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Problem Set 1

Part 1:

MySQL Queries

Please see attached zip folder in email for screenshot picture proof of output from terminal that these queries when done with MySQL on Ubuntu works or https://goo.gl/9iVd8X

```
1. SELECT DISTINCT b.bname, s.sname COUNT(*) FROM boats b,
reserves r, sailors s WHERE b.bid = r.bid AND s.sid = r.sid
GROUP BY b.bid, b.bname, s.sid, s.sname HAVING COUNT(*) >= ALL
(SELECT COUNT(*) FROM reserves r1, WHERE r1.bid = b.bid GROUP BY
r1.bid);
```

```
2. SELECT b.bid, COUNT(*) as reservescount FROM boats b,
reserves r WHERE r.bid = b.bid GROUP BY b.bid HAVING COUNT(*) >
0;
```

```
3. SELECT s.sid, s.sname, COUNT(*) as reservescount FROM sailors
s, reserves r, boats b WHERE s.sid = r.sid AND r.bid = b.bid AND
b.color = ‘red’ GROUP BY s.sid HAVING COUNT(*) > 1;
```

```
4. SELECT DISTINCT * FROM sailors s WHERE ‘red’ = ALL (SELECT
b.color FROM reserves r, boats b WHERE r.bid = b.bid AND r.sid =
s.sid);
```

```
5. SELECT b.bid, b.bname, COUNT(*) FROM boats b, reserves r
WHERE b.bid = r.bid GROUP BY b.bid, b.bname HAVING COUNT(*) >=
ALL (SELECT COUNT(*) FROM reserves r1 GROUP BY r1.bid);
```

```
6. SELECT * FROM sailors s WHERE s.sid NOT IN (SELECT r.sid FROM
reserves r WHERE r.bid IN (SELECT b.bid FROM boats b WHERE
b.color = ‘red’));
```

```
7. SELECT AVG(s.age) FROM sailors s WHERE s.rating = 10;
```

Part 2:

Attached code in email.

Part 3:

For this small business boat rental that recently had a surge of customers due to high tourism in the area, I have proposed a few measures to try and alleviate the \problems that they are facing since it is becoming quite out of hand and hard to handle. Some “inefficient processes” that the business has are that there are only three properties: the sailors, reserves, and the boats. In order to increase productivity and get more work done, I think that more jobs should be offered to expand the business. To improve the layout, there can be a system for monthly payments for all the sailors and a payroll to keep track of transactions issued through the boat rental. These tables will include the payment ID (‘pid’) so that each record or each transaction is stored uniquely (since sailors can be charged multiple times), the sailor ID (‘sid’) of the sailor who is getting paid, the salary that the company makes (the actual amount that the sailor is getting charged for is $1000/boat reserved), and the date that the sailor gets paid on. The date that the sailor gets paid on is calculated through looking at the reserves that the sailor has made using the dates during one calendar month and then multiplying how many boats they rented within that period by $1000/boat each. Since sailors can rent boats multiple times during a year, the date and payment ID will assist in differentiating between frequent sailors who rent and occasional ones. With this payment system, the owners can see how often they are paying the sailors and how much they are paying certain sailors within a given timeframe or on an individual basis. The date of payment will occur exactly one month after the earliest rental date for that month of a boat. This will help the boat rental company keep track of the volume of sailors, reserves, boats, and now payments to make sure their revenue is correct for each sailor. I believe this will benefit the business and based on data from part 1, sample queries have shown that it works.

“Extra Credit”

I tried to do it on codacy but I’m not sure how the link works. Here’s the link: https://app.codacy.com/project/sarahuang158/ECE464-Databases/dashboard?branchId=9237948