Assignment 1: Analyse a given business scenario and create an ER diagram that includes entities, relationships, attributes, and cardinality. Ensure that the diagram reflects proper normalization up to the third normal form?

Scenario – ER-Diagram for College Management System

Entities:

- Student
- Staff
- Department
- Course
- Exams

Attributes:

1. **Student**
    - Student ID
    - Student Name
    - Date of birth.
    - Contact No
    - Email
    - Gender

2. **Staff**
    - Staff Name
    - Staff ID
    - Phone No
    - Email

3. **Department**
    - Department Name
    - Department Id

4. **Course**
    - Course No
    - Course Name
    - Duration
5. **Exams**
    - Room No
    - Time
    - Date

Relationships and Cardinality:

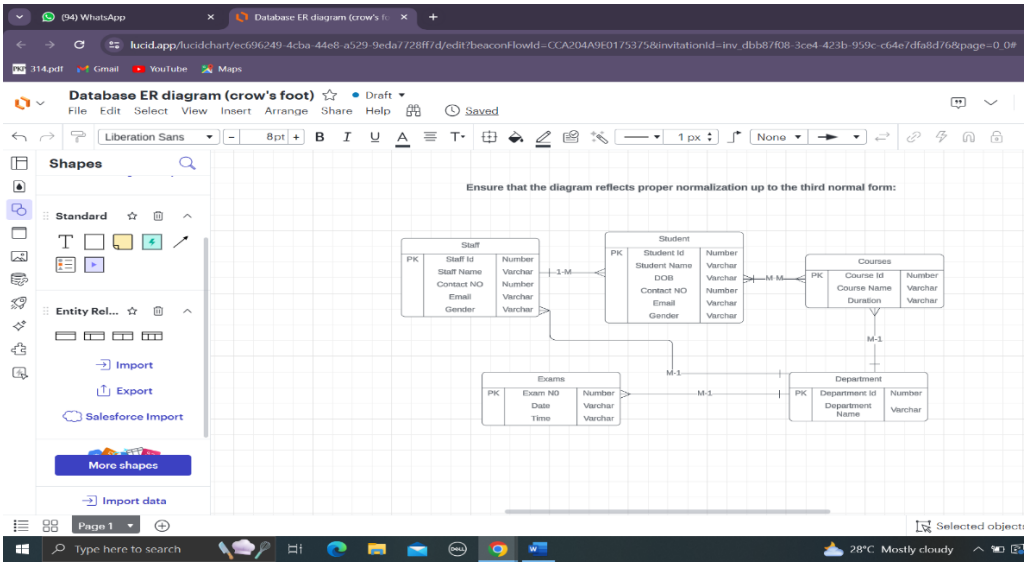
1. **Enrollment**:
   It comes between student and the teacher.
   Cardinality: A student can Enroll in many courses, and a course can have many students (Many-to-Many).
2. **Teaches:**
   It comes between Staff and the course.
   Cardinality: A Staff can teach many courses, and a course can be taught by many staff (Many-to-Many).
3. **Offers**:
   It comes between department and the courses
   Cardinality: A department offers many courses, and a course is offered by one department (One-to-Many)
4. **Belongs**:
   It comes between Staff and Department
   Cardinality: A Staff belongs to one department, and a department can have many staff (One-to-Many)
5. **Conducts**:
   It comes between Department and Exams
   Cardinality: A Department belongs to one, and a exam can many (One-to-Many)

Normalization

1. First Normal Form (1NF):
   - Each table has a primary key and all attributes are atomic

2. Second Normal Form (2NF):
   - For Enrollment, the composite key is (Student ID, Course ID).
   - For Staff, the composite key is (Staff ID, Course ID).

3. Third Normal Form (3NF):
   - All non-key attributes are dependent only on the primary key.



ER-Diagram for College Management System: