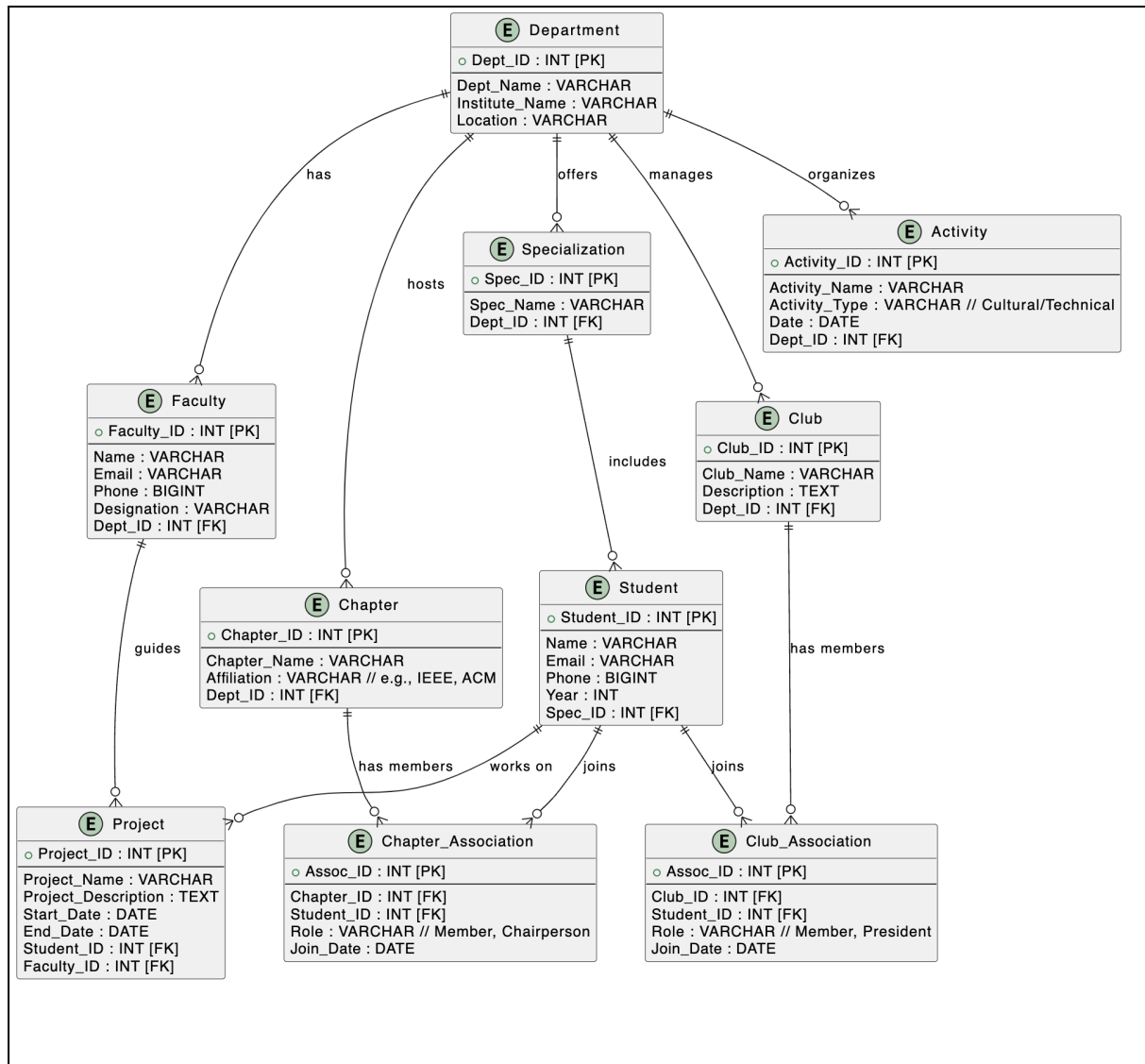


Assignment Number- 2 (B)

Title:

Implement a database using MySQL(DDL,DML)



1. Create Department Table

```
mysql> select*from department;
```

DeptID	DeptName
1	Computer Science
2	Electrical Engineering
3	Mechanical Engineering

2. Create Specialization Table

```
mysql> select*from specialization;
```

SpecID	SpecName	DeptID
1	Artificial Intelligence	1
2	Cybersecurity	1
3	Power Systems	2
4	Thermal Engineering	3

3. Create Student Table

```
mysql> select*from student;
```

StudentID	StudentName	SpecID
1	Alice	1
2	Bob	2
3	Charlie	3
4	David	4
5	Emma	1
6	Frank	2

4. Create Faculty Table

```
mysql> select*from faculty;
```

FacultyID	FacultyName	DeptID
1	Dr. Smith	1
2	Dr. Johnson	2
3	Dr. Brown	3

5. Create Project Table

```
mysql> select*from project;
```

ProjectID	ProjectName	StudentID	FacultyID
1	AI Chatbot	1	1
2	Cybersecurity Framework	2	1
3	Renewable Energy System	3	2
4	Heat Transfer Optimization	4	3

6.Create Activity Table

```
mysql> select*from activity;
```

ActivityID	ActivityName	ActivityYear
1	Hackathon	2024
2	Research Symposium	2023
3	Industry Workshop	2024

7.Create Club Table

```
mysql> select*from club;
```

ClubID	ClubName	DeptID
1	AI Club	1
2	Robotics Club	2
3	Automobile Club	3

8.Create Chapter Table

```
mysql> select*from chapter;
```

ChapterID	ChapterName	Affiliation
1	IEEE Student Chapter	IEEE
2	ACM Chapter	ACM

2 rows in set (0.00 sec)

9.Create Club_Association Table

```
mysql> Select*from club_association;
```

ClubID	StudentID
1	1
1	2
2	3
3	4

10. Create Chapter_Association Table

```
mysql> select*from chapter_association;
```

ChapterID	StudentID
1	1
2	2

QUERIES:

1. List all Students in a specific Specialization

```
mysql> SELECT StudentID, StudentName FROM Student WHERE SpecID = (SELECT SpecID FROM Specialization WHERE SpecName = 'Cybersecurity');
```

StudentID	StudentName
2	Bob
6	Frank

2. List all Projects along with their Student and Faculty Guides

```
mysql> SELECT P.ProjectID, P.ProjectName, S.StudentName, F.FacultyName  
-> FROM Project P  
-> JOIN Student S ON P.StudentID = S.StudentID  
-> JOIN Faculty F ON P.FacultyID = F.FacultyID;
```

ProjectID	ProjectName	StudentName	FacultyName
1	AI Chatbot	Alice	Dr. Smith
2	Cybersecurity Framework	Bob	Dr. Smith
3	Renewable Energy System	Charlie	Dr. Johnson
4	Heat Transfer Optimization	David	Dr. Brown

3. List all Clubs in the Department

```
mysql> SELECT ClubID, ClubName FROM Club WHERE DeptID = (SELECT DeptID FROM Department WHERE DeptName = 'Computer Science');
```

ClubID	ClubName
1	AI Club

4. List all Activities conducted in a given year

```
mysql> SELECT * FROM Activity WHERE ActivityYear = 2024;
```

ActivityID	ActivityName	ActivityYear
1	Hackathon	2024
3	Industry Workshop	2024

5. List all Chapters and their affiliations

```
mysql> SELECT ChapterName, Affiliation FROM Chapter;
+-----+-----+
| ChapterName | Affiliation |
+-----+-----+
| IEEE Student Chapter | IEEE |
| ACM Chapter | ACM |
+-----+-----+
2 rows in set (0.00 sec)
```

6.Count of Students in each Specialization

```
mysql> SELECT SpecName, COUNT(StudentID) AS StudentCount
-> FROM Specialization
-> LEFT JOIN Student ON Specialization.SpecID = Student.SpecID
-> GROUP BY Specialization.SpecID, SpecName;
+-----+-----+
| SpecName | StudentCount |
+-----+-----+
| Artificial Intelligence | 2 |
| Cybersecurity | 2 |
| Power Systems | 1 |
| Thermal Engineering | 1 |
+-----+-----+
4 rows in set (0.01 sec)
```

7.List all Students participating in a specific Club

```
mysql> SELECT S.StudentID, S.StudentName
-> FROM Student S
-> JOIN Club_Association CA ON S.StudentID = CA.StudentID
-> WHERE CA.ClubID = (SELECT ClubID FROM Club WHERE ClubName = 'AI Club');
+-----+-----+
| StudentID | StudentName |
+-----+-----+
| 1 | Alice |
| 2 | Bob |
+-----+-----+
2 rows in set (0.00 sec)
```

Conclusion:

In this assignment, we implemented a database using MySQL by creating multiple tables such as Department, Specialization, Student, Faculty, Project, Activity, Club, and Chapter. We also performed various queries to retrieve meaningful data. This assignment helped in understanding DDL, DML operations, and query execution for efficient database management.