CptS 322 Software Engineering Principles I

Homework 4 – example solution

1. How does a sequence diagram differ from a statechart diagram? And how are they similar?

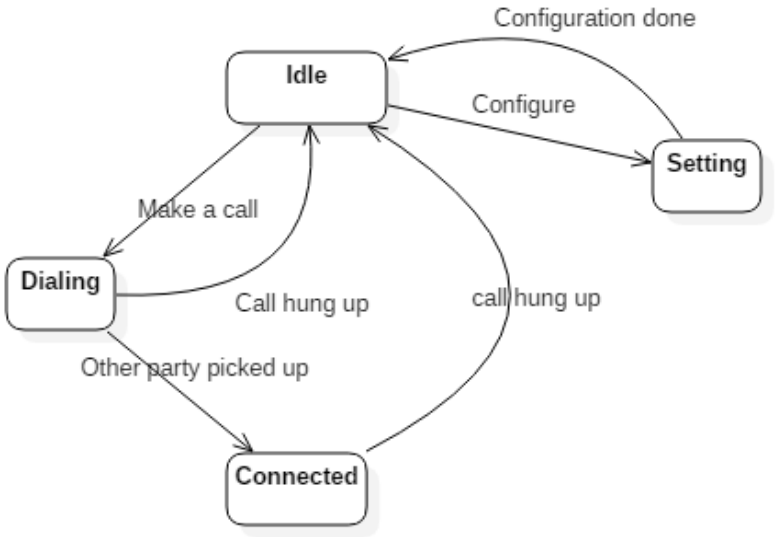
Both diagrams are representations of system behaviors, providing a way of behavioral modeling, showing how the system behaves.

The biggest difference lies in that the state diagram shows which valid states the system can be in and how it changes from one state to another without any temporal information.

The sequence diagram emphasizes the temporal logical processing of the system carrying out a functional feature (a use case); it also shows how different classes (components) of the system interact internally in order to carry out that use case.

2. Most smartphones feature an app called “phone” or “dialer”. Draw a UML state diagram to model the behavior of this app (i.e., for the entire system).

The following is a simplified solution: for each state, only the name of the state is shown, while the preconditions and actions for the state are omitted. You need to understand this topic in order to grade the specific UML diagrams from the students. As long the modeling makes sense, it is acceptable.

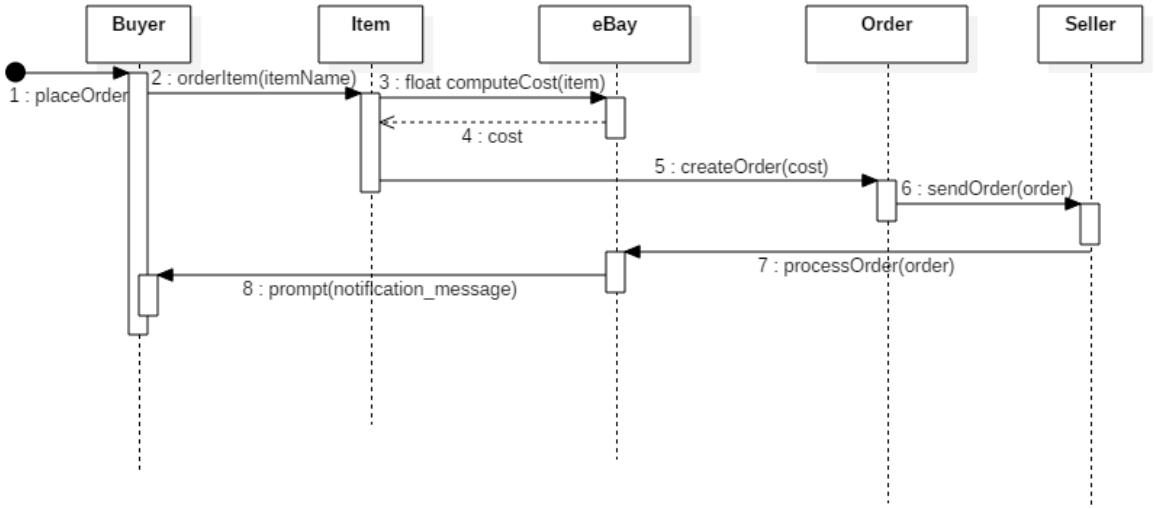


3. You are now asked to do requirement analysis for an online shopping system (e.g., eBay or Amazon). Draw a UML sequence diagram that represents the system’s behavior in *placing an order*.

There is not a golden solution. For example, there might be several classes involved including Buyer, Item, Order, Seller, eBay service.

Then for placing an order,

(1) the Buyer sends a message (e.g., order an item) to Item,
(2) the Item class sends a message to Seller or eBay service (e.g., compute cost), which returns a message to Item and then Item sends a message to Order with the cost of the item (e.g., createOrder);
(3) Order sends a message to the Seller (e.g., sendOrder);
(4) the Seller sends a message to eBay service for processing the order (e.g, processOrder)
(5) the eBay service class returns to Buyer with a message showing the order is completed or failed



The only rubric is that the sequence diagram is in a right format (i.e., using right notations, while making sense with respect to a real-world system's behavior for placing an order).

4. There is no solution needed. Students may state that they did not do any search, which is fine. Basically, as long as they respond, they receive 10 points for this question.