Pujan Chaulagain

Section 1:

Q.1.
Write a query to print the number of employees per department in the organization

Query:

SELECT department,COUNT(*) FROM employee GROUP BY department;

```
mysql> SELECT department,COUNT(*) FROM employee GROUP BY department;
+------------+----------+
| department | COUNT(*) |
+------------+----------+
| Banking    |        2 |
| Insurance  |        3 |
| Services   |        2 |
+------------+----------+
3 rows in set (0.00 sec)
```

Q.2.
Write an SQL query to find the name of the top-level manager of each department

Query:

SELECT DEPARTMENT, FIRST_NAME, LAST_NAME FROM Employee WHERE manager is NULL;

```
mysql> SELECT DEPARTMENT, FIRST_NAME, LAST_NAME FROM Employee WHERE manager is NULL;
+------------+------------+-----------+
| DEPARTMENT | FIRST_NAME | LAST_NAME |
+------------+------------+-----------+
| Banking    | Roy        | Thomas    |
| Insurance  | Tom        | Jose      |
| Services   | TestName1  | 123       |
+------------+------------+-----------+
3 rows in set (0.00 sec)
```

Q.3.

Write a query to find the total incentive received by a given employee in a given month.

Query:

SELECT EMPLOYEE_REF_ID, EXTRACT(MONTH from INCENTIVE_DATE) AS month,SUM(INCENTIVE_AMOUNT) FROM Incentives GROUP BY EMPLOYEE_REF_ID, month

```
mysql> SELECT EMPLOYEE_REF_ID, EXTRACT( MONTH from INCENTIVE_DATE) AS month,SUM(INCENTIVE_AMOUNT) FROM Incentives GROUP
BY EMPLOYEE_REF_ID, month;
+----------------+-------+----------------------+
| EMPLOYEE_REF_ID | month | SUM(INCENTIVE_AMOUNT) |
+----------------+-------+----------------------+
|              1 |     1 |                 4500 |
|              1 |     2 |                11000 |
|              2 |     1 |                 3500 |
|              2 |     2 |                 3000 |
|              3 |     2 |                 4000 |
+----------------+-------+----------------------+
5 rows in set (0.00 sec)
```

Q.4.

Write a query to find the month where employees got maximum incentive

Query:

SELECT EXTRACT(MONTH from INCENTIVE_DATE) AS month, SUM(INCENTIVE_AMOUNT) AS sum

FROM Incentives GROUP BY month HAVING MAX(sum)

```
mysql> SELECT EXTRACT(MONTH from INCENTIVE_DATE) AS month, SUM(INCENTIVE_AMOUNT) AS sum FROM incentives GROUP BY month H
AVING max(incentive_amount);
+-------+-------+
| month | sum   |
+-------+-------+
|     1 |  8000 |
|     2 | 18000 |
+-------+-------+
2 rows in set (0.00 sec)
```

Section 2:

Q.5.

You have two sand timers, which can show 4 minutes and 7 minutes respectively. Use both the sand timers (at a time or one after other or any other combination) and measure a time of 9 minutes.

Ans:

Start the 4minutes and 7 minutes sand timers at the same time. After the 4 minutes sand timer's sand is exhausted turn it upside down immediately.

At this point: The time is 4 min.

After the sand in 7 minutes gets exhausted it is turned upside down. The 4minutes sand timer has 1 minute more to be exhausted.

At this point: The time is 7.

The sand in 4 minutes sand timer is exhausted in 1 minutes.

At this point. The time is 8.

The sand in 7 minutes sand timer has 1 minutes elapsed. So turn it upside down until it exhausts itself.

Hence, the time now is 9 minutes.

Q.6.

John and Mary are a married couple. They have two kids, one of them is a girl. Assume safely that the probability of each gender is 1/2. What is the probability that the other kid is also a girl?

Ans:

There can be a total of four possibilities for the gender of two children. {BB,BG,GB,GG} if the probability of each gender is ½. It is also mentioned that one of them is a girl. So the first option is invalid. The sample space reduces to {BG, GB, GG}. Threfore, the probability that the other kid is also a girl is 1/3.

Q.7.

The following appeared as part of a campaign to sell advertising time on a local radio station to local businesses.

Ron's Cafe began advertising on our local radio station this year and was delighted to see its business increase by 10 percent over last year's totals. Their success shows you how you can use radio advertising to make your business more profitable.

Discuss how well reasoned you find this argument. In your discussion be sure to analyze the line of reasoning and the use of evidence in the argument. For example, you may need to consider what questionable assumptions underline the thinking and what alternative explanations or counterexamples might weaken the conclusion. You can also discuss what sort of evidence would strengthen or refute the argument, what changes in the argument would make it more logically sound and what, if anything, would help you better evaluate in conclusion.

Ans:

The author has mentioned that the reason behind the success of Ron's café is the advertisement on the local radio station. However, the argument doesn't provide enough evidence and comparison to support the claim. The increase in the business by 10 percent over last year's totals can be due to the decision to increase the investment capital. In such scenario the increase has nothing to do with the advertisement.

Likewise, it is also unclear whether the café has advertised just in the radio platform. The radio advertisement policy may be one among the several initiatives taken by the café to enhance their business. Other activities such as hiring of more qualified bartender or barista , use of modern espresso machine, etc may have contributed to the rise.

Even under the assumption that the radio advertisement was the only advertisement used by the café, other businesses cannot just rely on this testimonial. Every business has their own targeted customers. Customers of other business may be more interested in watching tv, reading newspapers or magazines for information and recreation rather than listening radios. So, we cannot conclude that the same success may repeat for other business as well.

Therefore, if aforementioned considerations were addressed it would strengthen the argument.