Data Flow and Use Case Diagrams

Course Code:CIS311
Module Name: System Analysis and Design
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Data Flow Diagram

- A Data Flow Diagram (DFD) is traditional visual representation of the information flows within a system.
- It shows how information enters and leaves the system, what changes the information and where information is stored.

Purpose of Data Flow Diagram

- The purpose of a DFD is to show the scope and boundaries of a system as a whole. It may be used as a communications tool between a systems analyst and any person who plays a part in the system that acts as the starting point for redesigning a system.

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Notations of Data Flow Diagram

- External Entity

An external entity can represent a human, system or subsystem. It is where certain data comes from or goes to. It is external to the system we study, in terms of the business process.

- Process

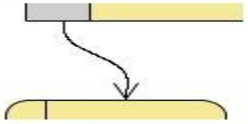
A process is a business activity or function where the manipulation and transformation of data takes place.

Notations of Data Flow Diagram

- Data Store

A data store represents the storage of persistent data required and/or produced by the process.

- Data Flow

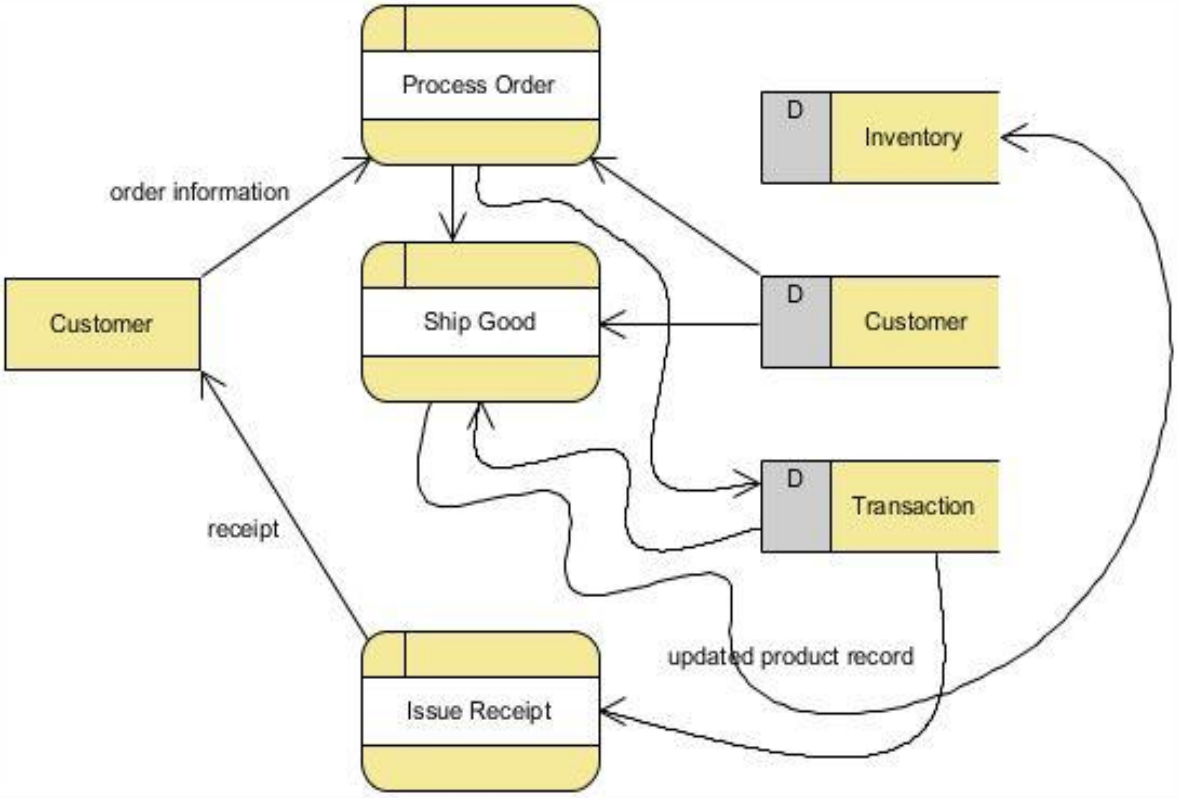


A data flow represents the flow of information, with its direction represented by an arrow head that shows at the end(s) of flow connector.

Context Diagram/0 Level DFD

- A context diagram/0 Level DFD gives an overview and it is the highest level in a data flow diagram, containing only one process representing the entire system.
- All external entities are shown on the context diagram as well as major data flow to and from them.
- The diagram does not contain any data storage.

1st Level DFD



Use Case Diagram

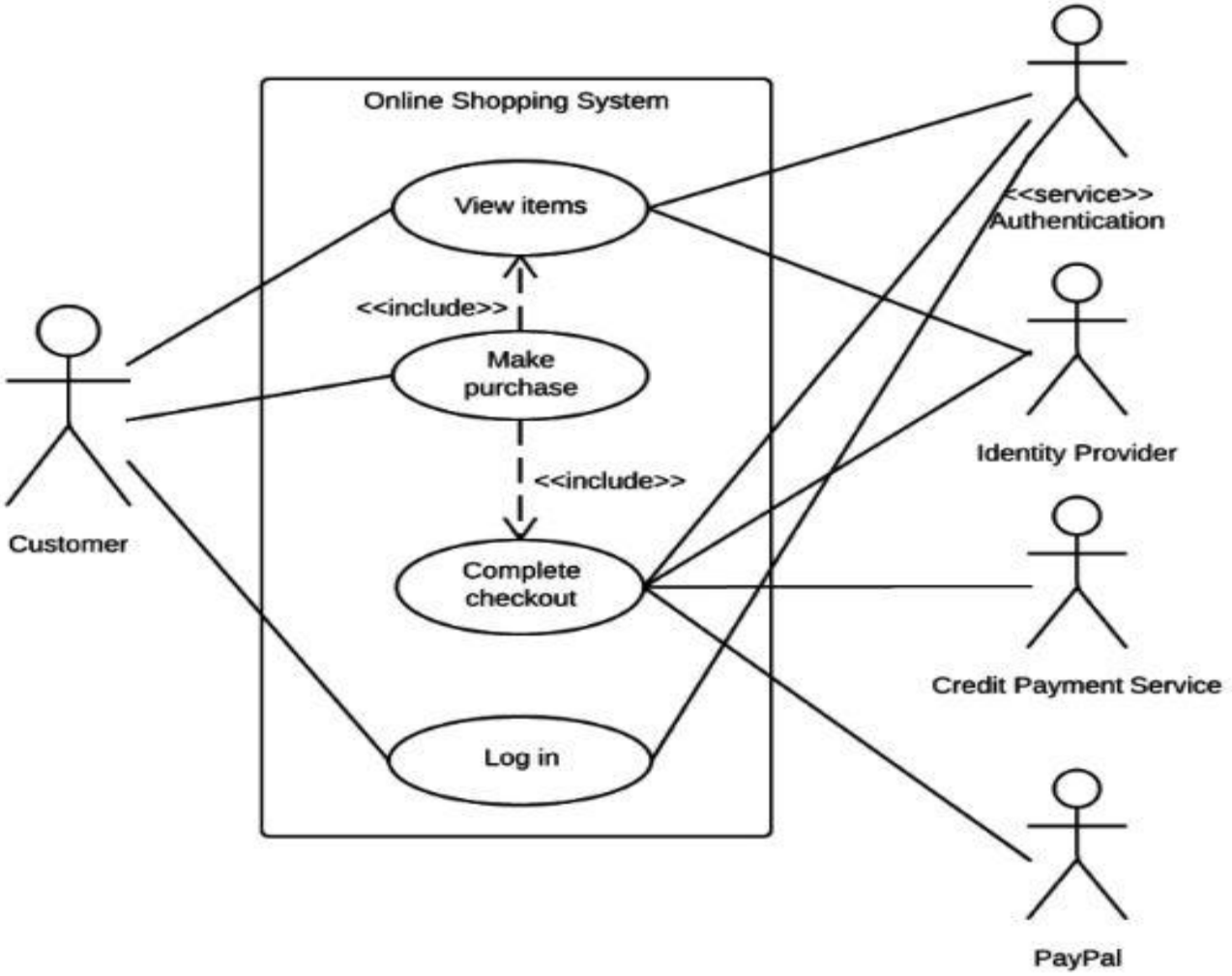
- A **use case diagram** doesn't contain a lot of details. It shows a high-level overview of the relationships between actors, different use cases, and the system.

Elements of Use Case Diagram

The use case diagram includes the following main elements:

- **Use cases.** Usually drawn with ovals, use cases represent different use scenarios that actors might have with the system (*log in, make a purchase, view items,* etc.)
- **System boundaries.** Boundaries are outlined by the box that groups various use cases in a system.
- **Actors.** These are the figures that depict external users (people or systems) that interact with the system.
- **Associations.** Associations are drawn with lines showing different types of relationships between actors and use cases.

Example of Use Case Diagram



Use Case Specification

- A **use case specification** represents the sequence of events along with other information that relates to this use case. A typical use case specification template includes the following information:
- Description
- Pre- and Post- interaction condition
- Basic interaction path
- Alternative path
- Exception path

Use Case Specification Template

Overview	
Title	[Title of the basic flow use case]
Description	[Short description of the basic flow]
Actors and Interfaces	[Identifies the Actors and Interfaces to components and services that participate in the use case]
Initial Status and Preconditions	[A pre-condition (of a use case) is the state of the system that must be present prior to a use case being performed]
Basic Flow	
STEP 1: … STEP 2: …	
Post Condition	
[A post-condition (of a use case) is a list of possible states the system can be in immediately after a use case has finished]	
Alternative Flow(s)	
[Alternative flows are described here if needed]	