EAST WEST UNIVERSITY

CSE347

Information System Analysis and Design

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Topic: 10

Data Flow Diagram (DFD)

Data Flow Diagram

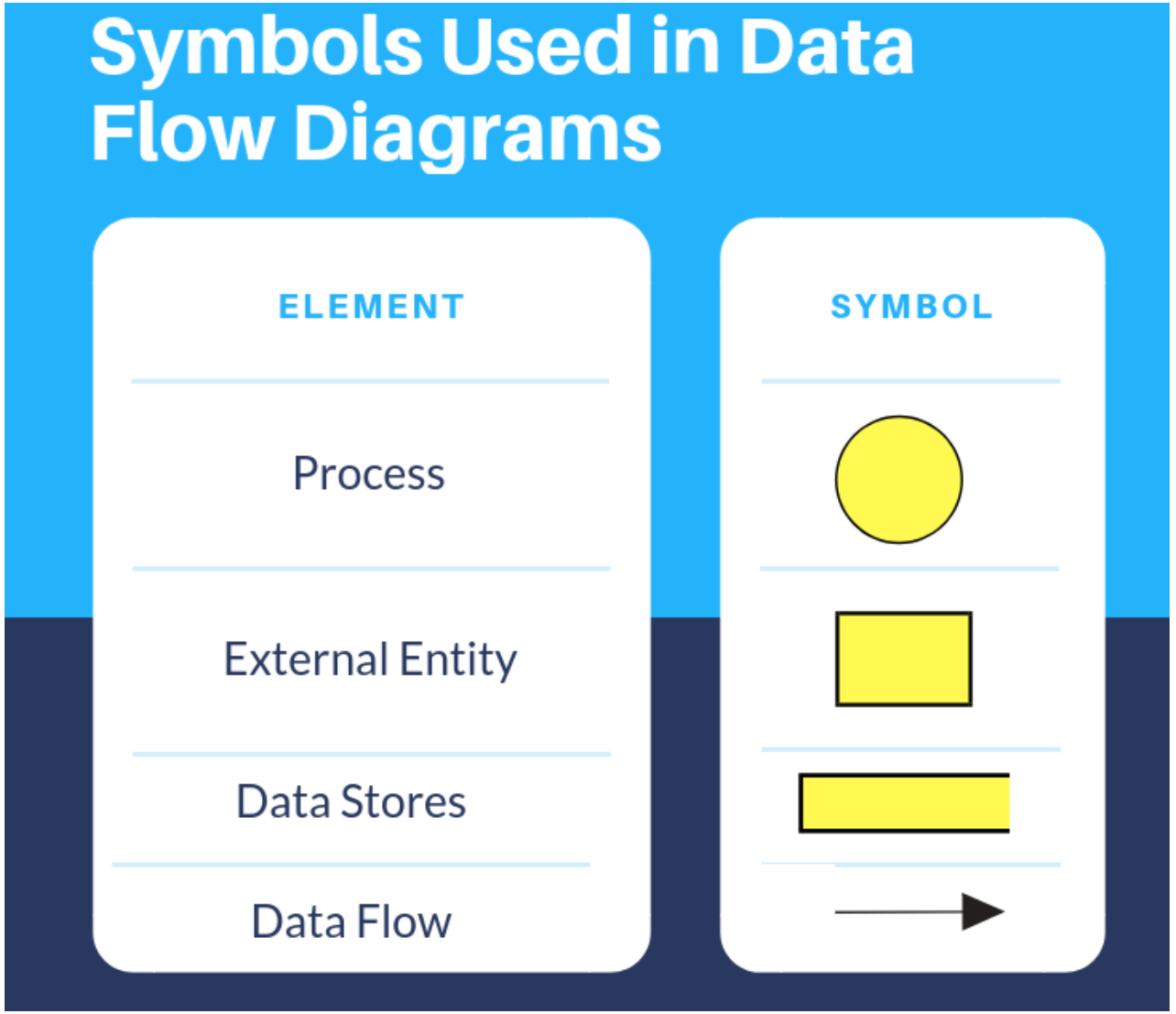
- A data flow diagram (DFD) is a graphical representation of the movement of data between external entities, processes and data stores within a system.

- Simply put, DFD’s show how data moves through an information system.

DFD Elements

- **Processes** – the main activities that are happening within the system boundary. The process can be as simple as collecting customer data and storing it in the company database. Also, it can be a very complicated process such as creating a report containing bank contracts with customers of all bank clones in a region.
- **External entities** – the sources of information coming to or leaving the system. External entities are outside systems such as people (customers, stakeholders, managers), organizations, computers and other systems that send or receive data from our system.
- **Data stores** – places where data is held such as files or repositories. Data stores show information that is not moving.
- **Data flows** – illustrate the movements that data have between the external entities, data stores, and the processes.

DFD Symbols


Symbols Used in Data Flow Diagrams
ELEMENT
SYMBOL
Process
External Entity
Data Stores
Data Flow

Designing DFD

1. Each process has at least one outgoing data flow and at least one ingoing data flow.

2. Each process can go to any other symbol (other processes, data store, and entities).

Designing DFD

3. Each data store should have at least one incoming and at least one outgoing data flow.

4. Entities must be connected to a process by a data flow

Designing DFD

5. Data flows cannot cross with each other.
6. Data stores cannot be connected to external entities. Otherwise, it means you’re allowing an external entity access to your data files and stores.
7. The labels of processes can be verb phrases. Data stores are displayed by nouns.
8. Data flows cannot run between two external entities without going through a process

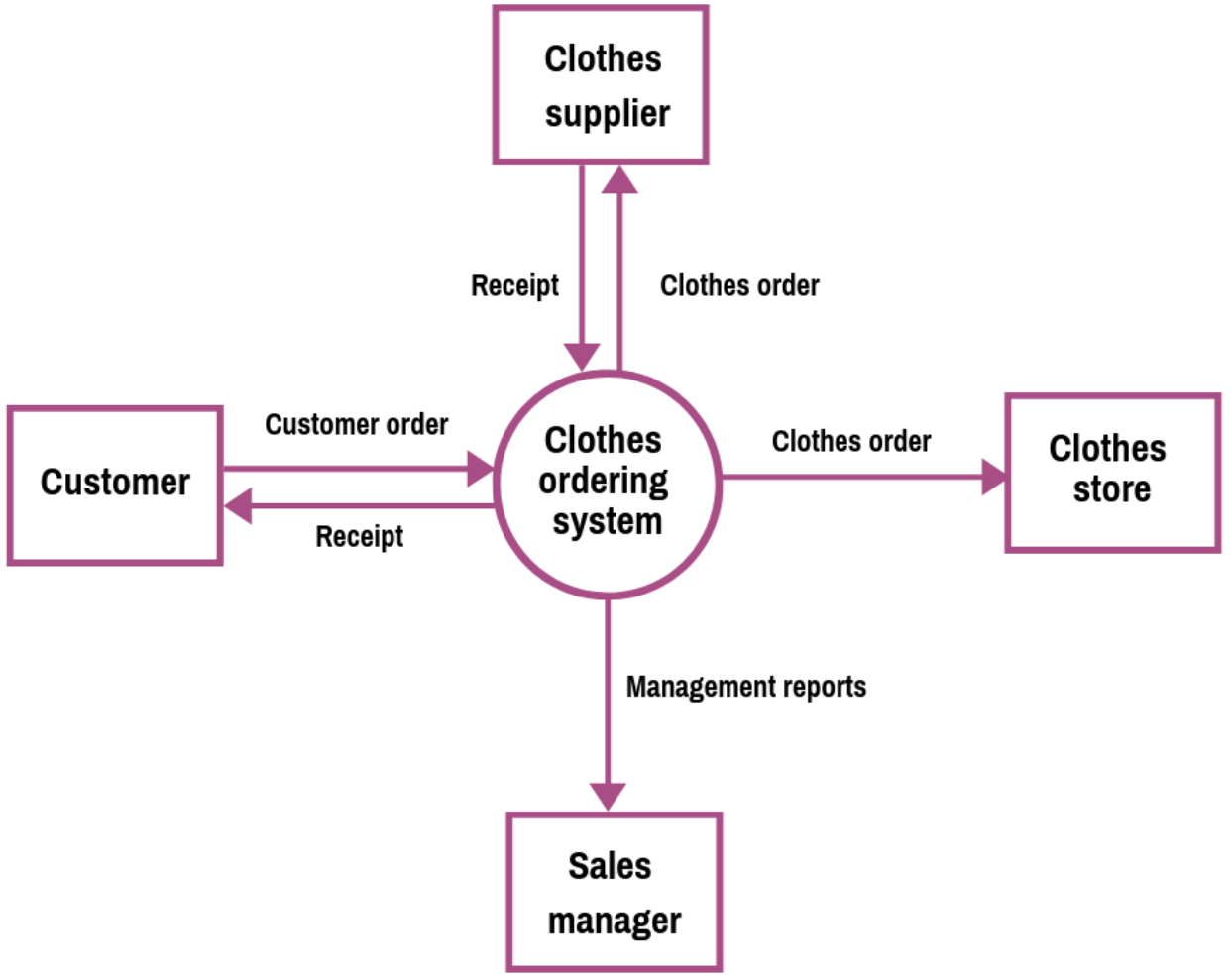
Advantages of DFD

- A graphical technique that is relatively easy to understand for stakeholders and other users.
- Provides a detailed view of the system components and boundaries.
- Provide clear and detailed information about the processes within a system.
- Shows the logic of the data flow.
- Presents a functional breakdown of the system.
- Used as a part of the system documentation.

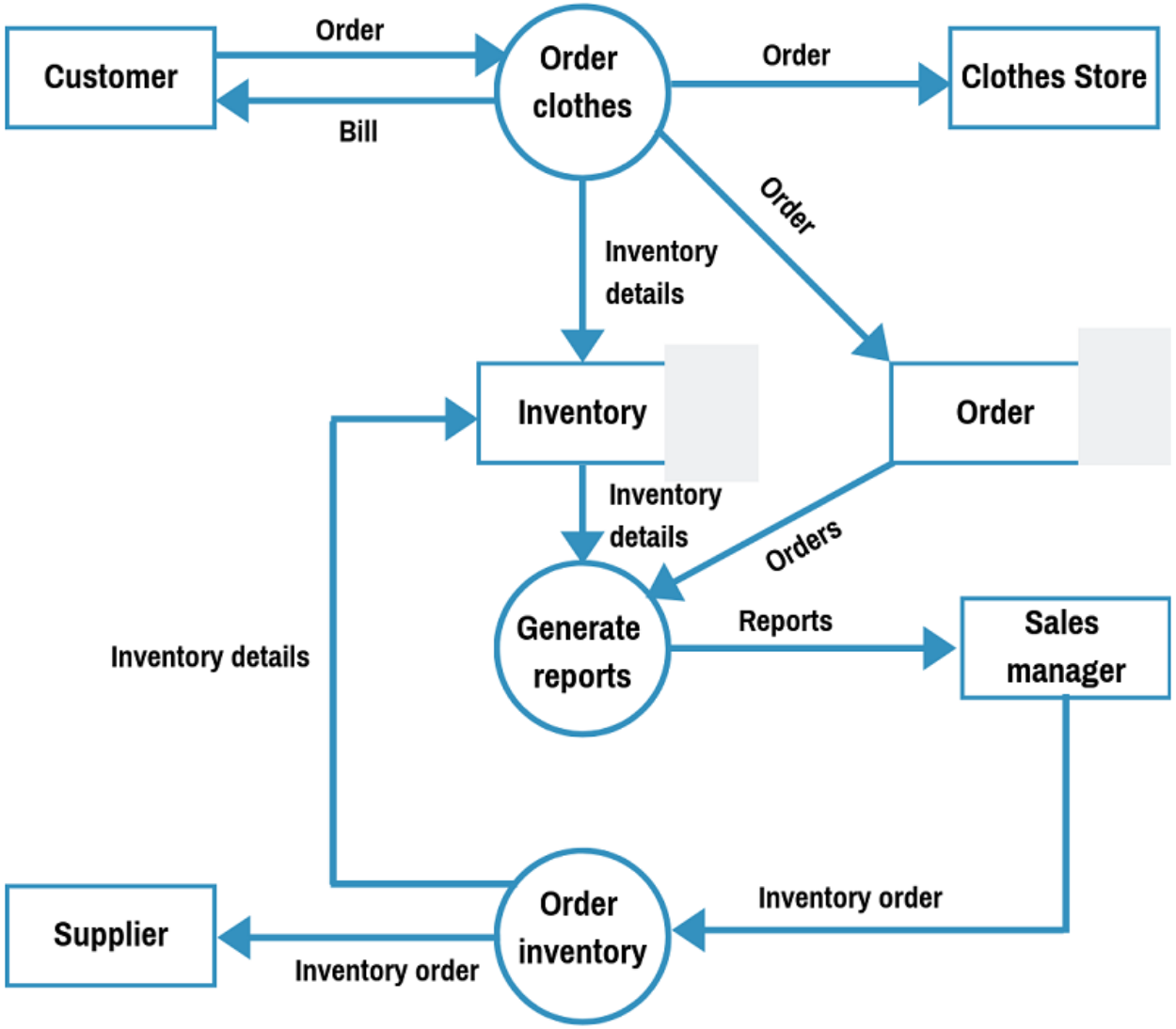
Disadvantages of DFD

- Takes a long time to create.
- Does not give any information about the timing, sequence, and synchronization of processes i.e., data flow diagrams do not specify when the processes are performed. Therefore, it should not be confused with a process or flowchart diagram which can illustrate these things.
- Sometimes might be difficult for non-technical users to understand the diagram

Example: Level 0



Example: Level 1



Example 2


Community Users
Information & Tools
Registration
Payments
Advertisers
Online Community
Compensation
Staff Writers
Ad Slots
Content
Finanical Reports
Financial Data
Accountants

Let’s draw the level 1 DFD for the previous Example