

Book Shop Automation Software

Software Requirements Specification

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1. Introduction

1.1 Purpose

The Bookshop Automation Software (BAS) is to automate all operations in a bookshop. Generally it includes the Order Processing, Stock Management and Accounts Management. Also BAS will provide the ability to search any book using the book title or the name of the author that are available in the shop and in case where the book is not available in the stock, it will ask the customer to enter full details of the book for procurement of the book in future and increment a request field for the book.

BAS will help the manager to periodically view the request field of the books so as to arrive at a rough estimate regarding the current demand for different books. Also it maintains the price of various books.

1.2 Document Conventions

The Software Requirement Specification (SRS) is a lower level of detailed document for the Book-shop Automation System. In the writing of this SRS Calibri font and font size of 12 is used.

1.3 Intended Audience and Reading Suggestions

SRS is mainly intended for the project managers, developers and team members who want to get the overview of the project, its scope and higher details of modules in the system. Anyone who would like to make the next version of this system can prefer this SRS. This SRS document includes the overall design description. The reader should read thoroughly from first page to the last page. It includes the purpose, scope, product feature and references along with the hardware & software requirements for this software.

1.4 Project Scope

The scope of this project Book-Shop Automation Software is to develop a software to automate the entire book purchasing process and the management and maintenance of records like transaction records, calculating the demand of various books, generating sales statistics and other basic tasks that are required by the manager. This software will be very useful to the large book-shops as well as the customers. The system will save lots of time as it will perform all the necessary tasks for purchasing books and maintaining the records in much lesser time. As a result both the customer and the shop owner will be benefited. Therefore, this software will be very economical in every respect.

1.5 References

- [1] Fundamental of Software Engineering By Rajiv Mall
- [2] IEEE. IEEE Std 830-1998 IEEE Recommended Practice for Software Requirements Specifications. IEEE Computer Society, 1998.
- [3] www.wikipedia.org

2. Overall Description

2.1 Product Perspective

The Book Shop Automation System is the new, self-contained product. It is using JAVA. All pages of the system are following a consistent theme and clear structure.

The occurrence of errors should be minimized through the use of checkboxes and scroll down in order to reduce the amount of text input from user. Error message should be located beside the error input which clearly highlight and tell user how to solve it. If system error, it should provide the contact methods. The page should display the project process in different colour to clearly reflect the various states. Each level of user will have its own interface and privilege to manage and modify the project information.

User interface elements are easy to understand. Part of user interface is well-organized on screen and the parts are concatenated right. When users look at the interface, they understand which pane is used for which purpose. Each task of an interface is specified clearly and users use them correctly. For example, when user's press to any button on interface, they can know which operations are done by pressing this button.

The user interface is easy to learn. When users use the user interface, they can know which element is used to which operations. The interface actions and elements inconsistent. When users press any button, required actions is done by the system.

Since the application must run on the PC, the main hardware interfaces for this system would be the monitor, Keyboard and mouse.

Book-shop Automation Systems is a technology that automates the book-shop. This technology has more advantages over manual work.

2.2 Product Features

The book-shop automation system provides the following facilities and services:

- Searching of books by title or by name of author
- See number of available books (for selected books)
- Each sold book is registered in database with date of sale and notification if customer has paid
- Book-shop automation System software provides full billing and supports different password protected employee accounts
- Server database is protected from unauthorized modifications
- Process payments quickly and efficiently
- Print bills with currency sign
- Unique design with very functional user interface
- Generate sales statistics for any period
- Improve store business with various reports and statistics
- Managing records
- Estimate current demand of different books that can be used by the manager

2.3 User Classes and Characteristics

There are five types of users that interact with the system: customer, sales clerk, employee, manager and the book shop owner. Each of these five types of users has different use of the system so each of them has their own requirements.

Customer will only use the system to find a book. This means that the user should get the exact number of copies available and the rack number in which the book is located.

Sales clerk would help the sales processes.

Employee would update the stock.

Manager would check the current demands of different books. So all the search queries by the customers and the sales records are to be maintained properly.

The **book shop owner** manages the overall system.

2.4 Operating Environment

The proposed software is intended to run on client/server model network. A client/server can deliver the better performance than the file server system because a client application and database server work together to split processing load of applications (thus the term distributed processing). The server manages the database among the number of clients, while the client send, request, and analyse the data entry form with small specific data set, such as rows in a table not file as in the file server system.

a) Hardware Requirement

- 20 GB HDD Free Space
- 256 MB RAM
- Pentium IV or above Processor
- Monitor
- Keyboard: Standard
- Mouse: Optional

b) Software Requirement

- MS-office-2007 or above
- SQL server
- Operating system: Windows 7 or later
- JAVA

2.5 Design and Implementation Constraints

- The system is based on menu driven interfaces. Menu selection will be done by using the mouse and the key board keys.
- Confirmation messages on taken actions, input acceptance and error conditions will be displayed after each input.
- Error messages will be displayed at the time of detection of input errors and the system errors.

2.6 User Documentation

All documentation will be made in accordance with requirements.

2.7 Assumptions and Dependencies

While cost estimation of the proposed system it has been assumed that the cost of hardware and that of license of Operating System and back end will be met by client (the organization). Hence only the cost incurred for the proposed software is included therein.

The followings are identified as some of the potential risk factors or dependencies:

- Non-availability of required resources
- Power cuts
- Slippage of schedule due to unpredictable holidays, etc.

3. External Interface Requirements

3.1 User Interfaces

User interface is used to provide communication between users and system. When users look at the interface, they should understand which pane is used for which purpose. Each task of an interface should be specified clearly and users should use them correctly. For example, when users press to any button on interface, they should know which operations are done by pressing this button.

The user interface should be easy to learn. When users use the user interface, they should know which element is used to which operations. If the user interface is very hard to learn by the user then teaching the interface activity would take longer time and hence there will be an extra cost for teaching the user interface of the product to the user.

The interface actions and elements should be consistent. When users press any button, required actions should be done by the system.

The screen layout and colour of the user interface should be appealing. When users look at the screen, it will have a nice vision. Colours will be selected clearly, thus eyes of users won't feel tired.

It has been required that every form's interface should be user friendly and simple to use.

3.2 Hardware Interfaces

The hardware interface for the user would be any PC having a configuration of P-IV and above 2GB HDD for loading any OS so that BAS could interact with the system without any problem. The main interface would be monitor, keyboard and mouse.

3.3 Software Interfaces

Book Shop Automation Software will use database for storing and management of records. So an access to the database management system is required. When such an event occurs the system establishes connection to the database management system, once the connection is created; the client program can communicate with the database management system.

A standard called Java Database Connectivity (JDBC) provides an application programming interface (API), which allows client-side programs to call database management system, as long as PC has the necessary software installed.

Most database management system vendors provide JDBC drivers for their systems. A user can actually connect to several database management system and send query and transaction requests using the Java Database Connectivity (ODBC) API, which are then processed at the server side. Any query results are sent back to user, which can process or display the result as needed.

3.4 Communications Interfaces

For communications sockets on TCP shall be used. A client program creates a socket on its end of the communication and attempts to connect that socket to a server. When the connection is made, the server creates a socket object on its end of the communication. The client and server can now communicate by writing to and reading from the socket.

The `java.net.Socket` class represents a socket, and the `java.net.ServerSocket` class provides a mechanism for the server program to listen for clients and establish connections with them.

The following steps occur when establishing a TCP connection between two computers using sockets:

- The server instantiates a `ServerSocket` object, denoting which port number communication is to occur on.
- The server invokes the `accept()` method of the `ServerSocket` class. This method waits until a client connects to the server on the given port.
- After the server is waiting, a client instantiates a `Socket` object, specifying the server name and port number to connect to.
- The constructor of the `Socket` class attempts to connect the client to the specified server and port number. If communication is established, the client now has a `Socket` object capable of communicating with the server.
- On the server side, the `accept()` method returns a reference to a new socket on the server that is connected to the client's socket.

After the connections are established, communication can occur using I/O streams. Each socket has both an `OutputStream` and an `InputStream`. The client's `OutputStream` is connected to the server's `InputStream`, and the client's `InputStream` is connected to the server's `OutputStream`.

TCP is a two-way communication protocol, so data can be sent across both streams at the same time.

3.5 Access Interfaces

All the users of the system should have a username / password logging mechanism to access it. Although signing in of the customer is optional. Depending on the role of the user, he / she should get the corresponding system access level.

4. Functional Requirements

R1. Check for availability of book:

Description:

When customer selects this option he is required to enter book title or the author name of book. The system would search the books in the books register based on the keywords. After making the search the system should output the details of all the books based on the details given.

R1.1:	Select query book availability option Input: "query book availability" option is clicked Output: User prompted to enter the key words
R1.2:	Search for book name and display result
	Input: Book title or the author name Output: Display details of all the books, no. of copies available and the rack no. where the book is located.
Processing:	Search the books in the book register based on the key words, if the book is not currently being sold by book-shop, then the customer is asked to enter full details of the book for procurement of the book in future. If a book is in stock, the exact number of copies available and rack number in which the book is located should be displayed. If a book is not in stock, the query for book is used to increment a request field for the book

R2. View request:

Description:

Once the manager selects this option, the system displays the current demand for different books

Precondition	Manager is logged in
R2.1:	Select view request option Input: "Find Trends" option is clicked Output: Display the current demand of different books
Processing:	Displays the books list if any requests are present otherwise it gives no pending requests

R3. Purchase Book:

Description:

Once the customer selects this option the system will ask to enter the ISBN no. of books sold. And the system will take the prices of books from inventory and generates the bills and updates the stock and generate the sales receipt for the book.

R3.1:	Select purchase option Input: "purchase" option is clicked Output: Prompt message to the salesclerk to enter the ISBN number of selected book
R3.1:	Generate sales receipt
	Input: Enter the ISBN number of selected book Output: Gets the price from inventory and prints the sales receipt and updates the stock
Processing:	Generates the bill based on the ISBN number of book selected by customer

R4. Update stock:

Description:

Once the employee selects this option, he would be asked to enter the list of new book name.

Precondition	Employee is logged in
R4.1:	Select update inventory option Input: "update inventory" option is clicked Output: Employee will be prompted to enter the details of books
R4.2:	Updating the inventory
	Input: Employee will enter the book details that is procured for the first time Output: Generates the ISBN number for the new books
Processing:	Updates the inventory by generating ISBN numbers of the books and updating the other details such as rack number, publisher, book name, and price.

R5. Generate Sales Statistics:**Description:**

Once the manager selects this option, he will be informed about exact business done over any period of time. It also calculates inventory level required for various books.

Precondition	Manager is logged in
R5.1:	Select generate sales statistic option Input: Select “generate sales statistic” option Output: System will generate the sales statistics
Processing:	System calculates the inventory level required for a book which is equals to number of copies of book sold over a period of two weeks multiplied by average number of days it takes to procure the book from its publisher. And generate statistic according to it. Display it.

R6. Check threshold books:**Description:**

The book shop owner would give a command for the BAS to print the books which have fallen below the threshold and the number of copies to be procured along with the full address of the publisher.

Precondition	Owner is logged in
R6.1:	Select check shortage option Input: Select “check shortage” option Output: The books which have fallen below the threshold and the number of copies to be procured along with the full address of the publisher.
Processing:	Checks the book which have fallen below the threshold, calculates number of copies to be procured along with the full address of the publisher

5. Non Functional Requirements

5.1 Performance Requirements:

- The response time for menu changes will be not more than 3 seconds.
- The time for search for a book will not more than 3 seconds.
- The time to print the stock valuation will not be more than 3 seconds.
- The time taken to update the database or get information from the database will not be more than 2 seconds.
- The time taken to prompt message boxes will not more than 2 seconds.

5.2 Safety Requirements:

All the higher level users should keep their system access credentials secure else an unauthorized personal may exploit the system. If at any point of time someone has compromised his/her login credentials then he/she should report to the system administrator so that he could issue new credentials.

5.3 Security Requirements:

Only the administrators have the authority to edit details in Users and Items tables. No one can enter the system without a username and a password. Normal system users cannot access the Administrators login. All deleting actions are notified by a message box asking to confirm deletion.

5.4 Software quality:

The prioritization of the software quality attributes are assumed as under:

- Accurate and hence reliable
- Secured
- High performance
- Compatibility

5.5 Business Rules:

Customer: The one who purchases books from the bookshop. He must have the very limited access to the system.

Sales Clerk: The one who enters purchase details in the bookshop. He must have the next higher level of access to the system after the customer.

Employee: The one who updates the inventory. He must the have next higher level of access to the system after the clerk.

Manager: The person who views the current demand of different books. He must have the next higher level of access to the system after the employee.

Book Shop Owner: The owner of the shop. He must have access to the entire system.