Unit-2
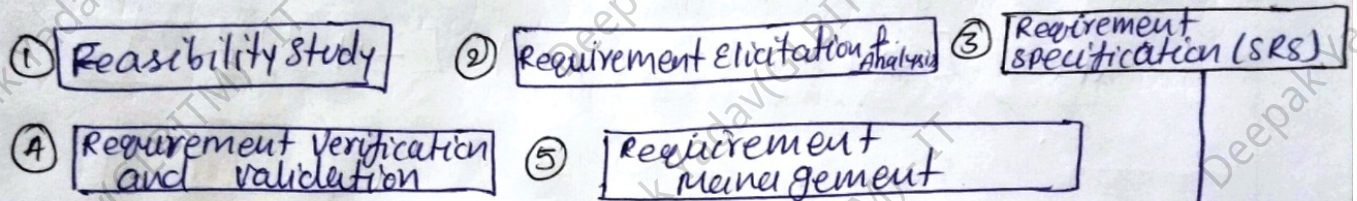
Requirement Engineering process.

→ Requirement engine is the process of collecting, validating and managing the requirements for development of s/w specified by the customers or end users.

⇒ This task is performed at the initial stages of the s/w development which provides the initial idea to s/w developers of what the client/customer or end users wants the s/w todo.

steps of Requirement Engineering Process.

① Feasibility study   ② Requirement Elicitation & Analysis   ③ Requirement specification (SRS)

④ Requirement verification and validation   ⑤ Requirement Management

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 Economi feasibility.

→ ①DFD   ER diagram

② Requirement elicitation and Analysis
It is the process of researching and discovering the requirements of the s/w from users, customer, and other stakeholders. This is sometimes also refered as requirement gathering.

⇒ The various techingues of requirement elicitation & analysis are as :-
  ① stakeholder   ② Brain storming
  ③ Interview   ④ Document Analysis Review
  ⑤ Observations.

③ Requirement specification (SRS)
Requirement specification is a document that describes that the s/w will do after creation i.e It consists of the overall description of the s/w system to be developed.
  like :- DFD, ER dia, data dictionorie.

④ Verification & validation of s/w requirement.

⇒ Requirement verification involves the reviews to ensure that the requirement that has been mentioned in the SRS is correct and up to the mark

⇒ In Requirement validation all the requirents of the users are validated.
  ⓐ Requirement can be implemented partically.
  ⓑ Requirement should be correct and complete.
  ⓒ There should be no canfusion.
 ⓓ Requirement should be discriable.

⑤ Requirement Management
⇒ It is the process of managing requirement that are keep changing based on the users view.

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Data Flow Diagram

→ 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.

→ In general terms, DFDs can be defined as visual representation of information flow within a system.

Database ──input→ (System) ──output→ Customer
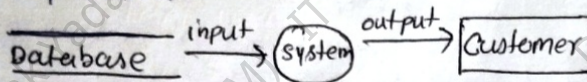
Objectives of DFDs

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 b/w system analyst and system manager.
4. There is no condition in DFD as well as no decision making and no order of events.

Components of DFD:

① External Entities ▭
② Process: ○
③ Data Store: ⊏
④ Data flow: ──→

Levels of DFD
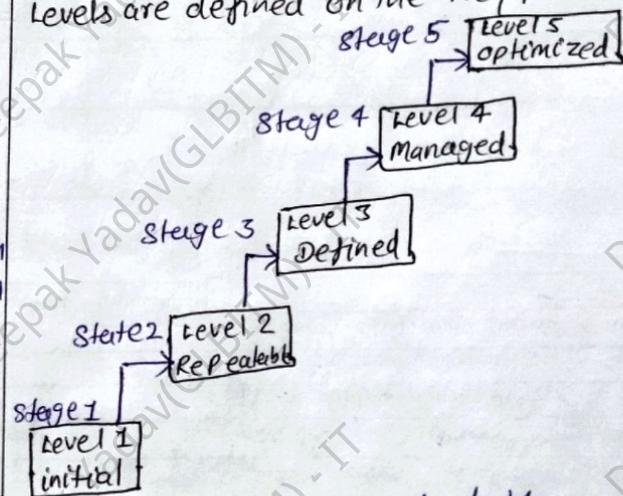
① 0-Level DFD:- In this complete system is represented as single process.
→ It is also known as content diagram.
→ provides an overall picture.
② 1-Level DFD: Level 1 provides a more detailed view of the level 0 DFD.
→ represent main function and how they impact.
③ 2-level DFD: It consists of more detailed description of the system as compared to level 1.
→ represent the processes within each function.

④ 3-Level DFD:-

SEI-CMM
→ Software engineering Institute
→ Capability maturity model.

• SEI-CMM is not a software process model. It is a framework that is used to analysis the approach & technologies followed by any organization to develop software product.

• SEI-CMM can be defined as a standard framework based on which software development organization classified into different capability levels.

Levels are defined on the key process area:-

Stage 5 Level 5 optimized
Stage 4 Level 4 Managed
Stage 3 Level 3 Defined
State 2 Level 2 Repeatable
Stage 1 Level 1 initial

Level 1:- Processes unpredictable
• lesser quality employees & Quality of product is also not good.
• management is not defined clearly.

Level 2:- uses repeatable process flow
• Organization are more decision on cost estimation well known project Management.
• well known.

Level 3: structures management process
• uses definite flow for development process.
• Creating documents in each phase.
• Every one in organization is aware of their roles and responsibilities.

Level 4:
• Qualified Management and focuses on quality deliverable products.
• uses various measures of self assesment both for product.

Level 5: • High quality products following well defined management process&pattern.
• Frequently evaluates process.

ISO-9000

→ International software organization is a group or consortium of 63 countries established to plan and fosters standardisation.

→ ISO declare its 9000 series of standards in 1987. It serves as a reference for the contract b/w independent parties.

→ It is an independent, non-governmental international organization for developing standards.

Types of ISO-9000 quality standards

(i) ISO-9000:- It is a series of standards develop by ISO.
These standards has been develop for assuring quality for manufacturing and service industries.

(ii) ISO-9001:- Current version is released in sept 2015
- These standards is provided to the organization which are involve in creating new products.
- It focuses for quality assurance in design, development 4 production. Ex: S/w Development Organisation.

(iii) ISO-9002: These standards is applicable to those companies which do not design product but involve in manufacturing.
  Ex: steel and car company.

(iv) ISO-9003 - Applicable to the organization that are only involve in the installation and testing of the product.

(v) ISO-9004: These standards gives the guidelines for enhancing an organization ability to acheive sustained success.
- It provides a self assessment tools

ISO-9000 Certification
An organization determines to obtain ISO certification applies ISO registrar office for registration.

The certification process consist of the following stages:-
① Application ② Pre-assessment
③ Document Review and Adequency of Audit
④ Compliance Audits
⑤ Registration
⑤ Continued inspection.

Software Quality Assurance (SQA)
⇒ Simply a way to assure quality in the software.
⇒ Set of activities such as processes, procedure.
⇒ focus on improving the process of development and removes the problems.
⇒ Generally the quality of the software is verified by the third-party organization.

Elements of software Quality Assurance
① Standards ② Reviews ③ Testing
④ Error analysis ⑤ change management
⑥ Education ⑦ security management
⑧ safety ⑨ Risk Management.

Advantages
- Increases clients confidence
- SQA saves money.
- Boost customers satisfaction.
- Promotes Productivity and Efficiency.
- Prevents from unforseen Emergencies.
- Reduces end time client conflicts.

Disadvantages
- Somtimes difficults to empliment.
- Time Consuming.
- High cost.
- It cannot prevent waste of resources when product is faulty.

Verification and validation

verification: It is the process to ensure whether the product that is develop is right or not.
- It verify whether the develop product fullfil the requirements that we have.
- verification is static.
- verification means we are building product right?

validation: It is the process of checking whether the software product is upto the mark. It is the process of checking the validation of the product that is it check what we are developing is the right product. It is the
- It is the validation of actual 4 expected product.