sql query and subquery

schema of the table:

sailor(sailor id primary key, sailor name,rating,age),

boats(boat id primary key, boat name ,color),

reserves(sailor id foreign key, boat id ,booking date).

tables;

sailors table:

sailorID	Sname	rating	age
1	dustin	7	45
2	jennifer	5	25
3	julie	6	35
4	methew	8	32
5	robin	5	50
6	joe	8	22
7	kim	5	30
8	rusty	10	19
9	M.Ali	9	26
10	Ben	7	45
11	bob	8	40
12	horatio	9	35
13	brutus	2	60

boats table:

boatID	Bname	color
1	battleship	brown
2	ironclad	black
3	interlake	green
4	corvette.	red
5	spray	white

reserves table:

boatID	sailorID	booking
3	2	2022-07-11
1	4	2022-07-12
2	12	2022-07-10
4	10	2022-07-09
5	1	2022-07-11
3	6	2022-07-15
2	4	2022-07-12
1	11	2022-07-10
4	7	2022-07-14
5	11	2022-07-12
5	1	2022-07-11
5	2	2022-07-13
2	9	2022-07-13

a. Find all information of sailors who have reserved boat number 5

solution:

query

```
select * from sailors,reserves where
sailors.sailorID=reserves.sailorID and
reserves.boatID=5;
```

output:

sailorID	Sname	rating	age	boatID	sailorID	booking
1	dustin	7	45	5	1	2022-07-11
11	bob	8	40	5	11	2022-07-12
1	dustin	7	45	5	1	2022-07-11
2	jennifer	5	25	5	2	2022-07-13

b.

Find the name of boat reserved by Ali.

solution:

query

```
select Bname,Sname from
sailors,boats,reserves
where reserves.sailorID=sailors.sailorID
and reserves.boatID=boats.boatID
and Sname="M.Ali";
```

output:

	Bname	Sname
▸	ironclad	M.Ali

c.

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

solution:

query

```
select sailors.Sname,sailors.age,boats.color
 from sailors,reserves,boats
 where  reserves.sailorID=sailors.sailorID
 and reserves.boatID=boats.boatID
and boats.color="red"
order by sailors.age;
```

output:

	Sname	age	color
	kim	30	red
	Ben	45	red

d.

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

solution:

query

```
select sailors.Sname from
sailors,reserves where
sailors.sailorID=reserves.sailorID;
```

output:

Sname
dustin
dustin
jennifer
jennifer
methew
methew
joe
kim
M.Ali
Ben
bob
bob
horatio

e.

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

solution:

query

```
select distinct sailors.sailorID,sailors.Sname
 from sailors,reserves R1,reserves R2
 where sailors.sailorID=R1.sailorID
and sailors.sailorID=R2.sailorID
and R1.booking=R2.booking
and R1.boatID<>R2.boatID;
```

output:

	sailorID	Sname
	4	methew

f.

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

solution:

query

```
select reserves.sailorID
from reserves,boats
where reserves.boatID=boats.boatID
and boats.color="red"
union select R2.sailorID
 from boats B2, reserves R2
 where R2.boatID=B2.boatID
 and b2.color="green" ;
```

output:

sailorID
10
7
2
6

g.

Find the name and the age of the youngest sailor.

solution:

query

```
select sailors.Sname,sailors.age
from sailors where
sailors.age<=all (select age from sailors);
```

output:

	Sname	age
	rusty	19

h.

Count the number of different sailor names.

query

```
SELECT  count(distinct Sname) from sailors;
```

output:

count(distinct Sname)
13

i.

Find the average age of sailors for each rating level.

query

```
select rating ,avg(sailors.age) as AVG_age
from sailors group by rating;
```

output:

rating	AVG_age
2	60.0000
5	35.0000
6	35.0000
7	45.0000
8	31.3333
9	30.5000
10	19.0000

j.

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

query

```
select rating ,avg(sailors.age) as AVG_age
from sailors group by rating having count(*) > 1;
```

output:

	rating	AVG_age
	5	35.0000
	7	45.0000
	8	31.3333
	9	30.5000