

Use Case Relationships

Use Case Relationships
The *Uses* relationship
The *Extends* relationship
Discussion Questions

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Questions Answered in This Lecture

- How are use cases related?
- What are the UML *extends* and *uses* for?

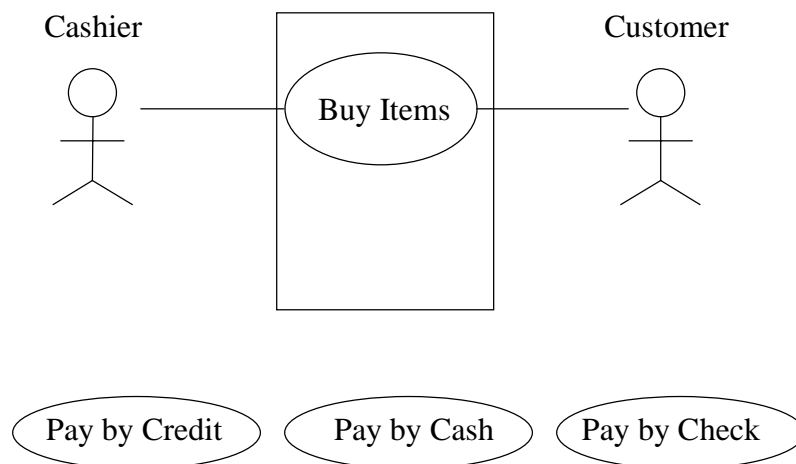
Relating Use Cases

Problem: Sometimes use cases are complex

- May have subsections
- May be long
- May have alternate paths
- May reuse sections of another use case

Answer: Need to be able to define relationships
BETWEEN use cases.

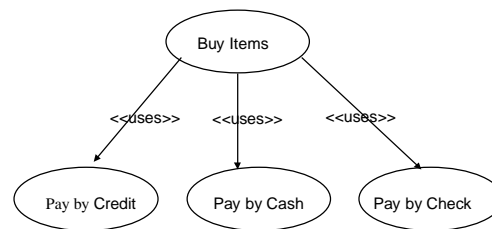
Relating Use Cases Con't



Using another Use-Case

- **Uses**

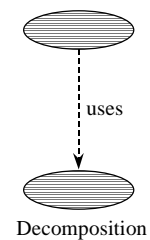
- A uses relationship from use case A to use case B indicates that an instance of the use case A will also include the behavior as specified by B.



Use

- Similar behavior across use cases is identified after the use cases are specified
- Requires *use case decomposition*, and identifying commonalities

Notation



Use UML 1.1

- *Decomposition of common behavior (function call)*
- "Uses is a stereotyped generalization between use cases.
It specifies that the contents of the related use case is included (or used) in the description of the other use case.
It is typically used for extracting shared behavior. It requires that the ordering of the parts of the used use case must be fulfilled if its parts are used at different places. Uses may only be defined between use cases."

Extending a Use Case

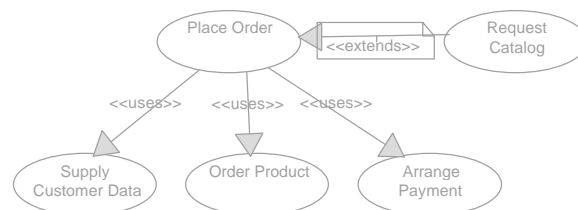
- Sometimes Use cases are complex because they have many steps
- We can separate these into several use cases and relate them with the extends notation

Extension UML 1.1

- A subroutine pulled out of an existing use case
- "Extends specifies that the contents of the extending use case may be added to the related use case.
- It not only specifies where the contents should be added (Extension Point), but also if it only should be added if a specified condition is true (Boolean Expression). "

Extending Use Cases

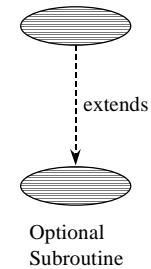
- Extends
 - An extends relationship from use case A to use case B indicates that an instance of use case B may include (subject to specific conditions specified in the extension) the behavior specified by A.



Extension

- Specifies how one use case can be inserted into (and thus, extend) another use case
- The original use case captures the complete course, avoiding unnecessary complexity
- Some examples of extensions
 - modeling optional parts of use cases
 - modeling complex, alternative courses that seldom occur
 - modeling separate sub-courses executed only in certain cases

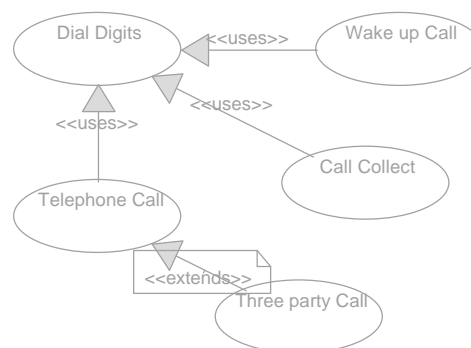
Notation



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Using & Extending a Use-Case

- A use case normally describes one main flow of events. An exceptional or additional flow of events could be added. The exceptional use case *extends* another use case while the additional use case is *used*
- Extends
 - Adds a flow to a use case that is already complete
- Uses
 - Reuses common behavior in different use cases



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Discussion Questions

- Why not describe a system (nearly) entirely in terms of a single use case that is decomposed into hierarchy of *uses* relationships?