**Tutorial 1**

**GC 312**

**Problem 1:**

At a weekend retreat, the entity type PERSON has three subtypes: CAMPER, BIKER, and RUNNER. Draw a separate EER diagram segment for each of the following situation:

1. At a given time, a person must be exactly one of these subtypes.
2. A person may or may not be one of these subtypes. However, a person who is one of these subtypes cannot at the same time be one of the other subtypes.
3. A person may or may not be one of these subtypes. On other hand, a person may be any tow (or even three) of these subtypes at the same time.
4. At a given time, a person must be at least one of these subtypes.

**Problem 2:**

A bank has three types of accounts: CHECKING, SAVINGS, and LOAN. Following are the attributes for each type of account:

CHECKING: Acct\_No, Date\_Opened, Balance, Service\_charge

SAVING: Acct\_No, Date\_Opened, Balance, Interest\_Rate

LOAN: Acct\_No, Date\_Opened, Balance, Interest\_Rate,Payment

Assume that each bank account must be a member of exactly one of these subtypes. Using generalization, develop an EER model segment to represent this situation using the traditional EER notation

**Problem 3:**

An organization depends on a number of different types of persons for its successful operation. The organization is interested in the following attributes for all these person: SSN, Name, Address, and Telephone. A person may have multiple telephone numbers. Three types of persons are of greatest interest: employees, volunteers, and donors. Employees only have a Date Hired attribute, and volunteers only have a Skill attribute. Donors only have a relationship (named Donators) with an item that has number and name. a donor must have donated one or more items, and an item may have no donors, or one donor.

There are persons other than employees, volunteers, and donors who are of interest to the organization, so that a person need not belong to any of these three groups. On the other hand, at a given time a person may belong to two or more of these groups (for example, employees and donors).

Draw an EER diagram based on the requirement above.

**Problem 4:**

Symphonic Band is an orchestra that plays different types of concerts. The orchestra’s popularity is growing fast and they are starting to have problems to keep track of the musicians that should play in each concert as well as the musical works that are most suitable for the concert.

Help the orchestra to create a database model, as a first step to implement a database, so that the orchestra can keep track of both musicians and musical works. The database model must represent the following points:

* The orchestra plays three types of concerts: church concerts, private parties, and outdoor concerts.
* The orchestra plays three types of music: classical, popular, and American folk. The orchestra always plays classical music in their church concerts. The orchestra always plays American folk on private parties. Finally, the orchestra plays a blend of the three types of music when playing outdoors.
* It should be possible to find in the database the music works that are suitable for each type of concert so that the repertoire can be easily planned well in advance.
* For each musical work, the database should store which musical setting (i.e.The instruments) are required to play the work.
* The database should store information for each coming concert. The information should include the place, date and time of the concert as well as the type of concert and the repertoire that will be played.
* For each musician in the orchestra, the database should store his/her name, the instrument that he/she plays, and in which of the coming concerts he/she will participate.

Draw an EER diagram for the orchestra’s database.

**Problem 5:**

We want to create the database of a training center, including information about its members, training activities and bookings. There are just three types of activity: Yoga, Aerobics and Core. Each member is identified by Name and his/her e-mail address. Gold-members can book any training activity, while common members can only book core- activities. For each training activity, the database stores the schedule (week, day of week, and time), the room, the leader and the e-mail of the leader. Each leader leads several activities per week, but the same activities every week. It allowed to the member to participate in more than one activity during the week