

System Requirements

Book Bazar

January 25, 2022

Group 6

Caleb Mech	mechc2
David Thompson	thompd10
Matthew Williams	willim36
Ahmed Al Koasmh	alkoasma
Harsh Mahajan	mahajanh

Contents

1	Table of Revisions	4
2	Purpose	4
3	Scope	5
4	Context Diagram	5
5	Constants, Monitored and Controlled Variables	5
6	Behaviour Overview	6
7	Use-Case Diagram	7
8	Normal/Undesired Operations	8
9	Functional Requirements	9
9.1	Posting Book	9
9.2	Buying Book	10
9.3	Authentication System	11
10	Functional Requirements Likelihood of Change	11
11	Non-Functional Requirements (NFR)	11
11.1	Look and Feel Requirements	11
11.2	Usability Requirements	12
11.3	Performance Requirements	12
11.4	Operational and Environmental Requirements	12
11.5	Maintainability and Support Requirements	12
11.6	Security Requirements	12
11.7	Cultural Requirements	12
11.8	Legal Requirements	14
11.9	Health and Safety Requirements	14

List of Figures

1	Book Bazar Context Diagram	5
2	Book Bazar User Diagram	7

List of Tables

1	Table of Revisions	4
2	Boundary Descriptions and System Behaviour	6
3	Types of Operations, Part 1	8
4	Types of Operations, Part 2	9
5	Requirements for Posting Book	9
6	Requirements for Buying Book	10
7	Requirements for the Authentication System	11
8	Functional requirements likely to change	11
9	NFR: Look and Feel	12
10	NFR: Usability	12
11	NFR: Performance	12
12	NFR: Operation and Enviroment	13

13	NFR: Support and Maintainability	13
14	NFR: Safety	13
15	NFR: Cultural	13
16	NFR: Legal	14
17	NFR: Health and Safety	14

1 Table of Revisions

Version	Date(dd.mm.yyy)	Author(s)	Description
0	11.10.2021	Caleb Mech Ahmed Al Koasmh David Thompson Matthew Williams Harsh Mahajan	First version compiled.
1	15.10.2021	Ahmed Al Koasmh David Thompson Harsh Mahajan	Existing version editing with feedback from David and Ahmed. Major edits: Addition of NFRs; Revision of Use-Case Diagram.
2	16.10.2021	Caleb Mech David Thompson Mathew Williams Ahmed Al Koasmh	Behavior Overview & Requirements Likelihood to Change added. Context diagram edited.
3	17.10.2021	Harsh Mahajan	Document edited for corrections & References added.
4	18.10.2021	David Thompson Ahmed Al Koasmh	Edited Fuctional Requirements to match conventions; added “shall.”
5	19.10.2021	Harsh Mahajan	Edited Use-Case Diagram to match TA’s feedback.
6	25.02.2022	Caleb Mech	Edited user and authentication requirements to match system design.

Table 1: Table of Revisions

2 Purpose

The motivation for this project is to create an application that allows McMaster students to conveniently buy and sell textbooks in a secure marketplace. Currently, students use online websites like Facebook (<https://www.facebook.com/groups/macusedtexts>) or the campus store’s buyback program (<https://campusstore.mcmaster.ca/information/guaranteed-buyback.html>, suspended because of COVID) to sell their books. These current solutions are either disorganized or take a cut of the transaction. Book Bazar aims to create an organized marketplace that allows users to sell books for a better price than at the campus store.

The purpose of this System Requirements Specification (SRS) is to provide a clear overview of the project’s functional and non-functional requirements that are relevant to the application’s stakeholders.

NOTE: Book Bazar’s website where all the books to be sold are listed, is referred to as *marketplace* in certain parts of this document.

3 Scope

The scope for the project covers the following application features:

1. An authentication and authorization platform that verifies McMaster students and allows them to log into and use the application.
2. A marketplace system that uses information from the campus store and allows users to:
 - Post about and categorize books that they would like to sell.
 - Search for books that they would like to purchase.
3. A system that allows buyers and sellers to privately contact each other, agree on a price, and choose where they would like to meet.
4. The application will be accessible from any device with a modern browser (phone, tablet, desktop, etc.) to provide the best experience.

4 Context Diagram

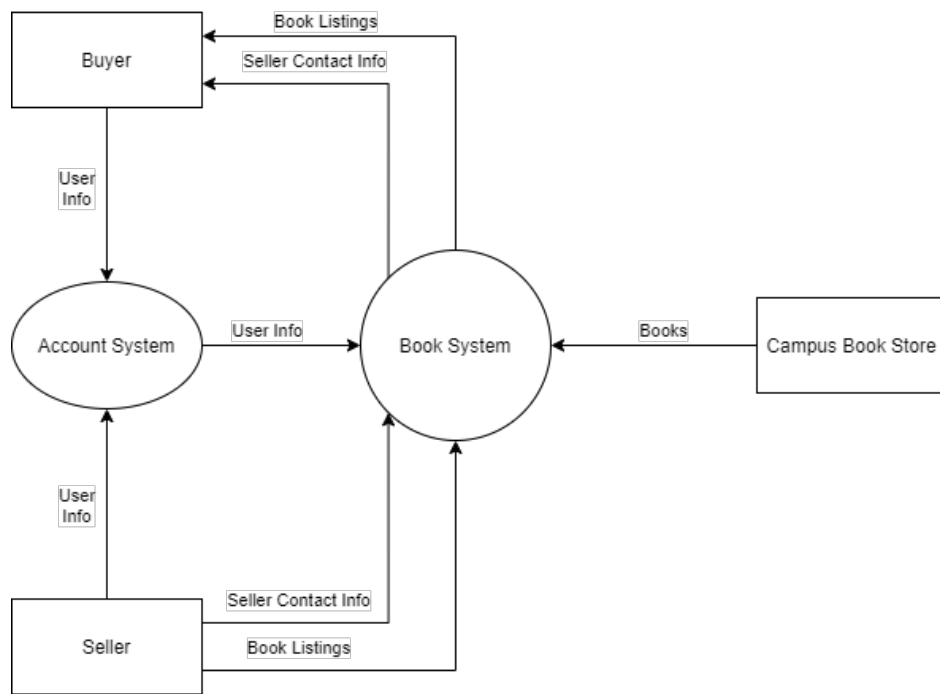


Figure 1: Book Bazar Context Diagram

5 Constants, Monitored and Controlled Variables

The Book Bazar application will not be using any elements from the physical world, like temperature, length, speed, etc., which require high precision when manipulating within the software. Elements from the physical world that Book Bazar will be using will be the Universal Product Code (UPC) code of books, information of users and the prices of books. All of these elements will be treated as constants and will not undergo changes.

6 Behaviour Overview

This specification document specifies a software system that allows McMaster University students to buy and sell used textbooks. Here is an overview of the system's behaviour in reference to the context diagram in section 4:

Boundaries	Behaviour Description
<i>Campus Book Store</i> → <i>Book System</i>	The book system retrieves relevant book information from the campus book store which allows the system to sort book data based on relevant categories.
<i>Seller</i> → <i>Book System</i>	Students who have used textbooks that they want to sell can create a posting/listing on the system by entering the UPC/ISBN13 code of the book and adding their desired sell price. A book seller will be able to remove their posting from the system if they decide not to sell the textbook or manage to find a buyer some other way.
<i>Seller</i> → <i>Account System</i> <i>Buyer</i> → <i>Account System</i> <i>Account S.</i> → <i>Book S.</i>	Buyers and sellers can store their confidential information including authentication and authorisation parameters within the Account System. Relevant information will be shared with the book system accordingly.
<i>Book System</i> → <i>Buyer</i>	Students who are looking to buy books can view the listings that the sellers created and retrieve them from the book system. The buyers will be able to filter postings/listings in order to quickly find what they are looking for. When a buyer finds a posting for a textbook that they want, they will have can retrieve the seller's contact information, and they will be able to send a message to the seller in order to confirm the price and schedule a time to meet up to sell/buy the textbook.

Table 2: Boundary Descriptions and System Behaviour

7 Use-Case Diagram

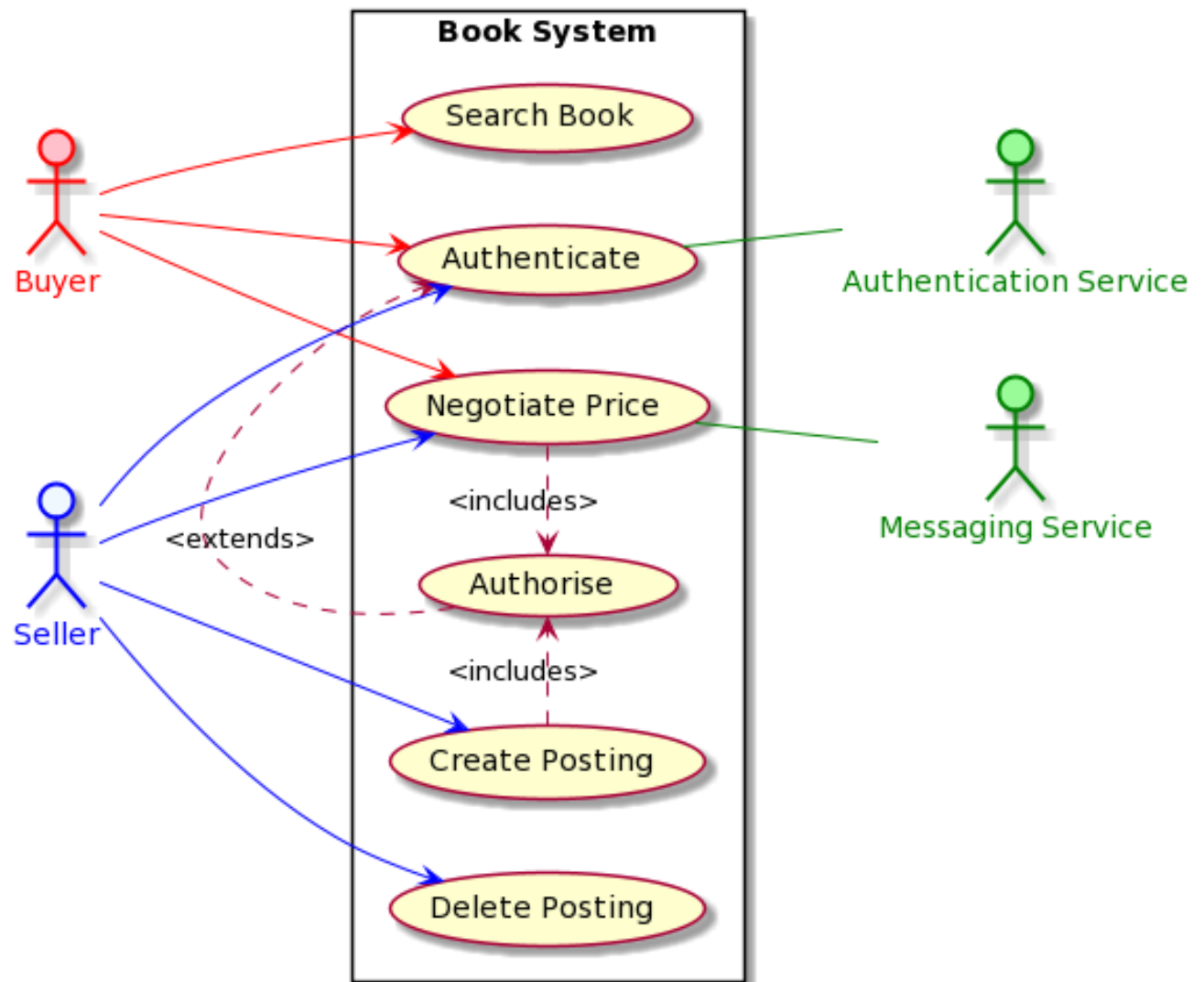


Figure 2: Book Bazar User Diagram

8 Normal/Undesired Operations

Event	Operation Type	Description	Course of Action
Sign-in	Normal Operation	User's university email address is validated.	-
	Undesired Event	The submitted email is invalid.	The user will be informed that their email is invalid and will be prompted to sign in again.
	Undesired Event	The user attempts to log in with an incorrect password more than 5 times.	Redirect the user to set up a new password before logging into the application.
	Undesired Event	The user visits a forbidden page on the website without being authenticated.	Redirect the user to a login page.
Book Listing	Normal Operation	The user submits a book, and it is listed on the website.	-
	Undesired Event	The submitted book is not valid.	The listing will not be completed, and the user will be prompted to try listing again.
	Undesired Event	The service which provides information on a book given the International Standard Book Number (ISBN) does not recognize the ISBN.	The user will be prompted to manually enter the details of the book, such as the title, edition, and authors.
	Undesired Event	A book posting remains on the application for 20 days without a sale occurring.	On the 15th day, provide a warning notification to the user asking them if they would still like the posting to be placed. If no response is received by the 20th day, the application archives the posting and removes it from the marketplace.

Table 3: Types of Operations, Part 1

Event	Operation Type	Description	Course of Action
Site Navigation	Normal Operation	Users will use the Graphical User Interface (GUI) to navigate the site from any supported browser.	-
	Undesired Event	The user visits the application from an unsupported browser.	Display an error message listing browsers that are supported.
	Undesired Event	The user visits a non-existent page.	Display an error message listing that the page was not found.

Table 4: Types of Operations, Part 2

9 Functional Requirements

9.1 Posting Book

Requirement	Description	Rationale
FR1	The system shall allow sellers to post books by manually inputting book information.	-
FR2	The system shall allow sellers to post books by scanning a -UPC barcode and filling out the remaining information.	This will allow users to easily post books without manually filling out its details.
FR3	System shall allow sellers to delete their posting.	The seller may no longer be interested in selling the book.
FR4	The system shall allow sellers to view the price the book is currently being sold for at the Campus Store.	Sellers may be interested in selling their book for a percentage of the price they originally paid while taking the Campus Store price into account.
FR19	System shall allow sellers to edit their posting.	The seller may want to change the price or edit their posting.

Table 5: Requirements for Posting Book

9.2 Buying Book

Requirement	Description	Rationale
FR5	The system shall allow buyers to find books for a specified course code.	Buyers may want to find the books available for a courses that they are taking.
FR6	The system shall allow buyers to find books by book name.	Buyers may be looking for a specific book.
FR7	The system shall allow buyers to initiate a chat with sellers using Microsoft Teams.	This way, the users can continue enjoying the secure nature of the platform.
FR8	The system shall allow buyers to contact sellers using email.	Not all buyers may be comfortable with a chat-feature and may prefer something more formal.
FR9	The system shall only give sellers' information to authorized buyers.	Sellers may be uncomfortable with their name, photo, and contact information being available on the open internet. Only allowing authorized buyers will reduce privacy and spam concerns.
FR10	The system shall allow buyers to find books at the campus store.	The selection of used books may not satisfy the buyer. In this case, they can opt to purchase the book from the campus store.

Table 6: Requirements for Buying Book

9.3 Authentication System

Requirement	Description	Rationale
FR11	The system shall allow new users to create an account.	Users will need an account in order to use the website as verified users.
FR12	The system shall allow users to delete their account.	Users may wish to no longer have their information on the website.
FR13	The system shall provide tips regarding safe interaction between buyers and sellers.	-
FR15	The system shall allow existing users to login.	-
FR16	The system shall allow authenticated users to logout.	-
FR17	The system shall allow authenticated users to update their user information.	Users may wish to modify their account information such as name or profile image
FR18	The system shall prevent users modifying user information that is not their own.	-

Table 7: Requirements for the Authentication System

10 Functional Requirements Likelihood of Change

NOTE: All unlisted requirements are very unlikely to change as they are imperative to our project goals.

Requirement	Likelihood (1-5)	Rationale
FR7	3	We may have difficulty interfacing with Microsoft Teams as a chat platform for connecting users.

Table 8: Functional requirements likely to change

11 Non-Functional Requirements (NFR)

11.1 Look and Feel Requirements

Requirement	Description	Rationale
NFR1	The application GUI must have a self-consistent design language; a GUI component that appears in multiple contexts should have a similar look and feel in all contexts.	This will provide a system that users feel is trustworthy and intuitive.

Table 9: NFR: Look and Feel

11.2 Usability Requirements

Requirement	Description	Rationale
NFR2	It should take no more than 10 minutes for a new user to create an account and make a used book listing.	-
NFR3	It should take no more than 5 minutes for a new user to find a book that they are looking for.	-

Table 10: NFR: Usability

11.3 Performance Requirements

Requirement	Description	Rationale
NFR4	The 95 th percentile of a sample of page load times must be under 3 seconds	-
NFR5	Server must support 1000 concurrent users.	-
NFR6	A book must be listed to the website within 3 seconds of submission and visible to other users on the website.	-
NFR7	The application must have an availability rate of 99.9% within any allocated time frame.	-

Table 11: NFR: Performance

11.4 Operational and Environmental Requirements

11.5 Maintainability and Support Requirements

11.6 Security Requirements

11.7 Cultural Requirements

Requirement	Description	Rationale
NFR8	The application should be able to be operated by at least one person who has limited system administration experience.	-
NFR9	The operational costs of the application should be minimized.	-
NFR10	Users can access all functionality with any browser with > 2% market-share in Canada [1]	This way, the website is accessible to the majority of users.

Table 12: NFR: Operation and Environment

Requirement	Description	Rationale
NFR11	The application should be maintainable by at least one developer who is skilled in the technologies used to develop the application.	-

Table 13: NFR: Support and Maintainability

Requirement	Description	Rationale
NFR12	Attackers should be unable to access confidential data stored by the application's servers.	-
NFR13	Attackers should be incapable of running arbitrary code on any of the servers running components of the application.	-
NFR14	Attackers should be unable of intercepting or monitoring data and events exchanged between the user's device and the application servers, given that neither the application servers nor the user's device are compromised.	-

Table 14: NFR: Safety

Requirement	Description	Rationale
NFR15	The user-interface of the application will be in Canadian English.	English is the most widely spoken language and most of our users will be better acquainted with Canadian English.

Table 15: NFR: Cultural

Requirement	Description	Rationale
NFR16	The application should avoid operating in geographical locations where strict data privacy is required, such as the European Union (EU) and California.	The privacy laws of the EU and of California are quite intricate and navigating through them would be quite a large challenge.

Table 16: NFR: Legal

11.8 Legal Requirements

11.9 Health and Safety Requirements

Requirement	Description	Rationale
NFR17	The application should foster an environment where users feel safe.	-
NFR18	All external communication systems that the application supports should provide mechanisms to allow users to discontinue all communication with another user.	Users should be able to block other users if they feel harassed/spammed.
NFR19	The application should adequately notify users of the inherit risk of meeting with a stranger in order to purchase a used textbook.	Meeting a stranger, even if they're verified, has its risks and users have the right to know all the risks that involve meeting a stranger.

Table 17: NFR: Health and Safety

References

- [1] S. Liu, "Canada most popular desktop browsers 2021," Statista, 04-Oct-2021. [Online]. Available: <https://www.statista.com/statistics/499462/most-popular-desktop-browsers-in-canada-by-market-share/>. [Accessed: 17-Oct-2021].