CHAPTER 19: Systems Analysis

PASTPAPERS

N.B. These pastpapers may rely on the knowledge gained from the **previous chapters.**

1 SEC '94-PAPER 1 Q12

A company wishes to computerize its existing stock control system. List, in ORDER, 7 stages necessary to conduct such an exercise:

a. _____

b. _____

c. _____

d. _____

e. _____

f. _____

g. _____

[7]

Briefly explain one main difference between these computing terms:

Kilobyte and Megabyte   **[1]**

ROM and RAM   **[2]**

Standalone computer and networked computer   **[2]**

System design and Feasibility study   **[3]**

Source Code and Executable Code   **[3]**

CAD and CAL   **[3]**

Sequential Access and Random Access   **[3]**

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A software development company is approached by a businessman who wants to upgrade his old stock control system.

In going about his job, the system analyst responsible for the assignment investigates how the current system is working to help him better understand the requirements of the new system.

a.   What is the name of this stage of project development?   **[1]**

b.   Name **THREE** techniques which the system analyst might employ to get a complete picture of how the system is currently working.   **[3]**

It is decided that a set of tailor-made programs would be the best solution to this client's requirement. A fourth generation language is identified as most suitable to develop the project.

c.   What is a **tailor-made** program?   **[1]**

d.   Give reasons why a **fourth generation language (4GL)** would be best suited for such application development.   **[4]**

Testing is considered to be an important stage in the development of the system.

e.   Why is testing important?   **[1]**

f.   Identify **TWO** testing aids which help the programmers in testing the programs being developed.   **[2]**

In introducing the new system, a **parallel changeover** method is selected.

g.   What is a **parallel changeover**?   **[1]**

h.   Name **TWO** advantages of this changeover method.   **[2]**

i.   Name **TWO** other changeover methods commonly used.   **[2]**

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a.   What is a **system life cycle**?   **[1]**

b.   The following is a list of the possible stages involved in the computeriza-
tion of a manual system.

Investigation of existing system;

Feasibility study;

Project approval;

Designing, testing of new system

Human elements, such as training staff in new practices;

Documentation, both technical and users manual;

Maintenance of new system.

                                                                                                          [5x2]

Briefly describe any **FIVE** of the above stages.

c.   What role do each of the following play in the system life cycle?

Systems analyst;

Programmers;

Computer operators.

                                                                                                          [3x2]

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The following are some of the stages involved in computerizing a system. Mention *two* things which would be done at each stage:

a.   Feasibility study _____   **[2]**

     _____

b.   System Analysis _____   **[2]**

     _____

c.   System design_____   **[2]**

     _____

d.   Coding _____   **[2]**

     _____

e.   Change Over _____   **[2]**

     _____

With reference to **system analysis and design**

Why is the system analysis conducted before a computerized system is designed?   **[2]**

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[2]

Mention **TWO** changeover methods

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A group of friends have decided to set up a computer club whose primary objective is to get together people interested in sweeping utilities and code for the development of personal web pages. As the newly elected treasurer of the club, you have been asked to develop a simple computer system to keep track of membership information (including membership fees).

(a)   With reference to the above scenario list and explain the major tasks that you expect to undertake (that is, the system development life cycle).   **[4]**

(b)   What changes if any, would be needed to the sequence of events listed in part (a) if the club in question had already been established for a number of years and maintained a paper based filing system holding member information?   **[3]**

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Systems Analysis comes into play when computerizing a manual system. The stages involved are the following:

> *Maintenance of the new system*
>
> *Project approval*
>
> *Implementation*
>
> *Designing and testing*
>
> *Training and testing*
>
> *Training staff*
>
> *Documentation, both technical & users manuals*
>
> *Feasibility study*
>
> *Problem identification*

(a) The stages above are not in the right order. Rewrite all the above Systems Analysis phases in the order a systems analyst would follow, once the analyst is approached with a new problem. **[4]**

(b) Write short sentences which briefly describe the purpose of any THREE of the phases above. **[9]**

(c) A *change-over procedure* considers the various aspects of approaches in installing and starting to use the newly developed system. Mention and describe TWO *change-over procedures*. **[4]**

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A company wishes to computerize its existing accounts system. List in order any 7 stages required to conduct such an exercise   **[7]**

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A billing program is used in a hospital to issue invoices to patients following an operation. Describe the main functionality you would expect to find in such a system and what data would be stored by the program **[7]**

An IT manager who is in charge of the billing program has given a presentation to staff on the advantages that the system offers compared to the previous manual system. During the presentation the manager has mentioned *data security* and *integrity of data*. Define the two terms in italics **[4]**

Hospital administration has requested that patients should be able to check their bills via a *web-site*. Patients should also be able to direct any queries to the hospital via *e-mail*. List and explain the advantages that the web-site and e-mail services can offer. **[6]**

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(a) Briefly explain the terms   **[6]**

      Web browser

      Modem

      E-mail

(b) Mention TWO types of buses found in computer systems and state their use.   **[4]**

(c) A company has decided to computerize its manual system. It hires a systems analyst to see whether this idea is feasible or not.

    i.   Mention TWO methods a systems analyst can use to collect data about the current manual system.   **[2]**

    ii. Mention TWO things that happen during the Design Phase and TWO things that happen during the Implementation Phase of the Systems Development life cycle.   **[4]**

    iii. Give ONE reason why program maintenance may be needed after a program has been installed.   **[1]**

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2. a. Briefly describe **THREE** main responsibilities of the *systems analyst* during systems analysis.   **[3]**

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b. What is the purpose of the *feasibility study* during system analysis?   **[2]**

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(a) A System Life Cycle represents all the stages involved in developing and information system.

   (i) State **THREE** methods that can be used to collect information about the system during the analysis phase. **[3]**

   (ii) Give **TWO** reasons why program documentation is essential. **[2]**

   (iii) There are various changeover methods that one can choose from for the transition from an old to a new system. Describe **ONE** method of your choice and state **ONE** advantage it possesses. **[2]**

(b) Explain **ONE** of the following terms: **[2]**
- e-government;
- e-commerce.

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Put the following system developing tasks in order:

Task	Order number
install new system	
check feasibility of system proposed	
design the new system	
problem definition (of new system)	1
collect data and analyze existing system	
identify user requirements	
implement and test system	

[3]

(a) Identify TWO categories of people who are involved in the development of a new system and define their role in a process.   **[6]**

(b) Documentation is a series of organized descriptive documents relating to all aspects of systems development and operation. Name the documents used to communicate between: **[2]**
   (i) systems analysts and programming;   (ii) programmers and users.

(c) Describe TWO techniques for collecting data about a system during the investigation stage of systems analysis.   **[2]**

(d) What takes place during the review stage of the system life cycle?   **[3]**

(e) Give ONE advantage and ONE disadvantage of each of the following change-over methods: **[4]**
   (i) parallel running;   (ii) direct changeover

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(a) What is software *piracy*?   **[1]**

(b) What is a *hacker*?   **[1]**

(c) Write an *if~then~else statement* to print 'YES' if a number is greater than 0, 'NO' if it is not.   **[2]**

(d) Draw the flowchart equivalent of the statement you have written in (c).   **[3]**

(e) A school has decided to computerize its library which at present is using a manual system. It hires a systems analyst to see whether this idea is feasible or not.

(i) State TWO advantages of computerizing the library.   **[2]**

(ii) Mention and briefly describe TWO stages of the systems development life cycle.   **[4]**

(iii) State which method of changeover would be most suitable while changing the manual library system to the computerized one. Give a reason for your answer.   **[2]**

(iv) Together with the computerized library system, the school is also given documentation. Name TWO categories of people who might make use of the documentation.   **[2]**

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Identify, *giving a reason*, ONE item of information likely to be present in each of the following documentation types.

(a)   User Documentation

*Item:*_____   **[1]**

*Reason:*_____   **[1]**

(b)   Technical Documentation

*Item:*_____   **[1]**

*Reason:*_____   **[1]**

The owner of a shop decides to introduce a new software application for her business but cannot decide whether to adopt a *tailor-made* program or an *off the shelf package*.

a)   Briefly explain what is meant by software application.   **[1]**

b)   Give ONE advantage and ONE disadvantage of a *tailor-made* program when compared to an *off the shelf package.*   **[2]**

c)   The owner decides to consult a *Systems Analyst*. Name FOUR principal responsibilities of a Systems Analyst.   **[4]**

d)   Testing a program for errors is an important step in the systems design stage. Briefly describe and give an example of the THREE types of errors a programmer can encounter when debugging a program.   **[6]**

e)   Two types of documentation must be written when a software application is implemented. Name the TWO types and state their importance.   **[4]**

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a)   What is a *feasibility study*?   **[1]**

b)   A feasibility study report has been accepted by a company. Identify   **[2]**
TWO items the feasibility report would contain.

c)   Apart from preparing a feasibility report, mention TWO other jobs of   **[2]**
the systems analyst.

d)   Match the following change-over methods with a suitable description   **[4]**
given below.

Straight cross-over   **Parallel Running**

Phased change-over   **Pilot Running**

i.   Requires the new system to operate for a short period of
time alongside the older system.

ii.   Requires the new system to operate alongside the old sys-
tem but only processing part of the data.

iii. Involves replacing part of a system with a new system
while some tasks continue to use the old system.

iv.   Requires that the new system replaces the old system
without any overlap.

e) Briefly describe TWO security measures which can be used to protect   **[4]**
confidential data.

f) What is the difference between *User documentation* and *Technical docu-   **[4]**
mentation*?

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The development of a computerised system is typically broken down into a number of stages:

System Analysis   Control and Review   Implementation

Feasibility study   Coding   System Design

(a) Place the stages in order to form what is collectively called the *system life cycle*. **[3]**

    1. _____

    2. _____

    3. _____

    4. _____

    5. _____

    6. _____

(b) Why is 'Control and Review' an important stage of the System Life Cycle? **[3]**

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XYZ Company Ltd. is the owner of a large book archive, and is currently considering cataloguing and digitalizing all the books in the library.

a) What kind of hardware device should the company use to digitalize all the books in the library?   **[1]**

b) Several employees would be needed to enter all the books' data like title, author etc. in the database. What would the role of such an employee be in this environment?   **[1]**

c) Name and explain the main stages involved in the computerization of XYZ Company Ltd.   **[8]**

d) The book archive is hosted in one large building that is also the head office for the company. What kind of network should the company install? Mention *TWO* advantages that installing such a network would have for the company.   **[4]**

e) Once every day before closing time, all the books' data need to be backed up. Distinguish between **BACKING UP** and **ARCHIVING**?   **[3]**

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When creating a tailor-made database package for a hospital, a Systems Analyst needs to create records and fields.

a)   Give an example of *ONE* type of record needed for the hospital database.   **[1]**

b)   Name *FIVE* fields the above record would contain.   **[5]**

c)   Describe the steps involved in the grandfather-father-son backup system.   **[5]**

d)   Mention *TWO* differences between *tailor-made* and *off-the-shelf* software   **[2]**

e)   What is a KEY field? Why would the patient's name not be a suitable key field? What would be a suitable KEY field in this case?   **[4]**

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a) Define the abbreviations LAN and WAN and hence highlight TWO differences between them. **[4]**

b) Give TWO reasons why video conferencing is important in today's schools. **[2]**

c) Explain the roles of the following persons in an IT department: **[5]**

          i. I.T. trainer;

         ii. lab technician;

       iii. web master;

       iv. systems administrator;

        v. data clerk.

d) Explain the term *program documentation*. Why is it used? **[2]**

e) In Systems Analysis, why is the analysis stage important? Give TWO reasons. **[2]**

f) Explain the purpose of the *design stage* during Systems Analysis. Why is it important to do the analysis stage before the design stage? **[2]**

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a) Define the following terms in relation to databases: **[2]**
    i.   *Appending* a record;
    ii.   *Editing* a record.

b) What is the use of querying data from a database? **[1]**

In a school database, fields are selected according to the data needed for every student.

Data Types:

Text	Number	Yes/No	Date/Time

c) Choose adequate data types for each of the following fields. The data types may be chosen more than once. **[6]**

Field Name	Data Type
Name	
Address	
Age	
Date Of Birth	
Transport Needed	
Telephone	

d) The school database issues reports on a weekly and monthly basis. What is the importance of report generation? Give an example of ONE such report. **[2]**

e) Before implementing the computerized database system, the school must think of a change-over procedure. Name TWO changeover procedures and explain ONE of them. **[4]**

f) When creating a database it is important to verify and validate the data entered. Explain the terms *Validation* and *Verification*. **[2]**

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