

System Behavior using Collaboration Diagram

Use Case, Sequence, and Collaboration Diagrams
Collaboration Diagrams

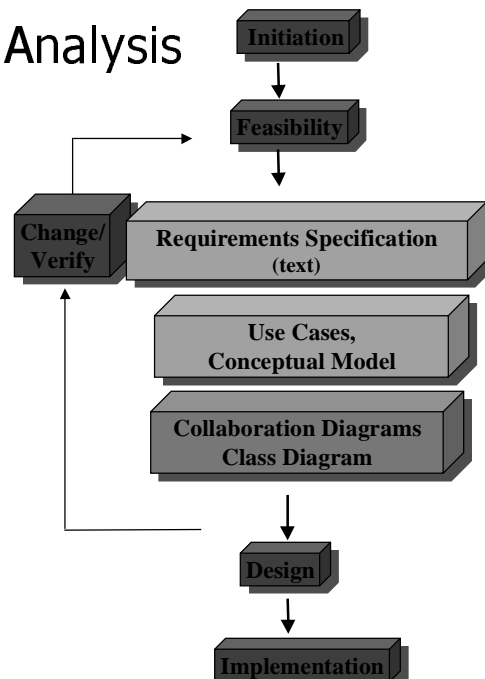
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Questions Answered in This Lecture

- What is the relationship between a use case , sequence diagram, and collaboration?
- What is a collaboration diagram?

Object-Oriented Analysis

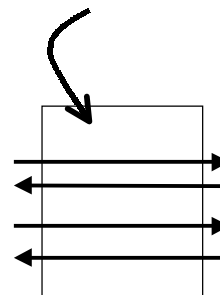
- Textual documentation
 - Describes system
 - Rationale
 - Requirements
- Multiple system models
 - Processing depicted in different views
 - Use case diagram (graph)
 - Collaboration Diagram / Contracts (text)
 - Data depicted in different views
 - Conceptual model (graph)
 - Class diagram (graph)



Use Case and Sequence Diagrams

Recall Use Case Details

- Use Case
 - A sequence of transactions in a system whose task is to yield a measurable value to an individual actor of the system
 - However, use case does not define the "sequence of transactions"
 - How does Buy Items work?
- Sequence Diagram
 - Elaborates on the operational details of a use case
 - A use case may have multiple sequence diagrams, each of which elaborates different aspects of the collaboration among agents

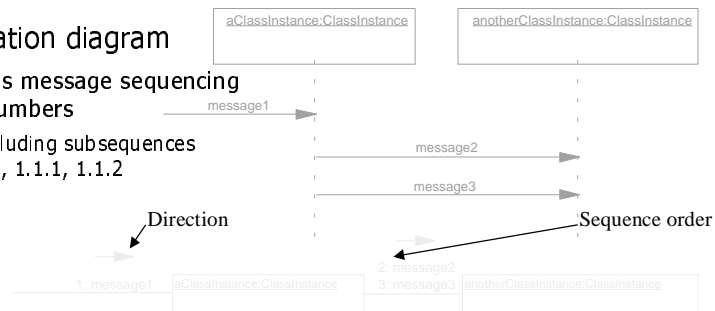


Collaboration Diagram

- A graphic diagram used to illustrate interactions between instances (and classes) in the class model
- UML has two kinds of diagrams for this purpose
 - Sequence diagram
 - Collaboration diagram
- Collaboration diagram

- Clarifies message sequencing with numbers

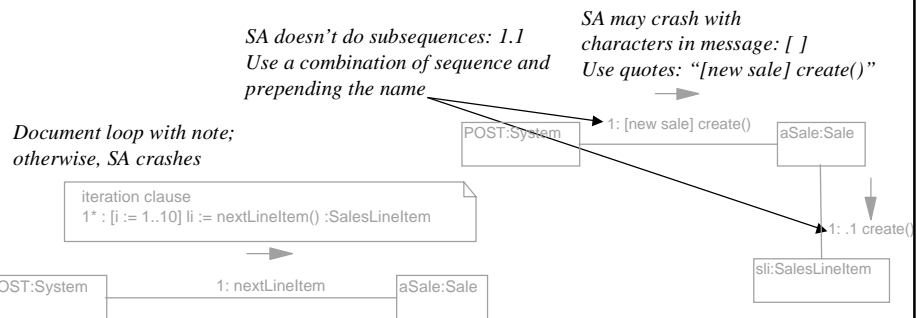
- Including subsequences 1.1, 1.1.1, 1.1.2



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Collaboration Links

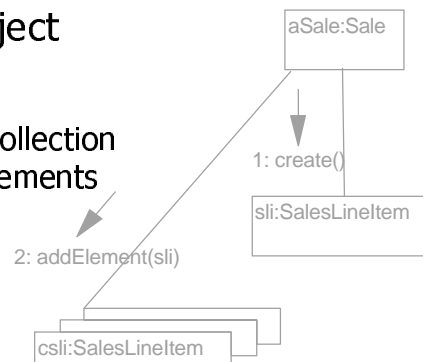
- Link
 - connection path between two object instances
 - implies that there **must** be an association between the corresponding classes in the class model
- Syntax
 - #: return := message(parameter : parameterType) : returnType



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Collaboration Multi-Objects

- Multi-object
 - a collect of object instances
 - E.g., list, array
- Message to a Multi-object
 - sent to the collect
 - sometimes implies that collection applies message to all elements of collection



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Building a Collaboration Diagram

- For each system operation
 - Create a separate collaboration diagram
 - The diagram starts with the operation (message) to its class
 - Ensure that the collaboration diagram is consistent with the associated Contract
 - Modify both if necessary
 - Use design patterns to construct a good description

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