CHAPTER 6

The tools of structured analysis

What is structured analysis?

- Structured analysis is a set of techniques and graphical tools that allow the analyst to develop a new kind of system specifications that are easily understandable to the user.
- Goals:
  - use graphics wherever possible to help communicate better with the user.
  - Differentiate between logical and physical systems
  - Build a logical system model to familiarize the user with the system characteristics.

Attributes of structured analysis

- It is graphic.
- The process is partitioned
- It is logical rather than physical
- It calls for a rigorous study of the user area.
- Certain tasks that are normally carried out late in the SDLC.

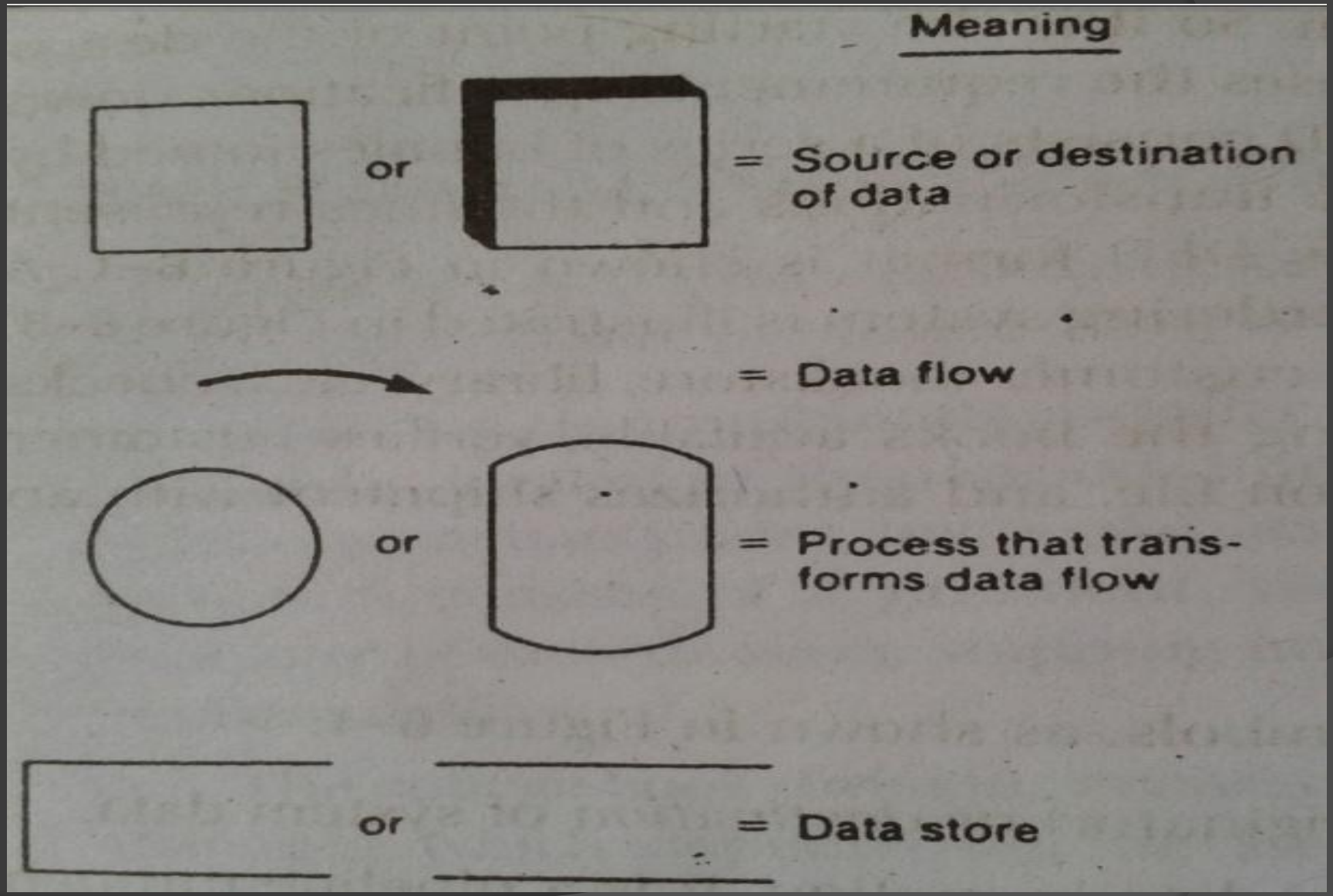
Tools of structured analysis

- Tools of structured analysis are:
  - Data flow diagram(DFD)
  - Data dictionary
  - Structured English
  - Decision tree
  - Decision table

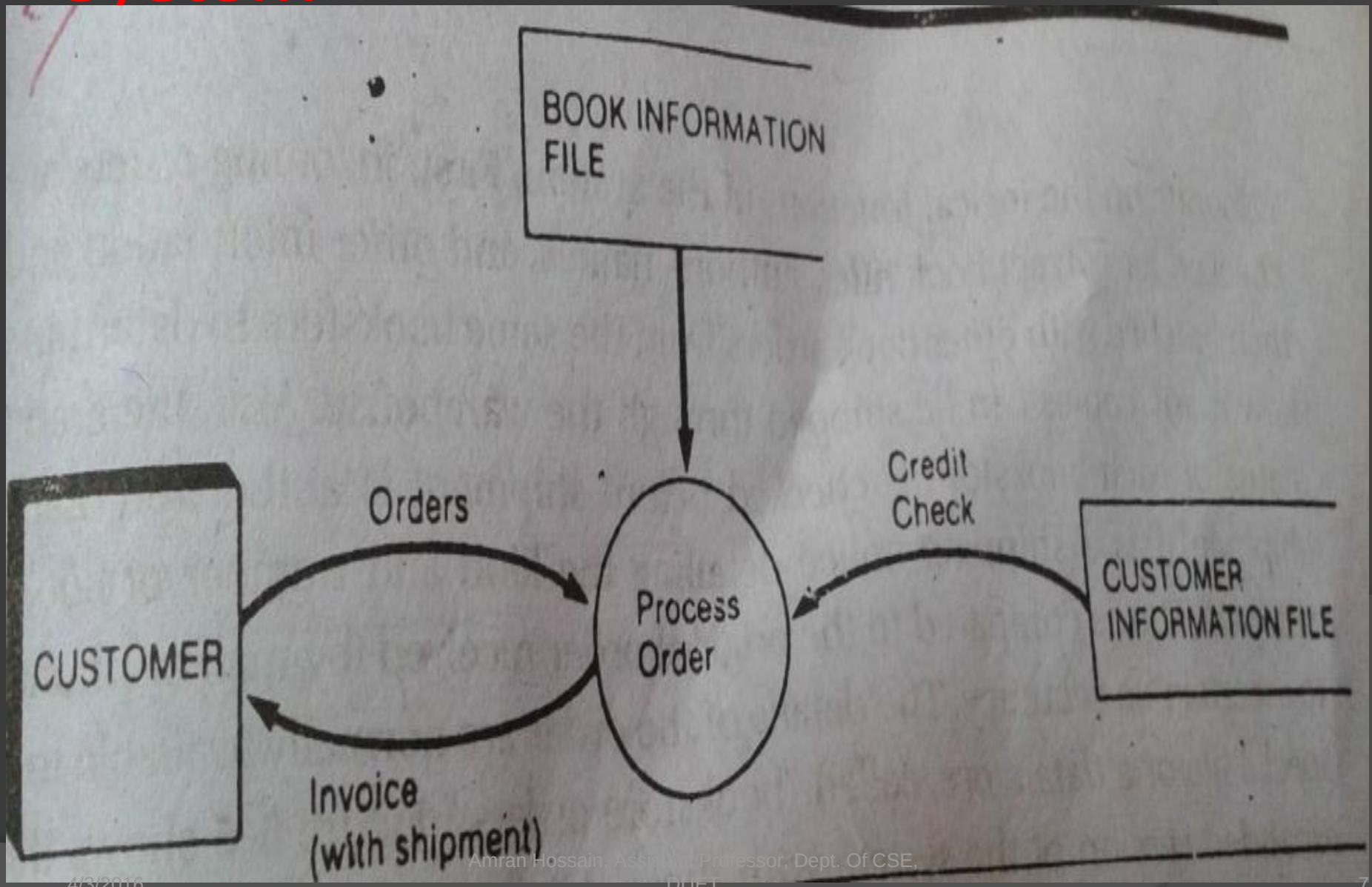
Data flow diagram(DFD)

- A DFD also known as a “bubble chart” has the purpose of clarifying system requirements and identifying major transformation that will be come programs in system design.
- DFD consist of a series of bubbles joined by lines

DFD symbols


Meaning
or
= Source or destination of data
= Data flow
or
= Process that trans-forms data flow
or
= Data store

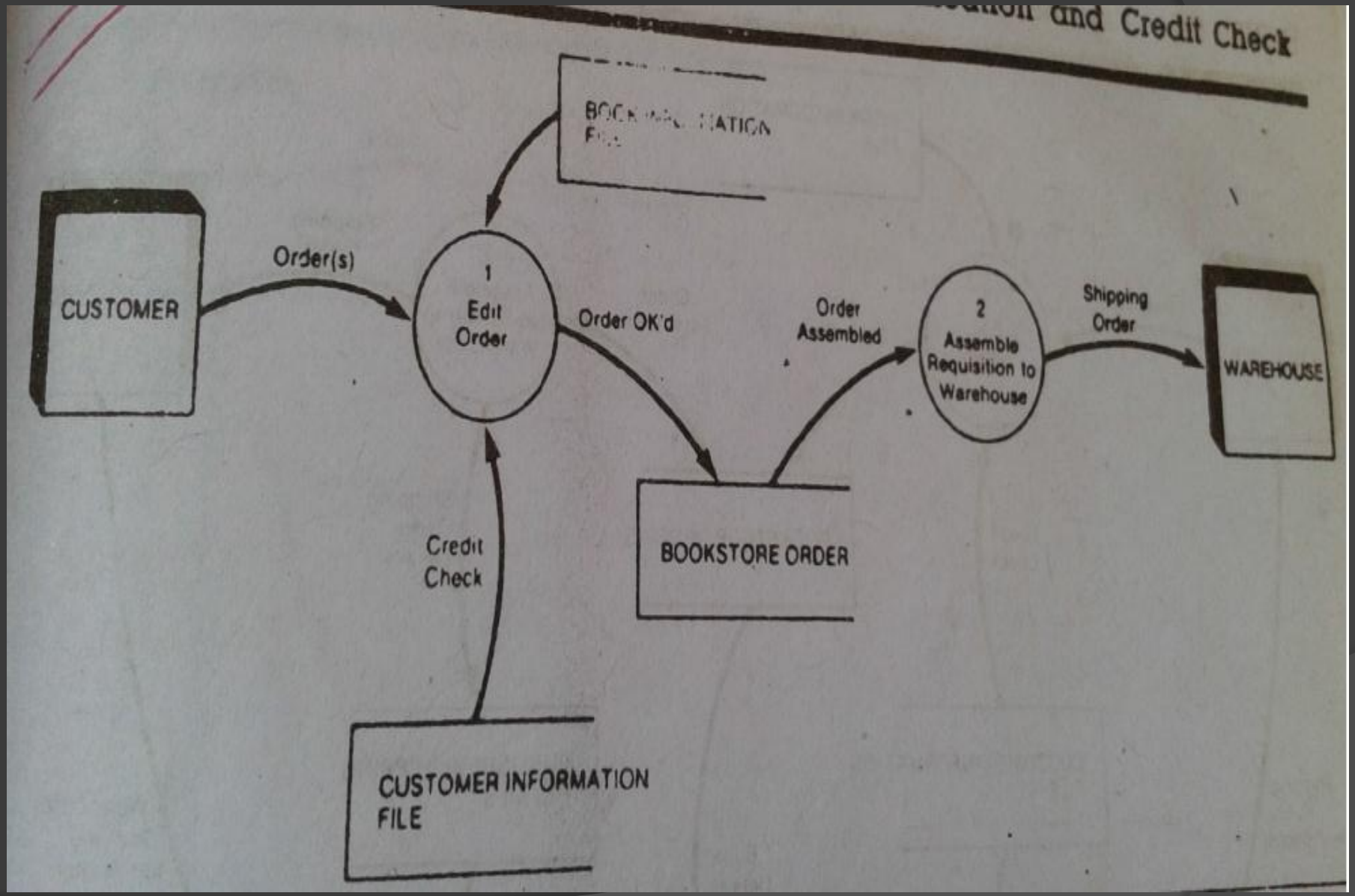
Example: publisher ordering system



Constructing a DFD

- Several rules of drawing DFD:
  - Processed should be named and numbered for easy reference.
  - The direction of flow is from top to bottom and from left to right.
  - When a process is exploded into lower level details , they are numbered.
  - The names of data stores ,sources, and destinations are written in capital letters.
  - Process and data flow names have the first letter of each word capitalized.

Example:


and Credit Check
CUSTOMER
Order(s)
1
Edit
Order
Order OK'd
Order
Assembled
2
Assemble
Requisition to
Warehouse
Shipping
Order
WAREHOUSE
BOOKSTORE ORDER
Credit
Check
CUSTOMER INFORMATION
FILE

- See DFD:
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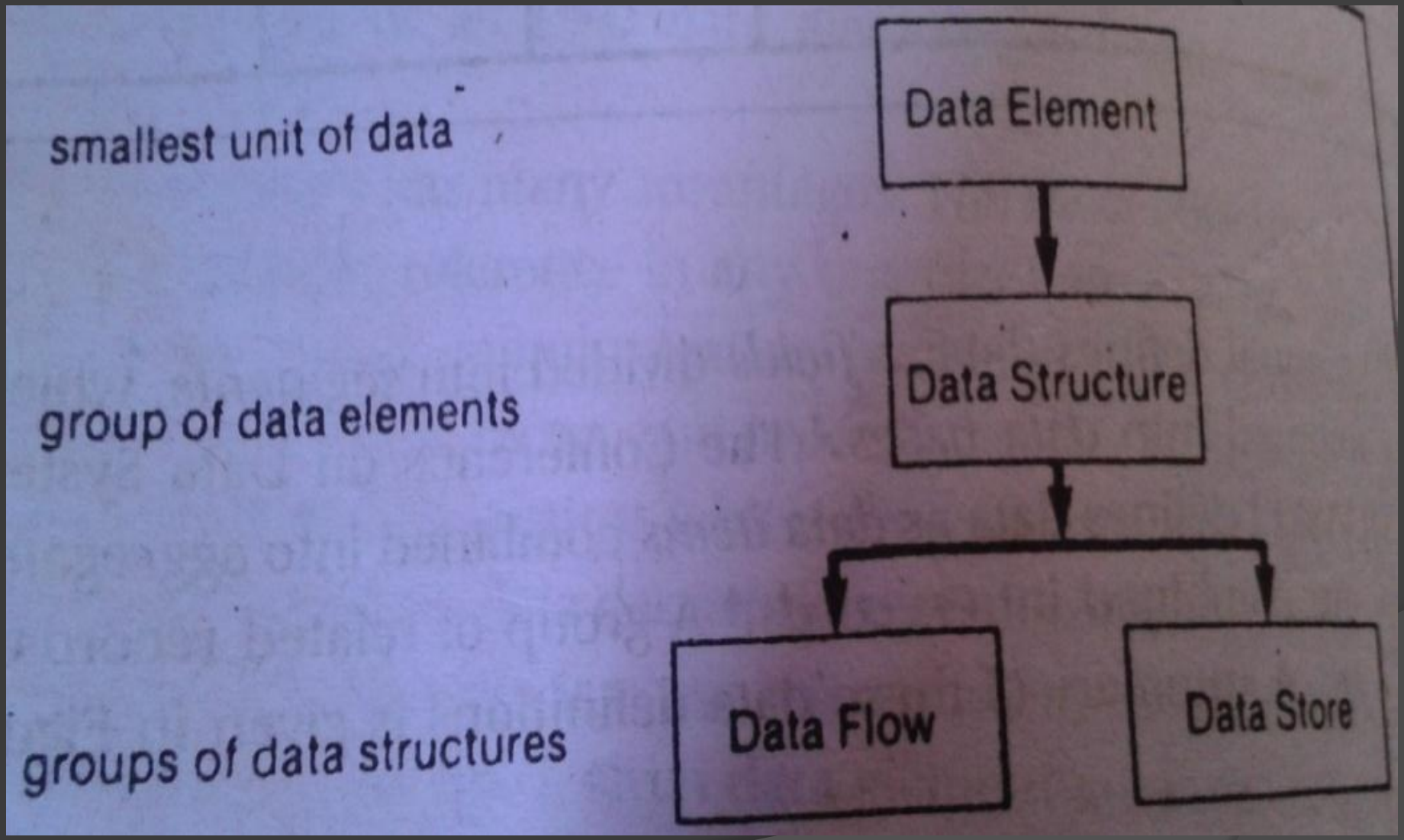
Data dictionary

- A data dictionary is a structured repository of data about data.
- It is a set of rigorous definition of all DFD data elements and data structures.

Advantages of data dictionary

- The most obvious is documentation
- It is valuable reference of any organization
- Improving analyst/user communication by establishing consistent definitions of various elements.
- Control information
- Important step in building data base.

Logical data description hierarchy



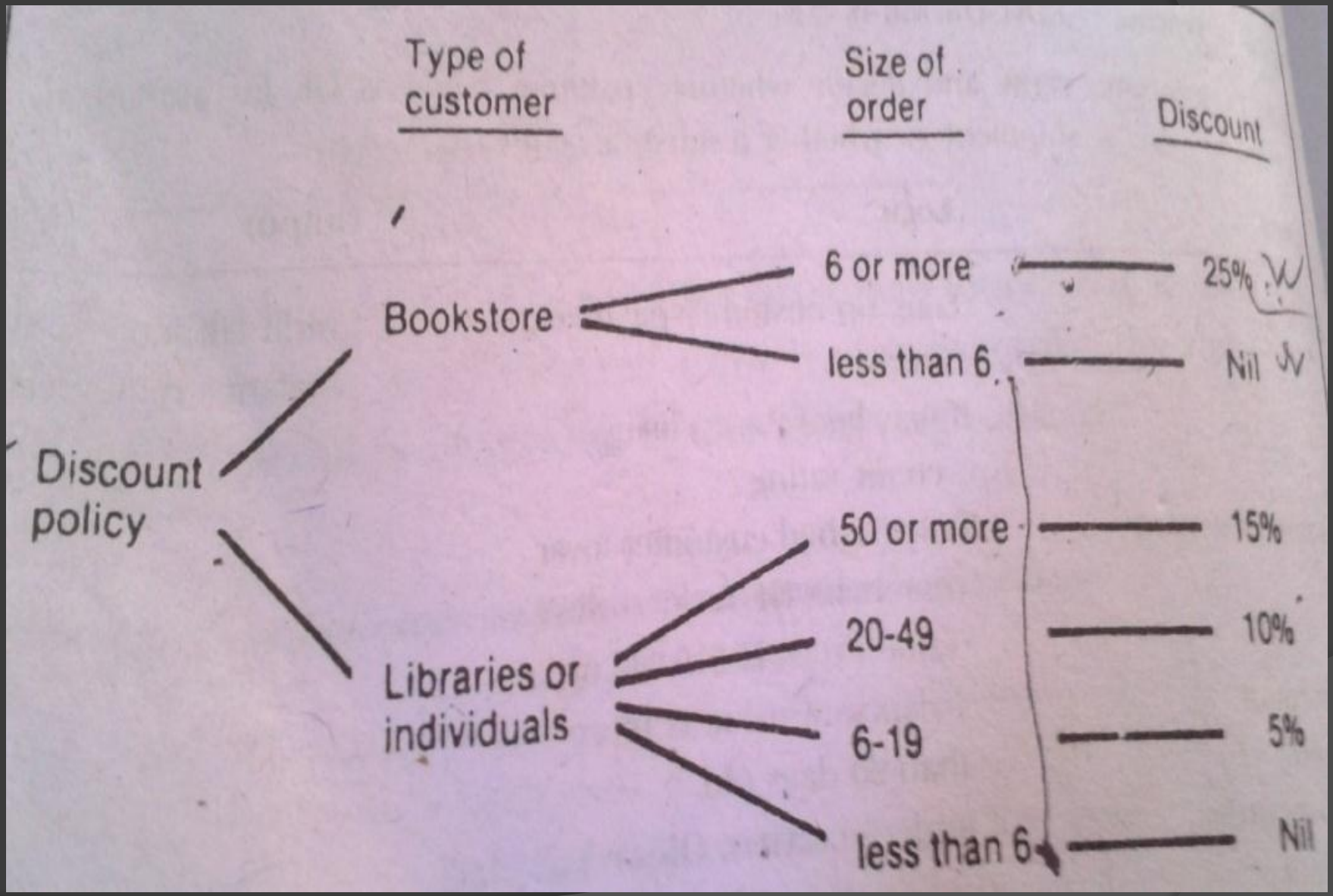
Decision tree

- A decision tree has as many branches as there are logical alternatives.
- It simply sketches the logical structure based on the stated policy.

Example

- Consider following discount policy:
  - Bookstores get a trade discount of 25%; for orders from libraries and individuals, 5%allowed on orders of 6-19 copies per book title;10% on orders for 20-49 copies per book title;15% on orders for 50 copies or more per book title.

Decision tree of example



Structured English of example

COMPUTE-DISCOUNT

Add up the number of copies per book title

IF order is from bookstore

and-IF order is for 6 copies or more per book title

THEN: Discount is 25%

ELSE (order is for fewer than 6 copies per book title)

SO: no discount is allowed

ELSE (order is from libraries or individual customers)

so-IF order is for 50 copies or more per book title
discount is 15%

ELSE IF order is for 20 to 49 copies per book title
discount is 10%

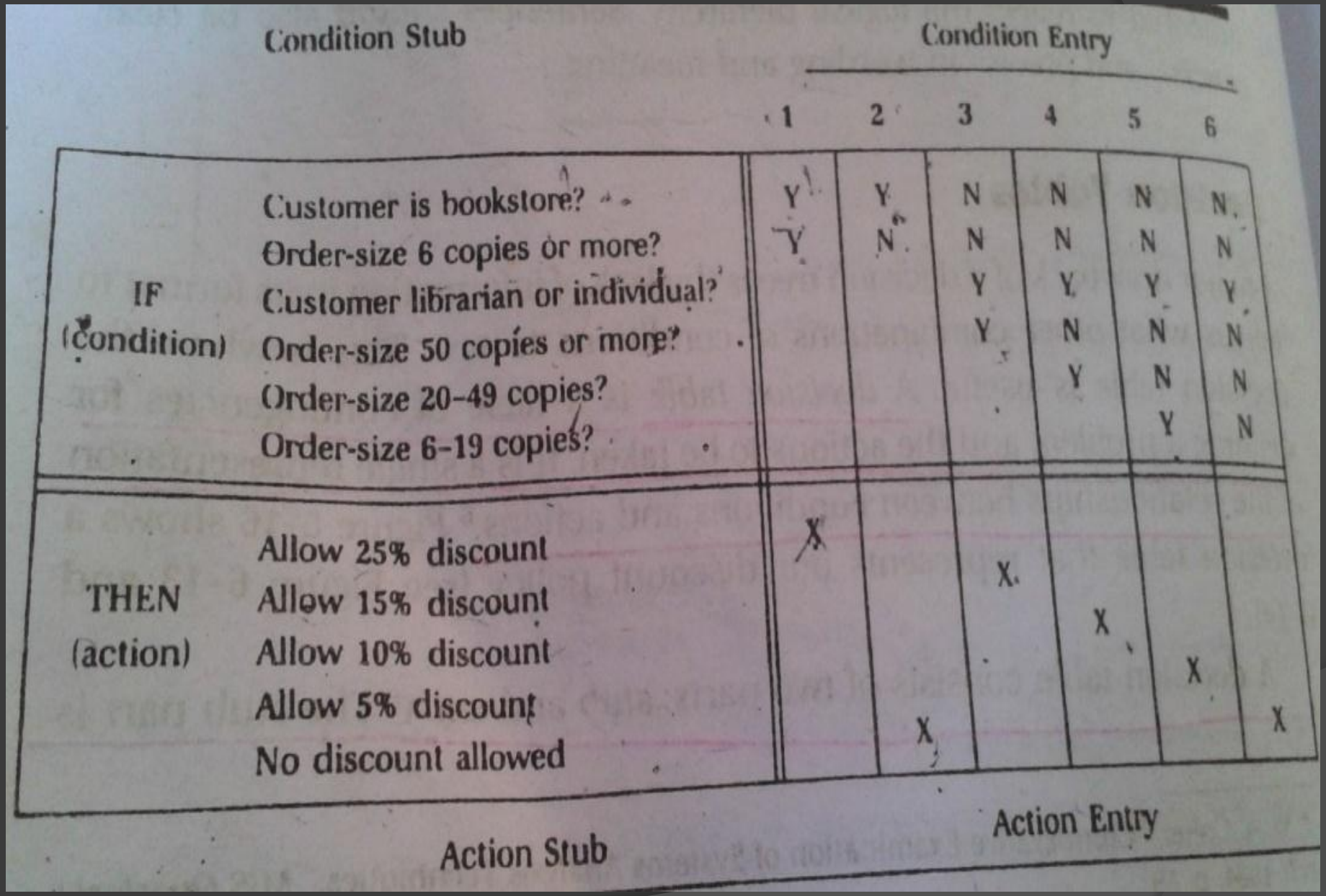
ELSE IF order is for 6 to 19 copies per book title
discount is 5%

ELSE (order is for less than 6 copies per book order)

SO: no discount is allowed

Decision Table

- A decision table is a table of contingencies for defining a problem and actions to be taken.
- It is a single representation of the relationships between conditions and actions.
- A decision table consists of two parts: stub and entry.
- The stub part divided into an upper quadrant called the condition stub and lower quadrant called action stub.
- The entry part is also divided into an upper quadrant called condition entry and lower quadrant called action entry.



Condition Stub		Condition Entry					
		1	2	3	4	5	6
IF (condition)	Customer is bookstore?	Y	Y	N	N	N	N
	Order-size 6 copies or more?	Y	N	N	N	N	N
	Customer librarian or individual?			Y	Y	Y	Y
	Order-size 50 copies or more?			Y	N	N	N
	Order-size 20–49 copies?				Y	N	N
	Order-size 6–19 copies?					Y	N
THEN (action)	Allow 25% discount	X					
	Allow 15% discount			X			
	Allow 10% discount				X		
	Allow 5% discount					X	
	No discount allowed		X				X

Action Stub — Action Entry

Pros and cons of each tool

- Self study
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