Unit : 3. Requirement Analysis & Specification

* Explain Requirement Engineering with its requirement.

=> Tasks and techniques that lead to an understanding of requirement is called Requirement Engineering.

Requirement Engineering provides the mechanism for understanding the project.

Requirement Engineering defines the customer requirement or maintaining requirement.

Requirement Engineering defines all the process in software and documantation of software.

There are two types of requirement in requirement engineering.

(i) Functional Requirements
(ii) Non-Functional Requirements

(i) Functional Requirements:

A Functional Requirements defines a system or its componen

This requirement specifies the behaviour of a system in project.

Functional Requirements is specified by User or customer.

This are the basic Functional Requirement.

- Business Rules
- Transaction corrections
- Authentication
- Authorization levels
- Audit Tracking.

(ii) Non-Functional Requirements:

A Non-Functional Requirements defines a quality attribute of a software system.

A Non-Functional Requirement specifies how a system should behave.

Non-Functional Requirements is specified by only technical peoples.

This are the basic Non-Functional Requirements:

- Availability
- Reliability
- Security
- Capacity
- Scalability

* Explain User Requirement and Domain Requirement for Software.

=> User Requirement:

User Requirement are the requirement which is describe by the customer at a time of communication phase.

Page No.
Date : / /

User Requirement Reflect specific user needs for Software.

User Requirements describe the end-users requirements for software.

User Requirements reflect the specific needs of software.

User Requirements is gathered using the communication with customers or end-users.

Basic user Requirement is software so should be easy and simple to operate.

Software should be effectively handling the all operation in the software.

Software should be provides easy customer support.

Software should be provides all the basic user requirement.

SMVS
Page No.
Date : / /

=> Domain Requirements:

Domain Requirement are the requirements which are characteristic of a Domain project.

Domain Requirement can be functional or non-functional requirement of project.

In Domain Requirement, we have to exhibit basic functions that a system of a specific Domain.

We have to cover all the basic operation that specific domain needs.

Ex. If we making any site for sales the product, than Domain of project will be e-commerce.

- If we making any website for education project, than Domain of project will be educational.

SMVS
Page No.
Date : / /

* Explain Software Requirements Engineering Tasks.

=> There are seven tasks in Requirement Engineering.

1) Inception
2) Elicitation
3) Elaboration
4) Negotiation
5) Specification
6) Validation
7) Requirement Management

1 Inception : In this task, we have to define the scope of project or software.

Inception is a first phase of the requirements analysis process.

In Inception, we have to understand basic details, aim and goal of the software or project.

2 Elicitation : In this task, we have to define the all the

requirement of project.

This is first phase of requirement gathering for a Project or Software.

In Elicitation phase, we have to understand the problem of software, problem of project scope and problem of volatility.

3 Elaboration: In this tasks, we have expand the project requirement which is collect in Inception and Elicitation phase.

In Elaboration, we have to create developing model and prototype model for software.

In this phase, we have to expand and refine requirement which is obtained from Inception and Elicitation phase.

4 Negotiation: Negotiation Task is perform between the Developer and customer.

In this phase, we have to decided

availability of resources, delivery time and overall estimation of project.

In this phase, customer defines the priority of the requirements in software.

5 Specification: In this phase, we have to collect all the functional and non-functional requirement of project.

In this phase, we have to create SRS document which contain detailed description of a software.

We have to submitte SRS document to the customer and give a glimpse of the working model.

6 Validation: In this phase, we have to check the error in software or project.

In this phase, we have to ensure quality of requirement which is present in SRS Document.

7 Requirements Management: In this phase, we have to identifying, controlling, tracking and establish all the requirements.

We have to check or track all the requirements which is present in software or project.

In this phase, we have to analyzed working model that will be ready to delivered to the customer.

* Explain Eliciting the requirements.

=> There are Four step for Eliciting the requirements.

1) Collaborative Requirements Gathering
2) Quality Function Deployment
3) Usage Scenarios
4) Elicitation work product

1 Collaborative Requirements Gathering:

In this phase, we have to One-on-One communication between

developer and customers.

We have to collect the all the requirement of a software.

Developer and customer do the Q&A sessions for collect the informations.

In this phase, we have to identify the problem and give the solution for the problem.

2 Quality Function Deployment:

In this phase, we have to identifies three types of requirements.

(i) Normal Requirements: These requirements are the objectives for started product or system during the meeting between customer and developer.

(ii) Expected Requirements: These requirements are develope by the developer but customer never told this types of requirements.

(iii) Exciting Requirements : These requirements of software which is beyond the customer's expectations but this requirement present in software.

3 Usage Scenarios :

For Understanding the software features and functions before the software develope, we have to use Usage Scenarios.

Using Usage Scenarios, we can easily show the features and functions to customer.

Usage Scenarios structure is called "Use Cases Diagram".

4 Elicitation work Products :

In this phase, we have to create work products which contains result of requirement elicitation.

We have to collect the list of users participate in the requirement ~~elico~~ elicitation.

We have to create list of stakeholders, description of technical environment.

We have to also create list of requirements and constraints.

We have to also create to Use case diagram to show how Users will interact with the System.

* Explain Requirement Analysis model with its element.

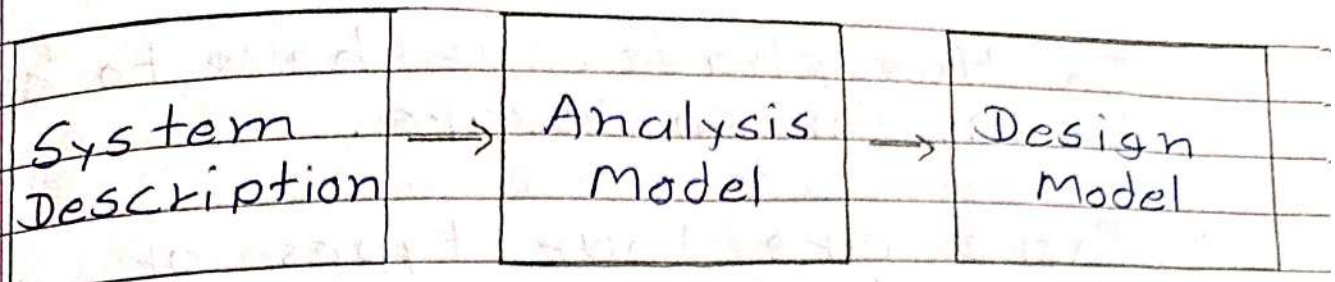
=> Requirement Analysis Model is use to describe what the customer wants to build.

This model provides the foundation of the software design.

Requirement Analysis Model consists three parts.

(i) System Description
(ii) Analysis Model
(iii) Design Model

Date : / /



(i) System Description :

This is First step to create this model which consists basic system or project description.

This phase contains basic system requirements.

(ii) Analysis Model :

After the collect the basic requirement we have to do analysis for a software.

In this phase, we have to do cost analysis, project duration or technology of the project.

(iii) Design Model :

After the create Analysis model, we have to create design for software.

In this phase, we have to create design for software.

→ There are Four types of elements in requirement analysis model.

(i) Scenario-based Models
(ii) Behavioral Models
(iii) Class Models
(iv) Flow Models

(i) Scenario-based Models:

For Understanding the software features and functions before the software creation, we have to create Scenario-based Models.

In Scenario-based Models, we have to create Use cases diagram or User Stories.

Using Use Cases Diagram, we can easily show the features and functions to customer.

Page No.
Date : / /

(iii) Behavioral Models :

For understanding the state in software before the creation of software, we have to create Behavioral Models.

In Behavioral Models, we have to create State diagrams or Sequence diagrams.

Using State Diagram, we can represent the state of the software system.

The Sequence Diagram represents the flow of messages in the software system.

(iii) Class Models :

For Understanding the domain class in software, before the creation of software, we have to create Class Models.

In Class Models, we have to create class diagrams.

Using class diagram, we can identify the domain classes which contains attributes and method in system.

(iv) Flow Models:

For Understanding the flow in software, before the creation of software, we have to create Flow Models.

In Flow Models, we have to create Data Flow Diagrams.

Using Flow Diagram, we can show how input data comes into the system and which are the Functions is applied into the data.

* Explain Software Requirements Specification with its Characteristics.

=> Software Requirement Specification is describes the software deatails.

It contains a complete information description of a software

It contains a deatailed Functional description with its ~~rep~~ System behaviour.

SRS is also helping the customer to understand how software is work.

- Characteristics of SRS Document:

1 Correct : SRS should be cover all the correct information of the system.

2 Unambiguous : In SRS, every stated requirement has only one interpretation.

3 Complete : In SRS, Every requirement should be clearly define.

4 Stability : Every requirements in software is stable for changes in future.

5 Modifiable : SRS Document should be created in such a way then user can change the requirement any time in future.

6 Traceable : In SRS Document, All the source of requirement should be clear represent.

7 Consistent : Every Requirement of software can not be conflict with each other.

8 Verifiable : Every Requirement of software can be verified with cost-effective Process.