

Highlights

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SA LEC 08

*Bolger 'n' Slaters
Systems
Analysis Course
Notes
Issue 8*

The Systems Analysis LECTURE

SA

Undertaking Systems Design *Background about the steps involved in a Systems Project*

System Design and Development

Systems specification

The systems specification must describe how the new system will work. Screen layouts and report formats must be designed, file contents and organisation specified, and each program in the system must be described by means of program specifications, structure charts, pseudo-code or flowcharts.

The programmers must then code, test and debug all the programs in the system. In smaller organisations the roles of programmer and analyst may overlap, and in some cases the 'analyst/programmer' may design, code and test the programs.

The 'tools' of the analyst

A tool could be described as something which helps someone to do his job better, faster or more easily. In the case of systems analysis, the tools will help the analyst to

- communicate his ideas more effectively to users and colleagues so as to make sure no misunderstandings arise
- clarify his own ideas and aid in the design of the new system.

Systems flowcharts and data flow diagrams could therefore be described as 'tools' in this sense.

Prototyping, described below, is a useful tool for both the analyst and programmer.

Prototyping

As in any other context, prototyping means building a working model of a new system in order to evaluate it, test it or have it approved before building the final product. When applied to computer systems, this could involve, for example, using special software to quickly design input screens and run a program (supplied as part of the prototyping package) to input and validate data using the screen format just created. This gives the user a chance to experience the 'look and feel' of the input process and to suggest alterations before going any further.

Some organisations will use prototyping in the analysis stage, others in the design phase. Others may use it almost exclusively, going directly from preliminary investigation, via the prototype, to an implemented system. The analysts or programmers will simply keep refining the prototype until the user says it is acceptable.

Practical Class Activity -

Q1: What are the advantages and disadvantages of using prototyping as a tool of systems analysis and design?

Applications generator

Applications generators are software tools which can be used to create complete systems. The user describes the input, output, data and files, and what needs to be done. The applications generator then uses this information to generate a program or suite of programs.

Report generator

This is a useful tool, used to generate reports from information supplied by the user. An example of a report generator is found in (dBASE 111+, which has the capability to generate and store report formats from the menu system. The user simply has to specify the headings, the fields to be printed, the order of the fields, how much space to allow for each and whether totals are required and so on. The program code is then automatically generated.

The role of applications packages

In some circumstances it may not be necessary to write programs for a new system, if a suitable package exists. In this case the analyst's task will be to evaluate likely packages and ensure that the one chosen is capable of performing the required task.

Practical Class Activity -

Q2: what steps could a systems analyst take to find a package suited to the requirements of an organisation?

The choice of hardware

The choice of hardware may depend on many factors, including:

- the volume of data
- the number of users
- the location of the users are they all in one office or spread around the country?
- the type of user is this a system to be used by the general public, or by technical specialists?

- the nature of the system batch or on-line
- the hardware currently in use
- security considerations
- the software. In particular, where a software package is to be used, this often dictates the choice of hardware, or at any rate narrows the choice.

Practical Class Activity -

1.State two advantages and two disadvantages to a company of using application packages bought from an external supplier compared with using internally produced software. (4 marks)

Practical Class Activity -

2. A software house has decided to develop a general software package for theatre bookings. It will consist of a number of interrelated modules. Outline the separate stages that have to be performed, before a working package is ready for demonstration and marketing. (8 marks)

Practical Class Activity -

3. Frequently systems development is considered to be a process with a series of stages as shown below:

project selection

analysis

design

implementation

- a) Describe what happens during the analysis, design and implementation stages. (6 marks)
- b) Explain why this may be a poor model of the actual process. (2 marks)
- c) Draw a diagram which better reflects the nature of traditional systems development.(3 marks)
- d) Outline two decisions which must be taken by the project control group. (4 marks)

Practical Class Activity -

4. A builder has formed a partnership with a variety of local tradesmen such as painters, electricians, plumbers and carpenters. In order to expand their business in the area they have decided to offer the residents a contract for regular household maintenance. They are considering using a computer system to help them manage these activities.

Discuss the various ways in which a computer system could be of use to the partnership, and the types of facilities which would be needed. You should consider

- i) the input which would be needed and the form of the output which would be useful,
- ii) the types of hardware needed,
- iii) the organisation of the data to be held within the system. (15 marks)