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FACULTY OF ENGINEERING & TECHNOLOGY

BCS-503: Object Oriented Techniques

Lecturer-16

Preeti Singh

Computer Science & Engineering

OBJECTIVES

In this PPT, you will learn to:

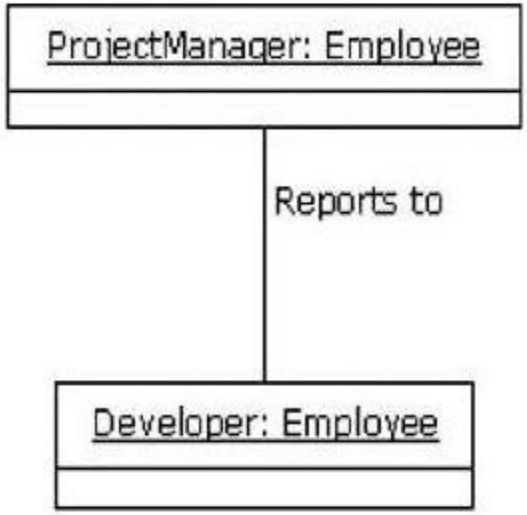
- ❖Recursive Aggregation
- ❖Qualified Association
- ❖Derived Elements
- ❖Derived Association

RECURSIVE AGGREGATION RELATIONSHIPS

Recursive Aggregation:

- Is an association relationship between two objects of the same class.

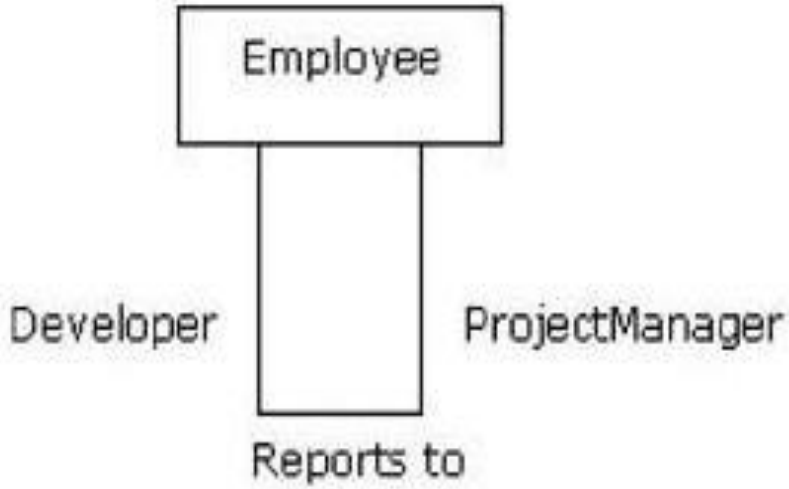
- The following figure shows the recursive aggregation relationship between the Project Manager and Developer objects of the Employee class.



Recursive Aggregation in an Object Diagram

RECURSIVE AGGREGATION RELATIONSHIPS (Contd.)

The following figure shows recursive aggregation in a class diagram.

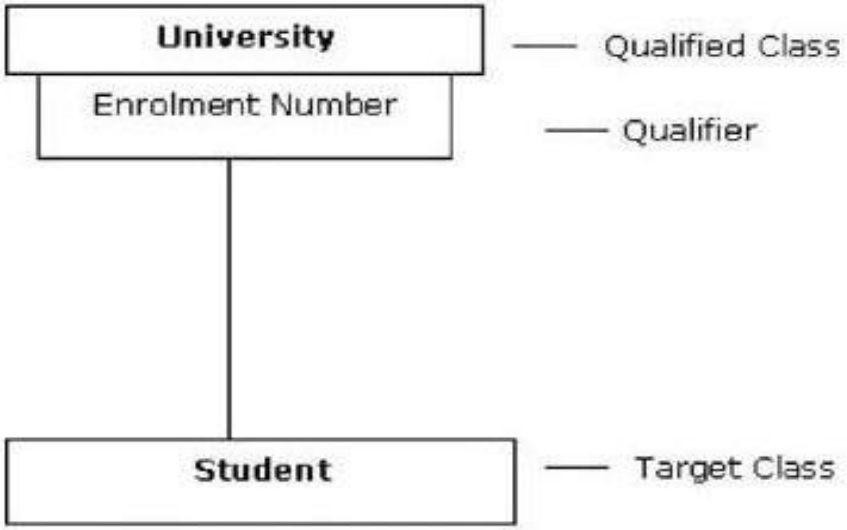


Recursive Aggregation in a Class Diagram

QUALIFIED ASSOCIATION RELATIONSHIPS

Qualified Association:

- An association relationship that relates an object of a class to a particular object or a set of objects of another class.
- A qualifier is used to distinguish the objects of one class from another. A qualifier can be an attribute of the class.
- The following figure depicts a qualified association between the University class and the Student class.



Qualified Association

DERIVED ELEMENTS

- Can be derived from one or more elements of the same type.

- Can be used to model an explicit detailed design.

- Are represented in a class diagram by placing a slash (/) before the name of an element.

Are of two types:

1) Derived attribute

2) Derived association

DERIVED ELEMENTS (Contd.)

Derived Attribute:

- The value of a derived attribute is calculated from the value of other attributes of the object.

- The formula for calculating the derived attribute is represented as a constraint in the class diagram.

- Representation of a derived attribute in UML notation is as follows:

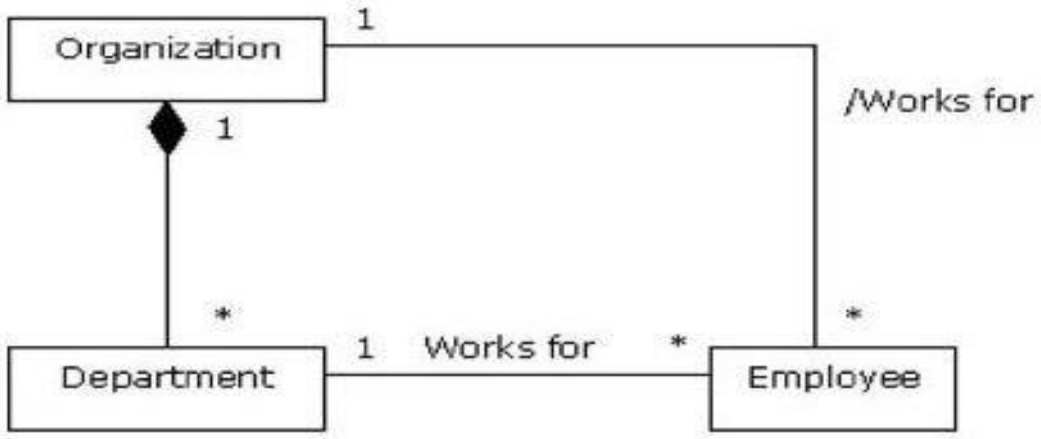
Derived Attribute

DERIVED ASSOCIATION

Derived Association:

- A derived association can be deduced from other associations in a class diagram.

- Representation of a derived association in UML notation:



Derived Association

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Multiple Choice Question:

Q1. A package diagram consists of the following?

a) Package symbols

b) Groupings of Use cases, classes, components

c) Interface

d) Package symbols, Groupings of Use cases, classes & components

Multiple Choice Question:

Q2. Which of the following is an association relationship between two objects of the same class?

a) Recursive aggregation

b) Derived association

c) Qualified association

d) Derived attribute

Multiple Choice Question:

Q3. What types of units does Component follow?

a) Modular Unit

b) Replaceable Unit

c) Unit with well defined interface

d) All of the mentioned

Multiple Choice Question:

Q4. Components can be represented by which of the following?

a) Component symbols

b) Stereotypes

c) Rectangular boxes

d) Component symbols & Stereotypes

Multiple Choice Question:

Q5. What does a component diagram consists of?

a) Components, their Relationship to the environment

b) Packages and dependency

c) Internal structure

d) Internal structure, Components & their Relationship to the environment

Summary

In this PPT, you learned that:

- In addition to generalization, dependency, and association relationships, you can also represent the following relationships among classes and objects:
  - Recursive aggregation
  - Qualified association
- A derived element can be derived from one or more other elements of the same type.
- An interface is defined as a collection of operations that specifies a particular service of a class or a component.