Data Flow Diagrams

What is a 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.

Symbols and Notations Used in DFDs

- Two common systems of symbols are named after their creators:
  - Yourdon and Coad
  - Yourdon and DeMarco
  - Gane and Sarson

- One main difference in their symbols is that Yourdon-Coad and Yourdon-DeMarco use circles for processes, while Gane and Sarson use rectangles with rounded corners,

Symbols and Notations Used in DFDs

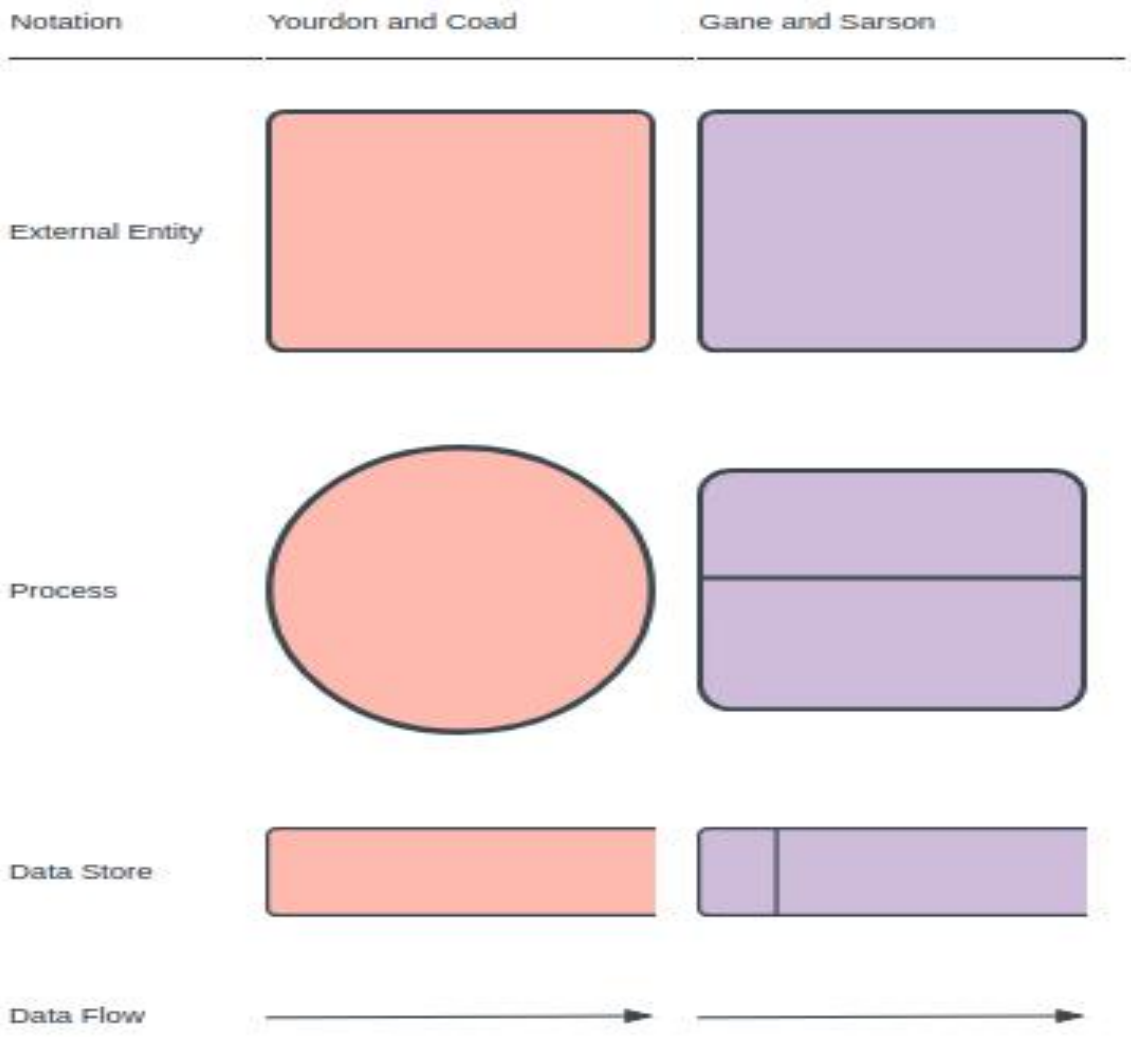
- **External entity:** an outside system that sends or receives data, communicating with the system being diagrammed. They are the sources and destinations of information entering or leaving the system
- **Process:** any process that changes the data, producing an output. It might perform computations, or sort data based on logic, or direct the data flow based on business rules. A short label is used to describe the process, such as “Submit payment.”

Symbols and Notations Used in DFDs

- **Data store:** files or repositories that hold information for later use, such as a database table or a membership form. Each data store receives a simple label, such as “Orders.”

- **Data flow:** the route that data takes between the external entities, processes and data stores. It portrays the interface between the other components and is shown with arrows, typically labeled with a short data name, like “Billing details.”

Symbols and Notations Used in DFDs



DFD rules

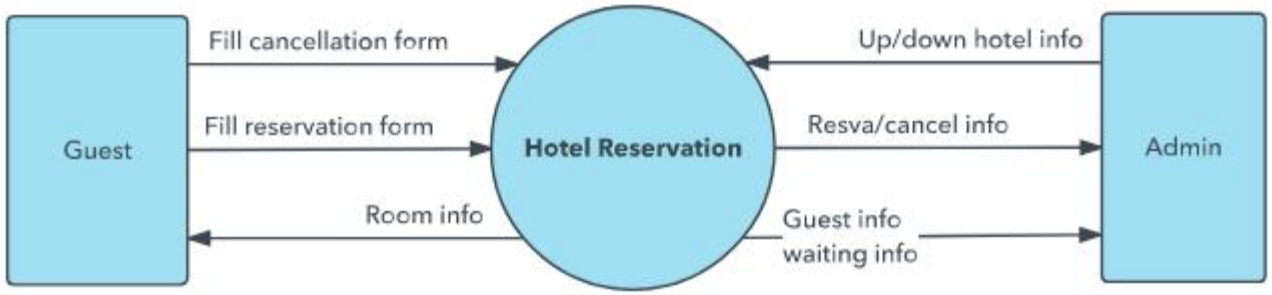
- Each process should have at least one input and an output.
- Each data store should have at least one data flow in and one data flow out.
- Data stored in a system must go through a process.
- All processes in a DFD go to another process or a data store.

DFD levels and layers

- A data flow diagram can be represented into progressively more detail by using levels and layers, zeroing in on a particular piece.
- DFD levels are numbered 0, 1 or 2, and occasionally go to even Level 3 or beyond.
- The necessary level of detail depends on the scope of what you are trying to accomplish.

DFD Level 0-Context Diagram.

- basic overview of the whole system or process being analyzed or modeled.
- It’s designed to be an at-a-glance view, showing the system as a single high-level process, with its relationship to external entities.
- Its used by a wide audience, including stakeholders, business analysts, data analysts and developers to understand the system.

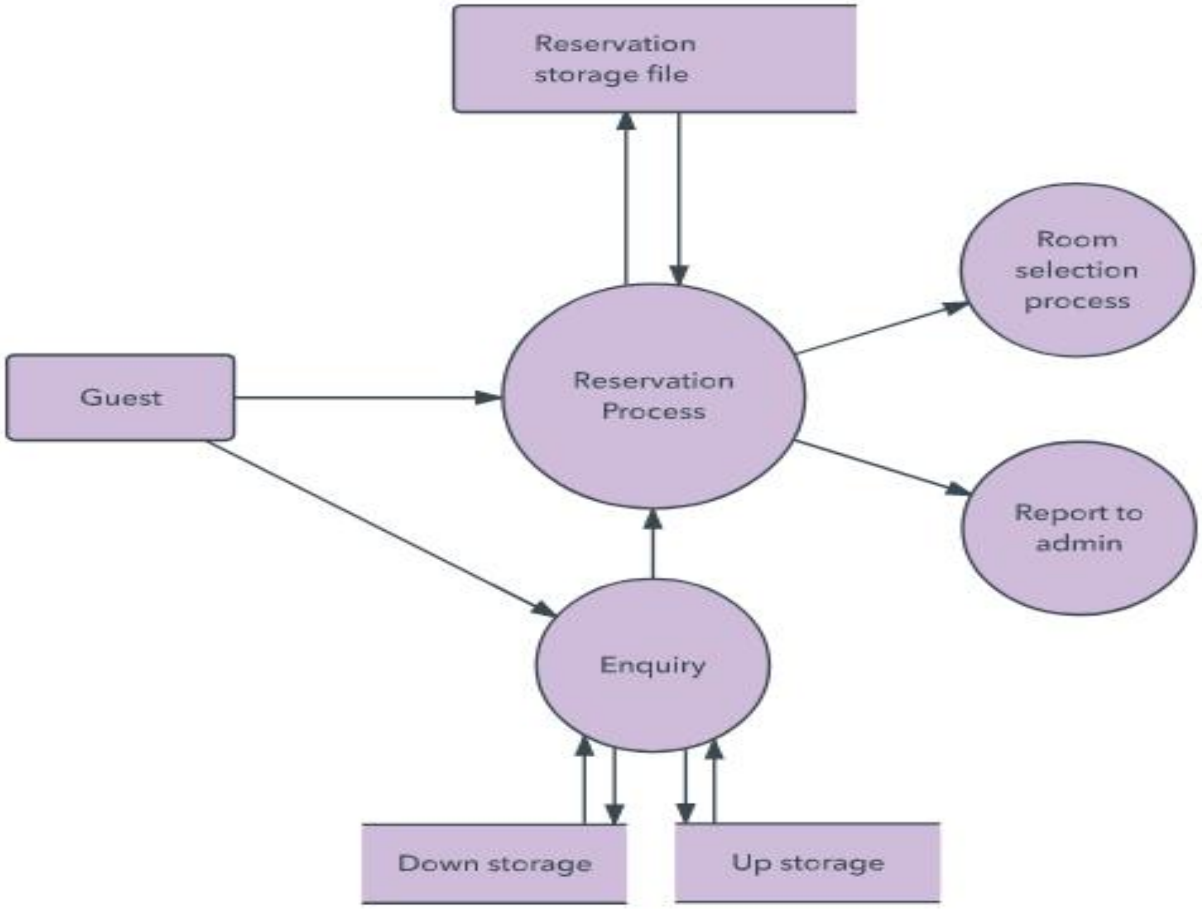


DFD Level 1

- It provides a more detailed breakout of pieces of the Context Level Diagram.

- It highlights the main functions carried out by the system, as we break down the high-level process of the Context Diagram into its subprocesses

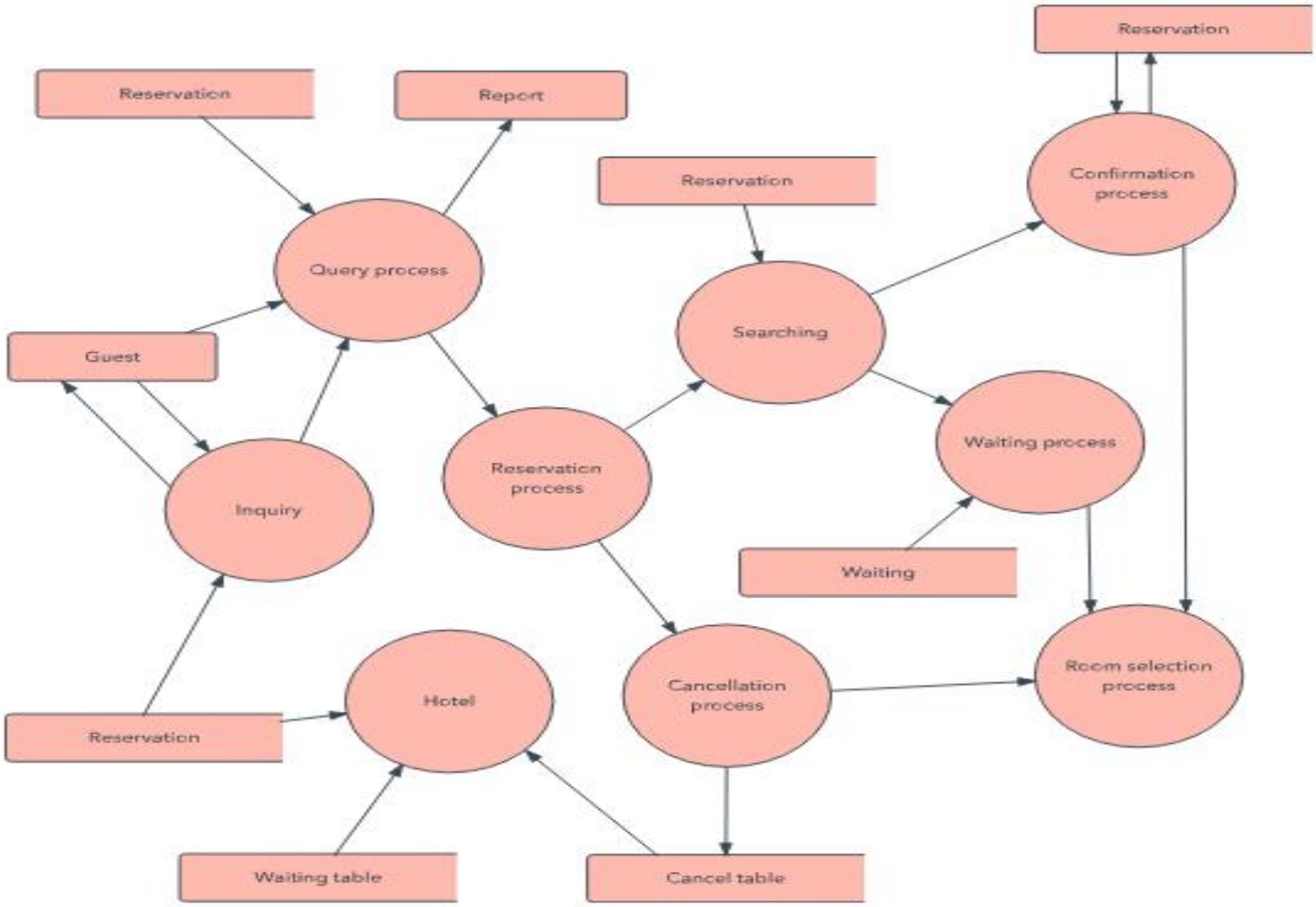
DFD Level 1


Reservation storage file
Room selection process
Guest
Reservation Process
Report to admin
Enquiry
Down storage
Up storage

DFD Level 2

- It goes one step deeper into parts of Level 1.
- It may require more text to reach the necessary level of detail about the system’s functioning.

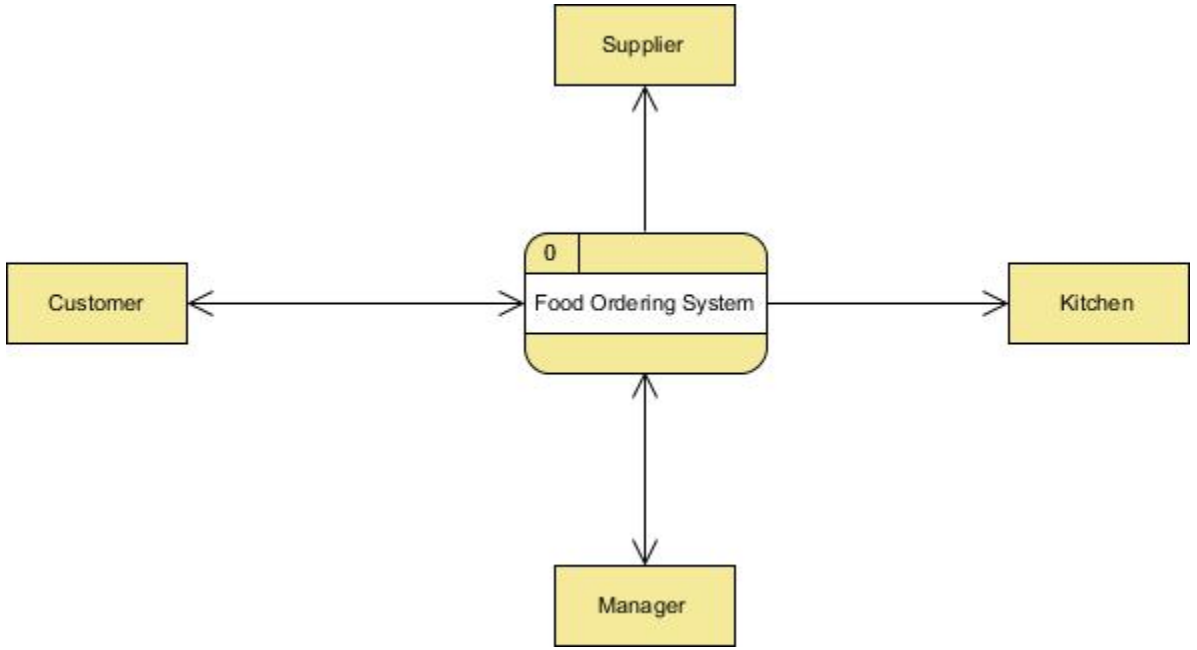
DFD Level 2


Reservation
Reservation
Report
Reservation
Confirmation process
Query process
Searching
Guest
Waiting process
Reservation process
Inquiry
Waiting
Room selection process
Cancellation process
Hotel
Reservation
Waiting table
Cancel table

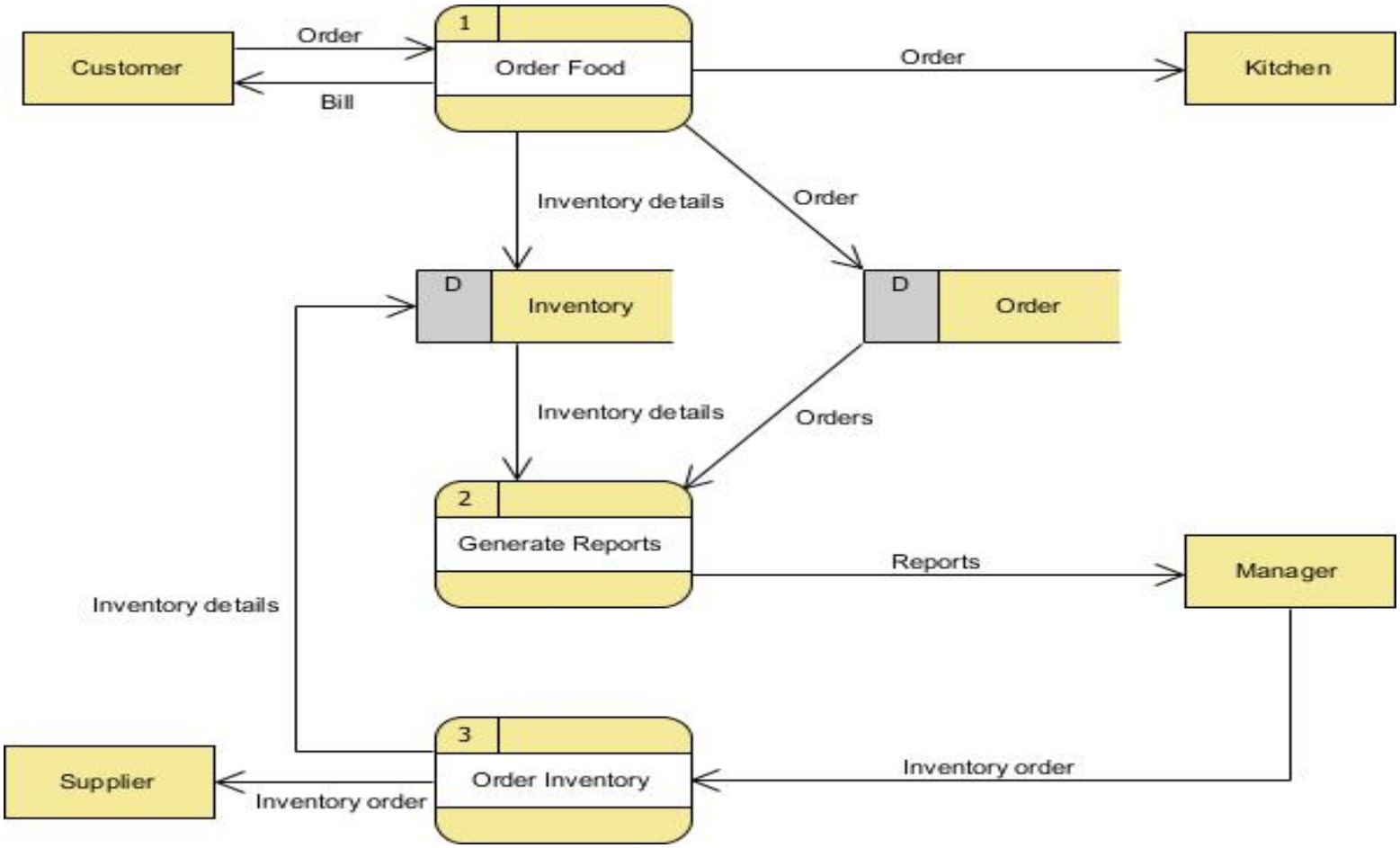
Example"Food Ordering System"

It also shows the participants who will interact with the system, called the external entities. (the Supplier, Kitchen, Manager, and Customer)

- In between the process and the external entities, there is data flow (connectors) that indicate the existence of information exchange between the entities and the system.



Level 1 DFD


Customer
Order
Bill
1
Order Food
Order
Kitchen
Inventory details
Order
D
Inventory
D
Order
Inventory details
Orders
2
Generate Reports
Reports
Manager
Inventory details
3
Order Inventory
Inventory order
Supplier
Inventory order

Group Exercise

- Get into your project individual/groups and figure out the best solution for the level 0 DFD,Level-1 DFD