Below are the tasks with SQL queries and their expected outputs in a table format, including fields from both the orders and customers tables:

Customers Table:

- CustomerId: Unique identifier for each customer.
- CustomerName: Name of the customer.
- Email: Email address of the customer.
- Phone: Phone number of the customer
- DepartmentId: Identifier for the department to which the customer belongs.

Orders Table:

- OrderId: Unique identifier for each order.
- CustomerId: Identifier for the customer who placed the order.
- OrderDate: Date when the order was placed.
- TotalAmount: Total amount of the order.

Departments Table:

- DepartmentId: Unique identifier for each department.
- DepartmentName: Name of the department.
- location: Location of the department.

Tasks:

1. Retrieve a list of orders along with the names of customers who placed those orders. Include only orders placed by existing customers.

Expected Output:

Order ID	Customer Name	Order Date
101	John Doe	2024-02-15
102	Jane Smith	2024-02-16

2. Retrieve a list of all orders along with the names of customers who placed those orders. Include orders placed by customers who are not registered in the system.

Expected Output:

Order ID	Customer Name	Order Date
101	John Doe	2024-02-15
102	Jane Smith	2024-02-16

103	NULL	2024-02-17

3. Retrieve a list of all customers who placed orders, even those without any orders. Include the details of orders they placed, if any.

Expected Output:

Order ID	Customer Name	Order Date
101	John Doe	2024-02-15
102	Jane Smith	2024-02-16
NULL	Michael Johnson	NULL

4. Retrieve a comprehensive list of all orders and customers, including those without any orders and customers who haven't placed any orders.

Expected Output:

Order ID	Customer Name	Order Date
101	John Doe	2024-02-15
102	Jane Smith	2024-02-16
103	NULL	2024-02-17
NULL	Michael Johnson	NULL

5. Generate a list of all possible combinations of orders and customers.

Expected Output:

Order ID	Customer Name	Order Date
101	John Doe	2024-02-15
101	Jane Smith	2024-02-15
101	Michael Johnson	2024-02-15
102	John Doe	2024-02-16
102	Jane Smith	2024-02-16
102	Michael Johnson	2024-02-16

103	John Doe	2024-02-17
103	Jane Smith	2024-02-17
103	Michael Johnson	2024-02-17

6. Retrieve the top 3 customers who have spent the highest total amount.

Expected Output:

Customer ID	Customer Name	Total Orders	Total Amount Spent
2	Jane Smith	3	400.00
1	John Doe	2	250.00
3	Michael Johnson	1	150.00

7. Retrieve the details of customers who have not placed any orders.

Expected Output:

Customer ID	Customer Name	Email	Phone
4	Bob Brown	bob@example.com	1234567890

8. Retrieve the total number of orders and total amount spent by each customer for orders placed in 2024.

Expected Output:

Customer ID	Customer Name	Total Orders	Total Amount Spent
1	John Doe	1	100.00
2	Jane Smith	2	250.00
3	Michael Johnson	1	150.00
4	Bob Brown	0	NULL

9. Retrieve the top 5 departments with the highest average total amount spent by customers in orders.

Expected Output:

Department ID	Department Name	Average Total Amount Spent
2	Marketing	300.00
1	Sales	275.00
3	Finance	250.00
4	IT	200.00
5	HR	150.00

10. Retrieve the department with the highest total number of orders.

Expected Output:

Department ID	Department Name	Total Orders
1	Sales	5

11. Retrieve the top 3 customers who have the highest total amount spent on orders in 2024. **Expected Output:**

Customer ID	Customer Name	Total Amount Spent
2	Jane Smith	400.00
1	John Doe	250.00
3	Michael Johnson	150.00

12. Retrieve the details of departments with at least 2 employees and the total number of orders placed by those employees.

Expected Output:

Department ID	Department Name	Total Orders
1	Sales	5
2	Marketing	3

13. Retrieve the customers who have placed orders both in 2023 and 2024.

Expected Output:

Customer ID	Customer Name	Email	Phone
1	John Doe	john@example.com	1234567890