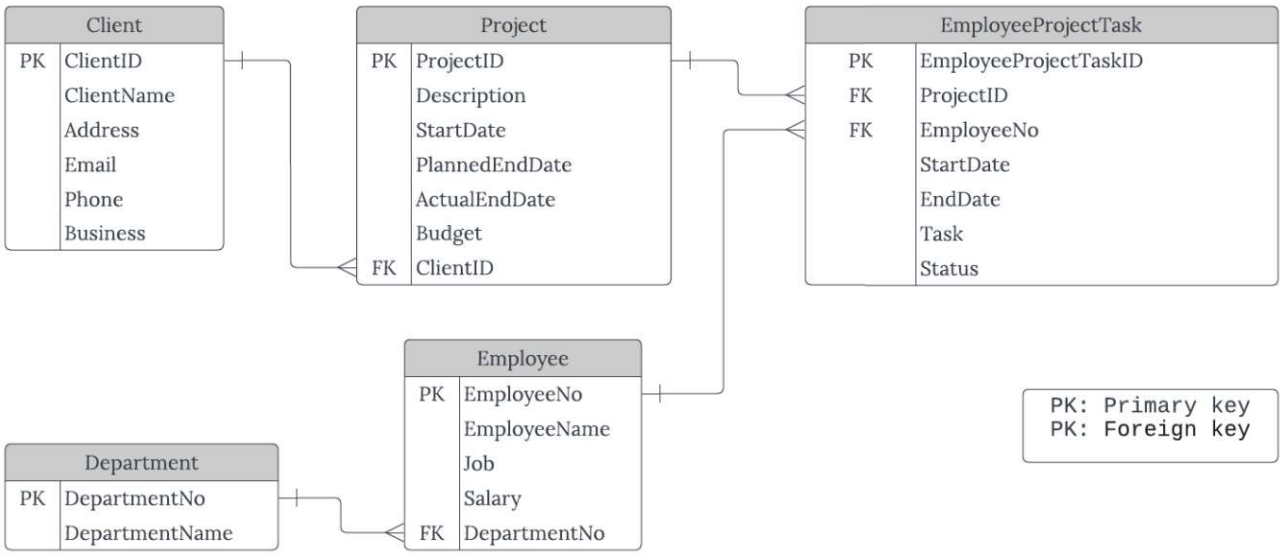
Basic Databases – Lab 06



In this SQL assignment, you are required to use the attached **Lab_06.sql** file to create a database and then write SQL queries using various techniques.

Using Common Table Expressions (CTE): (1 point)

For Tasks 1 to 3, you are required to use CTE in your SQL code. Specifically, you need to:

1. Display the client name, project description, and status.

```
-- Define the CTE expression name and column list
With Clients_CTE(ClientName, Description, Status)
```

Results:

ClientName	Description	Status
Nokia	Nokia Corporation is a F...	In Process
SamSung	Samsung follows a simp...	Complete

2. Display the departments that have at least three employees.

```
-- Define the CTE expression name and column list
WITH Departments_CTE(DepartmentNo, DepartmentName)
```

Example:

EmployeeNo	Employee...	Job	Salary	DepartmentNo
10001	Georgi Face...	*NULL*	1800	101
10002	Bezalel Sim...	*NULL*	1900	102
10003	Parto Bamf...	*NULL*	4700	102
10004	Kyoichi Mali...	*NULL*	2100	103
10005	Mingsen Ca...	*NULL*	2200	103
10006	Mayumi Sch...	*NULL*	2300	103
NULL	*NULL*	*NULL*	*NULL*	*NULL*

Results:

DepartmentNo	DepartmentName
103	Testing

3. Display the average salary by department and count how many employees had salaries equal to or above (≥) their respective department average.

Example:

	EmployeeNo	EmployeeName	Salary	DepartmentNo
1	10001	Georgi Facello	1800	101
2	10002	Bezalel Simmel	1900	102
3	10003	Parto Bamford	4700	102
4	10004	Kyoichi Maliniak	2100	103
5	10005	Mingsen Casley	2200	103
6	10006	Mayumi Schueller	2300	103

Results:

Department No	Average salary	employees_equal_or_above_average
101	1800	1
102	3300	1
103	2200	2

Explanations:

(1) Average salary = 1800 => the number of employees have the salary ≥ Average_Salary = 1

(2) Average salary = (1900+4700)/2 = 3300 => the number of employees have the salary ≥ Average_Salary = 1

(3) Average salary = (2100+2200+2300)/3 = 2200 => the number of employees have the salary ≥ Average_Salary = 2

Using SQL Views: (1 point)

For Tasks 4 and 5, you are required to use SQL views. Specifically, you need to:

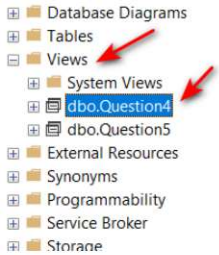
4. Create a view that displays the departments and total salary payable in each department.

Example:

	EmployeeNo	EmployeeName	Salary	DepartmentNo	
1	10001	Georgi Facello	1800	101	→ 1800
2	10002	Bezalel Simmel	1900	102	
3	10003	Parto Bamford	4700	102	→ 6600
4	10004	Kyoichi Maliniak	2100	103	
5	10005	Mingsen Casley	2200	103	→ 6600
6	10006	Mayumi Schueller	2300	103	

Results:

	DepartmentNo	DepartmentName	Sum_salary
1	101	Design	1800
2	102	Development	6600
3	103	Testing	6600

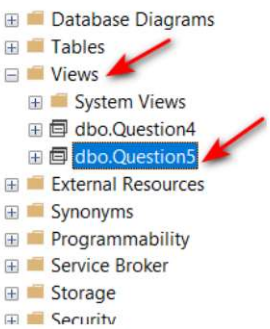


5. Create a view that displays the first three characters of each client name.

Results:

ults Messages

	ClientName	First 3 characters
	Nokia	Nok
	SamSung	Sam



Using Stored Procedures: (1.5 point)

For Tasks 6 to 9, you are required to use stored procedures in your SQL code. Specifically, you need to:

6. Create and execute a stored procedure named Employee_GetAll that displays EmployeeNo, EmployeeName, Job, and Salary.

   Results:

EmployeeNo	EmployeeName	Job	Salary
10001	Bezalel	IT developer	30000
10002	Parto	IT Support	30000
10003	Chirstian	IT developer	30000
10004	Kyoichi	IT developer	30000
10005	Anneke	IT Support	30000

7. Create and execute a stored procedure named Employee_Insert that inserts a row into the Employee table.

   Note: This stored procedure should accept five parameters, one for each of these columns: EmployeeNo, EmployeeName, Job, Salary, and DepartmentNo.

8. Create and execute a stored procedure named Client_Update that updates the ClientName column in the Client table.

   Note: This procedure should have one parameter for the ClientID and another for the ClientName.

9. Create and execute a stored procedure named Employee_Delete that deletes a row from the Employee table that matches the primary key.

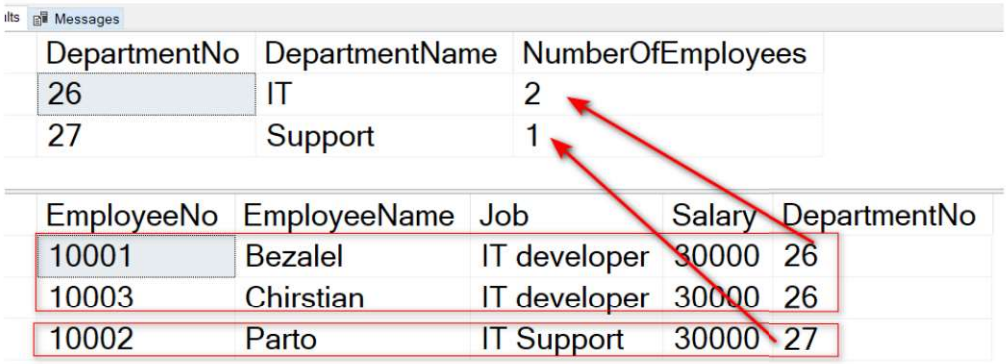
   Note: This procedure should have one parameter for the EmployeeNo.

Using Triggers: (0.5 point)

For Task 10, you are required to use a trigger in your SQL code. Specifically, you need to:

10. Modify the Department table and add a new column called NumberOfEmployees (int). Create a trigger to increase the NumberOfEmployees column value when inserting a new row into the Employee table.

    Results:



Messages

DepartmentNo	DepartmentName	NumberOfEmployees
26	IT	2
27	Support	1

EmployeeNo	EmployeeName	Job	Salary	DepartmentNo
10001	Bezalel	IT developer	30000	26
10003	Chirstian	IT developer	30000	26
10002	Parto	IT Support	30000	27

Using Microsoft SQL Server Integration Services (SSIS): (1 point)

As part of this SQL assignment, you are working for a company that needs to import data from various flat files into a SQL Server database. Specifically, the company receives two types of files: text files and Excel spreadsheets.

To accomplish this task, you are required to write an SSIS package that performs the following functions:

1. Use the *DimCustomer.sql* script to create a new table named DimCustomer.
2. Read the data from the attached text (*DimCustomer.txt*) or Excel (*DimCustomer.xlsx*) file and store it in a SQL Server table called DimCustomer.

To complete this task, you will need to write the SQL Server Integration Services package using SSIS. It is assumed that you have already created the necessary SQL Server connections and that the appropriate permissions are in place.

--- The end ---