Data flow diagram

Objective:

- 11.2.1.6 Use data flow diagrams (DFD) to input, process, store and output data in computing systems

- https://www.youtube.com/watch?v=ztZsEI6C-m

Why should we model?

What is DFD?

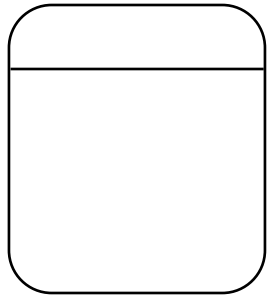
- DFD is used to analyze an existing system or model. Like all the best diagrams and charts, a DFD can often visually “say” things that would be hard to explain in words.
- A data flow diagram (DFD) maps out the flow of information for any process or system. It uses defined symbols like rectangles, circles and arrows, plus short text labels, to show data inputs, outputs, storage and the routes between each destination.

Four Main Elements

- **external entity** – people or organisations that send into the system or receive data from the system.
- **process** – models what happens to the data i.e. transforms incoming data into outgoing data
- **data store** – represents permanent data that is used by the system
- **data flow** – models the actual flow of the data between the other elements

DFD Symbols and Definitions

Process



- Process - performs some action on data, such as creates, modifies, stores, delete, etc. Can be manual or supported by computer.

Data store

- Data store - information that is kept and accessed. May be in paper file folder or a database.

External Entity

- External entity - is the origin or destination of data. Entities are external to the system.

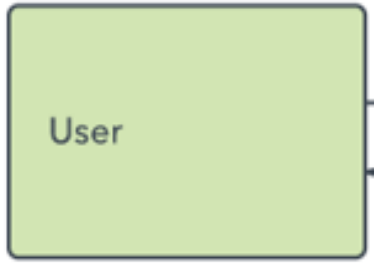
Data flow

- Data flow - the flow of data into or out of a process, datastore or entity

1. Dfd Symbols

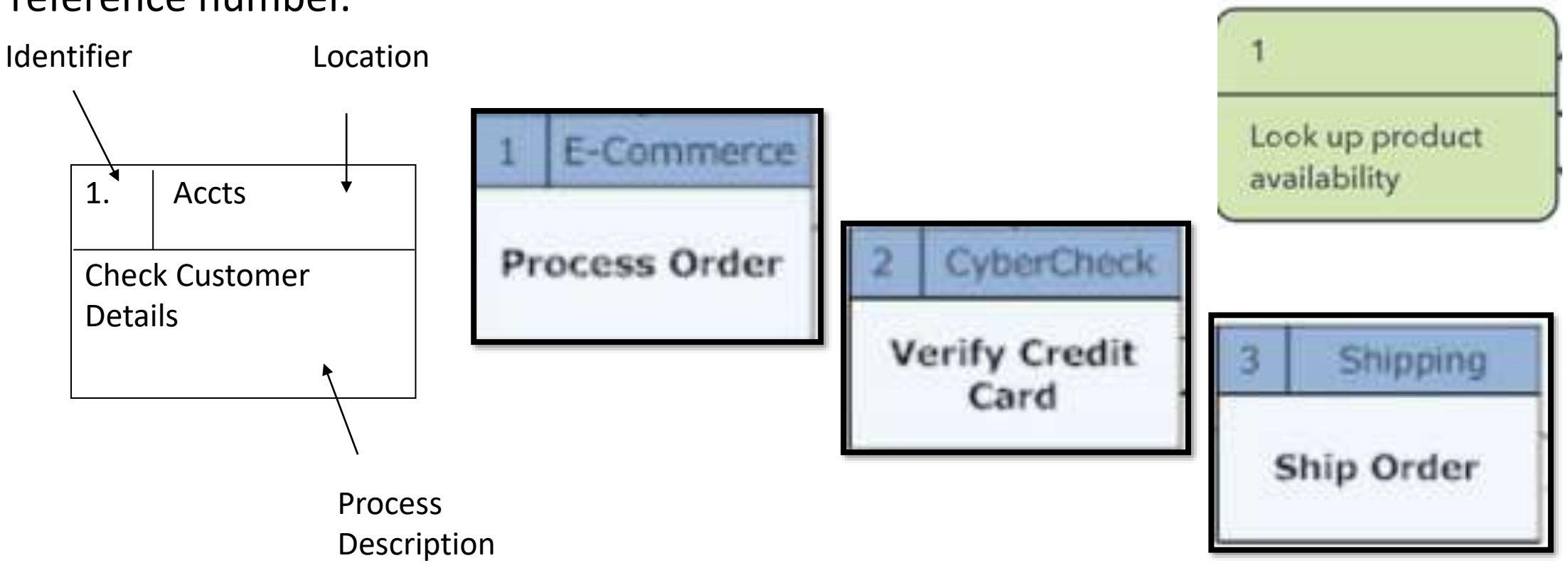
- **External or Internal entity:**

An external entity is a person, organisation, department, computer system or anything else which either sends data into a system or which receives data from a system, but which for the purposes of the project in question are outside the scope of the system itself.

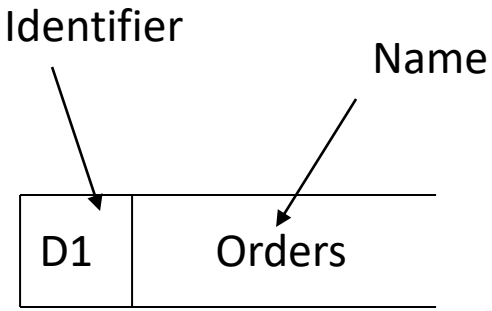


Process

- Processes are transformations which change incoming data flows into outgoing data flows. Processes are represented as rectangles which contain a simple description of the process, e.g. verify customer details. Each process has a unique reference number.



Data Store



A repository for data

- A data store is a repository for data. A data store is represented by an open ended rectangle containing the name of the data store (usually a plural noun such as customers), each data store has a unique reference number prefixed by the letter D

Data flow

The route that data takes between the external entities, processes and data stores.

DFD Rules and Tips

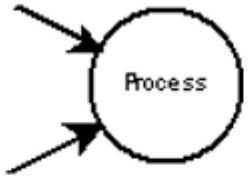
- Each process should have at least one input and an output.
- Each data store should have at least one data flow in and one data flow out.
- Data stored in a system must go through a process.
- All processes in a DFD go to another process or a data store.

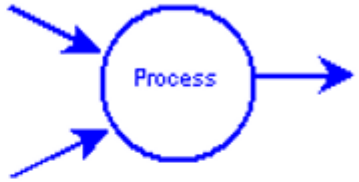
Observe common mistake, discuss in a group *handout*

Incorrect

Correct

5 No process can have only inputs. (This is referred to as a "black hole".) If an object has only inputs, then it must be a sink.





Incorrect

Correct

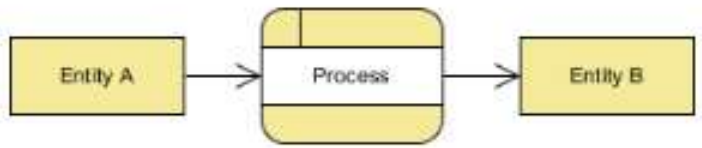
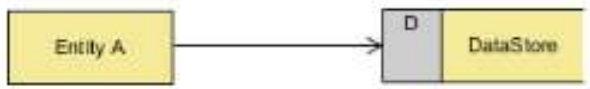
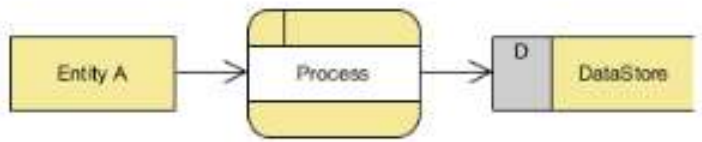
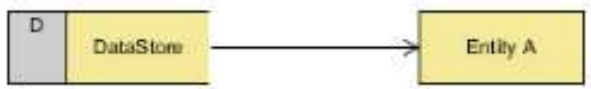
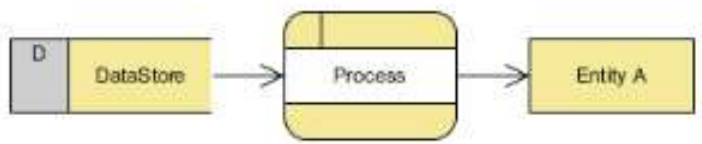
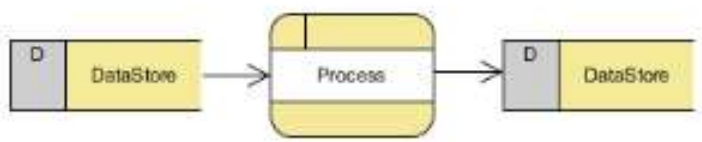
6 A process has a verb phrase label.

7 Data cannot move directly from one data store to another data store.
Data must be moved by a process.

Incorrect

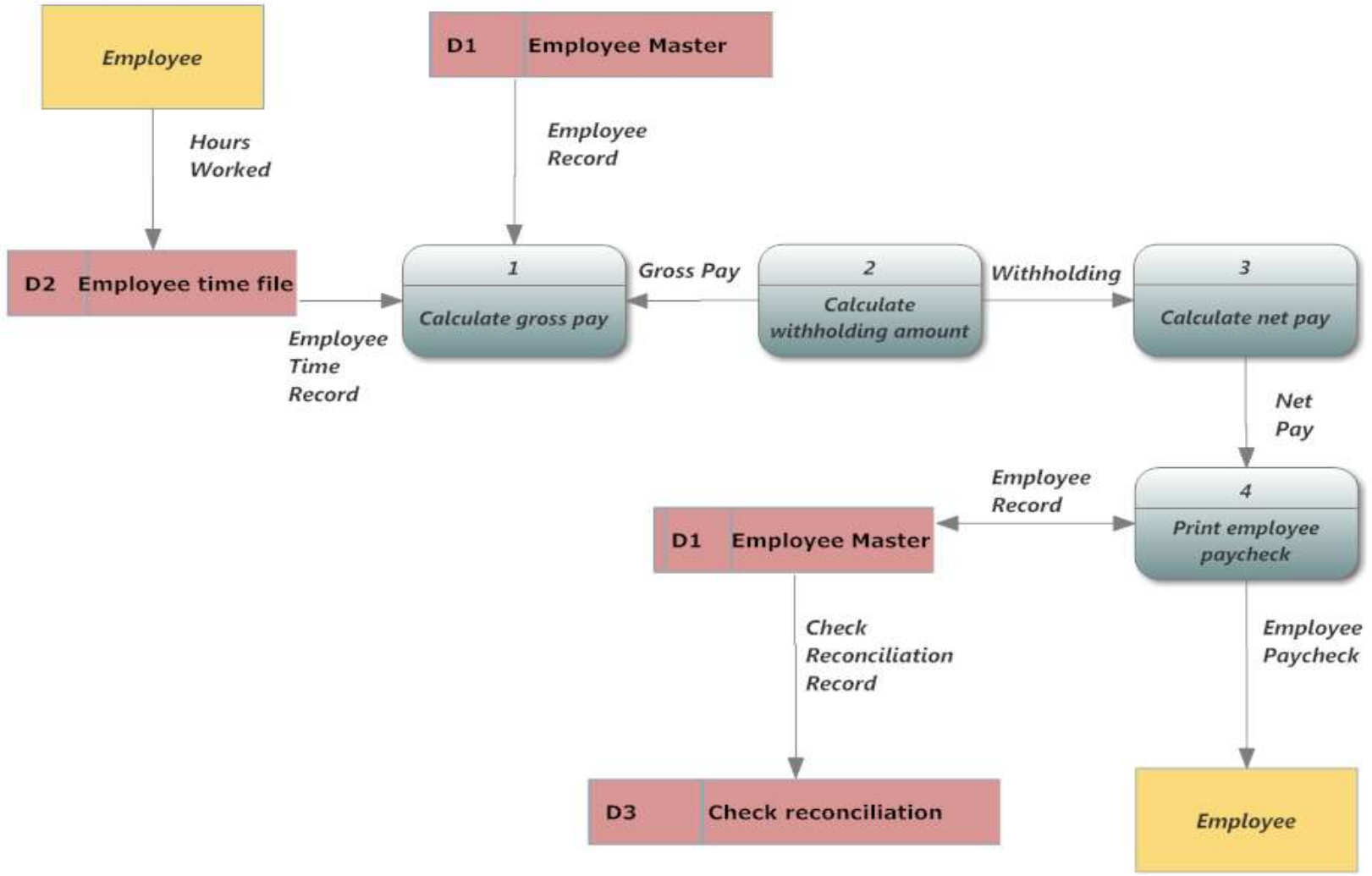
Correct

DFD mistakes

Wrong	Right	Description
		An entity cannot provide data to another entity without some processing occurred.
		Data cannot move directly from an entity to a data story without being processed.
		Data cannot move directly from a data store without being processed.
		Data cannot move directly from one data store to another without being processed.

https://www.visual-paradigm.com/guide/data-flow-diagram/what-is-data-flow-diagram/

Exercise, Find errors??



An Example of a simple DFD

Consider for a moment that you are reading a book, and then passing the information that you have gained onto a friend.

You have all the required components to construct a simple DFD:

Process: You

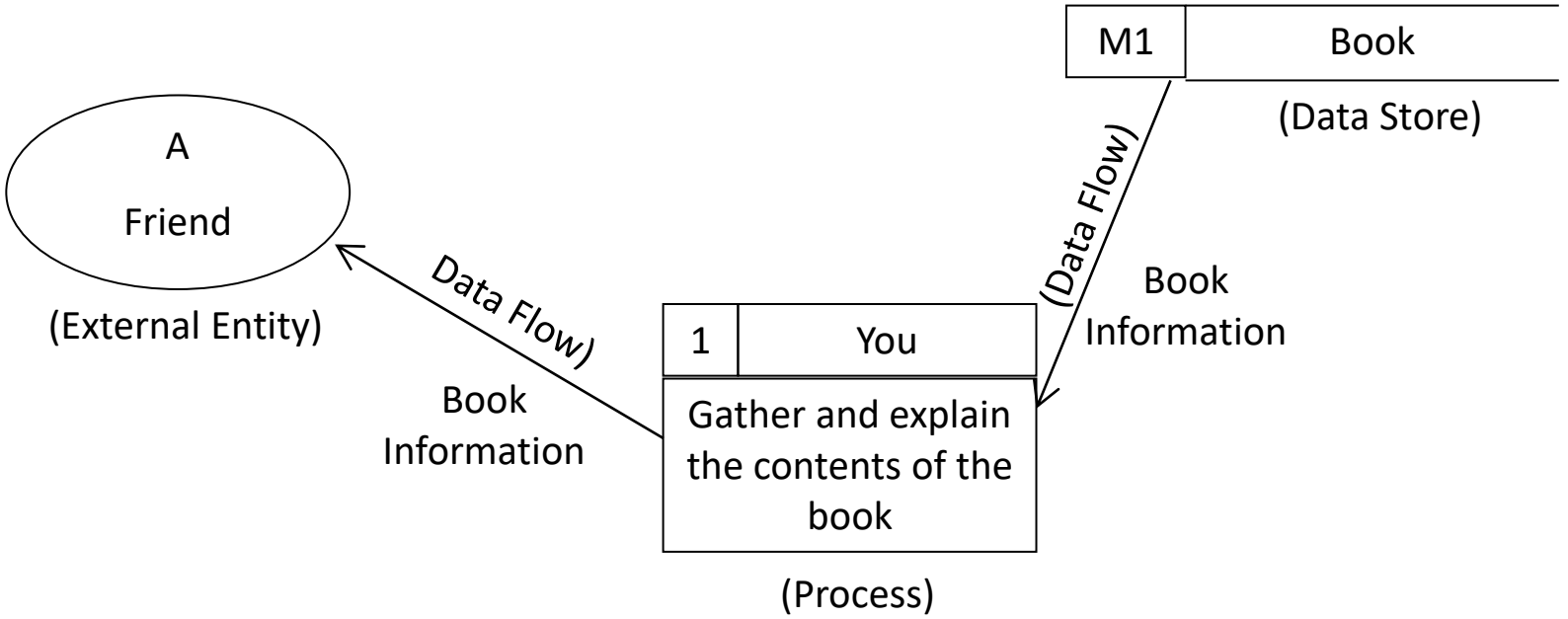
Data Store: Book

External Entity: A Friend

Data Flow: Book Information

An Example of a simple DFD

Now if we put this diagram together we now have:



This is an example of a physical Diagram

Conclusion

DFD’s can be used to represent any situation a system can present.

They can represent both physical and logical views of a situation.

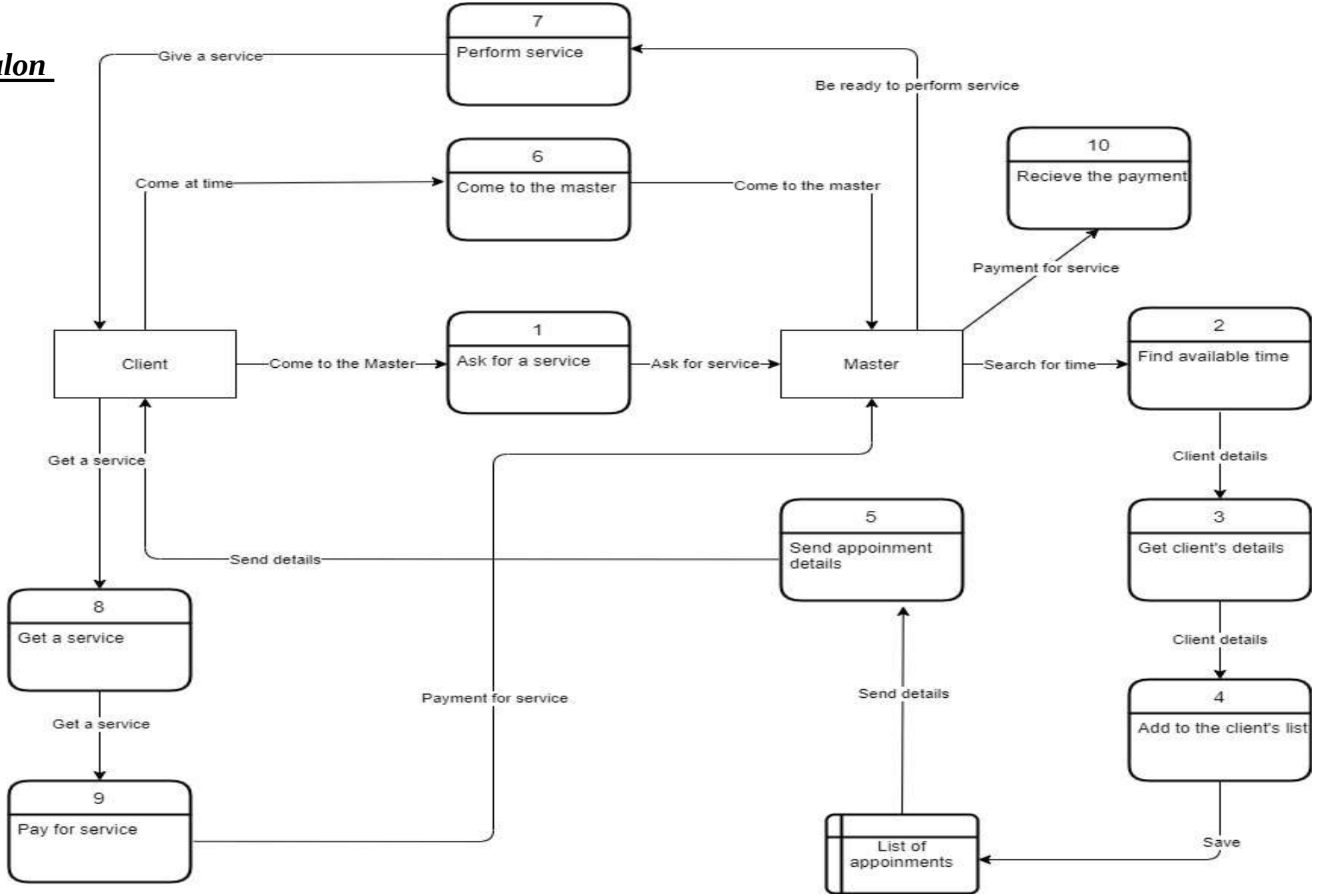
There are no hard or fast rules for the construction of DFD’s and Your design will change a number of times.

Normally evolve from the context diagram, (identifying the major Inputs/outputs).

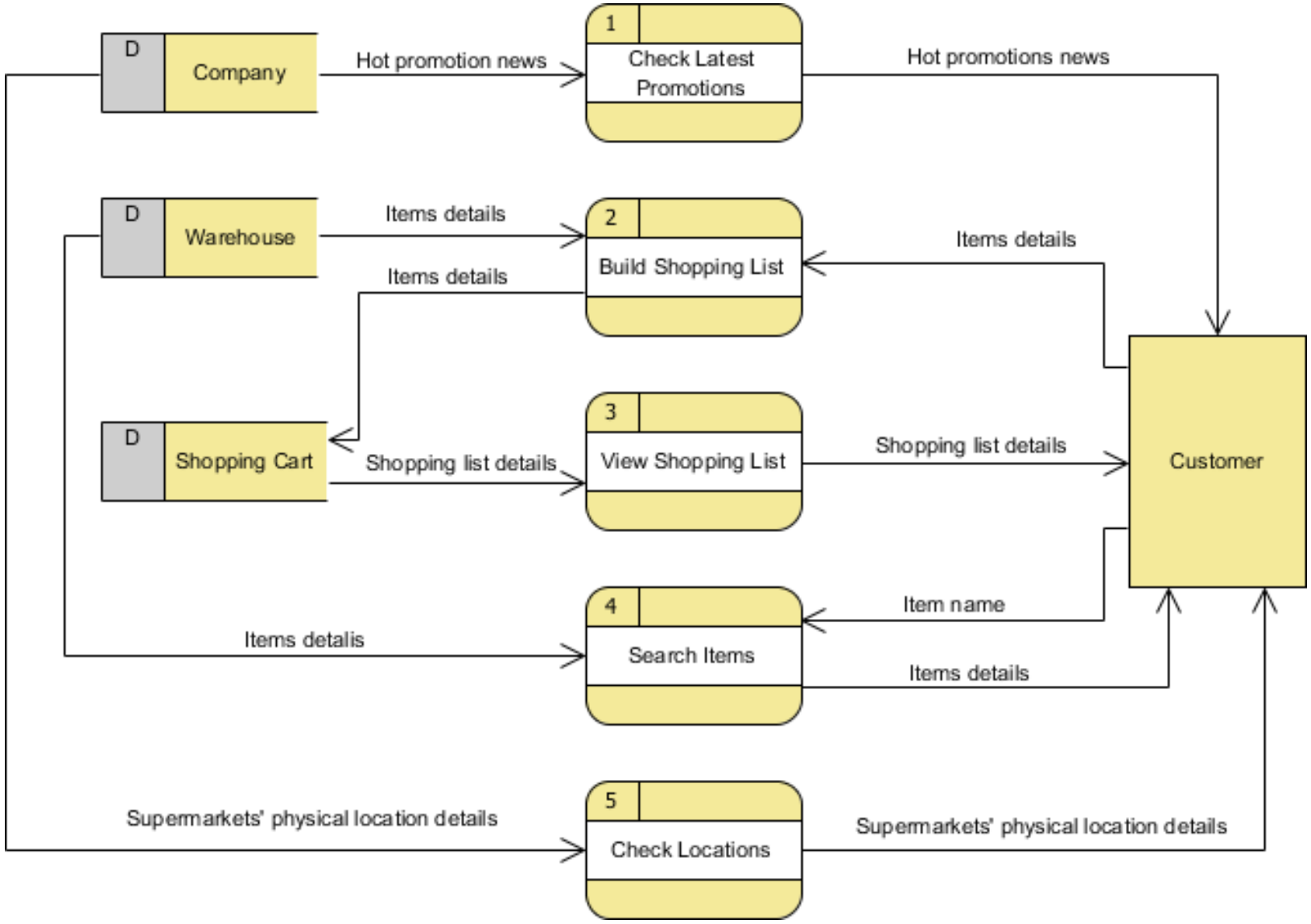
Each level of your DFD should hold 5 or so process box’s.

- Creating Data Flow Diagrams
- Steps to create DFD in action
- https://www.youtube.com/watch?v=Ik85hZkyYPA
- Write actual steps to create DFD

Website for a nail salon



Super market App



Individually work

- Download the Task 1 and 2 (dfd practicalwork part1, dfd practical work part2) and answer the questions.