# **Analytics SQL Assignment**

## **Intro**

These exercises are designed to help you demonstrate your facility with SQL and data-related problem-solving. Please include your SQL code below, not just the outcomes / answers you would derive. If you make assumptions or evaluate alternatives, please explain and elaborate as appropriate.

## **Part 1**

Suppose we are Costco and we have a database with two tables: **users**, which are the members of the club, and a table **purchases** that has the entire purchase history (if any) for those users.

### **Table: users**

**name date\_joined**

John ‘2011-01-01’

Dave ‘2009-04-02’

Mary ‘2008-03-04’

### **Table: purchases**

**user date\_purchased item price**

John ‘2011-02-04’ SK2341 34.54

John ‘2012-01-04’ LS2414 94.98

1) What are total expenditures by user (all time)? What is the total expenditure by item? What fraction of customers have never made a purchase?

**Total expenditures by user:**

SELECT

User,

SUM(price) as Total\_expenditures

FROM purchases

GROUP BY

User

**Total expenditures by item:**

SELECT

Item,

SUM(price) as Total\_expenditures

FROM purchases

GROUP BY

Item

**What fraction of customers have never made a purchase?**

Do ratio of:

SELECT COUNT (DISTINCT user)

FROM users

* Total of users (denominator)

SELECT

User,

SUM(CASE WHEN price IS NULL THEN 0 ELSE price END) as Total\_expenditures

FROM purchases

WHERE SUM(price) = 0

GROUP BY

User

* Total of users who haven’t purchased any items.

2) How would we tell if there’s a seasonal pattern for certain items? What queries might help us understand any seasonal patterns that exist?

SELECT

TRUNC(date\_purchased, “MM”) as Month,

SUM(price) as sales

FROM purchases

GROUP BY

TRUNC(date\_purchased, “MM”)

* To assess sales by month breakdown (any quarter/season/holidays boost)?

## **Part 2**

Suppose Costco has another database for tracking employees. In this database there is a table **employees** which contains rows for regular employees as well as managers. (The values in the manager\_id field are the manager’s employee\_id; for example Kate is Henry’s manager.)

**Table: employees**

**employee\_id manager\_id employee\_name**

1 2 Jane

2 3 Henry

3 *null* Kate

4 2 Moe

5 2 Larry

1) Write a query that will return a list of all employees and their managers (listing employees and managers by name). Include employees with no manager in your list.

SELECT

a. employee\_ID,

a. manager\_ID,

a. employee\_name,

CASE WHEN b. employee\_name IS NULL THEN 'No Manager' ELSE b.employee\_name END as manager\_name

FROM employees a LEFT JOIN

(SELECT

employee\_ID,

employee\_name

FROM employees) b

ON a.manager\_ID = b.employee\_ID

;

Graphical user interface, application

Description automatically generated

2) Suppose there is another table **training\_details** which contains information on the training sessions attended by an employee, the date of attendance, and their feedback on the training with a maximum score of 10. Write a query to get a list of employees’ names who attended more than one training session on the same day. Please include the names of the training sessions and their dates of attendance.

**Table: training\_details**

(employee\_ID, employee\_name, date, score, training\_name)

SELECT

TRUNC(a.date, DD) as day,

a.Employee\_name,

a.Date,

a.Training\_name,

FROM training\_details a JOIN (

SELECT

TRUNC(date, DD),

Employee\_id,

COUNT(DISTINCT date) as total\_number\_perday

FROM training\_details

WHERE COUNT(DISTINCT date) > 1) b

ON a.employee\_ID = b.employee\_ID

GROUP BY

TRUNC(date, DD),

Employee\_name,

Date,

Training\_name

;