Software Requirements Specification Template

Software EngineeringJanuary
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The following annotated template shall be used to complete the Software Requirements Specification (SRS) assignment of CS 258.

Template Usage:
Text contained within angle brackets (‘<’, ‘>’) shall be replaced by your project-specific information and/or details. For example, <Project Name> will be replaced with either ‘Smart Home’ or ‘Sensor Network’.

Italicized text is included to briefly annotate the purpose of each section within this template. This text should not appear in the final version of your submitted SRS.

This cover page is not a part of the final template and should be removed before your SRS is submitted.

Acknowledgements:
Sections of this document are based on the IEEE Guide to Software Requirements Specification (ANSI/IEEE Std. 830-1984). The SRS templates of Dr. Orest Pilskalns (WSU, Vancover) and Jack Hagemeister (WSU, Pullman) have also been used as guides in developing this.

CSE AUTOMATION

Software Requirements Specification

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Revision History

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Document Approval

The following Software Requirements Specification has been accepted and approved by the following:

Signature	Printed Name	Title	Date
	<Your Name>		

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1. Introduction

This section gives an overview of the SRS document. Also, the purpose for this document is described and a list of abbreviations and definitions is provided. This document includes the information regarding the product perspective, user requirements, database used, functionalities, design constraints, and the purpose for developing this software.

The Indian Government provide funding to prestigious Institutes in India such as IITs and IIMs for research purposes. These funds are allocated to the higher authorities of the institute and then are distributed amongst the admins of the various departments (CSE, EE, ME etc.) based on the needs of projects under them. The Admin then distributes the received money to the research scholars (USERS) working under him/her. The scholar uses this amount to fulfill the work requirements like getting hardware and licenses for particular software from the third parties(external retailers).

A proper monitoring of these transaction between the user-admin and the user-third parties is required in order to maintain proper record of the funds and it's flow. Maintaining the records manually would be a tedious job and moreover a person needs to be employed for this work which adds to the expenses. Developing a software for this purpose would reduce the inconsistency, cut down the expenses and process can be done more efficiently with consumption of fewer resources.

Along with these functionalities and benefits the software also provides a centralized depository where files can be uploaded and also be viewed/downloaded by an user

1.1 Purpose

The purpose of this document is to give a detailed description of the requirements for the "CSE AUTOMATION" software. It will illustrate the purpose and complete declaration for the development of the system. It will also explain system constraints, interface and interactions with other external applications. This document is primarily intended to be proposed to a customer for its approval. This system is actually intended to share the data with some other systems like the Finance and account Management System, IITI User Record System, etc. Since the access to these systems was not provided, on the suggestion of our client a working

environment (a database that stores all the details that are actually to be retrieved from other systems is being used) has been created for testing the required functionalities. As a part of this, the system was developed as if an individually functioning body with its own database. In this SRS the database used by developed software will be mentioned. The activity diagrams which play a major role in the design part are drawn assuming our software as an independently functioning system but the high level UML diagrams like the context and use case models were drawn assuming it as a dependent system. Assuming the system borrows data from the other software in the use case model did not affect the low level UML diagrams which were drawn as if the data is being retrieved from the software's own database, since its just the place from where data is being retrieved or store that has changed.
In the interaction details our software will be considered as an independent system (ALL THESE WERE DONE UNDER THE CLIENTS SUPERVISION AND GOT APPROVED).

1.2 Scope

"The Fund Management System for CSE Department" is a web application developed for keeping a track of various transactions made by the users. It also stores information regarding the users and admin. The web pages are responsive and are accessible from any device. The web pages are hosted on IITI main Server. These web pages are connected to database, through a WAMP server(currently LOCAL HOST), which stores the transaction records and the personal information and credentials of user and admin.

Each **Transaction Record** contains the details :
Date of Transaction, Transaction ID(UPI reference number), ID of the user initiating the Transaction, available balance in the respective user's institute account after the Transaction is complete, details of second person involved in the Transaction (ADMIN/ THIRD PARTIES), purpose of the Transaction, it's type (CREDIT/DEBIT) and whether the Transaction was successful or not.

Each **User Record** contains the details :
Name of the User, Unique ID assigned to the User by the Institute , Email ID, Available Balance in the respective User's Institute Account, Password, Date of Registration, Contact Details (Phone Number), Office Address and Permanent Address.

Each **Admin Record** contains the details :
Name of the Admin, Unique ID assigned to the Admin by the Institute , Email ID, Password, Contact Details (Phone Number) and Office Address.
One more table shows the relationships between the Users and Admins.

1.3 References

(1) IEEE Software Engineering Standards Committee, “IEEE Std. 830-19998, IEEE Recommended Practice for Software Requirements Specifications”, October 20.1998.

1.4 Overview

This document contains the details of the functionalities provided by the software and the requirements provided by the client mentioned in an organized way.

The functionalities are first mentioned at a glance and are then elaborated in the following sections .The interfaces provided by the software are again described in a detailed manner in the specific requirements section.

2. Overall Description

2.1 Product Perspective

THE INTENDED PROJECT :

[The product(Fund Management System) is dependent on other preexisting systems like the Finance and Account Management System, IITI User Record Management System. It shares the database with these systems in order to avoid the duplication of data. This makes the product a bit slow but the space saved by preventing the data redundancies by sharing the database overweighs the reduction in speed. But it does not affect the functionalities of the software it is interacting with].
THE DEVELOPED PROJECT :
Since there was no access provided to the other systems we developed the software as an independently functioning and self-consistent system (AS IF THE CLIENT WANTED US TO).

2.1.1 Memory Constraint

The product provides a central depository (secondary memory) of specific size for file uploading. Constraints are also applied on the size of the file (based on its extension) that can be uploaded(maximum of 10,000 KB).

2.2 Product Functions

This subsection of the SRS should provide a summary of the functions that the software will perform.

User Account Maintenance:

- **Create User**
  A webpage for creating a user.
  Security: Can be Accessed only by an admin.
  In this webpage the admin fills up the crucial details of the user like the user id ,email id, initial available balance.
  It adds a new record to the database

- **Edit User**
  Security: Can be accessed only by the user.
  User can edit his password and personal details like contact info and permanent address.
  All the records corresponding to the respective user would be updated.

- **Delete User**
  Security: Can be accessed only by the admin.
  It deletes the user record in the database.

- **Access User Records**
  Security: Can be viewed only by admin.
  All the user records are displayed with the details : User ID, Name, Available Balance.
  The transaction details of a particular user can be viewed by clicking on the respective user's record.

Invoice Preparation:

- **Viewing Records**

  - **For Admin**
    All the transaction records can be viewed by an admin.
    In case if the admin is interested on a single user's invoice, he can retrieve by searching for the particular user's Id or Name in the search bar provided on the web page. Suggestions will be displayed corresponding to the input string.

  - **For User**
    A particular user can view only his invoice statement. A web page is provided for this purpose.

- **Updating Records**

  Security : Can be used only by admin.
  Admin can add a new transaction, corresponding to a particular user, to the existing records, when a proof for the transaction is submitted by the respective user.

- **Transaction alert**

  - **Email notification**
    An user will be notified through email regarding his transactions.
    Only the admin has the authority to add a transaction to the existing records
    that too after assessing proper proofs for the transaction. An email will be
    sent to a respective user as an alert whenever a transaction has been added to his record. The email would look like:
    subject : Transaction Alert IITI
    body:
    This is a computer generated mail.
    Your SB A/C is credited/debited for Rs. XX /- on DD-MM-YYYY by Transfer Available Balance is Rs. ZZ /- (UPI REFERENCE NO: abed).

    Added by "Admins Name".

    "Admin's Name "

"Unique Id"
"Office Address "
CSE DEPARTMENT
Indian Institute of Technology INDORE

- **Login Alert**
  - The admin will be notified each time he/she logs in, through email. This increases the security.

- **File Uploading**

  - **Upload File**

    Provided for both users and admin.
    No security constraints.
    A button (Upload File) will be provided in the user's and admin's home page.
    On clicking the button a window pop ups asking for the file location.
    Only a single file can be added at a time.
    All these files uploaded by a user or an admin will be stored in the central depository.

  - **View File**

    Provided for both user and admin, with some security constraints imposed in case of user.
    A button (View File) will be provided in the user's and admin's homepage along with upload file.
    On clicking the button he will be directed to the central depository where he can view the files uploaded.
    The particular user and admin can even download the files from the depository.
    Security constraint : The Admin can view all the files uploaded on to the depository but a user has the view access only to the files uploaded by him.
    As mentioned in the memory constraints there are some restrictions imposed on the size of a file, that can be uploaded, based on it's extension.
    The size limit remains the same irrespective of the person uploading whether it be a user or an admin.

- **Home Page**
  - **For Admin**

    All the web pages mentioned above which can be accessed by an admin are integrated such that they can be navigated from a single platform i.e. the Admin's home page.
    In this page a navigation bar will be provided with options : "CREATE USER", "ACCESS RECORD", "DELETE USER" and "MAKE TRANSACTION", "TRANSACTION LOG" which redirects the person to the corresponding web page, along with the upload file and view file buttons.
    A search bar will be provided to search for a user through his User ID.
    Recent Transactions : The transaction activity of all the users done in the last two days will be displayed in a pallet.
    Even the name and some details of the respective person will be displayed.
    There will be a login page provided through which an admin actually gets redirected to his homepage. There would be a welcome message if the login is successful. The name of the admin will be displayed in a pallet till the end of the session.
    A logout button will be provided to end the session. Upon press he/she will be directed to the login page.

  - **For User**

    All the web pages mentioned above which can be accessed by a user are integrated such that they can be navigated from a single platform i.e. the User's home page.
    In this page the buttons : "UPLOAD FILE", "VIEW FILE", "EDIT USER" and "VIEW TRANSACTIONS" will be provided, which redirects the person to the corresponding web page.
    Even the name and some details of the respective person will be displayed.
    There will be a login page provided through which a user actually gets redirected to his homepage

A logout button will be provided to end the session. Upon press he/she will be directed to the login page.

- **Login Page**

To authenticate an user or an admin, in order to provide access to the web pages meant to be used by them, a login page is designed for the verification of the person's ID.
A person can claim his designation as an user or an admin and a login page corresponding to his choice will be displayed.
For this purpose two tabs are being depicted one corresponding to the user's login page and the other for the admin's login page.
After selecting the particular tab the login window would be displayed. This window asks the person for his user ID and password. After cross verifying with the details in the database the person is redirected to his home page in case of a successful match with one of the records in the database, otherwise a pop up appears mentioning "USER ID OR PASSWORD IS INCORRECT, PLEASE TRY AGAIN".

2.3 User Characteristics

This software is designed solely for a research scholar or an administrator in the CSE department which itself says that they are self-content to easily understand and use this application.

2.4 General Constraints

This subsection of the SRS should provide a general description of any other items that will limit the developer's options.

- No so called rigid regularity policies are imposed on this software as there is nothing that can be particularly considered as a bad behavior.

- There are no Hardware limitations.

- Some application programming interfaces are required as this software shares the data with some other preexisting systems.

- No knowledge of higher programming languages is required to operate this software. It communicates with the user in common language(English).

- Not yet tested to mention the reliability.

2.5 Assumptions and Dependencies

This subsection of the SRS lists each of the factors that affect the requirements stated in the SRS. These factors are not design constraints on the software but are, rather, any changes to them that can affect the requirements in the SRS.

- An active Internet connection is required.

3. Specific Requirements

3.1 External Interface Requirements

3.1.1 User Interfaces

- **Login**
  The user can login in order to access his files , view his transaction history and the details of his previous retailers.

- **Navigation Bar (**in the **Admin Page)**
  The admin can select the required web pages, like access records, view user, delete user, create user, update transactions etc. , from the navigation bar provided in the homepage.
- **Update/View File Buttons**
  In both the user and admin pages view file and update file buttons are provided through which the person can upload and view files(with some constraints).

- **Search box (**in the **Admin Page)**
  The admin can search for a particular user by entering any keywords and list of results will be displayed having tags containing the keywords.

3.1.2 Hardware Interfaces

No special hardware interfaces are required.

3.2 Logical Database Requirement

A database is required to store the details of the User, Admin and the Transaction history.

The database used in this software has the following tables in it:

Direct Tables

- **Admin**
  - **Attributes**
    Name ,ID ,Password, Email ID, Phone Number, Office Address.

- **User**
  - **Attributes**
    Name ,ID ,Password, Email ID, Phone Number, Office Address, Available Balance, Date of Registration.

- **Transaction**
  - **Attributes**
    Transaction Id, Amount, Type, Status, Date, Second Person, Purpose.

Relationship Tables

- **Admin-User**
  This table is to show the relationship between various users and admins i.e. the admin under whom a particular user is working.
  - **Attributes**
    User Id , Admin Id.

- **User-Transaction**

This table is meant to maintain a record of transactions done by various users.

- **Attributes**
  Transaction Id ,User Id.

There are certain triggers written in the database in order to ensure the data integrity.
Some of the functions or checks performed by a trigger are:

Whether a transaction leaves the available balance of a particular user positive?

Automatically update the user-transaction table whenever a new tuple is added to the transaction table.

Similarly, another trigger for automatically updating the user-admin table.

Automatically update the available balance attribute in Users table whenever a new transaction is recorded.

Click Here to view the UML Models.

Click Here to view the process followed in the software development.