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: **Student Management System**

Entities:

Student: Contains information about student like id,name,age cid

Attributes: sid int (Primary Key), name varchar(20) Not Null , age int Not Null, cid int not null (Foreign Key)

Course: Contains information about course id, instructor id and course name

Attributes: CourseID (Primary Key), cname, InstructorID (Foreign Key)

Instructor:

Attributes: InstructorID (Primary Key), Name, Email

Relationships:

Enrollment Relationship: Relates students to the courses they are enrolled in.

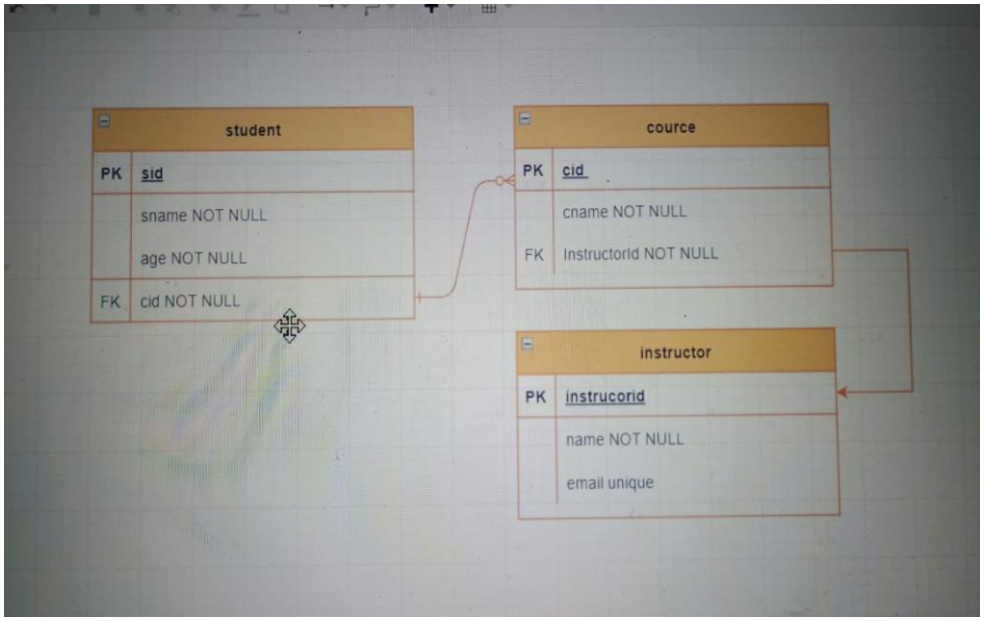
Cardinality: Each Student can enroll in zero or more Courses.

Cardinality: Each Course can have zero or more Students enrolled.

Teaching Relationship: Relates instructors to the courses they teach.

Cardinality: Each Instructor can teach one or more Courses.

Cardinality: Each Course is taught by exactly one Instructor.



Normalization:

First Normal Form (1NF): The entities are already in the first normal form (1NF) as each attribute contains atomic values.

Second Normal Form (2NF): In the second normal form (2NF), there are no partial dependencies. Each non-key attribute is fully dependent on the entire primary key.

Third Normal Form (3NF): In the third normal form (3NF), there are no transitive dependencies. Each non-key attribute is dependent only on the primary key.