GAME STORE MANAGEMENT SYSTEM(GSMS)

Design Document

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1. Abstract

Game Store Management System (GSMS) is an entirely extensible e-commerce system particularly designed for the procedures of game stores. It has an easy front-end through which potential customers can access and buy many games. However, the tools for managing inventory, sales, and customer data are very powerful for store administrators. The primary features include a secure payment gateway, customization of product listings, and a convenient feature of the wish list. GSMS will help a game store to run its business smoothly by growing customer satisfaction while increasing its business.

2. Introduction

Game stores work in a very dynamic, competitive atmosphere and face many hurdles which can reduce profitability and business efficiency. The traditional management practices that are implemented in game shops have inefficiency, mistake, and absence of crucial information, which cannot provide competitiveness. Therefore, there is a significant requirement of implementing a contemporary solution such as the Game Store Management System within the system to help improve operations by making the business method more efficient.

The GSMS is intended to change how the game store runs as it automates mundane jobs besides providing instant feedback on key aspects such as the performance of the stores and decision-making processes. This system increases efficiency and increases satisfaction from customers, which directly increases the success of the business. The GSMS provides a central hub for control of the inventory and sales processing besides customer relationships and tracking the finances thus omitting some of the errors that take place with common systems and delays.

Certainly, one of the most glaring challenges when running traditional game stores is inventory control. GSMS eliminates this by providing for an integrated license management system that replaces physical tracking of inventory levels. Retailers can easily track and monitor digital game licenses with the surety of having games available for sale with no incidents of running out of inventory. GSMS is an automated online system for selling digital copies that enables the instant provision of licenses; hence, there is access to games any time without interruption or deficit.

The GSMS is more than inventory management; it gives customers a better experience while shopping. Users can browse featured games, discounts, and free games and place them in their Wishlist or cart. It supports various payment methods, thus giving customer ease of buying in-game purchases. After the in-game purchase is successful, the games are added to the user's library. Their download status shows whether they have been played or updated. Such an efficient process creates user-friendliness, hence marking efficiency in the entire customer experience of purchase.

The system encompasses solid tools for managing sales and loyalty programs. For instance, GSMS makes checkouts at retail stores straightforward and hence makes them not only quicker but also more accurate. It supports loyalty programs under which repeat customers can earn rewards, hence making it more interactive with the customers.

An administrative view of GSMS allows administrators of stores to monitor the game catalog by adding or removing games and controlling current sales. Additionally, the administrators can track how the pages of the store work to ensure their proper functionality. Besides managing products, the system helps administrators track employee performance, payroll management, and integration with other systems, including accounting software and e-commerce platforms, that reduce the amount of manual data entry.

In general, GSMS will raise the demands of game dealers for ensuring the speed of automatic crucial functions, giving them precious analysis, and creating an integrated customer experience. The general system ensures that various optimization processes related to the occurrence of game selection, purchasing, and inventory management will enable the game stores to gain much better performance, compete, and sustain growth.

2.1. Problem Statement

Digitally licensed games pose problems of management of the licenses, tracking of sales, and ensuring an effective experience for customers in buying the games. The system used generally results in inefficiencies, missed sales, and limited visibility into performance at each store. This leaves the retailer in the position to meet customer expectations, improve its operational efficiency, and become more competitive within an increasingly dynamic digital marketplace.

2.2. Objectives

The GSMS is designed to meet the following intents:

- **Licensing Management Automated:**
  - This will eliminate the need to track physical inventories by managing digital game licenses.
  - Guarantee consistent availability of games, thereby preventing stockouts or shortages.
  - Instant achievement of acquired licenses and excellent game diffusion.
- **Improved Sales Process:**
  - Sales transaction optimization will ensure speedy and hassle-free transactions for customers.
  - Integrate with multiple payment methods, improving customer convenience.
  - It keeps track of acquisition and refreshes the user's library to readily download or play the games.

- **Higher Consumer Participation:**
  - It provides a unique purchasing experience by offering personalized game recommendations.
  - Wishlist and shopping cart for easy game surfing and purchases later.
  - Loyalty programs with reward schemes encourage repeat business.
- **Evidence-Based Decision Making:**
  - Comprehensive report and analytics generation.
  - Sales trend and consumer behavior analysis.
  - To support informed decisions on product selection, pricing, and marketing strategies.
- **Effective Administrative Actions:**
  - Admins should be able to add, remove, or manage games and sales conveniently.
  - Monitor page performance and the overall system health to ensure smooth store functionality.
  - Payroll, accounting and e-commerce links with third-party payroll, accounting, and e-commerce to prevent manual key in.
- **Data-informed decision making:**
  - Utilize such knowledge acquired for effective decisions about the products, promotions, and price.
- **Scalability and Flexibility:**
  - The system can be scaled according to different-sized game store undertakings and varying customers, hence with scale-up prospects.
- **Dependability and Safety:**
  - It secures the confidential customer and business information.
  - Elevation of system availability and reliability are geared toward facilitating unbroken operations.

These, in turn, enable the game store to enhance operational efficiency, increase customers, and improve overall business with the GSMS.

2.3. Vision

The Game Store Management System targets the slot of a product of choice in game retailers' business through an easy-to-use, efficient platform that brings a change to the way the game stores operate. Our goals are:

- **Empowerment of Game Retailers:** Enable Game Retailers Via a holistic solution which enables the owner and staff to make better, data-driven decisions in their day-to-day tasks.
- **Improved Customer Experience:** By giving recommendations on items, the prompt response of the questions, and so on the experience of customers will improve.
- **Facilitating Industry Growth:** The advancement of new approaches and operational efficiency in the video game industry towards sustainable prosperity and growth.

- **New Benchmark:** It should be followed as a benchmark among industries, provide efficient, high-performance solution that boosts customer satisfaction, and increase store management practices.

It would benefit not only the individual gaming retailer but also the larger, overarching gaming retail segment toward firm-level long-term success and growth.

2.4. Scope and Features

The Game Store Management System has following main characteristics:

2.4.1. Licensing Control

- **Digital Game Inventory:** The list of games, the platforms they are available on, and their prices will be updated regularly.
- **License Monitoring:** The digital games license will be monitored systematically so that they never run out of stock.
- **Orders:** Generate purchase orders from suppliers to restore their stock levels.
- **Automatic License Delivery:** The game license will be provided immediately after purchasing the game, so no physical stock management is required.

2.4.2. Sales Management

- **Facilitated Transactions:** All transactions should be smooth and managed properly to enhance user experience.

2.4.3. Customer Service

- **Loyalty Programs:** Loyalty Programs-Develop your reward points scheme to be used among your return customers for increased retention and long-term partnerships.
- **Facilitation and Technical Support:** It also will provide technical support hence promoting friendly customer purchasing conditions. The customer will have the capability of better searching, buying, and organizing games in one's library.

2.4.4. Additional Features

- **Auxiliary systems:** It connects to other applications, for example, the accounting packages and electronic online shops, hence increasing the effectiveness of their activities.
- **Security and Data Protection:** The company's security should be set so robust on customer data besides storing some information.
- **User Control Access:** Manage various accesses for different kinds of users to secure sensitive data and ensure the system's integrity.

This enriched function collection helps the video games retailer increase quality through operations that achieve high standards of customer satisfaction and competitiveness in the changing face of retailing.

3. Requirement Analysis

3.1. Related Work

There are several platforms available in the market for purchasing and managing games that offer similar functionality to our proposed game store, such as:

Steam – The graphical unit interface of steam is as shown in the [Figure 1: Login Figure 2: Main Page Figure 3: Item Figure 4: Payment Figure 5: Library]. The user has at his disposal possibilities of registering on the platform, viewing the games on offer, carrying out purchases etc. In the case of purchase, after selecting a game, the user can go to the checkout page where several payment methods such as a credit card, PayPal, or other options are available. After successful payment, the purchased game is automatically stored in the steam's library. Games may be downloaded from the library's contents or managing the game and starting it can also be done through the library. Moreover, there are plenty of discounts and sales on the Gamers' website as well as many free games.[1]
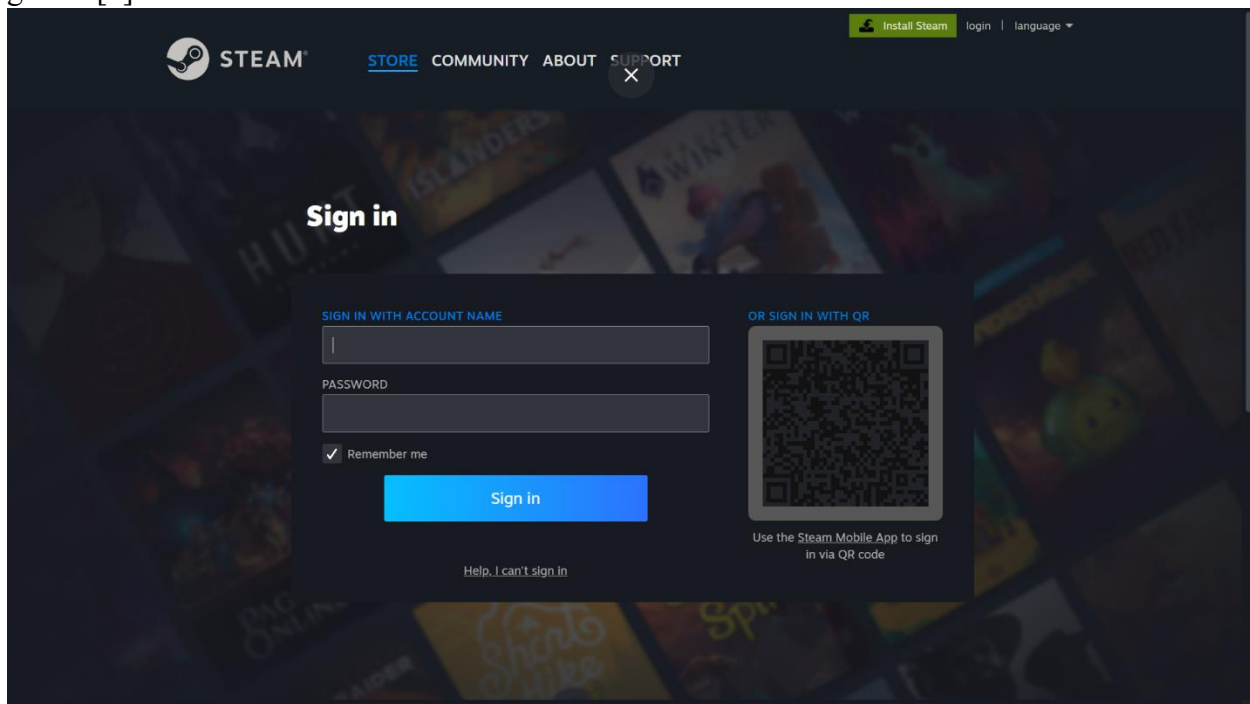
Figure 1: Login
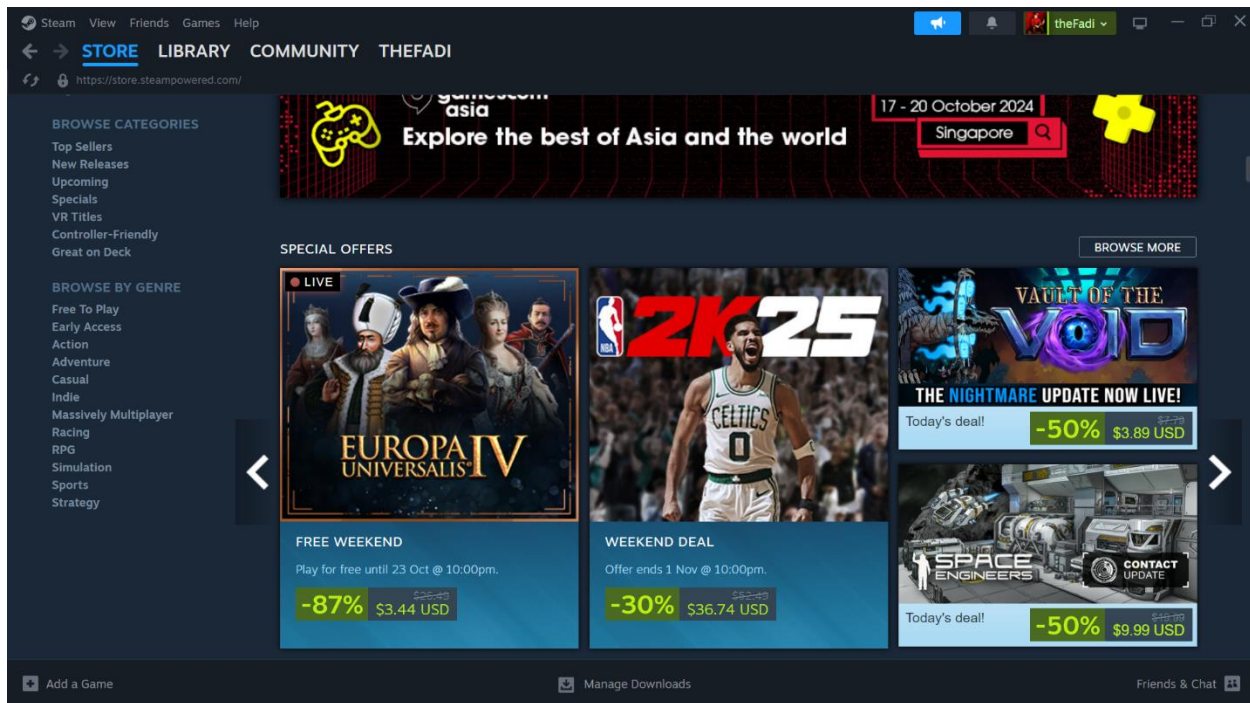
Figure 2: Main Page
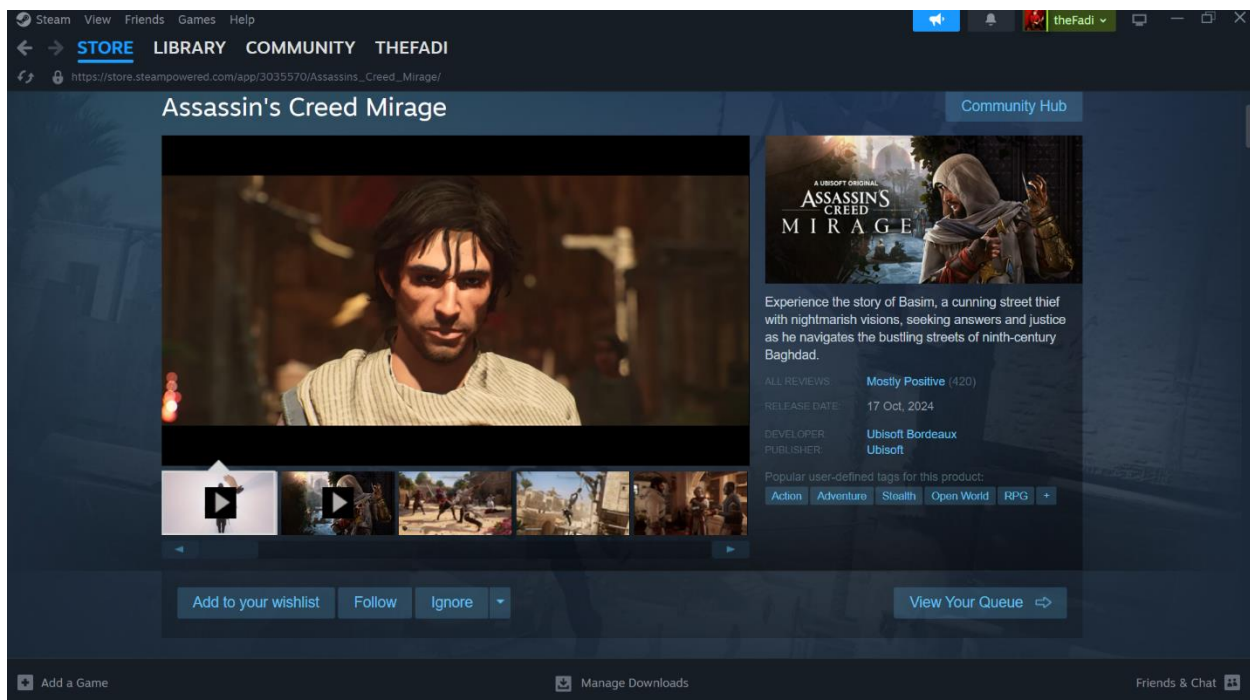
Figure 3: Item
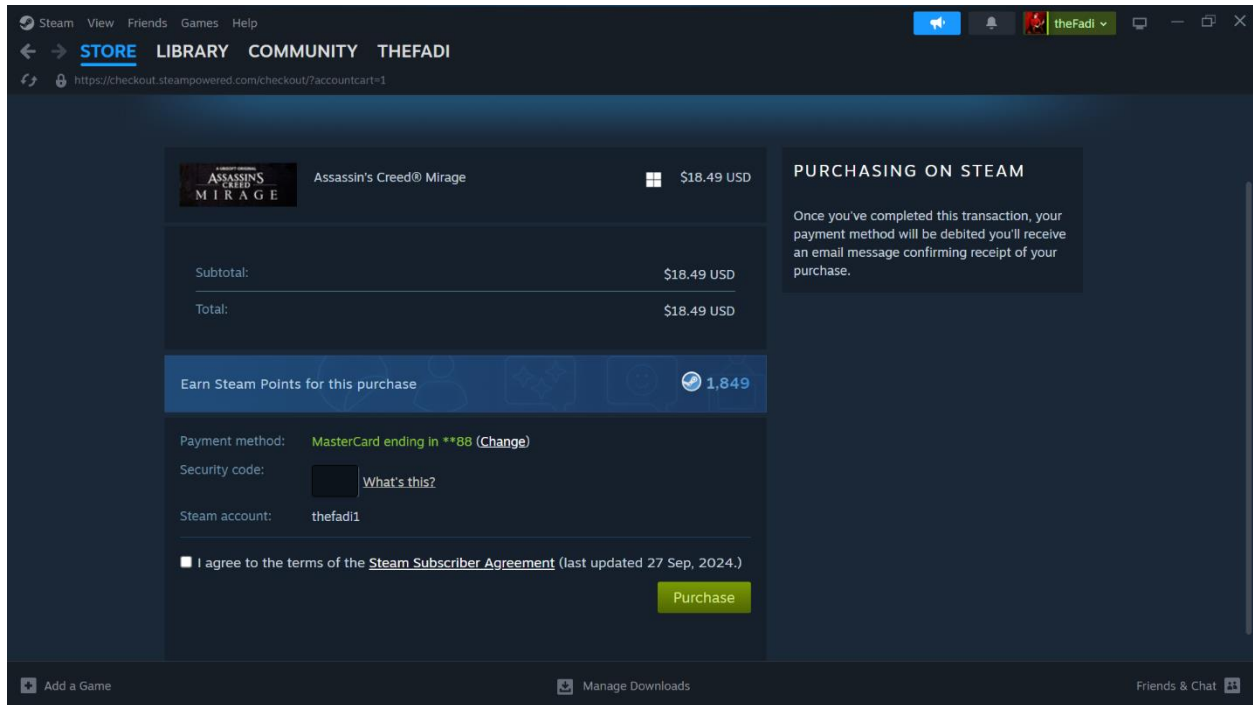
Figure 4: Payment
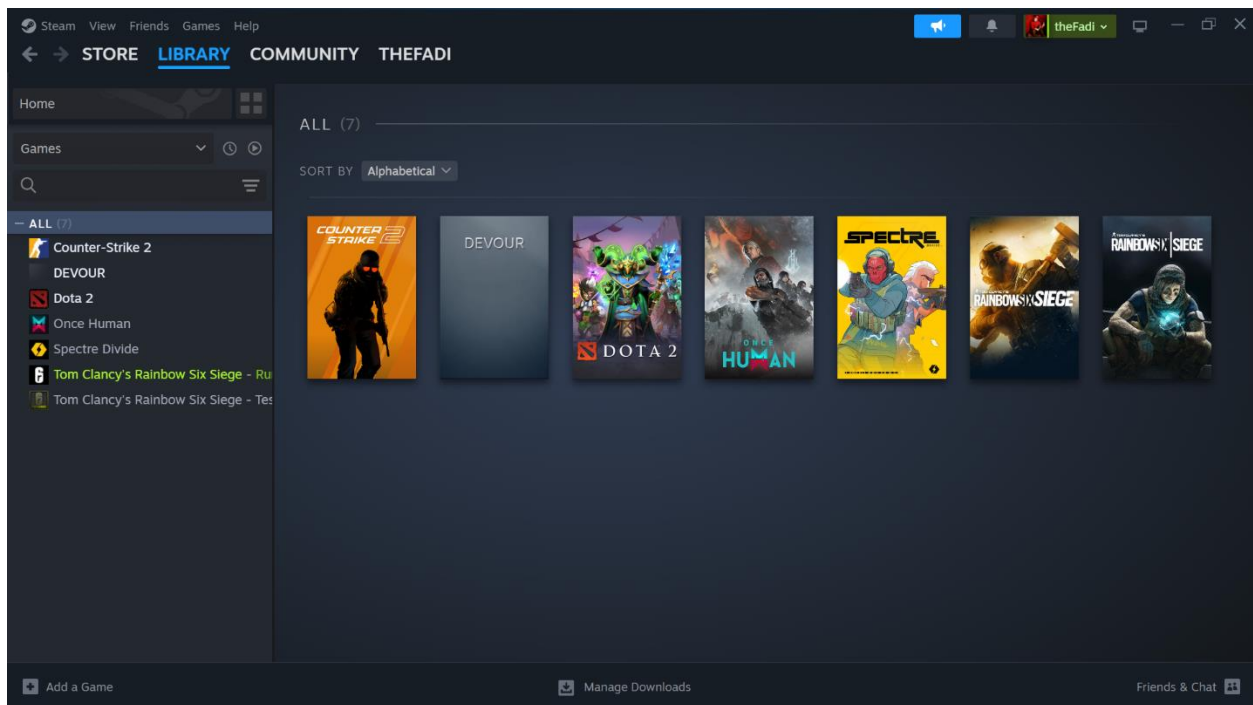
Figure 5: Library

Epic Games – The graphical user interface of the epic games store is as shown in the images [Figure 6: Login Figure 7: Store Figure 8: Item Figure 9: Checkout Figure 10: Library]. Users have the option of registering for an account, choosing one of the featured games, browsing a variety of games and putting them into their shopping cart. After the purchase of games, users are also able to click on the checkout options where they can also choose from several payment options such as credit cards, PayPal, and other mobile banking methods. After purchase, the game will be available in a user's Library from which it can be downloaded.[2]
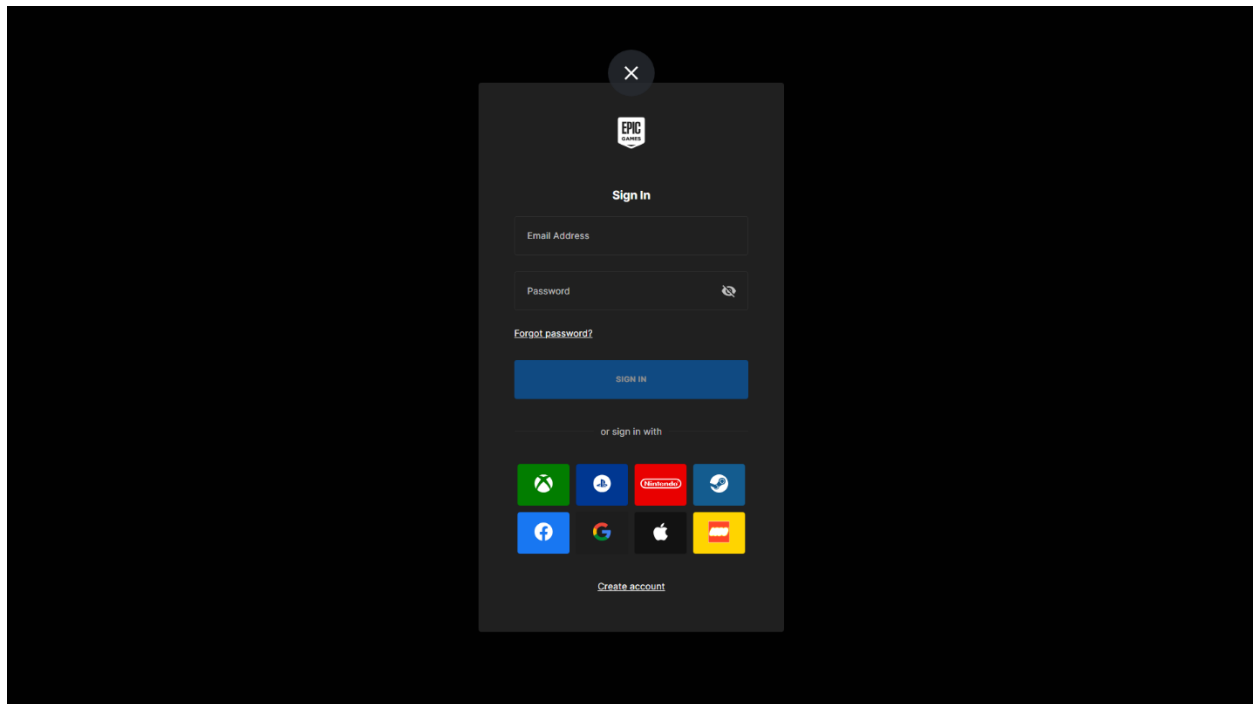
Figure 6: Login
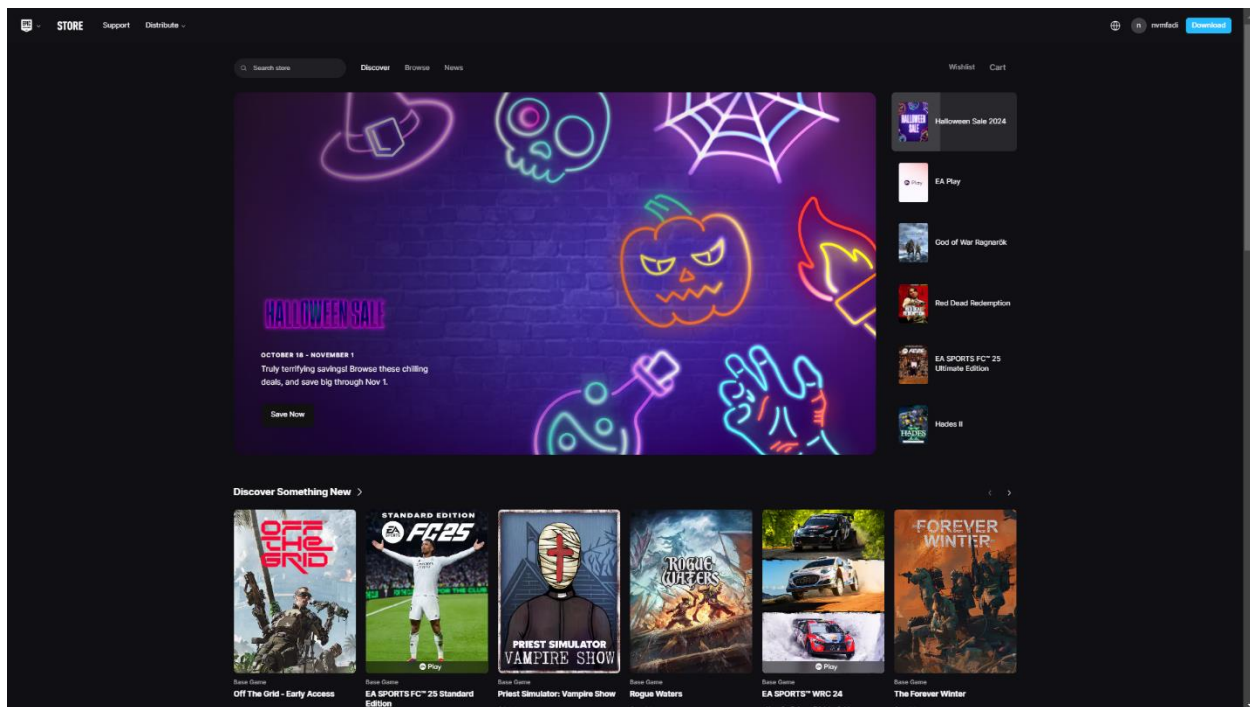
Figure 7: Store
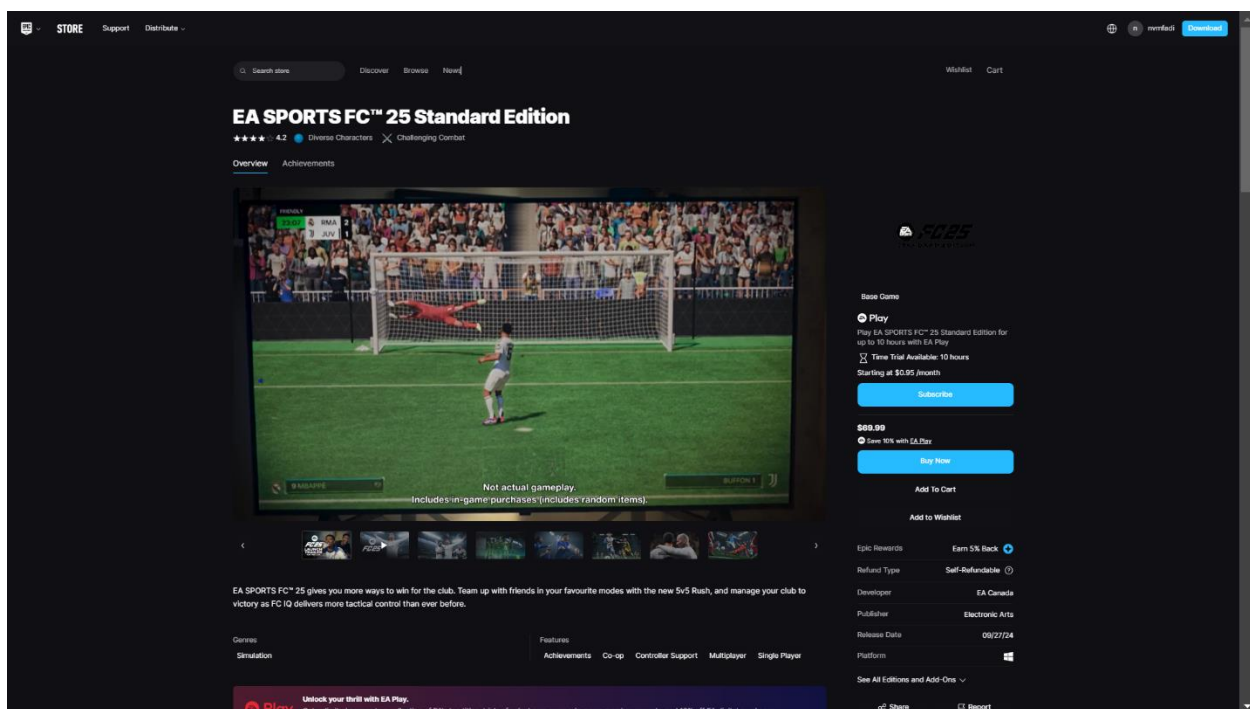
Figure 8: Item
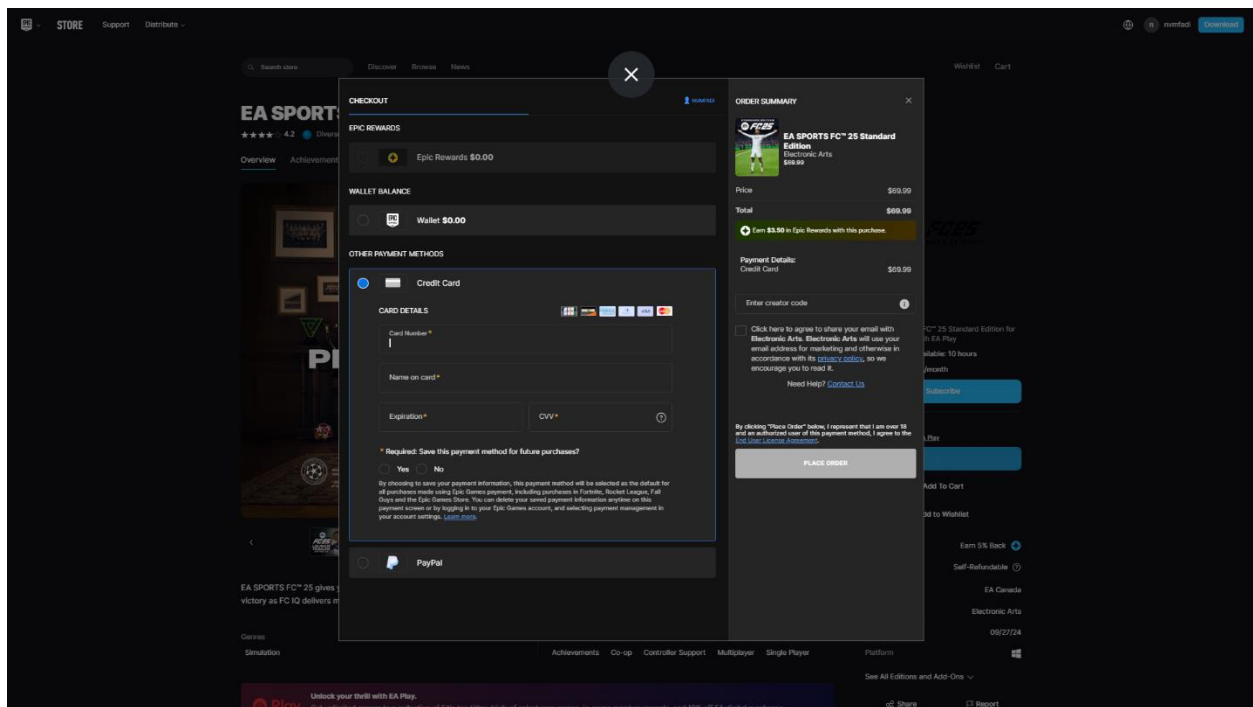
Figure 9: Checkout
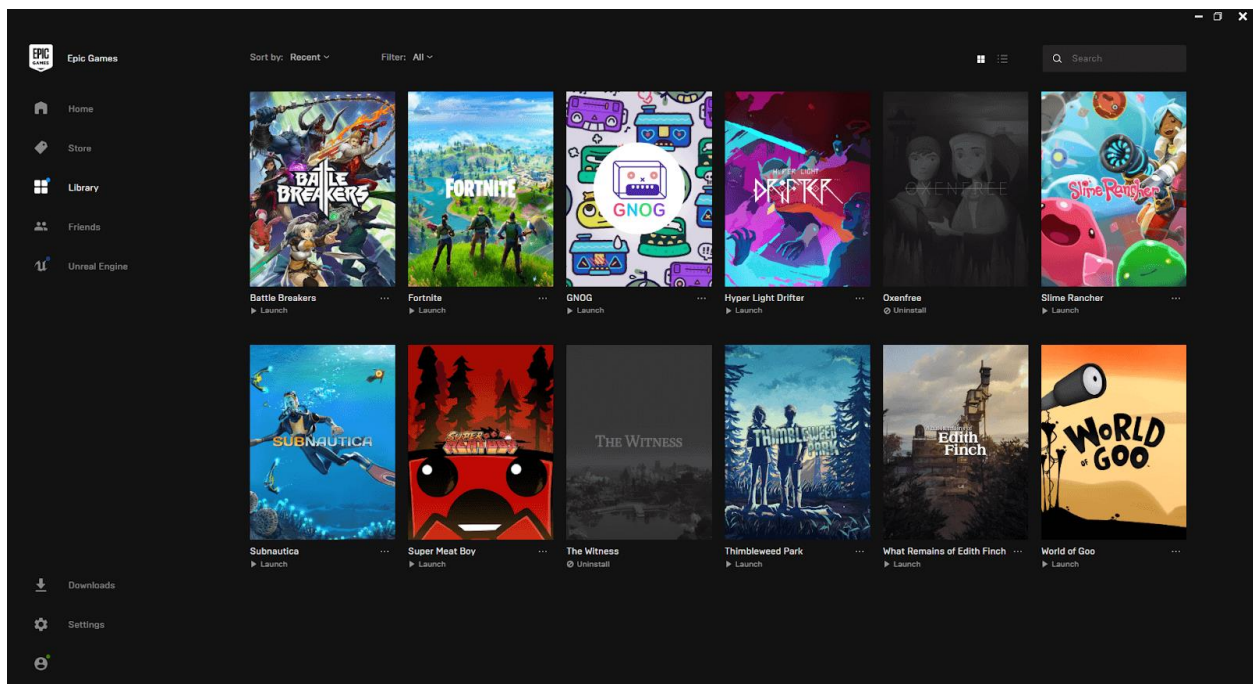
Figure 10: Library

3.2. Functional Requirements

Index	Priority	Requirements
FR-01-01	1	The system shall provide a login page for users to enter details.
FR-01-02	1	The system shall allow the user to login by entering username and password.
FR-01-03	1	The system shall allow the admin to login as admin by entering username and password.

Table 1.1: Login

Index	Priority	Requirements
FR-02-01	1	The system shall provide a signup page for users to create an account.
FR-02-02	1	The system shall allow the user to sign by entering its username and password.

Table 1.2: Signup

Index	Priority	Requirements
FR-03-01	1	The system shall allow the admin to add new games.
FR-03-02	1	The system shall allow the admin to remove games from the store.
FR-03-03	1	The system shall allow the admin to set the price for each game.
FR-03-03	2	The system shall allow the admin to apply or remove sales.
FR-03-04	2	The system shall allow the admin to view all users.
FR-03-05	2	The system shall allow the admin to delete any user they want.

Table 1.3: Admin Function

Index	Priority	Requirements
FR-04-01	1	The system shall allow the users to create their accounts and manage them.

Table 1.4: Account Management

Index	Priority	Requirements
FR-04-01	1	The system shall allow the users to purchase games using various payment methods.
FR-04-02	1	The system shall provide the Wishlist feature for users to save game they want to buy later.

| FR-04-03 | 1 | The system shall allow users to view their games in library. |
| FR-04-03 | 2 | The system shall provide a built-in launcher for downloaded games. |

Table 1.5: Game Purchasing and Ownership

Index	Priority	Requirements
FR-06-01	2	The system shall offer a featuring games system to the user.
FR-06-02	2	The system shall allow users to write in the review section to discuss games and connect with other players.

Table 1.6: Community and Engagement

Index	Priority	Requirements
FR-07-01	1	The system shall allow the users to add items to their shopping cart.
FR-07-02	1	The system shall allow users to remove items from their shopping cart.
FR-07-03	1	The system shall allow the users to view the contents of his/her shopping cart.
FR-07-04	1	The system shall display the total cost in the cart.

Table 1.7: Cart

Index	Priority	Requirements
FR-08-01	1	The system shall allow the users to select a payment method.
FR-08-02	1	The system shall utilize multiple payment methods, including credit cards, debit cards, and digital wallets.
FR-08-03	1	The system shall securely process payments using industry-standard encryption.
FR-08-04	1	The system shall provide order confirmation and receipt to the user after a successful payment.
FR-08-05	2	The system shall handle payment failures.

Table 1.8: Payment

Index	Priority	Requirements
FR-09-01	1	The system shall allow users to search for games in their library, home page, Wishlist, and cart.

FR-09-02	1	The system shall allow the admin to search games in remove game and sale page.

Table 1.9: Search

3.3. Non-Functional Requirements

Index	Priority	Requirements
FR-01-01	1	The system must provide a user-friendly interface.
FR-01-02	1	The system must not require too much knowledge about it to use.
FR-01-03	1	The system must provide an easy language to understand.

Table 2.1: Usability

Index	Priority	Requirements
FR-02-01	2	The system must provide 24/7 availability without any errors.
FR-02-02	1	The system must reduce errors in data management.

Table 2.2: Reliability

Index	Priority	Requirements
FR-03-01	2	The system must require space according to device.

Table 2.3: Scalability

Index	Priority	Requirements
FR-04-01	2	The system must take 0.5 seconds to respond.
FR-04-02	2	The system must take 1.5 seconds to save records in the database.

Table 2.4: Performance

Index	Priority	Requirements
FR-05-01	1	The system must be a cross-platform system.

Table 2.5: Supportability

Index	Priority	Requirements
FR-06-01	1	The system must only be accessed to authorized users.

Table 2.6: Security

Index	Priority	Requirements
FR-07-01	2	The system must be easy to maintain and update.
FR-07-02	1	The system must have clear documentation and code comments.
FR-07-03	2	The system must be modular and scalable to accommodate future changes.

Table 2.7: Maintenance

3.4. Business Requirements

Index	Priority	Requirements
FR-01-01	1	The system must reduce order errors by at least 25% within the first year of implementation.
FR-01-02	1	The system must enhance customer satisfaction and increase revenue by $5,000 within the first year of implementation.

Table 3.1: Error Reduction

Index	Priority	Requirements
FR-02-01	1	The system must improve operational efficiency by automating inventory management and order processing by 30%.

Table 3.2: Increased Efficiency

Index	Priority	Requirements
FR-03-01	1	The system must increase monthly sales by 10% within the first year through improved customer engagement.

Table 3.3: Sales Growth

Index	Priority	Requirements

Index	Priority	Requirements
FR-04-01	1	The system must be able to handle at least 1000 products and 500 orders daily.

Table 3.4: Scalability

3.5. Physical Requirements

Index	Priority	Requirements
FR-01-01	1	The system must have each workstation's minimum memory 8 GB RAM, a modern core multi-processor and at least 256 GB SSD.

Table 4.1: Workstation

Index	Priority	Requirements
FR-02-01	2	The system must operate on a stable local area network(LAN).

Table 4.2: Network Infrastructure

Index	Priority	Requirements
FR-04-01	1	The system must utilize a relational Database Management System.

Table 4.3: DBMS

Index	Priority	Requirements
FR-04-01	2	The system must be attached to a reliable uninterruptable power supply (UPS) to maintain operations during power cut out.
FR-03-02	1	The system must not be accessed by unauthorized users.

Table 4.4: Power and Security

3.6. Development Requirements

Index	Priority	Requirements
FR-01-01	1	The system must be developed using C# for backend services.
FR-01-02	1	The system must use Windows form for front-end development.

Index	Priority	Requirements
FR-02-01	1	The system must use Visual Studio as the IDE for coding, debugging, and deploying the application.

Table 5.2: Environment

Index	Priority	Requirements
FR-03-01	1	The system must use a relational database management system (RDBMS) such as MySQL.
FR-03-02	2	The system must ensure that database scheme is optimized for performance.

Table 5.3: DBMS

3.7. Wireframes
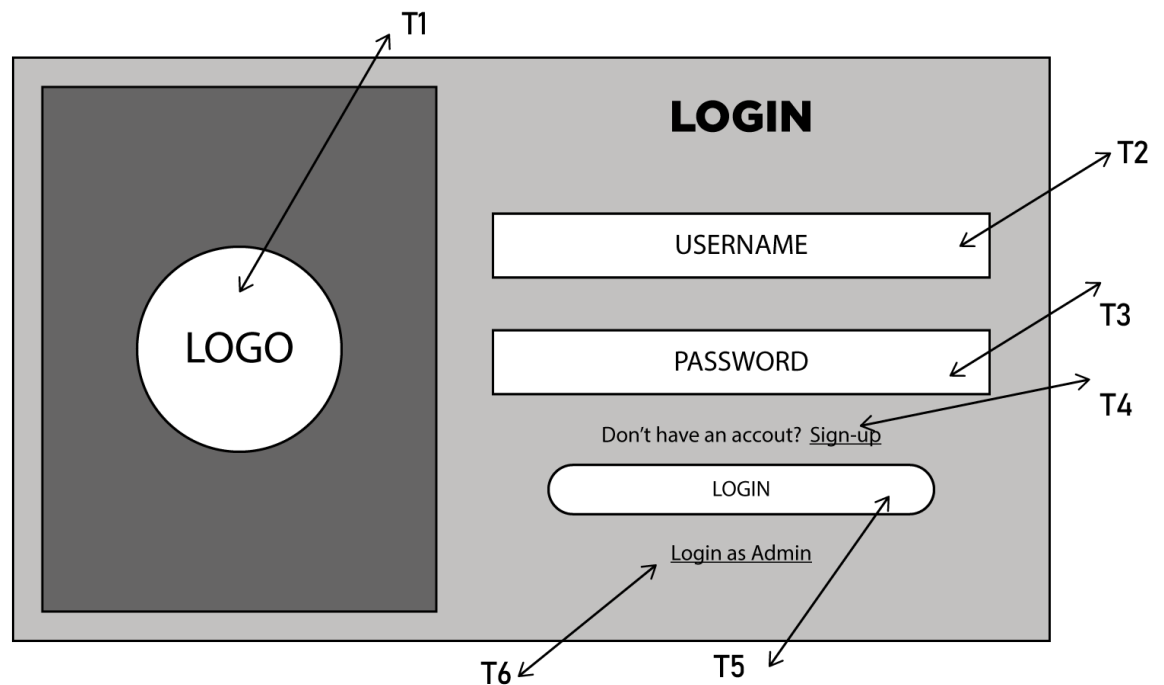
Figure 11: Login Wireframe

Requirement	User	Admin

T1	As a user, I shall be able to see Logo.	As an admin, I shall ensure logo is displayed correctly.
T2	As a user, I shall be able to enter my username in the username field.	As an admin, I shall ensure username is displayed correctly.
T3	As a user, I shall be able to enter my password in the password field.	As an admin, I shall ensure the password is displayed correctly.
T4	As a user, I shall click on Login button to login.	As an admin, I shall ensure the login button takes the user to Home page.
T5	As a user, I shall be able to create a new account by clicking on "Don't have an account? Sign-up".	As an admin, I shall ensure "Don't have an account? Sign-up" link takes the user to Sign-up page.
T6	As a user, I shall not click on "Login as admin"	As an admin, I shall click on "Login as admin" to login.

Table 3.7.1: Wireframe Login
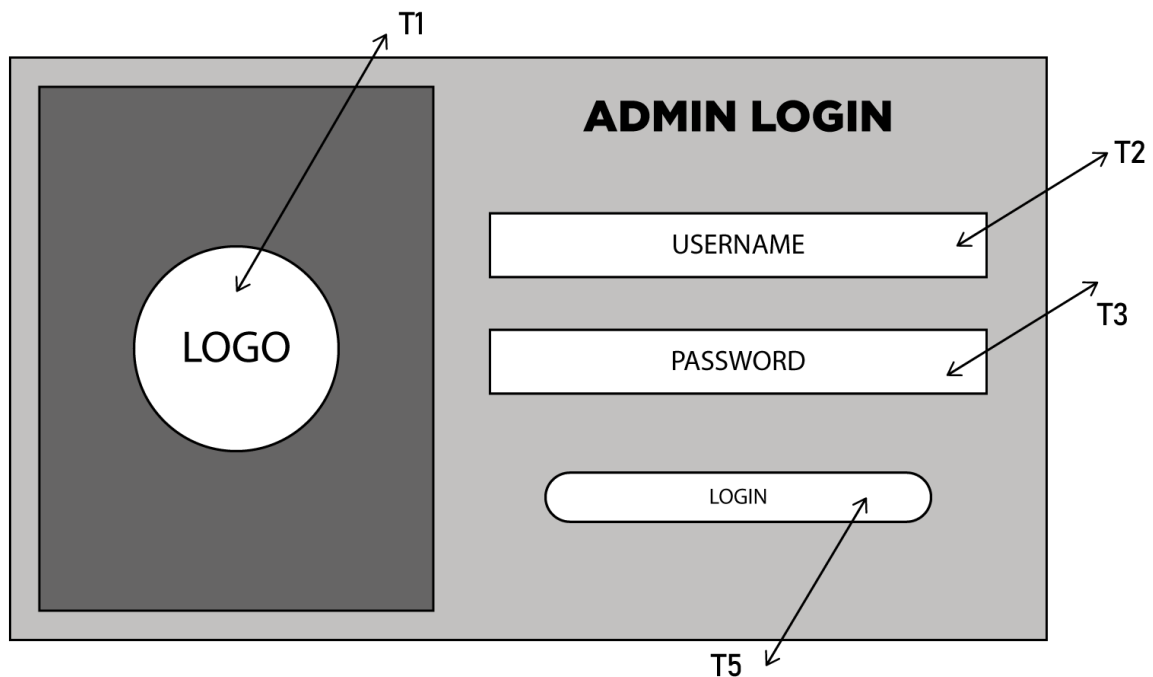
Figure 12: Admin Login Wireframe

Requirement	User	Admin
T1	As a user, I shall not be able to see Logo.	As an admin, I shall ensure logo is displayed correctly.
T2	As a user, I shall not be able to enter my username in the username field.	As an admin, I shall enter my username.
T3	As a user, I shall not be able to enter my password in the password field.	As an admin, I shall enter my password.

| T4	As a user, I shall not be able to login after clicking on Login Button.	As an admin, I shall click on Login button to login as Admin

Table 3.7.2: Admin Login
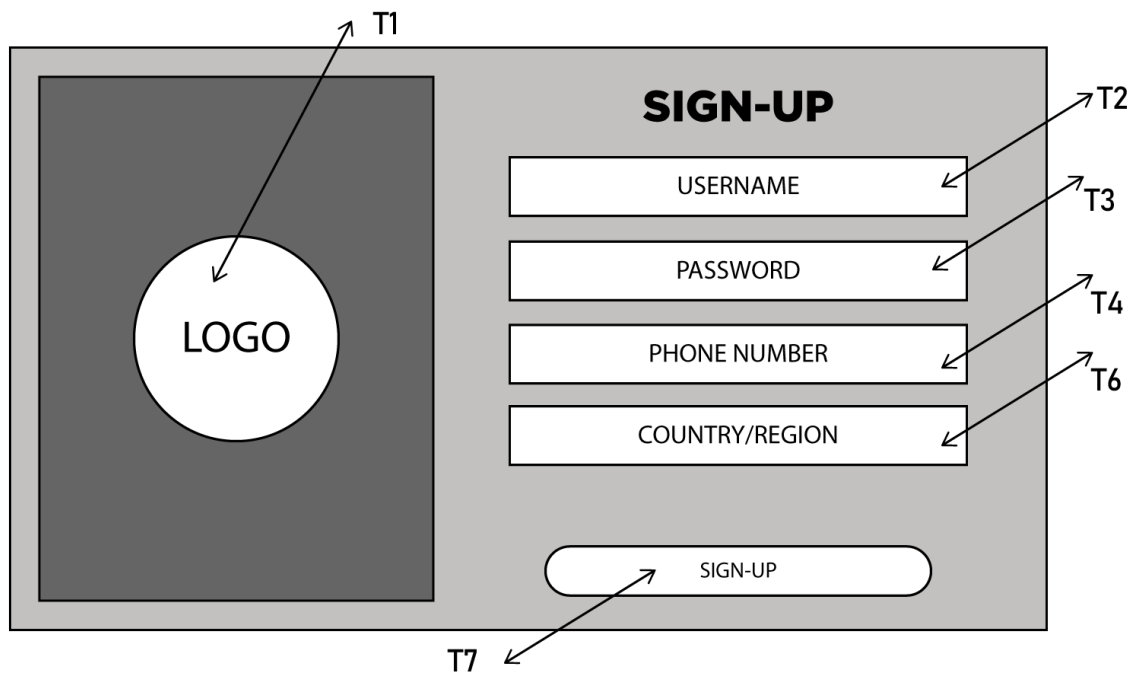
Figure 13: Signup Wireframe

Requirement	User	Admin
T1	As a user, I shall be able to see Logo.	As an admin, I shall ensure logo is displayed correctly.
T2	As a user, I shall be able to enter my username in the username field.	As an admin, I shall ensure username is displayed correctly.
T3	As a user, I shall be able to enter my password in the password field.	As an admin, I shall ensure password is displayed correctly.
T4	As a user, I shall be able to enter my phone number.	As an admin, I shall ensure phone number is displayed correctly.
T5	As a user, I shall be able to enter my Country/Region.	As an admin, I shall ensure that the country/region is displayed correctly.
T6	As a user, I shall click on Sign-up to create a new account	As an admin, I shall ensure Sign up button creates a new account of user.

Table 3.7.3: Sign-up
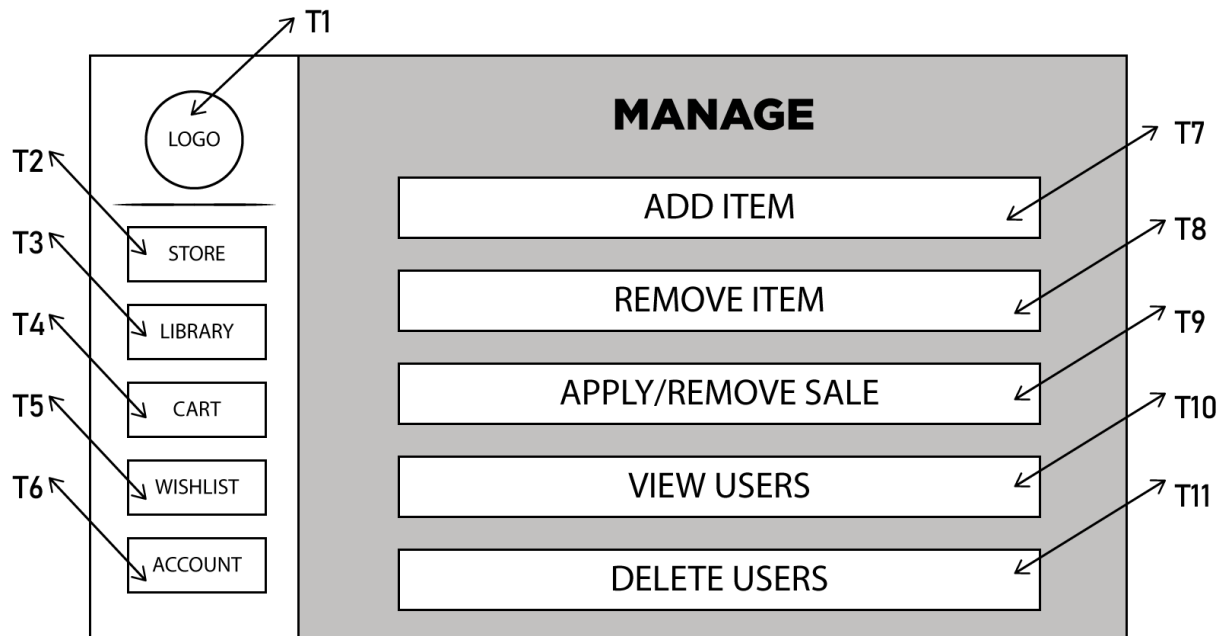
Figure 14: Manage Wireframe

Requirement	User	Admin
T1	As a user, I shall not see the logo of the store.	As an admin, I shall see the logo of the store.
T2	As a user, I shall not see the option to access Store.	As an admin, I shall see the option to access Store.
T3	As a user, I shall not see the option to access Library	As an admin, I shall see the option to access Library
T4	As a user, I shall not see the option to access Cart	As an admin, I shall see the option to access Cart.
T5	As a user, I shall not see the option to access Wishlist.	As an admin, I shall see the option to access Wishlist.
T6	As a user, I shall not see the option to access Account.	As an admin, I shall see the option to access Account.
T7	As a user, I shall not be able to see Add Items button.	As an admin, I shall click on Add Items to add new items.
T8	As a user, I shall not be able to see Remove Item button.	As an admin, I shall click on Delete Items to delete items.
T9	As a user, I shall not be able to see Apply/Remove Sale Button.	As an admin, I shall click on Apply/Remove Sale to apply or remove sale.
T10	As a user, I shall not see the View User option.	As an admin, I shall click on View Users to see all the list of users.
T11	As a user, I shall not see the Delete User option.	As an admin, I shall click on Delete User to delete the users.

Table 3.7.4: Sign-up
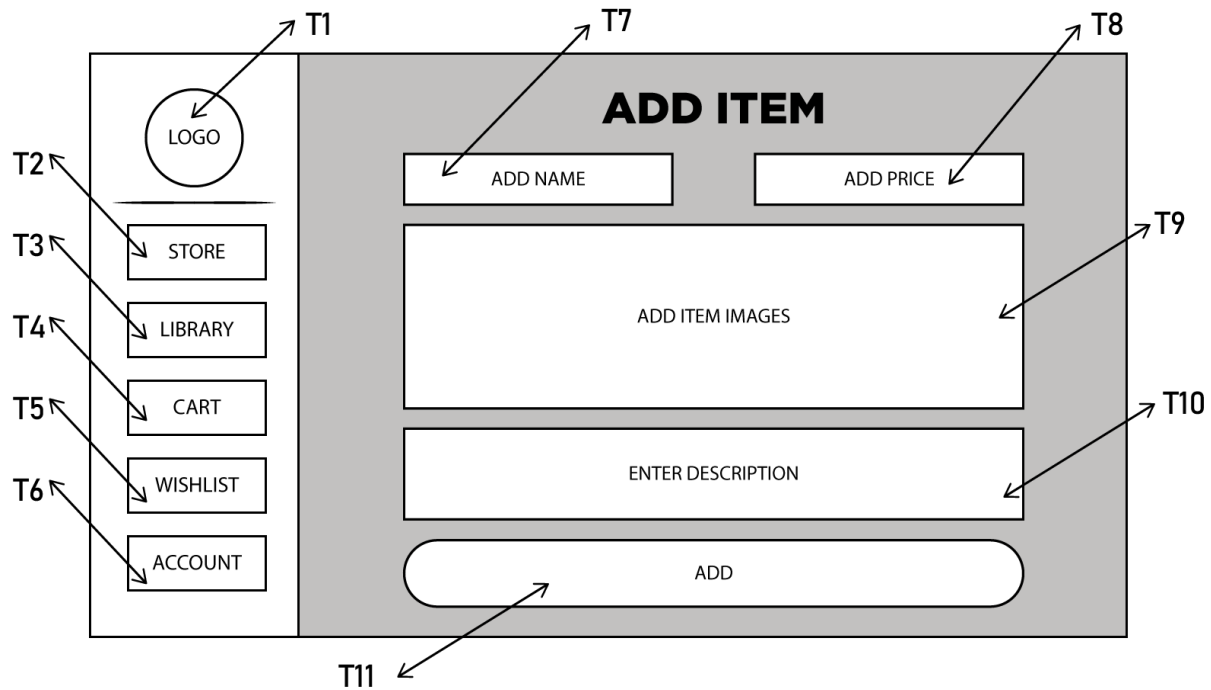
Figure 15: Add Item Wireframe

Requirement	User	Admin
T1	As a user, I shall not see the logo of the store.	As an admin, I shall see the logo of the store.
T2	As a user, I shall not see the option to access Store.	As an admin, I shall see the option to access Store.
T3	As a user, I shall not see the option to access Library	As an admin, I shall see the option to access Library
T4	As a user, I shall not see the option to access Cart	As an admin, I shall see the option to access Cart.
T5	As a user, I shall not see the option to access Wishlist.	As an admin, I shall see the option to access Wishlist.
T6	As a user, I shall not see the option to access Account.	As an admin, I shall see the option to access Account.
T7	As a user, I shall not be able to see Add Name option.	As an admin, I shall see the input field to Add Name.
T8	As a user, I shall not be able to see Add Price option.	As an admin, I shall see the input field to Add Price.
T9	As a user, I shall not be able to see Add Item Images option.	As an admin, I shall the option to Add Item Images.
T10	As a user, I shall not see the Enter Description option.	As an admin, I shall see the input field to Enter Description.
T11	As a user, I shall not see the Add button.	As an admin, I shall click on Add button to add the item.

Table 3.7.5: Add item
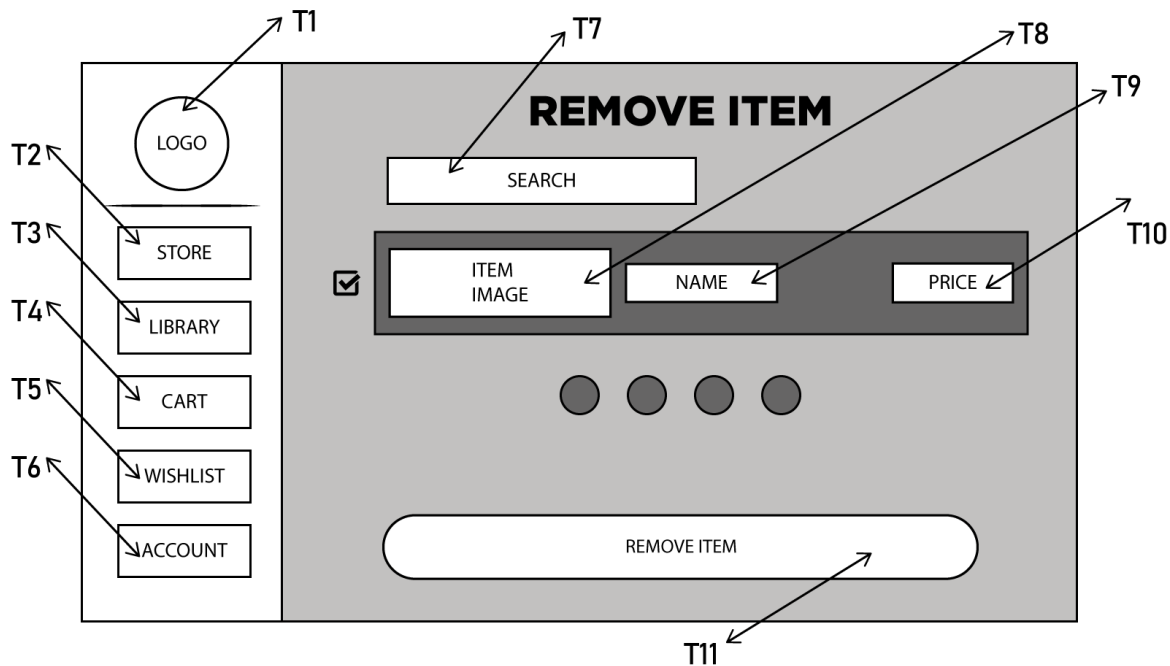
Figure 16: Remove Item Wireframe

Requirement	User	Admin
T1	As a user, I shall not see the logo of the store.	As an admin, I shall see the logo of the store.
T2	As a user, I shall not see the option to access Store.	As an admin, I shall see the option to access Store.
T3	As a user, I shall not see the option to access Library	As an admin, I shall see the option to access Library
T4	As a user, I shall not see the option to access Cart	As an admin, I shall see the option to access Cart.
T5	As a user, I shall not see the option to access Wishlist.	As an admin, I shall see the option to access Wishlist.
T6	As a user, I shall not see the option to access Account.	As an admin, I shall see the option to access Account.
T7	As a user, I shall not be able to see the Search option.	As an admin, I shall search for items in the Search input field.
T8	As a user, I shall not be able to see the Item Image.	As an admin, I shall see the Item Image.
T9	As a user, I shall not see the Item Name.	As an admin, I shall see the Name.
T10	As a user, I shall not see the Price.	As an admin, I shall see the Price
T11	As a user, I shall not see the Remove Item button.	As an admin, I shall delete the items by clicking on Delete button.

Table 3.7.6: Remove item
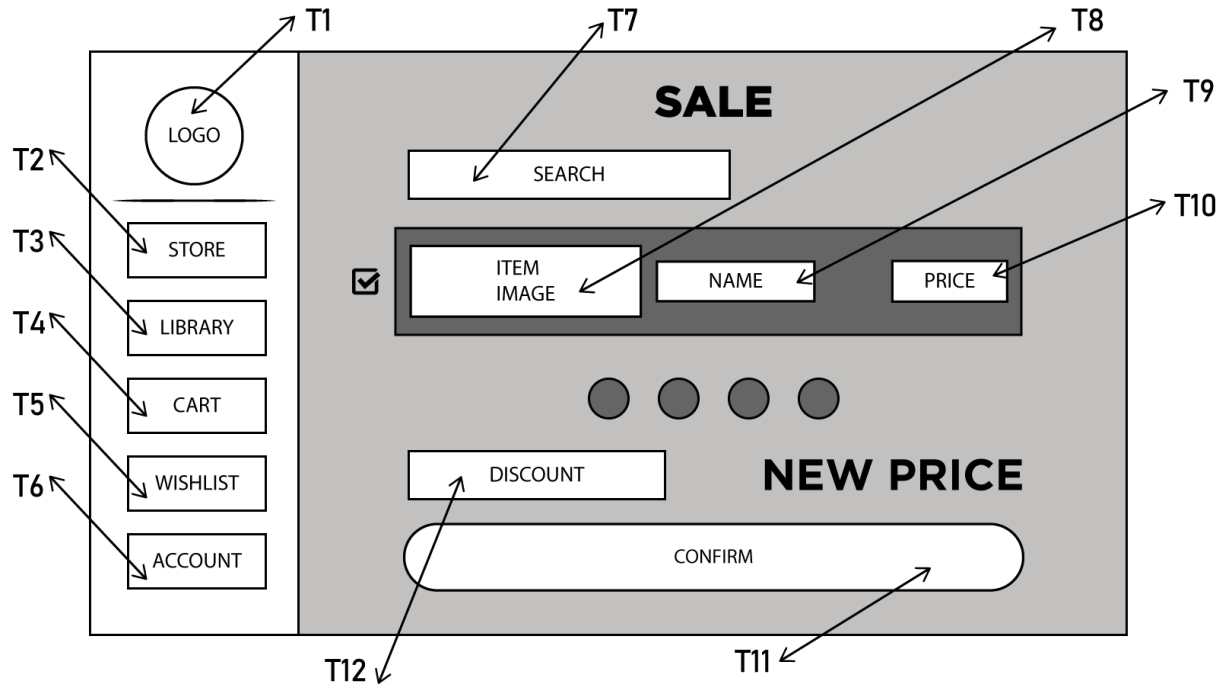
Figure 17: Sale Wireframe

Requirement	User	Admin
T1	As a user, I shall not see the logo of the store.	As an admin, I shall see the logo of the store.
T2	As a user, I shall not see the option to access Store.	As an admin, I shall see the option to access Store.
T3	As a user, I shall not see the option to access Library	As an admin, I shall see the option to access Library
T4	As a user, I shall not see the option to access Cart	As an admin, I shall see the option to access Cart.
T5	As a user, I shall not see the option to access Wishlist.	As an admin, I shall see the option to access Wishlist.
T6	As a user, I shall not see the option to access Account.	As an admin, I shall see the option to access Account.
T7	As a user, I shall not be able to see the Search option.	As an admin, I shall search for items in the Search input field.
T8	As a user, I shall not be able to see the Item Image.	As an admin, I shall see the Item Image.
T9	As a user, I shall not see the Item Name.	As an admin, I shall see the Name.
T10	As a user, I shall not see the Price.	As an admin, I shall see the Price
T11	As a user, I shall not see the Confirm option.	As a admin, I shall see the Confirm option to confirm sale.
T12	As a user, I shall not see the Discount option.	As an admin, I shall write the discount percentage in Discount input field.

Table 3.7.7: Sale
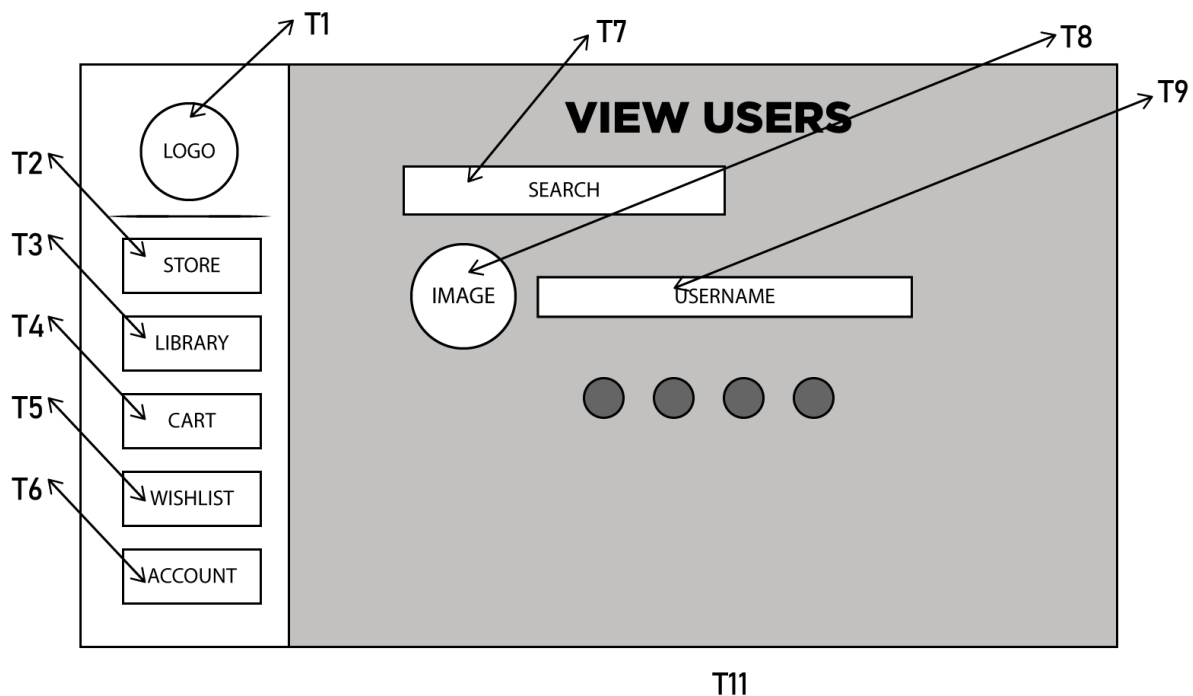
Figure 18: View Users Wireframe

Requirement	User	Admin
T1	As a user, I shall not see the logo of the store.	As an admin, I shall see the logo of the store.
T2	As a user, I shall not see the option to access Store.	As an admin, I shall see the option to access Store.
T3	As a user, I shall not see the option to access Library	As an admin, I shall see the option to access Library
T4	As a user, I shall not see the option to access Cart	As an admin, I shall see the option to access Cart.
T5	As a user, I shall not see the option to access Wishlist.	As an admin, I shall see the option to access Wishlist.
T6	As a user, I shall not see the option to access Account.	As an admin, I shall see the option to access Account.
T7	As a user, I shall not be able to see the Search option.	As an admin, I shall search for items in the Search input field.
T8	As a user, I shall not be able to see the User Image.	As an admin, I shall see the User Image.
T9	As a user, I shall not see the Username.	As an admin, I shall see the Username.

Table 3.7.8: View Users

Figure 19: Delete Users Wireframe

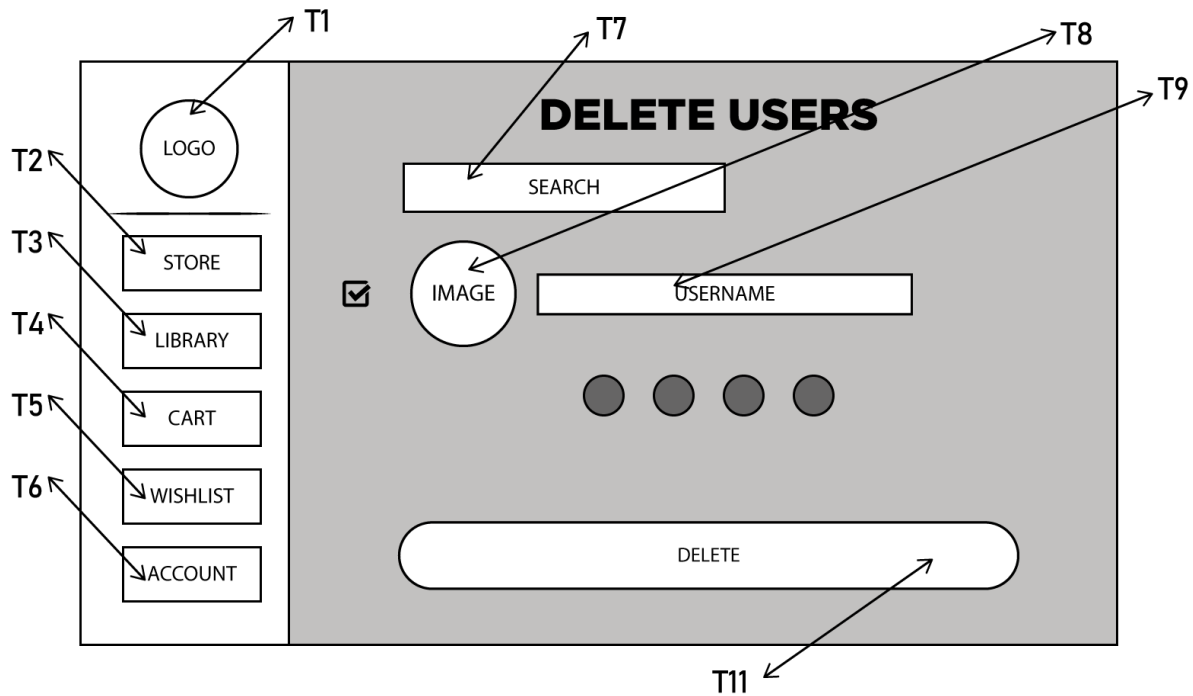| Requirement	User	Admin
T1	As a user, I shall not see the logo of the store.	As an admin, I shall see the logo of the store.
T2	As a user, I shall not see the option to access Store.	As an admin, I shall see the option to access Store.
T3	As a user, I shall not see the option to access Library	As an admin, I shall see the option to access Library
T4	As a user, I shall not see the option to access Cart	As an admin, I shall see the option to access Cart.
T5	As a user, I shall not see the option to access Wishlist.	As an admin, I shall see the option to access Wishlist.
T6	As a user, I shall not see the option to access Account.	As an admin, I shall see the option to access Account.
T7	As a user, I shall not be able to see the Search option.	As an admin, I shall search for items in the Search input field.
T8	As a user, I shall not be able to see the User Image.	As an admin, I shall see the User Image.
T9	As a user, I shall not see the Username.	As an admin, I shall see the Username.
T10	As a user, I shall not see the Delete button.	As an admin, I shall click on Delete button to delete the list of users.

Table 3.7.9: Delete Users
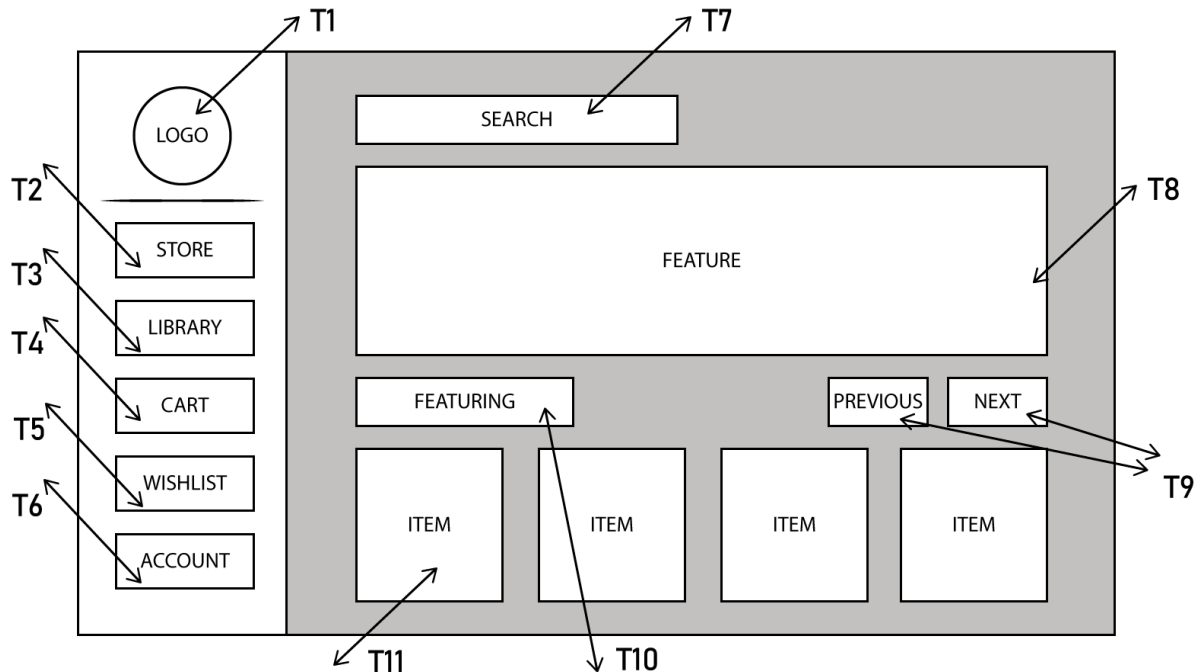
Figure 20: Store wireframe

Requirement	User	Admin
T1	As a user, I shall see the logo of the store.	As an admin, I shall see the logo of the store.
T2	As a user, I shall see the option to access Store.	As an admin, I shall see the option to access Store.
T3	As a user, I shall see the option to access Library.	As an admin, I shall see the option to access Library
T4	As a user, I shall see the option to access Cart.	As an admin, I shall see the option to access Cart.
T5	As a user, I shall see the option to access Wishlist.	As an admin, I shall see the option to access Wishlist.
T6	As a user, I shall see the option to access Account.	As an admin, I shall see the option to access Account.
T7	As a user, I shall be able to see the Search option where I can search games/items.	As an admin, I shall search for items in the Search input field.
T8	As a user, I shall access the featuring games or sales here.	As an admin, I shall see the User Image.
T9	As a user, I shall see the Next and Previous buttons for navigation.	As an admin, I shall see the Next and Previous buttons for navigation.
T10	As a user, I shall see the featuring tag here.	As an admin, I shall see the featuring tag here.
T11	As a user, I shall click on the item to view its details.	As an admin, I shall click on the item to view its details.

Table 3.7.10: Store
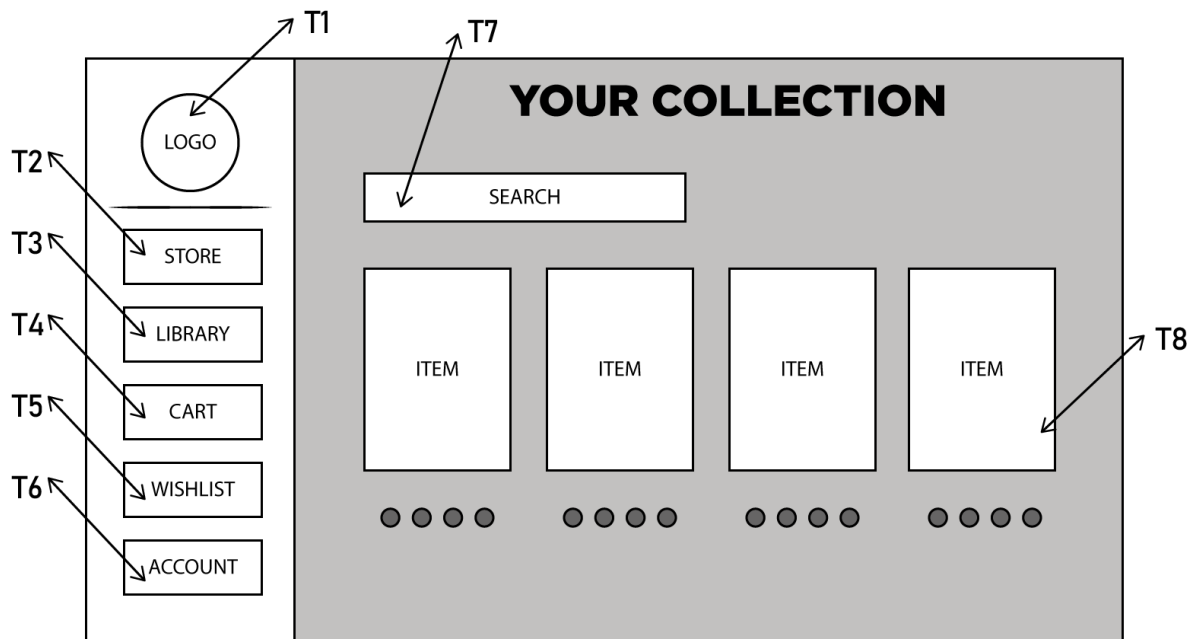
Figure 21: Library wireframe

Requirement	User	Admin
T1	As a user, I shall see the logo of the store.	As an admin, I shall see the logo of the store.
T2	As a user, I shall see the option to access Store.	As an admin, I shall see the option to access Store.
T3	As a user, I shall see the option to access Library.	As an admin, I shall see the option to access Library
T4	As a user, I shall see the option to access Cart.	As an admin, I shall see the option to access Cart.
T5	As a user, I shall see the option to access Wishlist.	As an admin, I shall see the option to access Wishlist.
T6	As a user, I shall see the option to access Account.	As an admin, I shall see the option to access Account.
T7	As a user, I shall be able to see the Search option where I can search games/items.	As an admin, I shall search for items in the Search input field.
T8	As a user, I shall click on the item that are in my library to view its details.	As an admin, I shall have no role in this function.

Table 3.7.11: Library
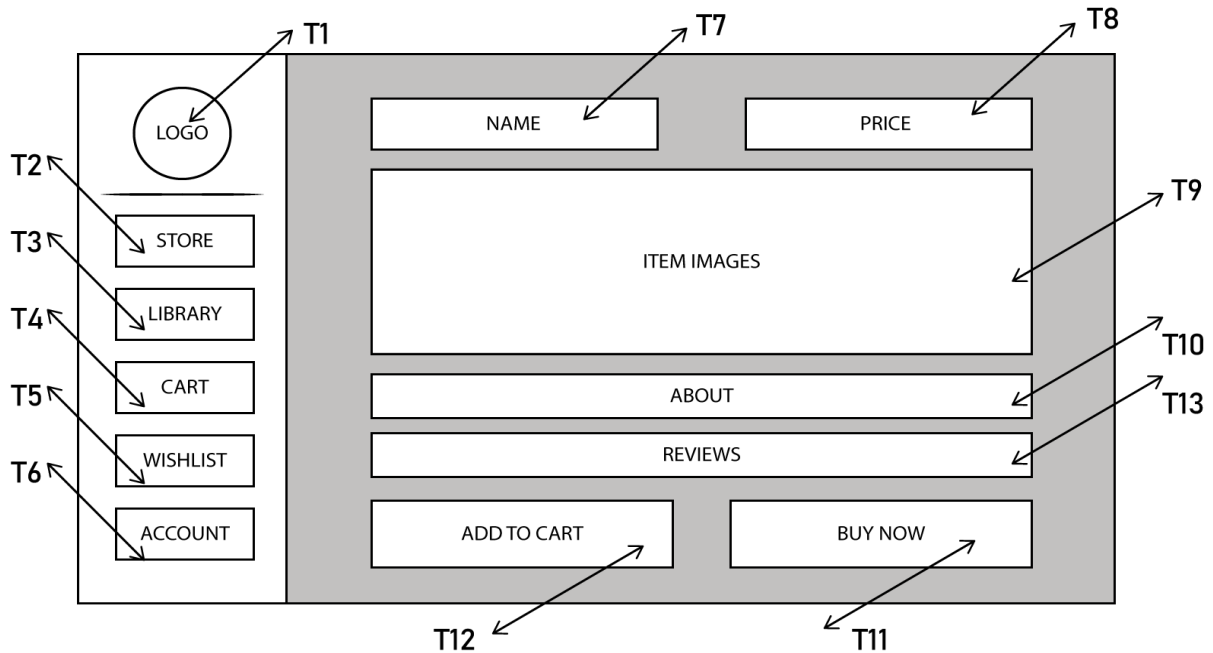
Figure 22: Item Wireframe

Requirement	User	Admin
T1	As a user, I shall see the logo of the store.	As an admin, I shall see the logo of the store.
T2	As a user, I shall see the option to access Store.	As an admin, I shall see the option to access Store.
T3	As a user, I shall see the option to access Library.	As an admin, I shall see the option to access Library
T4	As a user, I shall see the option to access Cart.	As an admin, I shall see the option to access Cart.
T5	As a user, I shall see the option to access Wishlist.	As an admin, I shall see the option to access Wishlist.
T6	As a user, I shall see the option to access Account.	As an admin, I shall see the option to access Account.
T7	As a user, I shall be able to see the Name of item here.	As an admin, I shall search for items in the Search input field.
T8	As a user, I shall be able to see the Price of item here.	As an admin, I shall see the User Image.
T9	As a user, I shall be able to see the Item Images.	As an admin, I shall be able to see the Item Images.
T10	As a user, I shall be able to see the About (description) of the item.	As an admin, I shall be able to see the About (description) of the item.
T11	As a user, I shall be able to see/write the Reviews of item here.	As a admin, I shall be able to see the Reviews of item here.

T12	As a user, I shall be able to add that item to my cart by clicking in Add to Cart.	As an admin, I shall have no role in this function.
T13	As a user, I shall proceed to payment directly by clicking on Buy Now.	As an admin, I shall have no role in this function.

Table 3.7.12: Item
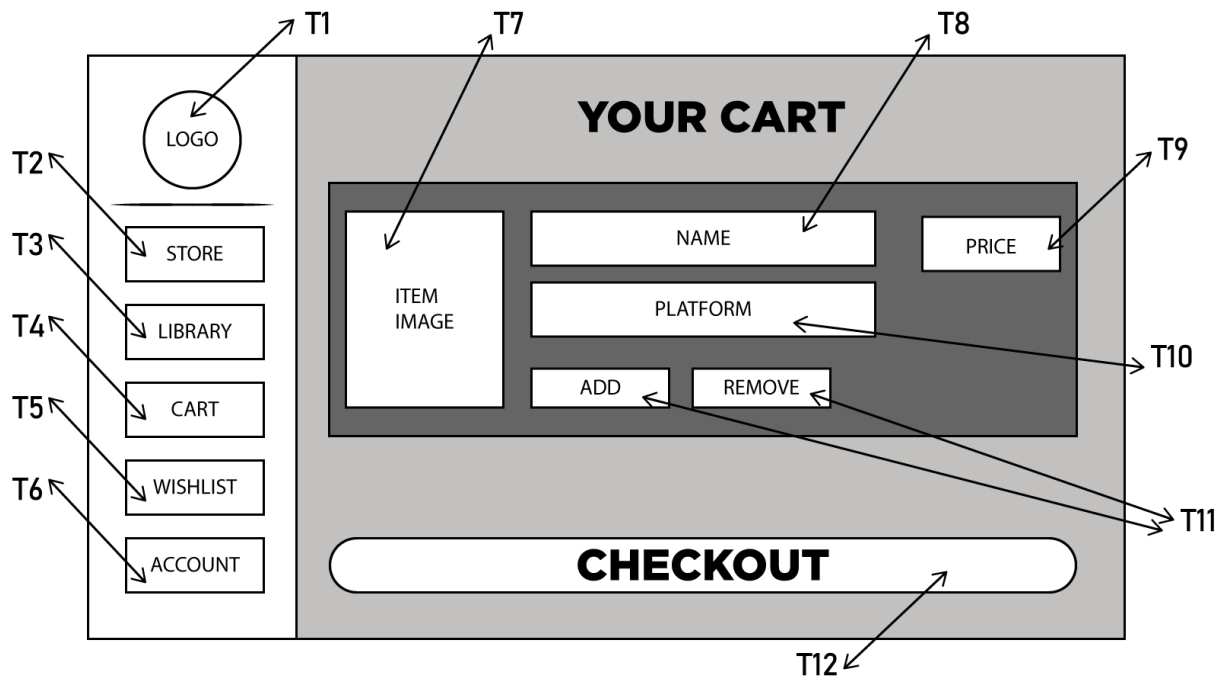
Figure 23: Cart Wireframe

Requirement	User	Admin
T1	As a user, I shall see the logo of the store.	As an admin, I shall see the logo of the store.
T2	As a user, I shall see the option to access Store.	As an admin, I shall see the option to access Store.
T3	As a user, I shall see the option to access Library.	As an admin, I shall see the option to access Library
T4	As a user, I shall see the option to access Cart.	As an admin, I shall see the option to access Cart.
T5	As a user, I shall see the option to access Wishlist.	As an admin, I shall see the option to access Wishlist.
T6	As a user, I shall see the option to access Account.	As an admin, I shall see the option to access Account.
T7	As a user, I shall see the Item Image.	As an admin, I shall see the Item Image.

T8	As a user, I shall see the Name of item.	As an admin, I shall see the Name of item.
T9	As a user, I shall see the Price of item.	As an admin, I shall see the Price of the item.
T10	As a user, I shall see the platforms on which that item is available.	As an admin, I shall have no role in this function.
T11	As a user, I shall click on Add or Remove button to manage my cart.	As an admin, I shall have no role in this function.
T12	As a user, I shall click on Checkout button to proceed to payment.	As an admin, I shall have no role in this function.

Table 3.7.13: Cart
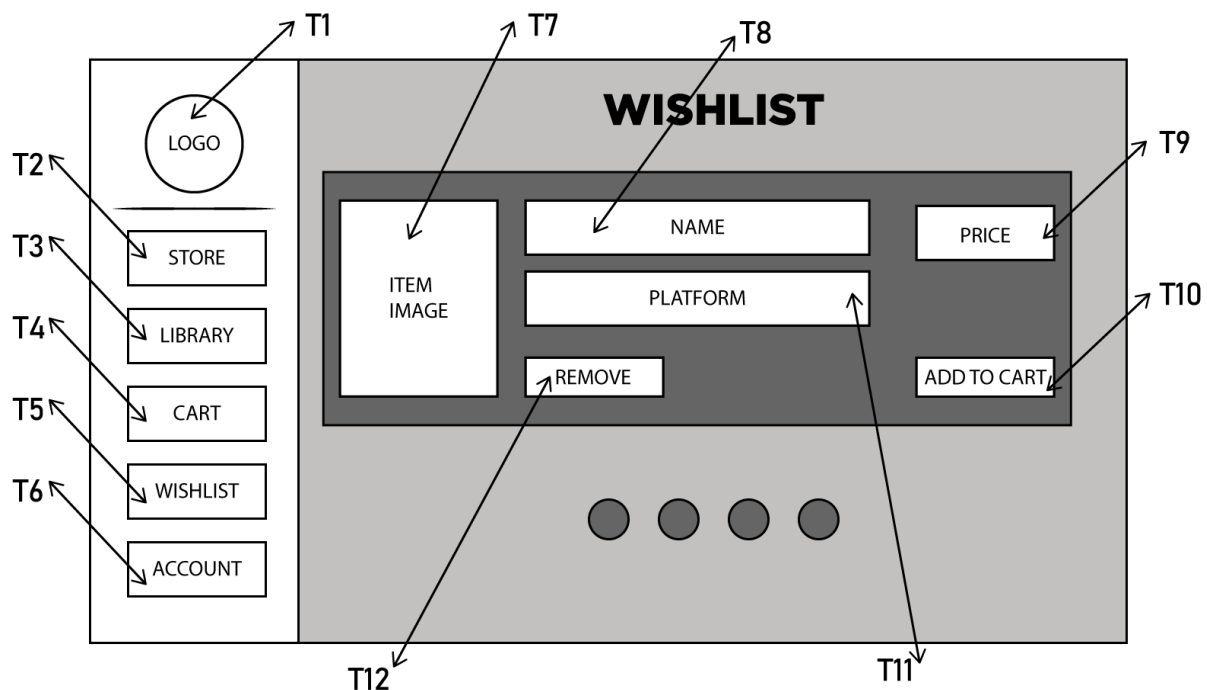
Figure 24: Wishlist wireframe

Requirement	User	Admin
T1	As a user, I shall see the logo of the store.	As an admin, I shall see the logo of the store.
T2	As a user, I shall see the option to access Store.	As an admin, I shall see the option to access Store.
T3	As a user, I shall see the option to access Library.	As an admin, I shall see the option to access Library
T4	As a user, I shall see the option to access Cart.	As an admin, I shall see the option to access Cart.
T5	As a user, I shall see the option to access Wishlist.	As an admin, I shall see the option to access Wishlist.

T6	As a user, I shall see the option to access Account.	As an admin, I shall see the option to access Account.
T7	As a user, I shall see the Item Image.	As an admin, I shall search for items in the Search input field.
T8	As a user, I shall see the Name of item.	As an admin, I shall see the Name of the item.
T9	As a user, I shall see the Price of item.	As an admin, I shall see the Username.
T10	As a user, I shall be able to add that item to my cart by clicking on Add to Cart.	As an admin, I shall have no role in this function.
T11	As a user, I shall see the platforms on which that item is available.	As an admin, I shall have no role in this function.
T12	As a user I shall be able to remove that item from my Wishlist by clicking on remove.	As an admin, I shall have no role in this function.

Table 3.7.14: Wishlist
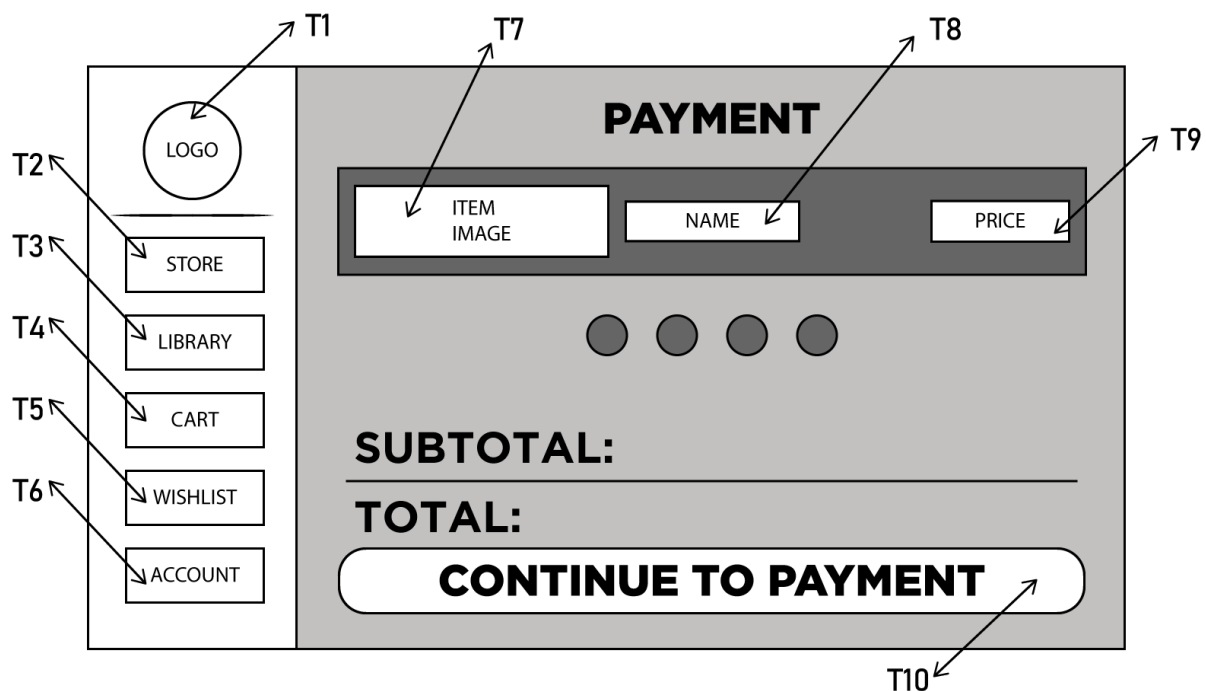
Figure 25: Payment wireframe

Requirement	User	Admin
T1	As a user, I shall see the logo of the store.	As an admin, I shall see the logo of the store.
T2	As a user, I shall see the option to access Store.	As an admin, I shall see the option to access Store.

T3	As a user, I shall see the option to access Library.	As an admin, I shall see the option to access Library
T4	As a user, I shall see the option to access Cart.	As an admin, I shall see the option to access Cart.
T5	As a user, I shall see the option to access Wishlist.	As an admin, I shall see the option to access Wishlist.
T6	As a user, I shall see the option to access Account.	As an admin, I shall see the option to access Account.
T7	As a user, I shall see the Item Image.	As an admin, I shall search for items in the Search input field.
T8	As a user, I shall see the Name of item.	As an admin, I shall see the Name of item.
T9	As a user, I shall see the Price of item.	As an admin, I shall see the Price of item.
T10	As a user, I shall continue to payment method by clicking on Continue to Payment.	As an admin, I shall have no role in this function.

Table 3.7.15: Payment
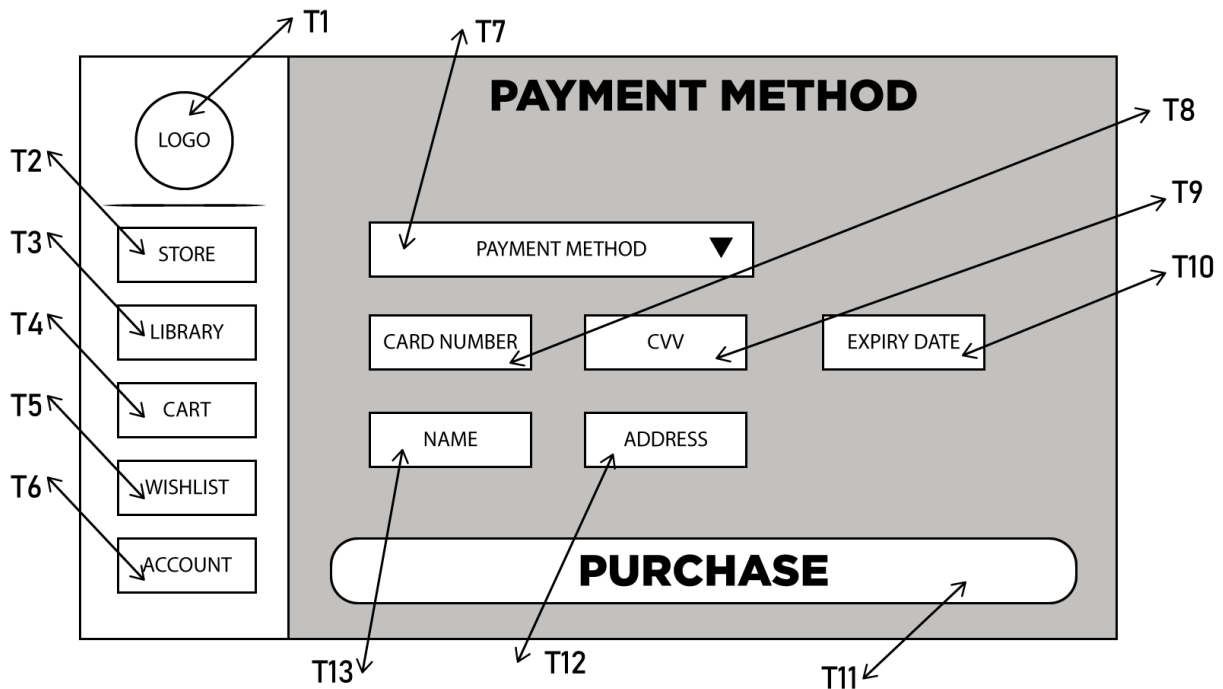
Figure 26: Payment Method Wireframe

Requirement	User	Admin
T1	As a user, I shall see the logo of the store.	As an admin, I shall see the logo of the store.

T2	As a user, I shall see the option to access Store.	As an admin, I shall see the option to access Store.
T3	As a user, I shall see the option to access Library.	As an admin, I shall see the option to access Library
T4	As a user, I shall see the option to access Cart.	As an admin, I shall see the option to access Cart.
T5	As a user, I shall see the option to access Wishlist.	As an admin, I shall see the option to access Wishlist.
T6	As a user, I shall see the option to access Account.	As an admin, I shall see the option to access Account.
T7	As a user, I shall see the dropdown menu to select the payment method.	As an admin, I shall have no role in this function.
T8	As a user, I shall enter my card number in Card Number input field.	As an admin, I shall have no role in this function.
T9	As a user, I enter my CVV in its input field.	As an admin, I shall have no role in this function.
T10	As a user, I shall add Expiry Date of my card.	As an admin, I shall have no role in this function.
T11	As a user, I shall click on Purchase to buy the item.	As an admin, I shall have no role in this function.
T12	As a user, I shall enter my address in Address input field.	As an admin, I shall have no role in this function.
T13	As a user, I shall enter my name in its field.	As an admin, I shall have no role in this function.

Table 3.7.16: Payment Method
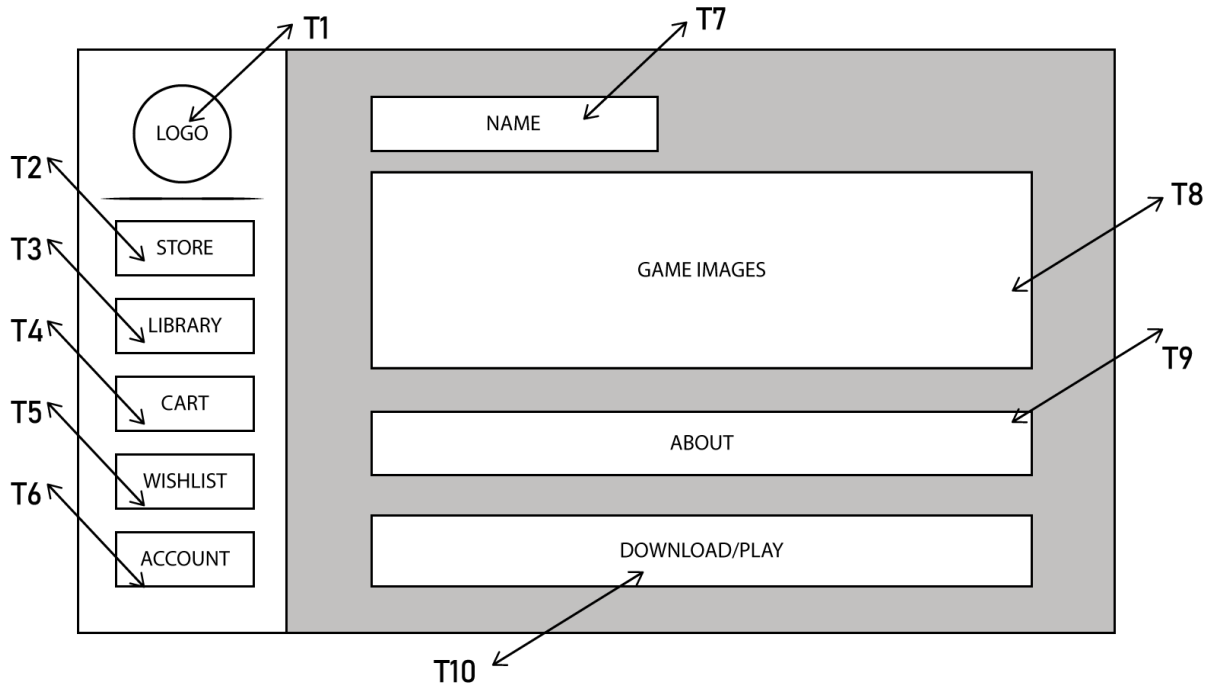
Figure 27: Game Wireframe

Requirement	User	Admin
T1	As a user, I shall see the logo of the store.	As an admin, I shall see the logo of the store.
T2	As a user, I shall see the option to access Store.	As an admin, I shall see the option to access Store.
T3	As a user, I shall see the option to access Library.	As an admin, I shall see the option to access Library
T4	As a user, I shall see the option to access Cart.	As an admin, I shall see the option to access Cart.
T5	As a user, I shall see the option to access Wishlist.	As an admin, I shall see the option to access Wishlist.
T6	As a user, I shall see the option to access Account.	As an admin, I shall see the option to access Account.
T7	As a user, I shall see the Name of the game here.	As an admin, I shall see the Name of the game here.
T8	As a user, I shall see the Game Images.	As an admin, I shall see the Game Images.
T9	As a user, I shall see the About (description) of the game.	As an admin, I shall see the About (description) of the game.
T10	As a user, I shall Download/Play the game by clicking on it.	As an admin, I shall have no role in this function.

Table 3.7.17: Game
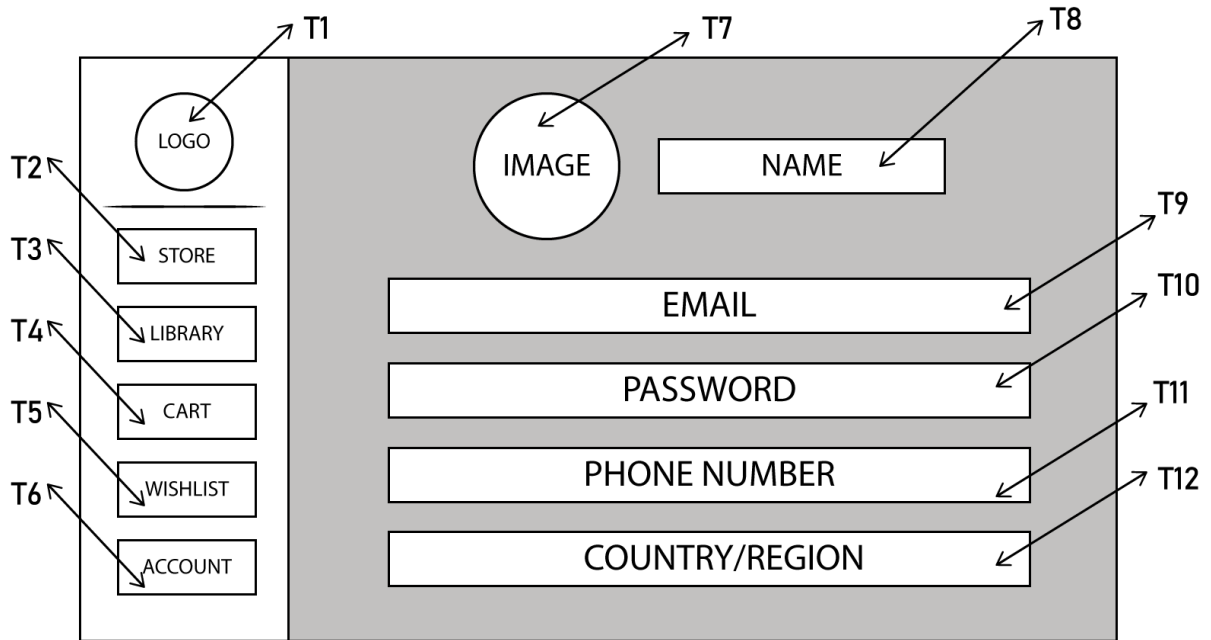
Figure 28: Account Wireframe

Requirement	User	Admin
T1	As a user, I shall see the logo of the store.	As an admin, I shall see the logo of the store.
T2	As a user, I shall see the option to access Store.	As an admin, I shall see the option to access Store.
T3	As a user, I shall see the option to access Library.	As an admin, I shall see the option to access Library
T4	As a user, I shall see the option to access Cart.	As an admin, I shall see the option to access Cart.
T5	As a user, I shall see the option to access Wishlist.	As an admin, I shall see the option to access Wishlist.
T6	As a user, I shall see the option to access Account.	As an admin, I shall see the option to access Account.
T7	As a user, I shall change my image by clicking on it.	As an admin, I shall have no role in this function.
T8	As a user, I shall see my Name here.	As an admin, I shall have no role in this function.
T9	As a user, I shall see the option to change my Email.	As an admin, I shall have no role in this function.
T10	As a user, I shall see the option to change my Password.	As an admin, I shall have no role in this function.
T11	As a user, I shall see the option to change my Phone Number.	As an admin, I shall have no role in this function.

T12	As a user, I shall see the option to edit Country/Region by clicking in it.	As an admin, I shall have no role in this function.

Table 3.7.18: Account

3.8. User Story

User Stories

• **Sign-Up**

- As a first-time user,
- I want to create a new account,
- So that I can start viewing and buying items.

• **Login**

- As a listed user,
- I want to log into my account,
- So that I can see my profile and my games.

• **Profile Management**

- As a user,
- I want to update/correct my individual information,
- So that my profile gets updated.

• **Item Search**

- As a user,
- I want to find some games on the website,
- So that I know where to look for them and buy them.

• **Shopping Cart Management**

- As a user,
- I want to add or remove items from my cart.
- So that I might be in charge of what I precisely need to buy.

• **Payment Processing**

- As a user,
- I want to pay securely to finish my payment,

-    So that I should not face any kind of problem while processing my order.

- **Promotional Offers**
  -   As a user,
  -   I want to see current promotions,
  -   So that I can take advantage of elevation and discounts.

- **Search Functionality**
  -   As a user,
  -   I want to access products by specific keywords,
  -   So that I can get everything I need with little trouble.

Admin Stories

- **Login**

  -   As an admin,
  -   I want to log into my account,
  -   So that I can see my store..
- **User Management:**
  -   As an admin,
  -   I want to manage user accounts,
  -   So that I can enable that users' data is safe.

- **Game Management:**
  -   As an admin,
  -   I want to add or remove games,
  -   So that I can keep catalogue updated.

- **Discount Management:**
  -   As an admin,
  -   I want to create or edit discounts,
  -   So that I can increase sales level.

3.9. Use Cases

3.9.1. User Use Case

Name	Login

Name:	User logs into GSMS website.
Actor:	User.
Goal:	Access their account.
Trigger:	User clicks the Login Button.
Pre-conditions:	User has valid Login credentials.
Post-conditions:	User logged in Successfully.
Basic Flow:	
User Action	**System Responses**
User opens the GSMS app	The system loads the login page.
User enters their email and password	The system verifies the entered credentials.
User clicks the login button	The system processes the login request
User successfully logs in	The system redirects the use to Store.
Exceptions:	
Exceptions	**Solutions**
Invalid Credentials	Display "Invalid email or password"
Account locked due to multiple failed attempts	Display "Your account has been locked due to multiple failed login attempt."
Qualities:	
Qualities	**Description**
Efficiency	Login must be completed within 2-3 seconds
Accessibility	Provide options for multiple recovery.

Table 3.9.1.1: Login as User Use Case

Name	**Sign-up**
Name:	User sign-up into GSMS website.
Actor:	User.
Goal:	Access their account.
Trigger:	User clicks the Sign in Button.
Pre-conditions:	User has stable internet connection.
Post-conditions:	User is prompted to verify their account.
Basic Flow:	
User Action	**System Responses**
User opens the GSMS website	The systems load the login page.
User navigates to sign up page	The system displays the sign-up form.
User fills in the required fields (email, password, etc.)	The system validates the input format in real time
User clicks on sign-up button	The system processes the registration request.
User clicks the activation link in his email	The system verifies the email and activates the user.
User successfully activates their account	The system redirects the user to dashboard.
Alternate Flow:	

User Action	System Responses
User navigates to sign up page	The system displays the sign-up form.
User fills in the required fields (email, password, etc.)	The system validates the input format in real time
User clicks on sign-up button	The system processes the registration request.
User receives an error message (e.g. User already exists)	The system displays the error message.
User corrects the invalid credentials and clicks Sign-up again	The system processes the registration request.
User successfully creates an account	The system processes the registration request.
User clicks the activation link in his email	The system verifies the email and activates the user.
User successfully activates their account	The system redirects the user to dashboard.
Exceptions:	
Exceptions	**Solutions**
Invalid input	Display "Please fill the fields correctly"
Email/Phone number already exists	Display "Email or phone number already exists."
Qualities:	
Qualities	**Description**
Efficiency	Registration should be completed within a specific timeframe.
Accessibility	The sign-up form should be user friendly and available to all users.
Security	User data should be stored securely and protected from unauthorized users.

Table 3.9.1.2: Signup as User Use Case

Name	Manage Profile
Name:	User manages their profile.
Actor:	User.
Goal:	Updates personal information.
Trigger:	User clicks the Account.
Pre-conditions:	User is logged into their account.
Post-conditions:	User profile is updated.
Basic Flow:	
User Action	**System Responses**
User clicks in Account option in the menu.	The systems loads the profile/account page with current user's information.
User updates personal information	The system validates the input format in real time

User clicks Save button	The system processes and make changes.
User profile is updated successfully.	The system confirms that changes has been made.
Alternate Flow:	
User Action	**System Responses**
User cancels the update	The system discards changes and reloads previous data.
Exceptions:	
Exceptions	**Solutions**
Invalid data	Display "Please fill in valid information"
Unable to save changes	Display "Error saving changes."
Qualities:	
Qualities	**Description**
Usability	User-friendly interface for profile updates.
Feedback	Provides confirmation for successful updates.

Table 3.9.1.3: Profile Management as User Use Case

Name	View Items
Name:	User views the items.
Actor:	User.
Goal:	Allow user to view and select items.
Trigger:	User clicks on store in menu.
Pre-conditions:	User is logged into their account.
Post-conditions:	User sees available products.
Basic Flow:	
User Action	**System Responses**
User selects an item from product list	The system displays the item details page.
User views the item's details	The system shows relevant information.
User wants to add the item to their cart	The system provides Add To Cart button.
User wants to buy the item	The system provides Buy Now button
Alternate Flow:	
User Action	**System Responses**
The system suggests items based on user's viewing history	The system displays reviews and ratings for the items.
Exceptions:	
Exceptions	**Solutions**
Item not found	The system displays an error message or redirects the user to homepage
System error	The system displays an error message and tries to recover the data.
Qualities:	
Qualities	**Description**

Clear and Concise information	Item's detail Page should be well organized and easy to read
High Quality Images	Item's images should be appealing
User generated contents	Customer reviews and ratings can provide valuable insights for other users.

Name	View Library
Name:	User views his library.
Actor:	User.
Goal:	Allow user to view and manage their game library.
Trigger:	User clicks on Library in menu.
Pre-conditions:	User is logged into their account.
Post-conditions:	User sees view and manage their game library.
Basic Flow:	
User Action	System Responses
User navigates to library section	The system displays user's library content.
User views their game collection	The system shows list of games, including their titles and image.
User selects a game.	User is redirected to the Game page.
Exceptions:	
Exceptions	Solutions
No games in library	The system displays a message that user has no game.
Qualities:	
Qualities	Description
User Friendly Interface	The library section should be easy to understand and navigate.
Comprehension information	The library provides detail information about each game.

Name	View Cart
Name:	User views their Cart.
Actor:	User.
Goal:	Allow user to view his cart and buy items.
Trigger:	User clicks on Cart in menu.
Pre-conditions:	User is logged into their account and has selected an item.
Post-conditions:	Items are added to their cart and user can proceed to checkout.
Basic Flow:	
User Action	System Responses
User adds an item to their cart	The system adds the item to the user's shopping cart and updates the cart

User views the Cart	The system displays the items in the cart including their quantity and total price.
User changes the quantity of an item	The system updates the total price accordingly.
User removes an item from the cart	The system removes item and updates the total price.
User proceeds to checkout	The system verifies the cart is not empty and redirects user to checkout page.
Alternate Flow:	
User Action	**System Responses**
System applies an applicable discount/sale to the item	The user can see the discounted price before moving to checkout.
The system allows user to save their cart for later	The user can retrieve their saved cart for a later time.
Exceptions:	
Exceptions	**Solutions**
Cart Empty	The system displays a message indicating the cart is empty.
Qualities:	
Qualities	**Description**
Clear and Concise information	Cart should be well organized and easy to understand and provide concise information.
Easy Quantity Adjustments	User should be able to easily change the quantity of the cart.
Promotion and Discount	The system should accurately apply any discount or promotion
Saved Cart Functionality	The save cart should allow the user to save and retrieve their carts for later
Error handling	The system should handle error gracefully and provide informative error messages.

Table 3.9.1.6: Cart as User Use Case

Name	**View Purchase**
Name:	User views their Payment.
Actor:	User.
Goal:	Allow user to purchase their games.
Trigger:	User clicks on Checkout in menu.
Pre-conditions:	User is logged into their account and has selected a game.
Post-conditions:	User purchase is processed successfully.
Basic Flow:	
User Action	**System Responses**
User enters the payment information	The system verifies the Payment information

User confirms the purchase	The system processes the payment and completes the purchase
The system sends a purchase confirmation to the user	The user receives a confirmation email.
Alternate Flow:	
User Action	**System Responses**
User adds multiple games to their cart.	The system displays the total cost and allows the user to proceed to checkout.
The system applies any applicable promotions or discounts to the total cost.	The user can see the discounted price before confirming the purchase.
The system offers multiple payment options (e.g., credit card, PayPal, gift card).	The user can select their preferred payment method.
Exceptions:	
Exceptions	**Solutions**
Payment Declined	The system displays an error message and ask the user to try again
Inventory Error	The system displays an error message and removes the game from the cart.
Qualities:	
Qualities	**Description**
Secure Payment Processing	The system should secure payment gateways to protect user data.
Clear and concise checkout	The checkout process should be easily to follow and informative
Multiple Payment Options	The system should offer multiple payment methods
Order Confirmation	The system should provide clear confirmation of the order including receipt.
Error handling	The system should handle error gracefully and provide informative error messages.

Table 3.9.1.7: Purchase as User Use Case

Name	View Wishlist
Name:	User views their Wishlist.
Actor:	User.
Goal:	Allow user to save items for later consideration.
Trigger:	User clicks on Wishlist in menu.
Pre-conditions:	User is logged into their account and has selected a game.
Post-conditions:	Item is added to their Wishlist.
Basic Flow:	
User Action	**System Responses**
User adds an item to their Wishlist	The system adds the item to the user's Wishlist

User views their Wishlist	The system displays the item in their Wishlist
User removes an item from their Wishlist	The system removes the item from their Wishlist.
Exceptions:	
Exceptions	**Solutions**
Item already in wish list	The system displays an error message that item is already in the Wishlist
Qualities:	
Qualities	**Description**
Easy addition and removal	User should be able to easily add and remove items from their Wishlist
Clear Display	The Wishlist should be easy to view and understand
Error handling	The system should handle error gracefully and provide informative error messages.

Table 3.9.1.8: Wishlist as User Use Case

Name	Search
Name:	User uses search function.
Actor:	User.
Goal:	Allow user to search for products within the system.
Trigger:	User clicks on Search Bar in menu.
Pre-conditions:	User is logged in.
Post-conditions:	Relevant search results are displayed to the user
Basic Flow:	
User Action	**System Responses**
User enters a search query in search bar	The system processes the search query
The system retrieves relevant search query	The system displays the search results.
Exceptions:	
Exceptions	**Solutions**
No results found	The system displays an error message indicating no results found.
System Error	The system displays an error message and tries to recover.
Qualities:	
Qualities	**Description**
Relevant Results	The search results should be heavily relevant to the query.
Fast search performance	The search should return results quickly
Initiative Search interface	The search interface should be user-friendly
Comprehensive search capabilities	The system should allow users to search for wide range of capabilities.
Error handling	The system should handle error gracefully and provide informative error messages.

Table 3.9.1.9: Searching Use Case

3.9.2. Admin Use Case

Name	Log-in
Name:	User log into GSMS website.
Actor:	Admin.
Goal:	Access their account.
Trigger:	Admin clicks the Log-in button.
Pre-conditions:	Admin has valid log-in credentials.
Post-conditions:	Admin is logged in successfully.
Basic Flow:	
User Action	**System Responses**
Admins open the GSMS web	The system loads the admin login page.
Admin enters its credentials	The system verifies the credentials.
Admin clicks on login button	The system processes the login request.
Admin logs in successfully	The system redirects to admin dashboard.
Exceptions:	
Exceptions	**Solutions**
Invalid Credentials	Display "Invalid email or password"
Account locked due to failed login attempts	Display "Your account has been locked due to multiple login attempts"
Qualities:	
Qualities	**Description**
Efficiency	Login should be completed within 2-3 seconds
Accessibility	Provide options for password recovery.

Table 3.9.2.1: Login as Admin Use Case

Name	Game Management
Name:	Admin uses adds/remove games function.
Actor:	Admin
Goal:	Allow admin to add, edit, and remove games from the store.
Trigger:	Admin clicks on Add/Remove button
Pre-conditions:	Admin is logged in
Post-conditions:	Games can be added, edited and removed successfully.
Basic Flow:	
User Action	**System Responses**
Admin navigates to Manage section	The system displays all the options.
Admins add new game	The system displays a form for entering game details.

Admins fills out the form and saves game	The systems validates the input and save game in the database.
Admin removes game	Admin searches for the game he wants to delete.
Admin confirms removal	The system removes the game.
Alternate Flow:	
User Action	**System Responses**
The system allows admin to assign games to multiple categories.	The system allows admin to set ratings for game.
Exceptions:	
Exceptions	**Solutions**
Invalid Input	The system displays an error message
Database Error	The system displays an error message and removes the game from the cart.
Qualities:	
Qualities	**Description**
User-Friendly Interface	The game management interface should be easily to follow and informative.
Comprehensive Game details	The system should allow admin to manage wide range of games.
Validation and error handling	The system should ensure data consistency and accuracy
Order Confirmation	The system should provide clear confirmation of the order including receipt.

Table 3.9.2.2: Game Management as Admin Use Case

Name	**Discount Management**
Name:	Admin uses apply and remove function.
Actor:	Admin
Goal:	Allow administrators to create, manage, and apply discounts to products or orders.
Trigger:	Admin clicks on Add/Remove Sale button
Pre-conditions:	Admin is logged in
Post-conditions:	Discount can be created, edited and removed successfully.
Basic Flow:	
User Action	**System Responses**
Admin navigates to Discount section	The system displays all the discount options.
Admins fills out the form and apply discount	Admin inputs a new discount. The program displays the form with information for entering a discount including name, discount type, amount, period and others.
Admin edits an existing discount	Admin edits an existing discount. The system shall show the same details about the discount to be edited.
Admin makes changes and saves updates.	Admin makes the changes and saves the updates. The system checks the changes and updates the discount.

Alternate Flow:	
User Action	System Responses
The system supports various discounts	The system allows admin to create different discounts.
Exceptions:	
Exceptions	Solutions
Invalid Input	The system displays an error message
Discount overlap	The system determines the appropriate discount to apply.
Qualities:	
Qualities	Description
User-Friendly Interface	The game management interface should be easily to follow and informative.
Flexible Discount Types	The system should support variety of discounts to meet business needs.
Discount Targeting	The system should allow admins to target discounts to specific products or groups.
Accurate Discount Application	The system should accurately apply discounts.
Performance	The system should perform efficiently, especially when managing large number of accounts.

Table 3.9.2.3: Discount Management as Admin Use Case

Name	User Management
Name:	Admin uses views/remove user function.
Actor:	Admin
Goal:	Allow admin to views and remove games from the store.
Trigger:	Admin clicks on View/Remove button.
Pre-conditions:	Admin is logged in.
Post-conditions:	Users can be viewed and removed successfully.
Basic Flow:	
User Action	System Responses
Admin navigates to Manage section	The system displays all the options.
Admins views user	The system displays a form for viewing user details.
Admin removes user	Admin searches for the user he wants to delete.
Admin confirms removal	The system removes the game.
Alternate Flow:	
User Action	System Responses
Admin wants to search user by his username or email.	The system allows admin to search for user based on his username or email.
Exceptions:	
Exceptions	Solutions
Invalid Input	The system displays an error message.
Database Error	The system displays an error message when that user is not in store.

Qualities:	
Qualities	**Description**
User-Friendly Interface	The game management interface should be easily to follow and informative.
Comprehensive user details	The system should allow admin to manage wide range of users.
Validation and error handling	The system should ensure data consistency and accuracy
Performance	The system should be capable enough to handle large number of users.

Table 3.9.2.4: User Management as Admin Use Case.

4. Design

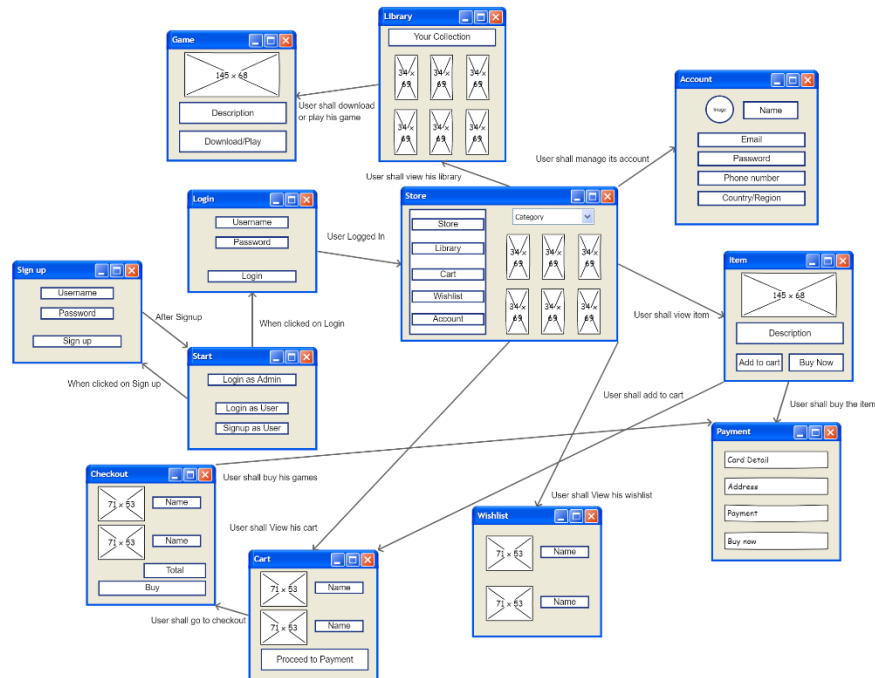## 4.1. Story Boards
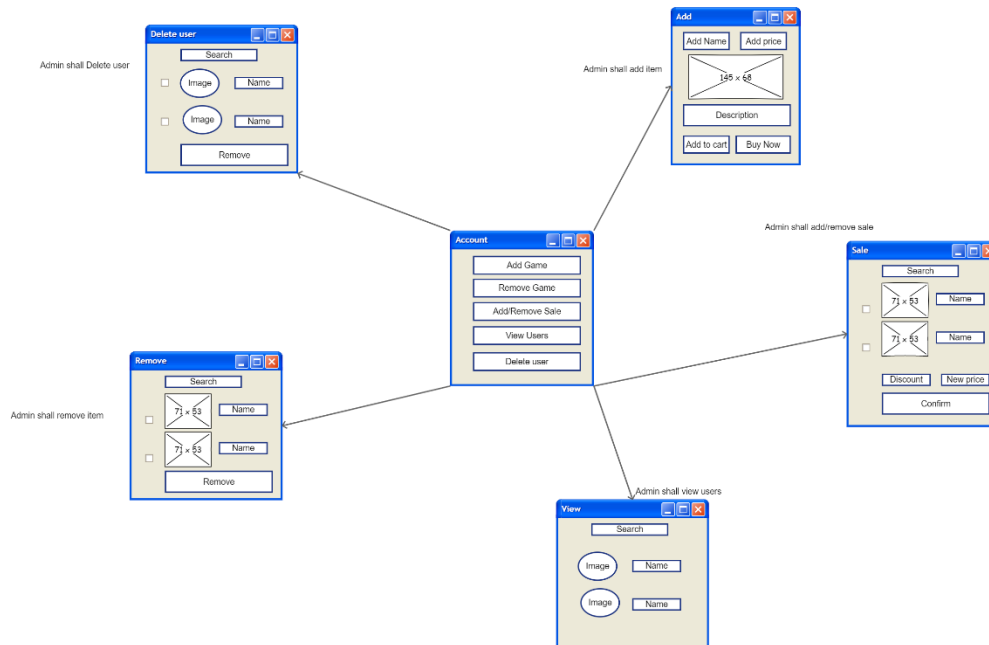
Figure 29: Admin Story Board

Figure 30: User Story Board

4.2. Proposed Methodology/System

Scrum Agile methodology has been adopted in developing the Game Store Management System because it will enable you to adapt to changes, do continuous improvement, and iterative delivery.

We chose this methodology as it has following benefits:

4.2.1. Benefits

• **Iterative Delivery**: The GSMS can be delivered incrementally, which will provide the operators with an opportunity to review it at early stages and have their say in case something needs to change to fit better.
• **Flexibility**: If priorities change-for instance, new features become desired-reprioritization of the backlog can be done, and the next sprint can be planned for those changes.
• **Continuous Improvement**: Retrospectives allow the team to improve development practices, making the process more efficient.
• **Collaboration**: Regular interactions with operators help ensure that the GSMS aligns with business goals and user expectations.

4.2.2. Roles

This model's role has been described in Figure 4:

• Product Owner (Sir Zeeshan).

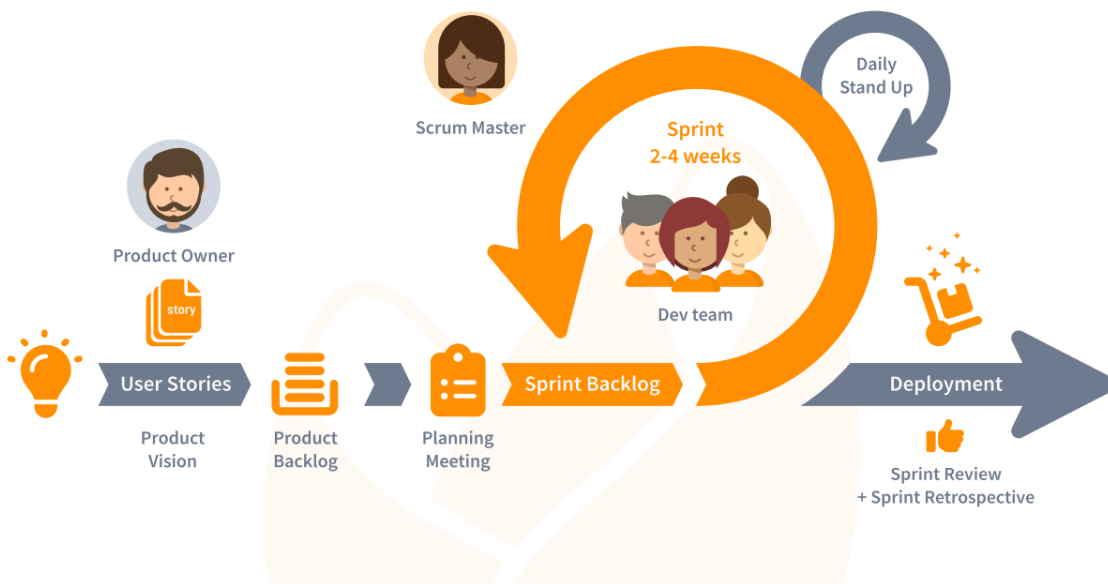• Scrum Master (Fahad Aamir).

• Developing team (Saeed, Fahad) .

Figure 31: Scrum Process [3]

4.2.3. Events

It includes the following events:

- Backlog Refinement.
- Sprint Planning.
- Daily Scrum.
- Sprint Review.
- Sprint Retrospective.

Scrum is also used during the development of the Game Store Management System. Events are the keys that will make the work properly organized and guarantee smooth processes. First, we gather the requirements for the project by meeting with a client which is helpful to

Product backlog, then comes the time for sprint planning where the team, guided by the product owner Sir Zeeshan, decides on which task to work upon. Say, the implementation of game inventory management or integrating payment gateways. The Daily Scrum is held daily, a very short 15-minute meeting where developers, testers, and project managers meet for progress updates, updates, and problem resolution in order to keep everybody aligned. At the end of the Sprint, a Sprint Review is held where the team reviews the features they have completed-for example, a functional game catalog or user analytics. Feedback from operators or users is collected in order to refine future work. This is followed, at the end of

each sprint, by a Sprint Retrospective, where it is discussed what needs to be changed, be it inside the development workflow or inside the system features, such as maybe offering more optimized results of the game searches or improving the user interfaces. It is in going through this cycle over and over again that keeps the GSMS development process agile, the quality of features assured, and advances the system based on users' feedback and the presence of market trends.[3]
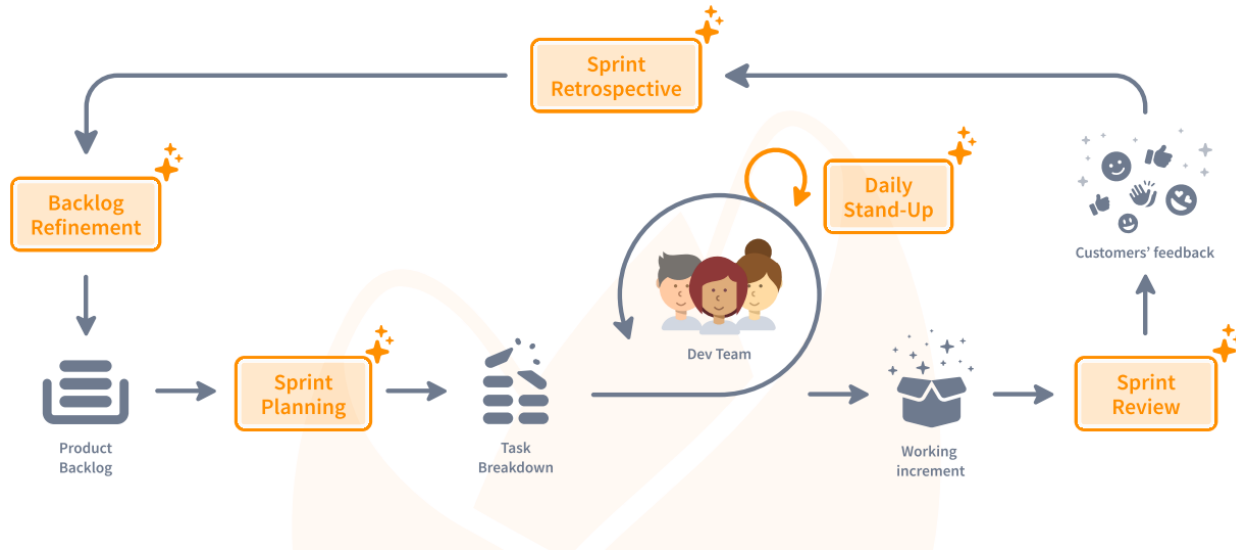

Figure 32: Methodology Diagram [3]

4.3. Data Gathering Approach

In order gather data for our project we used two techniques:

4.3.1. Interviews

Informal interviews with game-store operators were conducted to understand how their game store platforms could be improved. By doing so, variable understandings of the key features of the management system of the game store were gained. They informed us how the system is user-friendly: when any new title is added or sold, it automatically updates the inventory.

4.3.2. Prototyping

A prototype of the system was also developed to capture real time feedback from the users about the look and feel of the system. The operators identified the requirement of managing promotions and discounts during peak season sales and requested features to be provided that were user-friendly for non-technical staff with minimum technical training. The prototype recommended

refinements within the system, such as user analytics and update management, to make games friendlier and more effective.

4.4. Tools and Technologies

4.4.1. Software Tools and Technologies

- Pencil
- MS Word
- EndNote.

4.4.2. Hardware Tools and Technologies

- RAM: 8 GB
- SSD: 512 GB
- Platform: Windows
- Processor: Core i5 8th generation

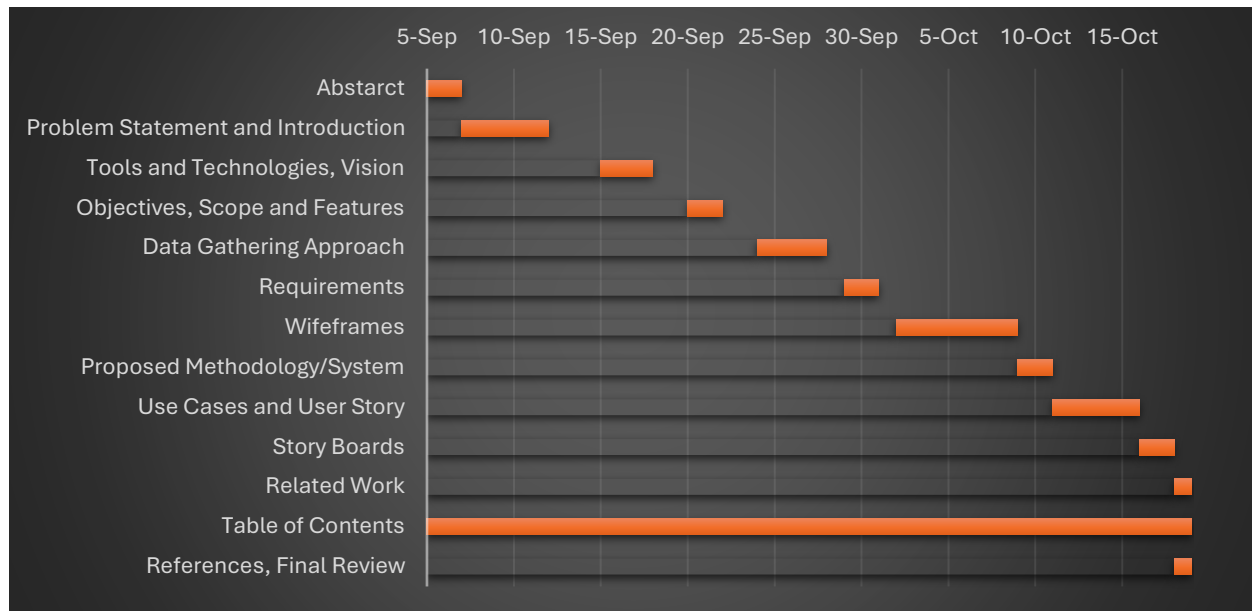## 4.5. Team members Individual Tasks/Work Division

Fahad Aamir:

- Wireframes
- Story Board
- Problem Statement and introduction
- Tools and Technologies
- Related Work
- Table of Contents

Muhammad Saeed Rasheed:

- Use Cases and User story
- Requirements
- Data Gathering
- References
- Methodology System
- Objectives, Scope and Features
- Abstract

4.6. Timeline/Gantt Chart:

5. References:

(EpicGames , Steam , Tuleap.)

Steam. "Main Page." Retrieved 20-10-2024, from https://store.steampowered.com [1].

EpicGames. "Main Page." Retrieved 20-10-2024, from https://store.epicgames.com/en-US/ [2].

Tuleap. "Main Page." Retrived 20-10-2024, from https://www.tuleap.org/agile/agile-scrum-in-10-minutes [3].