

Sequence Diagrams

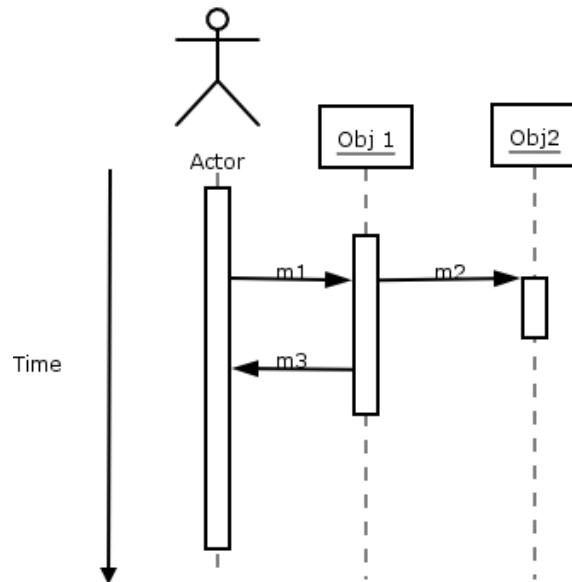
What is a Sequence Diagram?

- A model describing how groups of objects collaborate in some behavior over time.
- The diagram captures the behavior of a single use case.
- It shows objects and the messages that are passed between these objects for the particular use case.

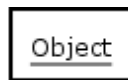
When to use a Sequence Diagram?

A good design can have lots of small methods in different classes. Because it is difficult to figure out the overall behavior of the design we draw a sequence diagram to verify the behavior.

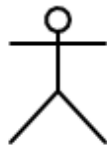
A Simple Sequence Diagram



Basic Notation



Object: objects are instances of classes and arranged horizontally.



Actor

Actor: actors can communicate with objects, therefore we also place them in columns in the sequence diagrams.

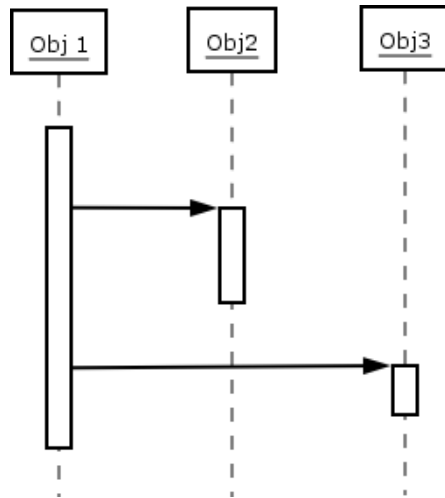


Lifeline & Activation: the lifeline (dashed vertical line) indicates the existence of the object over time. The activation (rectangular box) indicates that the object is performing an action.

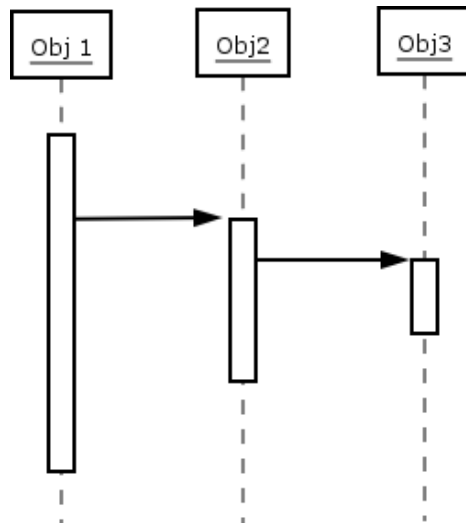


Message: messages indicate communication between objects (actors). Messages are passed between active objects.

Sequence Diagram Structures



Fork-Centralized



Stair-Decentralized

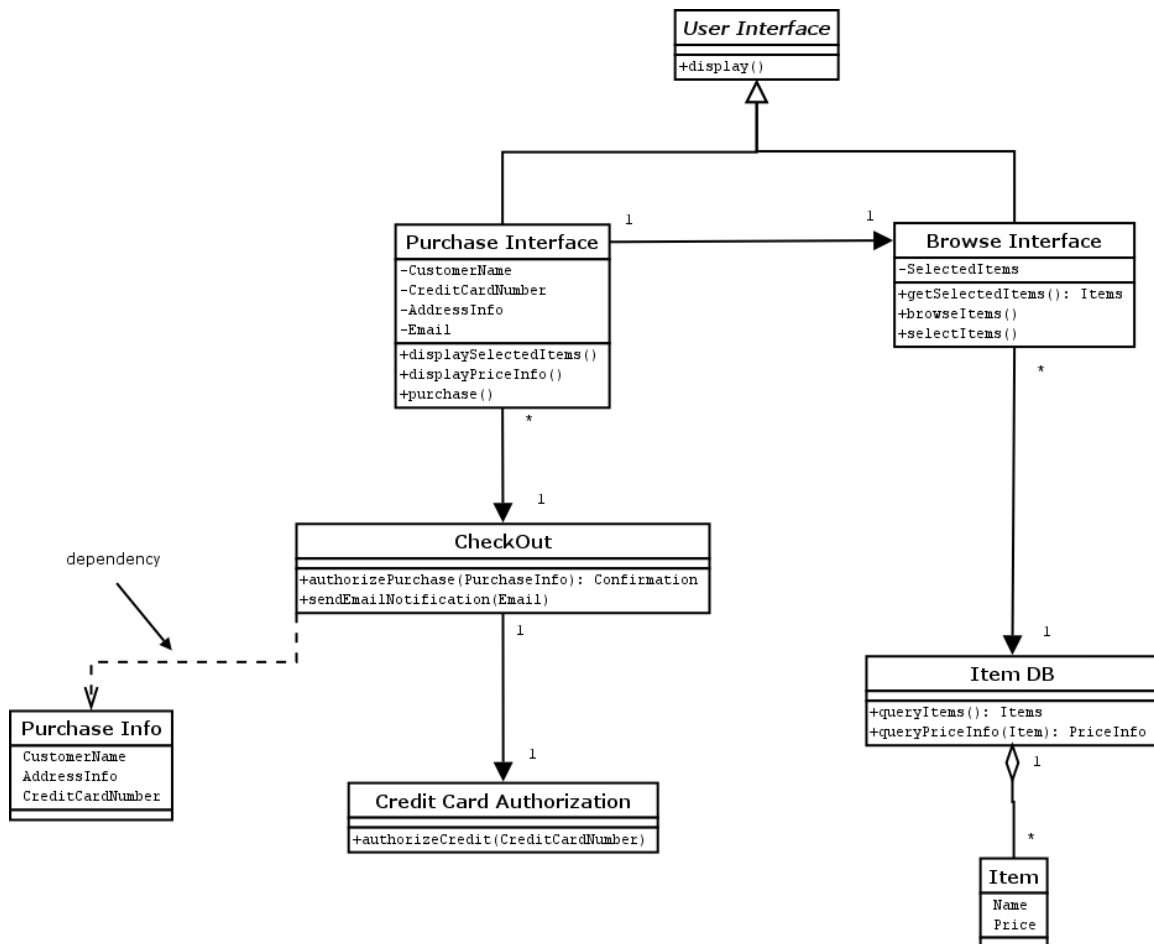
Example: Online Shopping

In order to develop our sequence diagram we will need the use case text and the specification class diagram:

Use Case Text: Buy a Product Online

1. Customer browses through catalog and selects items to buy.
2. Customer goes to checkout.
3. Customer fills out shipping information.
4. System presents full pricing information, including shipping information.
5. Customer fills in credit card information.
6. System authorizes purchase.
7. System confirms sale immediately.
8. System sends confirming email to customer.

The specification class diagram as developed previously:



We now work through the use case text and trace the behavior in the specification diagram as the basis for the sequence diagram:

