

EXPERIMENT 8

SAILOR BOAT DATABASE (DDL, DML, DQL, Subquery, Joins, Set operations)

Aim:

- Create sailors, boats, and reserves.(foreign key).
- Insert 5 values each table.
- Display all records.
- Find the names and ages of all sailors.
- Find all sailors with ratings above 8.
- Find sailors name with rating above 7 & age above 25.
- Display all the names & colors of the boats.
- Find all the boats with Red colors.
- Find the names of sailors' who have reserved boat number 103.
- Find the sids of sailors who have reserved blue boat
- Find the names of sailors' who have reserved Red boat.
- Find the colours of boats reserved by some name(provide any name in table).
- Find the names of the sailors who have reserved at least one boat.
- Find the names of the sailors who have reserved two different boats.
- Find the names of sailors who have reserved a Red or a Green boat.(union)
- Find the names of sailors who have reserved both a Red and a Green boat.
- Find the names of sailors who have reserved boat 103.(nested query)
- Find the names of sailors who have reserved red boat.(nq)
- Find the names of sailors who have not reserved red boat.(nq)
- Find the names of sailors who have reserved boat number 103.(exists)
- Find sailors whose rating is better than some sailors called name.
- Find sailors whose rating is better than every sailor' called name.
- Find the sailors with highest rating.
- Find the average age of all sailors.
- Find the average age of sailors with a rating of 10.
- Count the number of sailors.
- Count the number of different sailor ratings.
- Find the name and age of the oldest sailor.
- Find the names of the sailors who are older than the oldest sailor with a rating of 10.
- Find the age of youngest sailor for each rating level.
- Find the age of the youngest sailor who is eligible to vote (i.e., is at least 18 years old) for each rating level with at least two such sailors.
- For each red boat, find the number of reservations for this boat.
- Find all sailors name according to names.
- Find all sailors details according to rating.
- Find all sailors details according to rating (highest first) if ratings are same then according to age(youngest first).


SCHEMA:

```
create table sailors(sid integer,sname varchar(20),rating integer,age integer,primary key(sid));
desc sailors;
create table boats(bid integer,bname varchar(20),color varchar(20),primary key(bid));
desc boats;
create table reverse(sid integer,bid integer,days varchar(20),foreign key(sid) references sailors(sid),foreign key(bid) references boats(bid));
desc reverse;
insert into sailors values(22,'Austin',7,45);
insert into sailors values(29,'Brutus',1,33);
insert into sailors values(31,'Lubber',8,55.5);
insert into sailors values(32,'Andy',6,25.5);
insert into sailors values(58,'Rusty',10,35);
insert into sailors values(64,'Horatio',7,35);
insert into sailors values(71,'Izabela',10,10);
insert into sailors values(74,'Horatio',9,35);
insert into sailors values(85,'Art',1,25.5);
insert into sailors values(95,'Bob',1,63.5);
select *from sailors;
insert into boats values(101,'Interlake','blue');
insert into boats values(102,'Interlake','red');
insert into boats values(103,'Clipper','green');
insert into boats values(104,'Marine','red');
```

```
• insert into boats values(104,'Marine','red');
• select *from boats;
• insert into reverse values(22,103,'10/8/98');
• insert into reverse values(22,104,'10/7/98');
• insert into reverse values(31,102,'11/10/98');
• insert into reverse values(31,103,'11/6/98');
• insert into reverse values(31,104,'11/12/98');
• insert into reverse values(64,101,'9/5/98');
• insert into reverse values(64,102,'9/8/98');
• insert into reverse values(74,103,'9/8/98');
• select *from reverse;

• SELECT sname, age FROM sailors;
• SELECT sid FROM sailors WHERE rating>=8;
• SELECT sid FROM sailors WHERE rating>=7 and age >= 25;
• SELECT bname, color FROM boats;
• SELECT S.*
  FROM sailors S, reverse R
 WHERE S.sid = R.sid AND R.bid = 103;
• SELECT R.sid
```

- `SELECT sid FROM sailors WHERE rating>=8;`
- `SELECT sid FROM sailors WHERE rating>=7 and age >= 25;`
- `SELECT bname, color FROM boats;`
- `SELECT S.*
FROM sailors S, reverse R
WHERE S.sid = R.sid AND R.bid = 103;`
- `SELECT R.sid
FROM Boat B, Reserves R
WHERE B.bid = R.bid AND B.color = 'Pink';`
- `SELECT S.sname
FROM sailors S, reverse R, boats B
WHERE S.sid = R.sid AND R.bid = B.bid AND
B.color = 'red';`
- `SELECT B.color
FROM sailors S, reverse R, boats B
WHERE S.sid = R.sid AND R.bid = B.bid AND
S.sname = 'Lubber';`
- `SELECT S.sname
FROM sailors S, reverse R`

- `SELECT S.sname
FROM sailors S, reverse R
WHERE S.sid = R.sid;`
- 
`(SELECT S.sid
FROM sailors S, boats B, reverse R
WHERE S.sid=R.sid AND R.bid=B.bid
AND B.color='red')
UNION
(SELECT S.sid
FROM sailors S, boats B, reverse R
WHERE S.sid=R.sid AND R.bid=B.bid
AND B.color='green'));`
- `SELECT S.sid
FROM sailors S, boats B, reverse R
WHERE S.sid=R.sid AND R.bid=B.bid
AND (B.color='red' OR B.color='green');`
- `SELECT S.sid
FROM sailors S, boats B1, reverse R1,`

- ```
SELECT S.sid
FROM sailors S, boats B1, reverse R1,
boats B2, reverse R2
WHERE S.sid=R1.sid AND R1.bid=B1.bid
AND S.sid=R2.sid AND R2.bid=B2.bid
AND (B1.color='red' AND B2.color='green');
```
- ```
SELECT S.sname
FROM sailors S, reverse R
WHERE S.sid=R.sid AND R.bid=103;
```
- ```
SELECT S.sname
FROM sailors S
WHERE s.sid IN (
SELECT S.sid
FROM sailors S, reverse R, boats B
WHERE S.sid=R.sid AND R.bid=B.bid
AND B.color='red');
```
- ```
SELECT S.sname
FROM sailors S
WHERE s.sid IN (
SELECT S.sid
FROM sailors S, reverse R, boats B
WHERE S.sid=R.sid AND R.bid=B.bid
AND B.color='red');
```
- ```
SELECT S.sname
FROM sailors S
WHERE S.sid NOT IN (SELECT R.sid
FROM reverse R
WHERE R.bid=103);
```
- ```
SELECT *
FROM sailors S
WHERE S.rating > ANY (SELECT S2.rating
FROM Sailors S2
WHERE S2.sname='Horatio');
```


- ```
SELECT *
FROM sailors S
WHERE S.rating > ALL (SELECT S2.rating
FROM Sailors S2
WHERE S2.sname='Horatio');
```
- ```
SELECT *
FROM sailors S
WHERE S.rating >= ALL (SELECT S2.rating
FROM sailors S2);
```
- ```
SELECT AVG (S.age)
FROM sailors S;
```
- ```
SELECT AVG (S.age)
FROM sailors S
WHERE S.rating = 10;
```
- ```
SELECT COUNT(*)
FROM sailors S;
```
- ```
SELECT COUNT(DISTINCT S.rating)
FROM sailors S;
```
- ```
SELECT S.sname, S.age
FROM sailors S
WHERE S.age =
(SELECT MAX(S2.age)
FROM sailors S2);
```
- ```
SELECT S.sname
FROM sailors S
WHERE S.age > ( SELECT MAX(S2.age)
FROM sailors S2
WHERE S2.rating = 10);
```
- ```
SELECT S.rating, MIN(S.age) AS avg_age
FROM Sailors S
GROUP BY S.rating;
```

OUTPUTS:

Result Grid  Filter Rows:  Export: 

|   | Field  | Type        | Null | Key | Default | Extra |
|---|--------|-------------|------|-----|---------|-------|
| ▶ | sid    | int         | NO   | PRI | NULL    |       |
|   | sname  | varchar(20) | YES  |     | NULL    |       |
|   | rating | int         | YES  |     | NULL    |       |
|   | age    | int         | YES  |     | NULL    |       |

|  | Field | Type        | Null | Key | Default | Extra |
|--|-------|-------------|------|-----|---------|-------|
|  | bid   | int         | NO   | PRI | NULL    |       |
|  | bname | varchar(20) | YES  |     | NULL    |       |
|  | color | varchar(20) | YES  |     | NULL    |       |



Result Grid  Filter Rows:  Export: 


|   | Field | Type        | Null | Key | Default | Extra |
|---|-------|-------------|------|-----|---------|-------|
| ▶ | sid   | int         | YES  | MUL | NULL    |       |
|   | bid   | int         | YES  | MUL | NULL    |       |
|   | days  | varchar(20) | YES  |     | NULL    |       |

|   | sid  | sname   | rating | age  |
|---|------|---------|--------|------|
| ▶ | 22   | Dustin  | 7      | 45   |
|   | 29   | Brutus  | 1      | 33   |
|   | 31   | Lubber  | 8      | 56   |
|   | 32   | Andy    | 8      | 26   |
|   | 58   | Rusty   | 10     | 35   |
|   | 64   | Horatio | 7      | 35   |
|   | 71   | Zoriba  | 10     | 16   |
|   | 74   | Horatio | 9      | 35   |
|   | 85   | Art     | 3      | 26   |
|   | 95   | BOB     | 3      | 64   |
| • | NULL | NULL    | NULL   | NULL |

Result Grid   Filter Rows:

|   | bid  | bname     | color |
|---|------|-----------|-------|
| ▶ | 101  | Interlake | blue  |
|   | 102  | Interlake | red   |
|   | 103  | Clipper   | green |
|   | 104  | Marine    | red   |
| • | NULL | NULL      | NULL  |

| Result Grid   Filter Row |     |     |          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|----------|
|                                                                                                                                                                                            | sid | bid | days     |
| ▶                                                                                                                                                                                          | 22  | 103 | 10/8/98  |
|                                                                                                                                                                                            | 22  | 103 | 10/8/98  |
|                                                                                                                                                                                            | 22  | 103 | 10/8/98  |
|                                                                                                                                                                                            | 22  | 103 | 10/8/98  |
|                                                                                                                                                                                            | 22  | 104 | 10/7/98  |
|                                                                                                                                                                                            | 31  | 102 | 11/10/98 |
|                                                                                                                                                                                            | 31  | 102 | 11/10/98 |
|                                                                                                                                                                                            | 31  | 104 | 11/12/98 |
|                                                                                                                                                                                            | 31  | 104 | 11/12/98 |
|                                                                                                                                                                                            | 31  | 104 | 11/12/98 |
|                                                                                                                                                                                            | 64  | 101 | 9/5/98   |
|                                                                                                                                                                                            | 64  | 102 | 9/8/98   |
|                                                                                                                                                                                            | 74  | 103 | 9/8/98   |

| Result Grid   |         |     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----|
|                                                                                                                                                                                 | sname   | age |
| ▶                                                                                                                                                                               | Dustin  | 45  |
|                                                                                                                                                                                 | Brutus  | 33  |
|                                                                                                                                                                                 | Lubber  | 56  |
|                                                                                                                                                                                 | Andy    | 26  |
|                                                                                                                                                                                 | Rusty   | 35  |
|                                                                                                                                                                                 | Horatio | 35  |
|                                                                                                                                                                                 | Zoriba  | 16  |
|                                                                                                                                                                                 | Horatio | 35  |
|                                                                                                                                                                                 | Art     | 26  |
|                                                                                                                                                                                 | BOB     | 64  |

|   | sid  |
|---|------|
| ▶ | 31   |
|   | 32   |
|   | 58   |
|   | 71   |
|   | 74   |
| ● | NULL |

| sid  |
|------|
| 22   |
| 31   |
| 32   |
| 58   |
| 64   |
| 74   |
| NULL |

|   | bname     | color |
|---|-----------|-------|
| ► | Interlake | blue  |
|   | Interlake | red   |
|   | Clipper   | green |
|   | Marine    | red   |

| sid | sname   | rating | age |
|-----|---------|--------|-----|
| 22  | Dustin  | 7      | 45  |
| 22  | Dustin  | 7      | 45  |
| 22  | Dustin  | 7      | 45  |
| 22  | Dustin  | 7      | 45  |
| 74  | Horatio | 9      | 35  |

| sid | sname   | rating | age |
|-----|---------|--------|-----|
| 22  | Dustin  | 7      | 45  |
| 22  | Dustin  | 7      | 45  |
| 22  | Dustin  | 7      | 45  |
| 22  | Dustin  | 7      | 45  |
| 74  | Horatio | 9      | 35  |

| sname    |
|----------|
| ► Lubber |
| Lubber   |
| Horatio  |
| Dustin   |
| Lubber   |
| Lubber   |
| Lubber   |



|       |         |
|-------|---------|
|       | sname   |
|       | Dustin  |
|       | Dustin  |
|       | Dustin  |
|       | Dustin  |
|       | Dustin  |
|       | Lubber  |
| color | Lubber  |
| red   | Lubber  |
| red   | Lubber  |
| red   | Lubber  |
| red   | Horatio |
| red   | Horatio |

|  |     |
|--|-----|
|  | sid |
|  | 31  |
|  | 64  |
|  | 22  |
|  | 74  |

|  |     |
|--|-----|
|  | sid |
|  | 22  |
|  | 22  |
|  | 22  |
|  | 22  |



|  |         |
|--|---------|
|  | sname   |
|  | Dustin  |
|  | Dustin  |
|  | Dustin  |
|  | Dustin  |
|  | Horatio |

|  |         |
|--|---------|
|  | sname   |
|  | Brutus  |
|  | Lubber  |
|  | Andy    |
|  | Rusty   |
|  | Horatio |
|  | Zoriba  |
|  | Art     |
|  | BOB     |

|      |         |        |      |
|------|---------|--------|------|
| sid  | sname   | rating | age  |
| 31   | Lubber  | 8      | 56   |
| 32   | Andy    | 8      | 26   |
| 58   | Rusty   | 10     | 35   |
| 71   | Zoriba  | 10     | 16   |
| 74   | Horatio | 9      | 35   |
| NULL | NULL    | NULL   | NULL |

|         |
|---------|
| sname   |
| Lubber  |
| Horatio |
| Dustin  |

Result Grid

Filter Rows:

| sid  | sname  | rating | age  |
|------|--------|--------|------|
| 58   | Rusty  | 10     | 35   |
| 71   | Zoriba | 10     | 16   |
| NULL | NULL   | NULL   | NULL |

|             |
|-------------|
| AVG (S.age) |
| 37.1000     |

|             |
|-------------|
| AVG (S.age) |
| 25.5000     |

|          |
|----------|
| COUNT(*) |
| 10       |

|                          |
|--------------------------|
| COUNT(DISTINCT S.rating) |
| 6                        |

|       |     |
|-------|-----|
| sname | age |
| BOB   | 64  |

|             |
|-------------|
| Result Grid |
| sname       |
| Dustin      |
| Lubber      |
| BOB         |

| result Grid |         |
|-------------|---------|
| rating      | avg_age |
| 7           | 35      |
| 1           | 33      |
| 8           | 26      |
| 10          | 16      |
| 9           | 35      |
| 3           | 26      |

Components Used:

Instance: It is the collection of information stored in a database at a particular moment.

Entity: Object that is relevant to given system. Represented as rectangle.

Attribute: Trait of an entity, relationship or other attribute. Represented by oval.