Practical : 02.

Aim :- To study Data Flow Diagrams.

Theory :-

A Data Flow Diagram is a traditional Visual representation of the information flows within a system. It shows how data enters and leaves the system, what changes the information and where data is stored.

The Objective of a DFD is to show the scope and boundaries of a System as a whole. It may be used as a communication tool between a system analyst and any person what plays a part in the order that acts as a starting point for redesigning a system. The DFD is also called as a data flow graph or bubble chart.

· Data Flow diagram process.

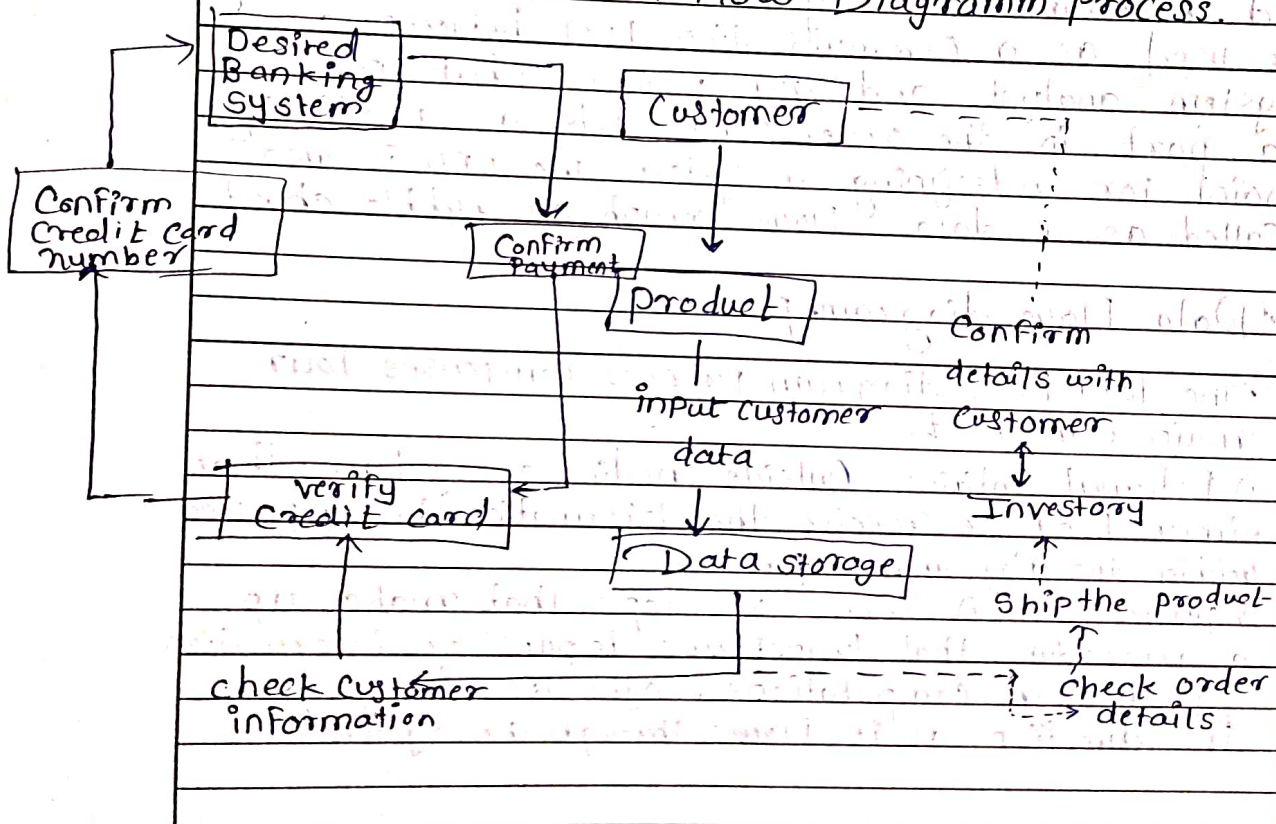· The data flow diagram process comprises four main components.

1) External Entities - Outside bodies or systems that either feed or receive the information being passed within the diagrammed process.

2) process :- A series of steps that makes up a procedure that transforms inputs or information e.g through computations, logic, or changing its direction as it flows through the system.
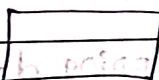
• **Data storage :-** A receptable of information to be used or processed at a later time i·e (a database) data inputs or incoming data Flow through a process and then data storage

• **Data Flow :-** The Course taken by data inputs or information through a system until the output is produced.

Data flow Diagramm Process.

Desired Banking System

Customer

Confirm Credit card number

Confirm Payment

product

Confirm details with Customer

input customer data

verify Credit card

Investory

Data storage

Ship the product

check customer information

check order details.

* Standard Symbols For DFDS are derived From the electric circuit diagram analysis are known

Symbol	Name	Function
1. ⌒	Data Flow	Used to Connect Process to each other to source or signal ; the arrow head indicate direction of data Flow
2. ◯	Process	performs some transformation of input data to yield output data
3. ▭	Source of Sink	A source of system inputs or Sink of System outputs.
4. ↓↗	Data Store	A respository of data the arrow needs net indicate inputs & net outputs to Store

Circule :- A Circle (bubble) Store

A Circle (bubble) Shows a process that transforms data inputs into data outputs

• When to use a data flow diagram?

These are useful across industries, especially in tech-driven environments where data management is critical. let's look at some common scenarios where DFD's are particularly useful:

Bussiness
• Softtware Engineering :-
DFDS are especially useful in business management to streamline workflows and enhance Operational efficiency.

• Software Engineering :-
DFDS are great for software engineers to plan software architecture and continuously improve System performance.

• Database development :-

DFDs play a crucial role in mapping data flow and ensuring robust Cybersecurity measures, making them indispensable as digital platforms become increasingly important for bussiness.

• Types of data Flow Diagrams :-

Data Flow diagrams are divided into two main types based on the Flow they visualize: logical data Flow diagrams and physical data flow diagrams.

1) Logical data flow diagram :-

Logical data flow diagrams focus on the activities and processes within a bussiness. They show "what" happens in a graphical format, emphasizing the bussiness's functions, services provided and goals.

2) Physical data flow diagram :-

A physical data flow diagram visualizes how bussiness systems are implemented in real-world terms. It explains how data moves through the system and details the software, hardware and files involved in the process.

• How to Create a data Flow Diagram.

1. Identify a high-level Overview :- ~~Begin~~ start by sorting out your inputs and outputs. Each process you map should have at least one input and one output.

2. Create a high-level Overview (Level 0) :- Begin your diagram with a high-level Overview of the system. This level 0 diagram gives you a broad Context of the system and helps you decide if you need to go into more detail with more levels.

3. Break down the main functions (Level 1) :- break down the main functions from your high-level overview into smaller, more detailed processes. This level 1 diagram focuses on specific systems within your business.

4. Add detail as needed :- There's no limit to the number of levels you can add, but keep in mind that your data Flow diagram should remain easy to understand.

· Benefits of data Flow diagrams.

i) Clarifies a system's scope :- Data Flow diagram clearly outline where a system starts and ends. This is crucial for defining the scope of a project or system, avoiding misunderstandings and making sure everyone agrees on what's included and excluded.

ii) Improves Communication bet^n teams :- By showing data Flow visually, DFDs make it easier for system designers, developers & users to communicate clearly. This Visual representation helps teams discuss and refine system requirements effectively, helps keep everyone is on the same page.

iii) Makes Complex Structures easier to understand :-
Complex data structures can be hard to understand but data Flow diagrams make things easier to interpret and digest. They help teams see how data moves through different stages of a system or software, making it easier to spot inefficiencies and areas for improvement.

iv) Visualizes logic and data Flow :- Data Flow diagrams visualize the logical sequence of how data moves within a system. This level of clarity helps non-technical stakeholders understand Flow how inputs get processed to produce outputs.

Conclusion :- In this Goay, we   about the Data Flow diagram, its benifits, levels & where it is used mostly.