# DATABASE

## 1- **Tables:**

**Customers** - Contains information about customers.

- **Columns**: customer_id (Primary Key), first_name, last_name, email, phone_number.

**Products** - Stores information about various products.

- **Columns**: product_id (Primary Key), product_name, category, unit_price.

**Orders** - Keeps track of customer orders.

- **Columns:** order_id (Primary Key), customer_id (Foreign Key), order_date, total_amount.

**Order_Items** - Represents the many-to-many relationship between orders and products.

- **Columns**: order_id (Foreign Key), product_id (Foreign Key), quantity, subtotal.

Answer the following queries on the basis of the tables mentioned above:

1- Retrieve the list of all customers along with the total amount they have spent on orders.
2- List the products that belong to a specific category.
3- Find the customers who have placed the highest and lowest total amount orders.
4- Retrieve the details of a specific order, including customer information and product details.
5- List the top N products based on the total quantity sold.
6- Find the average total amount spent by customers.
7- Retrieve the products that have never been ordered.
8- List the customers who have placed orders on a specific date.
9- Find the products with the highest and lowest unit prices.
10- Retrieve the total quantity sold for each product.
11- List the orders with the highest and lowest total amounts.
12- Find the customers who have not placed any orders.
13- Retrieve the average quantity of products ordered in each category.
14- List the products that have been ordered by more than a specified number of customers.
15- Find the total revenue generated by each category.

## 2- **Tables:**

**Authors** - Contains information about authors.

- **Columns**: author_id (Primary Key), first_name, last_name, birth_date.

**Books** - Stores information about various books.

- **Columns**: book_id (Primary Key), title, publication_date, genre, author_id (Foreign Key).

**Publishers** - Keeps track of different publishers.

- **Columns**: publisher_id (Primary Key), publisher_name, location.

**Book_Loans** - Represents the many-to-many relationship between books and readers who borrowed them.
- **Columns**: book_id (Foreign Key), reader_id (Foreign Key), loan_date, return_date.

Answer the following queries based on the schema mentioned above:

1- Retrieve the list of all customers along with the total amount they have spent on orders.
2- List the products that belong to a specific category.
3- Find the customers who have placed the highest and lowest total amount orders.
4- Retrieve the details of a specific order, including customer information and product details.
5- List the top 3 products based on the total quantity sold.
6- Find the average total amount spent by customers.
7- Retrieve the products that have never been ordered.
8- List the customers who have placed orders on January 15, 2023.
9- Find the products with the highest and lowest unit prices.
10- Retrieve the total quantity sold for each product.
11- List the orders with the highest and lowest total amounts.
12- Find the customers who have not placed any orders.
13- Retrieve the average quantity of products ordered in each category.
14- List the products that have been ordered by more than 5 customers.
15- Find the total revenue generated by each category.
16- Retrieve the list of products whose names contain the word 'electronics'.
17- Increase the unit price of all products in the 'Electronics' category by 10%.
18- Find the customers who have placed orders for products with a unit price higher than the average unit price across all categories.
19- Retrieve the email addresses of customers that end with '@domain.com'.
20- Update the total amount of orders to include a 5% discount for all customers who have placed orders in the 'Electronics' category.

## 3- **Tables:**

**Students** - Contains information about students.
- **Columns**: student_id (Primary Key), first_name, last_name, birthdate, gender.

**Courses** - Stores information about various courses.
- **Columns**: course_id (Primary Key), course_name, credit_hours, instructor.

**Enrollments** - Represents the many-to-many relationship between students and courses.
- **Columns**: student_id (Foreign Key), course_id (Foreign Key), enrollment_date, grade.

**Instructors** - Keeps track of information about instructors.
- **Columns**: instructor_id (Primary Key), instructor_name, department, hire_date.

1-Retrieve the list of students who have enrolled in multiple courses, along with the count of courses for each student.

2- List the courses that currently have the highest enrollment, along with the number of students enrolled in each.
3- Find the instructors who have the highest and lowest average student grades.
4- Retrieve the courses with the longest and shortest duration based on credit hours.
5- List the students who have not enrolled in any courses.
6- Find the instructors who have taught courses in multiple departments.
7- List the departments with the highest and lowest average instructor hire date.
8- Retrieve the courses that have not started yet.
9- Find the courses with the highest and lowest average student grades.
10- List the students who have received the highest and lowest grades.
11- Retrieve the courses where the instructor's name contains the word 'Professor'.
12- Find the instructors who have not taught any courses.
13- List the courses with the highest and lowest credit hours.
14- Retrieve the average credit hours for courses in each department.
15- Find the instructors who have taught the same course to multiple batches of students.