
id and boats.bid=reserves.bid and sailors.sid=31) and sid<>31;
+------+
| sid  |
+------+
|   22 |
+------+
1 row in set (0.01 sec)
```

19. List out all the sailors. For the sailors who have reserved some boats list out the boat’s bids also.

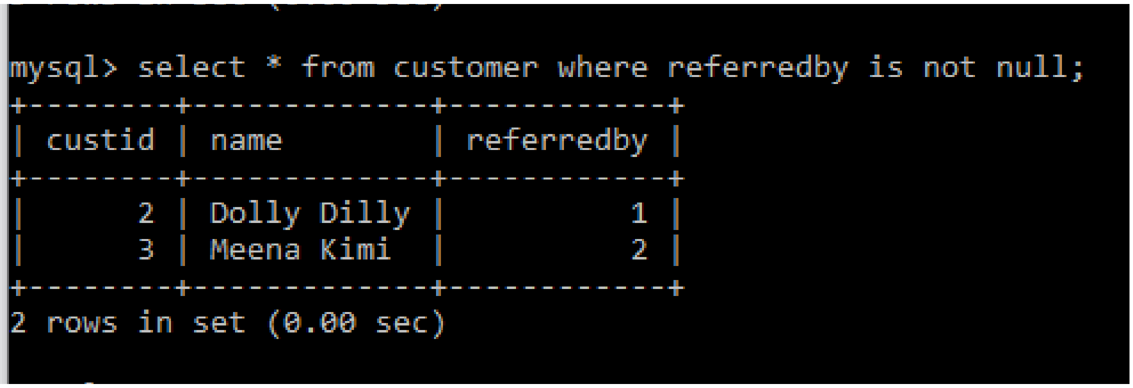


```
mysql> select sailors.sid, bid from sailors left outer join reserves on sailors.sid = reserves.sid;
+-----+------+
| sid | bid  |
+-----+------+
|  22 |  101 |
|  22 |  102 |
|  22 |  103 |
|  29 | NULL |
|  31 |  103 |
|  32 |  104 |
|  58 | NULL |
+-----+------+
7 rows in set (0.02 sec)
```

20. Assume that we have a table called customer.

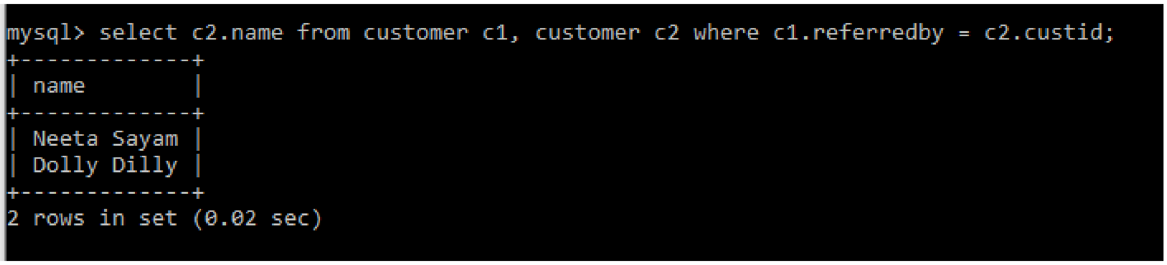
CustID	Name	ReferredBy
1	Neeta Sayam	
2	Dolly Dilly	1
3	Meena Kimi	2

21. Find the names of all customers who are referred by others.



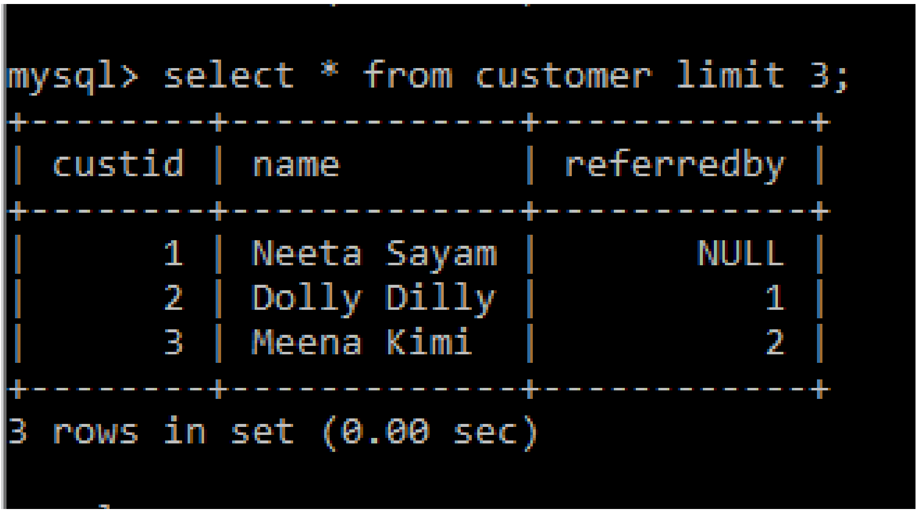
```
mysql> select * from customer where referredby is not null;
+--------+-------------+------------+
| custid | name        | referredby |
+--------+-------------+------------+
|      2 | Dolly Dilly |          1 |
|      3 | Meena Kimi  |          2 |
+--------+-------------+------------+
2 rows in set (0.00 sec)
```

22. Find the names of all customers who have referred others.



```
mysql> select c2.name from customer c1, customer c2 where c1.referredby = c2.custid;
+-------------+
| name        |
+-------------+
| Neeta Sayam |
| Dolly Dilly |
+-------------+
2 rows in set (0.02 sec)
```

23. Find the last three customer records inserted. (Refer the above Customer table)

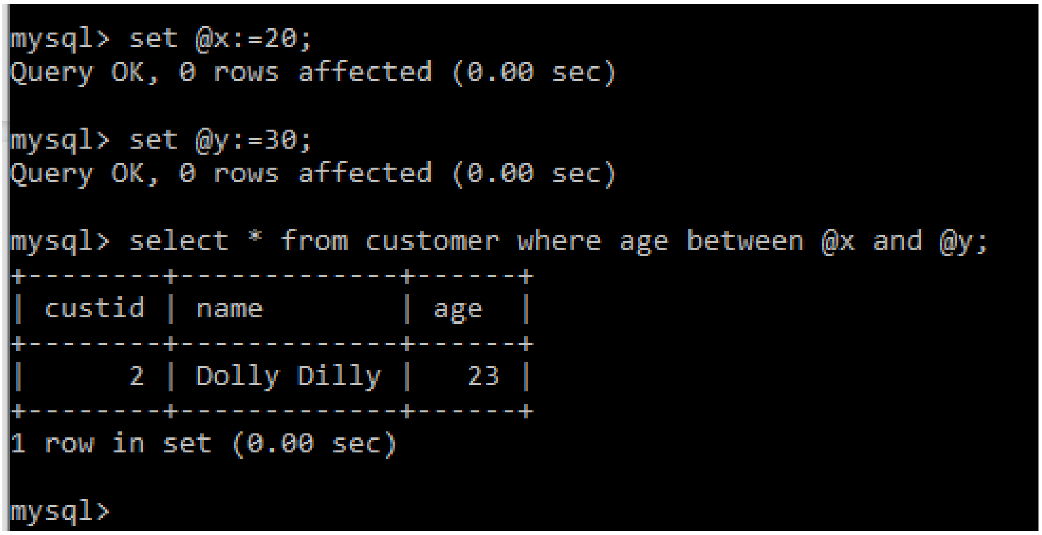


```
mysql> select * from customer limit 3;
+--------+-------------+------------+
| custid | name        | referredby |
+--------+-------------+------------+
|      1 | Neeta Sayam |       NULL |
|      2 | Dolly Dilly |          1 |
|      3 | Meena Kimi  |          2 |
+--------+-------------+------------+
3 rows in set (0.00 sec)
```

24. Given a table ‘customer’.

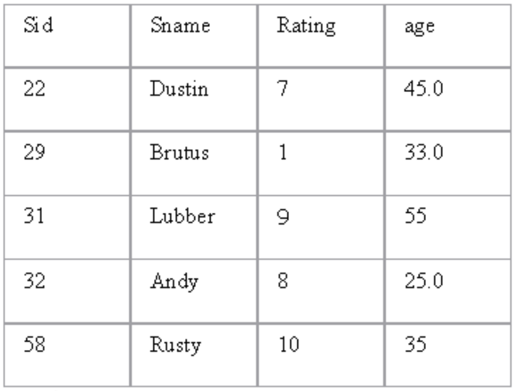
CustID	Name	Age
1	Neeta Sayam	32
2	Dolly Dilly	23
3	Meena Kimi	43

How will you get rows between the range x and y where x and y will be entered by the user?



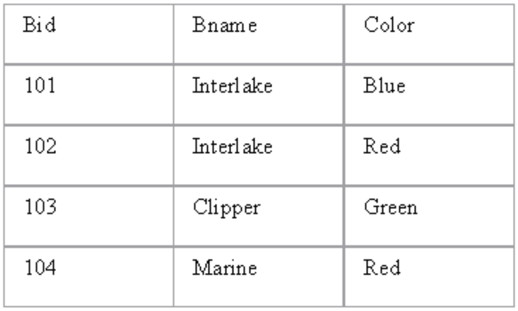
```
mysql> set @x:=20;
Query OK, 0 rows affected (0.00 sec)

mysql> set @y:=30;
Query OK, 0 rows affected (0.00 sec)

mysql> select * from customer where age between @x and @y;
+--------+-------------+------+
| custid | name        | age  |
+--------+-------------+------+
|      2 | Dolly Dilly |   23 |
+--------+-------------+------+
1 row in set (0.00 sec)

mysql>
```

25. Given three tables- sailors, boats and reserves. Sid, Bid and (Sid, Bid) are the primary keys of sailors, boats and reserves respectively. Sid and Bid are also the foreign keys of reserves which references Sid and Bid of sailors and boats relation respectively. No two sailors have same rating. The sname and bname of the sailors and boats table are cannot be null.



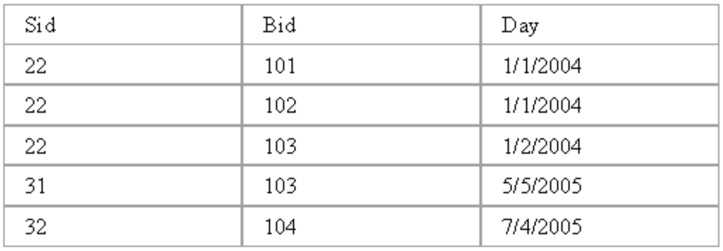
Sid	Sname	Rating	age
22	Dustin	7	45.0
29	Brutus	1	33.0
31	Lubber	9	55
32	Andy	8	25.0
58	Rusty	10	35

sailors



Bid	Bname	Color
101	Interlake	Blue
102	Interlake	Red
103	Clipper	Green
104	Marine	Red

boats

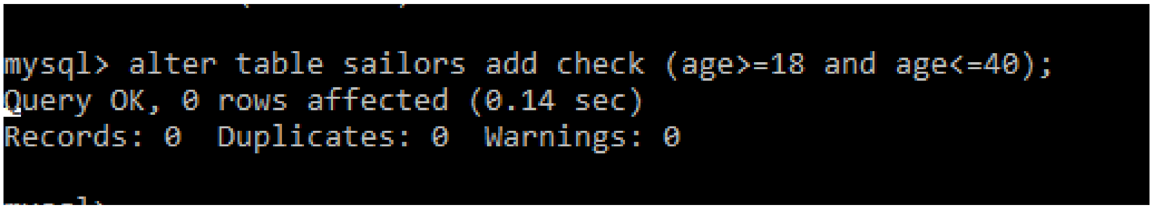


Sid	Bid	Day
22	101	1/1/2004
22	102	1/1/2004
22	103	1/2/2004
31	103	5/5/2005
32	104	7/4/2005

reserves

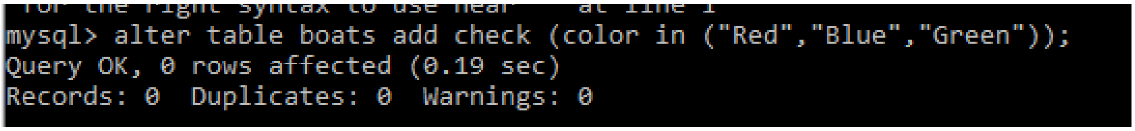
Queries:

a) Alter the Sailor table such that age is between 18 and 40.



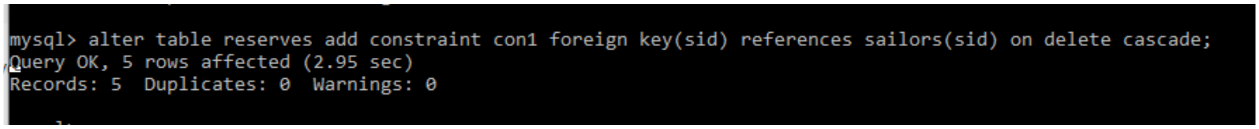
```
mysql> alter table sailors add check (age>=18 and age<=40);
Query OK, 0 rows affected (0.14 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql>
```

b) Alter the Boats table such that color is Red, Blue or Green.



```
 for the right syntax to use near    at line 1
mysql> alter table boats add check (color in ("Red","Blue","Green"));
Query OK, 0 rows affected (0.19 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

c) Assuming that all the tables are created as in 1, 2 and 3 alter the table (s) such that if a record from sailors table gets deleted, then the records corresponding to the same sailor also get deleted from reserves.



```
mysql> alter table reserves add constraint con1 foreign key(sid) references sailors(sid) on delete cascade;
Query OK, 5 rows affected (2.95 sec)
Records: 5  Duplicates: 0  Warnings: 0
```