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FACULTY OF ENGINEERING & TECHNOLOGY

BCS-503: Object Oriented Techniques

Lecture-10

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OBJECTIVES

In this PPT, you will learn to:

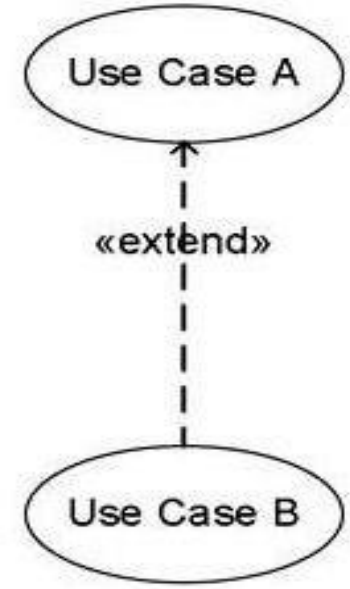
- ❖Relationship among Use Cases
- ❖Use Cases in the Design Phase
- ❖Tracing Requirements

RELATIONSHIP AMONG USE CASES

Relationships that can be established among use cases are: –

Extend:

Indicates that an existing use case is extended by additional behaviour to obtain another use case. The direction of the arrow in the extend relationship points to the use case that is extended to obtain another use

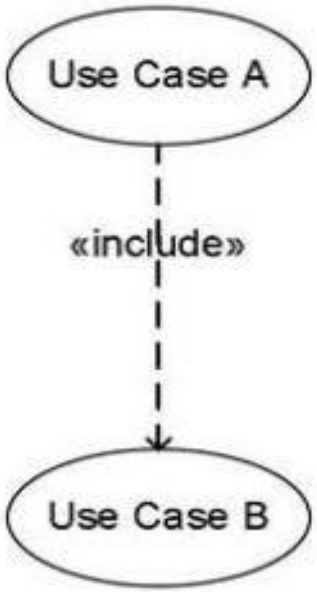


Extend Relationship

RELATIONSHIP AMONG USE CASES (Contd.)

Include:

Indicates that the functionality of a use case is included in the functionality of another use case. The direction of the arrow in the include relationship points to the use case that is included in another use case.



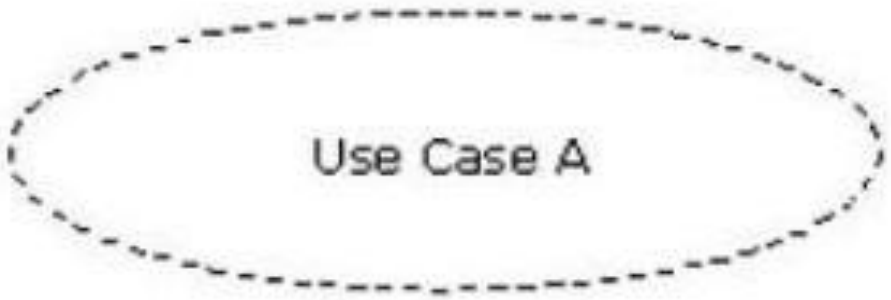
Include Relationship

USE CASES IN THE DESIGN PHASE

- Design phase requires understanding of how the functionality of a use case can be implemented using classes, interfaces, and sub-systems.

- UML provides specific modeling constructs, known as collaboration, to model use case realizations in the design phase.

- Collaboration is a collection of classes, interfaces, and sub-systems that interact with each other to accomplish the functionality of a use case.



TRACING REQUIREMENTS

You should trace requirements for the following two reasons:

1. The customer requirements may change during the SDLC of a project.
2. The implementation of a use case in an iteration may affect the functionality of other use cases of the system.

The two approaches to perform requirements traceability are:

- **Backward:** Tracing requirements from testing phase to requirement gathering phase.
- **Forward:** Tracing requirements from requirement gathering phase to testing phase.

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8. https://www.tutorialspoint.com/java/index.htm

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Multiple Choice Question:

Q1. Which of these should follow a review to the list?

a) Noun or Noun phrases designating characteristics of other entities in the list

b) Noun phrases referring to the activities or behaviors

c) Entities that are same with different names

d) All of the mentioned

Multiple Choice Question:

Q2. Which of the following guidelines helps with adding attributes?

a) Adjectives and modifiers sometimes give clues about class attributes

b) Attribute names should not be taken from problem domain

c) Attribute should be added for object identification

d) All of the mentioned

Multiple Choice Question:

Q3. What is the third step in sequence for conceptual class modelling?

a) Adding Class

b) Adding Association

c) Adding Attribute

d) None of the mentioned

Multiple Choice Question:

Q4. Which of these important verb phrases should be modeled?

a) Below, under

b) Reports to, Consults

c) Completes, Disposes of

d) All of the mentioned

Multiple Choice Question:

Q5. Which of the following statement is true?

a) Adding Multiplicities is the last step in conceptual modelling

b) Adding Multiplicities is the easiest step

c) All of the mentioned

d) None of the mentioned

Summary

In this PPT, you learned that:

- The extend and include relationships are established among use cases to refine the system definition.
- In the design phase, you realize a use case to understand how the functions of the use case, which cannot be translated directly into code, can be achieved.
- In UML, use case realizations are modeled using collaborations.
- Collaboration is a collection of classes, interfaces, and sub- systems that interact to implement the functions of a use case. Use Cases are used to generate test cases.
- Requirements are traced to ensure that the developed system fulfills the needs of the customer adequately.
- There are two approaches to trace requirements, backward and forward requirements traceability.