Stats 167 Final Project

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Option 1: Practice SQL Interview Questions

Question 1)

```sql
SELECT product_id, sale_data, amount,
  SUM(amount) OVER (PARTITION BY product_id ORDER BY sale_date) AS sales_overtime
FROM sales;
```

Logic

- We want to use all three columns because we are looking for the total amount of sales from each product id over the sale date.
- SUM(amount) is taking the total amount in the amount column
- OVER makes it a window function meaning that we creating a group of rows to perform the SUM.
- PARTITION BY essentially just divides the rows into multiple groups and in this case was want to partition by the product_id and then order the rows in each partition.

Question 2)

```sql
WITH revenue_per_product AS(
  SELECT products.id,
    products.name,
    products.category,
    SUM(order_items.quantity * order_items.price) AS revenue
  FROM order_items
  JOIN products ON order_items.product_id = products.id
  GROUP BY products.id, products.name, products.category
),
ranked_products AS (
  SELECT name,
    category,
    revenue,
  RANK() OVER (PARTITION BY category ORDER BY revenue DESC)  AS revenue_per_product
  FROM revenue_per_product
)
SELECT name, category, revenue
FROM ranked_products
WHERE revenue_per_prouct <= 2
```

Logic

- We join the products table with the order_items table to have access to both tables
- We want to group by products to calculate total revenue

- Using a window function will help rank the products within each category.
- Filter to get only the two 2 products per category

Question 3)

```sql
SELECT orders.customer_id, COUNT(DISTINCT order_items.product_id)
FROM order_items
JOIN orders ON order_items.order_id = orders.id
GROUP BY orders.customer_id
HAVING COUNT(DISTINCT order_items.product_id) = 1
```

Logic

- We join the order_items table to link each customer to the products they ordered.
- We the group by the customer_id to have each custmer's order history.
- COUNT will get the total number of distinct products each customer orered.
- Filtering the total number of distinct products to one will help identify all the unique products.

Question 4)