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MIST3030

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Homework 2

1. 2-39a) A company has a number of employees. The attributes of EMPLOYEE include Employee ID (identifier), Name, Address, and Birthdate. The company also has several projects. Attributes of PROJECT include Project ID (identifier), Project Name, and Start Date. Each employee may be assigned to one or more projects or may not be assigned to a project. A project must have at least one employee assigned and may have any number of employees assigned. An employee’s billing rate may vary by project, and the company wishes to record the applicable billing rate (Billing Rate) for each employee when assigned to a particular project.

Billing Rate

PROJECT

**Project ID**

Project Name

Start Date

EMPLOYEE

**Employee ID**

Employee Name

Address

Date of Birth

is assigned to

1. 2-39b) A laboratory has several chemists who work on one or more projects. Chemists also may use certain kinds of equipment on each project. Attributes of CHEMIST include Employee ID (identifier), Name, and Phone No. Attributes of PROJECT include Project ID (identifier) and Start Date. Attributes of EQUIPMENT include Serial No and Cost. The organization wishes to record Assign Date—that is, the date when a given equipment item was assigned to a particular chemist working on a specified project. A chemist must be assigned to at least one project and one equipment item. A given equipment item need not be assigned, and a given project need not be assigned either a chemist or an equipment item.

EQUIPMENT

**Serial Number**

Cost

PROJECT

**Project ID**

Start Date

CHEMIST

**Employee ID**

Employee Name

Phone Number

Is assigned

Assign Date

1. 2-39c) A college course may have one or more scheduled sections or may not have a scheduled section. Attributes of COURSE include Course ID, Course Name, and Units. Attributes of SECTION include Section Number and Semester ID. Semester ID is composed of two parts: Semester and Year.

SECTION

**Section Number** (Semester, Year)

Semester ID

COURSE

**Course ID**

Course Name

Units

Is scheduled

SEMESTER

**Semester ID**

Semester Number

Semester Year

1. 2-32) Prepare an ERD reflecting the data contained in the grade report. Assume that each course is taught by one instructor.

Grade

Semester

Year

COURSE

**Course ID**

Course Title

STUDENT

**Student ID**

Name

Address

Major

Registers for

Teaches

INSTRUCTOR

**Instructor Name**

Location

1. 3-29 and 3-30) A nonprofit organization depends on a number of different types of persons for its successful operation. The organization is interested in the following attributes for all of these persons: SSN, Name, Address, City/State/Zip, and Telephone. Three types of persons are of greatest interest: employees, volunteers, and donors. Employees have only a Date Hired attribute, and volunteers have only a Skill attribute. Donors have only a relationship (named Donates) with an Item entity type. A donor must have donated one or more items, and an item may have no donors, or one or more donors. 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 (e.g., employee and donor). Add a subtype discriminator (named Person Type) to the diagram.

PERSON

**SSN**

Name Address

City

State

Zip Code

Telephone Number

**Person Type(Employee?, Volunteer?, Donor?)**

**Person Type:**

O

DONOR

Item

EMPLOYEE

Date Hired

Employee?=”Y” Donor?=”Y”

Volunteer?=”Y”

VOLUNTEER

{Skill}

Donates