

## CSC380 Tutorial # 2

### Entity Relationship Model (ER)

#### **Problem 1:**

Departments, identified by ID, operate a variety of printers, each located in a particular room in a particular building. Printers are supplied by a number of suppliers, identified by name, with each supplier charging a different price for a given printer, but also providing different delivery delays, measured in days. A given room can have any number of printers, including none.

Identify the entities and relationships and draw an E-R diagram.

#### **Problem 2:**

Consider the following information about a university database:

- Professors have a SSN, a name, a rank, and a research specialty.
- Projects have a project number, a sponsor name, a starting date, an ending date, and a budget.
- Graduate students have a SSN, a name, and a degree program (e.g., M.S. or Ph.D.).
- Each project is managed by one professor (known as the project's principal investigator).
- Each project is worked on by one or more professors (known as the project's co-investigators).
- Professors can manage and/or work on multiple projects.
- Each project is worked on by one or more graduate students (known as the project's research assistants).
- When graduate students work on a project, a professor must supervise their work on the project. Graduate students can work on multiple projects, in which case they will have a (different) supervisor for each one.
- Departments have a department number, a department name, and a main office.
- Departments have a professor (known as the chairman) who runs the department.
- Professors work in one or more departments, and for each department that they work in, a time percentage is associated with their job.
- Graduate students have one major department in which they are working on their degree.
- Each graduate student has another, more senior graduate student (known as a student advisor) who advises him on what courses to take.

**Draw an ER diagram that captures the information about the university. Underline primary keys and show the total participation.**