

Draw an E-R diagram for the database presented above

Note : that the Identification number is unique.

Problem 1

ITI has decided to store information about its Students and curriculums in a database. ITI has wisely chosen to hire you as a database designer. Prepare an E-R diagram for ITI that describes its activities according to The following Description:

ITI has a number of **students** in different **departments(tracks)**, each student •
has St_id(unique), studentName(Fname,Lname), St_age, st_address.

Each department has dept_id(unique), dep_name. •

Students take **many** Courses, each **course** has crs_id, crs_name, •
crs_duration and crs_Description .

Students have a **grade** in each course. •

Each department contains a set of **instructors** and each instructor is located •
in one department, each instructor has ins_id, ins_name, ins_salary,
ins_hourRate, ins_bouns, ins_address.

For each Department, there is always one instructor assigned to manage •
that Department and each manager has **a hiring Date**.

Instructors may teach many courses and each course may be conducted by •
many instructors, each instructor has evaluation in each course.

Courses are classified under one topic, each topic may have many courses, •
and each topic has top_name and top_id .

Problem 2

Musicana records have decided to store information on musicians who perform on their albums in a database. The company has wisely chosen to hire you as a database designer

Each **musician** that is recorded at Musicana has an ID number, a name, an address (street, city) and a phone number. •

Each **instrument** that is used in songs recorded at Musicana has a unique name and a musical key (e.g., C, B-flat, E-flat). •

Each **album** that is recorded at the Musicana label has a title, a copyright date, and an album identifier (unique). •

Each **song** recorded at Musicana has a unique title and an author. •

Each musician may play several instruments, and a given instrument may be played by several musicians. •

Each album has a number of songs on it, but no song may appear on more than one album. •

Each song is performed by one or more musicians, and a musician may perform a number of songs. •

Each album has exactly one musician who acts as its producer. A producer may produce several albums. •

Problem 3

Prepare an E-R diagram for a real estate firm that lists properties for sale. The following describes this organization:

The firm has a number of sales offices in several states. Attributes of the **sales office** include Office Number and Location. •

Each sales office is assigned one or more employees. Attributes of **employees** include Employee ID and Employee Name. An employee must be assigned to only one sales office. •

For each sales office, there is always one employee assigned to manage that office. •

The firm lists property for sale. Attributes of **property** include Property ID and Location. Components of Location include Address, City, State, and Zip Code •

*Each property must be listed with one (and only one) of the sales offices. A sales office may have any number of properties listed, or may have no properties listed. •

Each property may have zero or more owners. Attributes of **owners** are Owner ID and Owner Name. An owner may own one or more properties. The system stores the percent owned by each owner in each property. •

Problem 4

A General Hospital consists of a number of specialized wards. Each **ward** is described by ward_id, Name ●

The system records the following details about **patients**: Patient_id, name, Date Of Birth ●

Each ward may host zero or more patients and each patient is hosted by only one ward. ●

Each patient is assigned to one leading consultant but may be examined by other consultants, if required. ●

Each consultant may be assigned zero or more patients and may examine zero or more patients. ●

Consultants are described by Consultant_id, Name ●

The system has to record all required data each time the Nurse gives a patient a certain drug with specified dosage at a certain date and time. ●

Each ward is under supervision of one nurse and a nurse may supervise only one ward. ●

Each Nurse must serve in one ward ●

Data about the **nurse** is recorded as her name and her number and her address. ●

A drug has code number, recommended dosage and more than one brand name ●

Problem 5

Major airlines companies that provide passenger services keep databases with lots of information on all airlines.

Each **airline** has an identification number, name and address, name of the contact person and telephone numbers. •

Each **employee** who works in Airline Company has an employee identification number, name, address, birthday recorded as (day, month, year), gender, position with the company, and qualifications. •

Each airline owns different aircraft models. For each **aircraft** an aircraft identification number, capacity, and model is recorded. •

The aircrafts are assigned to different routes. An aircraft can work on more than one **route** and a route has many aircrafts going on it. Some information such as number of passengers, price per passenger, departure date time, arrival date time and **the time that aircraft spent in traveling the route are recorded.** •

Each route has a **route** identification number, origin, destination, distance, classification (e.g. domestic or international route). •

Each aircraft has its own **crew** (major pilot, assistant pilot and two hostesses), the aircraft crew not stored as employees. Each crew is assigned to one aircraft. •

Each airline keeps information about their buy/sell transactions (for example selling an airplane ticket is a sell transaction, paying for maintenance is a buy transaction). Each transaction has a transaction identification number, date, description, and amount of money paid/received. •