Enhanced Entity Relationship Model (EER Model)

EER Model

EER is a high-level data model that incorporates the extensions to the original ER model.

It is a diagrammatic technique for displaying the following concepts

- Sub Class and Super Class
- Specialization and Generalization
- Union or Category
- Aggregation

These concepts are used when the comes in EER schema and the resulting schema diagrams called as EER Diagrams.

Features of EER Model

- EER creates a design more accurate to database schemas.
- It reflects the data properties and constraints more precisely.
- It includes all modeling concepts of the ER model.
- Diagrammatic technique helps for displaying the EER schema.
- It includes the concept of specialization and generalization.
- It is used to represent a collection of objects that is union of objects of different of different entity types.

A. Sub Class and Super Class

- Sub class and Super class relationship leads the concept of Inheritance.
- The relationship between sub class and super class is denoted with (d) symbol.

1. Super Class

- Super class is an entity type that has a relationship with one or more subtypes.
- An entity cannot exist in database merely by being member of any super class.
  For example: Shape super class is having sub groups as Square, Circle, Triangle.

2. Sub Class

- Sub class is a group of entities with unique attributes.
- Sub class inherits properties and attributes from its super class.
  For example: Square, Circle, Triangle are the sub class of Shape super class.

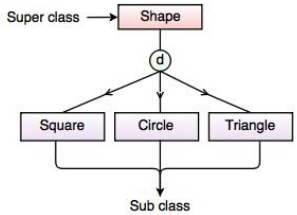
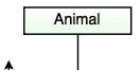


Fig. Super class/Sub class Relationship

B. Specialization and Generalization

1. Generalization

- Generalization is the process of generalizing the entities which contain the properties of all the generalized entities.
- It is a bottom approach, in which two lower level entities combine to form a higher level entity.
- Generalization is the reverse process of Specialization.
- It defines a general entity type from a set of specialized entity type.
- It minimizes the difference between the entities by identifying the common features.
  For example:



Related Topics

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- Distributed Databases
- Object Based Databases
- SQL
- SQL Server
- PL/SQL

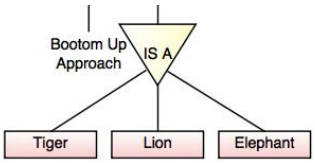

Fig. Generalization

In the above example, Tiger, Lion, Elephant can all be generalized as Animals.

2. Specialization

- Specialization is a process that defines a group entities which is divided into sub groups based on their characteristic.
- It is a top down approach, in which one higher entity can be broken down into two lower level entity.
- It maximizes the difference between the members of an entity by identifying the unique characteristic or attributes of each member.
- It defines one or more sub class for the super class and also forms the superclass/subclass relationship.
  For example

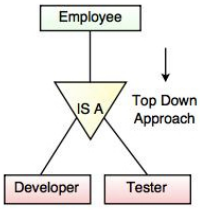

Fig. Specialization

In the above example, Employee can be specialized as Developer or Tester, based on what role they play in an Organization.

C. Category or Union

- Category represents a single super class or sub class relationship with more than one super class.
- It can be a total or partial participation.
  For example Car booking, Car owner can be a person, a bank (holds a possession on a Car) or a company. Category (sub class) → Owner is a subset of the union of the three super classes → Company, Bank, and Person. A Category member must exist in at least one of its super classes.

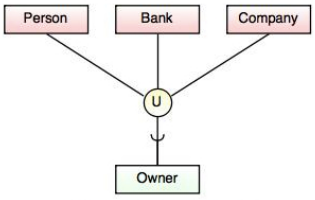

Fig. Categories (Union Type)

D. Aggregation

- Aggregation is a process that represent a relationship between a whole object and its component parts.
- It abstracts a relationship between objects and viewing the relationship as an object.
- It is a process when two entity is treated as a single entity.

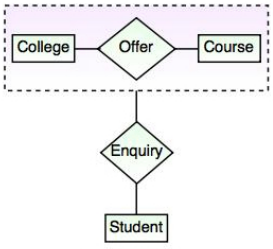

Fig. Aggregation

In the above example, the relation between College and Course is acting as an Entity in Relation with Student.

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