Phase 2: Requirements Analysis

1. Functional Requirements (FR)

- **FR-01 (Registration):** The system shall allow the user to input the Student's Name and select a Course.

- **FR-02 (ID Generation):** The system shall automatically generate a Registration Number for each new student.

- **FR-03 (ID Modification):** The system shall allow the user to manually change the automatically generated Registration Number if necessary.

- **FR-04 (Database Storage):** All registered details must be saved to a database.

- **FR-05 (Data Retrieval):** The system shall allow the user to view details of previously registered students.

- **FR-06 (Filtering):** The system shall provide a feature to view student details separately for each specific course.

- **FR-07 (Connection Check):** Upon startup, the system must display whether it is successfully connected to the Database or not.

2. Non-Functional Requirements (NFR)

- **NFR-01 (Robustness):** The program must be exception-proof; no runtime errors (Exceptions) should crash the system.

- **NFR-02 (Data Integrity):** The system must prevent submission if the Name or Course fields are empty (Null values).

- **NFR-03 (Usability):** The interface should clearly indicate the database connection status to the user immediately upon launching.

3. Use Cases

- **Use Case 1: Register Student**

  - *Actor:* Administrator

  - *Description:* Admin enters name, selects course. System generates ID. Admin confirms or edits ID. System saves to Database.

- **Use Case 2: View Course List**

  - *Actor:* Administrator

- *Description:* Admin selects a specific course (e.g., "Hardware"). System retrieves and displays only students registered for that course.

- **Use Case 3: Check System Status**

  - *Actor:* Administrator

  - *Description:* When the app opens, it automatically tests the DB connection and displays "Connected" or "Not Connected".