Project 1: Power Consumption Tracker

Creating Database Schema

Note: Creating database schema for the project must be done individually.

1. Create **Database Schemas** for following tables with the required constraints as provided.

    a. Create the table **Customer** with the following attributes,

        - Customer Id (Primary Key)
        - Name (Not Null)
        - Address (Not Null)
        - Phone Number (Not Null)
        - Email (Unique Key)

    b. Add some dummy data in the **Customer** table.

    c. Create the table **Meter** with following attributes,

        - Meter Id (Primary Key)
        - Customer Id (Foreign Key, add ON DELETE CASCADE constraint)
        - Installation Date (Valid Date, Not Null)
        - Last reading Date (Valid Date, Not Null)

    d. Add some dummy data in the **Meter** table.

    e. Create the table **Electricity Usage** with following attributes,

        - Usage Id (Primary Key)
        - Meter Id (Foreign Key, add ON DELETE CASCADE constraint)
        - Reading Date (Valid Date, Not Null)
        - Usage Units (Numeric, add CHECK constraint to prevent negative values)

    f. Add some dummy data in the **Electricity Usage** table.

    g. Create the table **Bill** with following attributes,

        - Bill Id (Primary Key)
        - Meter Id (Foreign Key, add ON DELETE CASCADE constraint)
        - Bill Date (Valid Date, Not Null)
        - Amount due (Numeric, add CHECK constraint to prevent negative values)
        - Due Date (Valid Date, Not Null)
        - Paid (Not Null and it can hold 0 (false) or 1 (true), indicating if the bill has been paid or not with a DEFAULT value of 0)

    h. Add some dummy data in the **Bill** table.

    i. Create the table **Payment** with following attributes,
        - Payment Id (Primary Key)
        - Bill Id (Foreign Key, add ON DELETE CASCADE constraint)
        - Payment Date (Valid Date, Not Null)
        - Amount Paid (Numeric and add CHECK constraint to prevent negative values)

j. Add some dummy data in the **Payment** table.

k. Write a query to fetch the records of all the above tables.

l. Write a query to get total electricity usage per Meter, only for meters with usage greater than 200 units.

m. Write a query to list all customers and their total unpaid bill amounts, ordered by amount due in descending.

n. Write a query to get all bills along with payment status, sorted by BillDate in ascending.

o. Write a query to find all customers who have at least one meter installed after '2023-12-31'.

p. Write a query to show meters with their last reading date and the total usage units in descending order of usage.