Course Code: IS212
Course Name: Fundamentals of Database Concepts
Faculty of Computer and Information
Assiut University

Sheet 3

1. Draw an ER diagram for each of the following situations. On the diagram be sure to identify the cardinality and existence of each relationship.

A. A company has a number of employees. Each employee may be assigned to one or more projects or may not be assigned to a project. A project must have at least one employee assigned and may have several employees assigned.

B. A university has a large number of courses in its catalog. Each course may have one or more other courses as pre-requisites or may have no prerequisites.

C. A college course may have one or more scheduled sections or may not have a scheduled section.

D. A hospital patient has a patient history. Each patient has one or more historical records (we assume that the initial patient visit is always recorded as an instance of the history). Each patient history record belongs to exactly one patient.

E. A video store may stock more than one copy of a given movie. It is also true that the store may not have a single copy of a particular movie.

2. Draw an ER diagram. Estimate any missing assumptions.

- A company has a number of employees. The attributes of EMPLOYEE include Emp_ID (identifier), Name, Address, and Birthdate.
- The company also has several projects. Attributes of PROJECT include Proj_ID (identifier), Proj_Name, and Start_Date.
- Each employee may be assigned to one or more projects or may not be assigned to any project.
- A project must have at least one employee assigned to it and may have any number of employees assigned to it.
- An employee's billing rate may vary by project, and the company wishes to record the applicable billing rate (Billing_Rate) for each employee when assigned to a particular project.

3. Design and draw an ER diagram that captures the information about this university. Estimate any missing assumptions.

A lecturer, identified by his or her number, name and room number, is responsible for organizing a number of course modules. Each module has a unique code and also a name and each module can involve a number of lecturers who deliver part of it. A module is composed of a series of lectures and because of economic constraints and common sense, sometimes lectures on a given topic can be part of more than one module. A lecture has a time, room and date and is delivered by a lecturer and a lecturer may deliver more than one lecture. Students, identified by number and name, can attend lectures and a student must

be registered for a number of modules. We also store the date on which the student first registered for that module. Finally, a lecturer acts as a tutor for a number of students and each student has only one tutor.