

Test Data:

1) Schemas of the underlying relations;

- a. Sailors(sid:integer, sname:string, rating:integer, age:real)
- b. Boats(bid:integer, bname:string, color:string)
- c. Reserves(sid:integer, bid:integer, day:date)

2) SQL queries

- a.

```
SELECT  S.sid, S.sname, S.rating, S.age
FROM    Sailors AS S
WHERE   S.rating > 7
```
- b.

```
SELECT  S.sid, S.sname
FROM    Sailors AS S
WHERE   S.color = 'green'
```
- c.

```
SELECT  B.color
FROM    Sailors AS S, Reserves AS R, Boats AS B
WHERE   S.sid=R.sid AND R.bid=B.bid AND S.sname = 'Lubber'
```
- d.

```
SELECT  sname
FROM    Sailors, Boats, Reserves
WHERE   Sailors.sid=Reserves.sid AND Reserves.bid=Boats.bid AND
Boats.color='red'
UNION
SELECT  sname
FROM    Sailors, Boats, Reserves
WHERE   Sailors.sid=Reserves.sid AND Reserves.bid=Boats.bid AND
Boats.color='green'
```
- e.

```
SELECT  S.sname
FROM    Sailors AS S, Reserves AS R
WHERE   R.sid = S.sid AND R.bid = 100 AND R.rating > 5 AND R.day = '8/9/09'
```

Invalid query
- f.

```
SELECT  sname
FROM    Sailors, Boats, Reserves
WHERE   Sailors.sid=Reserves.sid AND Reserves.bid=Boats.bid AND
Boats.color='red'
INTERSECT
SELECT  sname
FROM    Sailors, Boats, Reserves
WHERE   Sailors.sid=Reserves.sid AND Reserves.bid=Boats.bid AND
Boats.color='green'
```

- g. SELECT S.sid
FROM Sailors AS S, Reserves AS R, Boats AS B
WHERE S.sid=R.sid AND R.bid=B.bid AND B.color='red'
EXCEPT
SELECT S2.sid
FROM Sailors AS S2, Reserves AS R2, Boats AS B2
WHERE S2.sid=R2.sid AND R2.bid=B2.bid AND B2.color='green'
- h. SELECT S.sname
FROM Sailors AS S
WHERE S.sid IN (SELECT R.sid
FROM Reserves AS R
WHERE R.bid = 103)
- i. SELECT S.sname
FROM Sailors AS S
WHERE S.sid IN ((SELECT R.sid
FROM Reserves AS R, Boats AS B
WHERE R.bid = B.bid AND B.color = 'red')
INTERSECT
(SELECT R2.sid
FROM Reserve AS R2, Boats AS B2
WHERE R2.bid = B2.bid AND B2.color = 'green'))
- j. SELECT S.sname
FROM Sailors S
WHERE NOT EXISTS (SELECT B.bid
FROM Boats B
WHERE NOT EXISTS (SELECT R.bid
FROM Reserves R
WHERE R.bid = B.bid AND
R.sid = S.sid))
- k. SELECT S.sname
FROM Sailors S
WHERE S.age > (SELECT MAX (S2.age)
FROM Sailors S2
WHERE S2.rating = 10)
- l. SELECT B.bid, Count (*) AS reservationcount
FROM Boats B, Reserves R
WHERE R.bid=B.bid AND B.color = 'red'
GROUP BY B.bid

- m. SELECT B.bid, Count (*) AS reservationcount
FROM Boats B, Reserves R
WHERE R.bid=B.bid AND B.color = 'red'
GROUP BY B.bid
HAVING B.color = 'red'
- n. SELECT Sname
FROM Sailors
WHERE Sailor.sid IN (SELECT Reserves.bid, Reserves.sid
FROM Reserves
CONTAINS
(SELECT Boats.bid
FROM Boats
WHERE bname = 'interlake'))
- o. SELECT S.rating, Ave (S.age) As average
FROM Sailors S
WHERE S.age > 18
GROUP BY S.rating
HAVING Count (*) > 1