## ❖ Software requirement specification (SRS)

The production of the requirements stage of the software development process is Software Requirements Specifications (SRS) (also called a requirements document).

This report lays a foundation for software engineering activities and is constructed when entire requirements are elicited and analyzed.

SRS is a formal report, which acts as a representation of software that enables the customers to review whether it is according to their requirements.

Also, it comprises user requirements for a system as well as detailed specifications of the system requirements.

The SRS is a specification for a specific software product, program, or set of applications that perform particular functions in a specific environment.

It serves several goals depending on who is writing it. First, the SRS could be written by the client of a system.

Second, the SRS could be written by a developer of the system.

The two methods create entirely various situations and establish different purposes for the document altogether.

The first case, SRS, is used to define the needs and expectations of the users.

The second case, SRS, is written for various purposes and serves as a contract document between customer and developer.

SRS document comprises the following sections:

- Introduction
- General Description
- Functional Requirements
- Interface Requirements
- Performance Requirements

- Design Constraints
- Non Functional Attributes
- Preliminary Schedule and Budget
- Appendices

Introduction

- Purpose of this Document – At first, the main aim of why this document is necessary and what's the purpose of the document is explained and described.
- Scope of this document – In this, the overall working and main objective of the document and what value it will provide to customers is described and explained. It also includes a description of development cost and time required.
- Overview – In this, description of product is explained. It's simply a summary or overall review of a product.

General Description

In this, general functions of product which includes

- objective of user,
- a user characteristic,
- features,
- benefits,
- its importance

Functional Requirements

In this, the possible outcome of a software system which includes effects due to operation of the program is fully explained.

All functional requirements which may include calculations, data processing, etc. are placed in a ranked order.

Functional requirements specify the expected behavior of the system-which outputs should be produced from the given inputs.

They describe the relationship between the input and output of the system.

For each functional requirement, detailed description of all the data inputs and their source, the units of measure, and the range of valid inputs must be specified.

Interface Requirements

In this, software interfaces which mean how software programs communicate with each other or users either in the form of any language, code, or message are fully described and explained.

Performance Requirements

In this, how a software system performs desired functions under specific condition is explained.

It also explains required time, required memory, maximum error rate, etc.

The performance requirements part of an SRS specifies the performance constraints on the software system.

All the requirements relating to the performance characteristics of the system must be clearly specified.

There are two types of performance requirements: static and dynamic.

Static requirements are those that do not impose constraint on the execution characteristics of the system.

Dynamic requirements specify constraints on the execution behaviour of the system.

Design Constraints

In this, constraints which simply means limitation or restriction are specified and explained for the design team.

Examples may include use of a particular algorithm, hardware and software limitations, etc.

There are a number of factors in the client's environment that may restrict the choices of a designer leading to design constraints such factors include standards that must be followed resource limits, operating environment, reliability and security requirements and policies that may have an impact on the design of the system.

An SRS should identify and specify all such constraints.

Non Functional Attributes

In this, non-functional attributes are explained that are required by the software system for better performance.

An example may include

- Security,
- Portability,
- Reliability,
- Reusability,
- Application compatibility,
- Data integrity,
- Scalability
- capacity, etc.

Preliminary Schedule and Budget

In this, initial version and budget of project plan are explained which include overall time duration required and overall cost required for development of project.

Appendices

In this, additional information like references from where information is gathered, definitions of some specific terms, acronyms, abbreviations, etc. are given and explained.