جامعة الحمدانية

كلية التربية للعلوم الصرفة

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المرحلة الثالثة

هندسة البرمجيات

Software Engineering

Structured Analysis
Data Flow Diagram + Data Dictionary

Topics covered

- ✧ Structured Analysis
- ✧ Structured Analysis Models (Tools):

i. Data Flow Diagram

ii. Data Dictionary

iii. Decision Trees

iv. Decision Tables

v. Structured English

vi. Pseudocode

Structured Analysis

- ✧ Structured Analysis is a development method that allows the analyst to understand the system and its activities in a logical way.
- ✧ It is a systematic approach, which uses graphical tools that analyze and refine the objectives of an existing system and develop a new system specification which can be easily understandable by user.
- ✧ It has following attributes :

- It is graphic which specifies the presentation of application.
- It divides the processes so that it gives a clear picture of system flow.
- It is an approach that works from high-level overviews to lower-level details.

Structured Analysis

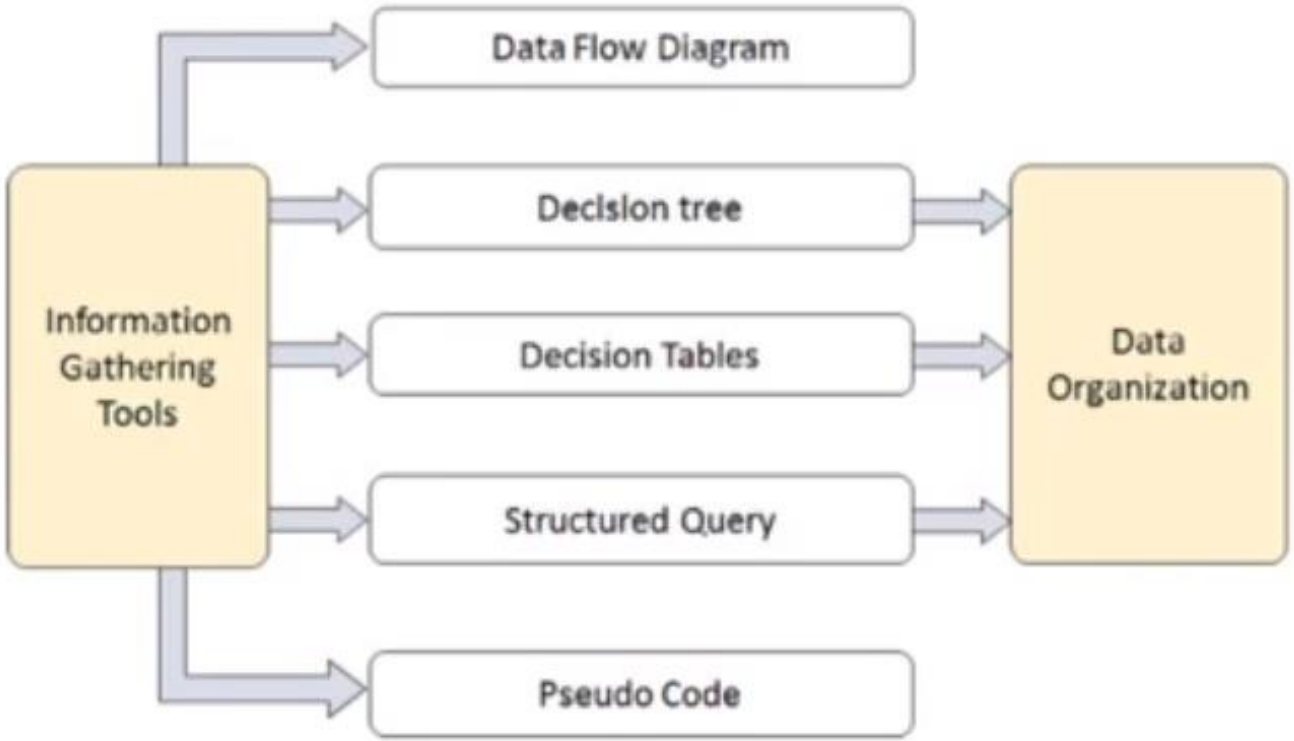


Figure 14: Structured Analysis

Data Flow Diagram (DFD)

- It is a technique developed by Larry Constantine to express the requirements of system in a graphical form.
- A primary tool in structured analysis that graphically illustrates a system's components process and the flow of data between them.
- It shows the flow of data between various functions of system and specifies how the current system is implemented.
- It is an initial stage of design phase that functionally divides the requirement specifications down to the lowest level of detail.

Data Flow Diagram (DFD)

- Its graphical nature makes it a good communication tool between user and analyst or analyst and system designer.
- It gives an overview of what data a system processes, what transformations are performed, what data are stored, what results are produced and where they flow.

Basic Elements of DFD

- DFD is easy to understand and quite effective when the required design is not clear, and the user wants a notational language for communication.

- However, it requires a large number of iterations for obtaining the most accurate and complete solution.

Basic Elements of DFD

Symbol Name	Symbol	Meaning
Square		Source or Destination of Data
Arrow		Data flow
Circle		Process transforming data flow
Open Rectangle		Data Store

Figure 10: Basic Elements of DFD

DFD Example: Airline Reservation System

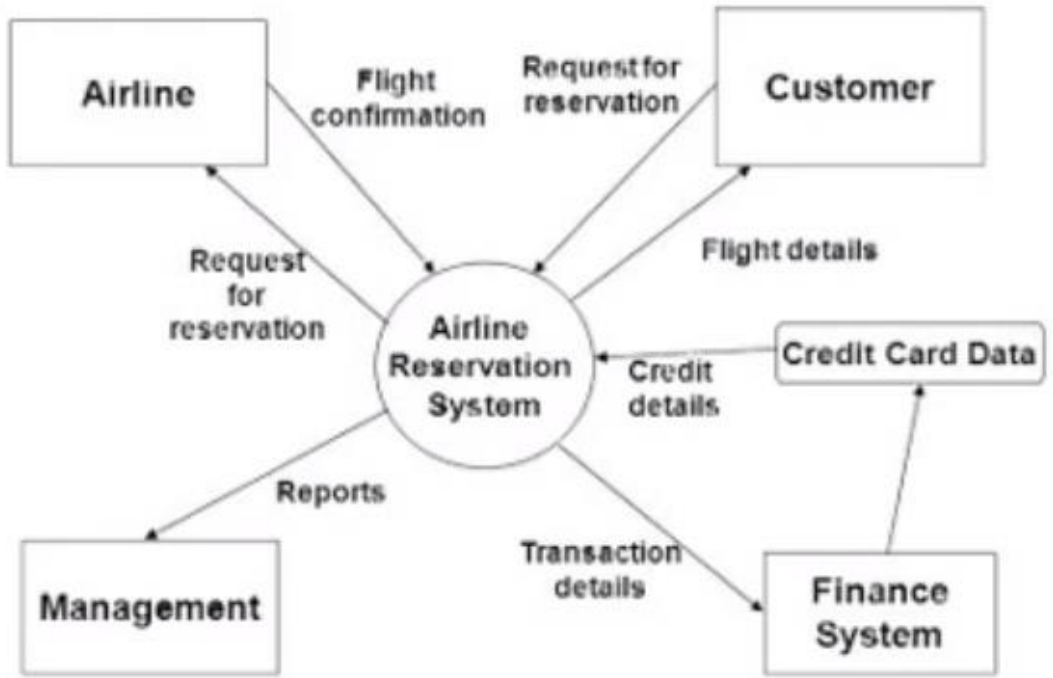
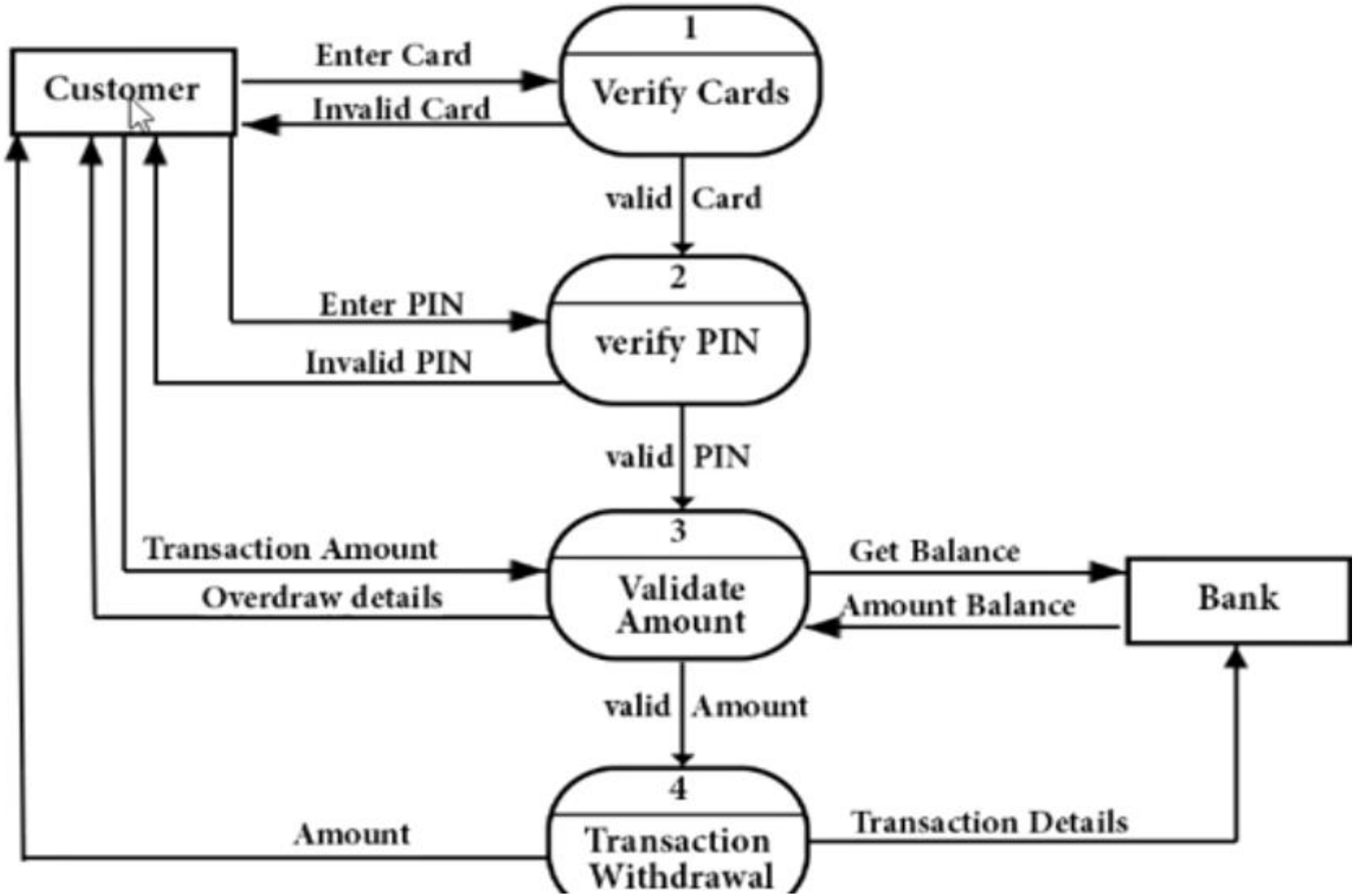


Figure 10: Basic Elements of DFD for Airline Reservation System

(Data Flow Diagram)



Data Dictionary

- A structured description of database.
- A data dictionary is a structured stores of the data elements in the system. It stores the descriptions of all DFD data elements.
- A data dictionary improves the communication between the analyst and the user. It plays an important role in building a database.
- The information you see in data dictionary is called *metadata*, which, quite simply, is data about data.

Data Dictionary

Data Dictionary

Data Dictionary outlining a Database on Driver Details in NSW

Field Name	Data Type	Data Format	Field Size	Description	Example
License ID	Integer	NNNNNN	6	Unique number ID for all drivers	12345
Surname	Text		20	Surname for Driver	Jones
First Name	Text		20	First Name for Driver	Arnold
Address	Text		50	First Name for Driver	11 Rocky st Como 2233
Phone No.	Text		10	License holders contact number	0400111222
D.O.B	Date / Time	DD/MM/YYYY	10	Drivers Date of Birth	08/05/1956

Figure 17: Data Dictionary