

## Assignment-01

## Software engineering

Q1 Differentiate between system analysis & system design.

System Analysis & System design are two stages of software development life cycle.

System Analysis is a process of collecting & analysing the requirements of the sys.

whereas System design is a process of creating a design for the system to meet the requirements.

Both are important stages as it helps to create an effective system with all the features & functions.

### System Analysis

### System Design

1. It is the process of gathering & analysing information to assess the suitability of a current system & to determine the requirements of a new system.

It is the process of specifying elements of a sys. such as modules, archi., components & their interfaces.

2. It is top-down approach where the analyst looks at the big picture first & then delves into the details.
- It is bottom-up approach where the analyst starts with the details & moves up to the big picture.
3. It focuses on the need of the user, the current sys. & the business processes that the sys. must support.
- It focuses on the design of the sys., its archi., & the components that make up the sys.
4. It is a one-time process that occurs at the beginning of the project.
- It is an ongoing process that occurs throughout the project.
5. It relies on a structured approach such as waterfall model or the Agile methodology.
- It relies on an iterative approach such as the spiral model.
6. It is the first step in software development process.
- It is the second step in software development process.

7. Its goal is to identify & understand the user requirements of the business processes that the sys. must support.
- Its goal is to create a design that meets the user requirements & supports the business process.
8. It involves minimal risk.
- It involves significant risk as the design may not meet the user requirements or support the business processes.
9. It focuses on problem identification & definition.
- It focuses on problem solving & finding sol?

## Q.2 Define System & basic elements of System.

The Greek word 'systema' is the origin of the word 'System'.

'System' is a group of resources which work collectively in order to produce desired output from given inputs.

It receives input & produces the output.

The components of the sys. are interconnected & work together to achieve a common objective.

Modern technology, human society & physical & biological sciences include of sys. such as biological sys. of human body, socio-economic sys. of a business organisation, the technological sys. of an oil refinery & physical sys. of sun & its planet.

Acc. to Ackoff's -

A system is a set of two or more elements that satisfies the following conditions -

1. The behaviour of each element has an effect on the behaviour of the whole.
2. The behaviour of the element & their effect on whole are interdependent.

3. However, sub-groups of elements are formed, each has an effect on the behaviour of the whole & none has an independent effect on it.

### → Elements of System -

The various elements of the system are -

#### 1. Inputs & Outputs -

The inputs are those elements which enter any stream from outside.

These inputs can be in various forms such as human efforts, physical items or info.

further, system works on the inputs to produce the desired results known as 'output'.

The outputs can be anything, info., materials or services.

#### 2. Processors -

The Processor is that element which performs the operation on the inputs to produce the outputs.

Ex - machines, people.

#### 3. Control -

Control elements are logical procedures, rules & regulations which direct & manage the processing of inputs in order to produce the desired outputs.

#### 4. Feedback -

It is the measurement of outputs against some set of standard benchmarks.

The comparison of sys. performance with some set benchmarks acts as the basis of the feedback.

The feedback is +ve or feed-forward when it incr. the inputs & when the input is reduced then it is negative.

## 5. Environment -

To function, every system required a specific environment.

A group of elements forms the environment.

The system is surrounded by these elements & interaction also takes place b/w them.

There are various types of systems & environments for a specific problem.

## 6. Boundaries & Interface -

The boundaries of system are limits within which sys. works.

Interface is the element which is helpful in the interaction b/w system & environment outside the boundaries.

The boundary is created by features which define & outline a sys.

The part which is outside the boundary is termed as the environm-

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ent whereas the inside part  
the is sys.

Q.8 Explain feasibility study in  
SDUC.

## \* feasibility study -

It can be considered as preliminary investigation that helps the management to take decision about whether study of sys. should be feasible for development or not.

It identifies the possibility of improving an existing sys., developing a new sys. & produce refined estimates for further develop. of sys.

It is used to obtain the outline of the problem & decide whether feasible or appropriate soln. exists or not.

The main objective of a feasibility study is to acquire problem scope instead of solving the problem.

The output of a feasibility study is a formal sys. proposal act as decision doc. which includes the complete nature & scope of the proposed sys.

## \* Steps involved in Feasibility Analysis -

1. Form a project team & appoint a project leader.

2. Develop sys. flowcharts.
  3. Identify the deficiencies of current sys. & set goals.
  4. Enumerate the alternative sol? or potential candidate sys. to meet goals.
  5. Determine the feasibility study of each alternative such as technical feasibility, operational feasibility, etc.
  6. weight the performance & cost effectiveness of each candidate sys.
  7. Rank the other alternatives & select the best candidate sys.
  8. Prepare a sys. proposal of final project directive to management for approval.
- \* Types -
1. Economic feasibility -

It is evaluating the effectiveness of candidate sys. by using cost/

benefit analysis method.

It demonstrates the net benefit from the candidate sys. in terms of benefits & costs to the organisation.

The main aim of Economic Feasibility Analysis is to estimate the economic requirements of candidate sys. before investments funds are committed to proposal.

It prefers the alternative which will maximize the net worth of organisation by earliest & highest return of funds along with lowest lv. of risk involved in developing the candidate sys.

## 2. Technical feasibility -

It investigates the technical feasibility of each implementation alternative.

It analyzes & determines whether the soln. can be supported by existing technology or not.

The analyst determines whether current technical resources be upgraded or

added it that fulfill the new requirements.

It ensures that the candidate sys. provides appropriate responses to what extent it can support the technical enhancement.

### 3. Operational feasibility -

It determines whether the sys. is operating effectively once it is developed & implemented.

It ensures that the management should support the proposed sys. & its working feasible in the current organizational environment.

It analyzes whether the users will be affected & they accept the modified or new business methods that affect the possible sys. benefits.

It also ensures that the comp. resources & network archi. of candidate sys. are workable.

#### 4. Behavioral feasibility -

It evaluates & estimates the user attitude or behaviour towards the development of new sys.

It helps in determining if the sys. req. special effort to educate, retrain, transfer & changes in employee's job status on new ways of conducting business.

#### 5. Schedule feasibility -

It ensures that the project should be completed within given time constraint or schedule.

It also verifies & validates whether the deadlines of project are reasonable or not.

Q.4 Role of System Analyst in SDLC. Explain in detail.

System analysis is applied information technology. It tries to decompose a system into various components studies the various components to identify the system's objective & ensures that every component is developed to accomplish the objectives of the system.

A system analyst is an individual who engages systems analysis & design technique in solving a business problem.

System analysts keep up to date with the latest technology to improve productivity at all times for an organisation.

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System analyst performs the following roles during various phases of SDUC -

### 1. Problem investigator -

The analyst studies the problems & needs of an organisation during feasibility & requirement analysis phases of SDUC.

He visits the various departments of the organisation & interviews the users.

He analyses the problem of the current system & collects their new requirements.

The analyst initially works as an investigator by extracting the real problems of the users.

### 2. Problem solver -

The analyst solves the problems of current sys. faced by the users.

He determines how people, method & technology can improve the

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Current System.

After feasibility analysis, he presents the system proposal to the management.

#### 3. System Designer -

The analyst creates a detailed physical & logical design of the system.

#### 4. Motivator -

The analyst motivates users to participate in development & implementation of the proposed system.

This helps to understand user's feelings about the proposed system.

The analyst interprets the thoughts of users & hence, draws conclusions.

He appeals management & users for getting the support.

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in development & implementation  
of the proposed system.

## 5. Project manager-

The analyst monitors the development & implementation of software in relation to quality, cost & time.

He works with the project leader for managing the project properly.

For development of small systems, the systems analyst is generally the project leader.