

Chapter 2 (Hoffer, Ramesh, & Topi)

1. Answer the following questions concerning Figure 2-22:

- a. Where is a unary relationship, what does it mean, and for what reasons might the cardinalities on it be different in other organizations?

EMPLOYEE exists one unary relationship.

It means Is Supervised By / Supervises is shown as a many-to-one / one-to-many relationship between instances of the EMPLOYEE entity type.

Each employee has exactly one supervisor; however, a manager has no supervisor. An employee who is a supervisor may supervise any number of employees, but not all employees are supervisors.

- b. Why is Includes a one-to many relationship, and why might this ever be different in some other organization?

One PRODUCT LINE includes many PRODUCT. It may happens one product line includes one product, or many product line includes one product.

- c. Does Includes allow for a product to be represented in the database before it is assigned to a product line (e.g., while the product is in research and development)?

No, because they are mandatory relationship.

- d. If there is a rating of the competency for each skill an employee possesses, where in the data model would we place this rating?

In SKILL.

- e. What is the meaning of the DOES BUSINESS IN associative entity, and why does each DOES BUSINESS IN instance have to be associated with exactly one TERRITORY and one CUSTOMER?

Each customer may do business in any number of territories or may not do business in any territory. A sales territory has one to many customers.

One territory must does many business, and one customer may does many business.

- f. In what way might Pine Valley change the way it does business that would cause the Supplies associative entity to be eliminated and the relationships around it to change?

Raw materials are not supplied by vendors.

2. There is a bulleted list associated with Figure 2-22 that describes the entities and their relationships in Pine Valley Furniture. For each of the 10 points in the list, identify the subset of Figure 2-22 described by that point.

1) TERRITORY-DOES BUSINESS IN one to many, CUSTOMER-DOES BUSINESS IN one to many

2) SALEPERSON-TERRITORY one to many

3) PRODUCT-USES many to many, RAW MATERIAL-USES many to many

4) VENDOR-SUPPLIES one to many, RAW MATERIAL- SUPPLIES one to many

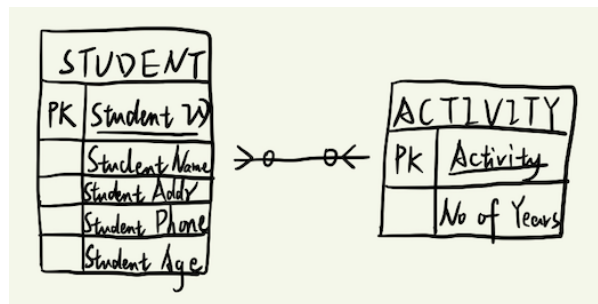
5) PRODUCT- PRODUCT IN one to many, WORK CENTER - PRODUCT IN one to many

- 6) WORK CENTER - WORKS IN one to many, EMPLOYEE- WORKS IN one to many, EMPLOYEE- HAS SKILL one to many, SKILL- HAS SKILL one to many
- 7)EMPLOYEE- EMPLOYEE one to many

4. Consider the two E-R diagrams in Figure 2-24, which represent a database of community service agencies and volunteers in two different cities (A and B). For each of the following three questions, place a check mark under City A, City B, or Can't Tell for the choice that is the best answer.

	City A	City B	Can't Tell
a. Which city maintains data about only those volunteers who currently assist agencies?		✓	
b. In which city would it be possible for a volunteer to assist more than one agency?	✓		
c. In which city would it be possible for a volunteer to change which agency or agencies he or she assists?			✓

5. The entity type STUDENT has the following attributes: Student Name, Address, Phone, Age, Activity, and No of Years. Activity represents some campus-based student activity, and No of Years represents the number of years the student has engaged in this activity. A given student may engage in more than one activity. Draw an ERD for this situation. What attribute or attributes did you designate as the identifier for the STUDENT entity? Why?



Student Id, because it's unique, not change, valid.

6. Are associative entities also weak entities? Why or why not? If yes, is there anything special about their "weakness"?

An associative entity is an entity type that associates the instances of one or more entity types and contains attributes specific to the relationship between those entity instances. An associative entity generally has independent business meaning to end users and can be identified with a single attribute identifier. If an associative entity meets these conditions, then it would not be considered a weak entity.

11. Figure 2-26 represents a situation of students who attend and work in schools and who also belong to certain clubs that are located in different schools. Study this diagram carefully to try to discern what business rules are represented.

a. You will notice that cardinalities are not included on the Works For relationship. State a business rule for this relationship and then represent this rule with the cardinalities that match your rule.

Each Student exactly attends one school, and one school must have many students.

One student can work for one school, and one school has one student work.

Each club must be located in one school, one school may have many clubs.

Each student may belong to one club, each club must have many students.

b. State a business rule that would make the Located In relationship redundant (i.e., where the school in which a club is located can be surmised or derived in some way from other relationships).

Each school has only one club.

c. Suppose a student could work for only a school that student attends but might not work. Would the Works For relationship still be necessary, or could you represent whether a student works for the school she attends in some other way (if so, how)?

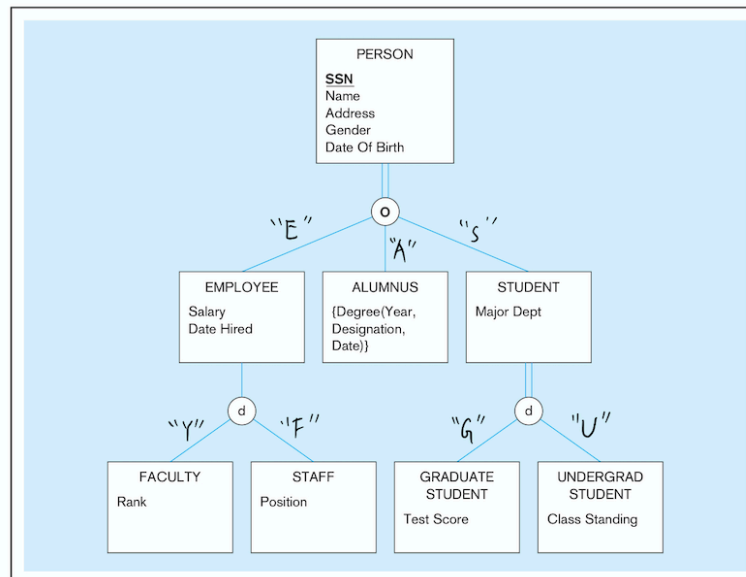
No.

Chapter 3 (Hoffer, Ramesh, & Topi)

1. Examine the hierarchy for the university EER diagram (Figure 3-10). As a student, you are an instance of one of the subtypes: either UNDERGRAD STUDENT or GRADUATE STUDENT. List the names of all the attributes that apply to you. For each attribute, record the data value that applies to you.

SSN, Name, Address, Gender, Date of Birth, Major Dept, Test Score/Class Standing.

2. Add a subtype discriminator for each of the supertypes shown in Figure 3-10. Show the discriminator values that assign instances to each subtype. Use the following subtype discriminator names and values:
 1. PERSON: Person Type (Employee? Alumnus? Student?)
 2. EMPLOYEE: Employee Type (Faculty, Staff)
 3. STUDENT: Student Type (Grad, Undergrad)



12. Draw an EER diagram for the following problem using this textbook's EER notation, the Visio notation, or the subtypes inside supertypes notation, as specified by your instructor.

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).

