

Design Assumptions and Data Clarifications

1. Name Changes for Students and Professors:

- **Students:** The design assumes that students may change their names without losing historical records (such as enrollment history). The Students table directly updates the FirstName and LastName fields to reflect the name change. The StudentID remains consistent as the primary identifier, ensuring continuity of records.
- **Professors:** Similarly, if a professor changes their name, their ProfessorID remains the primary identifier, while the ProfessorName field can be updated without affecting historical course assignments or records.

2. Multiple Professors Assigned to a Course (Co-Teaching):

- The design addresses co-teaching by introducing a **ProfessorAssignments** table to create a many-to-many relationship between **Professors** and **CourseSchedule**. Each professor assigned to a course section has a unique entry in this join table, allowing multiple professors to be associated with a single course section.

3. Course Location or Professor Change Mid-Semester:

- **Location Changes:** Since each course section in the **CourseSchedule** table is associated with a RoomID, changing a course's location requires updating the RoomID for that specific schedule entry. This update keeps the record intact while accurately reflecting the new location.
- **Professor Changes:** For changing professors mid-semester, the **ProfessorAssignments** table is used, allowing professors to be added or removed as needed without altering historical data. This flexibility also supports cases where multiple professors might take turns covering sections throughout the semester.

Assumptions and Clarifications on Data from the Registrar and Mock Data

1. Registrar Data Assumptions:

- **Unique Identifiers:** The registrar data assumes that fields like CRN (Course Registration Number) uniquely identify each course section. Likewise, each professor, student, and room has a unique identifier in the design.
- **Consistency in Data Entries:** Assumptions were made regarding the consistency of data entries, such as standardized abbreviations for buildings and departments, which are essential for joining data accurately.
- **Room Assignments:** The design assumes that room assignments are valid only for the associated term. Historical room data is maintained by each specific **CourseSchedule** entry without overwriting records.

2. Mock Data Clarifications:

- **Standardized Names:** For simplicity, mock data was created with standardized formats (e.g., "Dr. Firstname Lastname" for professors). This ensures clarity and reduces potential mismatches during mock queries.
- **Building and Room Codes:** Unique codes and names were assumed for buildings and rooms to maintain clarity, and BuildingCode was set as a foreign key in **Rooms** to avoid redundancy.

Issues and Solutions in Analyzing Registrar's Data

1. Repetitive or Ambiguous Data Entries:

- **Resolution:** During analysis, repetitive subject or professor names required deduplication. The **Subjects** and **Professors** tables were structured to hold unique entries, preventing duplicate entries in related tables.

2. Handling Room and Building Relationships:

- **Resolution:** Initially, BuildingName was directly included in the **Rooms** table. This was revised by creating a separate **Buildings** table, where BuildingCode serves as the primary identifier linked to **Rooms** as a foreign key. This adjustment preserved normalization and reduced redundancy.

3. Complex Relationships (e.g., Co-Teaching and Room Reassignments):

- **Resolution:** Complex relationships like co-teaching and room reassignments were managed by introducing **ProfessorAssignments** and referencing BuildingCode in **Rooms**. This approach provided flexibility in representing dynamic scenarios while keeping historical data intact.

4. Missing or Inconsistent Location Data:

- **Resolution:** For cases where room details were inconsistent or missing, the design ensures that each RoomID is linked to a building with a BuildingCode in **Buildings**. Mock data was created with placeholder values where necessary, assuming standardized room codes to complete the ERD.