

# Systems Analysis and Design

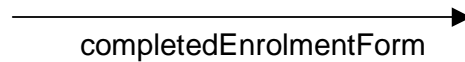
## 5 Data Flow Diagrams (DFD)

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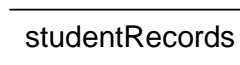
Data flow diagrams show the movement of data between processes and files. We check them out and see how to create them.

### 5.1 Notation

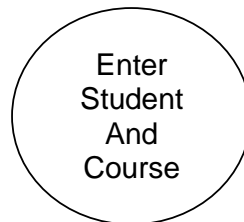
Arrows represent the flow of data.



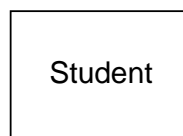
Parallel lines represent a data store. A data store could be a file on disk or a paper file.



Circles represent processes. A process acts on data. A process could be to store data on a file, or to retrieve data from a file.

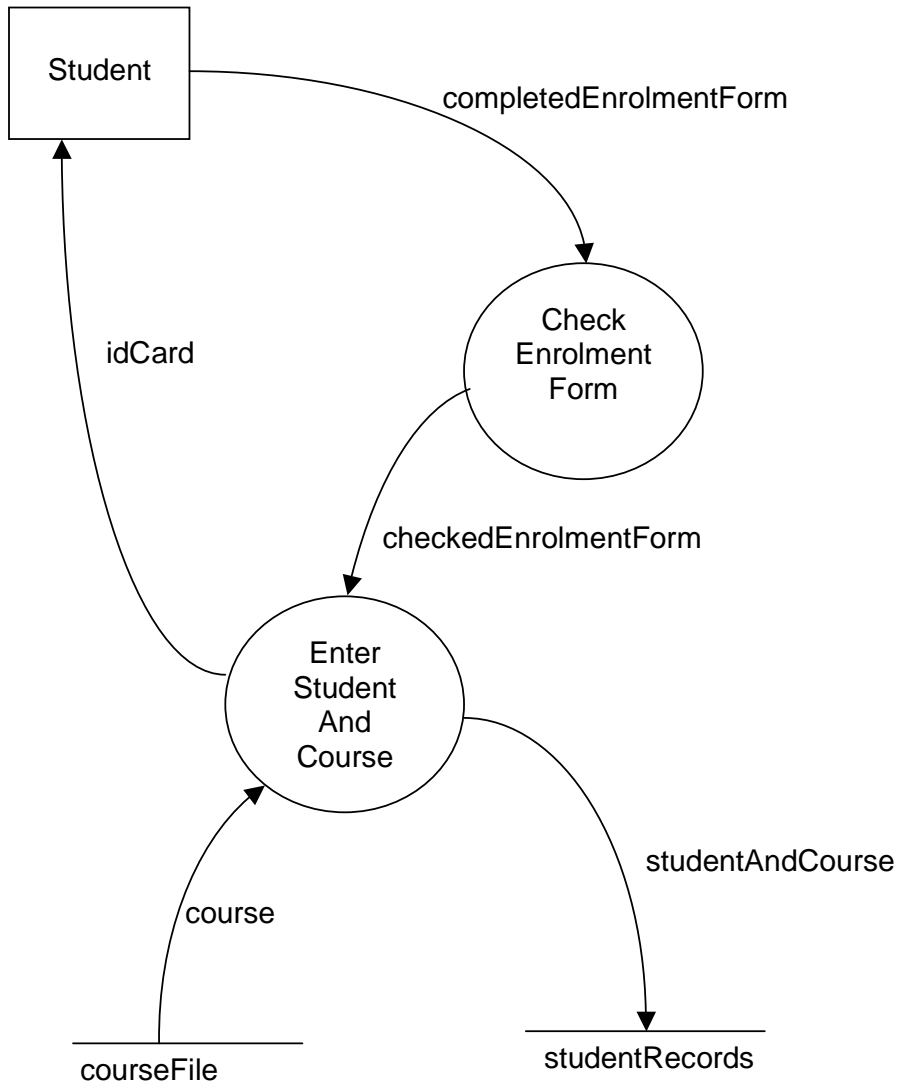


Rectangles represent sources or sinks of data outside the system. A source is where data comes from. A sink is where data goes to.



Data flows, data stores, processes, sources and sinks all have descriptive names.

## 5.2 Student Enrolment System



A student completes an enrolment form, has it checked and signed by a lecturer, and hands it to the enrolment clerk for processing. The enrolment clerk checks the course file for the requested course and issues a Student Id Card. The student and course details get placed on the student records file.

### 5.3 Construct a Data Flow Diagram

- maintain a consistent level of detail
- between five and nine symbols per page
- data flow arrows do not cross each other
- label your data flow arrows first
- label your your process circles last
- process circles may have several arrows flowing into, and out of, them
- an arrow from a data store always go to a process, an arrow to a data store always comes from processes
- check and redraw as many times as it takes to get it right
- include a descriptive narrative

We use the original Tom De Marco notation because it is simple and straightforward.

#### Exercises 5.1

Construct and explain data flow diagrams for each of the following scenarios.

1. At the end of every day the student records file is copied into the college library membership file.
2. A borrower takes a book out of the library.
3. A book is returned to the library.
4. A borrower reserves a book.
5. An overdue book is returned and a fine is paid.

#### Bibliography

PRESSMAN R.S *Software Engineering - A Practioner's Approach* McGraw-Hill 1992  
[http://www.yourdon.com/strucanalysis/wiki/index.php?title=Chapter\\_9](http://www.yourdon.com/strucanalysis/wiki/index.php?title=Chapter_9) accessed 12 Dec 2007