Problem 1

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.
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- 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 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, song must appear on 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.

Design a conceptual schema for Musicana. Be sure to indicate all keys and cardinality .constraints and any assumptions that you make

Problem 2

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

- The firm has a number of **sales offices** in several states. Attributes of sales office include Office_Number and Location.
- Each **sales office** is assigned one or more employees. Attributes of **employee** 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 (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** has one 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 3

- The company has a number of employees each employee has SSN, Birth Date, Gender and Name which represented as Fname and Lname.

- The company has a set of departments each department has a set of attributes DName, DNUM (unique) and locations.

- Employees work in several projects each project has Pname, PNumber as an identifier, Location and City.
- Each employee may have a set of dependent; each dependent has Dependent Name (unique), Gender, and Birth Date.
  Note: if the employee left the company no needs to store his dependents info
- For each Department, there is always one employee assigned to manage that Department and each manager has a hiring Date.

- Department must have employees and employee must work on Only One department

- Each department may have a set of projects and each project must assigned to one department

- Employees work in several projects and each project has several employees and each employee has a number of working hours in each project

- Each employee has a supervisor and supervisor supervise many employee.