

## **0Draw 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 unique title, a copyright date, and an album identifier.
- 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.