**Database and file Management Systems** (CIS 2109)

**Lab 8**

1. **Reference Chapters 2, 3, 4,6 and 7 in "Modern Database Management"**

**Part 01 Use Oracle SQL developer to develop an EER diagram.**

After completing a course in database management, you have been hired as a summer intern by Mountain View Community Hospital. Your first assignment is to work as part of a team of three people to develop a high-level E-R diagram for the hospital. You conduct interviews with a number of hospital administrators and staff to identify the key entity types for the hospital.

Your team has identified the following entity types:

• Patient—a person who is either admitted to the hospital or is registered as an outpatient. Each patient has an identifier, the medical record number (MRN), and a name.

• Physician—a member of the hospital medical staff who may admit patients to the hospital and who may administer medical treatments. Each physician has a physician ID (identifier) and name.

• Bed—a hospital bed that may be assigned to a patient who is admitted to the hospital. Each bed has a bed number (identifier), a room number, and a care center ID.

• Employee—any person employed as part of the hospital staff. Each employee has an employee number (identifier) and name.

• Diagnosis—a patient’s medical condition diagnosed by a physician. Each diagnosis has a diagnosis ID/code and diagnosis name. Mountain View Community Hospital is using the HIPAA-mandated ICD-9-CM Volume 1 diagnosis codes1 for patient conditions (e.g., 00.50, STAPH FOOD POISONING, 173.3, BASAL CELL CARCINOMA, 200.2, MALIGNANT MELANOMA, BURKITT’S TYPE, or 776.5. CONGENITAL ANEMIA).

• Treatment—any test or procedure ordered by and/or performed by a physician for a patient. Each treatment has a treatment ID/treatment code and treatment name using standard codes. HIPAA-mandated ICD-9-CM Volume 3 Procedure Codes are used for diagnostic and therapeutic procedures (e.g., 03.31, SPINAL TAP, 14.3, REPAIR OF RETINAL TEAR, 87.44, ROUTINE CHEST X-RAY, or 90.5, MICROSCOPIC EXAMINATION OF BLOOD).

• Order—any order issued by a physician for treatment and/or services such as diagnostic tests (radiology, laboratory) and therapeutic procedures (physical therapy, diet orders), or drugs and devices (prescriptions). Each order has an order ID, order date, and order time.

The team next recorded the following information concerning relationships:

• A given patient may or may not be assigned to a bed (since some patients are outpatients). Occupancy rates are seldom at 100 percent, so a bed may or may not be assigned to a patient.

• A patient must be admitted to the hospital by exactly one physician. A physician may admit any number of patients or may not admit any patients.

• Prior to a patient being seen by a physician, an employee (typically a nurse) obtains and records relevant information about the patient. This includes the patient’s weight, blood pressure, pulse, and temperature. The nurse who assesses the vital signs also records the date and time. Finally, the reasons for the visit and any symptoms the patient describes are recorded.

• Physicians diagnose any number of conditions affecting a patient, and a diagnosis may apply to many patients. The hospital records the following information: date and time of diagnosis, diagnosis code, and description.

• Physicians may order and perform any number of services/ treatments for a patient or may not perform any treatment. A treatment or service may be performed on any number of patients, and a patient may have treatments performed or ordered by any number of physicians. For each treatment or service rendered, the hospital records the following information: physician ordering the treatment, treatment date, treatment time, and results.

**Part 02: Now Modify your EER diagram to take into account the following:**

* As a large service organization, Mountain View Community Hospital (MVCH) depends on four major groups of persons for its continued success: employees, physicians, patients, and volunteers. A small number of persons in the hospital community do not belong to any of these four groups. A particular person may belong to two (or more) of these groups at a given time. For example, a volunteer or employee may also be a patient at the hospital at some point in time. The four groups of people listed previously share many common characteristics such as a unique identifier, Name, Address, City/State/Zip, Birth Date, Phone, and E-mail. Then there are characteristics that apply to only one of these groups. For example, a hire date (Date Hired) is recorded for employees only. Volunteer Services records skills and interests of its volunteers in order to place them appropriately. Physicians have a pager number (Pager#) and a DEA number (a physician needs a DEA registration number from the Drug Enforcement Administration to be able to prescribe controlled substances). For patients, the hospital records the date of first contact with the hospital (Contact Date). There are also characteristics that apply to some, but not all of the groups. For example, both physicians and nurses have a specialty (e.g., pediatrics, oncology).

**Part 03**

In this part we will allow Oracle Data Modeler to create the relational schema. To do that, use the solution that you have for lab 06 and for each Part generate the Relational schema following the instructions here:

<https://docs.oracle.com/cd/E15276_01/doc.20/e13677/tut_data_modeling.htm#insertedID2>

1. How does each of the models compare to the ones you created?

**Part 04**

**Now extract the scripts and execute them to create the tables in your database.   
Hint: Use the relational schema that you created before, then use Ctr+A to select all the relations, right click and you should see the option to generate the SQL statements necessary to create the tables.**