

## 1. Database

- a. Please answer the following questions based on the database tables as below: -

### Department Table

ID	Code	Description
1	IT	IT Department
2	AC	Account Department
3	MK	Marketing Department

### Employee Table

ID	Code	Name	Salary	DepartmentID
1	A001	David	3500	1
2	A002	Kelvin	4000	2
3	A003	Jimmy	6000	1
4	A004	Jason	3500	1
5	A005	Albert	4500	2

- i. Please write a SQL query to count the total employee for each department code.
- ii. Please write a SQL query to filter the salary range between 3000 and 4000, then sort them by department code, and following by Name.
- b. Please design the database structure based on the points given as below: -
- The database is for the tuition center management system purpose.
  - The tuition center specializes in subjects Math, Science and English.
  - Each year has 4 semesters.
  - Each semester has 2 classes for each subject.
  - Students will be enrolled into class once they have registered.

**Answer:**

Ai)

```
SELECT d.Code AS DepartmentCode, COUNT(e.ID) AS TotalEmployees
FROM Employee e
JOIN Department d ON e.DepartmentID = d.ID
GROUP BY d.Code;
```

Aii)

```
SELECT e.Code, e.Name, e.Salary, d.Code AS DepartmentCode
FROM Employee e
JOIN Department d ON e.DepartmentID = d.ID
WHERE e.Salary BETWEEN 3000 AND 4000
ORDER BY d.Code, e.Name;
```

Bi)

<b>Student Table</b>	
Column Name	Description
StudentID	Primary Key (Unique ID)
Name	Student's full name
DateOfBirth	Date of birth of the student
RegisteredDate	Date the student registered

Bii)

<b>Subject Table</b>	
Column Name	Description
SubjectID	Primary Key (Unique ID)

Biii)

<b>Semester Table</b>	
Column Name	Description
SemesterID	Primary Key (Unique ID)
Year	Year number (e.g., 1, 2, 3, 4)
SemesterNumber	Semester number (e.g., 1 or 2)

Biv)

<b>Class Table</b>	
Column Name	Description
ClassID	Primary Key (Unique ID)
SemesterID	Foreign Key to Semester Table
SubjectID	Foreign Key to Subject Table
ClassName	Name of the class (e.g., Math_Sem1_A)

Bv)

Enrollment Table	
Column Name	Description
EnrollmentID	Primary Key (Unique ID)
StudentID	Foreign Key to Student Table
ClassID	Foreign Key to Class Table
EnrollmentDate	Date when student enrolled in the class