**Student Management System**

**The Student Management System is a program that helps schools keep track of students, their departments, courses, and addresses. It lets you add, update, view, and delete student details. It displays which students belong to which department and which courses they are enrolled in, making student information easy to manage and locate.**

**Entities Are**

1. **Student**
2. **Department**
3. **Address**
4. **Course**
5. **Enrollment**

**Features**

1. **Add, update, view, and delete student information.**
2. **Manage various departments, such as CSE and ECE etc.**
3. **Create and manage courses offered by the institution.**
4. **Track student enrollments in various courses.**
5. **Store and manage student addresses linked to their profiles.**

**Relations**

1. **Student — Department : ManyToOne**
2. **Department — Student: OneToMany**
3. **Student — Address: OneToOne**
4. **Student—Enrollment: OneToMany**
5. **Enrollment — Student: ManyToOne**
6. **Course — Enrollment: OneToMany**
7. **Enrollment — Course: ManyToOne**

**Explanation**

* **Many Students belong to One Department (ManyToOne)**
* **One Department has Many Students (OneToMany)**
* **One Student has One Address (OneToOne)**
* **One Student can have Many Enrollments (OneToMany)**
* **Each Enrollment belongs to One Student (ManyToOne)**
* **One Course can have Many Enrollments (OneToMany)**
* **Each Enrollment belongs to One Course (ManyToOne)**

**🔷 Table Schema**

**1. student**

| **Column** | **Type** | **Description** |
| --- | --- | --- |
| id | BIGINT | Primary Key |
| name | VARCHAR | Student name |
| email | VARCHAR | Unique |
| dob | DATE | Date of birth |
| department\_id | INT | FK → department |
| address\_id | INT | FK → address |

**2. Department**

| **Column** | **Type** | **Description** |
| --- | --- | --- |
| id | INT | Primary Key |
| name | VARCHAR | Unique department |

**3. address**

| **Column** | **Type** | **Description** |
| --- | --- | --- |
| id | INT | Primary Key |
| street | VARCHAR | Street name |
| city | VARCHAR | City |
| state | VARCHAR | State |
| pincode | VARCHAR | Pincode |

**4. course**

| **Column** | | **Type** | **Description** | |
| --- | --- | --- | --- | --- |
| id | | INT | Primary Key | |
| title | | VARCHAR | Course title | |
| description | | VARCHAR | Course details | |
|  |  | | |

**5. enrollment**

| **Column** | **Type** | **Description** |
| --- | --- | --- |
| id | INT | Primary Key |
| student\_id | INT | FK → student |
| course\_id | INT | FK → course |
| enrollment\_date | DATE | Date of enrollment |

**🔷 Core Functionalities**

**🧑‍🎓 Student Module**

* Add, View, Update, Delete Student
* Search by ID or Name
* View student with department and address

**🏢 Department Module**

* Add, View, Update, Delete departments
* Show all students under a department

**📘 Course Module**

* Add, View, Update, Delete courses
* Show all students enrolled in a course

**📝 Enrollment Module**

* Enroll student into course
* View all enrollments
* View courses of a student
* Delete enrollment (unenroll)

**🏠 Address Module**

* Automatically linked while adding student