

UNIT-3 DYNAMIC MODELING

Domain Models-Finding Conceptual Classes and description classes-Domain Model Requirement-Finding conceptual class hierarchies-Logical architecture and UML package diagrams-logical architecture refinement-mapping design to code-OO testing

DOMAIN MODELS

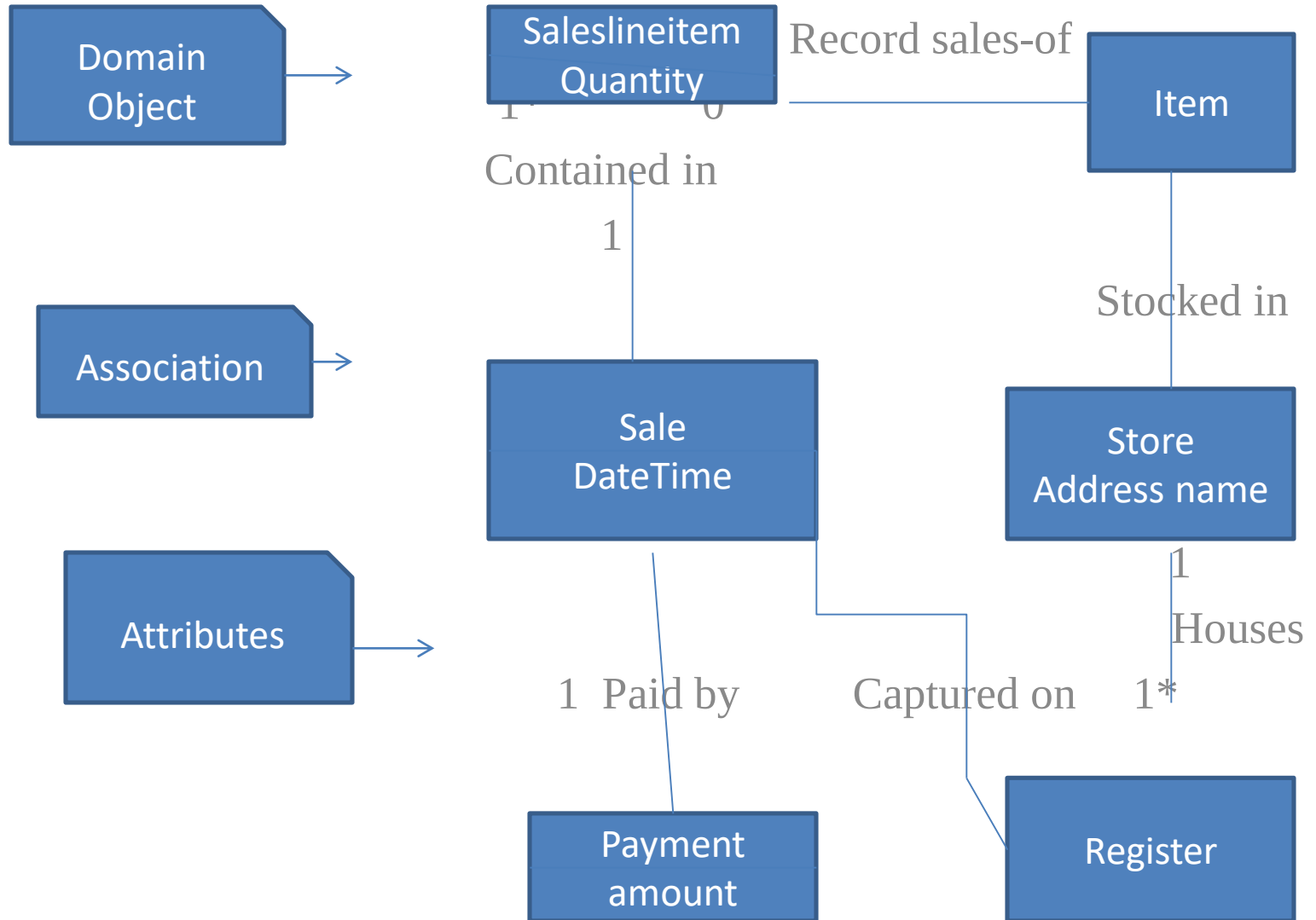
A domain model is a visual representation of conceptual classes or real-world objects in a domain. They are called **conceptual models**, **domain object models**, and **analysis object models**.

- Domain model can be represented by a set of class diagrams in which no operations (methods) are defined. It provides a conceptual view that includes,
 1. Domain objects or conceptual classes
 2. Association between conceptual classes
 3. Attributes of conceptual classes

DOMAIN MODEL AS A VISUAL DICTIONARY

- Domain model provides a visualization of concepts or words in Business domain such as name of the classes, association and attributes using UML notation.
- The information expressed by the Domain model can also be expressed by a plain text as a glossary and hence the name Domain model a visual dictionary.

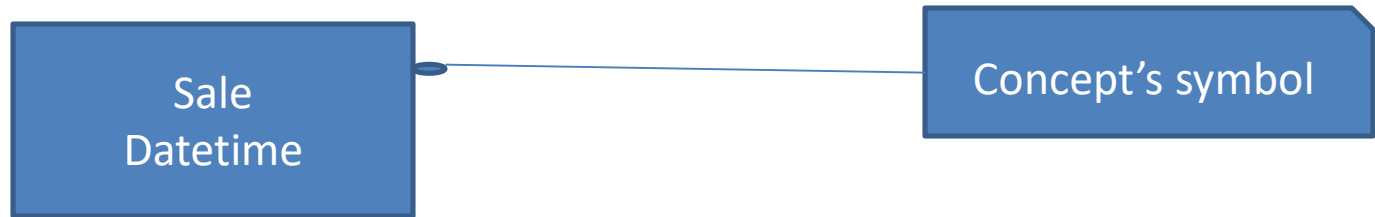
PARTIAL DOMAIN MODEL



CONCEPTUAL CLASSES

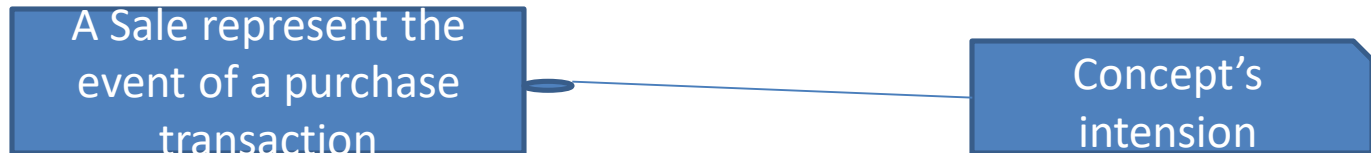
A Conceptual class is an idea, thing, or object to understand the real world situation. It is considered in terms of its symbol, intension, and extension.

- **Symbol**-words or images representing a conceptual class.



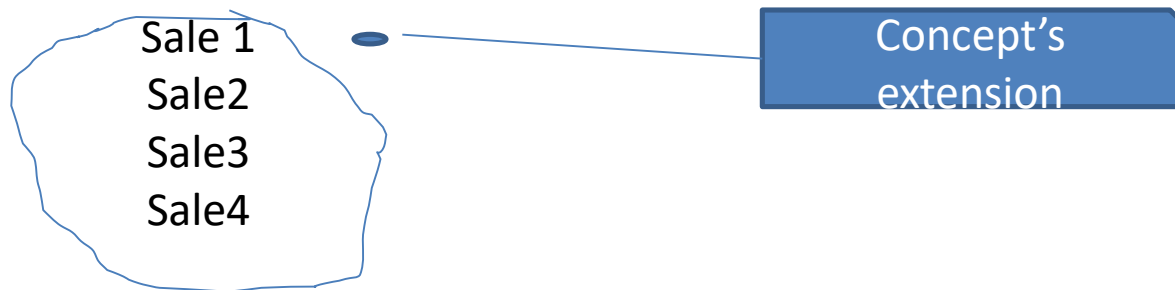
A Conceptual Class has a symbol

- **Intension**-the definition of a conceptual class.



A conceptual class has an intension

- **Extension**-the set of examples to which the conceptual class applies.



A conceptual class has an extension

GUIDELINES TO CREATE A DOMAIN MODEL

1. Find the conceptual classes.
2. Draw them as classes in a UML class diagram.
3. Add associations and attributes.

1) STRATEGIES TO FIND THE CONCEPTUAL CLASS

1. Reuse or modify existing models

→ They are published, well-crafted domain models and data models for many common domains such as inventory, finance, health etc.

2. Use of category list

S.NO	Conceptual class	Examples
1.	Business Transactions	Sale,payment
2.	Roles of people	Cashier,payment
3.	catalogs	Product catalog, flight catlog
4.	Records of finance	Reciept,ledger

3. Identify noun phrases

→ Linguistic analysis i.e identify noun and noun phrases in textual description of a domain.

→ Eg. POS domain

A list of candidate classes for the domain is generated.

Sale

Cashier

Cash Payment

Customer

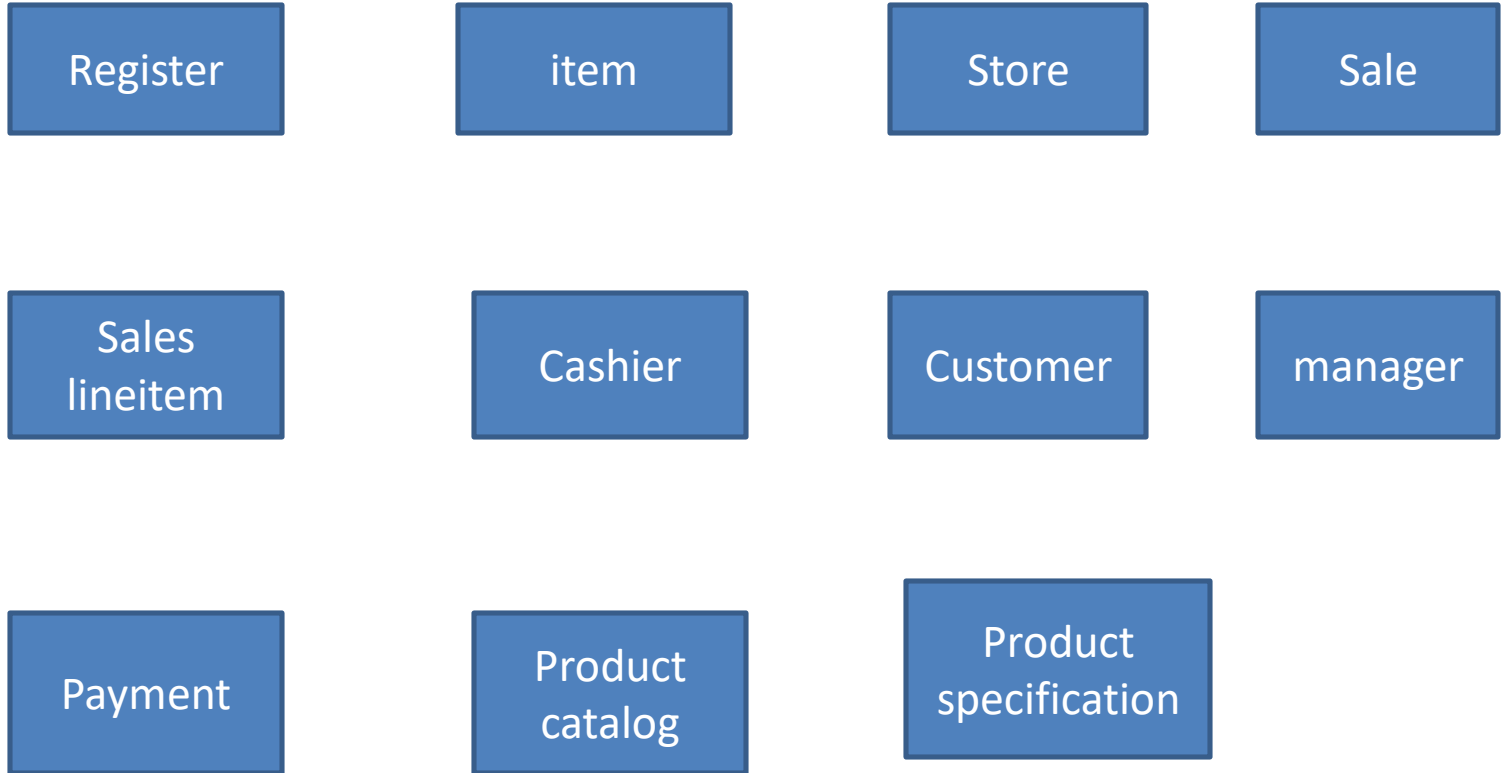
Sales Line Item

Store

Item

Product Description

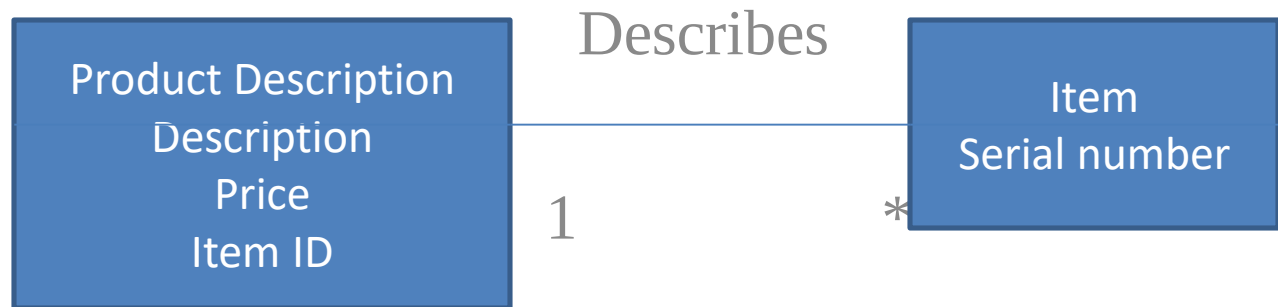
Initial POS Domain Model



DESCRIPTION CLASS

A description class contains information that describes something else.

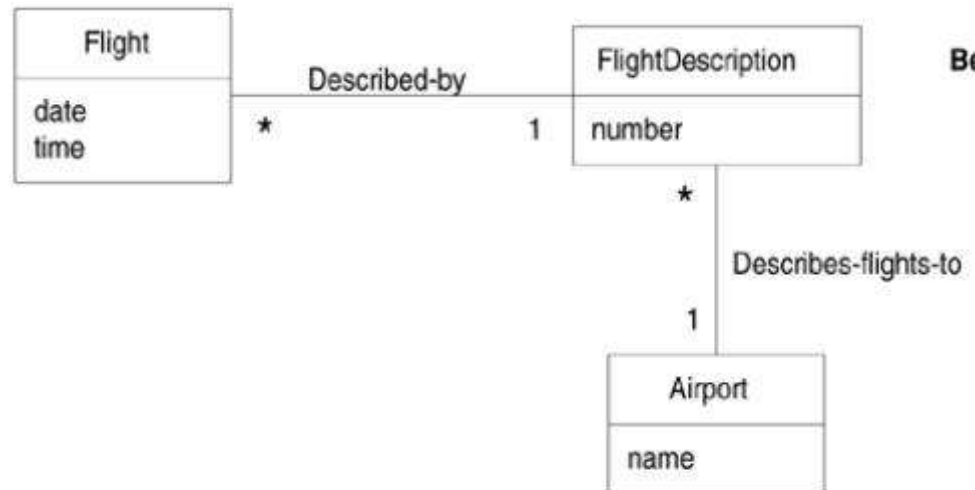
Eg: Product Description- records price, picture and text description of an item.



USE OF A DESCRIPTION CLASS

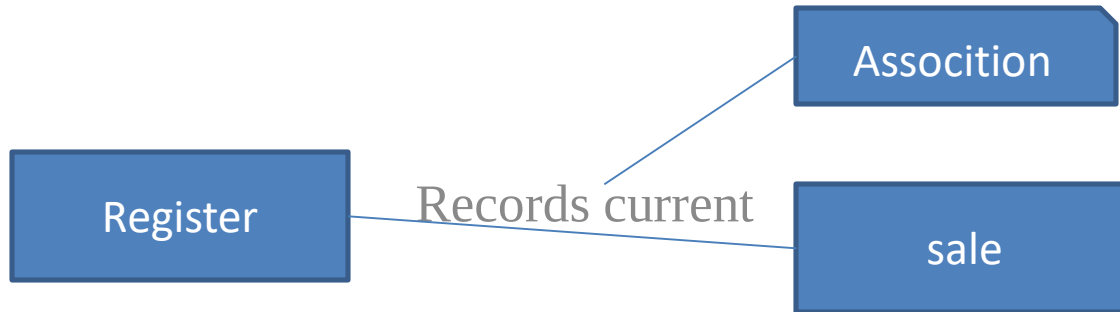
Description class is used when,

- There needs to be a description about an item or service , independent of the current existence of any examples of those items or services.
- Deleting instances of things they describe results in a loss of information that needs to be maintained.
- It reduces redundant or duplicated information.



ASSOCIATION

An association is a relationship between classes that indicates some meaningful and interesting connection.

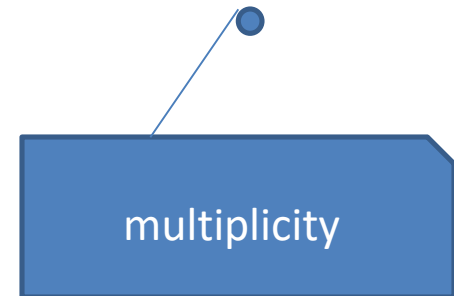
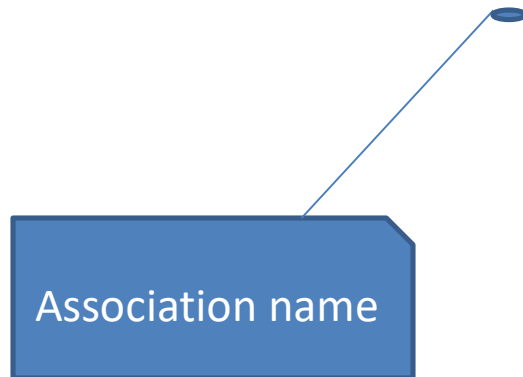
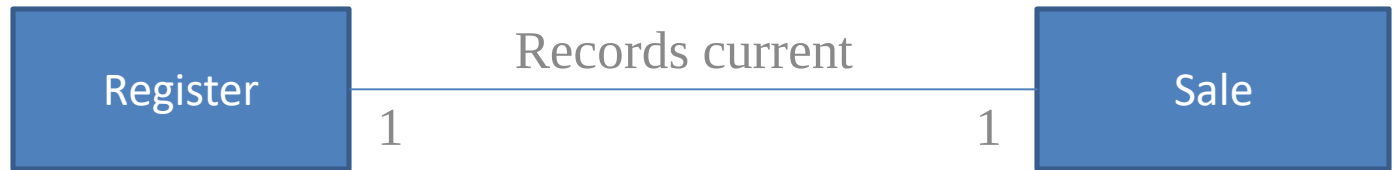


ASSOCIATION NOTATION

- An association is represented as a line between classes with a capitalized association name.
- The end of an association contains a multiplicity expression indicating the numerical relationship between instances of the classes.

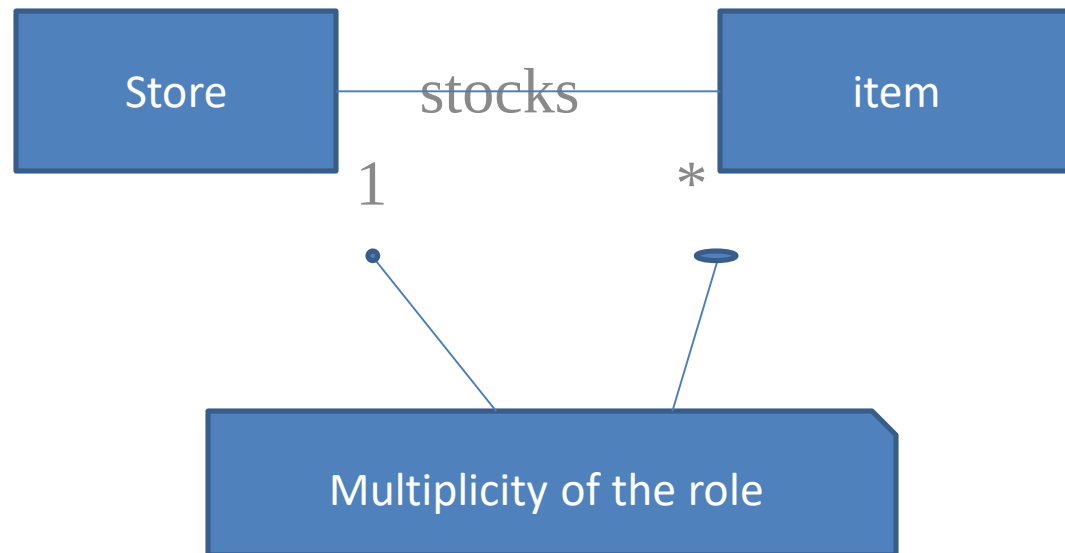
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MULTIPLICITY

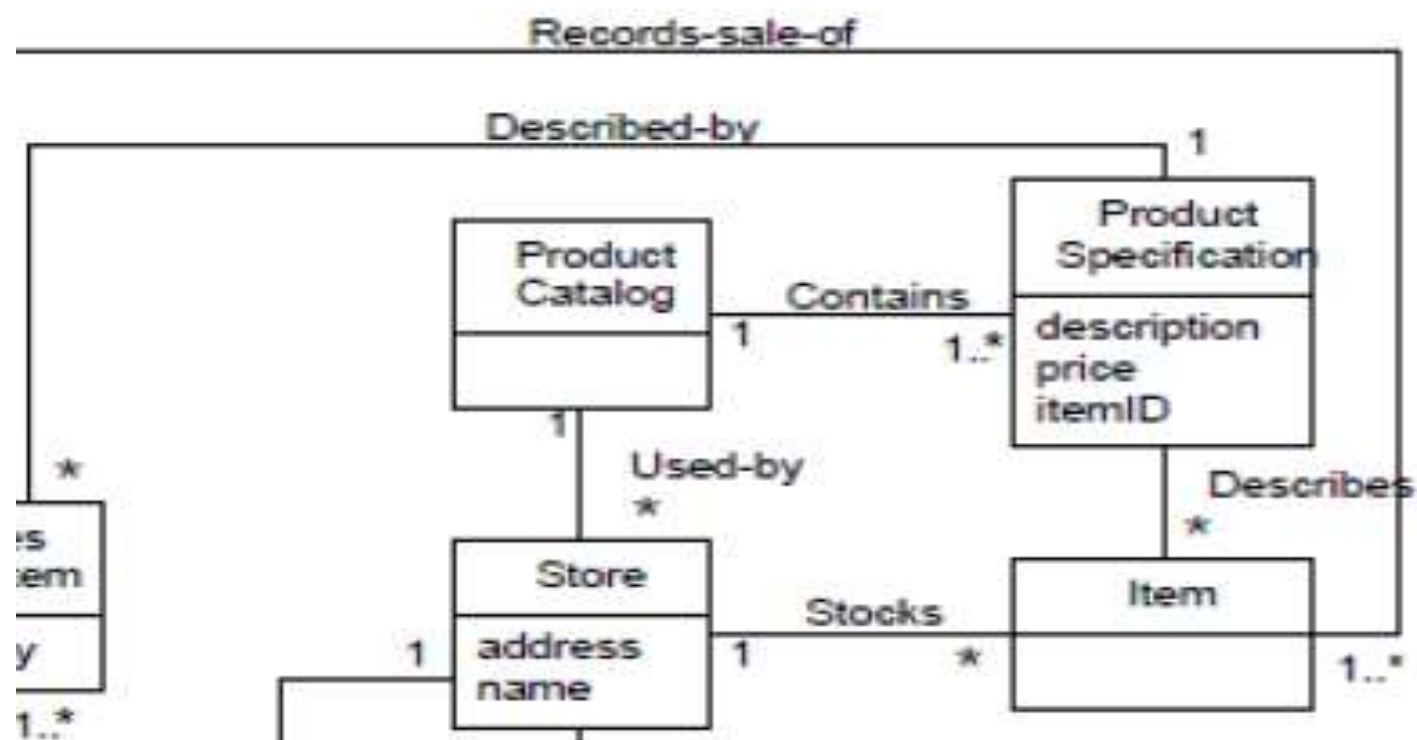
Multiplicity defines how many instances of a class A can be associated with one instance of a Class B.



MULTIPLE ASSOCIATION BETWEEN TWO CLASSES



Fig: Multiple associations



ATTRIBUTE

- An attribute is a logical data value of an object.
- It is useful to identify those attributes of conceptual classes that are needed to satisfy the information requirements of the current scenarios under development.