

Chapter 6: Sequence and Collaboration Modeling

- Introduction
- Sequence Diagram
 - Elements of Sequence Diagram
 - Example
- Collaboration Diagram
 - Elements of Collaboration Diagram
 - Example

Sequence and Collaboration Diagram

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Introduction

- The Sequence and Collaboration diagrams are used to illustrate *interactions between objects*.
- They both model objects and messages between objects.

Sequence and Collaboration Diagram

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Sequence Diagram

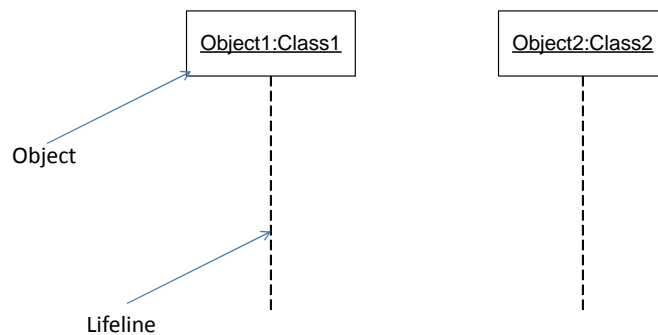
- Introduction
 - The Sequence diagram uses a time-oriented visualization.
- Elements of Sequence Diagram
 - Object
 - Object lifeline
 - Message
 - Activation
 - Object Termination
 - Iteration and Condition

Sequence and Collaboration Diagram

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Elements of Sequence Diagram

- Object and Lifeline
 - The objects that participate in an interaction are either concrete things or prototypical things.
 - Object lifeline is a line represent the life of object.



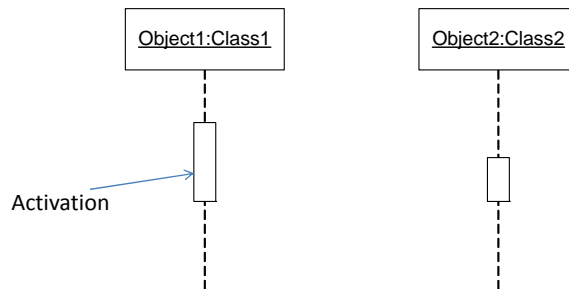
Sequence and Collaboration Diagram

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Elements of Sequence Diagram

- Activation

- Represents both the duration of the action in time and the control relationship between the activation and its callers (stack frame).



Sequence and Collaboration Diagram

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Elements of Sequence Diagram

- Message

- An interaction between two objects is performed as a message sent from one object to another.
- It may invoke an operation, raise a signal, or cause the creation or destruction of the target object.
- Message consist of sequence number.
- Common Messages are:
 - *Call*: Invokes an operation on an object; an object may send message to itself, resulting in the local invocation of an operation.
 - *Return*: return a value to the caller.
 - *Send*: Sends a signal to an object.
 - *Create*: Creates an object.
 - *Destroy*: Destroys an object; an object may commit suicide by destroying itself.
 - *Asynchronous*: Message that not have a return.

Sequence and Collaboration Diagram

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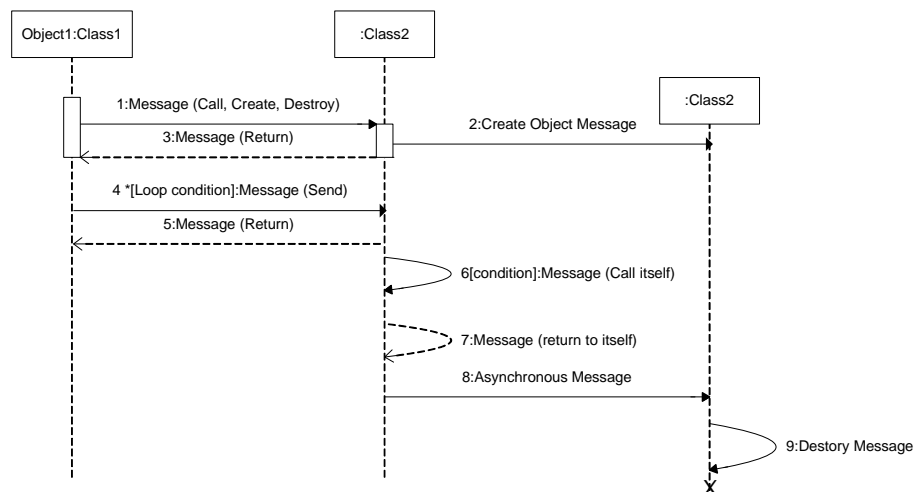
Elements of Sequence Diagram

- General form of Message
 - Sequence number : message([arguments])
 - 1 : NewInvoice()
 - 2 : Return invoice number
 - 3 : AddItem(productid)
 - 4 : Return done
- Object Termination symbolized by an X at the end of lifeline of object.
- Iteration and Condition
 - Sequence Number: [Condition] Message()
 - Sequence Number *[Loop condition] : Message()

Sequence and Collaboration Diagram

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Elements of Sequence Diagram

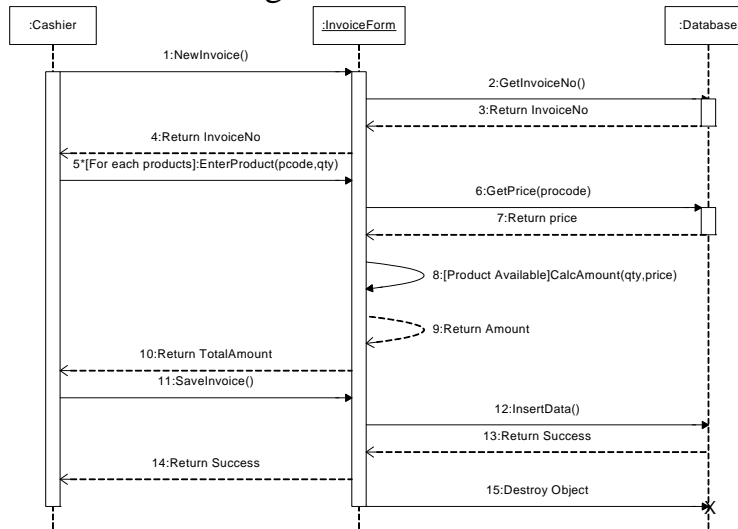


Sequence and Collaboration Diagram

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Example of Sequence Diagram

• Process of Creating Invoice



Sequence and Collaboration Diagram

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Collaboration Diagram

• Introduction

- Collaboration Diagram places a priority on mapping the object interactions to the object links (drawing the participating objects in an Object Diagram format and laying the message parallel to the object link).
- Collaboration Diagram emphasize the effect of the object structures on the interactions.

Sequence and Collaboration Diagram

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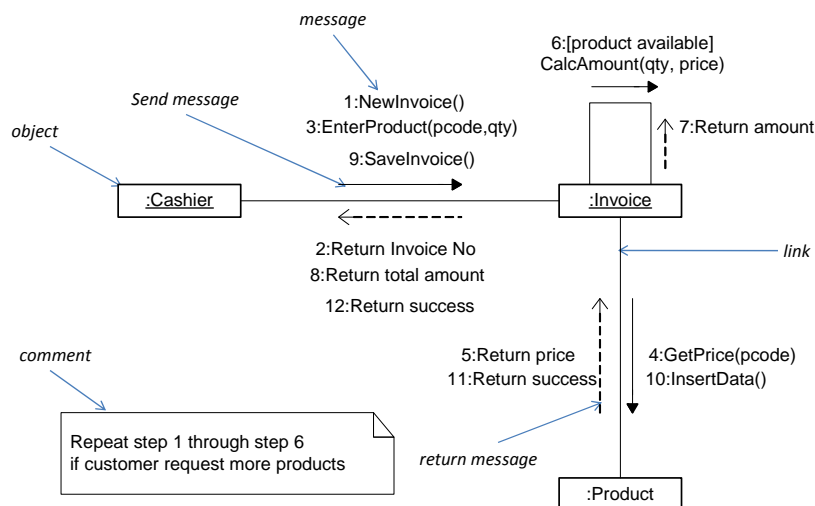
Collaboration Diagram – Elements

- Elements of Collaboration Diagram
 - Object
 - Link: link between object
 - Message
 - Send Message
 - Return Message
 - Condition
 - Sequence number: [Condition] Message

Sequence and Collaboration Diagram

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Collaboration Diagram – Elements and Example



Sequence and Collaboration Diagram

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