



Faculty of Technology and Engineering

Chandubhai S. Patel Institute of Technology (CSPIT)

Department of Computer Science & Engineering

Date: / /

Laboratory Manual

Academic Year	:	2024-25	Semester	:	4
Course code	:	CSE206	Course name	:	DATABASE MANAGEMENT SYSTEM

Practical - 7

- **Aim:** - As a database administrator for a university, you are tasked with designing and implementing a database schema in the MS Access tool. This database should efficiently manage relationships between departments, courses, students, and their academic performance. To ensure data integrity and consistency, you will define master-slave relationships with appropriate integrity constraints.

The university database consists of the following entities:

1. Department (Master Table):

- Stores information about university departments.
- Attributes: Dept_ID (Primary Key), Dept_Name (Not Null, Unique).

2. Course (Slave Table):

- Stores courses offered by departments.
- Attributes: Course_ID (Primary Key), Course_Name (Not Null), Dept_ID (Foreign Key referencing Department).

3. Student (Slave Table):

- Stores details of enrolled students.
- Attributes: Student_ID (Primary Key), Student_Name (Not Null), Dept_ID (Foreign Key referencing Department).

4. Enrollment (Slave Table):

- Tracks student enrollments in courses.
- o Attributes: Enrollment_ID (Primary Key), Student_ID (Foreign Key referencing Student), Course_ID (Foreign Key referencing Course), Grade.

Tasks:-**1. Create Master Table (Department):**

- o Design a Department table with Dept_ID as the Primary Key.
- o Enforce the following constraints:
 - Dept_Name must be unique.
 - No null values in Dept_Name.

Dept_ID	Dept_Name	Click to Add
D001	Computer Engg	
D002	Electronics	
D003	Civil Engg	

2. Create Slave Table (Course):

- o Design a Course table with Course_ID as the Primary Key.
- o Establish a relationship with the Department table using the Dept_ID foreign key.
- o Enforce referential integrity with the following rules:
 - Cascade updates: If a Dept_ID is updated in the Department table, the corresponding Dept_ID in the Course table should update automatically.
 - Restrict deletions: Prevent deleting a department if courses are linked to it.

Course_ID	Course_Nam	Dept_ID
C001	Data Structures	D001
C002	Circuit Theory	D002

3. Create Slave Table (Student):

- Design a Student table with Student_ID as the Primary Key.
- Establish a relationship with the Department table using the Dept_ID foreign key.
- Enforce referential integrity to ensure that each student belongs to a valid department.

The screenshot shows the Microsoft Access interface. On the left, the 'All Access ...' pane displays a list of tables: Course, Department, Enrollment, Student (highlighted), and Queries (Query1). The main window shows the 'Student' table in Datasheet view. The table has three columns: Student_ID, Student_Name, and Dept_ID. The first two rows of data are visible: S001 (Alice, D001) and S002 (Bob, D003). A primary key symbol (asterisk) is shown in the first column header.

Student_ID	Student_Name	Dept_ID
S001	Alice	D001
S002	Bob	D003

4. Create Slave Table (Enrollment):

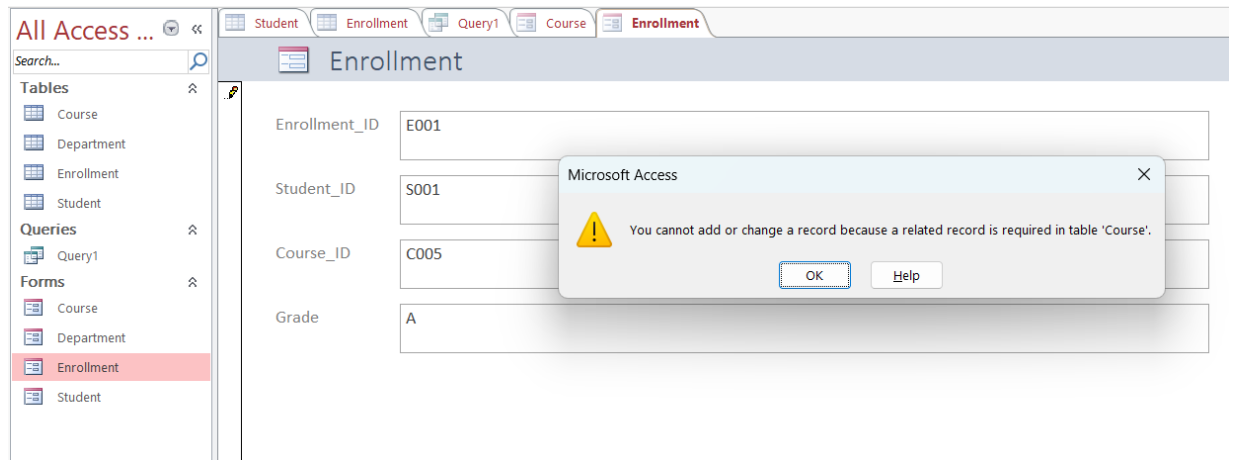
- o Design an Enrollment table with Enrollment_ID as the Primary Key.
- o Establish relationships:
 - Student_ID as a foreign key referencing the Student table.
 - Course_ID as a foreign key referencing the Course table.
- o Enforce referential integrity for cascading updates and restricting deletions:
 - Cascade updates: If a Student_ID or Course_ID is updated in their respective tables, the changes should reflect in the Enrollment table.
 - Restrict deletions: Prevent deleting a student or course if enrollment records exist.

The screenshot shows the Microsoft Access interface. On the left, the 'All Access ...' pane displays a list of tables: Course, Department, Enrollment (highlighted), Student, and Queries (Query1). The main window shows the 'Enrollment' table in Datasheet view. The table has four columns: Enrollment_ID, Student_ID, Course_ID, and Grade. The first row of data is visible: E001 (S001, C001, A). A primary key symbol (asterisk) is shown in the first column header.

Enrollment_ID	Student_ID	Course_ID	Grade
E001	S001	C001	A

5. Data Validation Rules:

- o Ensure that grades in the Enrollment table only accept valid values (A, B, C, D, F).



6. Data Entry:

- Populate the tables with sample data for departments, courses, students, and enrollments.
- Relationship :--

