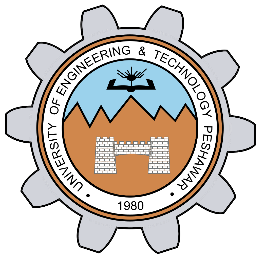
**KEY MILESTONE 2**

**COURSE REGISTRATION SYSTEM**



**Spring 2025**

**CSE-403L**

**Database Management Systems Lab**

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**Finalized Normalized Relational Schema (for Airline Reservation System):**

1. **Relational Schema:**

1. Student

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Student\_ID | Name | Email | Phone | Enrollment\_Number | Department\_ID |

2. Registration

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Registration\_ID | Registration\_Date | Status | Course\_ID, | Student\_ID |

3. Course

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Course\_ID | Course\_Name | Course\_Code | Credit\_Hours | Department\_ID | Instructor\_ID |

4. Instructor

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Instructor\_ID | First\_Name, | Last\_Name, | Email | Phone | Department\_ID |

5. Schedule

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Schedule\_ID, | Course\_ID, | Classroom\_ID | Day\_of\_Week | Start\_Time | End\_Time |

6. Classroom

|  |  |  |  |
| --- | --- | --- | --- |
| Classroom\_ID | Building\_Name | Room\_Number | Capacity |

7. Department

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Department\_ID, | Department\_Name | Office\_Location |  | contact\_Number |

**2. Normalization**

**I. Third Normal Form (3NF):**

1. No transitive dependencies.
2. Every non-key attribute is directly dependent only on the primary key.

**1. Student**

* **Primary Key:** Student\_ID
* **Foreign Key:** Department\_ID
* **Dependencies:** All attributes depend directly on Student\_ID
* **No transitive dependencies**

**2. Registration**

* **Primary Key:** Registration\_ID
* **Foreign Keys:** Student\_ID, Course\_ID
* **Dependencies:** All attributes depend directly on Registration\_ID
* **No transitive dependencies**

**3. Course**

* **Primary Key:** Course\_ID
* **Foreign Keys:** Department\_ID, Instructor\_ID
* **Dependencies:** All attributes depend directly on Course\_ID
* **No transitive dependencies**

**4. Instructor**

* **Primary Key:** Instructor\_ID
* **Foreign Key:** Department\_ID
* **Dependencies:** All attributes depend directly on Instructor\_ID
* **No transitive dependencies**

**5. Schedule**

* **Primary Key:** Schedule\_ID
* **Foreign Keys:** Course\_ID, Classroom\_ID
* **Dependencies:** All attributes depend directly on Schedule\_ID
* **No transitive dependencies**

**6. Classroom**

* **Primary Key:** Classroom\_ID
* **Dependencies:** All attributes depend directly on Classroom\_ID
* **No transitive dependencies**

**7. Department**

* **Primary Key:** Department\_ID
* **Dependencies:** All attributes depend directly on Department\_ID
* **No transitive dependencies**

**Conclusion:**

The Course Registration System is **fully normalized to Third Normal Form (3NF)**. All tables have clear primary keys, appropriate foreign keys, and no transitive dependencies. This structure ensures **data integrity**, eliminates redundancy, and improves the **efficiency and maintainability** of the database.

**References:**

This content and guidance were developed with the assistance of ChatGPT, an AI language model by OpenAI (<https://chat.openai.com>).