

# **Spring-2023 Final Project Report**

**Course Title:** CS-2005 Database Systems

**Section:** A

**Group members:**

1. 21I-0733 Irtiqa Haider
2. 21I-2502 Mansoor Ali
3. 21I-0411 Muhammad Sohaib



**Department of Computer Science**

**National University of Computing & Emerging Sciences**

**Islamabad, Pakistan**

[illegible]

The diagram illustrates the database structure for a university system. It includes the following entities and their attributes:

- Sections**: Section ID (PK), Total Students, Section Name, STYPE, Course ID (FK), User ID (FK), Lecture NO (FK), User ID (FK).
- Feedback**: Comment, Date, User ID (FK), User ID (FK).
- Users**: User ID (PK), Name, Password, Email, Role.
- Department**: Dept ID (PK), Dept Name.
- Courses**: Course ID (PK), Course Name, Credit Hrs, Pre Req, Type, Semester ID (FK), User ID (FK).
- Grades**: Total Marks, Grade, Points, Course ID (FK).
- Evaluation**: Weightage, Obtained Marks, Total Marks, Average, Minimum, Maximum, Course ID (FK).
- Administrator**: User ID (FK), Admin ID (U).
- Student**: User ID (FK), Roll\_NO (U), Batch, Campus, Status, CNIC, Phone\_NO, Address, Degree ID (FK).
- Semester**: Semester ID (PK), Semester GPA, Credit Hrs Allowed, Degree ID (FK).
- Degree**: Degree ID (PK), Start Time, End Time, Credits Hrs Completed.
- Attendance**: Lecture NO (PK), Date, Presence, Duration.
- Course Instructor**: User ID (FK), Coordinates\_User ID (FK).
- Lab Instructor**: User ID (FK).
- Can Read**: User ID (FK).
- Gives**: User ID (FK).

Relationships are indicated by lines connecting the entities, with crow's foot notation symbols (one-to-many, mandatory, etc.) at the connection points.

## **Relationship Mapping:**

### **Degree one to many with Student**

One student can take a degree at a time but a lot of students go for a single degree at a time.

### **Course one to many with Section**

One course can have many sections but one section will be of a single course.

### **Semester one to many with course**

One semester can have many courses but a single course will be enrolled once in a degree and once in a semester.

### **Section one to many Attendance**

One Section will have attendance of students on a daily basis. So, the section has one to many relations with attendance.

### **Courses one to one with Grades**

Course has one to one relation with grades because one course can only have one grade for a student.

### **Courses one to one with Evaluation**

Courses have one to one relation with evaluation because one course will have only one evaluation sheet.

### **Users disjoint with Administrator, Student, Faculty**

A user can only be a student, administrator or student or faculty. A man who works in administration will not be a student and a man who's in faculty can be a student.

**Student many to many with feedback**

A student can submit many feedback about a different teacher and single feedback will be shared to a single student for different teachers.

**Faculty many to one with Department**

A single department can have a group of faculties and one faculty will only belong to a single department.

**Feedback one to many with Faculty**

A faculty can have a lot of feedback about itself and feedback will only belong to specific feedback.

**Lab instructor one to many with Section**

A specific Lab instructor can teach many labs but a lab can only have one demonstrator.

**Course instructor one to many with Section**

A specific Courses instructor can teach many labs but a lab can only have one demonstrator.

**Administrator one to many with course**

Only one administrator can offer many courses.

**Course Coordinator one to one relation**

Only one course coordinator will be present for a course at a time.

**Student one to many with course**

A student can unroll many courses in a single semester but a student can't take a single course twice in degree.