# Lab 10 - Advanced SQL and Stored Procedures

## Refresher

### CASE - WHEN

Useful for handling if-else conditions in SQL.

Syntax:

```
CASE
WHEN condition1 THEN result1
WHEN condition2 THEN result2
WHEN conditionN THEN resultN
ELSE result
END;
```

Example:

```sql
SELECT OrderID, Quantity,
CASE
WHEN Quantity > 30 THEN 'The quantity is greater than 30'
WHEN Quantity = 30 THEN 'The quantity is 30'
ELSE 'The quantity is under 30'
END AS QuantityText
FROM OrderDetails;
```

## Views

- In SQL, a view is a dynamic virtual table based on the result-set of an SQL statement.
- A view contains rows and columns, just like a real table. The fields in a view are fields from one or more real tables in the database.
- You can add SQL statements and functions to a view and present the data as if the data were coming from one single table.

Syntax:

```sql
CREATE VIEW view_name AS
SELECT column1, column2, ...
FROM table_name
WHERE condition;
```

Example:

```sql
CREATE VIEW [Brazil Customers] AS
SELECT CustomerName, ContactName
FROM Customers
WHERE Country = 'Brazil';
```

## WITH

- Used for defining a temporary relation such that the output of this temporary relation is available and is used by the query that is associated with the WITH clause.

- Similar to Views, but it's not saved on disk. It's available temporarily with its associate query.

  Note: queries that have an associated WITH clause can also be written using nested sub-queries but doing so add more complexity to read/debug the SQL query.

Example:

```sql
WITH temporaryTable (averageValue) as
(SELECT avg(Attr1) FROM Table)
SELECT Attr1
FROM Table, temporaryTable
WHERE Table.Attr1 > temporaryTable.averageValue;
```

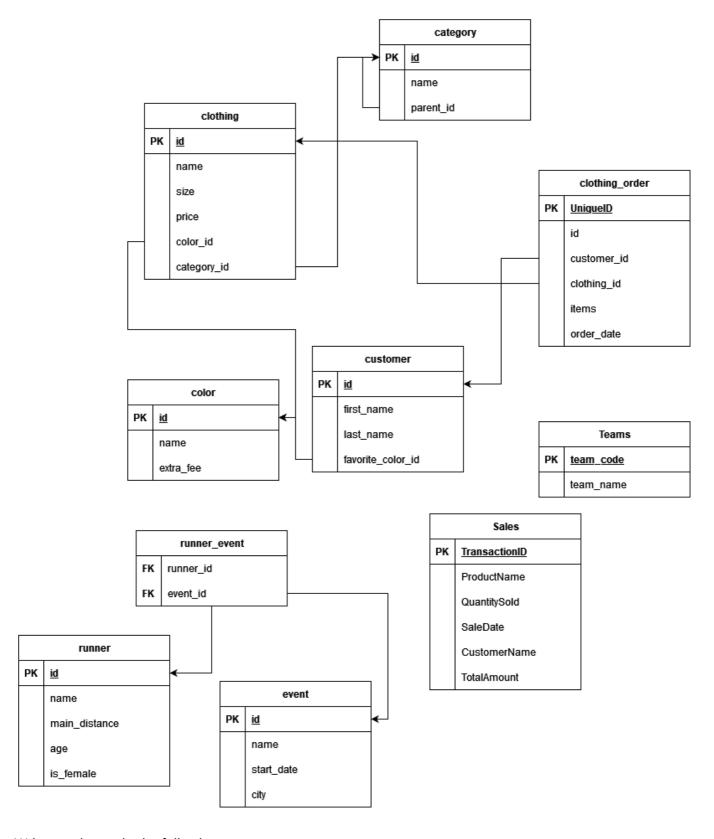# Practice

## Section 1

On CompanyDB:

- Get the employees' SSNs whose total working hours in all projects is unknown or zero
- What is the number of dependents in each department?
- Which department does not have dependents?
- Who is the manager of the department that has the highest number of projects?

In your In-Lab Project:

- Create a stored procedure to get a single project's info by its id, and display it in the "Project Details" page.

## Section 2

Download and execute *Lab10_ProblemSolving.sql* from Lab 10 folder.

Write queries to do the following:

1. Display the name of clothing items (name the column clothes), their color (name the column color), and the last name and first name of the customer(s) who bought this apparel in their favorite color. Sort rows according to color, in ascending order.
2. Select the last name and first name of customers and the name of their favorite color for customers with no purchases.
3. Select the name of the main categories (which have a NULL in the parent_id column) and the name of their direct subcategory (if one exists). Name the first column category and the second column

subcategory
- o Save the result as a VIEW called CatSubCategory.

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1. Select the main distance and the number of runners that run the given distance (runners_number). Display only those rows where the number of runners is greater than 3.
2. Display the event name and the number of club members that take part in this event (call this column runner_count). Note that there may be events in which no club members participate. For these events, the runner_count should equal 0.

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1. Categorize sales based on total amount. IF total sales:
    - o Less than or equal to 1000, it should be categorized as low.
    - o Greater than 1000 and less than 2000 , it should be categorized as medium.
    - o Otherwise, it should be categorized as high.
2. Query to calculate discounted price based on quantity purchased
    - o If a customer purchases 5 or more of a product, they receive a 10% discount on the total price. Otherwise, if they purchase less than 5, they pay the regular price without any discount

## Section 3

Solve the following problems on leetcode:

1. https://leetcode.com/problems/recyclable-and-low-fat-products/?envType=study-plan-v2&envId=top-sql-50
2. https://leetcode.com/problems/find-customer-referee/?envType=study-plan-v2&envId=top-sql-50
3. https://leetcode.com/problems/big-countries/?envType=study-plan-v2&envId=top-sql-50
4. https://leetcode.com/problems/article-views-i/?envType=study-plan-v2&envId=top-sql-50