ASSIGNMENT1: The Company Database consider the following Company data requirements.

1. The company is organized into branches. Each branch has a unique number, a name, and a particular employee who manages it. The company makes its money by selling to clients. Each client has a name and a unique number to identify it. The foundation of the company is its employee. Each employee has a name, birthday, sex, salary and a unique number.
2. An employee can work for one branch at a time, and each branch will be managed by one of the employees that work there. We will also want to keep track of when the current manager started as manager.
3. An employee can acts as a supervisor for other employees at the branch, an employee may also acts as the supervisor for employees at other branches. An employee can have at most one supervisor.
4. A branch may handle a number of clients, with each client having a name and a unique number to identify it. A single client may only be handled by one branch at a time.
5. Employees can work with clients, controlled by their branch to sell their stuff. If necessary multiple employees can work with the same client. We will want to keep track of how many francs worth of stuff each employee sells to each client they work with.
6. Many branches will need to work with suppliers to buy inventory. For each supplier, we will keep track of their name and the type of product they are selling the branch. A single supplier may supply products to multiple branches.

A. Draw an ER diagram that captures the above requirements, by mapping strong and weak entities, cardinalities, total and partial participation, identifying relationship, various type of attributes concerned, and carrying relationships. Be sure to indicate any key.

## ASSIGNMENT 2: MINIWORLD

The wholesale supplier has customers that place orders, which are placed on a particular date and have a total price, current status, and an order number (starting from 1 for each customer). In each order, a customer can order several parts (products), each in a different quantity and at a (possibly discounted) price. We also want to model the date on which each of the parts has been sent. The parts are provided by suppliers. Each part may be provided by several suppliers and customers may order the same part of different suppliers in the same order, but in this case, they may have different (retail) prices. Customers and suppliers have a name, an address, a phone number, and a customer/supplier number and they come from a certain nation, which in turn is from a particular region (of the world). Parts have a brand, a size, and a retail price.

A. Model the following miniworld of an international wholesale supplier in ER. Identify the keys and give the functionalities of all relationships (e.g. 1:1, N:1, N:M)

## ASSIGNMENT 3: calendar program

A calendar program that allows users to browse each other's calendars and to book common appointments shall be developed. The program has a database which keeps track of the users and their calendars.

You use the calendar to store data concerning appointments. An appointment starts and ends at a given time on a given day and is described by a text. You may specify that you wish to be reminded of an appointment.

A. Develop an E/R model of the database.

ASSIGNMENT 4: parking lot system

A homeowners association (that is, an association of people who own apartments) owns a parking lot. The parking lot has a number of parking spaces. The owners and their guests may freely use all the parking spaces, except some spaces that have electric sockets for engine heaters. Such a parking space is rented by one of the apartment owners, who has exclusive use of the space. The rent for the space is added to the apartment rent.

The spaces with electric outlets are popular, and there is a queue of apartments that wish to rent such a space. Each apartment may have at most one place in the queue. When a space becomes available, the apartment with the longest queue time may rent it. One of the apartment owners must sign the contract (an apartment may have more than one owner, and an owner may own more than one apartment).

The association sometimes has problems with scrap cars that are deposited in the parking lot. It is often a difficult procedure to get rid of these cars. Discovery of a scrap car must be registered in the database, as well as each thing that happens with the car (Parking space 43: 2009–04–26 "Discovered suspect car, license number
XYZ789", 2009–05–02 "Called the police about the car", and so on)

A. Develop an E/R model of the database