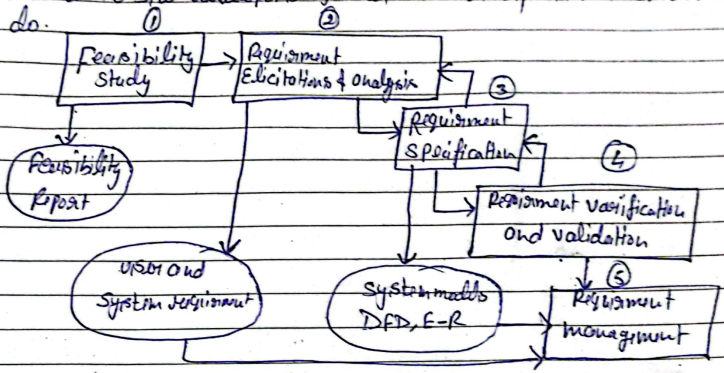
Unit-2

Requirement Engineering :- It is the process of collecting, validating, and managing the requirements for the development of S/w, specified by the customers or end users. This task is performed at the initial stage of the S/w development which provides the basic idea to S/w developers of what the client/customer or end users wants the S/w to do.



① **Feasibility Study :-** The main aim of feasibility study is to create reasons for the development of the S/w that are acceptable by the users. Several types of feasibility can be checked

① Technical Feasibility
② Operational "
③ Economic "

The o/p of this feasibility report in which it has been mentioned that the product development can be started or not.

(2) Requirement Elicitation and Analysis :- It is the process of researching and discovering the requirements of the s/w from users, customers and other stakeholders. This is sometimes also referred as requirement gathering.
Various techniques of requirement elicitation & analysis are as:-

(i) Stakeholder analysis:- Stakeholder can include team members, customers or any individual who is impacted by the project. Stakeholder analysis is done to identify the stakeholders who will to get benifitted by the product/s/w project

(ii) Brainstorming:- This technique is used to generate new ideas and find a solution for any specific issue. Various members like domain experts, subject experts are included in this process.
After gathering all the ideas, we can select one of them.

(iii) Interview:- This is the most common technique that can be used for requirement elicitation in which developer can directly ask questions to the stakeholders to know the exact requirement.

(iv) Document Analysis Review :- This technique is used to gather information by reviewing the available materials about the particular project/product. This can help for identifying alternative solutions to specific problems by identifying gaps.

(v) Observation :- The objective of this is to identify/understand the activities, task, tools used and events performed by others. In this the developer can look for the time taken, methodologies used by others to complete the specified products.

(3) Requirment Specification :- It is a document that describes what the S/w will do after creation i.e. It consist the overall description of the S/w system to be developed. Several modules like DFD, E-R diagram are used during the process of S/w requirement specification.

(4) Verification & validation of S/w requirments :- After completing the requirment Specification phase next come the verification and validation of S/w requirment. Requirmant Verification involves the reviews to ensure that the requirment that has been mentioned in the SPS is correct and up to the mark. In requirment validation, all the requirments of the users are validate. i.e. the requirments are checked whether they are legal or illegal (It can not be fulfilled). Requirments must satisfy following conditions :-

(a) Requirement can be implemented practically.
(b) " Should be correct and complete.
(c) There should be no confusion
(d) Requirement should be desirable

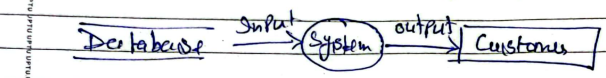
(5) Requirement management:- It is the process of managing requirements that are keep changing based on the users view.
There are situations where new requirement arises, requirements are updated & modified during the development process, so all these actions are ~~managed~~ managed in this phase.

Advantages of requirement engineering:-

(1) The requirement that are critical can be identified earlier.
(2) ~~Too~~ There is a quick response to the change in requirements.

Information Modeling:- It is the process of representing the concepts and relationships, constraints, rules, and operations to specify the data semantics i.e. meaning of data. following data models can be used for this purpose.

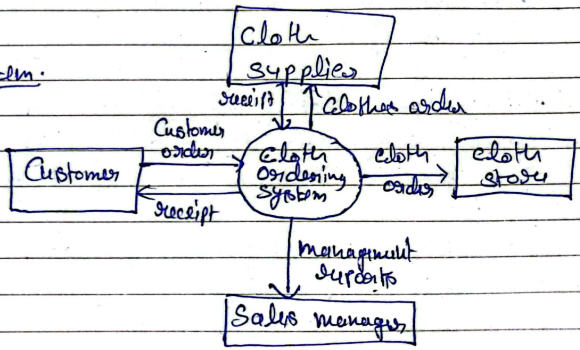
(1) Data Flow Diagram (DFD):- It is a way of representing flow of data through a process or system. Here flow of data means taking inputs, processing them and then generating outputs.
It is a visual representation of information flow within a system



Objectives of DFD:-

(1) DFDs helps us to understand the functioning and limits of a system
(2) It is used to show the scope and boundaries of a system as a whole
(3) It can be used as a communication tool by a system analyst and system managers.

Example:- Cloth ordering System.



Components of DFDs :- ① Entity ② Process ③ Data Store ④ Data flow

Symbols :-

Entities :- 

process :- 

Data Store :- 

Data flow :-

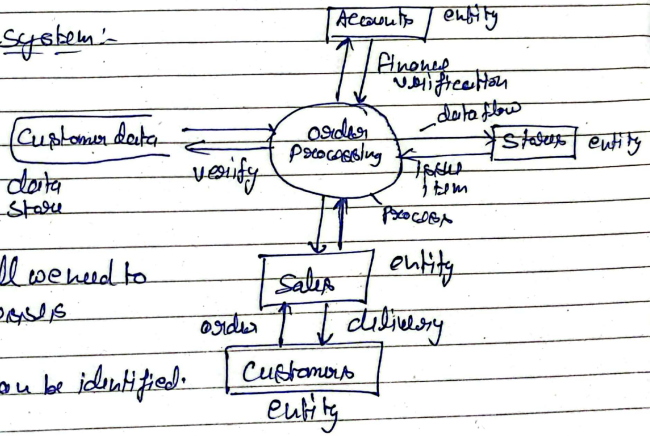
① External Entities :- Also known as actors, Sources, or sinks and terminators. External entities produce and consume data flows b/w source & destination. It can be described by some meaningful names for better understanding

② Process :- The task performed on data is known as process. In simple terms, An activity that changes a transfer data flows is known as process. All process must have input and outputs.

③ Data Store :- It includes the database of the system, which holds data that can be used for later stage/process.

(5) Data flow :- movement of data b/w entities, processes and data stores is represented with an arrow symbol and known as direction of flow or data flow.

Ex:- Order management system :-



Note:- To design any DFD first of all we need to identify entities then processes associated with it.
After this data flow can be identified.