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).

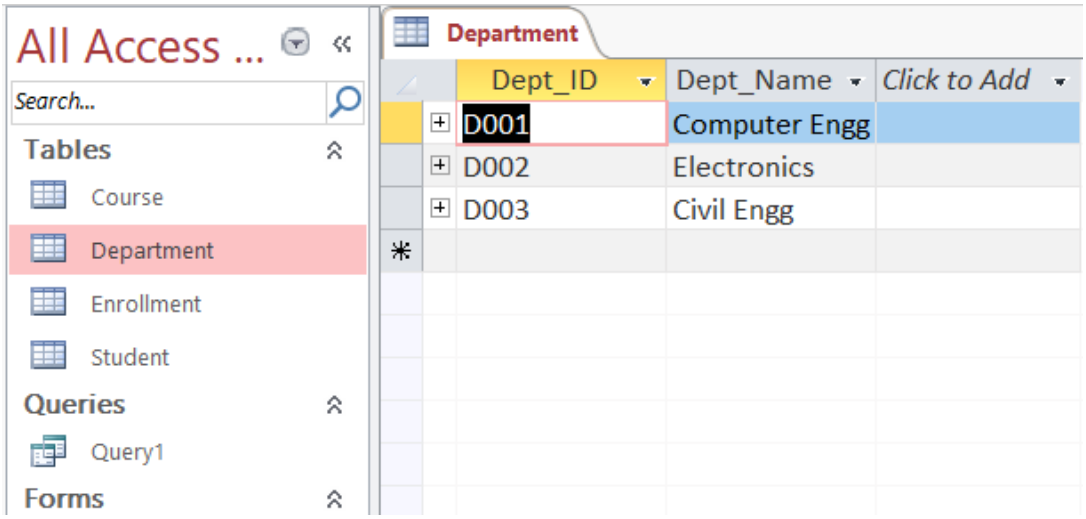
2. **Course (Slave Table):**
- Stores courses offered by departments.
- Attributes: Course_ID (Primary Key), Course_Name (Not Null), Dept_ID (Foreign Key referencing Department).

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

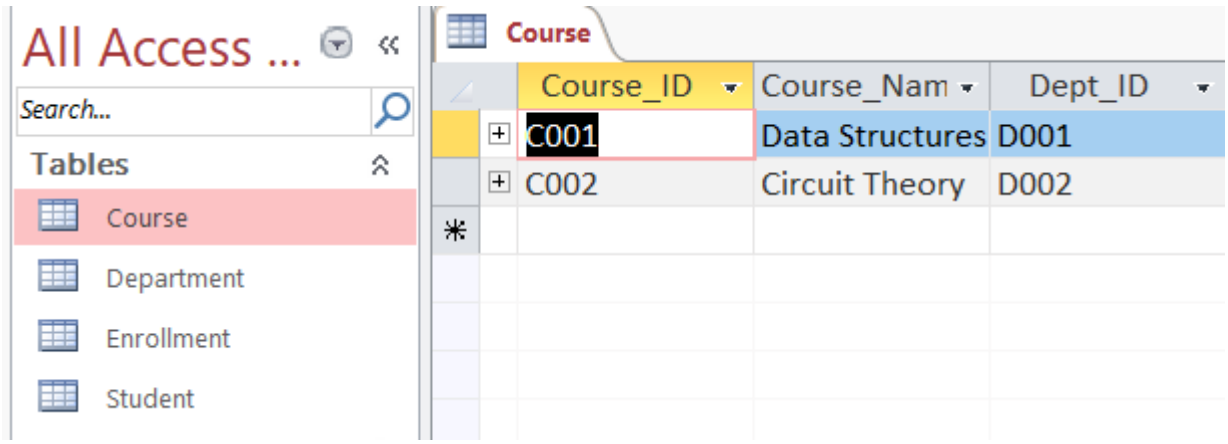
4. **Enrollment (Slave Table):**
- Tracks student enrollments in courses.
- o Attributes: Enrollment_ID (Primary Key), Student_ID (Foreign Key referencing Student), Course_ID (Foreign Key referencing Course), Grade.

Tasks:-

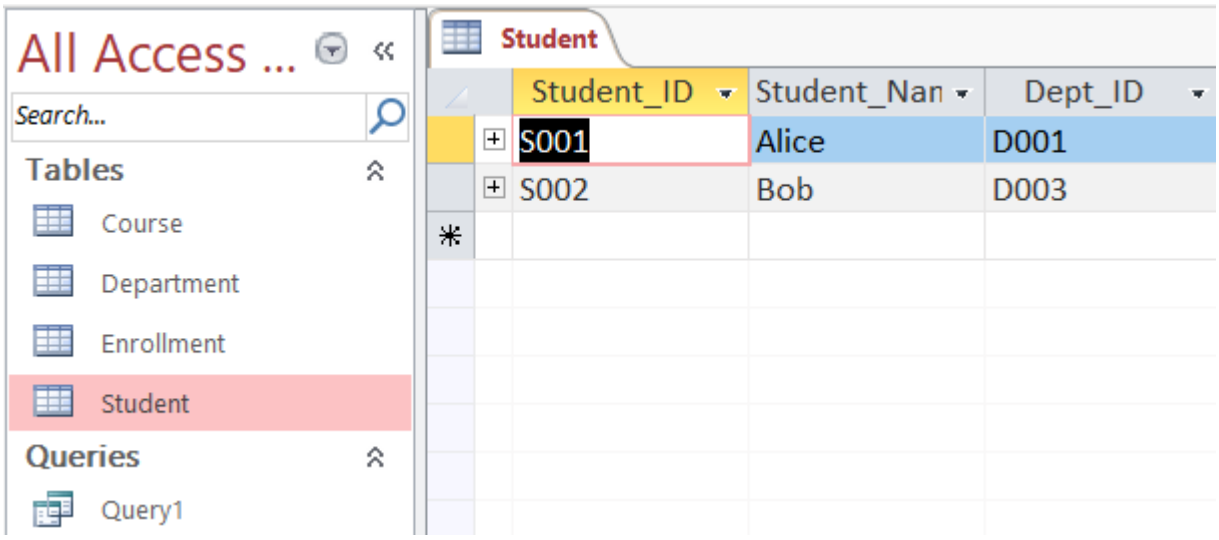
1. **Create Master Table (Department):**
   o Design a Department table with Dept_ID as the Primary Key.
   o Enforce the following constraints:
   - Dept_Name must be unique.
   - No null values in Dept_Name.



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.



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.

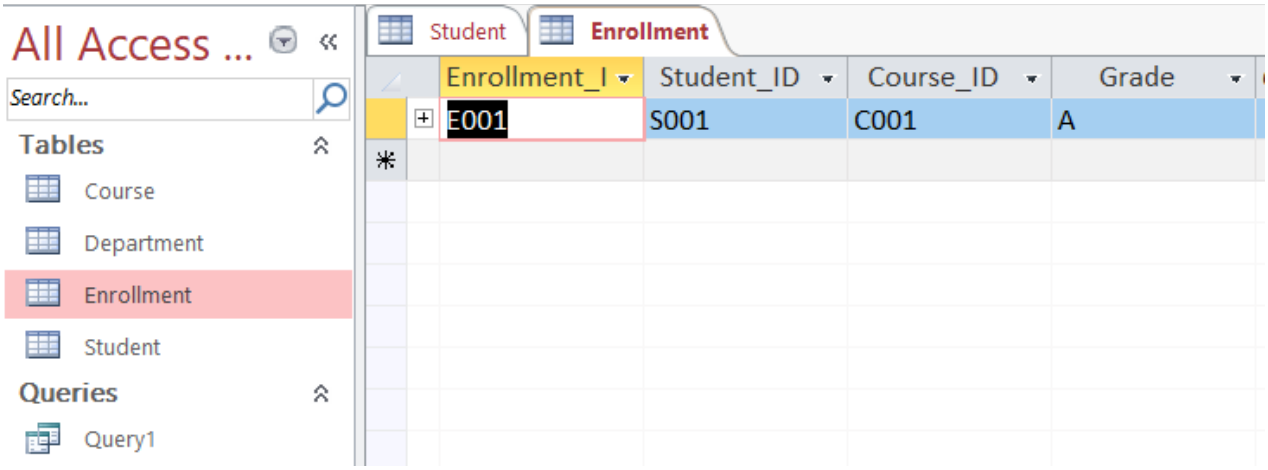


4. **Create Slave Table (Enrollment):**

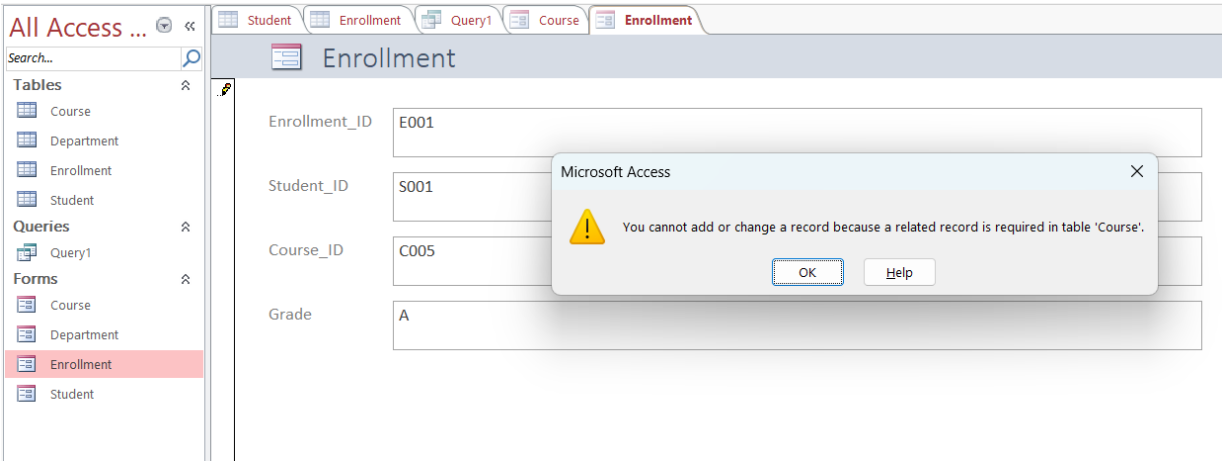
o Design an Enrollment table with Enrollment_ID as the Primary Key.

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.



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 :--