# UML diagram case study

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204362 Object-oriented Analysis and Design

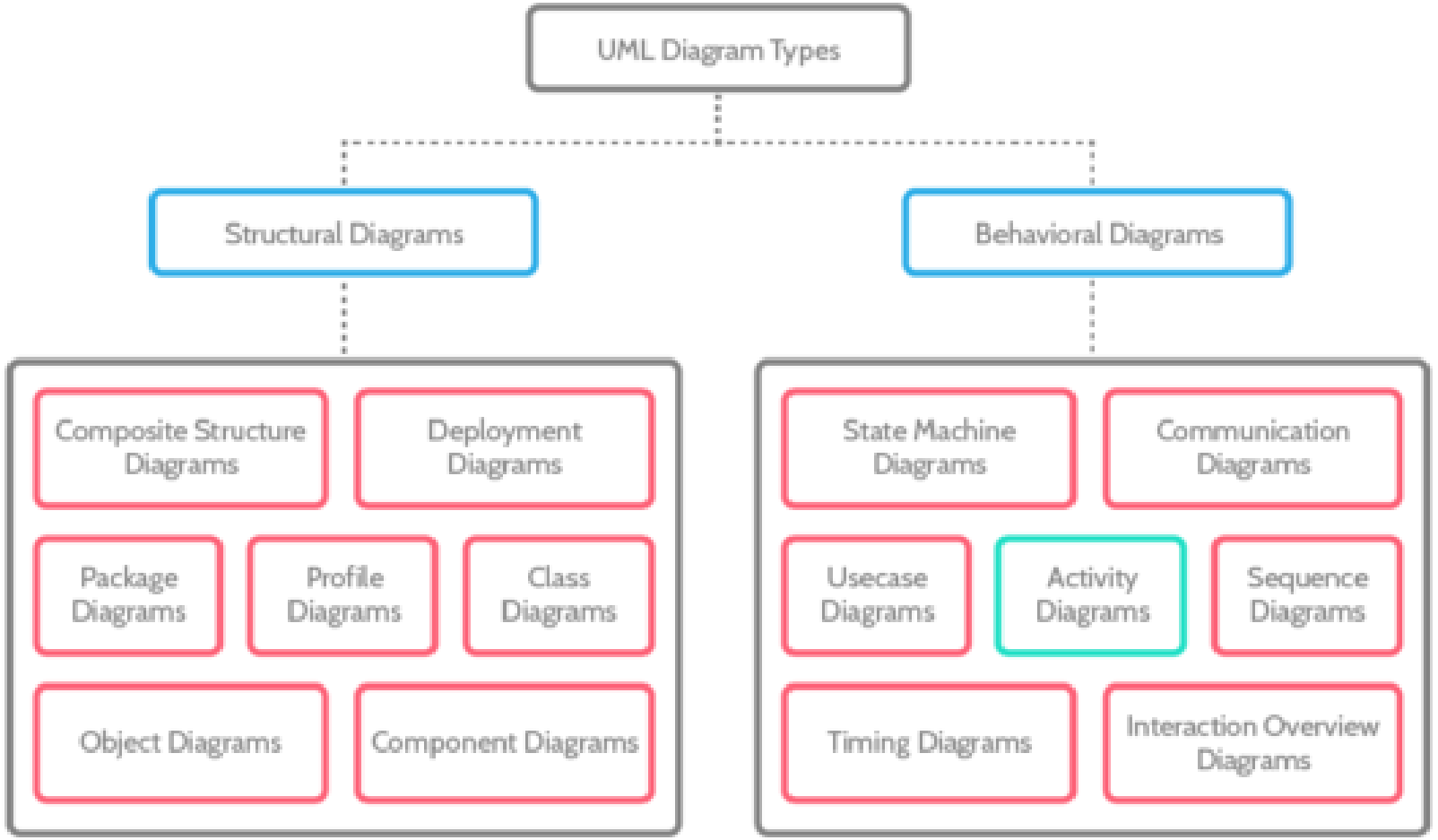
https://www.tutorialspoint.com/uml

# Outline

- UML diagrams
  Business process model
- Use case diagram
- Interaction diagram
  - Sequence diagram
  - Collaboration diagram
- Activity diagram

# UML diagrams

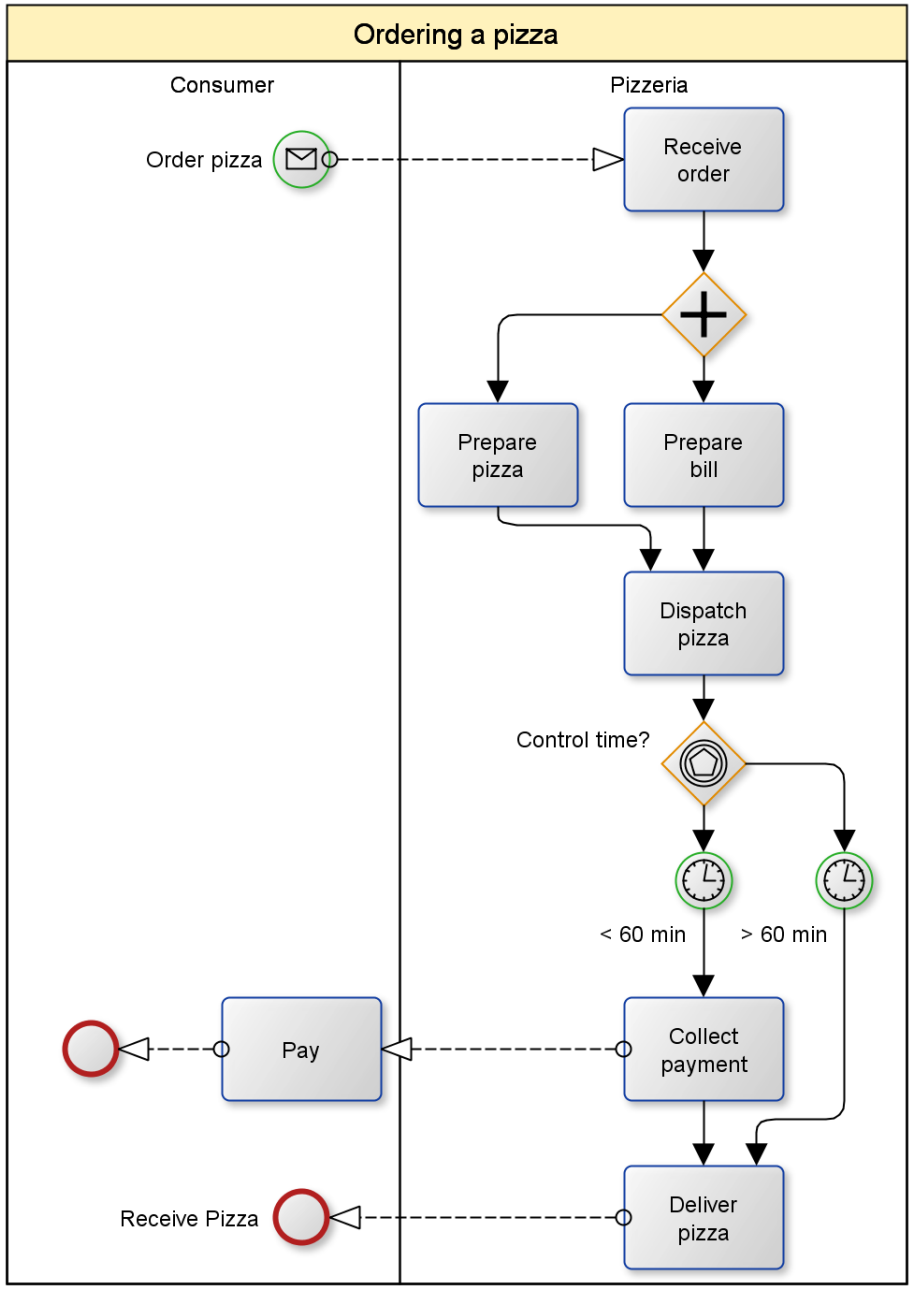
- A quick look at the 2 main types of UML diagrams




https://www.business2community.com/tech-gadgets/uml-tutorial-how-to-model-any-process-or-structure-in-your-business-02134704

# Business process model and notation (BPMN)

- Activities are elements used to symbolize work which is performed within a business process.
- Activities can be simple single tasks – or they may be compound tasks – so called sub-processes.




http://mapit.biz/business-process-modeling-factsheet/

# Business process model and notation (BPMN)

*Figure 1.* **Representation of a business process using BPMN 2.0**

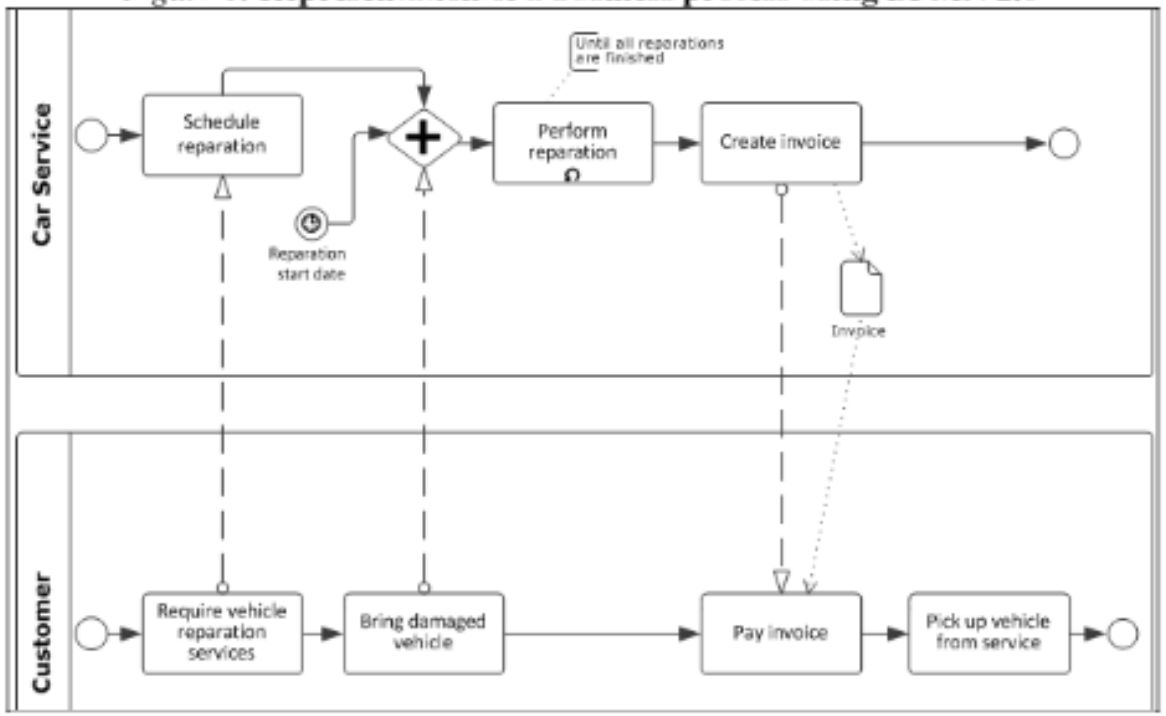
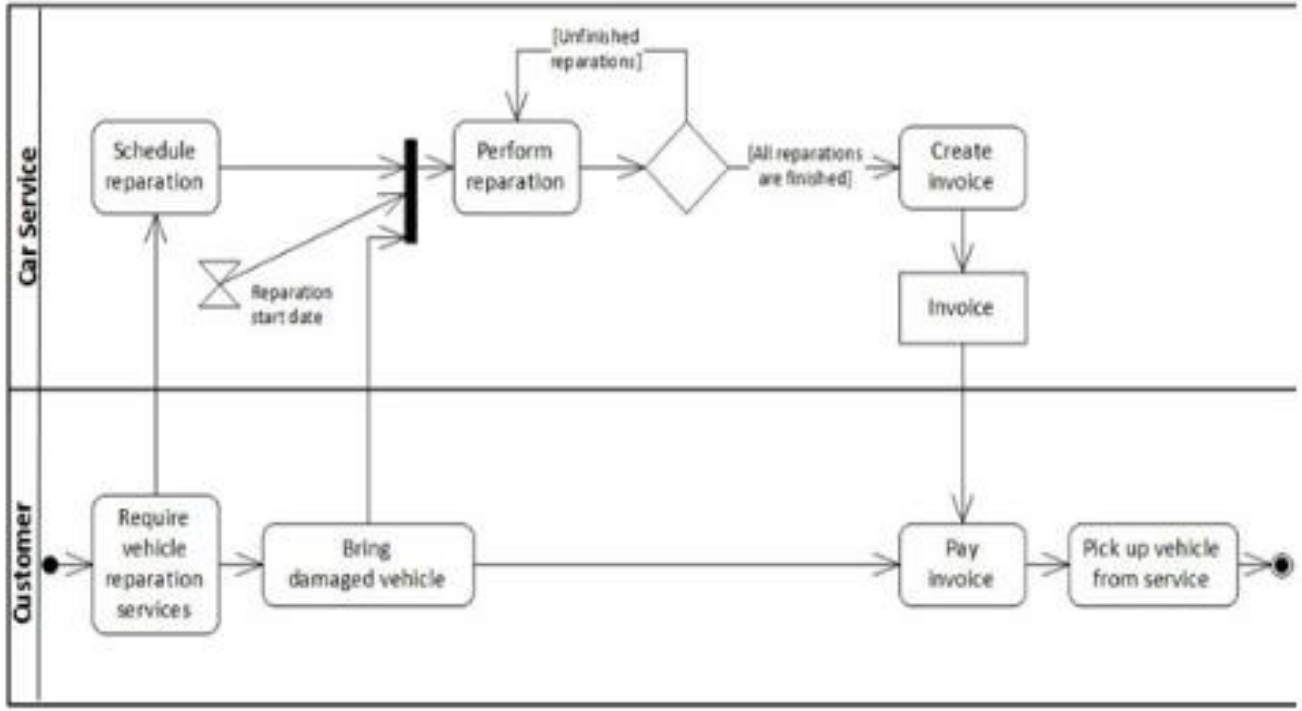
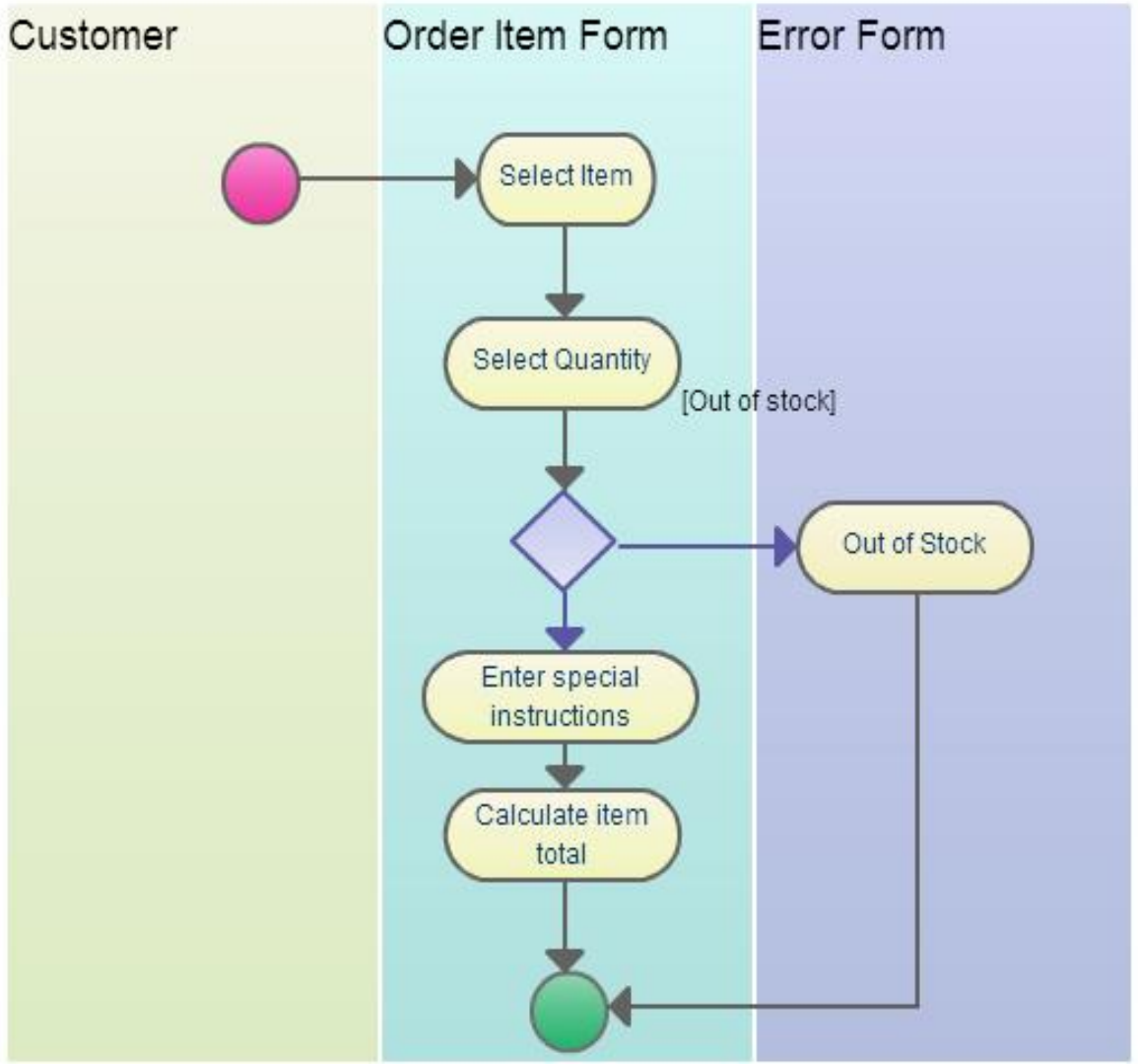



*Figure 2.* **Representation of a business process using UML AD 2.1.4**



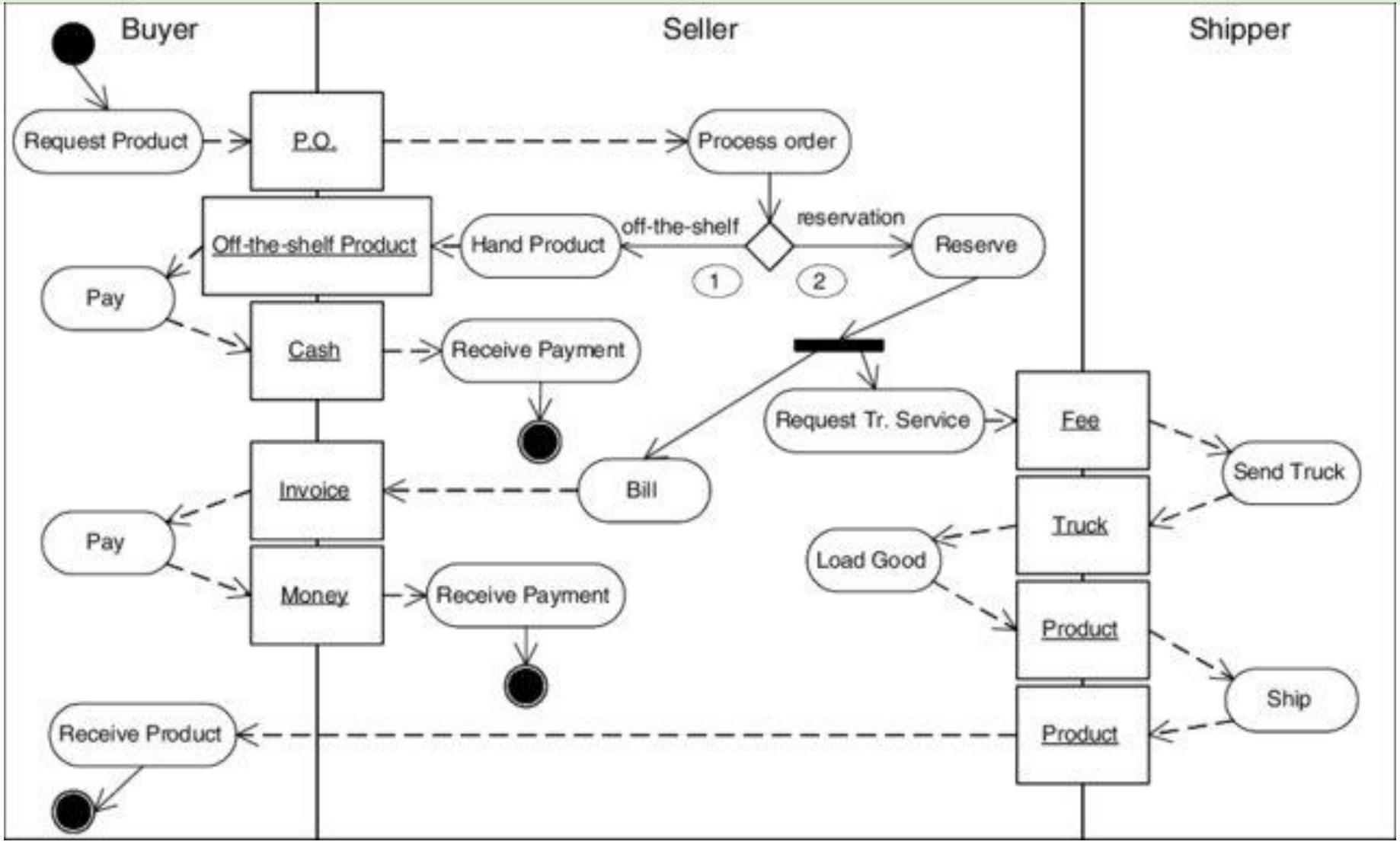

https://docplayer.net/12252977-Bpmn-vs-uml-activity-diagram-for-business-process-modeling.html

# BPMN & UML activity diagram




https://creately.com/blog/diagrams/business-process-modeling-techniques/

# BPMN & UML activity diagram




https://www.researchgate.net/publication/225686020_Consistency_Between_e3-value_Models_and_Activity_Diagrams_in_a_Multi-perspective_Development_Method/figures?lo=1&utm_source=google&utm_medium=organic

# Use case diagram

- the purposes of use case diagrams can be said to be as follows −
  - Used to gather the requirements of a system.
  - Used to get an outside view of a system.
  - Identify the external and internal factors influencing the system.
  - Show the interaction among the requirements are actors.

# Use case diagram

- we should have the following items identified.
  - Functionalities to be represented as use case
  - Actors
  - Relationships among the use cases and actors.

# Use case diagram

- Following is a sample use case diagram representing the order management system.
- Hence, if we look into the diagram then we will find three use cases **(Order, SpecialOrder, and NormalOrder)** and one actor which is the customer.

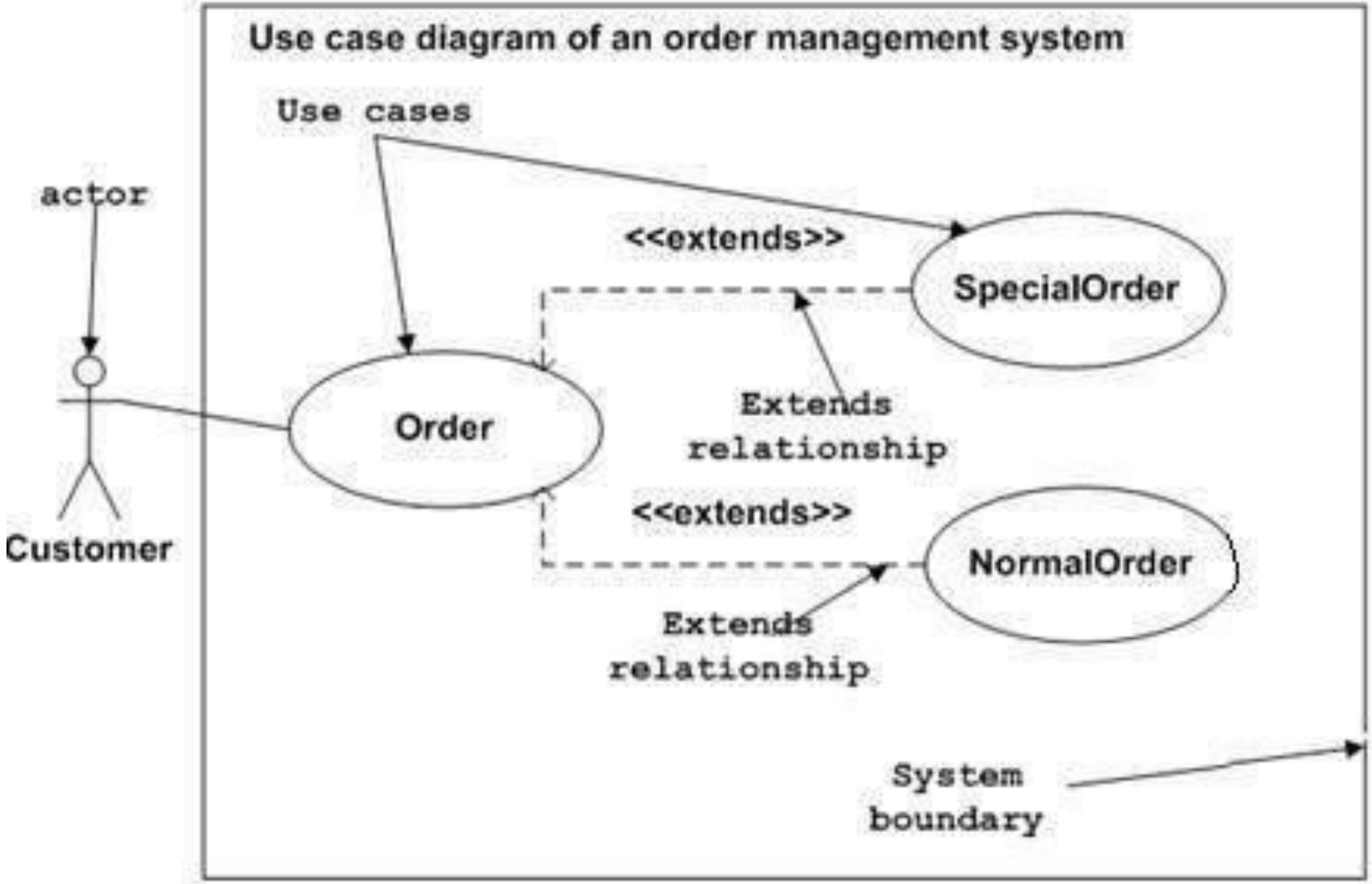



Figure: Sample Use Case diagram

# Interaction diagram

- This interactive behaviour is represented in UML by two diagrams known as
  - Sequence diagram
  - Collaboration diagram
- The basic purpose of both the diagrams are similar.
- Sequence diagram emphasizes on time sequence of messages and
  - collaboration diagram emphasizes on the structural organization of the objects that send and receive messages.

# Interaction diagram

- The purpose of interaction diagram is −
  - To capture the dynamic behaviour of a system.
  - To describe the message flow in the system.
  - To describe the structural organization of the objects.
  - To describe the interaction among objects.

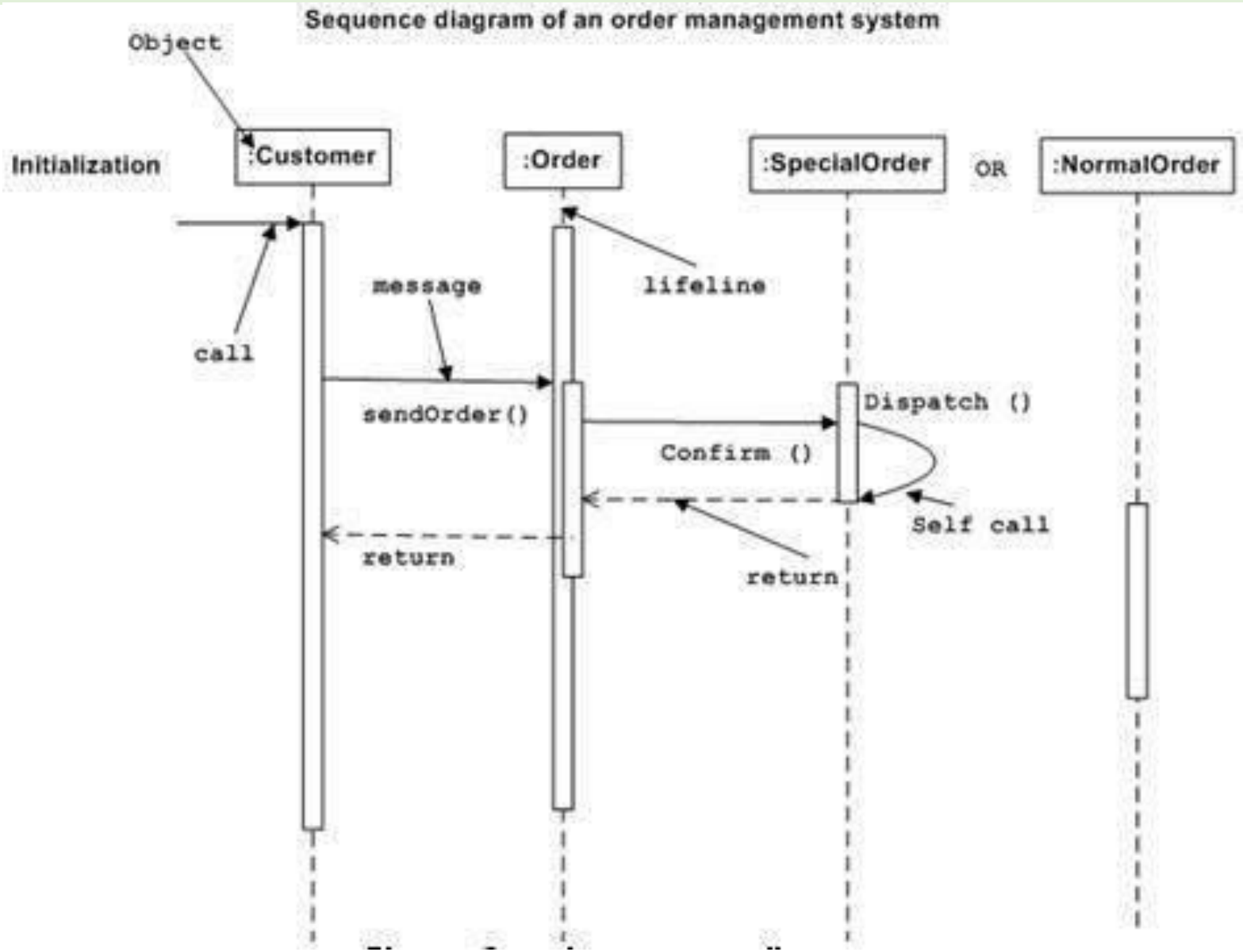
# Interaction diagram

- Following things are to be identified clearly before drawing the interaction diagram
  - Objects taking part in the interaction.
  - Message flows among the objects.
  - The sequence in which the messages are flowing.
  - Object organization.

# Sequence diagram

- The sequence diagram has four objects (Customer, Order, SpecialOrder and NormalOrder).
- The following diagram shows the message sequence for *SpecialOrder* object and the same can be used in case of *NormalOrder* object.
- It is important to understand the time sequence of message flows.
- The message flow is nothing but a method call of an object.

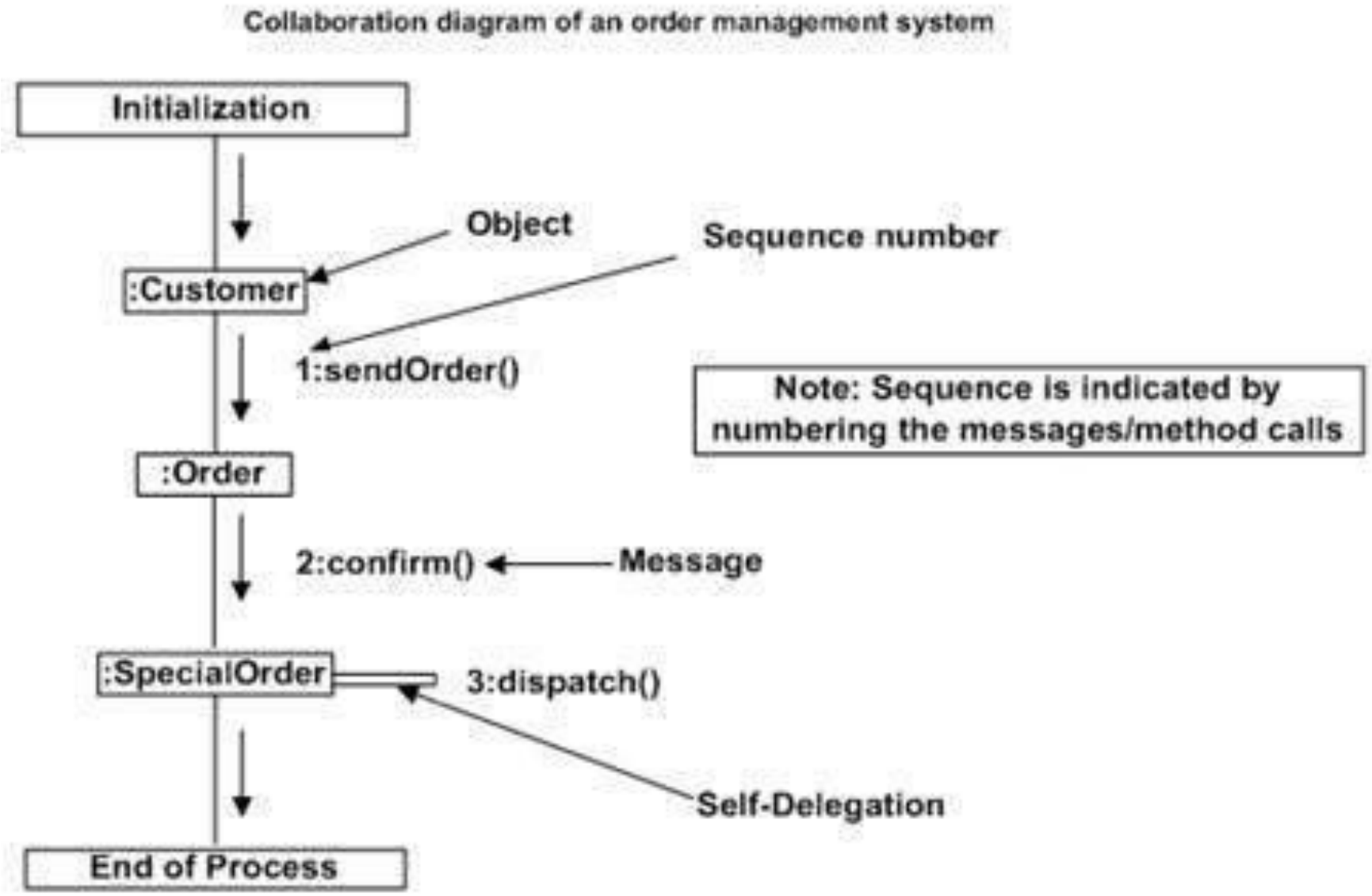
# Sequence diagram



# Collaboration diagram

- It shows the object organization as seen in the following diagram.
- In the collaboration diagram, the method call sequence is indicated by some numbering technique.

# Collaboration diagram



# Activity diagram

- The purpose of an activity diagram can be described as −
  - Draw the activity flow of a system.
  - Describe the sequence from one activity to another.
  - Describe the parallel, branched and concurrent flow of the system.
- Before drawing an activity diagram, we should identify the following elements −
  - Activities
  - Association
  - Conditions
  - Constraints

# Activity diagram

- Following diagram is drawn with the four main activities –
  - Send order by the customer
  - Receipt of the order
  - Confirm the order
  - Dispatch the order