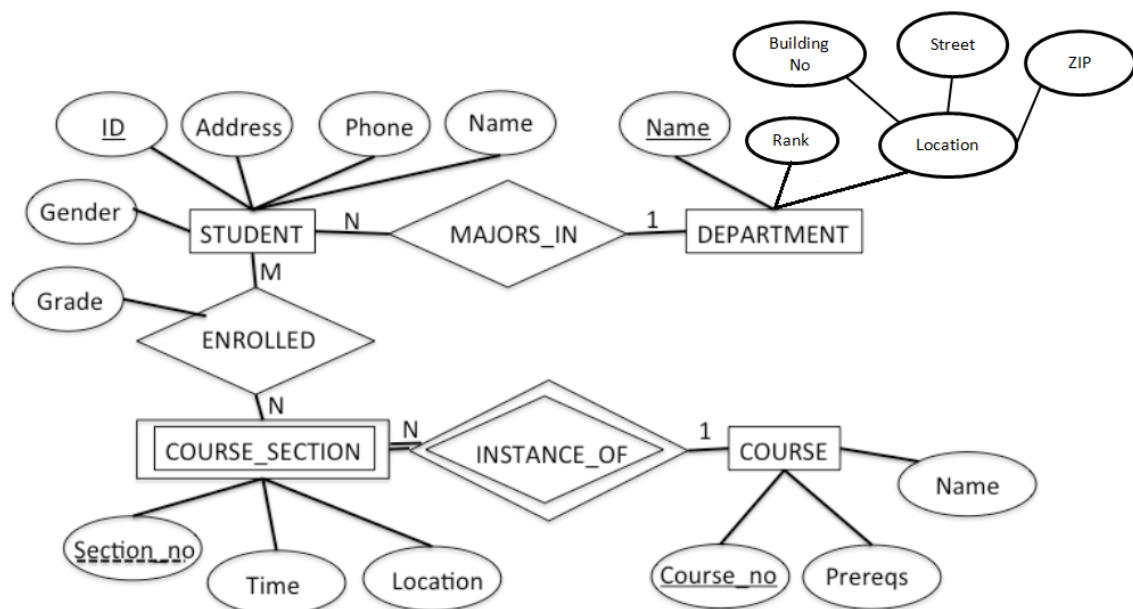


CS 34800 - PSO Solutions - Week 6

1. Consider the following set of requirements for a UNIVERSITY database, draw an ER diagram for the database and then convert it into the relational model:
 - (a) The university keeps track of each student's name, student ID number (unique), current address, phone number, gender, and major department.
 - (b) Each department is described by a unique name, rank, and has a location; the location is composed of street name, building number and ZIP code.
 - (c) Each course has a unique course number, a course name and a set of prerequisites.
 - (d) There could be multiple sections for a course, distinguished by the section number. Each course section also has a time and location.
 - (e) A student can be enrolled in multiple course sections (or no sections at all) and a course section can have multiple students enrolled in it (or no students).
 - (f) A student can major in at most one department, but a department may or not have students majoring in it.

ER diagram



Relational Model

- **Mapping of regular entity types**

Student

<u>ID</u>	Name	Gender	Address	Phone
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Department

<u>Name</u>	Rank	Location
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Course

<u>Course_no</u>	Name	Prereqs
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- **Mapping of weak entity types**

Course_Section

<u>Course_no</u>	<u>Section_no</u>	Time	Location
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- **Mapping of regular (non-weak) 1:N relationship types**

Student

<u>ID</u>	Name	Gender	Address	Phone	DeptName
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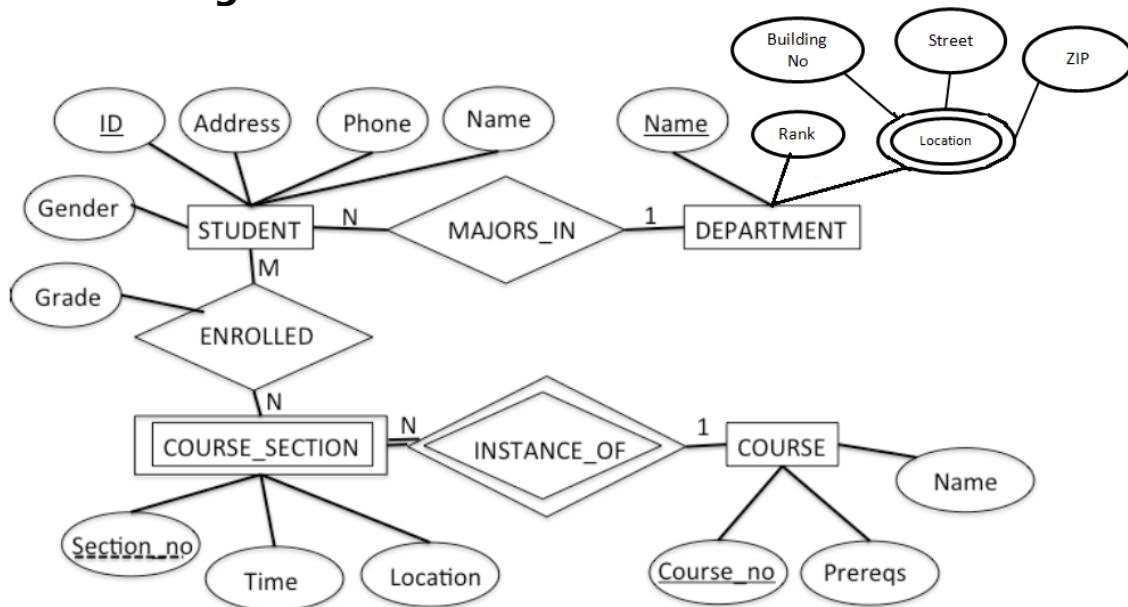
- **Mapping of M:N relationship types**

Enrolled

<u>SID</u>	<u>Course_no</u>	<u>Section_no</u>	Grade
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2. Change your design to allow each department to have multiple locations.

ER diagram



Relation Model

- **Mapping of multivalued attributes**

Student

<u>ID</u>	Name	Gender	Address	Phone	DeptName
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Department

<u>Name</u>	Rank
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Department Location

<u>DName</u>	BuildingNo	Street	ZIP
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Course

<u>Course_no</u>	Name	Prereqs
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Course_Section

<u>Course_no</u>	<u>Section_no</u>	Time	Location
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Enrolled

<u>SID</u>	<u>Course_no</u>	<u>Section_no</u>	Grade
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