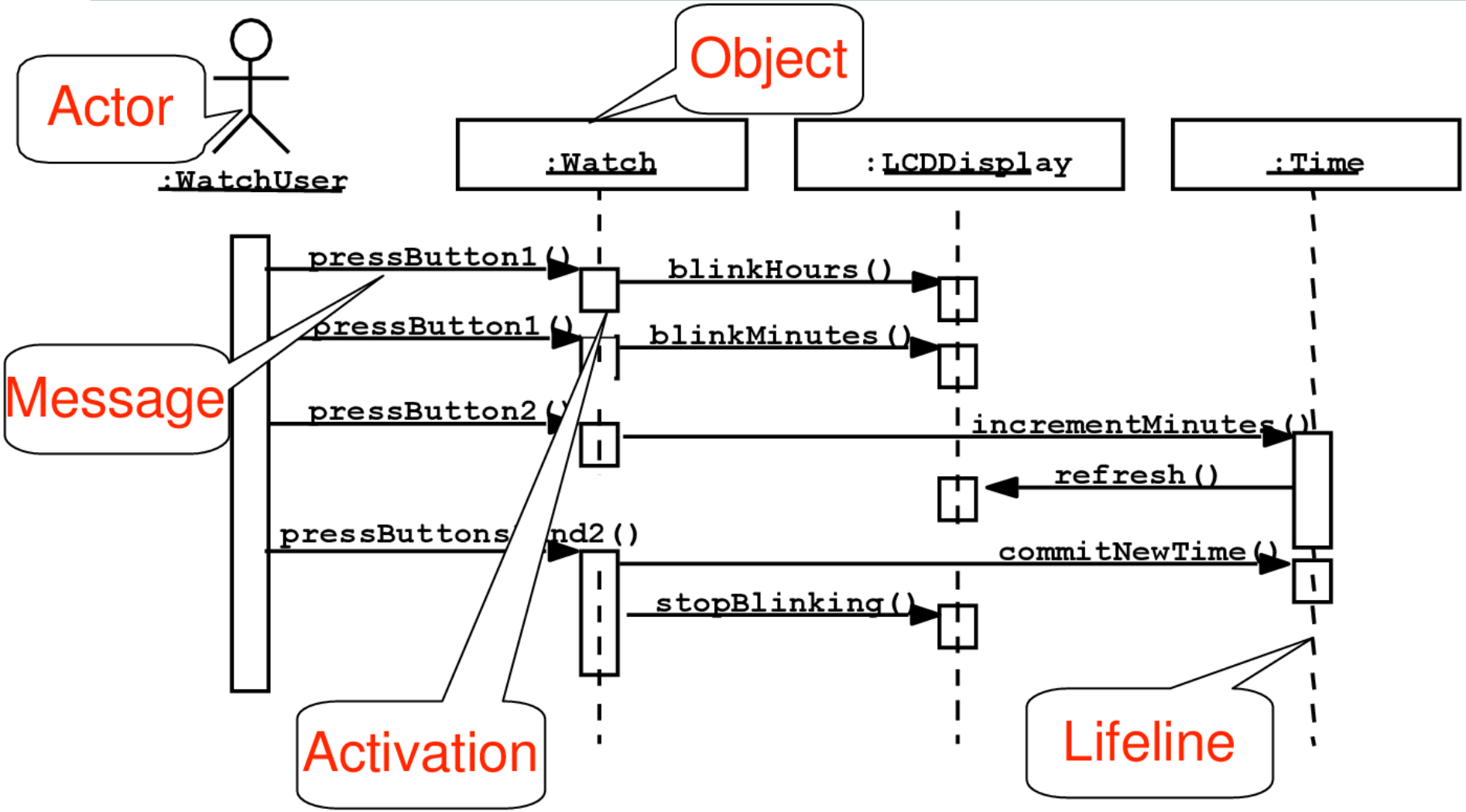
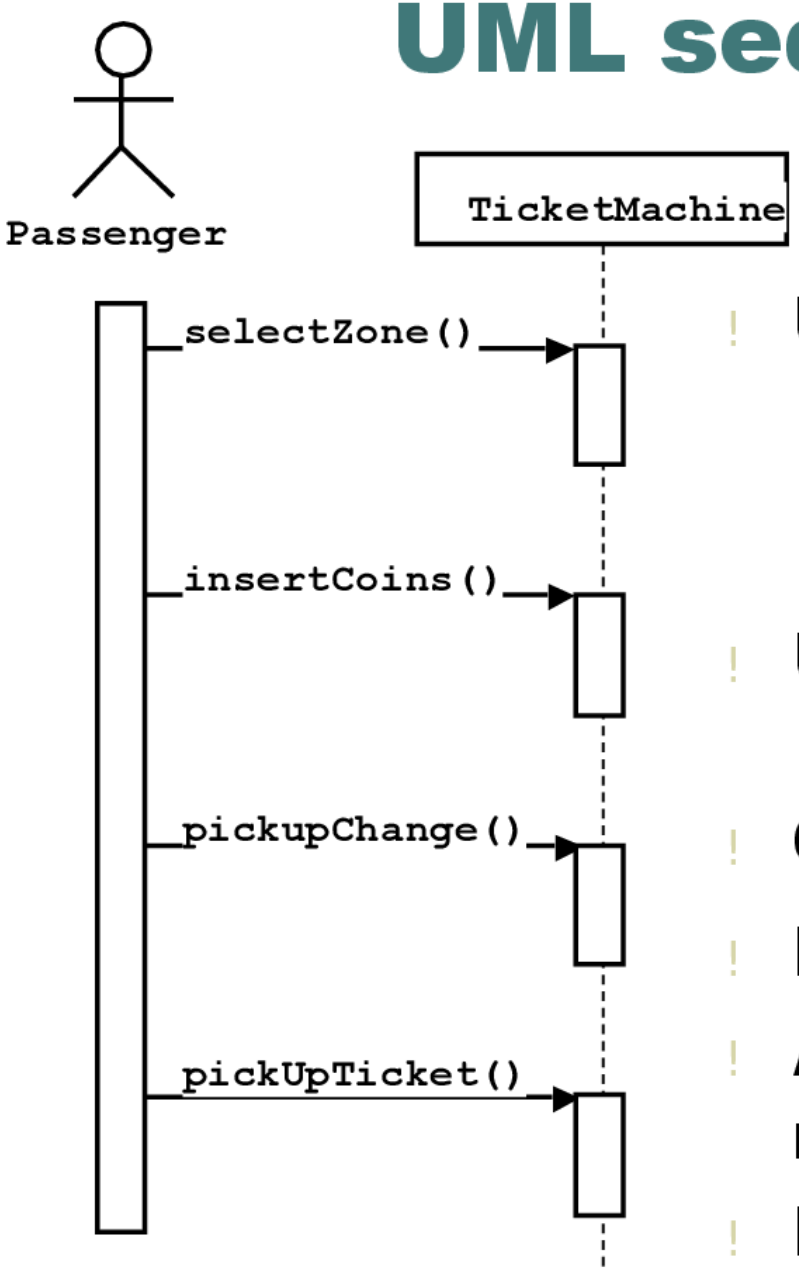
UML first pass: Sequence diagram

Represent behavior as interactions

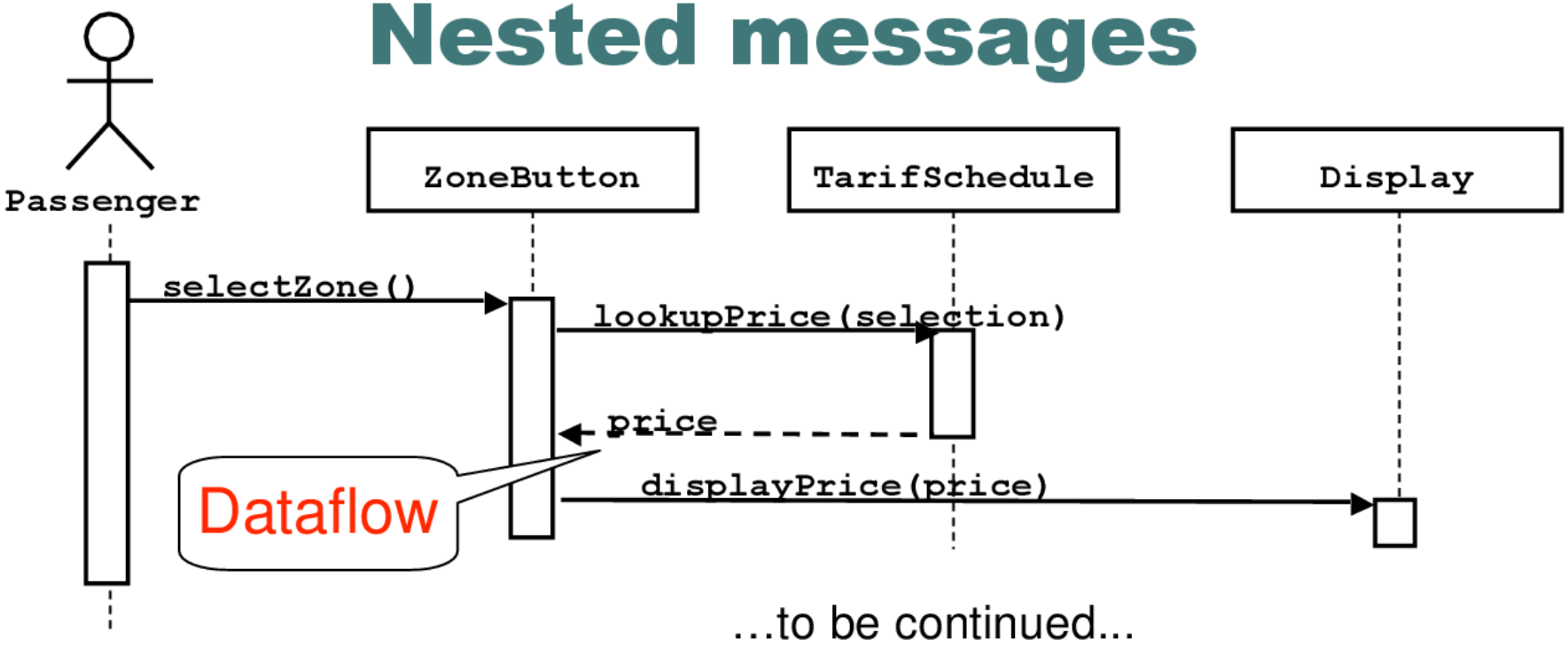


UML sequence diagrams



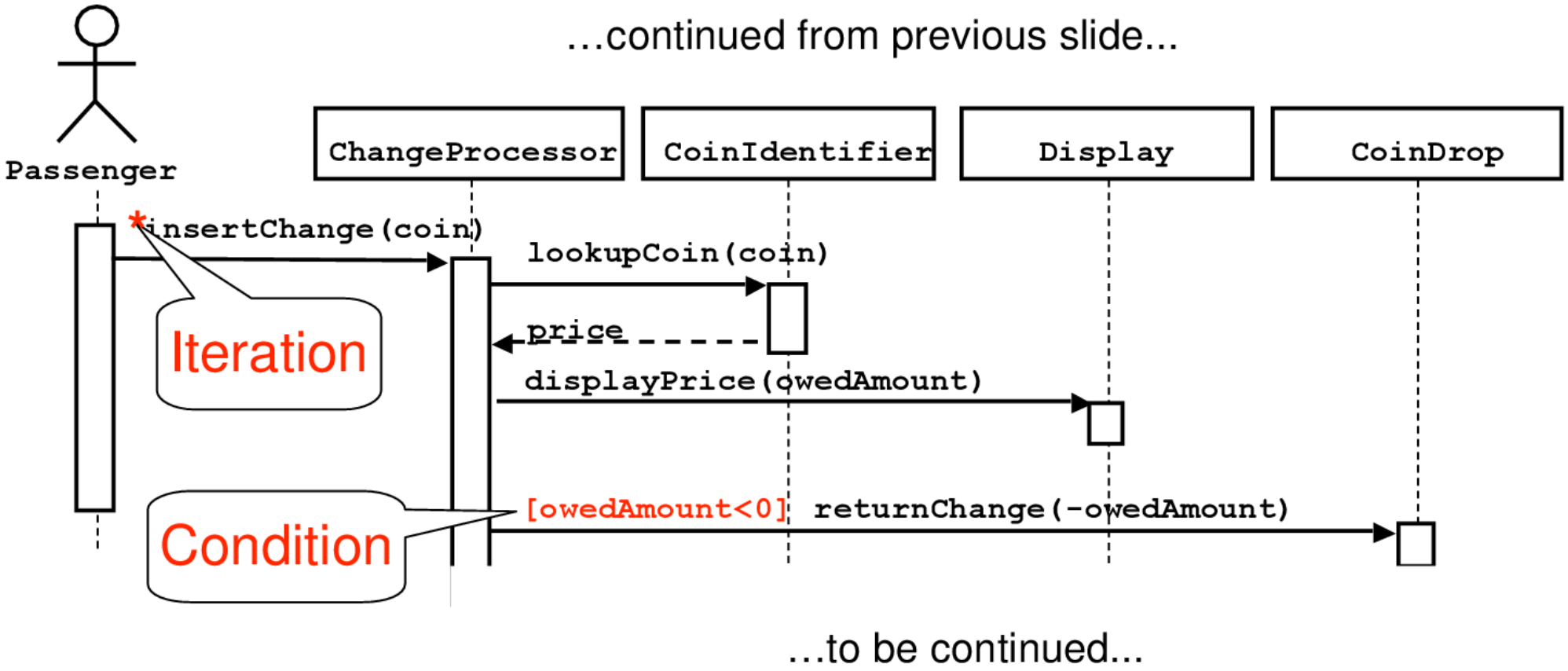
- Used during requirements analysis
  - To refine use case descriptions
  - to find additional objects ("participating objects")
- Used during system design
  - to refine subsystem interfaces
- Classes are represented by columns
- Messages are represented by arrows
- Activations are represented by narrow rectangles
- Lifelines are rep. by dashed lines

Nested messages



- The source of an arrow indicates the activation which sent the message
- An activation is as long as all nested activations
- Horizontal dashed arrows indicate data flow
- Vertical dashed lines indicate lifelines

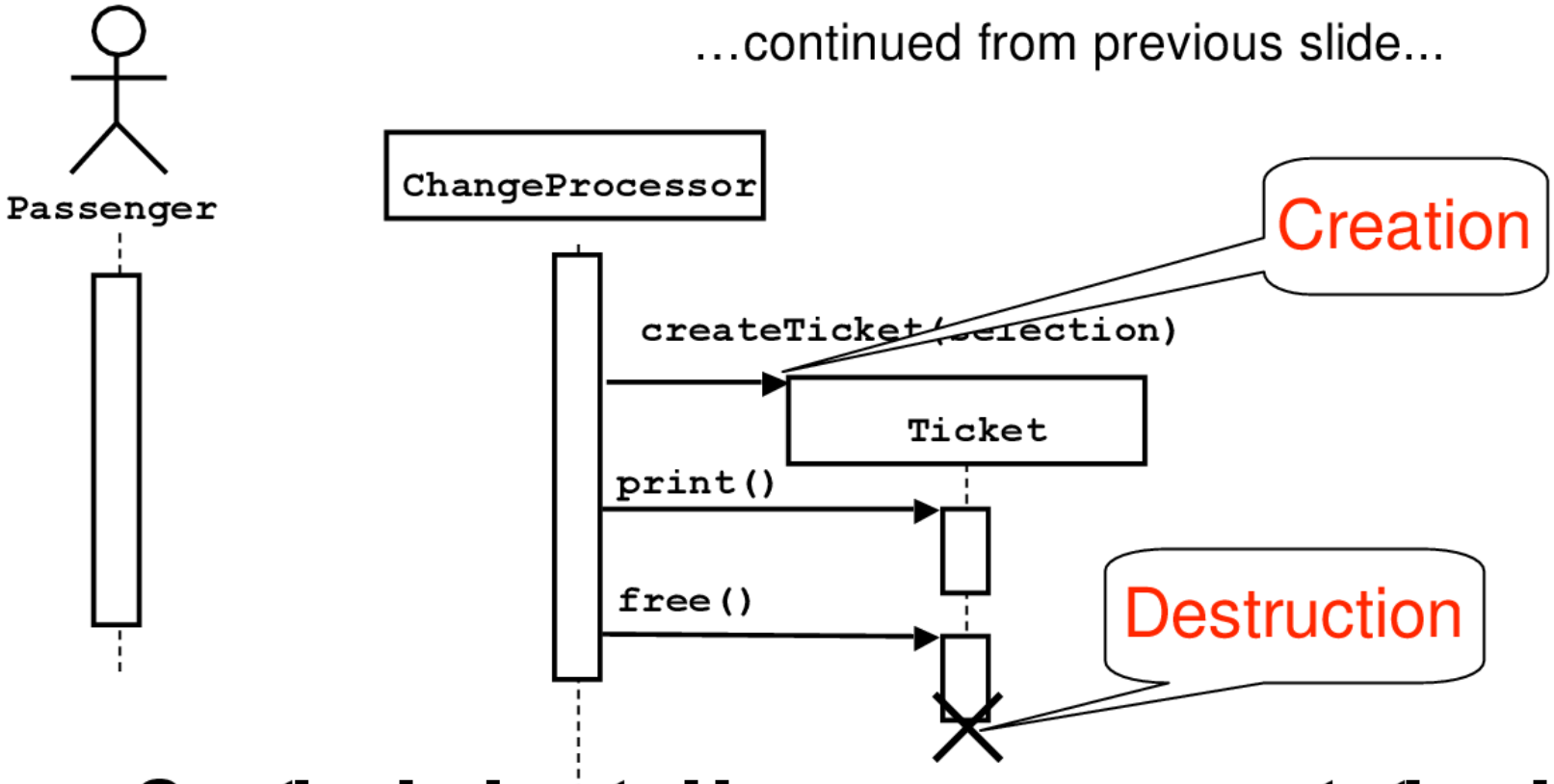
Iteration & condition



- **Iteration is denoted by a * preceding the message name**
- **Condition is denoted by boolean expression in [ ] before the message name**

Creation and destruction

…continued from previous slide...



- **Creation is denoted by a message arrow to the object.**
- **Destruction is denoted by an X mark at the end of the destruction activation.**
- **In garbage collection environments, destruction can be used to denote the end of the useful life of an object.**

Sequence Diagram Summary

- UML sequence diagram represent behavior in terms of interactions.
- Useful to find missing objects.
- Time consuming to build but worth the investment.
- Complement the class diagrams (which represent structure).

UML: System Sequence Diagrams

- More resources
  - UML 2 Sequence Diagrams:
    http://www.agilemodeling.com/artifacts/sequenceDiagram.htm
  - Wikipedia
  - http://en.wikipedia.org/wiki/System_sequence_diagram
  - Other slides adapted from Larman et al.
  - http://www.cse.lehigh.edu/~glennb/oose/ppt/06SystemSequenceDiagrams.ppt
  - UML basics: The sequence diagram
  - http://www.cse.lehigh.edu/~glennb/oose/ppt/06SystemSequenceDiagrams.ppt

Slides originally by Ken Wong