

System Analysis & Design

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2017

❑ What are the differences between Physical & Abstract System?

Physical System	Abstract System
Physical systems are tangible entities.	Abstract systems are conceptual entities.
They can be seen and counted.	They can't be seen.
Is a system based only on matter and energy.	It can be the result of design or invention.
For example, the physical parts of a computer center.	For examples, models- the abstract conceptualization of physical situations.

Types of System

- ❑ What are the element of a system?
- ❑ A system has three basic elements input, processing and output. The other elements include control, feedback, boundaries, environment and interfaces.
- ❑ Can you have a viable system without feedback?
- ❑ Yes. You can have a viable system without feedback but it is highly impractical and is not recommended.

Elements of System

- ❑ Discuss the elements of a system.
- ❑ A system has three basic elements input, processing and output. The other elements include control, feedback, boundaries, environment and interfaces.
 1. Input: Input is what data the system receives to produce a certain output.
 2. Output: What goes out from the system after being processed is known as Output.
 3. Processing: The process involved to transform input into output is known as Processing.
 4. Control: In order to get the desired results it is essential to monitor and control the input, Processing and the output of the system. This job is done by the control.
 5. Feedback: The Output is checked with the desired standards of the output set and the necessary steps are taken for achieving the output as per the standards, this process is called as Feedback.
 6. Boundaries: The boundaries are nothing but the limit of the system. Setting up boundaries helps for better concentration of the actives carried in the system.
 7. Environment: The things outside the boundary of the system are known as environment.
 8. Interfaces: The interconnections and the interactions between the sub-systems is known as the Interfaces.

Elements of System

- ❑ What will be the aftermath of an open system?
- ❑ An open system is directly connected with the environment. So the system will be affected by the environment soon. As a result many change will be occurred in system. If the system is related to temperature then the temperature will be changed and will be at same temperature of the environment. After a long time our main objective will be lost.
- ❑ What will be the aftermath of an closed system?
- ❑ A closed system is not directly connected with environment. It is protected from environment by a boundary. So the environment can not affect a closed system. And system never been corrupted. The system neither loss any energy to environment nor gain any energy from the environment. So, after a long time the system remains almost same.

System Life

- ❑ How a system is entropic?
- ❑ An entropic force acting in a system resulting from the entire system's statistical tendency to increase its entropy, rather than from a particular underlying force on the atomic scale. The entropic force can be considered as an emergent of the entropic interaction.

System Entropy

- ❑ What do you mean by candidate system?
- ❑ Depending on user request system analyst need to initial investigation. After initial investigation a system analyst or a system analyst team build a demo system. Different system analyst can form different demo system. According which system analysts should go forward. Those systems are called candidate system.

Candidate System

❑ What internal and external factors influence the system change?

❑ Internal Factors:

- i. Organization
- ii. Top Management
- iii. User
- iv. Systems Analyst

❑ External Factors:

- i. Government Rules & Regulations
- ii. Consumers
- iii. Union
- iv. Competition

System Change

❑ What are the considerations that act as important factors in deciding a candidate system?

❑ Considerations for candidate system:

1. Operations of existing systems.
2. Maintenance that focuses on “patching” programs.
3. Enhancements that involve major modifications in program structure or equipment.
4. Requests for candidate systems.

❑ On the human side, the computer department has to provide the following:

- Computer operators to run equipment.
- Data entry personnel.
- Systems analysts to define and design specifications.
- Application programmers to convert system specifications to computer programs.
- Maintenance programmers to repair errors.
- Supervisors, project leaders and managers to coordinate the jobs with the users.

Candidate System

- ❑ What do you mean by 'Paralysis by analysis'? How to overcome this situation?
- ❑ 'Paralysis by analysis' describes an individual or group process when overanalyzing or overthinking a situation can cause forward motion or decision-making to become "paralyzed," meaning that no solution or course of action is decided upon.
- ❑ There are many ways to help prevent or overcome the logjam of analysis paralysis. There may be many factors contributing to the cause. Possibly overlapping conditions of paralysis:
 - Set limits
 - Clarify objectives and priorities
 - Remember nothing is perfect
 - Take small iterative steps
 - Change number of options
 - Add or remove emotion
 - Talk about it
 - Make your best decision

System Analysis

❑ What are the technical and interpersonal skills required of systems analysts?

❑ Technical Skills:

1. Communication
2. Understanding
3. Teaching
4. Selling

❑ Interpersonal Skills:

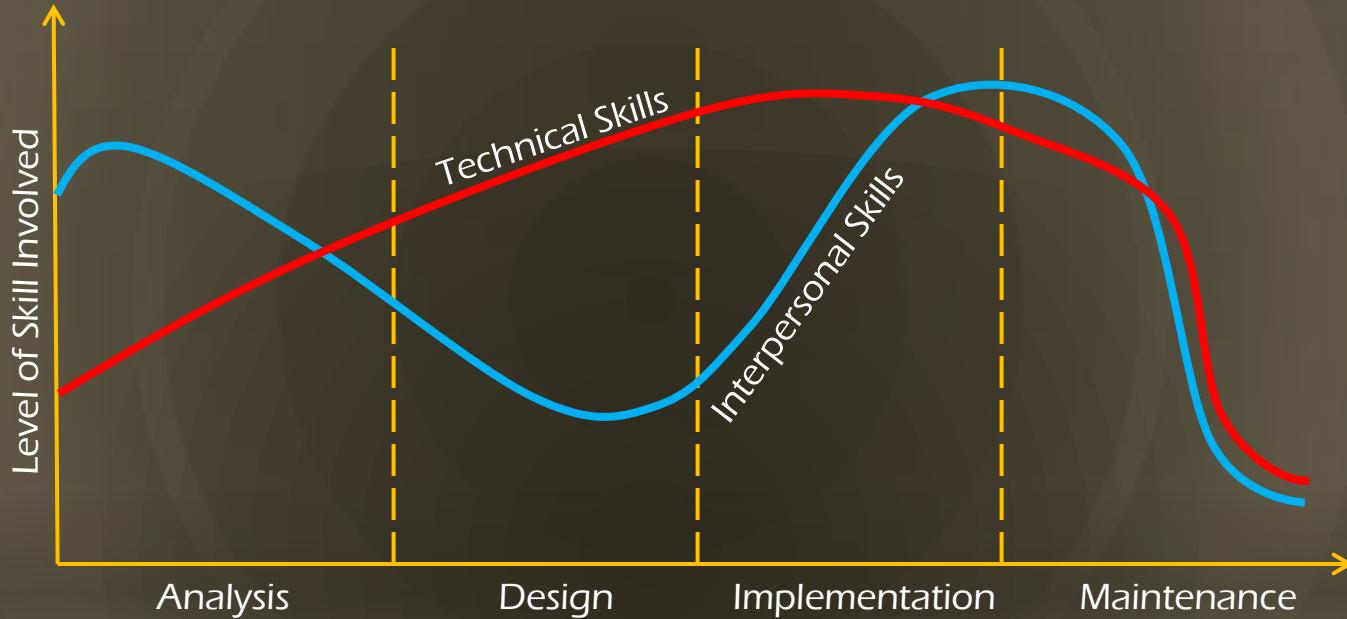
1. Creativity
2. Problem Solving
3. Project Management
4. Dynamic Interface
5. Questioning Attitude
6. Knowledge of Computer

System Analyst

Which skill is favored over the other in the stages: Feasibility study, Design, Implementation, Maintenance.

- i. Feasibility Study: Interpersonal skill is favored over technical skill in this stage.
- ii. Design: Technical skill is favored over interpersonal skill in this stage.
- iii. Implementation: Technical skill is favored over interpersonal skill in this stage. In this step technical and interpersonal skills converge.
- iv. Maintenance: During the maintenance stage the role of the analyst drops off, except when unanticipated problems develop.

System Analyst



System Analyst

- ❑ Discuss the behavioral issues involved in understanding the analyst/user difference.
- ❑ On the surface, differences in the education, experiences and language are quite obvious. The analyst's impatience with the user's ignorance about terminology and the user's impatience with the analyst's limited understanding of the business, however, often lead to conflict during system development. The user also tends to take for granted the analyst's knowledge and expects the computer to solve virtually all problems. These unrealistic expectations are barriers to the interface. Much of it is defensive behavior. The user does not want to seem dumb about the technology.

Behavioral Issues

- Do you think it is necessary to fulfill all demands of the target users for a system developer?
- No. I don't think it is necessary to fulfill all demands of the target users for a system developer. But I should try to fulfill most of them. Sometimes it is too hard to determine all user requirements. There are several reasons why it is difficult to determine user requirements:
 - System requirements change and user requirements must be modified to account for these changes
 - The articulation of requirements is difficult, expert for experienced users.
 - Heavy user involvement and motivation are difficult. Reinforcement for their work is usually not realized until the implementation phase too long to wait.
 - The pattern of interaction between users and analysts in designing information requirements is complex.

System Users

❑ What planning dimensions determine information system development?

❑ The planning dimensions that determine information system development:

- Familiarity with the present system through available documentation such as procedures manuals, documents and their flow, interviews of the user staff and onsite observation.
- Definition of the decision making associated with managing the system. This is important for determining what information is required of the system. Conducting interviews clarifies the decision points and how decisions are made in the user area.
- Once decision points are identified a series of interviews may be conducted to define the information requirements of the user. The information gathered is analyzed and documented. Discrepancies between the decision system and the information generated from the information system are identified. This concludes the analysis and sets the stage for system design.

System Development

- ❑ Why is it difficult to determine user requirements?
- ❑ There are several reasons why it is difficult to determine user requirements:
 - System requirements change and user requirements must be modified to account for these changes
 - The articulation of requirements is difficult, expert for experienced users.
 - Heavy user involvement and motivation are difficult. Reinforcement for their work is usually not realized until the implementation phase too long to wait.
 - The pattern of interaction between users and analysts in designing information requirements is complex.

System Users

❑ According to Davis, A strategy for determining user information requirements is used when the user cannot establish information needs accurately before the information system is built. The reason could be the lack of an existing model on which to base requirements or a difficulty in visualizing candidate systems. In this case, the user needs to anchor on real-life systems from which adjustments can be made. Therefore, the iterative discovery approach captures an initial set of information requirements and builds a system to meet these requirements. As users gain experience in its use, they request additional requirements or modifications in the system. In essence, information requirements are discovered by using the system.

System Information

- Why is it important for an analyst to learn the organization's policies and objectives?
- It is important for an analyst to learn the organization's policies and objectives because, information about the organization's policies, goals, objectives and structure explains the kind of environment that promotes the introduction of computer based systems. Company policies are guidelines that determine the conduct of business. Policies are translated into rules and procedures for achieving goals. A statement of goals describes management's commitment to objectives and the direction system development will follow. Objectives are milestones of accomplishments toward achieving goals.

System Information

❑ What are advantages and disadvantages of on-site observation?

❑ Advantages:

1. On-site observations are one of the most effective tools with the analyst where the analyst personally goes to the site and discovers the functioning of the system.
2. The analyst can gain first hand knowledge of the activities, operations, processes of the system on-site.
3. The role of an analyst is of an information seeker.

❑ Disadvantages:

1. Attitudes and motivations of subjects cannot be readily observed, only the actions that result from them.
2. Unproductive, long hours are often spent in an attempt to observe specific, one time activities or events.
3. Intruding into the users' area often results in adverse reactions by the staff. Therefore, adequate preparation and training is important.

On-Site Observation

- ❑ Explain and give an example of each type of questionnaires.
- ❑ Types of questionnaires: There are five major types of questions.
 1. Fill in the Blanks: Questions request for specific information.
 2. Dichotomous Question: In this type questions offer two answers and you have to choose one.
 3. Ranking Scales: Here questions ask the respondent to rank a list of items in order of importance of preference.
 4. Multiple Choice: Questions offer some specific options where the answer is included.
 5. Rating Scales: Questions are an extension of the multiple-choice design. The respondent is offered a range of responses along a single dimension.

Questionnaires

❑ Example of Fill in the Blanks:

- What is the name of the Google CEO?

✓ _____

- What is your department name?

✓ _____

❑ Example of Dichotomous Questions:

- Are you MEAN Stack in programming?

✓ ■ Yes ■ No

- Do you study in University of Rajshahi?

✓ ■ Yes ■ No

Questionnaires

❑ Example of Ranking Scales Questions:

❑ To be a programmer,

- _____, You need to learn Laravel.
- _____, You have to buy a computer.
- _____, Start with HTML.
- _____, Build a project with Laravel.
- _____, Then you can learn PHP

❑ Example of Multiple Choice Questions:

❑ $2+5=?$

- 2
- 5
- 8
- 6

❑ What is your name?

- Mahin
- Tuhin
- Mili
- I don't Know

Questionnaires

❑ Example of Rating Scale Question:

Rating Matters					
■ Your satisfaction level in SAD	1	2	3	4	5
■ You won't find anymore solved question	1	2	3	4	5
■ What is your reaction about life	1	2	3	4	5
■ How you will feel if you see tomorrow morning that you are not in CSE but in Bangla.	1	2	3	4	5

Questionnaires

❑ What are the pros and cons of the traditional approach to system analysis?

❑ The pros and cons with traditional approach:

1. The system life cycle provides very little quality control to ensure accurate communication from user to analyst. They have no language in common.
2. The analyst is quickly overwhelmed with the business and technical details of the system. Much of the time is spent gathering information. The details are needed and must be available, but the analyst does not have the tools to structure and control the details.
3. Present analytical tools have limitations. English narrative descriptions of a system are often too vague and make it difficult for the user to grasp how the parts fit together. Furthermore, English is inherently difficult to use where precision is needed. System and program flowcharts commit to a physical implementation of the system before one has complete understanding of its logical requirements.
4. Problems also repeat to system specifications. System specifications are difficult to maintain or modify. A simple change in the user's requirements necessitates changes in several parts of the document. The describe user requirements in terms of physical hardware that will implement the system rather than what the user wants the system to do.

Traditional Analysis

❑ What is DFD (Data Flow Diagram)?

❑ A DFD also known as a “bubble chart” has the purpose of clarifying system requirements and identifying major transformations that will become programs in system design. So, it is the starting point of the design phase that functionally decomposes the requirements specifications down to the lowest level of detail. A DFD consists of a series of bubbles joined by lines. The bubbles represent data transformations and the lines represent data flows in the system.

❑ What are the symbols that is used to draw DFD symbol?

1. A square defines a source or destination of system data.
2. An arrow identifies data flow.
3. A circle or a bubble represents a process that transforms incoming data flows into outgoing data flows.
4. An open rectangle is a data store– a temporary repository of data.

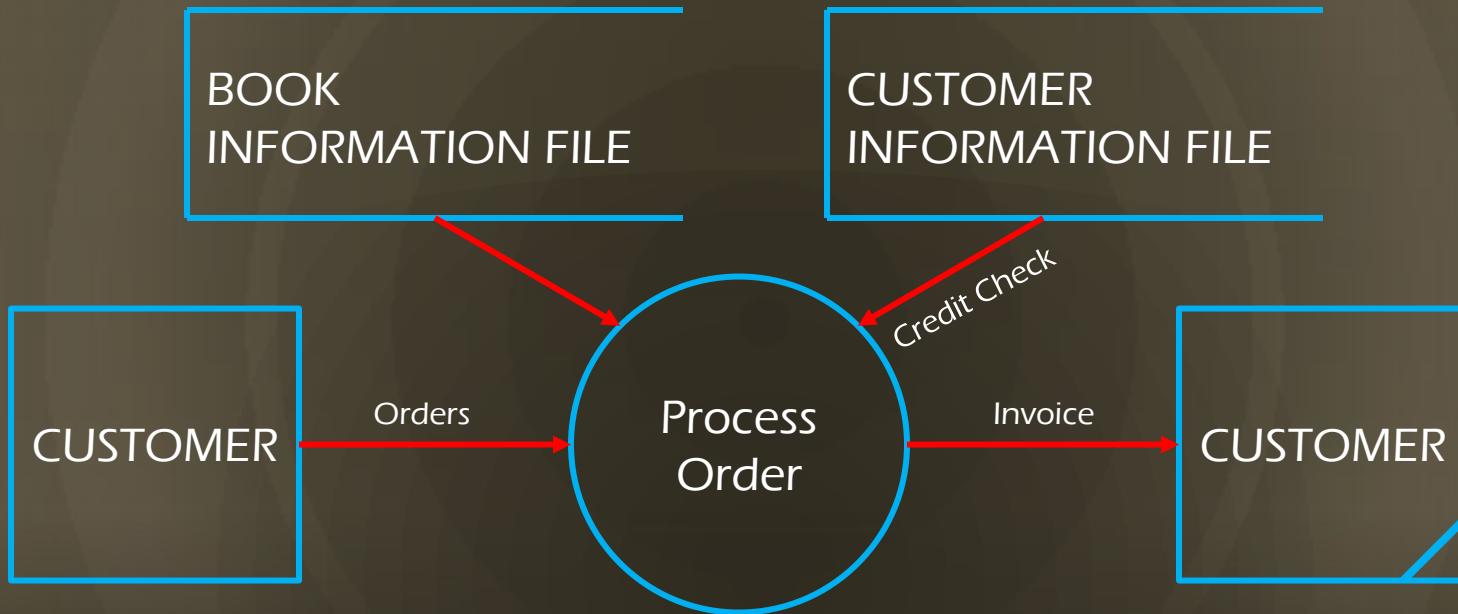
REF

❑ What is the procedure of constructing DFD?

❑ Procedure of constructing DFD:

1. Processes should be named and numbered for easy reference. Each name should be representative of the process.
2. The direction of flow is from top to bottom and from left to right. Data traditionally flow from the source to the destination, although there may flow back to source. One way to indicate this is to draw a long flow line back to the source. An alternative way is to repeat the source symbol as destination. Since it is used more than once in the diagram so it is marked with a short diagonal in the lower right corner.
3. When a process is exploded into lower-level details, they are numbered.
4. The names of data stores, sources and destinations are written in capital letters. Process and data flow name have the first letter of each word capitalized.

REF



BFD

- ❑ What is Data Dictionary?
- ❑ A data dictionary is a structured repository of data about data. it is a set of rigorous definitions of all DFD data elements and data structures.
- ❑ How data dictionary overcomes the limitations of DFD?
- ❑ In DFD we give names to data flows, processes and data stores. Although the names are descriptive of the data, they do not give details. So following the DFD our interest is to build some structured place to keep details of the contents of data flows, processes and data stores. We can do this with data dictionary.

Data Dictionary

What are the advantages and disadvantages of Data Dictionary?

Advantages of Data Dictionary:

- It is a valuable reference in any organization because it provides documentation.
- It improves the communication between system analyst and user by establishing consistent definitions of various items terms and procedures.
- It is a good tool for manage operators and other members of the development team to understand requirements and design.
- It helps the analyst to simplify the structure for meeting the data requirements of the system.
- It is just like a store of all data elements information that can link all phases of software development life cycle.
- It is used to remove the redundancy in data definition.
- It is an important step building a database. Most data base management system has a data dictionary as a standard feature.
- During implementation, it serves as a base against which developers compare their data description.

Disadvantage of Data Dictionary:

- It does not provide functional details.
- It is not acceptable to many nontechnical users.

Data Dictionary

- ❑ What makes up a system performance definition?
- ❑ A system's required performance is defined by describing its outputs in a user acceptable format and at a higher level of detail than what was described in the initial investigation. This involves three steps:
 1. Statement of constraints
 2. Identification of specific system objectives
 3. Description of Outputs

Feasibility Study

❑ Explain the steps of system performance definition to prepare the definition with an example situation.

❑ Steps of system performance definition:

1. Statement of constraints: Constraints are factors that limit the solution of the problem. Let's consider a safe deposit billing system to illustrate these points. In this case the result of the fact-finding phase of the initial investigation revealed the following general constraints:
 - a. The president views safe deposit billing as a low priority.
 - b. The senior vice president is worried that a billing system might require the transfer of safe deposit staff to other departments.
 - c. The accounting department has been pushing for installing a computer based general ledger application for months.
 - d. Management department is checking savings, installment loans, commercial loans and trusts.
 - e. Safe deposit, while doing better than breaking even is not projected to grow as fast as it did in early 1980s.
 - f. If an online system is to be installed, it must interface with the existing checking/savings application to allow for the automatic payment of box rentals.
 - g. A proposed design must be compatible with the bank's burroughs computer system.

Feasibility Study

Steps of system performance definition:

2. Identification of specific system objects: Once the constraints are spelled out, the analyst proceeds to identify the system's specific performance objectives. They are derived from the general objectives specified in the project directive at the end of the initial investigation. Specific objects for our safe billing system:
 - a. To establish a billing system with six five-day cycles per month.
 - b. To mail customers no later than the close of the billing cycle and no later than 25 days prior to the box renewal date.
 - c. To mail customers a reminder two weeks after the initial statement for box renewal.
 - d. To speed collections and reduce the float by 40%.
 - e. To examine the availability of boxes by size, rental fees and location.
 - f. To evaluate the ratio of rented to available boxes at all times.
 - g. To produce periodic reports to management on the performance of the safe deposit department.

Feasibility Study

Steps of system performance definition:

3. Description of Outputs: A final steps in system performance definition is describing the outputs required by the user. An actual sketch of the format and contents of the reports as well as a specification of the media used, there frequency and the size and number of copies are required are prepared at this point. Specifying exactly what the output will look like leads to an estimate of the computer storage requirements that form the basis for the file design. The analyst is now ready to evaluate the feasibility of our safe billing system.

Feasibility Study

What are the steps in feasibility study?

Steps in feasibility:

1. Form a project team and appoint a project leader.
2. Prepare system flowcharts.
3. Enumerate potential candidate systems.
4. Describe and identify characteristics of candidate systems.
5. Determine and evaluate performance and cost effectiveness of each candidate system.
6. Weight system performance and cost data.
7. Select the best candidate system.
8. Prepare and report final project directive to management.

Feasibility Study

❑ What are the steps of weighted system performance and cost data?

❑ The steps of weighting candidate system is:

1. Assign a weighting factor to each evaluation criterion based on the criterion's effect on the success of the system. For example, if the usability criterion is twice as important as the accuracy factor, usability will be assigned 4 when accuracy is assigned 2.
2. Assign a quantitative rating to each criterion's qualitative rating. For example, ratings {poor, fair, good, very good, excellent} may be assigned respective values {1, 2, 3, 4, 5}.
3. Multiply the weight assigned to each category by the relative rating to determine the score. For example if the weight is 2 then the ratings of no. 2 may be {2, 4, 6, 8, 10}
4. Sum the score column for each candidate system.

Weighted System

❑ What makes up a feasibility report?

❑ The feasibility report contains:

1. Cover Letter: Formally presents the report
2. Table of Contents: Specifies the location of the various parts of the report.
3. Overview: A narrative explanation of the purpose and scope.
4. Detailed Findings: Outline the methods used in the present system.
5. Economic Justification: Details point by point cost comparisons.
6. Recommendations and Conclusions: Suggest to management the most beneficial and co-effective system.
7. Appendixes: Document all memos and data compiled during the investigation.

Feasibility Report

- ❑ How do you change a feasibility report?
- ❑ A feasibility report can be changed by giving an oral presentation. An oral presentation may aim three steps:
 1. Informing
 2. Confirming
 3. Persuading

Feasibility Report

❑ What are elements of cost benefit analysis?

❑ Elements of cost benefit analysis are:

1. Determine on-going staffing costs: An analysis of the operating costs. This is based on the rough design of the planned system and its anticipated impact on the company.
2. Estimated savings and expenses: Estimated savings and expenses by user department areas. This describes the on-going costs associated with the system, as well as the anticipated savings.
3. Itemized benefits: Both tangible and intangible. In the systems world, the biggest benefits are typically intangible in nature. A benefit is typically written beginning with a transitive verb, such as improve, maximize, minimize, etc.
4. Break Even point: The calculated point in time where cost savings match accumulated development expenses.
5. Calculate Return On Investment (ROI): The ratio of projected cost savings versus amount invested.

Cost Benefit Analysis

- ❑ Which element of cost benefit is most difficult to estimate?
- ❑ Estimating savings and expenses is the most difficult element in cost benefit analysis. Because, to estimate cost benefit analysis you need to know all the transactions that occurred by the meantime. You need to know what was the capital. What is daily profit etc. So it is more difficult than other steps.

Cost Benefit Analysis

- ❑ Define and explain the procedure for cost benefit determination.
- ❑ Cost benefit determination has following steps:
 1. Identify the cost and benefits: First we need to identify the cost or benefit. Is that a fixed or variable cost, direct or indirect cost.
 2. Classify the cost and benefits: We need to classify the costs and benefits identified in step 1.
 3. Select evaluation method: We need to select what we want to evaluate. Either Net benefit analysis, Break even analysis or other.
 4. Interpret the results of the analysis: After completing the evaluation we need to come to a result.
 5. Take action: According to result we need to take action for next step.

Cost Benefit Analysis

- Distinguish between Direct costs and Indirect costs.
- Difference between Direct costs and Indirect costs:
 - Direct Costs: A direct cost is a price that can be completely attributed to the production of specific goods or services. For example: direct labor, direct materials, commissions etc.
 - Indirect Costs: Indirect costs are costs that are not directly accountable to a cost object. Indirect costs may be either fixed or variable. For example: rent and utilities.

Cost Analysis

- ❑ Distinguish between Tangible benefit and Intangible benefit.
- ❑ Difference between Tangible benefit and Intangible benefit:
 - Tangible benefit: Tangible benefits are those benefits which can be measured in monetary terms. For example: cost reduction and income gains.
 - Intangible benefit: Intangible benefits are those benefits which cannot be measured in monetary terms. For example: examples of intangible benefits include brand awareness, customer loyalty, and employee morale

Benefit Analysis

2017Im

- ❑ What is a System?
- ❑ A system is an orderly grouping of independent components linked together according to a plan to achieve a specific object.

System
2021

❑ What are the difference between open system and closed system?

Open System	Closed System
A system which can exchange energy and matter with the environment.	A system which is protected from the environment.
Elements of the system will vary with time.	Elements of the system won't vary with time.
There is no boundary outside the system.	There is a boundary around the system.
For example, Fire-camp	For examples, intake water bottle.

Types of System

- ❑ What is the concept of prototyping?
- ❑ An alternative to “paralysis by analysis” is an advanced technique called prototyping. Prototyping recognizes problems of cognitive style and uses advanced computer technology. It advocates building a simple system through trial and error and refining it through an iterative process.

Prototyping

2018

Write down the three basic implications of system concept.

The study of system concepts has three basic implication:

1. A system must be designed to achieve a predetermined objective.

2. Interrelationships and interdependence must exist among the components.

3. The objectives of the organization as a whole have a higher priority than the objectives of its subsystems.

System
2020

Briefly Describe the characteristics of a system.

Organization: It implies structure and order. It is the arrangement of components that helps to achieve objectives.

Interaction: It refers to the manner in which each component functions with other components of the system.

Interdependence: It means that parts of the organization or computer system depend on one another.

Integration: It refers to the holism of systems. It is concerned with how a system is tied together.

Central Objective: A system should have a central objective. Objectives may be real or stated.

System

What are the elements of a system?

Outputs and inputs: A major objective of a system is to produce an output that has value to its user. In order to get a good output, inputs to system must be appropriate.

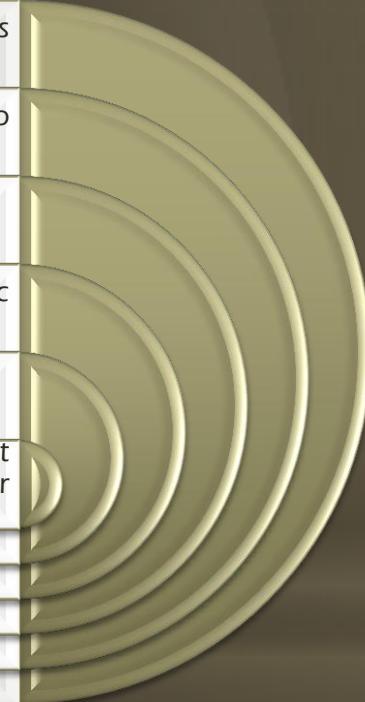
Processors: It is the element of a system that involves the actual transformation of input into output. It is the operational component of a system.

Control: The control elements guide the system.

Feedback: Feedback measures output against a standard in some form of cybernetic procedure that includes communication and control.

Environment: The environment is the “supra-system” within which an organization operates.

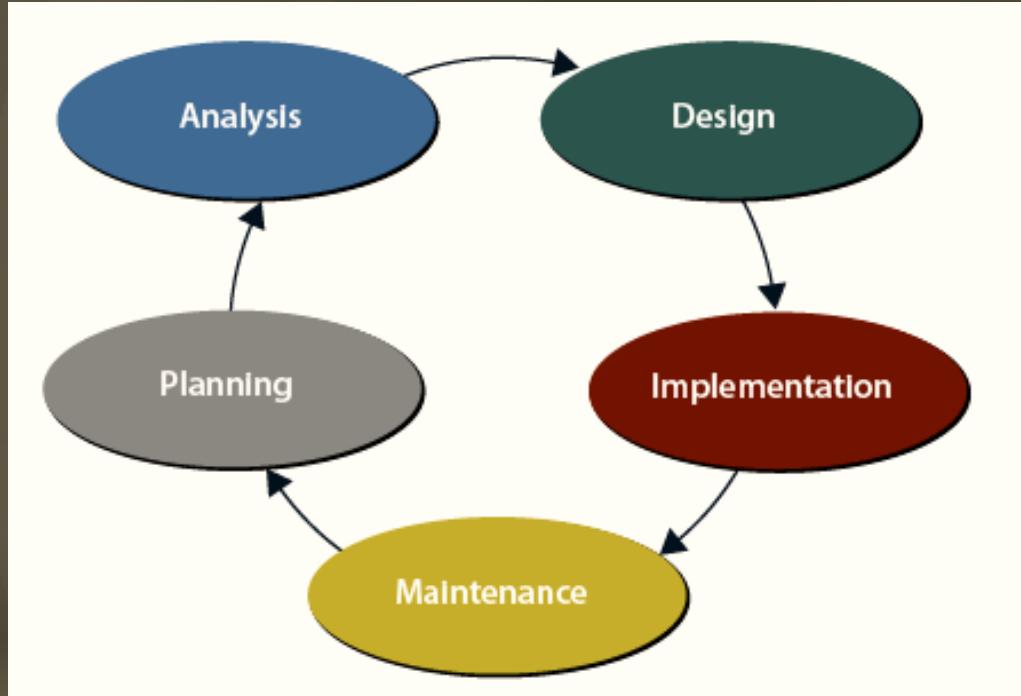
Boundaries and Interfaces: A system should be defined by its boundaries- the limits that identify its components, processes, and interrelationships when it interfaces with another system.



System

- ❑ What is system development life cycle?
- ❑ The **systems development life cycle** describe a process for planning, creating, testing, and deploying an information system.
- ❑ How a system development cycle relates to system analysis?
- ❑ A system development cycle is a very important process in system analysis. It describes a system analyst that, how to plan and analyze a system. After analysing a system system analyst need to design the system and implement it. That is also in the system development cycle. System development cycle also tells how to maintain a system. So it is directly related with system analysis.

System Life



System Life

- ❑ Give insight into the contents of a formal system proposal.
- ❑ Contents of a formal system proposal:
 - Statement of the problem: A carefully worded statement of the problem that led to analysis.
 - Summary of Findings: A list of major findings and recommendations should be provided.
 - Details of findings: An outline of the methods and procedures undertaken by the existing system, followed by coverage of the objectives and procedures.
 - Recommendations: Specific recommendations, re-grading the candidate system including personnel assignments, costs, project schedules and target dates.

Feasibility Study

- ❑ Why a system proposal is so important for system design?
- ❑ Depending on the result of initial investigation, a survey is expanded to more details. We need do know,
 - What are the user's demonstrable needs and how does a candidate system meet them?
 - What resources are available for given candidate system?
 - What are the likely impact of the candidate system on the organization?

Feasibility Study

What activities make up a system design?

Activities in system design:

- To determine how the output is to be produced.
- Input data and master file have to be designed.
- The operational phases are handled through program construction and testing.
- Details related to justification of the system and an estimate of the impact of the candidate system on the user and organization are documented and evaluated.

How system design simplify implementation?

If you have a good design than it is easy to implementation. Because, design is the demo how a system will be designed.

System Design

- ❑ What do you mean by initial investigation of a system?
- ❑ The initial investigation is the first step in the analysis phase of your project. It is a fact-finding mission in which you aim to find out as much as you can about your user, the current problem and what the user needs from a computer system in order to solve the problem.

Initial Investigation

- ❑ Why initial investigation is necessary for system analysis?
- ❑ The main aim of preliminary analysis is to identify the problem. First, need for the new or the enhanced system is established. Only after the recognition of need, for the proposed system is done then further analysis is possible.

Initial Investigation

- ❑ What is system requirement specification (SRS)?
- ❑ A **System Requirements Specification** is a document or set of documentation that describes the features and behavior of a system. It includes a variety of elements that attempts to define the intended functionality required by the customer to satisfy their different users.

System Requirements

- Briefly explain characteristics of SRS?
- Characteristics of SRS:
 - Correctness: User review is used to ensure the correctness of requirements.
 - Completeness: Completeness of SRS indicates every sense of completion.
 - Consistency: Requirements in SRS are said to be consistent if there are no conflicts between any set of requirements.
 - Unambiguousness: An SRS is said to be unambiguous if all the requirements stated have only 1 interpretation.
 - Ranking for importance and stability: There should a criterion to classify the requirements as less or more important.
 - Modifiability: SRS should be made as modifiable as possible.
 - Verifiability: An SRS is verifiable if there exists a specific technique to quantifiably measure the extent to which every requirement is met by the system.
 - Traceability: One should be able to trace a requirement to a design component.
 - Design Independence: There should be an option to choose from multiple design alternatives for the final system.
 - Testability: An SRS should be written in such a way that it is easy to generate test cases and test plans from the document.
 - Understandable by the customer: A system must be understandable to user.
 - Right level of abstraction:
If the SRS is written for the requirements phase, the details should be explained explicitly.

System Requirements

- ❑ What is meant by analyst/user interface?
- ❑ Analyst/user interface is an important issue in system design. For various reason such as background, education an user and an analyst doesn't have the same choice. User motivation is out of analyst thought. This fact is known as analyst/user interface.
- ❑ Why analyst/user interface is a problem?
- ❑ If an analyst cannot understand users problem then it is too hard to solve the problems what users face. So analyst/user interface is a big problem in system analysis.

Analyst User Interface

What would you expect from an interviewer while he conducts your interview?

I will expect from the interviewer that,

- He will set the stage for the interview.
- He will establish rapport with me.
- He will question clearly and succinctly so that I can understand all of his questions.
- He will listen all of my answers what I want to say.
- He will evaluate the outcome of the interview.

Interview

What is the difference between structured and unstructured interviewing?

BASIS FOR COMPARISON	STRUCTURED INTERVIEW	UNSTRUCTURED INTERVIEW
Meaning	Structured Interview is one in which a particular set of predetermined questions are prepared by the interviewer in advance.	Unstructured Interview refers to an interview in which the questions to be asked to the respondents are not set in advance.
Data collection	Quantitative	Qualitative
Research	Descriptive	Exploratory
Type of Questions	Closed-ended questions	Open-ended questions
Factors evaluated	Explicit	Implicit
Used by	Positivist	Interpretivist
Application	To validate results, when the number of candidates is quite large.	To probe personal details of the candidate, so as to judge if he is the right person for the job.

Interview

- ❑ In which way Questionnaire is a better information gathering method than Interviewing?
- ❑ Multiple Choice Question is better information gathering method than Interviewing. This offers the advantage of faster tabulation and less analyst bias due to the order in which the answers are given. Respondents have a favorable bias toward the first alternative item.

Questionnaire

- ❑ What do you mean by the traditional approach to system analysis?
- ❑ This structured approach looks at the system from a top-down view. It is a formalized step by step approach to the systems development lifecycle (SDLC) which consists of phases or activities. The activities of one phase must be completed before moving to the next phase. At the completion of each activity or phase, a milestone has been reached and a document is produced to be approved by the stakeholders before moving to the next activity or phase; painstaking amounts of documentation and signoffs through each part of the development cycle is required. "The center of the structured approach is the process model, which depicts the business processes of the system, and the primary model that presents the processes is the data flow diagram."

System Analysis

❑ What are the disadvantages of traditional system analysis?

❑ Disadvantages of traditional approach:

1. The system life cycle provides very little quality control to ensure accurate communication from user to analyst. They have no language in common.
2. The analyst is quickly overwhelmed with the business and technical details of the system. Much of the time is spent gathering information. The details are needed and must be available, but the analyst does not have the tools to structure and control the details.
3. Present analytical tools have limitations. English narrative descriptions of a system are often too vague and make it difficult for the user to grasp how the parts fit together. Furthermore, English is inherently difficult to use where precision is needed. System and program flowcharts commit to a physical implementation of the system before one has complete understanding of its logical requirements.
4. Problems also repeat to system specifications. System specifications are difficult to maintain or modify. A simple change in the user's requirements necessitates changes in several parts of the document. The describe user requirements in terms of physical hardware that will implement the system rather than what the user wants the system to do.

System Analysis

- ❑ What is the difference between traditional approach and structured approach?

Traditional Approach	Structured Approach
This structured approach looks at the system from a top-down view. It is a formalized step by step approach.	Structured analysis is a set of techniques and graphical tools that allow the analyst to develop a new kind of system.
There has no proper way I this approach.	DFD, Data Dictionary are some examples of structured approach.

System Analysis

What are the difference between validity and reliability?

BASIS FOR COMPARISON	VALIDITY	RELIABILITY
Meaning	Validity implies the extent to which the research instrument measures, what it is intended to measure.	Reliability refers to the degree to which scale produces consistent results, when repeated measurements are made.
Instrument	A valid instrument is always reliable.	A reliable instrument need not be a valid instrument.
Related to	Accuracy	Precision
Value	More	Comparatively less.
Assessment	Difficult	Easy

System Analysis

- ❑ How validity relate to reliability?
- ❑ If reliability is over then validity doesn't have any proper value. And if validity is expired then reliability cannot do anything. So they are related.

System Analysis

ABC Company Ltd. will need Tk. 2,50,000 at the end of 3 years for restructuring. Calculate the present investment value needs at annual compound interest rate of 10%.

Solution:

$$\text{Savings} = 2,50,000,$$

$$n = 3 \text{ years},$$

$$r = 10\%$$

$$\text{Capital} = ?$$

$$\text{Savings} = \text{Capital} (1 + r^n)$$

$$\text{Capital} = 2,23,990$$

Investment

INVESTMENT

- ❑ How is DFD useful in analyzing the data and processes used in a system?
- ❑ DFD is a systemic process in which data and processes are explained with diagram. There data flow describes every transactions on data. So, they are very useful in system analysis.

DFD