CPSC 471: Database Management Systems

Project Progress Report-2 (RM)

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EERD Assumptions

1. Classes:
   - Superclass: Person
   - Subclass: Student and Advisor

A person must be either a student or an advisor, but not both (disjoint)

2. Student-Related Assumptions

A Student Can Register for Multiple Courses:

A student can register for many courses, and a course can have multiple students (N:M).

Students Must Be Enrolled in a Semester: A student must be registered in at least one semester.

Each semester has a unique Semester_ID, year, and term.

Enrollment Tracks Student Progress: A student's enrollment is verified before being registered for courses.

Enrollment includes Enrollment_ID, grade, and status.

3. Course-Related Assumptions

Each Course Can Have Prerequisites:

A course may require one or more prerequisite courses before enrollment.

Prerequisites are stored in a separate weak entity linked to Course.

Course Details: Each course has attributes like Course_ID, Course_Name, Level, Credits, Description, and Instructor.

4. Degree and Requirement Assumptions

Students Pursue a Degree: A student can pursue only one degree at a time, but a degree can be pursued by multiple students (1:N).

Degree Requirements: Each degree has specific requirements that students must fulfill.

Requirements have attributes like Requirement_ID, Type, and Description.

A Course Can Satisfy Multiple Requirements: A single course can satisfy multiple degree requirements (M:N).

5. Advisor-Student Relationship Assumptions

Each Student Has One Advisor: Every student is assigned one advisor, but an advisor can advise multiple students (1:N).

Advisors Belong to a Department: Each advisor has an Advisor_ID, Department, and Notes field.

6. Other Assumptions

The Address is a Composite Attribute: Person (Student/Advisor) has an address with components: Street, City, Province, and Postal Code.

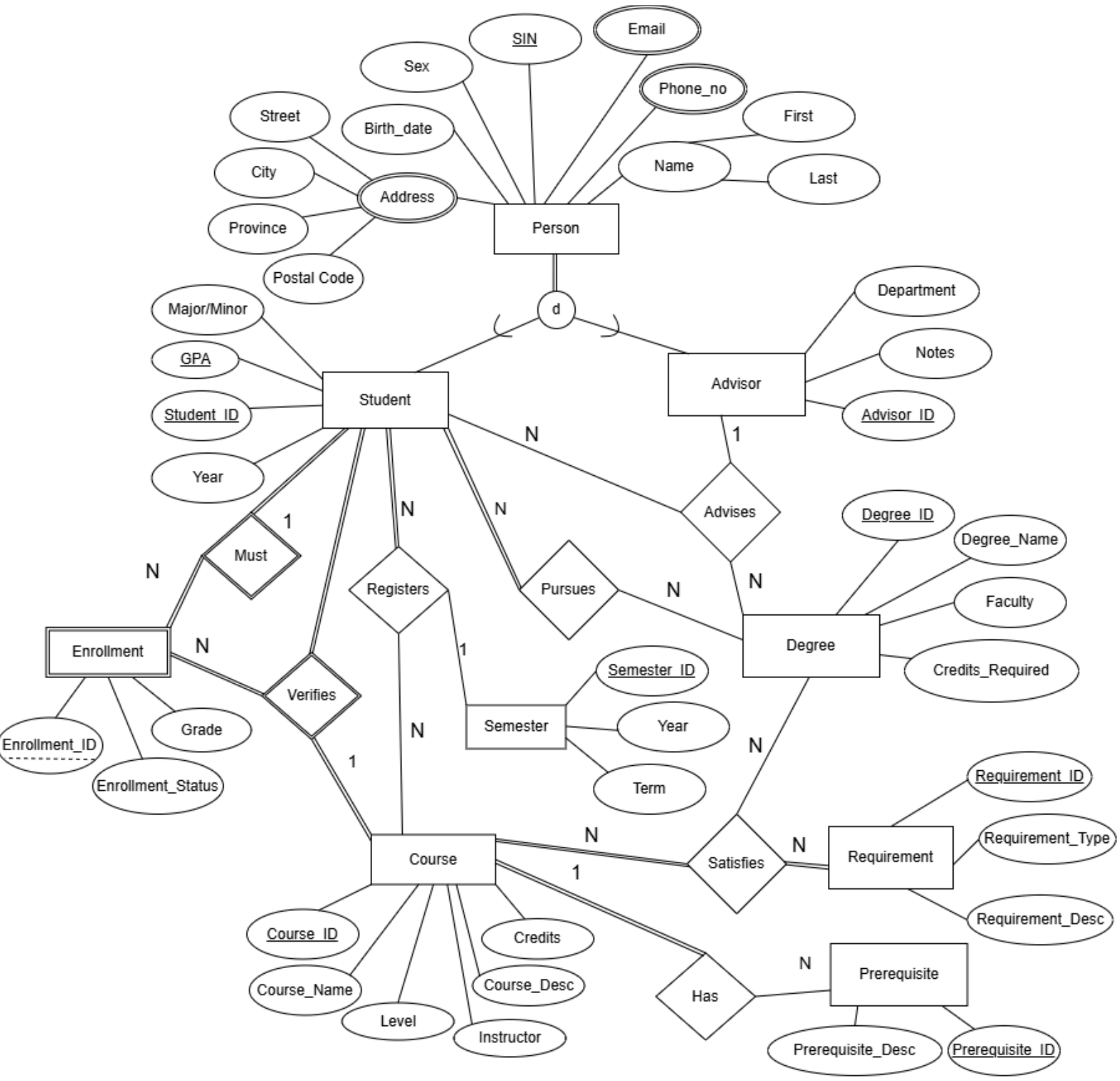
Student's GPA is stored as an attribute of Student, indicating academic performance.

Course Verification: A student's enrollment in a course is verified before registration (N:N relationship).

Participation Constraints:

- Total Participation: Students must have an advisor.
- Partial Participation: Not all courses have prerequisites.

EERD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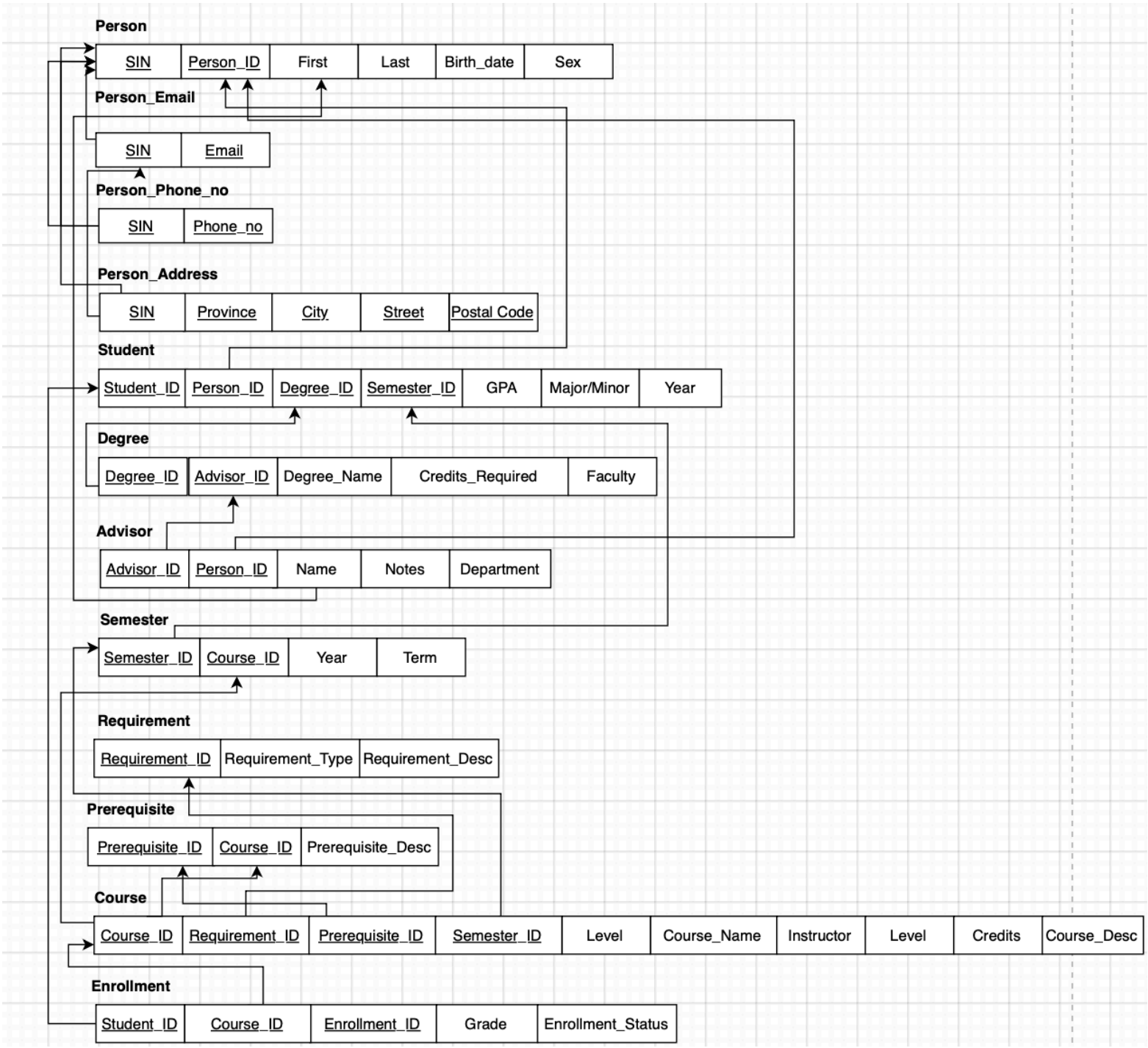
RM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RM Assumptions

1. Person Attributes Are Stored in Separate Relations:

   - Person_Email, Person_Phone_no, and Person_Address are separate relations to handle multiple emails, phone numbers, and addresses per person.
   - SIN is the primary identifier for Person and is referenced in all sub-relations.

2. Primary & Foreign Keys:
   - Each entity has a primary key (PK) for unique identification.
   - Foreign keys (FK) establish relationships between tables.

3. Student & Enrollment:

   Student Inherits from Person:

   - Person_ID is a foreign key (FK) in Student, indicating a relationship with Person.
   - Each Student must be associated with a Degree and a Semester.

   Enrollment Tracks Student Progress:

   - Enrollment_ID is used to track each course enrollment instance.
   - A student can enroll in multiple courses across different semesters.
   - Grade and Enrollment_Status are attributes of Enrollment.

4. Course:

   - Each Course can have multiple Prerequisites
   - Each Course can satisfy one or more Degree Requirements.
   - Courses are offered in different Semesters, ensuring students enroll in the right term.

5. Degree & Advisor:

   Students Must Be Pursuing a Degree:

   - Degree_ID is a foreign key in Student, meaning every student must be enrolled in a degree program.

   Advisors Are Assigned to Degrees & Students:

   - Each Advisor is linked to a Degree and Students through Advisor_ID.

6. Relationship:

Relationships Are Explicitly Mapped in RM:

- Many-to-Many (M:N) relationships such as Student-Course (Enrollment), Course-Requirement are handled via separate tables.