Lab Assignment 1

Q1. Construct an E-R diagram for a hospital with a set of patients and a set of medi-

cal doctors. Associate with each patient a log of the various tests and examinations conducted.

Q2. A university registrar’s office maintains data about the following entities: (a)

courses, including number, title, credits, syllabus, and prerequisites; (b) course

offerings, including course number, year, semester, section number, instructor(s),

timings, and classroom; (c) students, including student-id, name, and program;

and (d) instructors, including identification number, name, department, and title. Further, the enrollment of students in courses and grades awarded to students in each course they are enrolled for must be appropriately modeled. Construct an E-R diagram for the registrar’s office. Document all assumptions that you make about the mapping constraints.

Q3. Consider a university database for the scheduling of classrooms for final exams.

This database could be modeled as the single entity set exam, with attributes

course-name, section-number, room-number, and time. Alternatively, one or more

additional entity sets could be defined, along with relationship sets to replace

some of the attributes of the exam entity set, as

• course with attributes name, department, and c-number

• section with attributes s-number and enrollment, and dependent as a weak

entity set on course

• room with attributes r-number, capacity, and building

a. Show an E-R diagram illustrating the use of all three additional entity sets listed.

b. Explain what application characteristics would influence a decision to include or not to include each of the additional entity sets.

Q4. Consider a database used to record the marks that students get in different ex-

ams of different course offerings.

a. Construct an E-R diagram that models exams as entities, and uses a ternary relationship, for the above database.

b. Construct an alternative E-R diagram that uses only a binary relationship between students and course-offerings. Make sure that only one relationship exists between a particular student and course-offering pair, yet you can represent the marks that a student gets in different exams of a course offering.