

SAD

UNIT - 1

System Definition:-

✓ System can be defined in three steps

- (1) They should be one central objective
- (2) It can be divided into sub-component
- (3) This sub – components works to get(achieve) the central objective

Or

We can define system as an orderly grouping of components which are trying to achieve one central objective

Or

"System is an integrated collection of component which function together according to decide plan to achieve specific goal object."

Need for system development?

Systems are Initial for different reason the most important reasons are below..

➤ **Capability**

Business activities are influenced by an organization ability to process transaction quickly and efficiently.

Information systems add capability in three way

1. Improve processing speed:-

The Inherent speed with which computers process data is one reason why organization seek the development of system projects.

➤ **Increase Volume:-**

Provide the capacity to process a greater amount of activity, perhaps to take advantage of new business opportunities.

3. Faster retrieved of information:-

Locating and retrieving information from storage provide the ability in conducting complex searches.

➤ **Control**

1. Greater accuracy and consistency:-

Carrying out computing steps including arithmetic correctly and consistency.

2. Better security:-

Safe gearing sensitive and important rate in a form that is accessible only to authorized person.

➤ Communication:-

1. Enhanced Communication:-

Speeding the flow of information and massages between remote locations well as within offices. This includes the transmission of documents within offices.

2. Integration of business areas:-

Coordination a business activities taking place in separate Ares of an organization through capture and distribution of information.

➤ Cost

1. Monitor Cost:-

Tracking the costs of labor, goods and overhead is essential to determine whether a firm is performing in line with expectations within budget.

2. Reduce the Cost:-

Using the computing capability to process data at a lower cost than possible with other methods, while maintaining accuracy and performance level.

➤ Competitiveness

1. Lock in Customers:-

Changing the relationship with and services provided to customers in such way that they would not think of changing suppliers.

2. Lock out the competition:-

Reducing the chances of entering the competitions in the same market because of good information system being used in the organization.

3. Improve arrangements with suppliers:-

Changing the taking services or delivery arrangement or relationships between suppliers and the organization to benefits the firm.

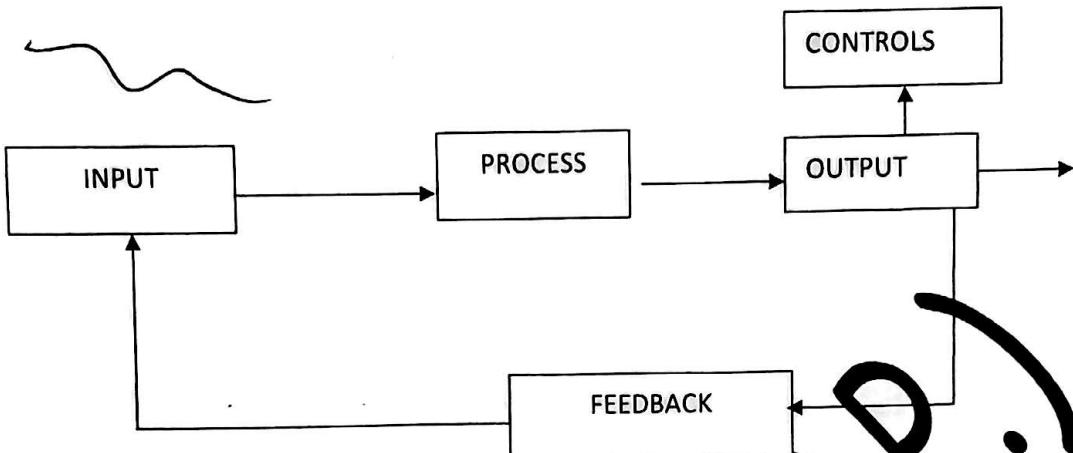
4. New product development:-

Introducing new products with characteristics that use or are influenced by information technology.

Element of system analysis:

Basically there are six elements of a system

- (1)Input
- (2)Process
- (3)Output
- (4)Feedback
- (5)Environment
- (6)Boundaries



1. Input:-

The entire thing required to get the desired goal are known as input

Ex: - (1) Input computer system if one person want to calculate the sum of integer then the two integer
Are known as input

(2) In the organization raw material used for production is known as input

2. Process:-

The procedure used to convert input into output is known as process

Ex: - (1) The central processing unit of computer system process of some operation that's why it is called process.

(2) The production department converts raw material into a products and work as a processor.

3. Output:-

The result of processor is known as output this output should be convert with central objective.

4. Feedback

The results of output unit will be match with the central objective if there is any gape (Difference) between both of these then some improvement is needed and the process is start again with the correction. The process is known as feedback

5. Environment:-

The things which are not a part of system but used to get information for the system are known as environment

Ex: - Goodwill works as an environment for the organization

6. Boundaries:-

Each system has its own limits these limits are known as boundaries in other words we can say boundaries are the scope of the system

Characteristics of system:

1. Organization:-

Every system should have some hierarchical structure this means by that some level by level a structure should be maintain a system so that each level information for its use only in other words we can say the information should be filter before reaching to each components or sub component.

"Organization means structure and order means it's the arrangement of component of the system that helps to achieve goals & task"

Ex: - The computer system is the combination of input device central processing unit (C. P. U.), output device and storage unit. All units are integrated or linked together with each other and do their work.

2. Interdependence:-

In the system each component should be dependent upon another component of the system

3. Interaction :-

"A Process in which each component works with other component of system is called as interaction."

Interaction consist the relation

Ex:-

Company purchasing must interact with production

Advertising must interact with Sales

Payroll must interact with Personal

CPU must interact with other units

4. Central objective

Each system should have one central objective that should be fulfill by sub components of the system.

5. Integration:

All though the subcomponents of the system works separately but the aim of each components should be one (to gain the central objective)

Types of users

1. Hands – on End User
2. Indirect End User
3. User Manager
4. Senior Management

1. Hand – on End User
 - Hand-on End User actually interacts with the system.
 - They feed input data or receive output, using terminal.
 - For example Airline reservation agents use terminals to query the system about passenger, flight & ticket information.
2. Indirect End User
 - Indirect users benefit from the results or reports produced by this system but do not directly interact with the H/W or S/W.
 - These users may be managers of business functions using the system.
 - For e.g. marketing managers responsible for sales applications.
3. User Manager
 - User manager have management responsibilities for application systems.
 - These users may be upper – level managers for business functions that make heavy use of information systems.
 - While these people may not actually use the systems directly or indirectly, they retain authority to approve or disapprove investment in the development of applications & have organizational responsibility for the effectiveness of the systems.
 - These upper – level users must be involved in major systems development efforts.
4. Senior Management
 - Senior Manager is taking increased responsibility for the development of information systems.

Type of management user	characteristics
• Hands on End User	Operates the system.
• Indirect End User	Direct interaction through systems equipment.
• User Manager	Users reports or information produced by System but does not operate equipment.
• Senior Management	Oversees investment in development or use of The system. Has organizational responsibility For control of system-activities.
	Incorporates competitive & strategic uses of Information systems with corporate plans & Strategies. Evaluates organization's exposure To risk from information systems failure.

Types of System

1. Open and close system:-

Open:-

A system can be categorized as a open system if the system interact beyond the boundaries that means if it interacts with its environment that it will be an open system.

Close:-

If the system do not interact with it environment that it case a close system

2. Physical or abstracts system:-

Physical:-

A system is called physical system if it really exists this can be further classified in tangible or Non tangible system.

Tangible means that can be see or feel.

Non tangible means that cannot be see but it works.

Abstracts:-

Abstracts system means that it does not exists but it is required to make an existing system. System models can be considered as an abstracts system

3. Man made information system:-

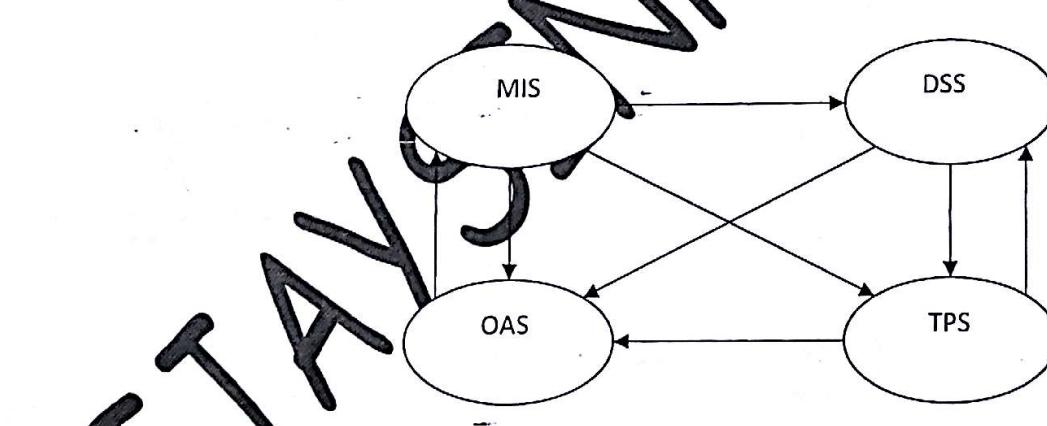
These types of system include both systems that are based on information. In this types of system the inputs, outputs and process are based on information

Decision support system (DSS)

Management Information System (MIS)

Transaction processing system (TPS)

Office Automation System (OAS)



4. Natural or Artificial System :-

Natural systems that are created and maintain by natural are known as natural system

Ex: Solar system, Life cycle, water system etc...

Artificial system:-

The system that are created and maintain by human beings are known as artificial system generally all the system are artificial Ex: - Business organization computer system, Air condition system

5. Deterministic and Probabilistic system:-

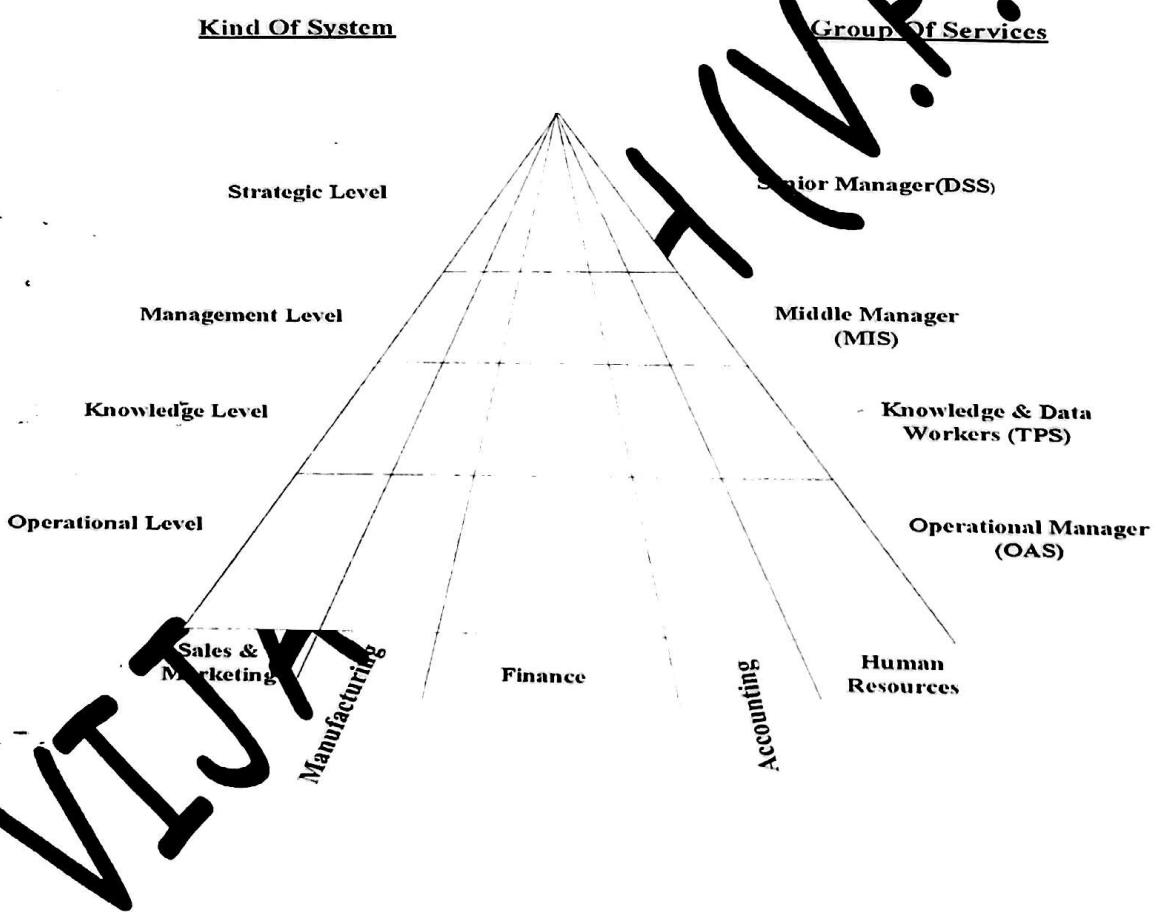
Deterministic:-

A system in which the occurrence of all events is perfectly predictable called that system is deterministic system. If we get the current status at a time we easily can predict the next state Ex: - Auto miter

Probabilistic system is one in which the output can't be predicted perfectly
Ex: - Student's Result

Types of Information (Categories of Information):-

Ans:-



The Information can be categories into four level The first level is strategic information (DSS) strategic information which is related with long term planning this type of planning can be done by higher authorities of organization and gives result in a year or more that menace this type of information are use to take decision that way we call it as a decision support system (DSS)

Second level of information is managerial information if is used by middle level management that menace department head etc. this information is use for short time planning , that is from month rather than year this are called managerial information system.

The third level of information is operation that is use by delay triangulation there result can we seen in a day or twice this are known as tps or tranception processing system

I.M.V Difference between system analysis and system design

System Analysis

System analysis is the examination of the problem

It is concerned with identifying all the constraints
And influences

It deals with data collection and detail
Evaluation of present system

It provides logical model of the system
Through data flow diagrams and data
Dictionaries

System Development Life Cycle [SDLC]

System Design

System design is the creation of the information

System which is solution to the problem

It is concerned with the co – ordination of the

activities, job, procedures and equipment

Utilization in order to achieve system goals

it deals with general design specification output,
Input file and procedures. It also deals with
Program construction testing and maintenance
System

it provides technical specifications and reports with
which the problem can be tackled

Most system analyst use some variation of a system
problem – solving approach called a system development life cycle as already mentioned in the above
paragraph, system development is a process consisting of two major steps of system

(1)System analysis

(2)System Design

So in short system development life cycle is a systematic and orderly approach to solving system problem. SDLC is a logical process by which system analysts, software engineers, programmers and user build information systems and computer application to solve business problem and needs. It is sometimes called application development life cycle.

It usually incorporates the following general problem solving steps.

1. Planning:-

Identify the scope and boundary of the problem and the plan the development strategy and goals.

2. Analysis:-

Study and analysis the problems cause and effects. Then identify and analyze the equivalence that must be fulfilled by any successful solution. In short it is a detailed study of a current business system and its problems analyze the requirements and get alternative solutions.

3. Design:-

System design is the general and detailed specification of a computer based solution that was selected during system analysis this is done after the work of analysis is completed. Design specifications are sent to computer programmers for generating the code required for it if necessary analyst designs the solution not all solutions require design.

4. Implementation:-

System implementation is putting the system into operation once the system is completed computer programmers are tested managers and users are trained to use the new system and operations are converted to the new system.

5. Support:-

Analyze the implemented solution refine the design and implement improvements to the solution. So it is nothing but maintaining a system after it has been developed and working any changes and upgrade the system comes under system support.

What is System Development Life Cycle and Explain Its Phase

We can broadly divide the whole life cycle into six stages

1. Problem Identification [Feasibility study]
2. Analysis [Determination system requirement]
3. Design
4. Development of software
5. System testing
6. Implementation, Evaluation & maintenance

Problem Identification:-

All thought all stages of SDLC are important but we can categories their importance as per our judgment

Need identification is the most critical (Investigation) stages because in this stage we have to get the actual problem and if the problem is not identified correctly then there is no question about the solution but we can effort only

Feasibility study:-

At this stage we have to find whether our project can be complete in the given time
- within the cost specified and with our technical power

Many systems dies in this face because here we have to study about our system more practically and systematically if we find that our system cannot be complete as per our solution then we will try to get an ultimate solution for the problem

Analysis:-

(This is the most important stage of SDLC because in this stage we have to analysis all the facts and information regarding to our system)

We have to find out what is the actual problem and how can we solve it. We have to study all the facts and analysis the actual problem in dept.

It determines-

What outputs are needed?

What input are needed to obtain those output?

What operations are must perform to obtain output?

What resources must be used?

What operations & accounting controls are needed, etc....

System analyst can know the user's requirements by

Asking user directly

Interviews

Questionnaires

Developing charts

Design:-

The design of system produces the details that clearly describe how a system meets the requirement during system analysis

The Specifications of the system designs are

- Output designs
- Input Designs
- Procedures
- Information Available
- Files & Database
- Volumes
- Manually used forms
- Program Specification

System analyst begins its designing part with identifying output & reports of system it also defines data to be input stored & processed system analysis in the design.

- The traditional tools are
- Flow charts
 - IPO (Input, Procedure, & Output)
 - Decision Tables

Development of software

Software developers may install purchased software or they may develop new custom designed or tailor make software. The choice depends on availability of programs, time available for develop software and cost of software program. Programmers are a port at big organization but in small organization the service of programmer can be hired on construct base. Programmers are responsible for test and carry maintenance of application, installation

System Testing:

During system testing the system is used experimentally to ensure that the software does not fail in other words, we can say that it will run according to its specifications and in the way user expect special test data are input for processing and the results examined

There are four types of testing

1. Black box test
2. White box test
3. Manual testing
4. By software testing

(121) Black Box Testing:-

In black box testing only inputs are examined it does not matter that what procedure is done

2. White Box Testing:-

In this type of testing the input is given and actual internal process will be examined with its output

3. Manual Testing:-

In this process the programmer manually gives input and observes output

4. By software Testing:-

In this system the original software program will be checked from another testing program these programs will automatically input different data and observe the output

Implementation, Evaluation & Maintenance:-

Implementation is the process at having systems personal checkout and put new equipment into use, train users, installs the new application depending upon the size of organization the system analyst takes into account implements new systems. Sometimes the system analyst will run both old and new system parallel to compare the results and after some time he stops using old system and put use of new system.

Evaluation is nothing but feedback of system it is used to do test strengths & weakness of system it includes.

Development Evaluation

This decides whether the system is developed on time & within the budget also includes assessment of development methods and tools.

Operational Evaluation

It consists

- A. Response time
- B. Easy to use
- C. Reliability of computation
- D. Adequacy of storage capacity,

Maintenance is necessary to eliminate errors in the working system during its working life and to turn system to any valuation in its working environment

What is structured analysis?

Structured analysis is a development method for the analysis of existing system A system to create the modify system A Structured analysis allows the analyst to learn about a system of process in a manageable and logical do not overlook.

The main objective of the structured analysis is to organize the task associated with requirement determination to provide and accurate and complete understanding of current situation from that requirement are determine that will be the basic for a new modified system.

Explain the components of structured analysis (Tool)

1. Graphic symbol:-

These include icons and data flow diagrams instead of words, structured analyst users symbol or icons to create a graphic model of the system
Icon is graphical representation of entities described by the data
Data flow diagrams is important
Graphical tool to described and analyze the movement of data through a system

2. Data Dictionary:-

The data dictionary stores details and description of all data used in a system it is an organized listing of all the data elements that are pertinent of the system

3. Procedures and process description:

The process description allows the system analyst to describe the business policy representation by each of the bottom level bubbles in the bottoms levels DFD There can be written in a variety of forms such as structured English decision tree description tables etc

4. Rules:-

These are the standards for describing and documenting the system correctly in completely Good documentation will provide an explanation of how a system operates

SSADM (STRUCTURED SYSTEM ANALYSIS & DESIGN METHOD)

SSADM :- structured system analysis design method)

- SSADM: - structured system analysis and design is a well defined approach in the form of methodology.
- The term structured is borrowed from structured programming.
- SSADM is in fact a modified form of SDLC using structured techniques.
- SSADM consists of:
 - 1) System survey
 - 2) Structured analysis
 - 3) Structured design

- 4) Hardware study
- 5) Implementation and
- 6) Maintenance
- The SSADM involves data flow diagram method of showing the movement of data through a system. The DFD's are free of unnecessary details and are therefore very useful in providing an overview of the system.

1. SYSTEM SURVEY:

The first step in SSADM is system survey. The sub activities in survey are

- 1) Identify the scope of the current system
- 2) Identify and list the shortage in the current system
- 3) Establish new system goals and identify the constraints
- 4) Prepare a document consisting of
 - Goals and objectives
 - Customized project life cycle
 - cost benefit analysis

2. STRUCTURED ANALYSIS: -

- o The second stage in SSADM is structured analysis which is the most important part.
- o Structured analysis is a set of techniques and graphical tools
- o They allow the analyst to develop a new kind of system specification that is easily understandable to the user. Here the analyst uses graphic symbols.
- o Here, the analyst uses graphic symbols, data flow diagrams and data dictionaries to represent the data.

SUBPROCESS OF STRUCTURED ANALYSIS:-

- 1) To study current system
- 2) To derive logical equivalent DFD
- 3) Develop logical model of new system
- 4) Establish man-machine interface
- 5) Quantify costs and benefits
- 6) Select the best option
- 7) Package Specification

3. STRUCTURED DESIGN

- o Structured design is a data-flow based methodology.
- o Structured design is a structured specification.
- o The input of structure design is an output of the structure analysis.
- o System analysis involves transforming a logical design into a physical design.
- o This includes :
 - 1) input-output design
 - 2) Files and database design
 - 3) Program design
 - 4) Control design
- o Structure design specification are
 - 1) Equipment specification
 - 2) Test specification
 - 3) User interface specification
- o There are two types structure design:-
 - 1) Preliminary design

2) A detail design walks through

4. HARDWARE STUDY

- o This step considers the physical requirements of the proposed system.
- o It is based on the new physical DFDs, DFD of structured analysis.
- o It defined which are the hardware are used for the configure the particular system.

5. SYSTEM IMPLEMENTATION

- o Implementation is start when the management will except the system.
- o There are five components.

1) system acquisition

- It involves the purchase of hardware, packaged software and software services.
- Here, analyst and designer work together.

2) programming

- It is the writing of instructions to be read and executed by a computer.
- Programming is performed by computer programmer or analyst

3) Testing

- In this stage, we test the code of program.
- At this stage

4) Conversion

- Once the system has been tested successfully then the part which remains is that of putting them into the operation.

5) Documentation

- Documentation means putting it in the written form about how a system is designed.
- The documentation includes:
 - 1) Design documentation
 - 2) Program documentation
 - 3) Training documentation
 - 4) Operation documentation
 - 5) User reference documentation

6. MAINTAINANCE

- o Maintenance is the end of the software development.
- o It is last step in the system life cycle
- o There are three types of maintenance
 - 1) Adaptive maintenance
 - 2) Corrective maintenance
 - 3) Perfective maintenance

ADVANTAGE OF SSADM

1 Good documentation:

In the structured methodology well defined documentation take place. So, it is easy for the analysts, users and programmers to understand and use.

2 Better communication:

Since structured methodology is graphics it provides easy to understand presentation of the application.

3 Standardization:

The systems analyst used to have their own methods of designing computerized system.

4 Modularization:

The process is partitioned so that we have clear picture of the smaller module which is essential to understand the system thoroughly.

5 Logical designs:

The SSADM is more logical than physical. The elements of the system do not depend on vendor or hardware

6 User oriented:

7 Maintainability:

What is DFD (Data Flow Diagram)?

Data flow diagram is a graphical aid for defining systems inputs, process and outputs it represent flow of data through the system

The DFD are used in modern method of system analysis they are simple to the extent that the types of symbols and rules are very few

DFD serve two purposes - 1) Provide a graphic tool which can be used by the analyst to explain his understanding of the system to the user

They can be readily converted in to a structured chart which can be used in design.

The use of DFDs as modeling tools was popularized by De Marco (1978) and Gane and Sarson (1979) through their structured system analysis method

Symbols used in DFD *most imp*

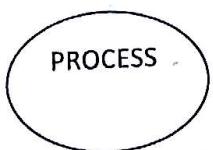
Most DFDs use four types of symbols which represent system components such as:-External, Entities, Processes, Data flow and Data stores

The use of specific items associated with each element depends on whether Yourdon (Demacro, Weinberg, Page – Jon or Gane and sarson approach is used)

1. Process: - Here flow of data is transformed.

Ex: - Verify credits update inventory file

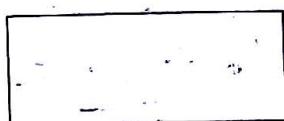
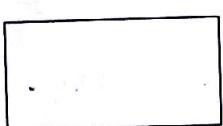
A Circle is used to denote a process both inputs & Outputs to a process are data flow processes are Numbered & give a name



2. External Entity:-

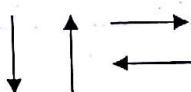
A source or destination of data which is external to the system

Ex: - Supplier, Customer



3. A Data Flow:-

It shows the direction of data from source to destination



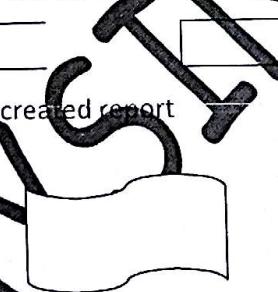
4. A Data Store:-

Any stored data but with no reference to the physical method of storing.

Ex: - Inventory master file, Customer master file, etc

5. Report:-

To be created report



Rules of Constructing DFD

ANS: -

1. Processes should be named and homebred for easy reference
2. The direction of data flow is from top to bottom and from left to right although they may flow back to the source
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 letter process and data flow names have the first letter of each word capitalized.

Advantages of DFD

1. Though the DFD the data flow can be shown pictorially that is easy to understand.
2. It is easy to represent data in front of user.
3. There is not necessary maintain or update number of file DFD are easily update
4. It is use to represent the analysis in a generalize way.

Disadvantage of DFD

1. Since the general approach of analysis follows file maintenance so sometime it is difficult to draw DFD (Employ are needed to be skill)
2. They symbol and rules have to be remembering.
3. It needs more calculation or logics.

Difference between physical and logical DFD

PDFD

1. Data flow names include the implementation facts as names numbers media, timing, etc
2. Process name of the processor Ex:- Person department, computer system etc
3. Data stores identify their computer and manual implementation
4. This is more realize & implement oriented the PDFD are more detailed in nature.

LDFD

1. Data flow names describe the data they contain they do not refer to the from or document on which they reside.
2. Process names describe the work done without referring Ex:- Account payable, order processing etc
3. Physical location of data stores is in relevant many time, the same data store may be shared by many sub system & processes.
4. As name this is more logical in format this is more abstract then PDFD & less dependent on implementation steps.

Who is System Analyst?

System Analyst is a person who conducts the system development life cycle that means he is the responsible person in the SDLC All the step of SDLC are indicated by system analysis that means he is a person who identify the actual problem stage it find a solution of it and determine process to get the desire objective in other word we can say a system analysis is a person who changes the users need in to operational system considering all constraints.

"A System analyst is a person who conducts a study identifies activities and objectives and determines a procedure to achieve the goals"

Skills of system analysis

Ans: - The skill of system analysis is divided in two categories

- (1) Interpersonal skill
- (2) Technical skill

Interpersonal skill speaks on the behavior of the analysis

Technical skill speaks on the knowledge and technical analysis

1. Inter Personal skill:-

A. Communication:-

The system analysis should be locative in nature that menace he should communicate with people efficiently communication does not include only conversation it also involves his feeling are relating to one another

B. Understanding:-

The system analysis should identify problem and give there solution that menace he may able to understanding the actual need of user

C. Communication Taconic:-

He should able to educate people that menace he able to convince others and explain his views in front of other.

D. Selling:-

He should have selling ideas that can be helpful to create new system

2. Technically skill:-

A. Creativity:-

The system analysis should be very creative that menace he must capable to model the ideas of user into a develop system.

B. Problem solving:-

He should reduce problem at their elementary level can suggest internal solution and identify benefits and fail ear or system.

C. Project management:-

He should sedul and manage the whole process in such a way that the system can be develop under time cost and other constrain

Questionnaires and inquiring mind

E. Knowledge of basic of the computer and business function

Role of system analyst

Ans:-

1. Change Agent:-

2. Investigator:-

The analyst may be viewed as an agent of change the way to secure user acceptance is through user participation during design and implementation.

3. Sales – Person:-

Analyst works is similar to that of an investigator such as the analyst combined together the information gathered to determine why the present system is not working well and what changes are required to solve the problem.

4. Motivator:-

The oral presentation of the system proposal has one objective that is selling it to the user on the system selling on the system actually takes the place of each step in the system development life cycle.

5. Architect:-

The success of system is achieved through the user participation user training and proper motivation that means user should be motivated to the use of the system the analyst role as a motivator is useful SDLC he also work as a motivator for the programmer's team.

6. Monitor:-

As an architect the analyst creates a detailed physical design of a candidate system he/she aids users in formalizing abstract ideas and provides details to build the end product

7. Psychologist:-

Analyst act as a monitor to undertake the successful completion of the project the analyst must monitor the program in relation to time cost and quality

8. Politician:-

In the system development system are built around people this Ares the need that system analyst work as a psychologist that means he should be to understand expression and thought and draw conclusions perform the interaction

Fact Finding Techniques:-

Analyst - The specific methods, which are used by analyst for collecting data about requirement are called

Fact finding technique

There are four types of fact finding techniques

1. Interviews
2. Questionnaires
3. Record inspection
4. Observation