

SYSTEM ANALYSIS & DESIGN

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SYSTEM ANALYSIS

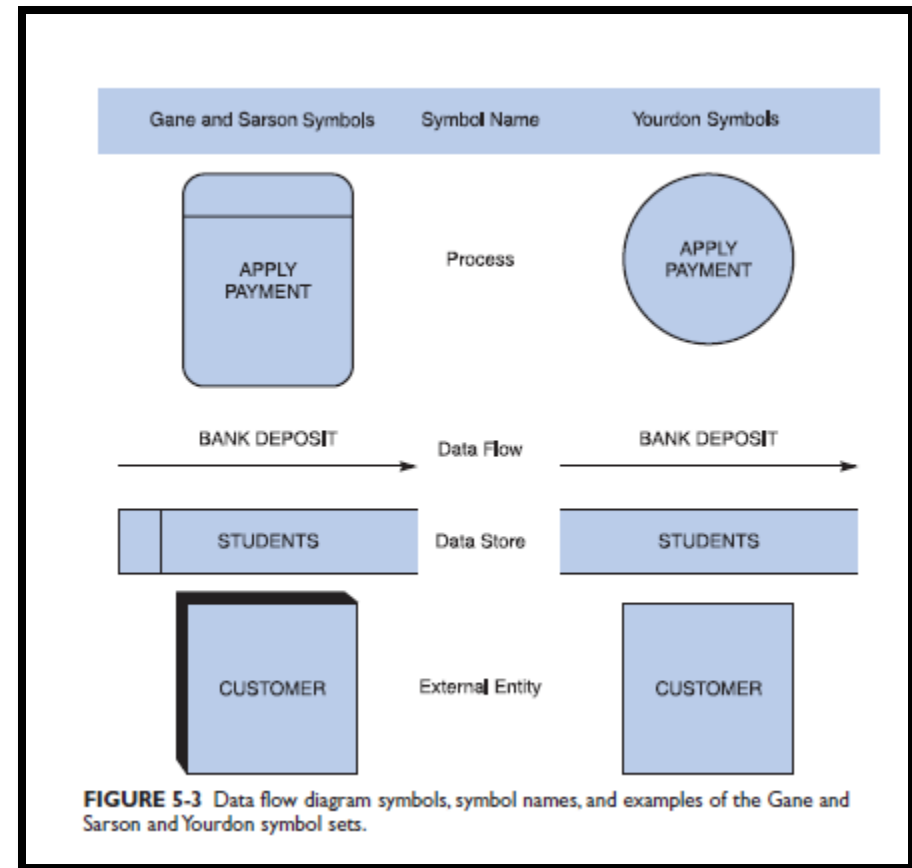
What is Data Flow Diagram (DFD)?

DFD represent processes, each with various inputs and outputs.

DFD shows how data moves through an information system but does not show program logic or processing steps.

A **data flow** is a path for data to move from one part of the information system to another.

A data flow in a DFD represents one or more data items.



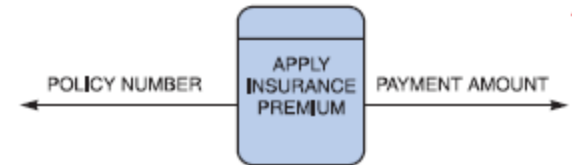
DFD Symbols

SYSTEM ANALYSIS

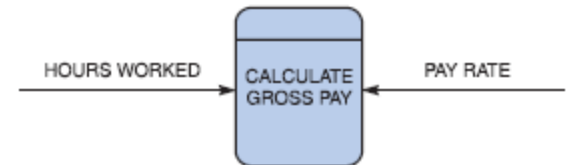
What is Data Flow Diagram (DFD)?

Three data flow and process combinations that you must avoid:

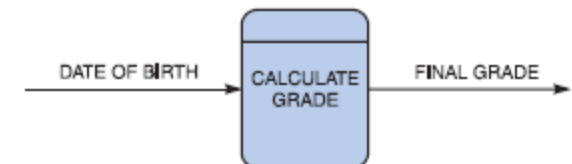
- **Spontaneous generation.** The APPLY INSURANCE PREMIUM process, for instance, produces output, but has no input data flow. Because it has no input, the process is called a spontaneous generation process.



- **Black hole.** The CALCULATE GROSS PAY is called a black hole process, which is a process that has input, but produces no output.



- **Gray hole.** A gray hole is a process that has at least one input and one output, but the input obviously is insufficient to generate the output shown. For example, a date of birth input is not sufficient to produce a final grade output in the CALCULATE GRADE process.



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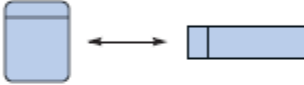

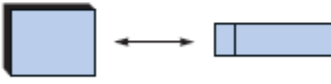

Correct and Incorrect Examples of Data Flows		
	Process to Process	✓
	Process to External Entity	✓
	Process to Data Store	✓
	External Entity to External Entity	✗
	External Entity to Data Store	✗
	Data Store to Data Store	✗

FIGURE 5-11 Examples of correct and incorrect uses of data flows.

What is Data Dictionary?

A **data dictionary**, or **data repository**, is a central storehouse of information about the system's data.

The data dictionary also defines and describes all data elements and meaningful combinations of data elements.

A **data element**, also called a **data item** or **field**, is the smallest piece of data that has meaning within an information system.

Data elements are combined into **records**, also called **data structures**. A record is a meaningful combination of related data elements that is included in a data flow or retained in a data store.

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What is Data Entity Relationship Diagram (ERD)?

An **ERD** is a model that shows the logical relationships and interaction among system entities.

An ERD provides an overall view of the system and a blueprint for creating the physical data structures.

Types of Relationship

one-to-one relationship, abbreviated **1:1**

one-to-many relationship, abbreviated **1:M**

many-to-many relationship, abbreviated **M:N**





SYMBOL	MEANING	UML REPRESENTATION
	One and only one	1
	One or many	1..*
	Zero, or one, or many	0..*
	Zero, or one	0..1

FIGURE 9-19 Crow's foot notation is a common method of indicating cardinality. The four examples show how you can use various symbols to describe the relationships between entities.