SOS IN COMPUTER SCIENCE & APPLICATION
JIWAJI UNIVERSITY

Class : MBA (E-Commerce) II Semester

Subject : Software Engineering & Software Project Management

Paper Code: (202)

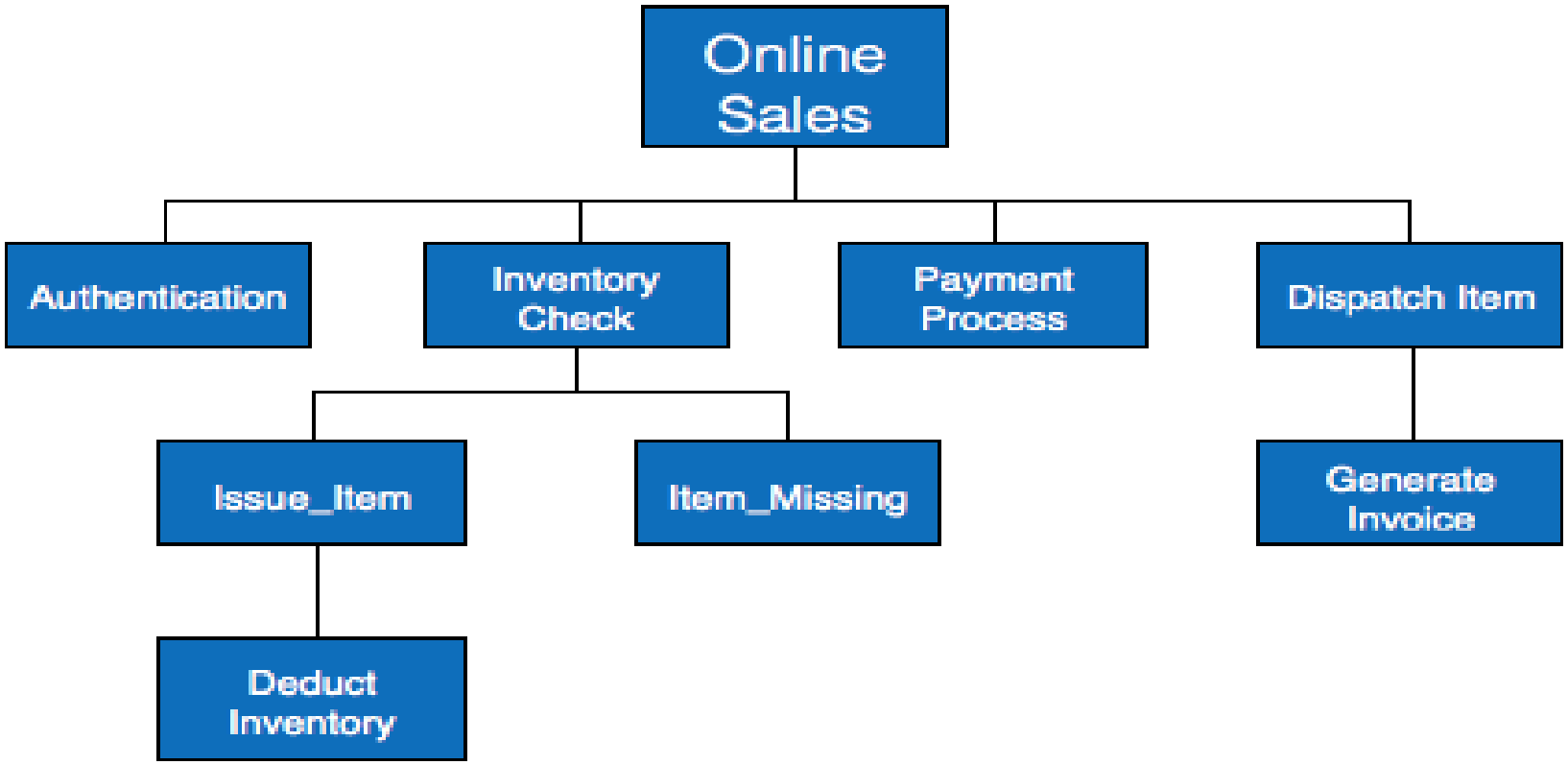
Topic: (i) Bubble Chart

(ii) HIPO Charts

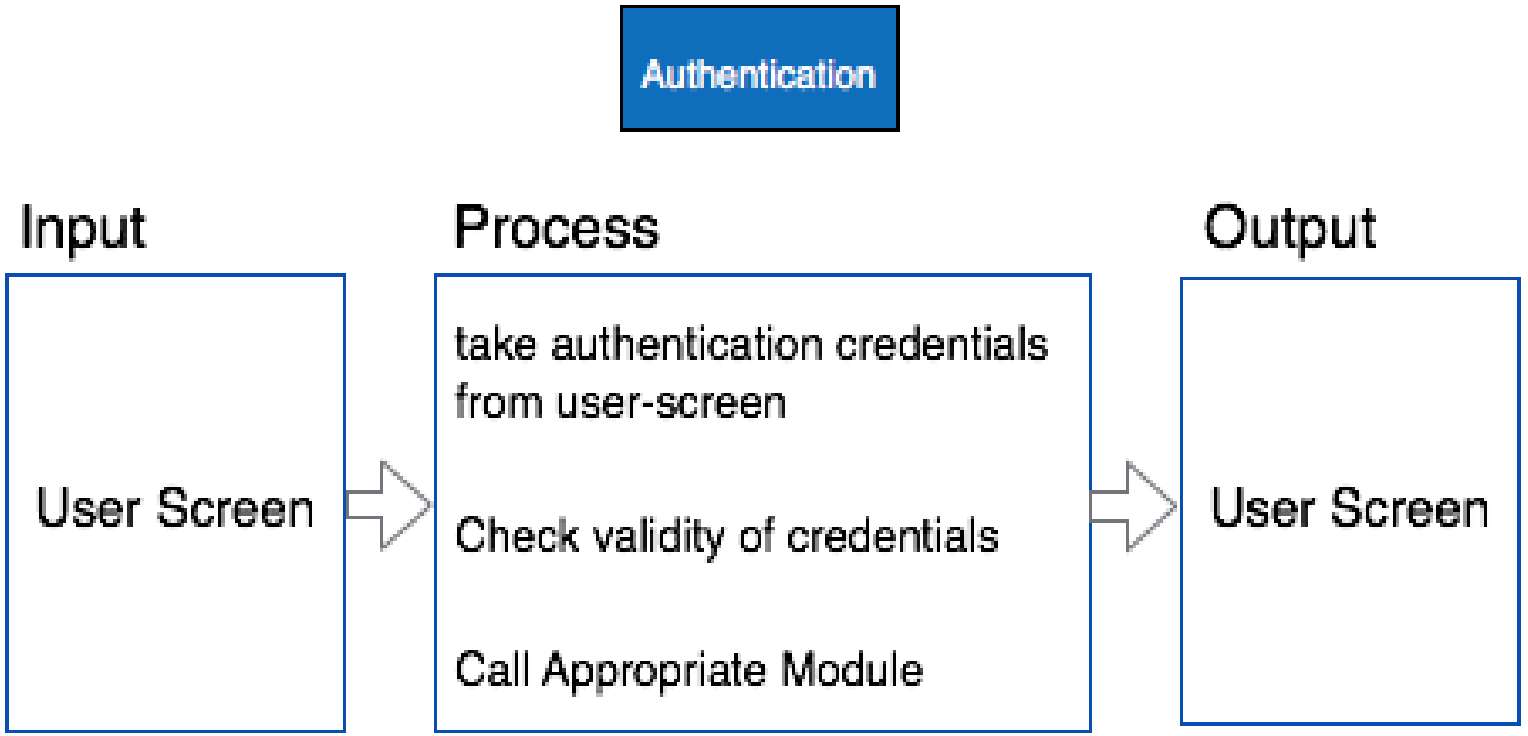
HIPO Diagram

- HIPO (Hierarchical Input Process Output) diagram is a combination of two organized method to analyze the system and provide the means of documentation. HIPO model was developed by IBM in year 1970.
- HIPO diagram represents the hierarchy of modules in the software system. Analyst uses HIPO diagram in order to obtain high-level view of system functions. It decomposes functions into sub-functions in a hierarchical manner. It depicts the functions performed by system.
- HIPO diagrams are good for documentation purpose. Their graphical representation makes it easier for designers and managers to get the pictorial idea of the system structure.

EXAMPLE


Online Sales
Authentication
Inventory Check
Payment Process
Dispatch Item
Issue_Item
Item_Missing
Generate Invoice
Deduct Inventory

- In contrast to IPO (Input Process Output) diagram, which depicts the flow of control and data in a module, HIPO does not provide any information about data flow or control flow.



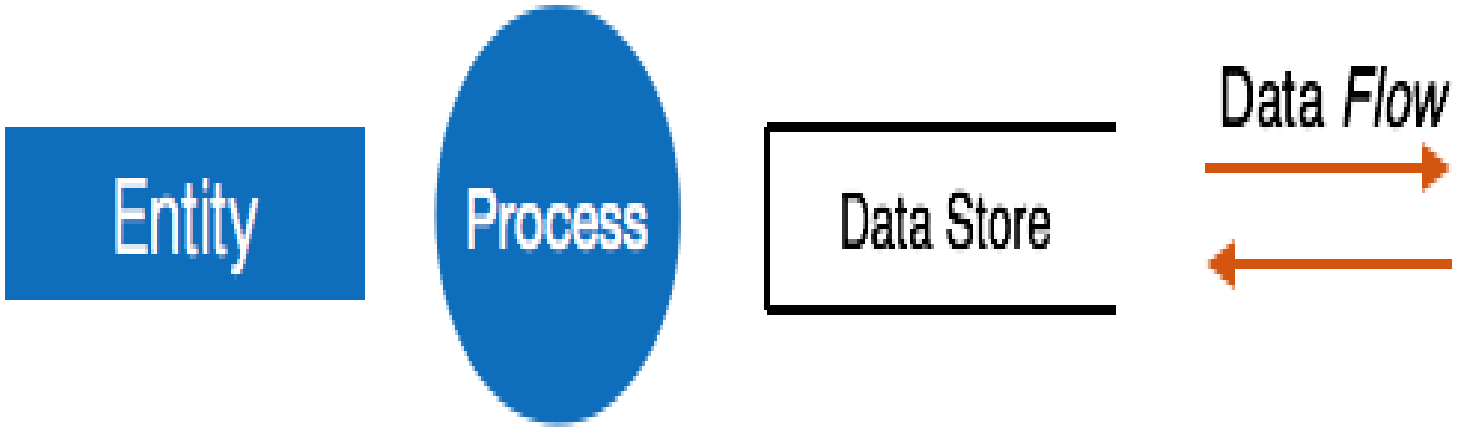
- Example
- Both parts of HIPO diagram, Hierarchical presentation and IPO Chart are used for structure design of software program as well as documentation of the same.
- In software engineering, "bubble chart" can refer to a data flow, a data structure or other diagram in which entities are depicted with circles or bubbles and relationships are represented by links drawn between the circles.

Data Flow Diagram

- Data flow diagram is graphical representation of flow of data in an information system. It is capable of depicting incoming data flow, outgoing data flow and stored data. The DFD does not mention anything about how data flows through the system.
- There is a prominent difference between DFD and Flowchart. The flowchart depicts flow of control in program modules. DFDs depict flow of data in the system at various levels. DFD does not contain any control or branch elements.
-

Types of DFD

- Data Flow Diagrams are either Logical or Physical.
- **Logical DFD** – This type of DFD concentrates on the system process, and flow of data in the system.For example in a Banking software system, how data is moved between different entities.
- **Physical DFD** – This type of DFD shows how the data flow is actually implemented in the system. It is more specific and close to the implementation.



Entities – Entities are source and destination of information data. Entities are represented by a rectangles with their respective names.

Process – Activities and action taken on the data are represented by Circle or Round-edged rectangles.

Data Storage – There are two variants of data storage – it can either be represented as a rectangle with absence of both smaller sides or as an open-sided rectangle with only one side missing.

Data Flow – Movement of data is shown by pointed arrows. Data movement is shown from the base of arrow as its source towards head of the arrow as destination.

Levels of DFD

- **Level 0** – Highest abstraction level DFD is known as Level 0 DFD, which depicts the entire information system as one diagram concealing all the underlying details. Level 0 DFDs are also known as context level DFDs.
- **Level 1** – The Level 0 DFD is broken down into more specific, Level 1 DFD. Level 1 DFD depicts basic modules in the system and flow of data among various modules. Level 1 DFD also mentions basic processes and sources of information.

Level 0 & Level 1