

SOFTWARE ENGINEERING LABORATORY | CSPC-325

COMPUTER SCIENCE AND ENGINEERING DEPARTMENT

DR. B.R. AMBEDKAR NATIONAL INSTITUTE OF TECHNOLOGY, JALANDHAR

**ACADEMIC YEAR: 2021-2022**

***Submitted by:***

Arshdeep Singh (19103022)

Arshit Mittal (19103023)

Balihar Singh (19103029)

Shubham Saini (19103111)

***Under the guidance of***

Asst. Prof. Kuldeep Kumar

CSE Department, NIT Jalandhar

**SRS Report**

A software requirements specification (SRS) is a description of a software system to be developed. It lays out functional and non- functional requirements of the software. It establishes the basis for an agreement between customers and contractors or suppliers on how the software product should function. Software requirements specification is a rigorous assessment of requirements before the more specific system design stages, and its goal is to reduce later redesign. It should also provide a realistic basis for estimating product costs, risks, and schedules. Used appropriately, software requirements specifications can help prevent software project failure.

**Theory**

***Requirements***

It is specification of what should be implemented and how final system behave. It specifies what to do, how to do. Requirement engineering refers to the process of understanding what a customer expects from the system to be developed, and to document them in a standard and easily readable and understandable format.

It is necessary and important that before we start planning, design and implementation of the software system for our client, we are clear about its requirements. If we don't have a clear vision of what is to be developed and what all features are expected, there would be serious problems, and customer dissatisfaction as well.

***Characteristics of Requirements***

Requirements gathered for any new system to be developed should exhibit the following three properties:

1. **Unambiguity**: There should not be any ambiguity what a system to be developed should do. For example, consider you are developing a web application for your client.
2. **Consistency:** Consistency refers that the data is correct. To illustrate this, consider the automation of a nuclear plant. Suppose one of the clients say that it the radiation level inside the plant exceeds R1, all reactors should be shut down. However, another person from the client side suggests that the threshold radiation level should be R2. Thus, there is an inconsistency between the two end users regarding what they consider as threshold level of radiation.
3. **Completeness:** A particular requirement for a system should specify what the system should do and also what it should not. For example, If a customer enters an amount greater than the maximum permissible withdrawal amount, the ATM should display an error message, and it should not dispense any cash.

***Categories of Requirements***

Based on the target audience or subject matter, requirements can be classified into different types, as stated below:

* **User requirements:** They are written in natural language so that both customers can verify their requirements have been correctly identified
* **System requirements:** They are written involving technical terms and/or specifications, and are meant for the development or testing teams

Requirements can be classified into two groups based on what they describe:

* **Functional requirements (FRs):** These describe the functionality of a system -- how a system should react to a particular set of inputs and what should be the corresponding output.
* **Non-Functional requirements (NFRs):** They are not directly related what functionalities are expected from the system. However, NFRs could typically define how the system should behave under certain situations. For example, a NFR could say that the system should work with 128MB RAM. Under such condition, a NFR could be more critical than a FR.

Non-functional requirements could be further classified into different types like:

* **Product requirements**: For example, a specification that the web application should use only plain HTML, and no frames
* **Performance requirements**: For example, the system should remain available 24x7
* **Organizational requirements**: The development process should comply to SEI CMM level 4.

**Case Study**

***Functional Requirements***

* **New user registration:** Any member of the institute who wishes to avail the facilities of the library has to register himself with the website. On successful registration, a user ID and password would be provided to the member. He has to use this credentials for any future transaction.
* **Search Product:** Any member can avail this facility to check whether any particular item is present in the website list. A product could be searched by its:
* Type
* Brand’s name
* **User login:** A registered user can login to the system by providing his ID and password as set by him while registering. After successful login, "Home" page for the user is shown from where he can access the different functionalities: search product, click on the items, place an order, search for latest deals. Any user not registered cannot place the order -- a failure message would be shown to him, and the login dialog would appear again. This same thing happens when any registered user types in his password wrong. However, if incorrect password has been provided for three time consecutively, the security question for the user (specified while registering) with an input box to answer it are also shown. If the user can answer the security question correctly, a new password would be sent to his email address. In case the user fails to answer the security question correctly, his/her account would be blocked. He needs to contact with the administrator to make it active again.
* **Arrange the list:** User can arrange list according to his/her choices, low to high price, latest collection, brand etc.
* **Place an order:** User can place order with options to select quantity, gift wrapping, color type etc. They will also be provided to apply various promo code, select payment option etc.
* **Cancel an order and return item:** User will also be provided facility to cancel and replace their order according product return policy.

**Non-Functional Requirements**

***Performance requirements:***

* The system should remain accessible 24x7.
* Around 1 million users should be able to access the system altogether at any given time.

***Security requirements:***

* The system should be accessible only to authenticated and authorized users.
* No user should be allowed to access the data of other user.
* The passwords at database should not be stored in plaintext.

***Design constraints:***

* Website should work and provide complete functionality on all the web browsers such as Firefox 5, Internet Explorer 8, Google Chrome 12, Opera 10.
* The Blog website will be made using Django Framework of python (HTML, CSS and Javascript is used within it. ML recommendation system should have good learning rate.

**Exercises**

**Problem Statement**

Consider the problem statement for an "Online Auction System" to be developed:

*New users can register to the system through an online process. By registering a user agrees to abide by different pre-defined terms and conditions as specified by the system. Any registered user can access the different features of the system authorized to him / her, after he authenticates himself through the login screen. An authenticated user can put items in the system for auction. Authenticated users can place bid for an item. Once the auction is over, the item will be sold to the user placing the maximum bid. Payments are to be made by third party payment services, which, of course, is guaranteed to be secure. The user selling the item will be responsible for its shipping. If the seller thinks he's getting a good price, he can, however, sell the item at any point of time to the maximum bidder available.*

**1** **Exercise 1**

**1.1** **Following are the ambiguities**

* None
* There's no specification when an auction gets over
* It doesn't say who are registered users
* No mention about what technology to be used for developing the application

**1.2** **Following are the inconsistencies**

* None
* An item is said to be sold to the max bidder after auction is over; it can also be sold before the auction is over
* A registered user seems could be both buyer and seller

**1.3** **The problem statement is incomplete because**

* None
* No mention of how a new user registers
* No mention of any dispute regarding the sold product
* No mention of what kind of products could be put on auction

**2** **Exercise 2**

* **Following functional requirements could be obtained from the requirements specifications**
* **Registration:** New users have to register themselves online with the site and accept its terms & conditions
* **User Login:** A user has to login into the site using his correct user ID & password
* **Upload Item for Auction:** An authenticated user can upload an item into the site, which is to be put on auction subsequently
* **Auction Item:** User puts an item already uploaded by him ino the site on auction
* **Balance Check:** Bidder should have enough bank balance to bid
* **Bid for Item:** Any registered & authenticated user of the system could place a bid for an item on auction
* **Win Auction:** After the auction is over, the maximum bidder for the item owns the item post payment
* **Ship Item:** Seller of the item ships the item to the auction owner after he (seller) receives the payment
* **Availability:** The system should remain up & running before, during and after an auction
* **Remove item:** Owner removes an item after uploading it, and doesn't put on auction
* **Remove auctioned item:** System automatically removes an item from its inventory after it has been successfully auctioned
* **Site Support:** Customer care for the website should provide 24x7 help over phone

**3** **Exercise 3**

* **Following possible non-functional requirements could be identified from the requirements specifications**
* The system provides option for online registration of new users
* The system should remain up & running throughout it's working hours
* System automatically removes an item from its database after it has been successfully auctioned
* Sessions of different users must not affect each other
* Customer care for the website should provide 24x7 help over phone
* System should maintain privacy of their users and should not leak their information to third parties
* System should be able to service 100 users simultaneously
* System could remain unavailable for up to 2 hours for maintenance once in a quarter with 36 hours prior notice