Software Engineering: Data Flow Diagram – Part 1

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What is a Data Flow Diagram

A data flow diagram shows the way information flows through a process or system. It includes data inputs and outputs, data stores, and the various subprocesses the data moves through. DFDs are built using standardized symbols and notation to describe various entities and their relationships.

Data flow diagrams visually represent systems and processes that would be hard to describe in a chunk of text. You can use these diagrams to map out an existing system and make it better or to plan out a new system for implementation. Visualizing each element makes it easy to identify inefficiencies and produce the best possible system.

Data Flow Diagrams(DFDs)

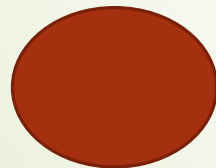- Basic Symbols used for constructing DFDs:

External Entity Symbol

Data Flow Symbol

Output Symbol

Function Symbol

Data Store Symbol

External Entity Symbol

➡ Represented by a Rectangle

➡ External entities are either users or external systems

o input data to the system or

o consume data produced by the system

o sometimes called terminator, source or sink

Librarian

Data Flow Symbol

- A directed arc or line

- Represents data flow in the direction of the arrow

- Data flow symbols are annotated with names of data they carry.

Book-name

Output Symbol: Parallelogram

- Output produced by the system

Function Symbol

- A function such as "search-book" is represented using a circle:

- This symbol is called a process, bubble or transform.

- Bubbles are annotated with corresponding function names

- A function represents some activities

- Function names should be verbs

search-book

Data Store Symbol

- Represents a logical file:
  - A logical file can be a data-structure
  - A physical file on disk
- Each data-store is connected to a process:
  - By means of a data flow symbol

Book details

Example Software

- Consider a software called RMS calculating Software:
- Reads 3 integers in the range -1000 and +1000
- Finds out the root mean square(rms) of the three input numbers
- Displays the result

Sample DFD