Definition of Data & Information :-

OR

Difference b/w Data & Information :-

Data :- Data is raw facts and figures, which is unorganized, that needs to be Processed.

Data can be Something Simply and seemingly random and useless until it is organized.

example :- data may be numbers or letters or special symbol or combination of al

a, 123, *$, 91*

Information :- When data is Processed, organized, structured or Presented in a given context so as to make it useful, it is called information.

Example :- abhishek, 10km, 12 * 2 = 24

Combined example of Data & Information :-

The number of visitors to a website by country is an example of data. Finding out that traffic from the U.S. is increasing while that from Australia is decreasing is meaningful information.

Ref:- R3

(2.) Definition of Software :- Software is a collection of well defined Programs & instruction's which is used to provide desired features, functions & Performance.

Example:- operating system, MS office.

There are two types of S/W available.

1) System S/W :- A S/W which is used as an interface b/w user & Compiter H/W. is called system S/W.

ex:- Operating System (Linux, MS windows)

2) Application S/W :- Application S/W runs on System S/W.

Application S/W is a set of one or

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Definition of Accounting Information system:-

"An accounting information system (AIS) is a system of collecting, storing & Processing financial & accounting data i.e. used by decision makers (company persons). An AIS is generally a computer Based Method for tracking Accounting activity with the help of information technology resources."

Ref :- R4

more Programs designed to carry out operations for an specific application or task

ex:- VLC Player, M.S. office. etc.

Ref:- R1 = Page 36, P4

(4) Definition of Hardware :- Computer Hardware is the collection of Physical elements or Parts or components of a computer, such as Monitor, Mouse, keyBoard, Hard Disk (HDD) etc.

example:- Monitor, mouse, keyboard etc.

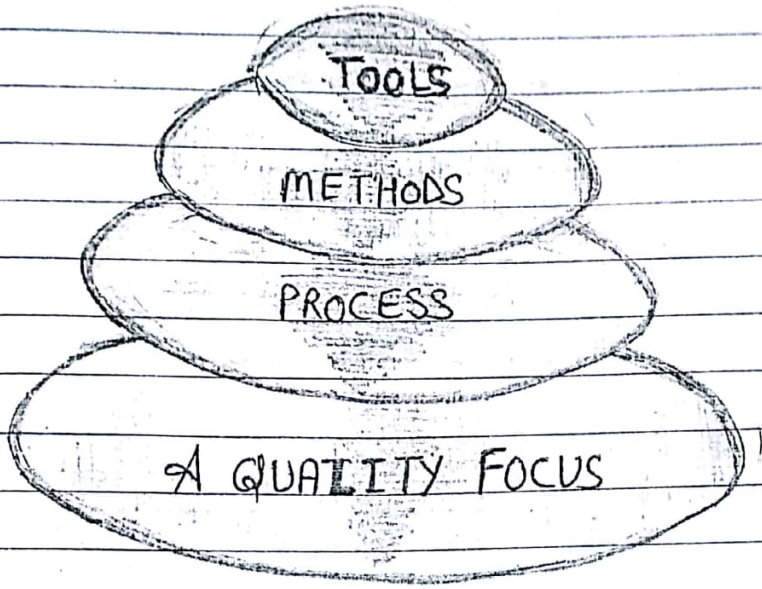
Ref:- R4

(5) Definition of Software Engineering :- "Software engineering is the Studies and application of engineering to the design, development & maintenance of Software."

Ref:- R4

(6) Layers of Software Engg. :-

Software engineering is a layered technology.



Layered technology includes,

1) A quality Focus.
2) Process Layer. — work plan (what)
3) Methods. — which method (how)
4) Tools.

1) A quality Focus :- Quality is a degree to which a component, system or process meets specified requirements and user/customer needs & expectations.

S/w quality is the totality of functionality & features of a S/w that bears on its ability to satisfy stated or implied needs.

2) Process Layer :-

- Process layer is a foundation of S/w engg.
- It is a layer that holds the technology layer together.
- It enables rational and timely development of component S/w.

3) Methods :-

- S/w engg. methods provide technical "How to" for building S/w.
- It encompasses a broad array of tasks i.e.
  - Requirement Analysis.
  - Design.
  - Program construction (coding)
  - Testing
  - Maintenance
  - It includes Modeling techniques & descriptive techniques.

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4) Tools :- S/w engg. tools Provide supports for Process & Methods. When tool are integrated so that information created by one tool can be used by another, a system for the support of S/w development called Computer-aided S/w engg. is established.

Ref :- R1 → Page 54

Definition 05.

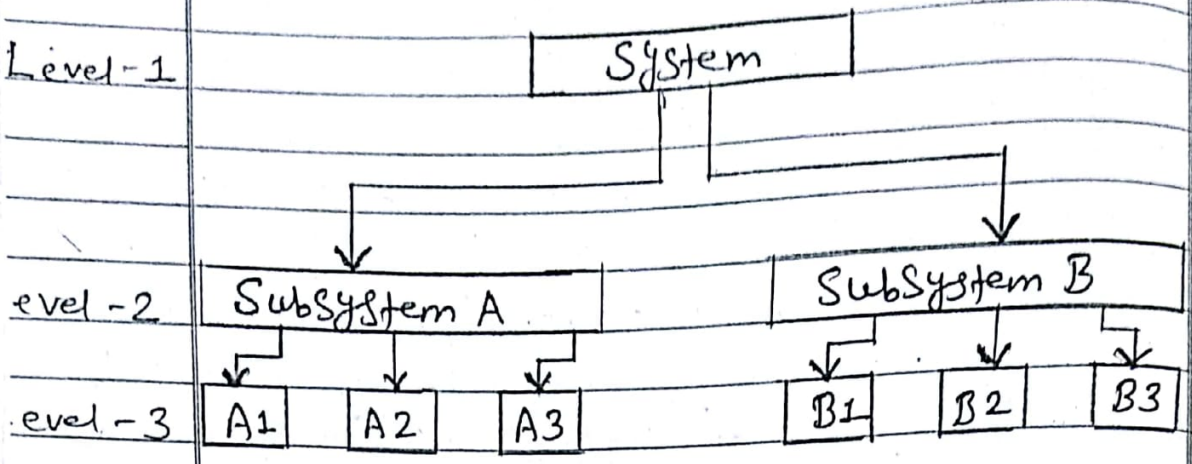
(7) System Fundamentals :-

System is an organized relationship among components.

OR

A system is an orderly grouping of interdependent components linked together acc. to a plan to achieve a predefined specific objective by processing information.

ex:- Car, hospital, hotel, human body, banking system, educational system, transportation system, library management, computer system



System - Subsystem Structure

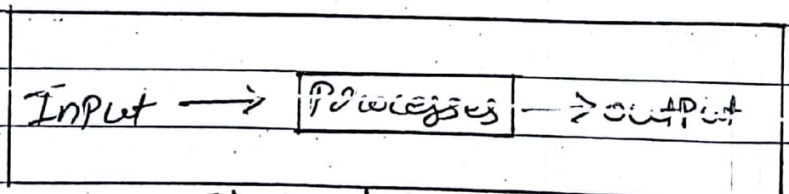
A Component can be a physical Part of system or may be any Subsystem. So System is composed of Subsystems, which are interconnected by interfaces.

The formula to calculate the number of interfaces is given as:

$$\frac{1}{2} n(n-1)$$

Where n is the no. of subsystems.

All types of systems follows IOP model:-



I/O Model

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A man-made systems has a set of interacting components which take I/P from the user, processed it & Produces output.

Ref :- R1 → P155, R4

(8) System Elements :-

There are basically Six types of system elements, where all are equally important to the system,

1) Software
2) Hardware
3) People
4) Database
5) Documentation
6) Procedures.

1) Software :- Computer Programs, data structures, & related works Products that serve to effect the logical method, Procedure or control that is required.

2) Hardware :- Electronic devices that Provide computing capability, the interconnection

devices (eg; network switches, telecomm
-unication devices) that enables a
flow of data, and electromechan
-ical devices (ex; sensors, motors,
pumps) that provide external world
functions.

3) People :- Users & operators of H/w
& S/w.

4) Database :- A large organized
collection of information
i.e. accessed via S/w.

5) Documentation :- Descriptive information
(ex; models, specifications, hard copy
manuals, on-line help files, websites)
that portrays the use or
operation of the system.

6) Procedures :- The steps that define
the specific use of each
system element or the procedural
context in which the system resides

Ref :- R1 → P 155 & 156

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System Characteristics :-

There are basic seven system characteristics to be defined as given below;

1) Goal/central Objective
2) organization
3) Interdependence
4) Integration
5) Interaction
6) Equifinality
7) Entropy.

1) Goal / central objective :-

A system must have a unique, static & central objective. This objective may be real or stated. The real objective is defined as an objective we are going to objective or have achieved. But the stated objective may or may not be the real objective, because if we achieve whatever we have stated then the stated objective becomes the real one

2) **Organization :-** An organization concerns with the hierarchial structure and arrangement of the components of the

System to achieve the mentioned goal.

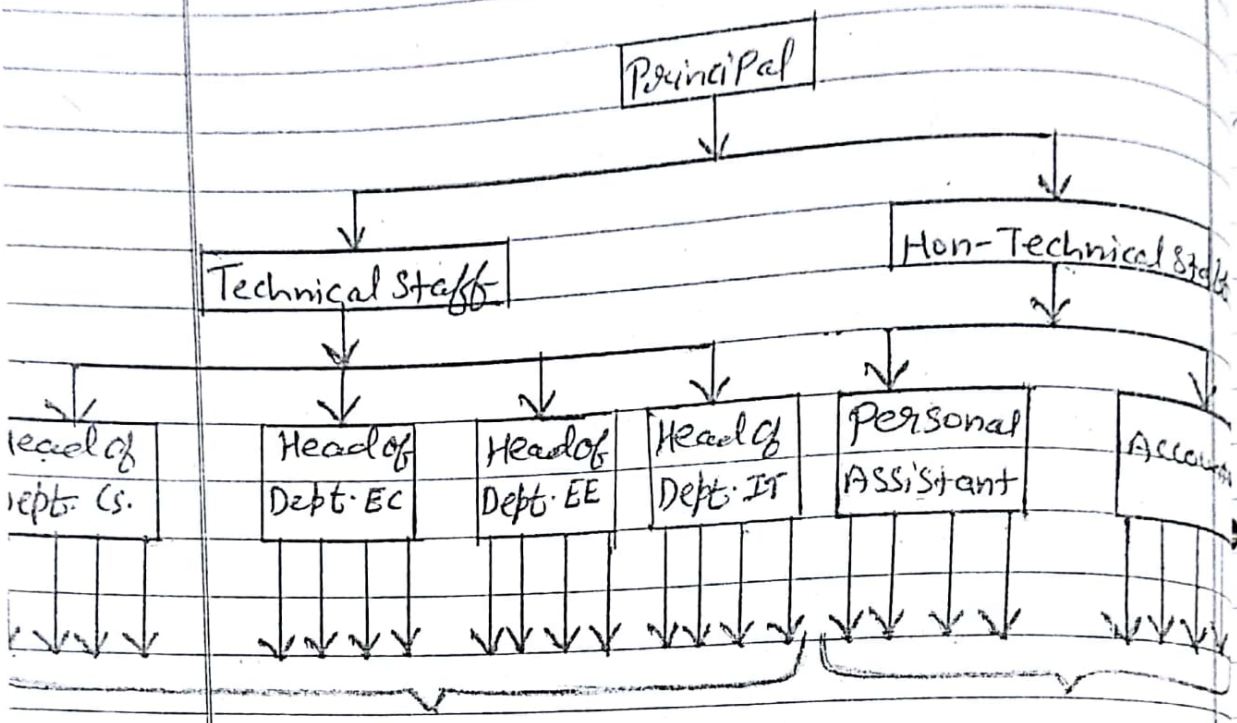

fig:- Staff Member Structure

In the above fig; at the top level, there is a head of the college, who has his command on the technical & non-technical staff members, at lower level. Here the order does matter & must be followed sequentially. Any component in independent manner can't work. So all the components must be linked together to form a whole system.

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3) **Interdependence :-** All the components of a System depend upon each other. The o/p of one component act as the I/P of the next component. The whole System will work properly when all the component will work (link) together acc. to a plan. The unrelated & independent components don't constitute a System, rather they are considered as the isolated components, not being the part of the whole system. So no subsystem can function in isolation because it depend upon the data (input) it receives from its Previous subsystems to perform its required task.

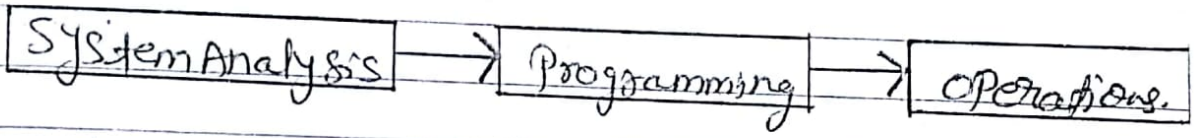

fig :- Task Interdependence

4) **Integration :-** Integration is required to assemble all the components or subsystems of the system. So, when all the Parts of the System are linked together according to a plan, the system Performs a specific job.

5) Interaction:- Interaction can be done only through the interrelationships of the components of the system. So, interaction refers to the manner in which each component functions with other components of the system.

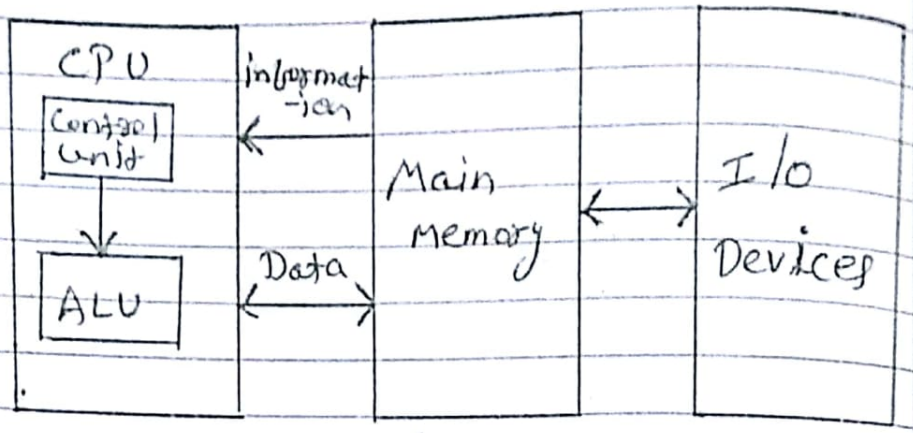

fig:- Computer System Architecture.

All the components of Computer system are interrelated with each other either directly or indirectly.

6) Equifinality:- In this feature, a system can accomplish its objectives with varying I/P's & varying Processes. There is no one best way of achieving the objectives. A system equifinality is the principle that in open systems a given & end state can be reached by many potential means.

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Should exhibit the equifinality i.e. can reach the same final result from different initial conditions & by various routes.

7) Entropy :- Entropy means disorder. A moves towards disorganization.
for ex:- a firm which is not sensitive to customer demand will eventually decline degree of disorder or randomness in the system

Ref. :- R4

(10) Major Problems and Their Solutions in System Development.

In the system development, the S/w is one of the component of the system & can be further classified into its subcomponents like S/w development Pages. As S/w is a major part of the system so the success or unsuccess of the system are also related to the success or unsuccess of the S/w.

The major Plan factors of S/w like risk schedule, quality, configuration mgmt.

may lead to many problems to the S/w which further become the problems of the system.

Problem 1 :- Schedule of the System development.

This Problem is related to the total development time (schedule) of a large System. The task which is given to be completed within time, must be finished within the time. But two Problems may occur regarding this time Constraint.

a) If the development team takes much time to develop the system, then it is quite possible that the technology (comp. S/w, H/w & c.s.) may change, & the better technologies may come into the market with good features & attributes, within the time duration of when the system concept is initialized & the time it is ready for release to the customer. The period of time is so much, & during this period so many changes may take place.

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(11) System Level Project Planning :-

The System are basically the information system; which exchange the information with each other. Planning of an information system in business has become increasingly important during the past decades.

1) Information is now recognized as a vital resource & must be managed as cash, Physical facilities & Personnel.

2) More & more financial resources are committed to information system. Top mgmt. is paying more attention to their development.

3) There is a growing need for formal planning with information System that are complex, require much time to take (like) months or years to build, use common data bases, or have a greater competitive edge.

Ref:- R4

Planning Scenario's :-

2) 1) Dimensions of Planning :- The following conditions dictates todays business strategies on which Parameters, the Planning is to be done.

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a) High interest rates make it more important that business realizes a good return on investment.

b) Inflation puts pressure on profit when it occurs. By demand & supply, Foreign exchange, labour shift Inflation - Hike & slowdown of Prices of commodities & services

c) Resources shortages put obstacles for expansions.

d) Regulatory constraints slow entry into the market govt policies, rules & regulations.

e) Increased productivity guided the way of expansions.

Ref:- P4

2) Work-Shop Planning Approach:- (WPA)

The WPA is to call together representatives of various organizations that will participate in the project development process & then jointly prepare the process or program plan. One or more specialist may be involved from each of following areas, application operations, systems engg., human factors, reliability, testing, finance, & configuration control.

Ref:- P4

Attached to Tasin

3) System Development Plan :-

A good system level development plan is always required before beginning the Project development. A good system or s/w Plan must be made flexible enough so that it can easily & successfully accommodate the changes.

Contents of System-Level Development Plan.

i) Document scope or Documentation.

ii) system Description (system description, Interfaces, deleverables ---)

iii) Contract Description

iv) schedules Estimates & Resource Estimates

v) organizational Details.

vi) Technical Reviews (Audits, Walk-Through)

vii) Risk management.

viii) Standards, Procedures, & Processes to be used on this Project.

ix) Staffing (Team or People)

Ref:- R4

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5) Software Development Plan :-

After discussing the overall System development plan. The S/w development Plan is,

Contents of Software Development plan.

i) Introduction
ii) Resource & schedule estimates
iii) Organization & Staffing
iv) Work breakdown structure, work packages & cost A/c.
v) Technical Management & control
vi) Standards & Procedures
vii) Reviews, Audits & Walk-through
viii) Testing.
ix) Human factors.

x) Module Description & cost Accounts.

xi) Development Environment (H/w & S/w).

xii) Verification & Validation.

xiv) Maintenance

xv) Delivery, installation & Acceptance.

xvi) Appendices & References.

Ref :- R4

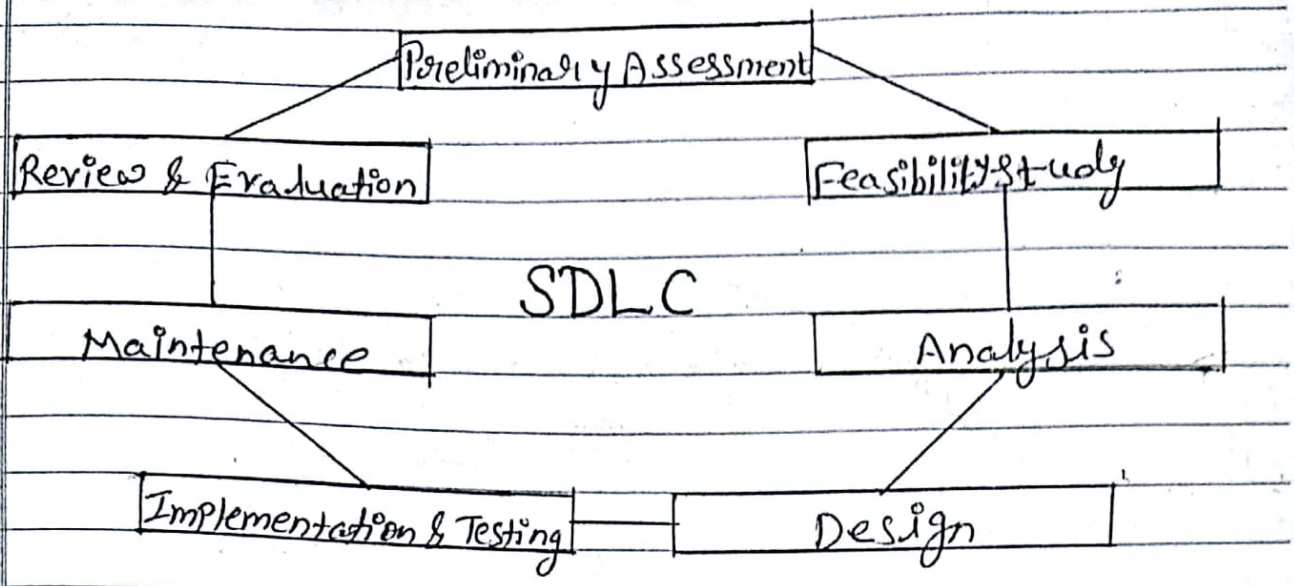
(16) System Development life cycle :- (SDLC)

A system development life cycle is a frame work consisting of a series of various task to achieve the specific centralized objective in the development of a system. SDLC is an application of the system approach to the task of developing & using computer based system.

A system development life cycle is the evolutionary process that is followed in implenting a computer based system or subsystems.

Ref :- R4

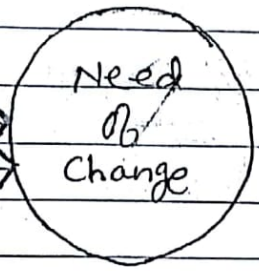
Name of Lecturer: Abhishek Jain



1) **Preliminary Assessment :-** In this phase how the info. system can be improve is recognized & also proposes alternative solutions for improvement.

Internal Sources
Organization
Top Management
User/Customer
System Analyst

External Source
Govt. Policies
Rules & Regulations
Consumers
unions
Market Place



SDLC
Preliminary Ass.
Feasibility Study
Analysis
Design
Implementation & Testing
Maintenance
Review & Evaluation

In this step, you need to find out the organizations objectives & the nature & scope of the problem under study.

All the internal & external sources in combined form can lead to need to change any existing system.

External Sources :-

1) Govt. policies, rules & regulations sometimes lead to change some important Procedures, some format etc.

2) Consumers can give their feedback about the existing systems & want to change such by a new system.

3) Unions like the union of truck drivers wants some type of modification.

4) The market competition arises suddenly & now it is essentially required to modify or replace the existing system to include new H/w, S/w, technology.

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Internal Sources :-

1) organization itself want to add some advanced technology to modify the existing applications or to make an improvement in it Like an organization aquires another organization.

2) Top management can also require the changes like related to the cost.

3) User factors also sometimes require the changes like for any risk & Potential return.

4) Even the investigators himself (System analysis) may require it.

2) Feasibility Study :- Feasibility study is the study of possibilty. It means in this we can check whether it is possible to create the user's s/w or not. The task of this phase should clearly define.

1) The user's demonstrable needs
2) availability of resources.
3) Estimate the resource required.
4) Impact of this system on the organization.
5) Define & document in outline a Proposed System.

Analysis :- Analysis is a detailed study of the various operations performed by a system & their relationships within & outside of the system.

The main objective of this phase is to come up with the precise structured functional specification of the user requirements.

There are more subobjectives;

1) Define the scope of the new system.
2) Understand the old information.
3) Analysis the current system to find the deficiencies in it.
4) Develop the structured functional specification for the new system.
5) Review the feasibility & cost benifit analysis.

Design :- System design is the determination of the processes & data that are required by a new system.

The design describes a final system & the process by

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which it is developed. It refers to the technical specification that will be applied implementing the system.

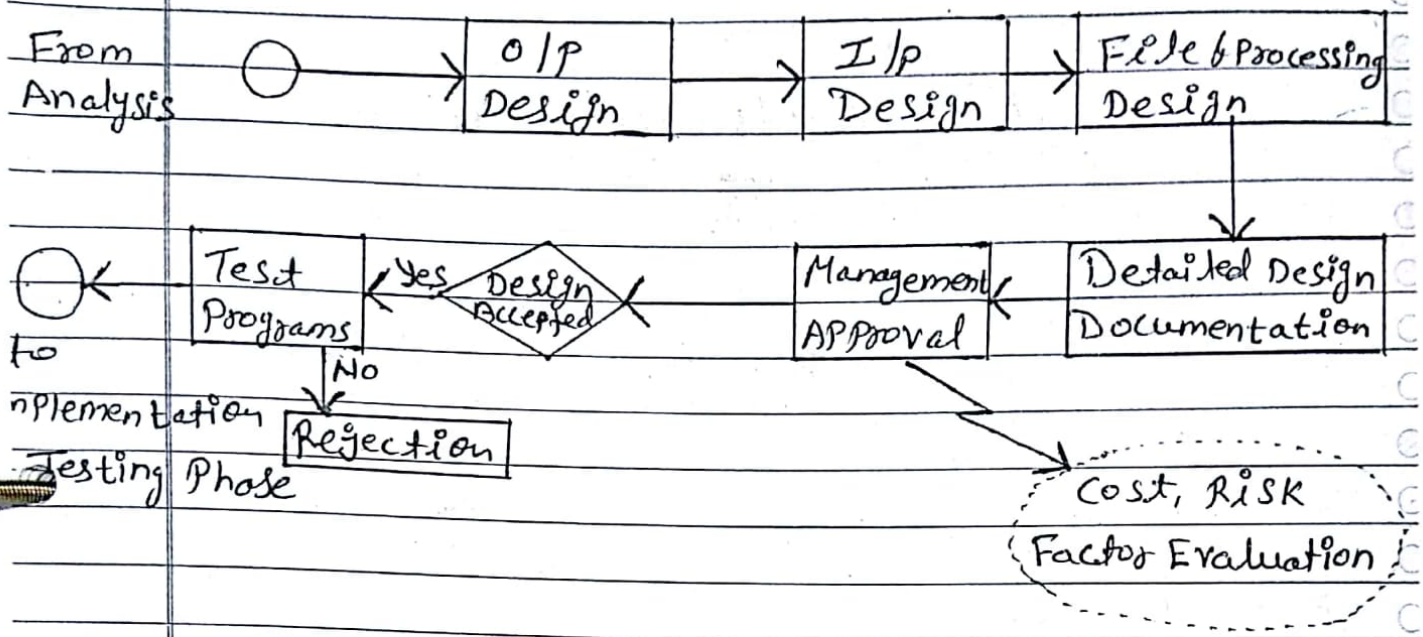

fig :- Steps to System Design.

All the steps to system design are described one by one :

1) O/P design.
→ Procedure to Produce the o/p.
→ Format/Presentation of the o/p.
→ Examples/samples presentation.

2) Input Design

→ Input data are designed
→ Format of I/P data
→ Samples of presentation.

3) File & Processing (operational) Design

→ Processing design, handled through program construction & testing.
→ Files of database design to fulfill the requirements of the system.

4) Detailed design documentation.

5) Management approval.

6) Design acceptance or not.

7) If design is accepted then Programs is tested otherwise it will be rejected.

8) The test programs design go for the next phase.

Implementation & Testing :-

Implementation is the acquistion & integration of the physical & conceptual resources that produce a working system. It is concerned with those tasks leading to a fully operational systems.

The system testing checks the readiness, completeness, & accuracy of the system to access, modify & update. With the help of testing an error free sys or s/w is delivered to the user.

Maintenance :- The system analyst may be involved in amendment of procedures to adapt the system to changing conditions in auditing the system to check that the stated objectives of the system are still valid in the present environment & in evaluating the achievement of those objectives. H/w also requires periodic maintenance to keep in time with design specification.

Review & Evaluation :- A review is conducted whether the system objectives are being met with the user requirements & what are the problems in the smooth running. steps are taken to resolve the

This is an audit by the designer for improvements through test data & audit trials.

Ref :- R4

(19) Computer Based Systems :- (CBS)

Computer based system is a collection of different types of components like H/w, S/w, & databases, etc. Eg a time pass our CBS covered almost all areas of working of any organization. Small & big, all the works are directly done by the various applications of CBS.

Definition :- "A set or arrangement of elements that are organized to accomplish some method, Procedure or control by processing information"

The 5 components that must come together in order to Produce a CBS;

1) Software.
2) Hardware.
3) Human or People
4) Data.
5) Procedures.

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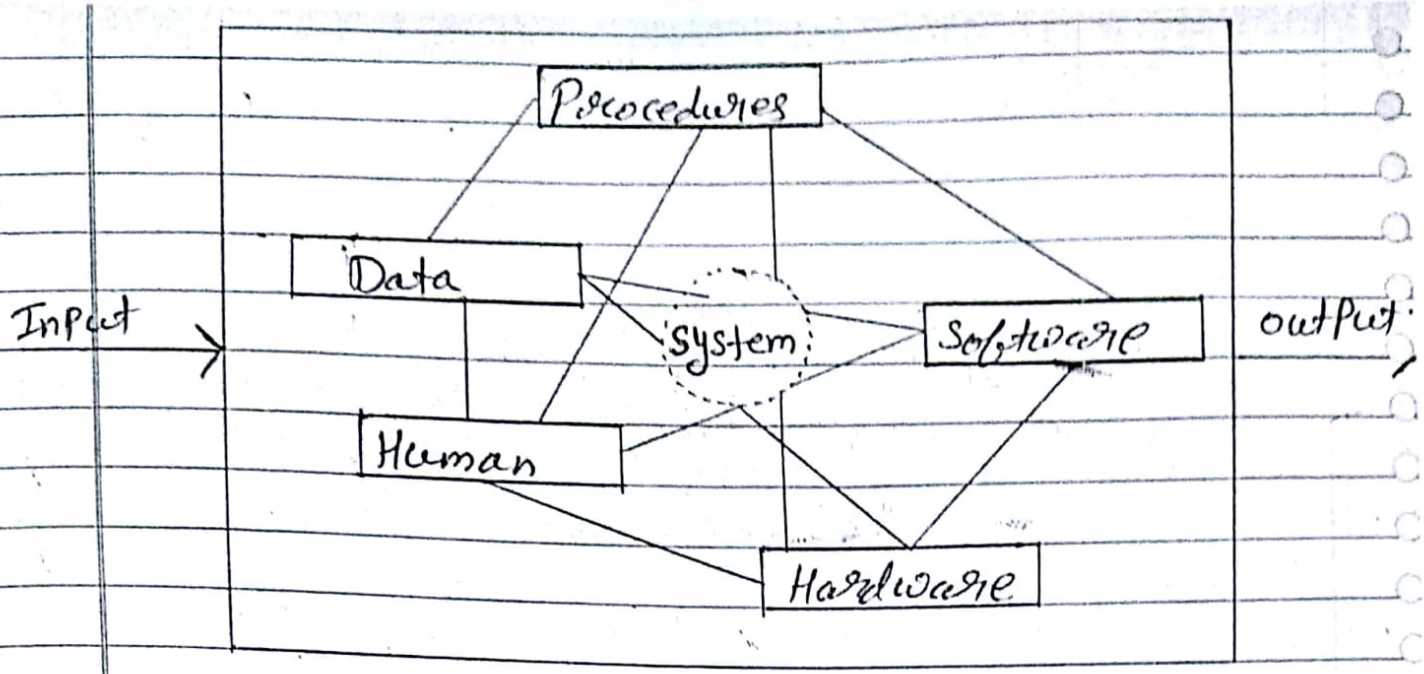

fig :- System Components

1) Hardware :- The term H/w refers to machinery. H/w elements may be any electronic device like CPU, Memory (HDD & RAM), keyboard, mouse etc.

2) Software :- The s/w refers to Computer program. Computer programs are the machine readable instructions which is used to accomplish a required task.

3) Data :- Data are facts that are used by programs to produce useful information

Data are generally stored in machine readable form on disk or tape until the computer needs them.

4) Procedures :- A methodology or a sequence of steps, to be followed, which describes the specific use of each system element or the system itself.

5) Human or people :- Human refers to be the users or operators of the system.

Ref.:- R8