Software Requirements Specification

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Contents

1 Introduction

1.1 Purpose

The purpose of this document is to give a detailed description of the requirements for the software being built by Team-1(Hack-street Boys) as a part of the Software Engineering course. It will illustrate the purpose and the complete declaration for the development of system. It is intended explain the interface, system constraints and interactions with users. This document is primarily intended to be proposed to a customer for its approval and a reference for developing the first version of the system for the development team.

The system intends to bridge the gap between buyers and sellers by bringing them under the same roof. It will make available the sources from which a person can buy books. Similarly, if one wants to sell a particular book, the system will provide him/her the means(via advertisement) to do so.

The system will also provide a platform(open forum) for people to discuss various issues regarding their courses. Students and faculty can review the products being sold. They can provide their comments regarding the same.

There will be separate profiles for students as well as faculty to encourage authenticity.

1.2 Scope

The purpose of the project is to aid the students in finding the best book for the courses that they are taking. The portal will provide a space where the users(faculty and students) can review and rate the books that they have read. This will help new students to choose the books based on their reviews from the faculty and their peers. The features provided are:

- User will have the platform to identify sellers and buyers of any desired book.

- Users have their profiles which will include necessary information used for the contribution on the portal in any form (buyer, seller).

- All the users can discuss anything related to the courses on an open forum.

The project is supposed to be completed and be ready for deployment by the semester end(Nov,2015). But it will be available for testing by the clients by november 2nd week.

1.3 Overview

The document is organized as follows. In section 2 a brief description of the various functions of the software is present. It also articulates the assumptions and constraints that affect our project. Section 3 describes the various interface requirements for the portal. These include hardware interfaces, software interfaces and communication interfaces. In section 4 the functional requirements of the portal are listed. The audience is divided into various classes based on the role that they will play in the platform. This includes the the buyers, sellers and the users. In section 5 the non functional requirements are specified. These include performance requirements and security requirements.

2 Overall Description

2.1 Product Functions

This software will provide following basic functionalities to its' users:

2.1.1 Selling Books

User(Faculty, Students) will be able to sell their books(Hardcopy of Text book, Leisure Book etc). For that the seller will be able to quote about the book. The user(as a seller) will be able to adjust the price of the book on his own will.

2.1.2 Buying Books

Users will be able to see the price, ratings and reviews of a particular book and the rating of the seller.

2.1.3 Review and Rating

The software will provide an adequate platform for reviewers(Faculty, Student) to review and rate a particular book. The reviewers after login will review a book based on some criteria like ease of language and understanding, clearity of concepts, illustrated and concrete examples etc. There will be seperate profile for faculty and student reviewers and reviews by both party will be shown seperately. The rating of a book would be calculated based on some weighting criteria.

2.1.4 Forum For Discussion

The software will facilitate a common forum for the student and the faculties. Students can raise any question regarding their course, study material, assignments, future planning etc. Faculty/student can start discussion on any topic of interest.
All of the above functionalities are provided on the mobile application as well as on the web portal.

2.2 User Characteristics

There are three types of users who interact with the system: Android application users, Web application users, System Administrators and maintainers. Each of these three types of users have different use of the system so each of them have their own requirements. The mobile application users can only use the application for its intended purpose. This means that the user should to be able to search for books, review them and participate in the forum. The web portal users will be able to exploit the same freedom. The administrators will manage the overall system. The administrator can ma nage the information like adding books to the database as well as the pages for both the mobile application users and the web portal users.

2.3 Constraints

No design constraints on the software.

2.4 Assumptions and Dependencies

Assumptions

1. The Android application is compatible only with Android API level 16 and above.

2. Use of the developed software would be only within the IIITV Network.

3. A student with an IIITVID (Eg. 201351014) only will be able to use this portal.

4. ID for the faculty would be given by the Administrator and they have to use it as their login user-id.

5. Account activation will be done only after verifying their(users) gmail that must have an extension of `iiitvadodara.ac.in`.

Dependencies Mostly we were dependent on the software and languages we used.

1. Android Language - Android, Java
   Tools - Android Developement and SDK Tools

2. Web Developement
   Languages = PHP, Ajax, JavaScript, Jquery, HTML5, CSS3, Bootstrap (Responsive Website)
   Tools - Linux, Apache2

3. Database
   Language PostgreSQL
   Tools - pgAdminIII, Dia(ER- Diagram)

4. Documentation
   Tools LibreOffice, TeXmaker(LATEX)

3   External Interfaces Requirements

3.1   Hardware Interfaces

Since neither the Android application nor the web portal have any designated hardware, it does not have any direct hardware interfaces.
The hardware connection to the database server is managed by the underlying operating system on the mobile phone and the web server.

3.2   Software Interfaces

Software Interfaces - These are the softwares interfaces we are going to use during our project.

- Android - Language Android, Java
  Tools - Android Developement and SDK Tools
  Version Jelly bean 4.1.2 & above
  Source www.android.com

- Web Developement - Languages = PHP, Ajax, JavaScript, Jquery, Django, HTML5, CSS3, Bootstrap (Responsive Website)
  Tools Linux, Apache2
  Source `https://help.ubuntu.com/community/Apache/MySQLPHP`

- Database - Language PostgreSQL
  Tools - Dia (ER- Diagram)
  Version Dia 3.0
  Source www.sourceforge.net

- Documentation - Tools LibreOffice, Texmaker
  Version Texmaker 4.1-1, Libreoffice 1:4.2.8
  Source - www.sourceforge.net

3.3   Communication Interfaces

The password will be generated for every student and faculty and will be facilitated via IIITV gmail account. The change in password of the user will be informed via an email to the same account. For a buyer, any inquiry for a product will be through the seller's gmail account.

A seller may reply to the inquiry the same way.

- The software is proposed to be portable to become compatible with various web browsers.

- The system will use TCP/IP as network server communication protocols.

- There will be electronic forms like pages to collect information about the books from sellers.

- Standards of HTTP will be used for communications.

- Hashing will be used to resolve encryption issues as all smart phones can perform Hashing very well. Encrpytion is performed using MD5(The MD5 message-digest algorithm is a widely used cryptographic hash function producing a 128-bit (16-byte) hash value, typically expressed in text format as a 32 digit hexadecimal number. MD5 has been utilized in a wide variety of cryptographic applications, and is also commonly used to verify data integrity.).

- The software will be kept synchronized with the database.

4 System Features

4.1 Functional Requirements

This section gives details about all the functional requrements available to the user in the application.

4.1.1 User Class 1 Android Users

- ID: FR1
  TITLE: Download the mobile application
  DESC: A user should be able to download the mobile application through either an application store or similar service on the mobile phone. The application should be free to download.
  RAT: In order for a user to download the user application.
  DEP: None

- ID: FR2
  TITLE: Upgrade the mobile application
  DESC: When a new/updated version or release of the software is released, the user should check for these manually. The download of the new release should be done through the mobile phone in the same way as downloading the mobile application.
  RAT: In order for a user to download the latest application.
  DEP: FR1

4.1.2 User Class 2 General Users (Android + Web)

- ID: FR4
  TITLE: Login to the portal
  DESC: Given that a user has registered, then the user should be able to log in to the mobile application/web portal. The log-in information will be stored on the phone (in case of android app) and in form of ccokies (web portal) and in the future the user should be logged in automatically.
  RAT: In order for a user to register to the portal.
  DEP:

- ID: FR5
  TITLE: Password retrieval for forgotten passwords
  DESC: Given that a user has registered, then the user should be able to retrieve his/her password by e- mail.
  RAT: In order for a user to retrieve his/her password
  DEP:

- ID: FR6
  TITLE: Build a profile on the portal
  DESC: Given that a user has registered, the user should be able to customize his/her profile, add books to his/her personal reading list, upload course materials, buy/sell stuff.
  RAT: In order for a user to use full functionalities of out portal.
  DEP:

4.1.3   User Class 3 Buyers

- ID: FR7
  TITLE: Get in touch with the seller
  DESC: Given that a user has registered and wants to buy books being sold by another user, he/she should be able to get the contact number of the seller as to get clear information of the product being sold.
  RAT: In order to establish trust factor between buyer and seller and to ensure that buyer is aware of the product he/she is buying.
  DEP: FR6

- ID: FR8
  TITLE: Search and view all available deals and item details
  DESC: Popularity, edition, price, ratings, isbn, seller ratings
  RAT: In order to provide a user with different parameters to filter and narrow his search.
  DEP: FR1 or None

- ID: FR9
  TITLE: View the best deals on the home page of buying and selling portal
  DESC: To make the job of a buyer easier by giving him exiting deals to make him buy stuff and revisit our portal.
  RAT: To attract more buyers and sellers to buy/sell books.
  DEP: RF1 or None

4.1.4   User Class 4 Sellers

- ID: FR10
  TITLE: Upload and categorize books and USP of each book i.e. book details.
  DESC: To make the searching of books by buyers more easier.
  RAT: To make searching of books easier.
  DEP: FR6

4.1.5   User Class 5 Everybody using the portal

Open Forum

- ID: FR11
  TITLE: Start any conversation or discussion on the forum
  DESC: To encourage users to clear their doubts and discuss about any idea they have in mind.
  RAT: To let the ideas of different people flow.
  DEP: FR6

- ID: FR12
  TITLE: Answer and participate in any discussion or questions
  DESC: To encourage other users o help their peers in their idea or clear their doubts.
  RAT: To encourage interaction between users.
  DEP: FR6

4.1.6 User Class 6 - The Reviewer

- ID: FR13
  TITLE: Separate profile for everybody
  DESC: Every user faculty or students has seprate profiles. To do any kind of activity one has to sign up, after confirming their institutes's email account he/she can use the features of software.
  RAT: In order to differentiate the classes of users.
  DEP: None

- ID: FR14
  TITLE: Able to review only after logging in
  DESC: After providing the user name and password user can use the various functionalities of the software.
  RAT: It helps in verifying the user's identity and get the correct/verified reviews
  DEP: FR13

5 Other Non-functional Requirements

5.1 Performance Requirements

- The software must be easily available to every student and faculty of IIITV.

- The web application must be responsive

- The user interface must be easy to use.

- The user profile creation must be as automatic as possible.

- The search, sort and autocompletion feature must be quick (within 1s)

- Proper and timly delivery of notification.

5.2 Security Requirements

- ID: SR1
  TITLE: Password hashing
  DESC: During logging in or while registering to the portal, the password user types isn't directly stored to the database. Password hashing is used to safely store the passwords.
  RAT: In order to keep the password of the user secure.

- ID: SR2
  TITLE: Prevent sql injection
  DESC: Anybody shouldn't be able to view sql commands or forge inputs in a way to execute sql queries to disclose sensitive information. To implement this, all the queries will be handled by server itself which will come with an output to every query.
  RAT: In order to prevent disclosing the data of the database through irrelevant queries/forged inputs.

- ID: SR3
  TITLE: Page crash should not reveal application or server info
  DESC: In case of any error or sudden page crash, application or server info should not be displayed. For this case, error page should be displayed and error pages should be created for any known error.
  RAT: In order to prevent the application from being vulnerable.

- ID: SR4
  TITLE: Test file extension handling so that .exe files are not uploaded.
  DESC: exe files should not be uploaded as they can be executed on the server and can cause damage to the database and the server. To prevent this, before uploading the file, it's extension will be checked for all image formats (jpg/bmp/png etc.)
  RAT: In order to keep the the database and server safe from exe file upload and execution.

5.3   Software Quality Attributes

- Availability: As the web application requires a browser, it should be available round the clock. The android app will be a download from the main page of the website.

- Portability: The web application must run on every browser which support HTML5/CSS3 and javascript. The android app must run on all devices running jelly bean and up. Android users can also use the web based application.