# COSC344 Assignment 1 (Sample)

Team: X
Leader:  [put leader name here]
Members: [put names of all members here]

## 1. Mini-world Description

We select the COMPANY mini-world for our assignments. The COMPANY database keeps track of a company's employees, departments, and projects. The part of the company that will be modeled in our assignment is described as follows:

- The company is organized into departments. Each department has a unique name, a unique number, and a particular employee who manages the department. We keep track of the start date when that employee began managing the department. A department may have several locations.
- A department controls a number of projects, each of which has a unique name, a unique number, and a single location.
- We store each employee's name, Social Security number, address, salary, gender, and birth date. An  employee is assigned to one department, but may work on several projects, which are not necessarily controlled by the same department. We keep track of the current number of hours per week that an employee works on each project. We also keep track of the direct supervisor of each employee (who is another employee).
- We want to keep track of the dependents of each employee for insurance purposes. We keep each dependent's first name, sex, birth date, and relationship to the employee.

## 2. Entities and Attributes

- EMPLOYEE
    - Name:      composite (Fname, Minit, Lname),    single-valued,      string
    - Bdate:      simple,                                                   single-valued,      date
    - Address: simple,                                                   single-valued,      string
    - Salary:    simple,                                                   single-valued,      real
    - SSN:       simple,         key attribute           single-valued,      string
- DEPARTMENT
    - Name:                       simple,     single-valued,     string
    - Number:                    simple,     single-valued,     integer,               key attribute
    - Locations:                  simple,     multi-valued,      string
    - Number_of_employees: derived,     single-valued,      integer
- PROJECT
    - Name:        simple,   single-valued,  string
    - Number:    simple,   single-valued,  integer,                  Key attribute
    - Locations: simple,   single-valued,  string

- DEPENDENT (week entity)
  - Name:        simple,   single-valued,   string,     weak key attribute
  - Sex:          simple,   single-valued,   char type with values of either 'M' or 'F'
  - Birth_date:   simple,   single-valued,   date
  - Relationship: simple,   single-valued,   string

## 3. Relationships

- WORKS_FOR
  - N:1 relationship
  - An employee can only work for one department, but a department can have many employees.
  - EMPLOYEE is total participation; DEPARTMENT is total participation.
- MANGES
  - 1:1 relationship
  - One employee can only manage one department, and one department can only be managed by one employee.
  - Has an attribute *Start_date* of date type for keeping track of the starting time for managing the department.
  - EMPLOYEE is partial participation; DEPARTMENT is total participation.

- WORKS_ON
  - M:N relationship
  - One employee can work on multiple projects, and each project can have multiple employees worked on it.
  - Has an attribute *Hours* of real type for keeping track of the number of hours that the employee works on the project per week.
  - EMPLOYEE is total participation; PROJECT is total participation.

- SUPERVISION
  - 1:1 relationship
  - Each employee can only have one supervisor, and each supervisor can only supervise one employee.
  - Both are partial participation.
- CONTROLS
  - 1:N relationship
  - Each department can have multiple projects, but each project can only be host by one department.
  - DEPARTMENT is partial participation; PROJECT is total participation.

- DEPENDENTS_OF
  - 1:N relationship
  - Each employee can have multiple dependents, and each dependent is the dependent of one employee.
  - EMPLOYEE is partial participation; DEPENDENT is total participation.

## 4. ER-diagram
**Note**: if an entity type has multiple key attributes, you just need to show one.
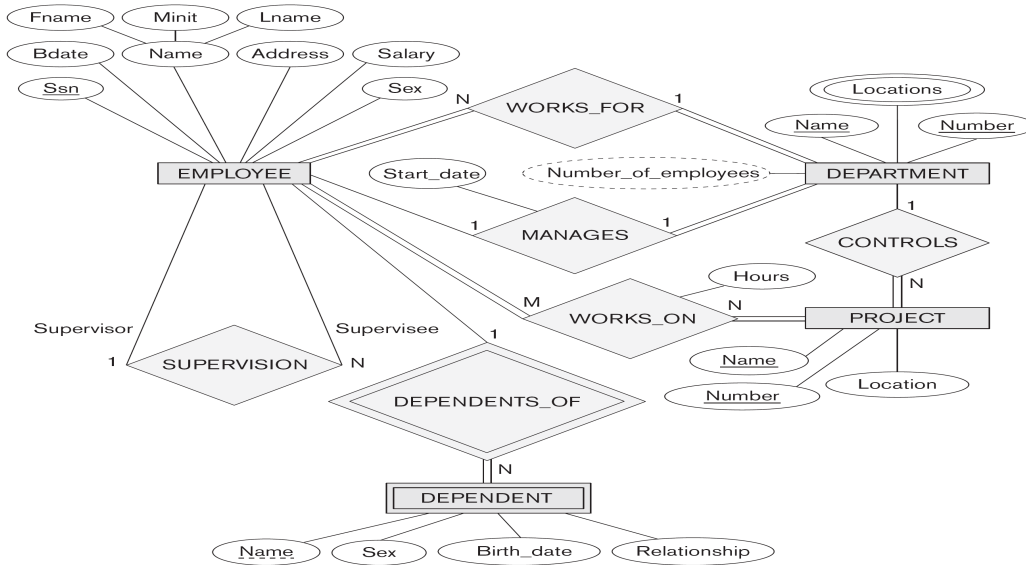


**Figure 7.2**
An ER schema diagram for the COMPANY database. The diagrammatic notation
is introduced gradually throughout this chapter and is summarized in Figure 7.14.

## 5. Teamwork Summary
Here are some samples that can be put in this section. However, you can add any comment on the teamwork in your group.
- All tasks were properly allocated and had been discussed among group members, and consensus was reached.
- The EMPLOYEE entity type, the attributes of this entity type, and the WORKS_FOR relationship were modeled by John. Their descriptions in Sections 1-3 were written by John. This part of work has been discussed among group members, and consensus was reached.
- The PROJECT entity type, the attributes of this entity type, and the WORKS_ON relationship were modeled by Alice. This part was not discussed among group members as Alice did not finish it by the due time.
- Mary didn't complete the task allocated to her, and she didn't attend any group meeting.