



Computer Application And Management Information System **MB 402**

UNIT V – **Management Information System (MIS)**

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Data Flow Diagram (DFD)

Period : 10 (1hr.)



Introduction

- The overall scenario of structuring the system requirements are modelled in three stages – **Process Modelling**, Logic Modelling and Data Modelling.
- Process modelling involves, graphically depicting the processes, which captures the data, stores it, manipulate and distribute the same, between the system and its environment and between the elements within the system.
- The common way to represent it, is, by using **Data Flow Diagram**.



Data Flow Diagram

- Data flow diagramming is one of the **structured analysis techniques** which is a **diagrammatic representation of the system**. It provides a more complete, clear and global understanding of the system under investigation.
- It is also known as a "**bubble chart**" that depicts the passage of data through a system, aims at refining system requirements and identifying major transformations which will become programs in system design.
- Data flow diagrams are used to emphasize the **logical flow of data through a system**.



Data Flow Diagram

- It is ideal for illustrating the overall data flows into an information system, through an information system and out of an information system.
- A DFD do not show the detailed logic processes involved in the information system.
- The basic symbol used is a circle or bubble and is called a 'transform' since it identifies a function that transforms data.
- The data flow diagram depicts the passage of data by using four basic symbols - Data flows, Processes, Data stores and Data sources or Data Sinks.



DFD Symbols

- **Data Flows** : A data flow is a route which enables packets of data to travel from one point to another. Data may flow from a source to a process, or to and from a data store or process.
- An arrowed line shows the flow with the arrowhead indicating the direction of flow, for example, the Registration Form passes from the student (which is a source or an entity), to a process that checks the student's details.





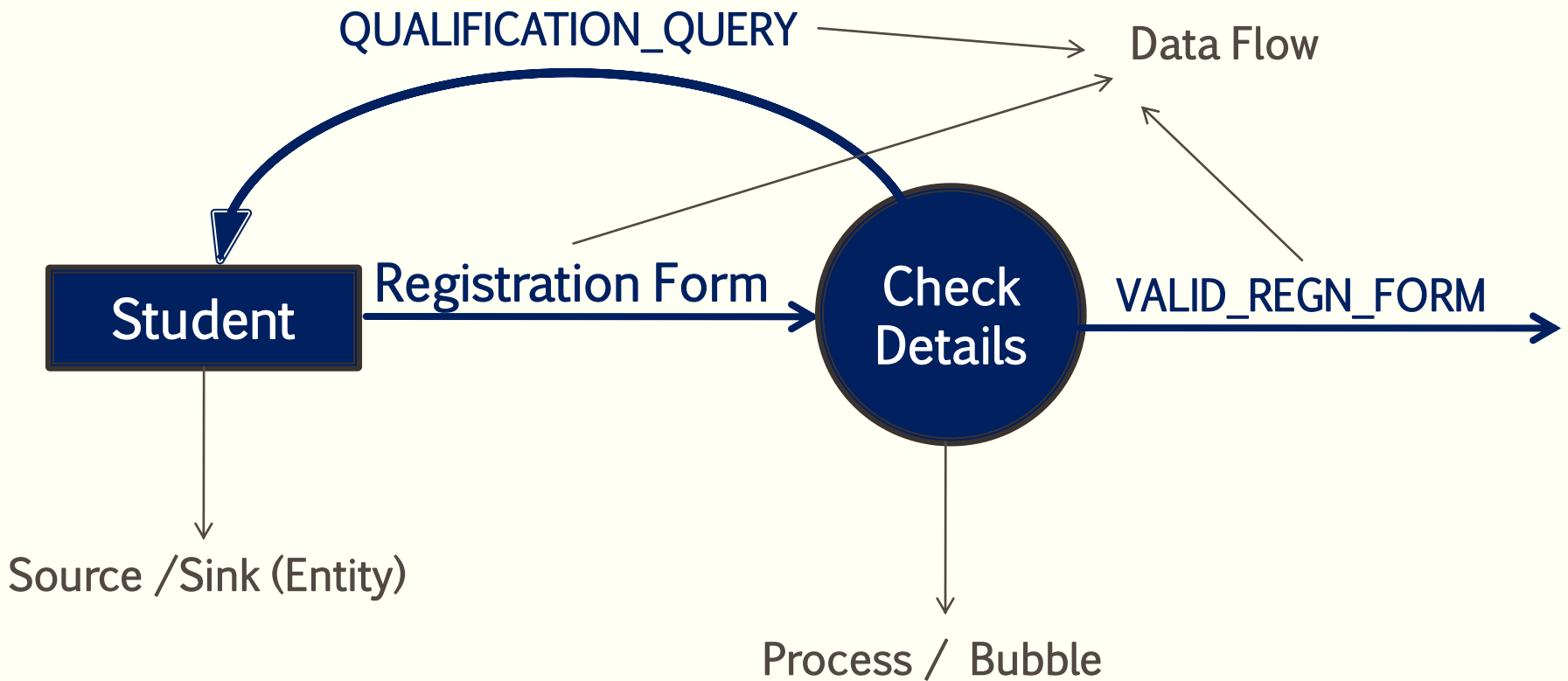
DFD Symbols

- **Processes** : Processes represent transformations, *changing incoming data flows into outgoing data flows*. Process names must give an idea of what happens to the data as it passes through the process.
- For example, process **“Check Details”** that verifies candidate’s eligibility. Let the situation be in which the incoming flow (REGISTRATION FORM) to the process (CHECK DETAILS) is transformed into two outgoing flows, a valid registration form (VALID_REGN_FORM) and a flow which indicates that the form requires further clarification (QUALIFICATION_QUERY)



DFD Symbols

- Process :





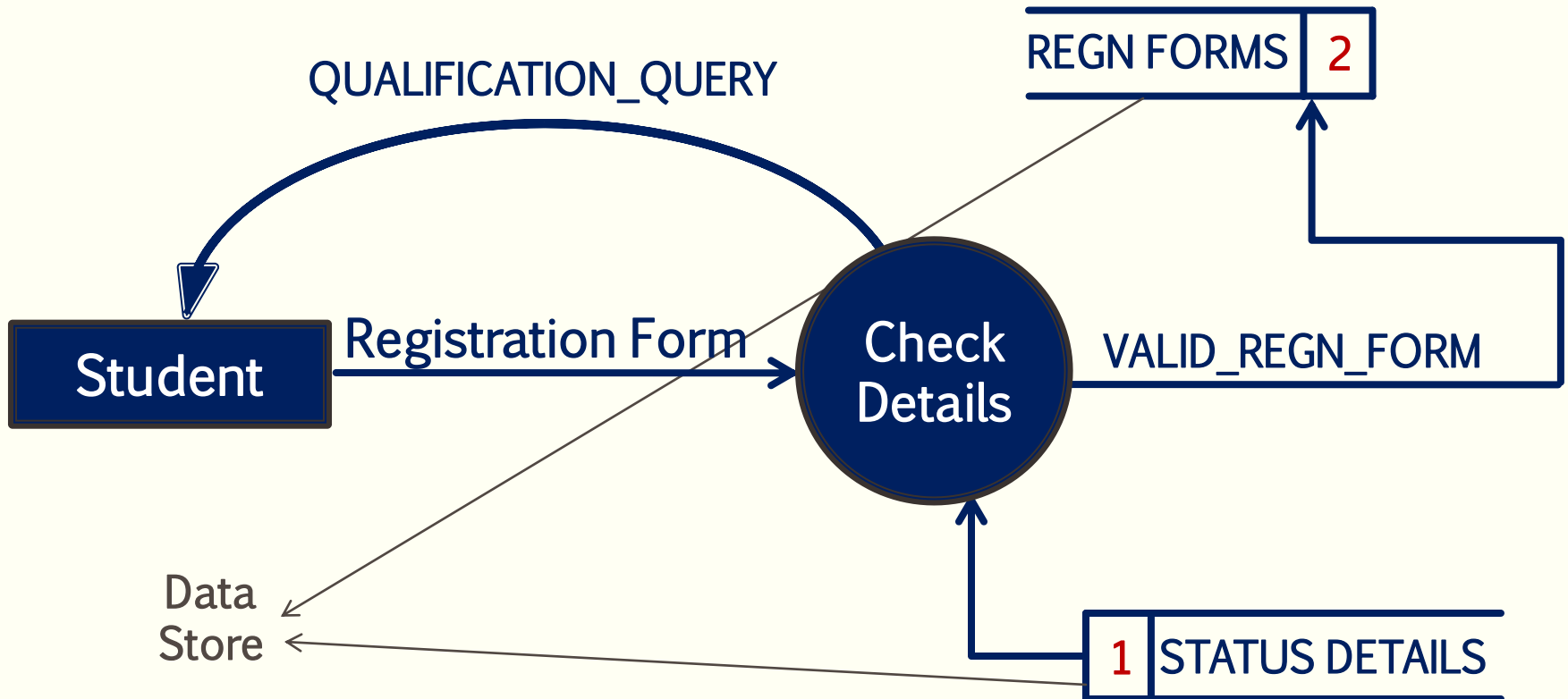
DFD Symbols

- **Data Store** : It is a repository of data which is represented by an one end open rectangle. It must be assigned a proper name.
- It may be used for storing valid/modified data (inflow) or it may be used in the checking of data (outflow). For example, in the process CHECK_DETAILS needs access to data which allows checking. The data items required for this process is available in the data store, **STATUS DETAILS**.
- **Single headed arrow** is used that points towards the process. This indicates that the process does not alter the contents of the store, it only uses the data available. If the arrow used is a **double-headed arrow**, then the contents of the store are read as well as modified by the process.



DFD Symbols

- Data Store : Each data store is numbered



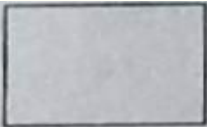
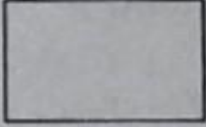
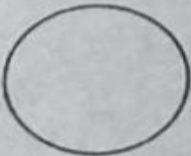

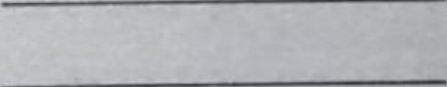
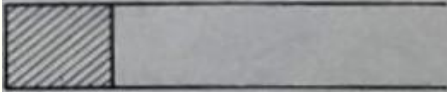




DFD Symbol

- **Data Source or Data Sinks** : A source or sink is a person (Entity) or part of an organization which feeds or receives data from the system.
- It is considered to be outside the context of the data flow model.
- square defines a source or sink which is viewed as external to the system under investigation.
- The first data flow is generally from the Data Source, i.e., the main input to the system.
- The last data flow is generally to the Data Sink, i.e., the receiver of the final output of the system.

DFD Symbols

- There are two different standard sets of DFD symbols, each consisting of four symbols that represent the same things, i.e. Source/Sink(external entity), Process, Data Store and Data flow. These two standard sets were devised by De Marco & Yourdon and Gane & Sarson.

Symbol Name	De Marco & Yourdon	Gane & Sarson
Source/sink		
Process		
Data store		
Data flow		



Naming Conventions

- Each component in a data flow diagram is labelled with a descriptive name.
- Process names are further identified with a number that is used for identification purposes and has nothing to do with the sequence of processes.
- A process name should consist of a single meaningful phrase and denote the specific action carried by the process.
- A data store name should be specific and not general. Each data store should contain data with one specific structure and should not contain compound structures.
- Suggestive words or phrases should be used to name the data flows. The name should represent the aggregation of all the elements of data moving at the same time.



Conventions for drawing DFD

- Process names, data store names, and data flow names must be meaningful in the problem's context.
- Higher level processes in DFDs should be exploded into more than one lower level processes to incorporate more details.
- Data should be conserved, i.e., process cannot create new data, it can only transform input data to create output data.
- Consistency should be maintained between levels. No new inputs or outputs to the overall process, that were not identified in the higher level diagrams, should be introduced at the lower level.
- Controls should be evaluated on the lowest level diagrams only.
- DFDs should be evaluated for correctness.