Software Design Specifications

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Indian Institute of Information Technology, Vadodara

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Contents

1 Introduction

This section provides an overview of the entire design document. This document describes all data, architectural, interface and component-level design for the software.

1.1 Goals and Objectives

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 the customer for his/her 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 notes and 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 Statement of 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 unfamiliar students to choose the books based on their reviews from the faculty and their peers. The features that will be covered in our project will be:

- Users can buy and sell books on the portal.
- Users can rate and give their reviews on any book in the portal.
- Users have their profiles which will include necessary information about the users used for the contribution on the portal in any form (buyer, seller).
- All the users can discuss anything related to the courses at an open forum. The faculty will be given the right to edit any content on the forum.

The project is supposed to be completed and be ready for deployment by 16/11/2015. It will be available for testing by the clients by november 2nd week.

1.3 Software Context

The end product will be used by IIITV faculty and students for academic purposes. Students will ask questions, review and rate books. The system will facilitate the information regarding books and a common platform for discussion.

1.4 Major Constraints

1. For Mobile application, Android OS SDK API Version 16 or more is required.
2. For Web applications: Web Browser should be HTML, CSS, JavaScript Enabled, Internet Connectivity is required.
3. For Server- Linux(OS), Apache2, php5.
4. For Database PostgreSQL

2 Data Design

2.1 Internal Software data structure

Majority of data passed among the components will be simple data type like string, or integer. The JSON objects will be used for communication with database.

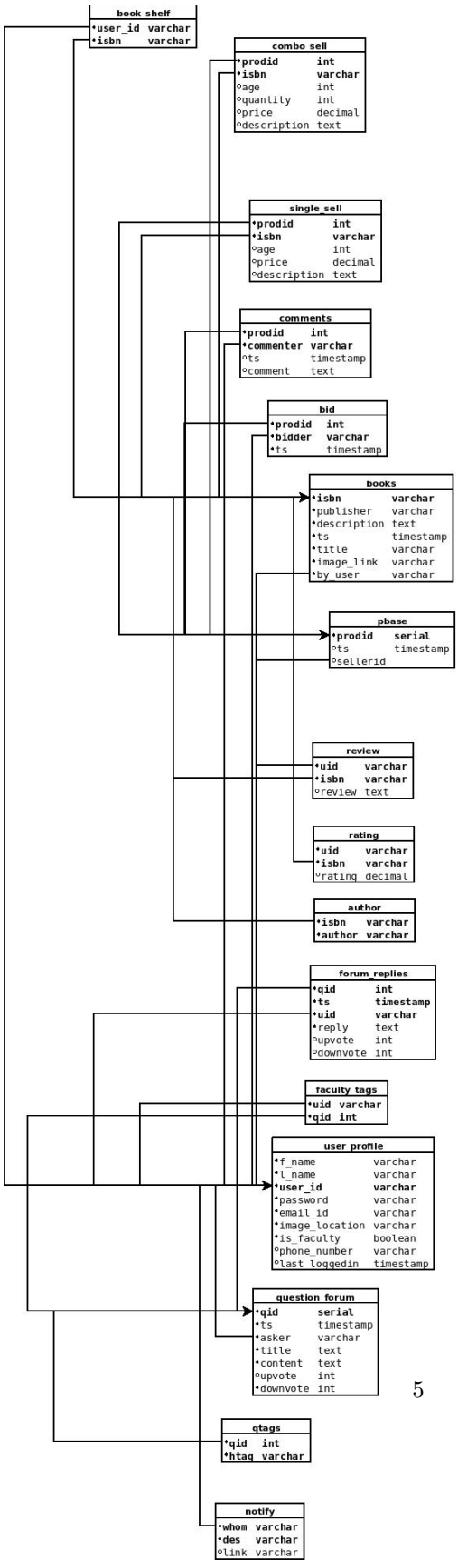
2.2 Database Description

Only one database will be created to support BeyondBooks. Our database contains 16 tables. Database is in BCNF (Boyce Codd Normal Form). BCNF ensures that the data in the table is not redundant. Every table has it's primary key and foriegn key(if there is a foriegn key). Primary key shows that that attribute of the table is unique. The foriegn shows the dependency of one attribute of the table on other attribute of another table. and The schema for the database is shown below:

3 Architectural and Component-Level Design

3.1 System Architecture

A system architecture or systems architecture is the conceptual model that defines the structure, behavior, and more views of a system. An architecture description is a formal description and representation of a system.


book shelf
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•asker varchar
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•content text
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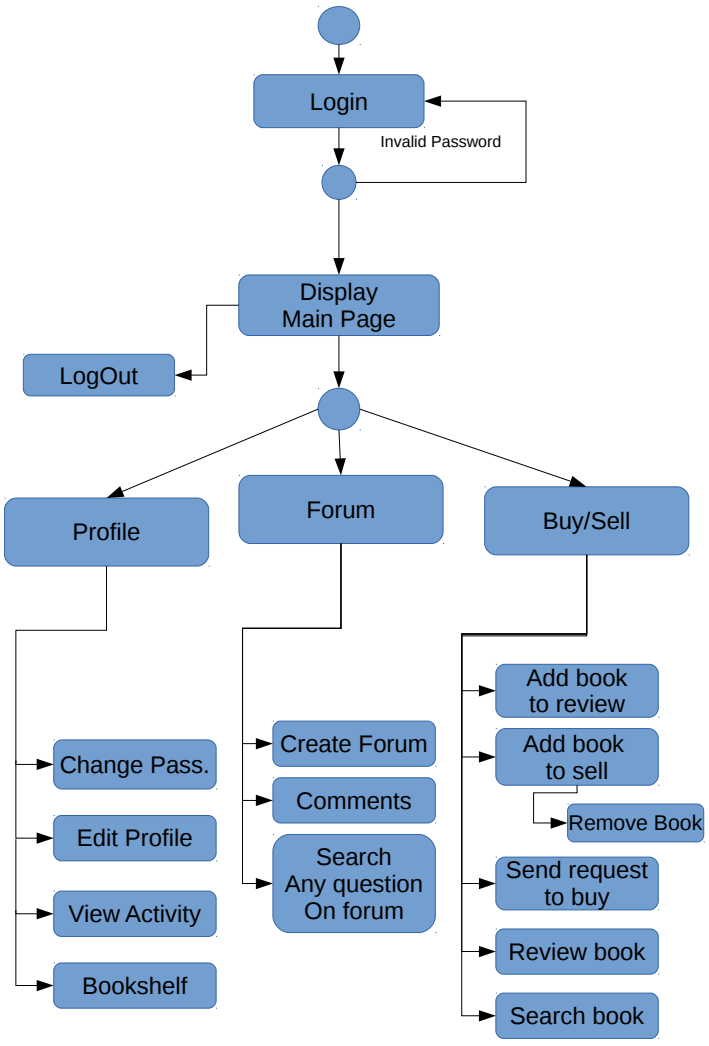
•downvote int
qtags
•qid int
•htag varchar
notify
•whom varchar
•des varchar
◦link varchar

3.1.1 Architecture Diagram

The diagram shows the basic structure of the software. It contains different components of the software. It also shows the behaviour of the different of the components.



4 User interface design

User interface design (UI) is the design of user interfaces for web softwares and mobile software with the focus on maximizing the user satisfaction. The goal of user interface design is to make the user's interaction as simple and efficient as possible, in terms of accomplishing user goals (user-centered design). We have used LayoutIt! to design UI for web and Fluid UI! for Android Mobile.

4.1 Description of the user interface

4.1.1 Screen images For Mobile App:

We have prototyped what we would like the basic user interface concepts to be. Below are the screenshots:

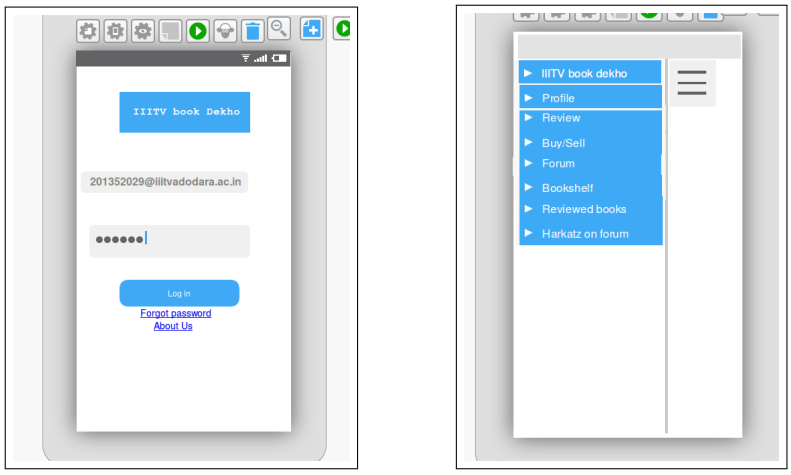


Figure 1: First: Login Page, Second: Navigator

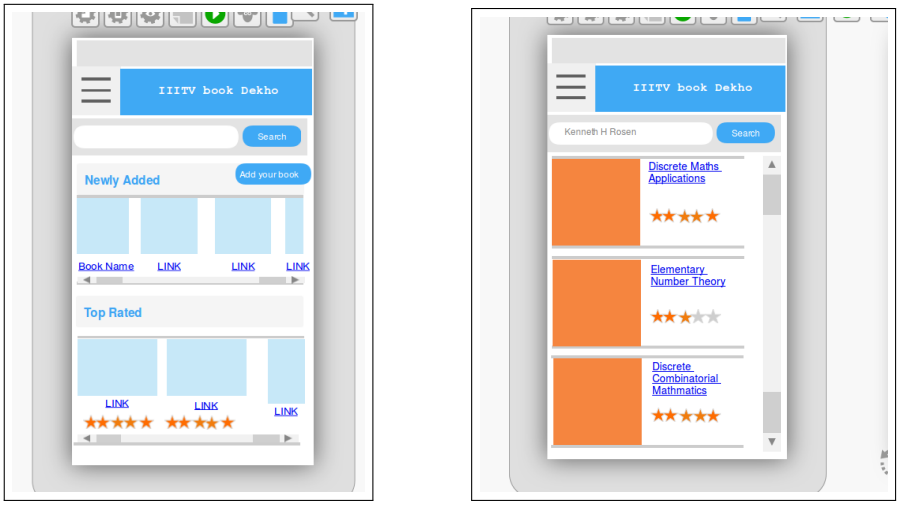


Figure 2: First: BookShelf, Second: BookSearch

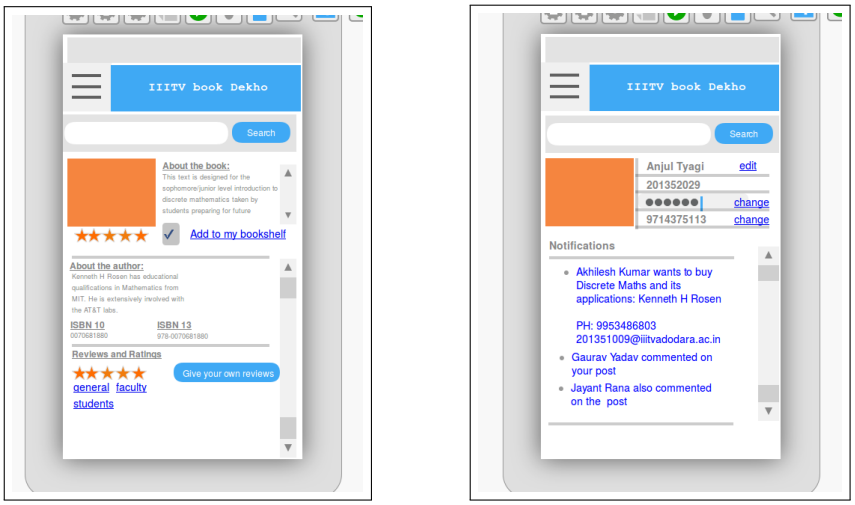


Figure 3: First: Books' Description, Second: User Profile & Notifications

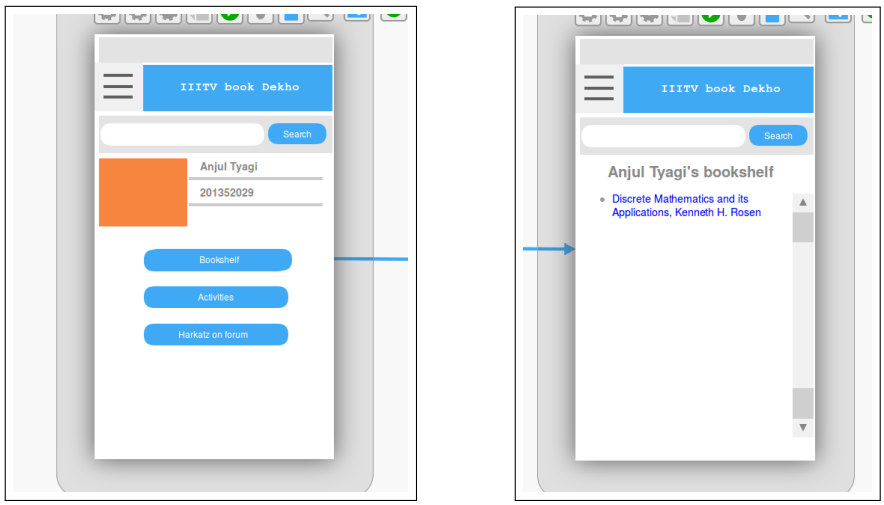


Figure 4: First: User Profile Navigator, Second: Users' Bookshelf

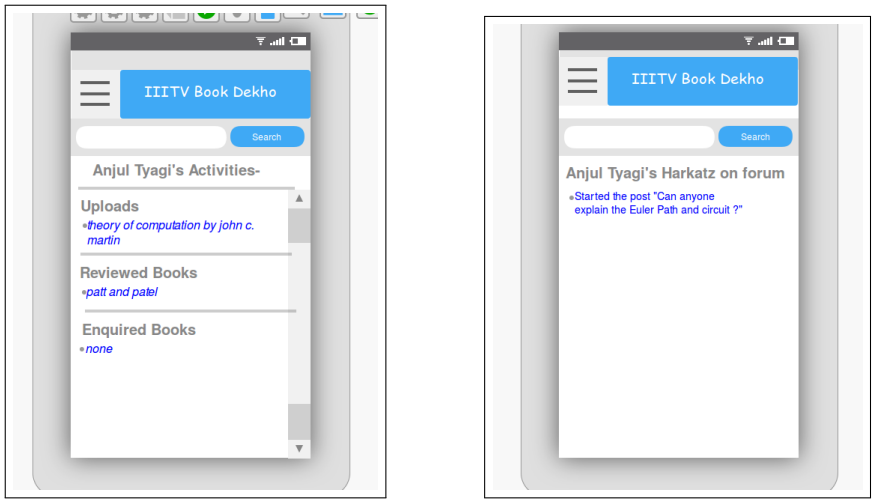


Figure 5: Users' Activities

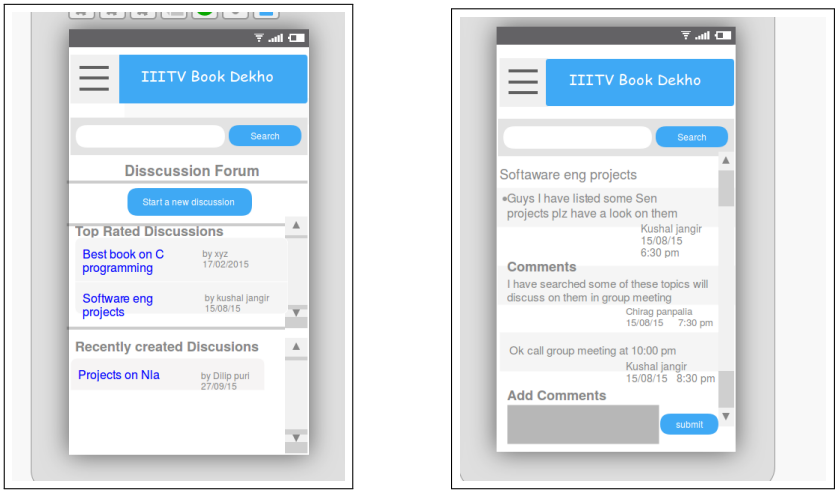


Figure 6: First: Discussion Forum Homepage, Second: Listing of Discussions

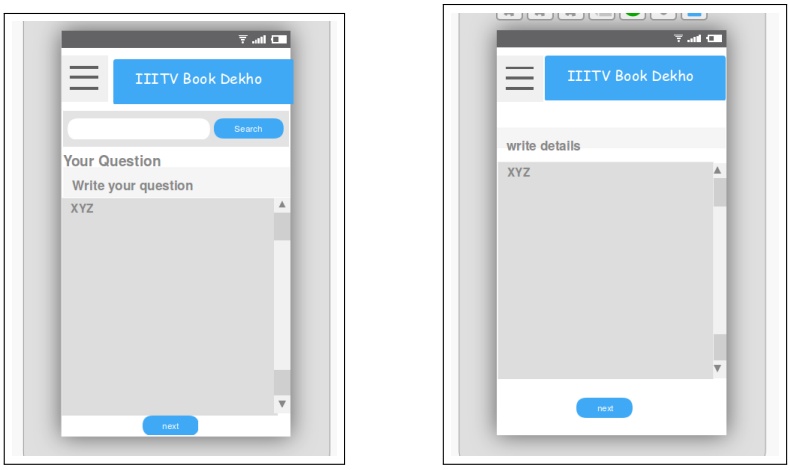


Figure 7: Adding Question on Forum

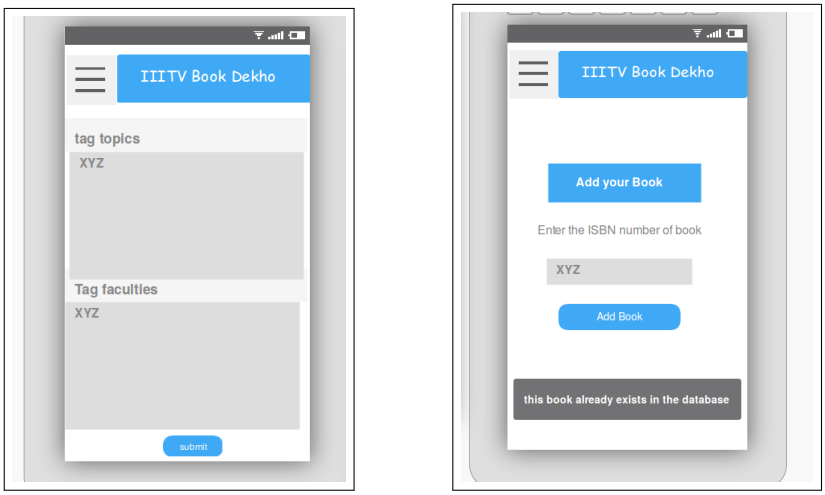


Figure 8: First: Adding Question on Forum, Second: Adding a new Book

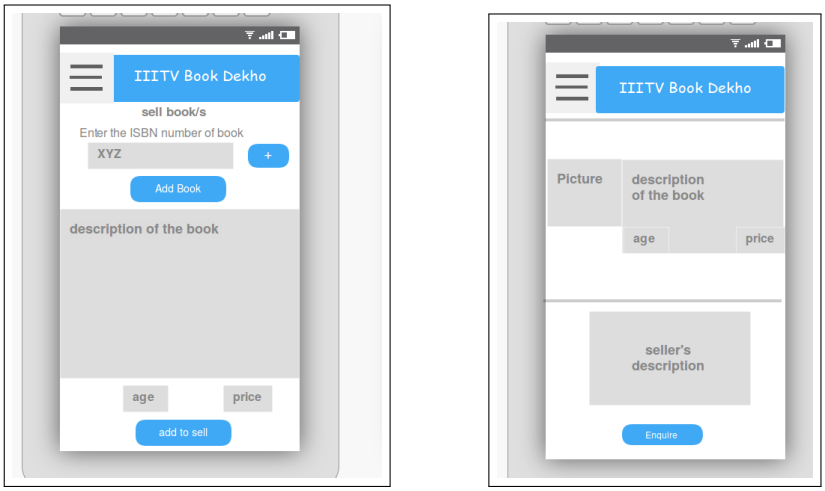


Figure 9: First: Adding Book to Sell

4.1.2 Screen Images For Web Application:

These are the UI screens for Web Application:

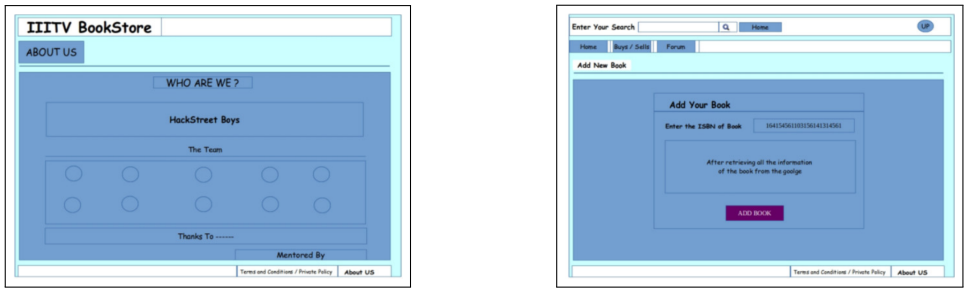


Figure 10: First:About US, Second: Add Book to Sell

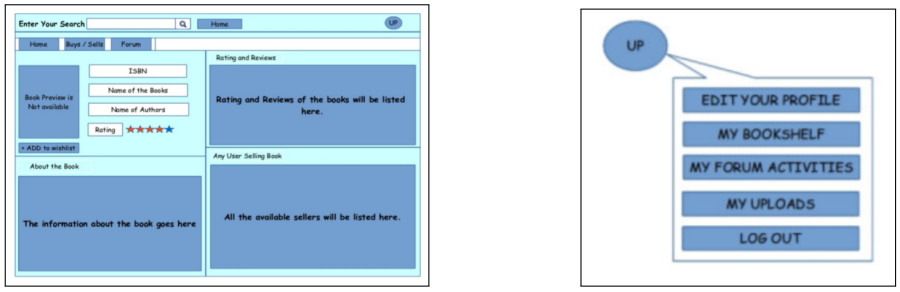
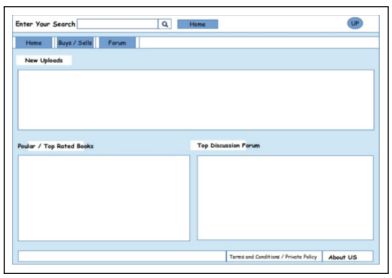


Figure 11: First: Book Description, Second: User Profile Navigator



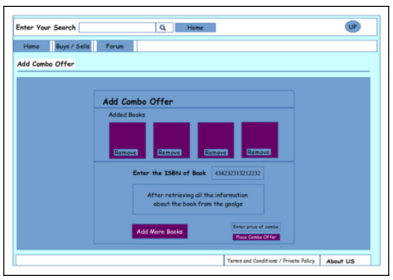
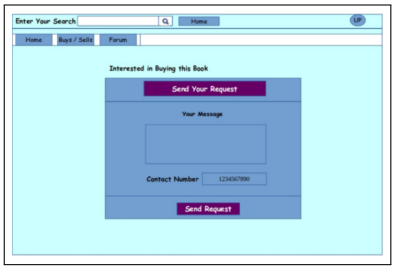


Figure 12: First: New Uploads Page, Second: Add Combo Offer



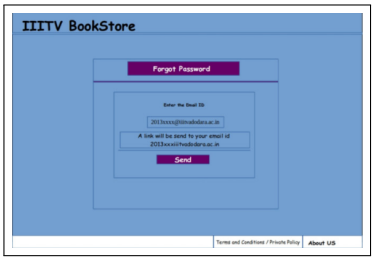


Figure 13: First: Sending RTB to Seller, Second: Forgot Password

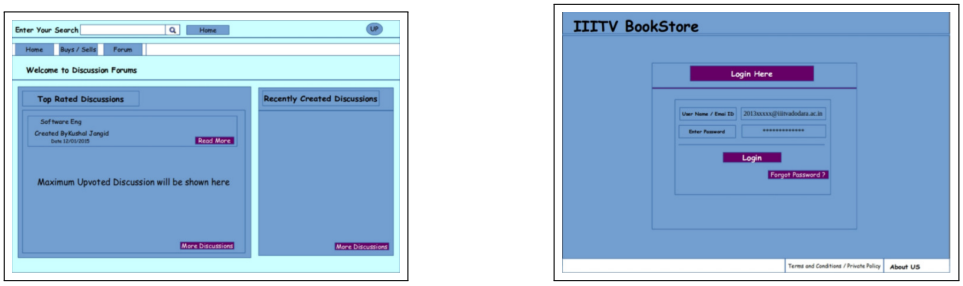
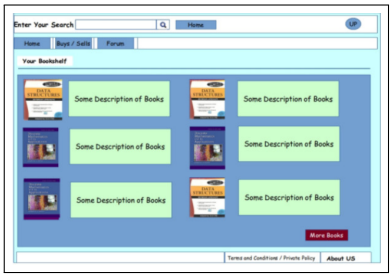


Figure 14: First: Discussion Forum Home Page, Second: Login Page

Figure 15: First: Book Description Page, Second: User Profile Page



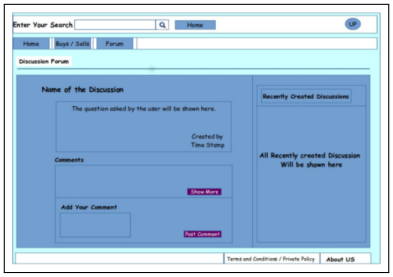
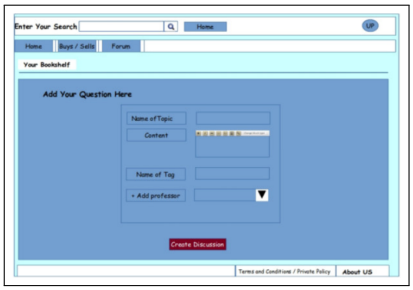


Figure 16: First: BookShelf, Second: Listing of Discussions



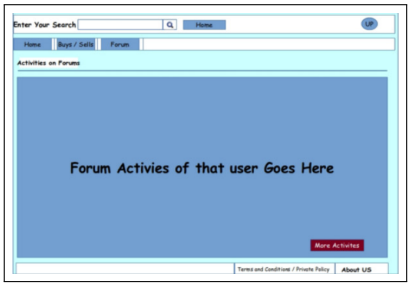


Figure 17: First: Adding Question on Forum, Second: Users' Activities

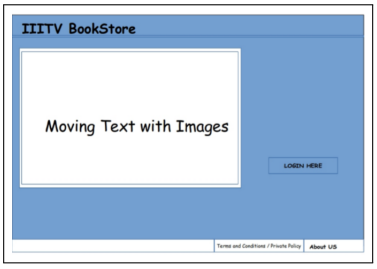


Figure 18: First: Listing of Search, Second: Websites' Home Page

4.2 Interface design rules

Android: The interface was designed keeping in mind the minimization of pages. Maximum functionality was incorporated in all the pages. Each page contains a navigation bar for ease of access to all the functionality. A search bar had to be added to each page. The interface was supposed to be user friendly and attractive.

Web application: The interface for web is designed keeping user satisfaction in mind.As our web software, means it is compatible with any resolution of screen like laptop, mobile, computer. So our design is such that it can deal with any screen size. Evert page contains a navigation bar that contains direct link to the homepage of different component.

5 Restrictions, Limitatations and Constraints

Due to lack of time, the attractive portion of the user interface had to be removed. The application is still fully functional.

6 Testing Issues

6.1 Classes of Tests and response

6.1.1 Black Box Testing:

The application is satisfying all the major functionalities it promised. The user is able to put an advertisement of his/her book. The user is also able to view advertisements and bid for the books. Books can be added to the user's bookshelf. The user can start a discussion on the forum and comment on any discussion. The user is able to rate, review and add any book on the portal.

6.1.2 White Box Testing:

All the code statements, paths, branches and conditions satisfy their purpose.

6.1.3 Unit Testing:

All the modules are working up to their specifications.

6.1.4 Incremental Integration Testing:

Every individual component of the web software is working. It is working fine, When one component is integrated with another component

6.1.5 System Testing:

The entire system works correctly and provides all the correct responses.

6.1.6 End-to-end Testing:

The Android application was made to run on different Android smartphones. The web application runs smoothly across various web browsers.

6.1.7 Regression Testing:

The software was tested regressively during its creation.

6.1.8 Acceptance Testing:

We have done the acceptance testing on small set of people. System is working according to the specificationin SRS document.

6.1.9 Performance Testing:

This testing has been done. Software is working within the local area of the network. As we need some data from the internet, so computer must be connected to the internet. Performance of the software is dependent on speed of the internet.

6.1.10 Usability Testing:

This testing has been done with very few set of people due to the time constraints.

6.1.11 Install/Uninstall Testing:

This appplication has been getting installed on different Android devices correctly it is downloadable from our web app. The web application opens correctly across all browsers.

6.2 Performance Bounds

As software is retrieving data from the internet, so performance of the software is dependent on the internet speed. Both web and mobile app software is using data that is stored on the server. So communication of client and server shoudl work properly and make sure that server is working fine, and connected to the internet.