SUMMARY OF MODULE 5

1. Data flow diagrams (DFDs) are used to depict the flow and transformation of data in an information processing system.
2. DFDs give an overview to an analyst specifying where data originates, how it is processed and where the results go.
3. DFDs act as a graphical communication aid between a user and an analyst. It is also useful as a communication aid between an analyst and a system designer.
4. The procedure to develop a DFD starts with one DFD giving an overview of the system to be de designed. This is called a context diagram.

5 The context diagram is expanded into a series of DFDs, each describing a specific function. This method of top down analysis and breaking down DFDs to give more and more detail is known as *levelling.*

6. Some style convention is developing DFDs are:
   i. Data flows, processes and data store must have meaningful names.
   ii. A DFD should not have more than 7-9 processes.
   iii. A DFD should not have any loops, crossing lines or pure decisions as processes.
   iv. Data should be conserved in a DFD.
7. In practice, DFDs are used for representing logical data flow and processing of data. It is, however, useful to evolve a logical DFD after first developing a physical DFD which shows the persons performing various operations and how data flows between persons performing operations.

QUESTION BANK MODULE 5

5.1 What is the difference between an external entity and a process in a DFD?

5.2 What are the main merits of using a DFD?

5.3 What is the role of DFD as a documentation aid?

5.4 What is the difference between a source and a sink in a DFD?

5.5 Why is data flow between data stores not allowed in DFD?

5.6 Is data flow allowed between an external entity and a data store. If your answer is "no", explain why.

5.7 What is a context diagram?

5.8 What do you understand by levelling of DFD?

5.9 What is the main difference between a flow chart and a DFD?

5.10 What do you understand by top down development of a DFD?

5.11 What is a physical DFD?

5.12 What is the difference between a physical and a logical DFD?

5.13 In what way is physical DFD useful?

5.14 Prepare physical and logical DFDs for the following activities:

i. Issuing out a book from the library

ii. Returning a book to the library

iii. Getting a ticket reserved for a train journey

iv. Getting an item issued from a store

v. Getting your marksheet from a University office.

5.15 Admission procedure in a University is as follows:

An advertisement is issued giving essential qualifications for the course, the last date for receipt of application, and the fee to be enclosed with the application. A clerk in the Registrar's office checks the received applications to see if marksheet and fee are enclosed and sends valid applications to the concerned academic department. The department checks the application in detail and decides the applicants to be admitted, those to be put in the waiting list, and those rejected. Appropriate letters are sent to the Registrar's office which intimates the applicant. Give physical and logical DFDs corresponding to the above problem.

5.16 A magazine is published monthly and is sent by post to its subscribers. Two months before the expiry of subscription, a reminder is sent to the subscribers. If subscription is not received within a month, another reminder is sent. If renewal subscription is not received up to two weeks before the expiry of the subscription, the subscriber's name is removed from the mailing list and the subscriber informed. Obtain logical DFDs for this problem

5.17 Obtain a flowchart for Exercise 5.17 and state in what way it differs from the DFD.

5.18 Obtain a physical DFD for a simple payroll system described below. A list of employees with their basic pay is sent to a clerk. He calculates the gross pay using standard allowances which are known for each pay slab. Deduction statements such as loan repayment, subscription to association etc. are also sent to another clerk who matches these slips with the slips of gross pay and calculates net pay. This slip is used by a third clerk to write out pay cheques for each employee and sent to respective employees. The total pay bills paid are also

computed.

5.19 If the procedure of Exercise 5.19 is to be computerised, obtain a logical DFD for the computer-based system.

Annotated References

1. Ian Sommerville, "Software Engineering", 5th Edition, Addison-Wesley, 1996, has a brief discussion of Data Flow Models on pp.101 to 103.
2. T.DeMarco, "Structured Analysis and System Specification", Yourdon Press, 1978. this book written by the original developer of DFD modeling is a well written book. It is a good reference book.
3. E.Yourdon, "Modern Structured Analysis", Prentice Hall of India, New Delhi, 1996. Chapter 9 (pp.139 to 187) is a good treatment of Data Flow Diagrams. All the topics covered in this module are discussed in this chapter.
4. Hoffer, J.A., George, J.F. and Valacich J.S., "Modern Systems Analysis and Design", 3rd Edition, Pearson Education Asia, New Delhi, 2002. Chapter 8 (pp.241 to 271) has a good treatment of DFDs with a running example of a quick service restaurant. Different types of DFDs and logical checking of DFDs are discussed well.
5. K.E.Kendall and J.E.Kendall, "Systems Analysis and Design", 5th Edition, Pearson Eduation Asia, New Delhi, 2003. Chapter 9 is devoted to Data Flow Diagrams (pp.241 to 285). Has a number of problems at the end of the chapter which are quite interesting.

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