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Use Cases and Software Requirements Specification

Sequence Diagrams for Use Case Authoring

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Acknowledgements

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- A Microsoft® PowerPoint file of this notebook is available by request. Send an email to John Artim (jartim@uistyle.com) requesting the Use Case Basics Notebook PowerPoint file in the Use Cases and Software Requirements Specification series. Please include your name, affiliation, and your intended use of the material.

Goals of this Notebook

- Introduce UML sequence diagrams as a way to present use case scenarios
- Use these diagrams to demonstrate the relationship between scenarios and a concept model

Browsing Time for this notebook is about 45 minutes.



Background for this Notebook

- You should have a basic understanding of use case modeling such as is outlined in the *Use Case Basics* notebook
- You will get more out of this notebook if you've already gone through the notebook, *Concept Modeling for Analysis and Specification*

What is a Sequence Diagram?

- A sequence diagram shows how an actor interacts with a set of objects to complete a use case
- Think of it as a graphical scenario
- **Note:** sequence diagrams are also used to demonstrate how objects collaborate in a design but this isn't relevant for analysis work

Confirm Order—Scenario Text

- In one of the final steps in *Create an Order*, the *Customer Service Representative* acts to *confirm the Order*
 - See *Concept Modeling for Specification* slide #25
1. Activate *Confirm Order*
 2. The *Order* requests that the *Order Item* confirm itself
 3. The *Order Item* confirms stock availability and reserves this stock
 4. The *Order* requests that the *Payment* process itself
 5. The *Payment* debits the source of funds and adds an entry to the *General Ledger* for this *Order* and *Payment*

Confirm Order—A Simplified Sequence Diagram

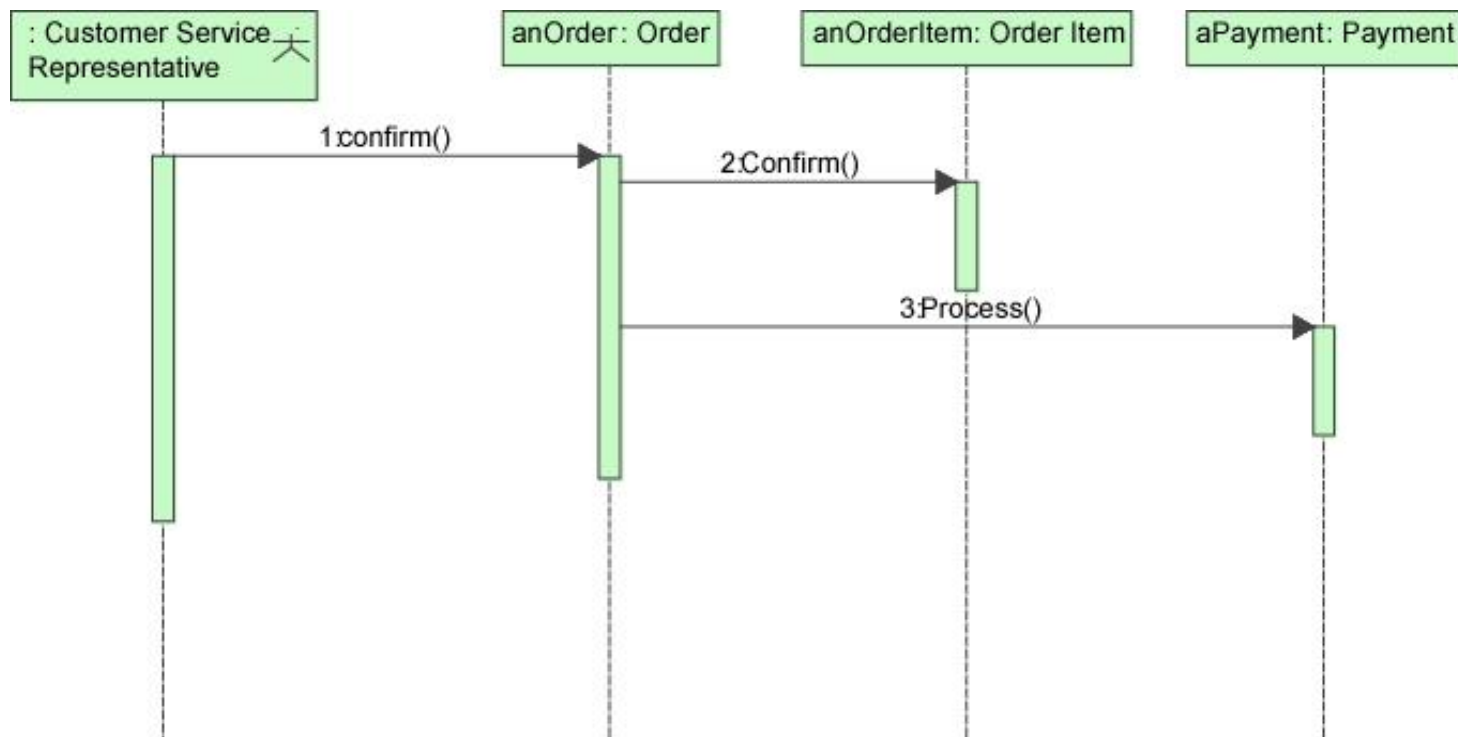


Diagram Parts—The Object

- Represents one object in the scenario
- The *Classifier* names the class for this object
- This object instance is named by *Object Name*
- The tail below the object represents the flow of time, flowing from top to bottom

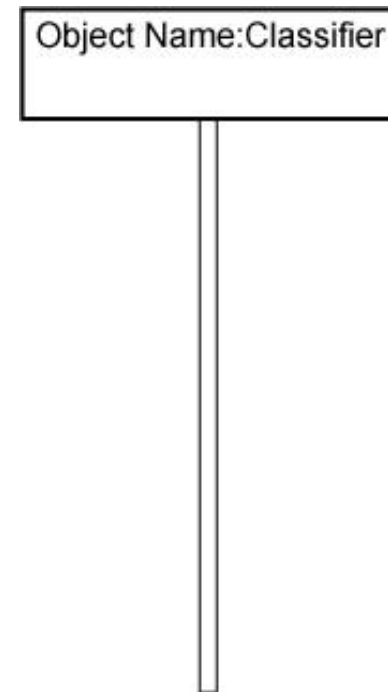


Diagram Parts—The Actor

- This is the placeholder for the actor initiating all action in this scenario
 - Some UML sources¹ mark this with a stick figure atop a column, as here
 - Others label the first object with a stick figure icon, as in preceding diagram

1. *UML Reference*, Rumbaugh, Jacobson, and Booch

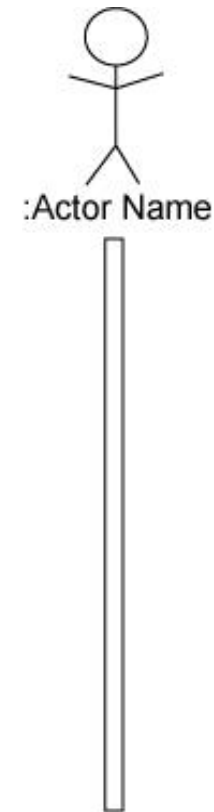
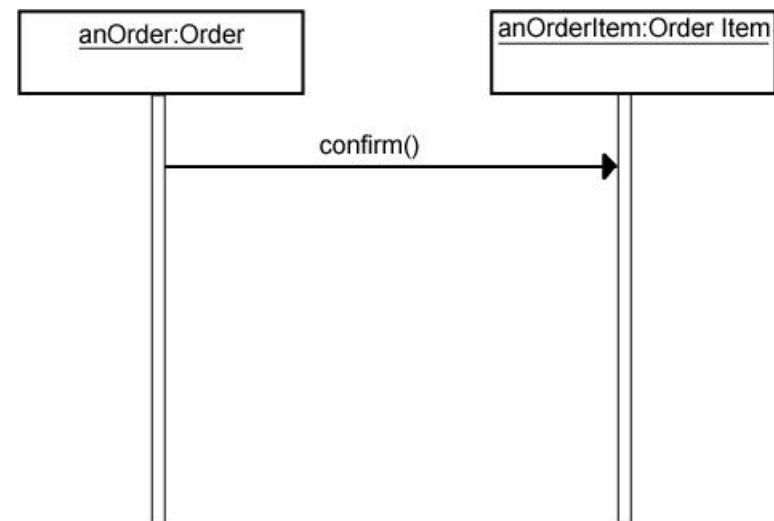


Diagram Parts—An Interaction

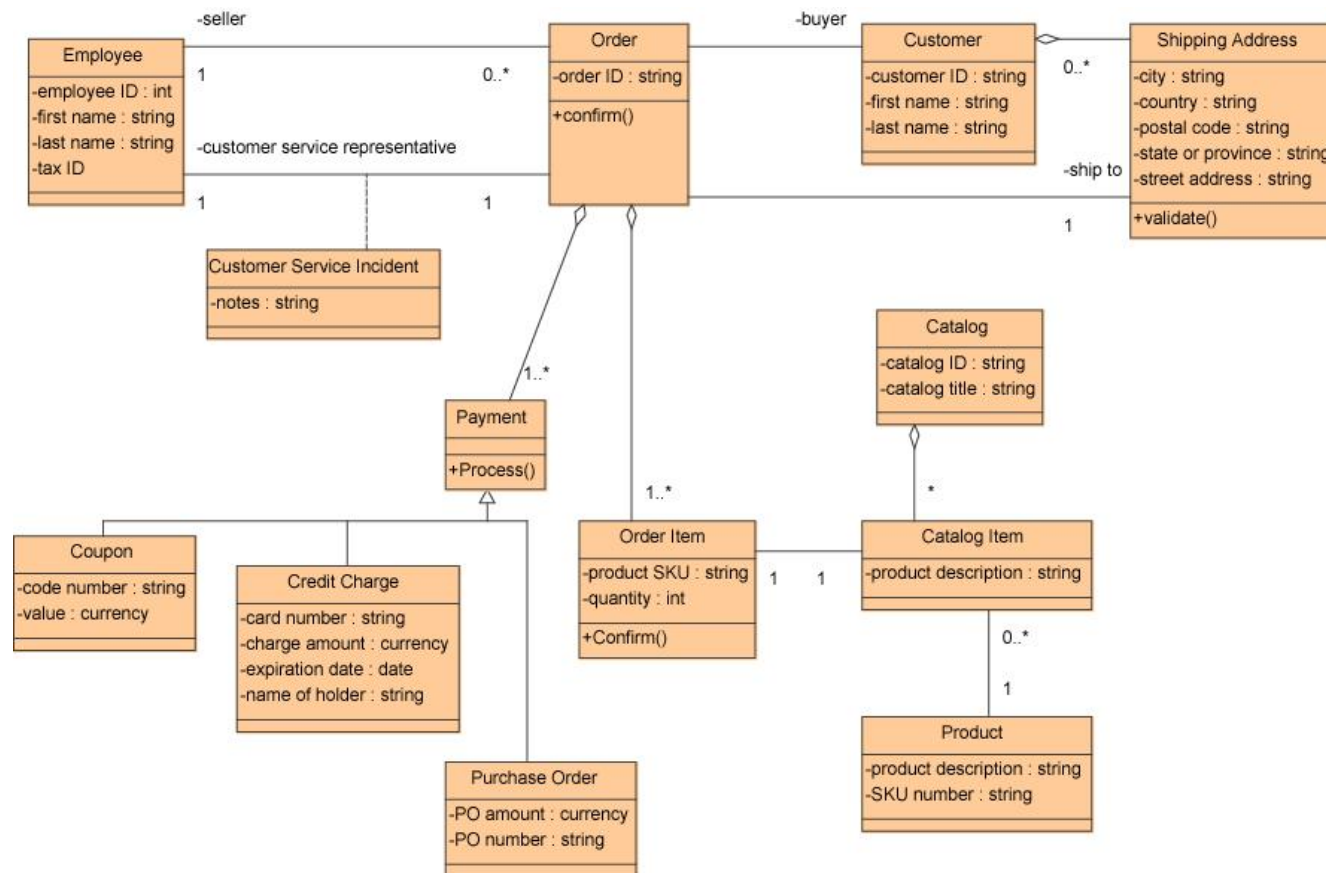
- An interaction depicts one object
 - The sender
- Requesting that the next object
 - The receiver
- Execute one of its responsibilities
- For Example:
 - *anOrder* requests that *anOrderItem* confirm itself



Relationship to Classes

- The events—that is, the requests going from sender to receiver—in an interaction correspond to responsibilities in class definitions

Customer Service Class Diagram



Sequence Diagrams for Use Case Scenarios

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What About User Interface? Business Logic?

- Scenarios must have placeholders for user interface requirements and business logic
 - Bundle user interface requirements in a sequence object called an Interface
 - Bundle business logic in a sequence object called a Task

Confirm Order—Complete Sequence Diagram

