Experiment No. 6

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Aim: Develop Sequence and Collaboration diagram for the project.

Sequence Diagram:

A sequence diagram is used to show the dynamic communications between objects during execution of a task. It shows the temporal order in which messages are sent between the objects to accomplish that task. One might use a sequence diagram to show the interactions in one use case or in one scenario of a software system.

A sequence diagram shows method calls using horizontal arrows from the caller to the callee, labelled with the method name and optionally including its parameters, their types, and the return type.

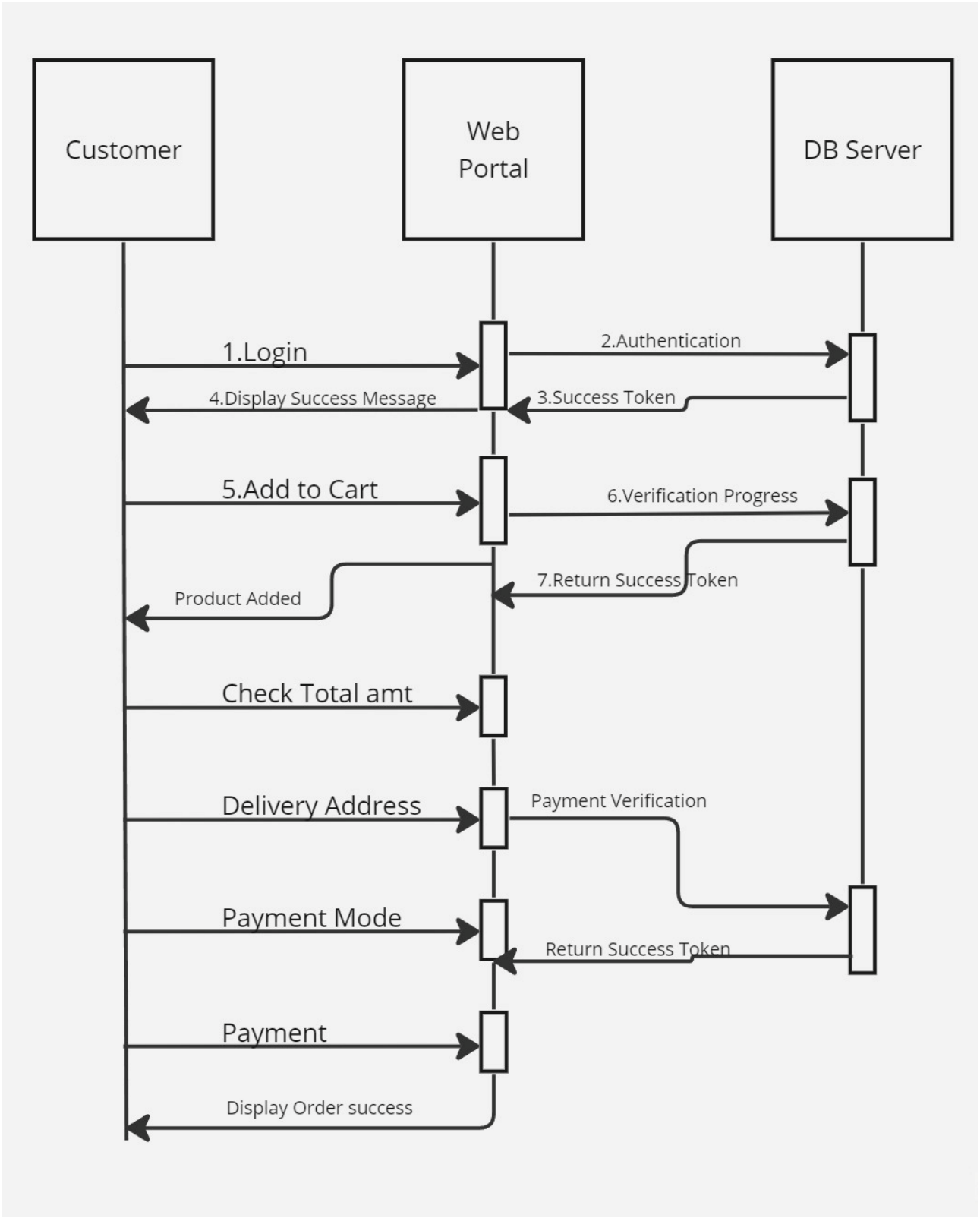
The **Sequence Diagram for E-Commerce Website** is a form of interaction diagram that shows how a group of entities interact and in a specific order. It is used to understand and describe a series of processes on the website.

In addition, this **E-commerce Website Sequence Diagra**m is created based on Unified Modeling Language (UML) that depicts the flow of messages between objects in a scenario. It's composed of entities connected by lifelines, and the communications they exchange over time.

Here there are 3 instances of objects:

1. Customer
2. Web Portal of Company
3. Database Server of the company

The diagram has the message and replies messages with sequence numbering, and the lifeline of each object.


Customer
Web Portal
DB Server
1.Login
2.Authentication
4.Display Success Message
3.Success Token
5.Add to Cart
6.Verification Progress
7.Return Success Token
Product Added
Check Total amt
Delivery Address
Payment Verification
Payment Mode
Return Success Token
Payment
Display Order success

Collaboration (communication) Diagrams:

In a collaboration diagram the interacting objects are represented by rectangles. Associations between objects are represented by lines connecting the rectangles. There is typically an incoming arrow to one object in the diagram that starts the sequence of message passing. That arrow is labelled with a number and a message name.

UML Collaboration Diagram

The collaboration diagram is used to show the relationship between the objects in a system. Both the sequence and the collaboration diagrams represent the same information but differently. Instead of showing the flow of messages, it depicts the architecture of the object residing in the system as it is based on object-oriented programming. An object consists of several features. Multiple objects present in the system are connected to each other. The collaboration diagram, which is also known as a communication diagram, is used to portray the object's architecture in the system.

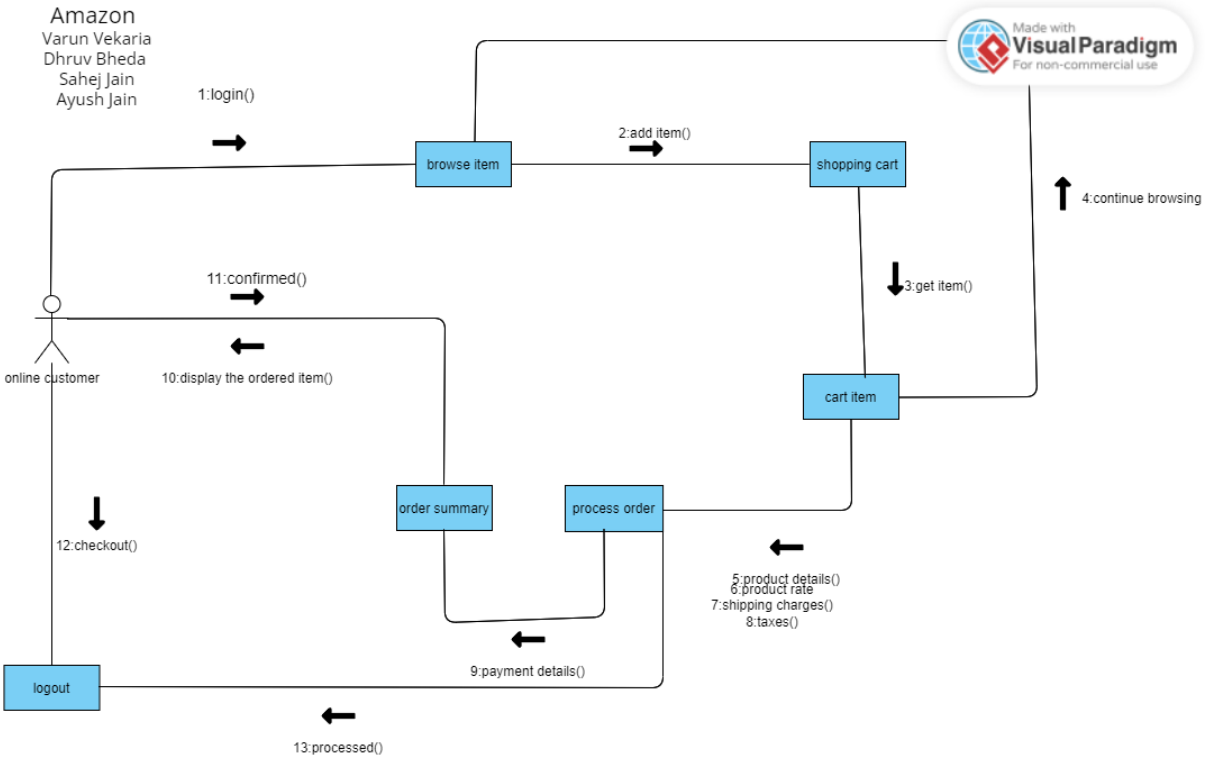
Benefits of a Collaboration Diagram

1. The collaboration diagram is also known as Communication Diagram.
2. It mainly puts emphasis on the structural aspect of an interaction diagram, i.e., how lifelines are connected.
3. The syntax of a collaboration diagram is similar to the sequence diagram; just the difference is that the lifeline does not consist of tails.
4. The messages transmitted over sequencing is represented by numbering each individual message.
5. The collaboration diagram is semantically weak in comparison to the sequence diagram.
6. The special case of a collaboration diagram is the object diagram.
7. It focuses on the elements and not the message flow, like sequence diagrams.
8. Since the collaboration diagrams are not that expensive, the sequence diagram can be directly converted to the collaboration diagram.
9. There may be a chance of losing some amount of information while implementing a collaboration diagram with respect to the sequence diagram.

The drawback of a Collaboration Diagram

1. Multiple objects residing in the system can make a complex collaboration diagram, as it becomes quite hard to explore the objects.

2. It is a time-consuming diagram.
3. After the program terminates, the object is destroyed.



Conclusion:

Thus, we are able to draw a Sequence and Collaboration diagram for a functionality of our case study.