

Tutorial 3

1. Matching

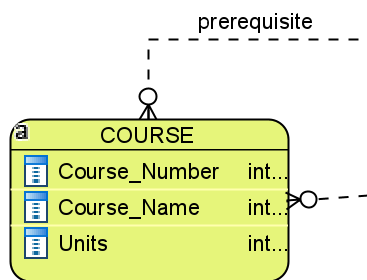
1. supertype d	a. subset of supertype
2. entity cluster f	b. entity belongs to two subtypes
3. subtype a	c. subtype gets supertype attributes
4. specialization e	d. generalized entity type
5. discriminator g	e. creating subtypes for an entity type
6. attribute inheritance c	f. a group of associated entity types and relationships
7. overlap rule b	g. locates target subtype for an entity

2. Contrast the following term

- a. Supertype: create subtypes for an entity type
Subtype: subset of supertype
- b. Generalization: The process of defining a more general entity type from a set of more specialized entity types. BOTTOM-UP
Specialization: The process of defining one or more subtypes of the supertype and forming supertype/subtype relationships. TOP-DOWN
- c. Disjoint rule: an instance of the supertype can be only ONE of the subtypes
Overlap rule: an instance of the supertype could be more than one of the subtypes
- d. Total specialization rule: an instance of a supertype **must** also be a member of at least one subtype
Partial specialization rule: an entity instance of a supertype is not allowed to belong to any subtype.
- e. PARTY: persons and organizations independent of the roles they play
PARTY ROLE: information about a party for an associated role, thus allowing a party to act in multiple roles
- f. Entity: instance—person, place, object, event, concept
Entity cluster: Set of one or more entity types and associated relationships grouped into a single abstract entity type

2. Draw ER diagram for the following situation:

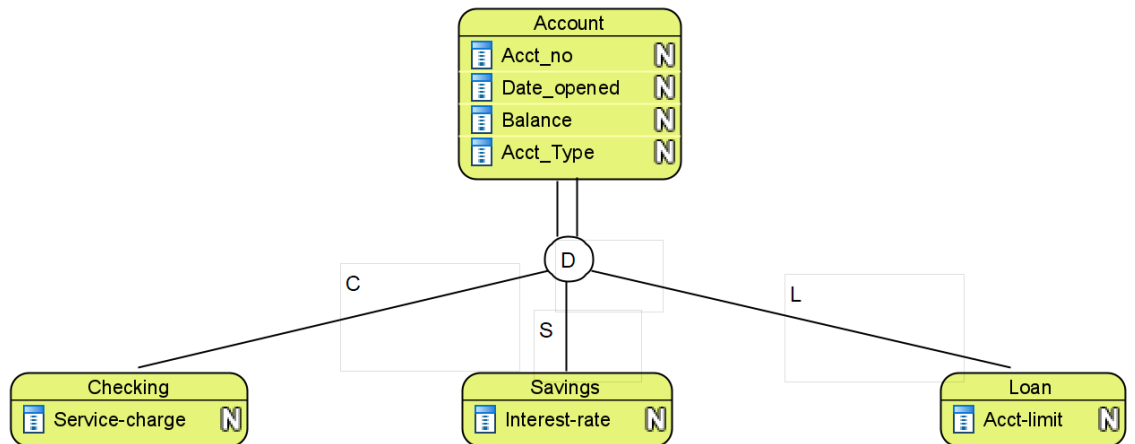
A university has a large number of courses in its catalog. Attributes of COURSE include Course_Number (identifier), Course_Name, and Units. Each course may have one or more different courses as prerequisites, or may have no prerequisites. Similarly, a particular course may be a prerequisite for any number of courses, or may not be prerequisite for any other course.



3. Draw EER diagram for the following situation:

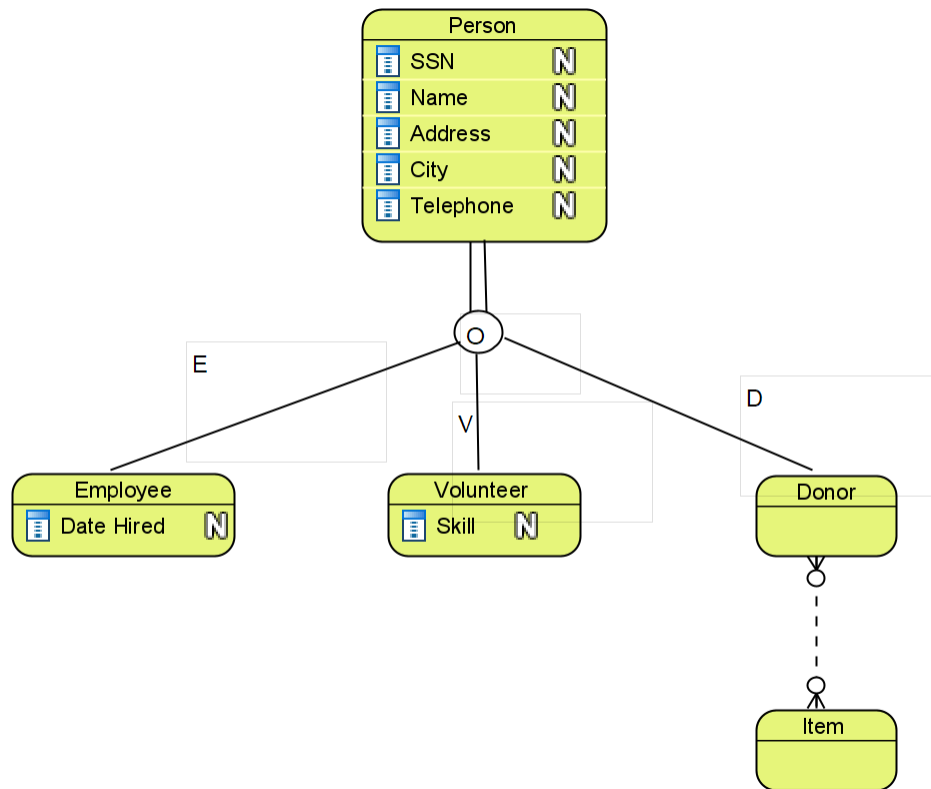
There are only three types of accounts in a bank, with these attributes:

- Checking: Acct-no, Date-opened, Balance, Service-charge
- Savings: Acct-no, Date-opened, Balance, Interest-rate
- Loan: Acct-no, Date-opened, Balance, Acct-limit



4. Draw an EER diagram for the following problem

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).

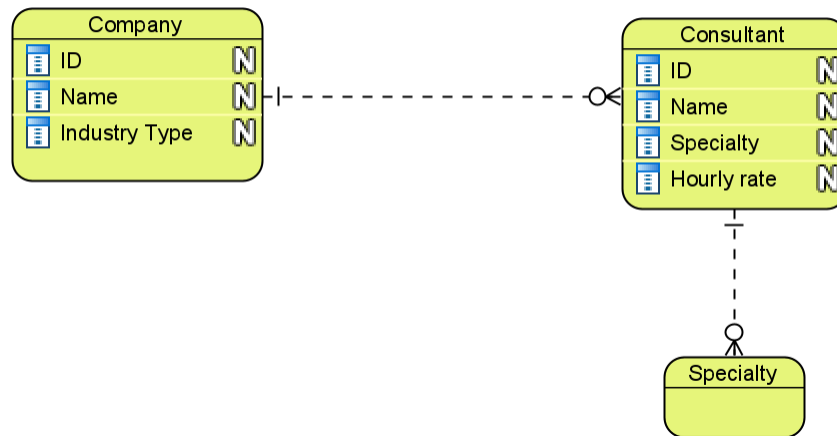


5. Draw ER diagram for the following use cases

- a) Companies, identified by Company ID and described by Company Name and Industry Type, hire consultants, identified by Consultant ID and described by Consultant Name, Consultant Specialty, which is multivalued. Assume that a consultant can work for only one company at a time, and we need to track only current consulting engagements. Draw an ERD for this situation.



- b) Now, consider a new attribute, Hourly Rate, which is the rate a consultant charges a company for each hour of his or her services. Assuming that a consultant can still work for only one company at a time. Draw ER diagram.



- c) (Contd) Now, consider that each consultant works for a company, a contract is written describing the terms for this consulting engagement. Contract is identified by a composite identifier of Company ID, Consultant ID, and Contract Date. Assuming that a consultant can still work for only one company at a time. Redraw ERD to reflect changes.

