

Final project report

1. Project outline

1. Group member

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2. Project title

Loving sports- An online shopping website

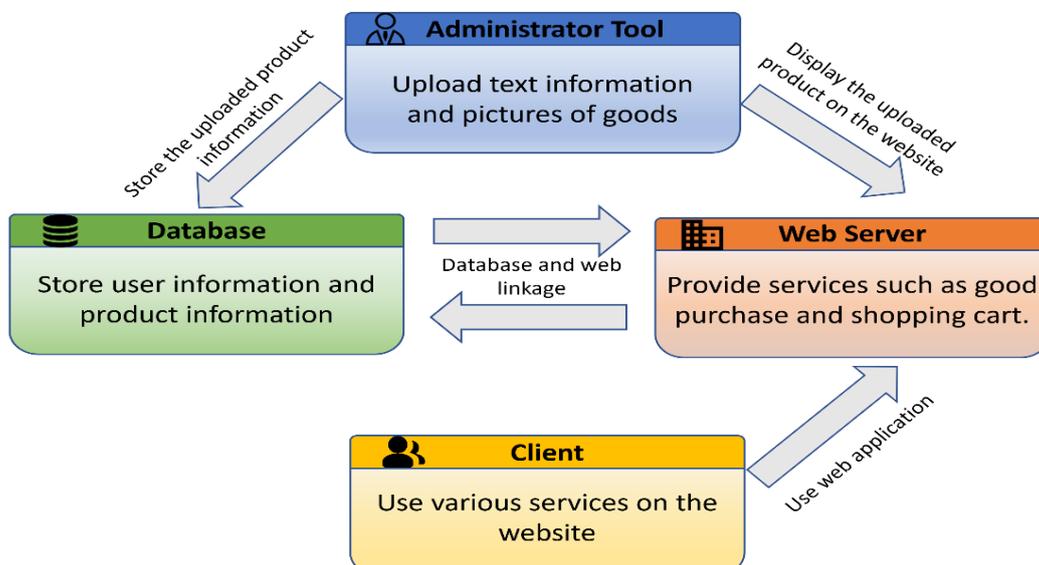
3. Project abstract

We aim to build an online application which supports online purchase of sports equipment. Our website will contain user login and register interface, home page interface, commodity classification interface, commodity detail information interface, shopping cart interface and administrator interface. The backend database will store all the user information and commodity information. Our goal is to build a simple, practical, and beautiful online sports equipment shopping platform.

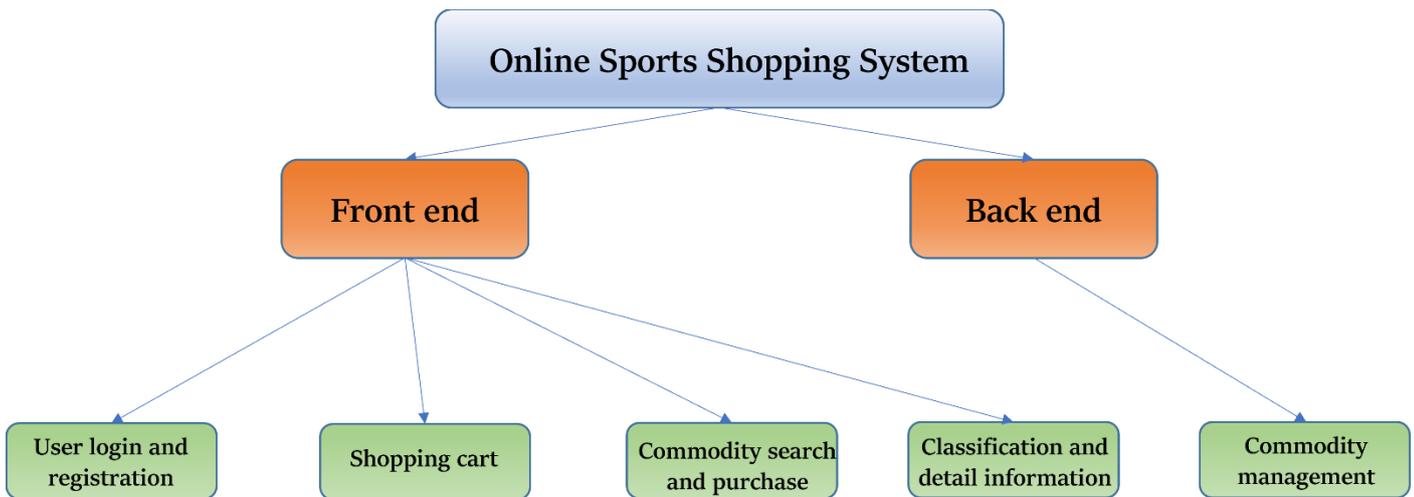
2. Programming languages and tools used

The whole project adopts MVC (Model-View-Controller) framework. Development language is C# and adopts net Core 3.1 version. Front end mainly using HTML, CSS, jQuery, Ajax, JSON. The database uses SQLServer2012. The development tool is Visual Studio 2019.

3. System structure



4. Components of the system and their functionalities



5. Database

User table (HT_User)

Field Name	Description	Type
Id	Primary key	Varchar
UserName	Login name	Varchar
LastName	The last name of the user	Varchar
Password	Password (plain text)	Varchar
RegistrationDate	Registration time	Datetime
Jine	Balance of the account	Decimal(18,2)
FirstName	The first name of the user	Varchar
Email	Email address	Varchar

Product table (HT_Product)

Field Name	Description	Type
Id	Primary key	Varchar
ProductName	Product name	Varchar
Price	Product unit price	Decimal(18,2)
Quantity	Product stock	int
Description	Product description html statement	ntext
AddTime	Add product time	Datetime
ProductImg	The address of the uploaded product picture	Varchar

Order table (HT_Addr) (For future development)

Field Name	Description	Type
Id	Primary key	Varchar
UserId	Username of the ordering user	Varchar
Tel	Telephone number	Varchar
Receiver	Good receiver	Varchar
Address	Address	Varchar
AddTime	Ordering time	Datetime

6. Project structure

Solution 'ShoppingDemo' (1 of 1 project)

- ShoppingDemo
 - Connected Services
 - Dependencies
 - Properties
 - wwwroot
 - css
 - css_files → All css files
 - IcoMoon-Free-master → Font file
 - image → All image files
 - js → All js files
 - jquery.js
 - jquery-3.3.1.min.js → jQuery public source file
 - site.js → All front-end methods, such as purchase
 - toastr → All html files and the website icon
 - cart.html
 - detail.html
 - favicon.ico
 - index.html
 - list.html
 - login.html
 - searchResult.html
 - sign_up.html
 - Controllers → Object controller folder
 - AccountController.cs
 - HomeController.cs
 - ProductController.cs
 - UploadsController.cs
 - Models → Database model folder
 - HT_Addr.cs
 - HT_Product.cs
 - HT_User.cs
 - ShoppingDbContext.cs
 - Results → Result object folder
 - CartResult.cs
 - NormalResult.cs
 - ProductResult.cs
 - UploadResult.cs
- Views
 - Home
 - Manage.cshtml → cshtml file for the administrator interface
 - Shared
 - _ViewImports.cshtml
 - _ViewStart.cshtml
 → Files automatically generated by the framework
 - appsettings.json → File to connect the project to SQL Server
 - log4net.config
 - log-file.log
 - Program.cs
 - Startup.cs
 → Files automatically generated by the framework

7. Website User manual & Testing strategies

lovingsports-home page has been deployed onto a real cloud:

<http://shoppingdemo.lemontreex.com/index.html>

The image shows a screenshot of the Lovingsports website home page with several annotations pointing to specific UI elements:

- Login/sign up bar:** Points to the "Login" and "Sign up" links in the top right corner.
- Shopping Cart:** Points to the "My cart" icon with a red notification bubble in the top right.
- Quick-searching bar:** Points to the search input field with the placeholder text "What do you want?" and a "Search" button.
- Picture viewing window:** Points to the main product display area, which includes a basketball hoop, a black tool, an orange bag, a basketball, and a tennis ball.
- Product viewing window:** Points to a section titled "Hot" which displays a grid of product images including a basketball hoop, a pair of sneakers, a bicycle, and a stationary bike.
- Guess you like:** Points to a section titled "Guess you like" which displays a grid of product images including a pair of sneakers, a basketball, a tool, a bicycle, and a pair of sneakers.

Login

Function Description

If the user is an existing user:

Click “Login” icon and the user will enter a new page(<http://shoppingdemo.lemontreex.com/login.html>):



On clicking the **Home icon**, the user can go back to the home page. After the user input his/her username in the **User box** and the corresponding password in the **Password box**, he/her can click the login button. He/her can also click the password shown/ hidden button to show the password or hide the password. The following picture is one example.



Testing strategies

If the login process is successful, the user will go back to the **home page** with his/her status changes to login.



When user click the **log out** button, his/her status will change back to the logging state.

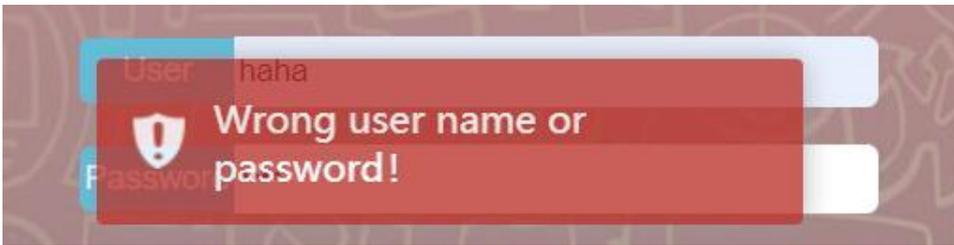


The following picture shows the result when the login process is not successful.

If the user does not input the username. Warning message will be shown to inform the user to input his/her username. Similar warning will also be shown if the user does not input his/her password.



If the user input the wrong username or password. Warning will be shown.



Sign up

Function Description

If the user is not an existing user:

Click the "Sign up" icon and the user will enter a new page(http://shoppingdemo.lemontreex.com/sign_up.html):

A screenshot of a "New user" sign-up form. The form has a white background and is set against a red patterned background. It contains several input fields: "User name:" with "haha", "Password:" with "..." and a toggle icon, "Confirmation:" with "...", "Last name:" with "haha", "First Name:" with "zeng", and "Email:" with "11@qq.com". A blue "Submit" button is at the bottom. Annotations with arrows point to the input fields and the button, with labels: "User information input" (pointing to the User name field), "Password shown/hidden" (pointing to the Password field), and "Submit button" (pointing to the Submit button).

After the user input his/her user information, such as username, password last name, first name and email, in the corresponding **box**. he/her can click the **submit** button. He/she can also click the password shown/ hidden button to show the password or hide the password, similar to the login page.

Testing strategies

If the sign up process is successful, the user will go back to the **home page** with his/her status changes to login.



Similar to the login page, when user click the log out button, his/her status will change back to the logging state.

The following picture shows the result when the sign up process is not successful.

If the user does not input the username. Warning message will be shown to inform the user to input his/her username. Similar warning will also be shown if the user does not input his/her password, last name etc.

User name:

Password:

Confirmation:

Last name:

Warning: User name cannot be empty!

Email:

Submit

If the user's password is inconsistent with the confirmation, a warning will be shown to inform the user to input the same password.

User name:

Password:

Confirmation:

Last name:

Warning: Two passwords are inconsistent!

Email:

Submit

Shopping carts

Function Description

If the user has been signed in:

Click the "My Cart" button and the user will enter a new page:

(<http://shoppingdemo.lemontreeex.com/cart.html>)

Annotations:

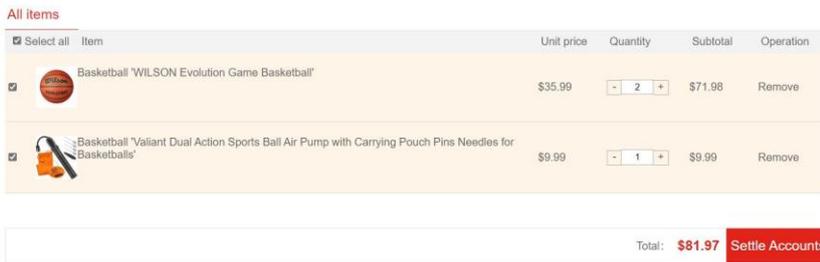
- Login bar
- Home icon
- Select item window
- Quantity chosen bar
- Clear cart button
- Settle deal button

Item	Unit price	Quantity	Subtotal	Operation
Basketball WILSON Evolution Game Basketball	\$35.99	2	\$71.98	Remove
Basketball Valiant Dual Action Sports Ball Air Pump with Carrying Pouch Pins Needles for Basketballs	\$9.99	1	\$9.99	Remove

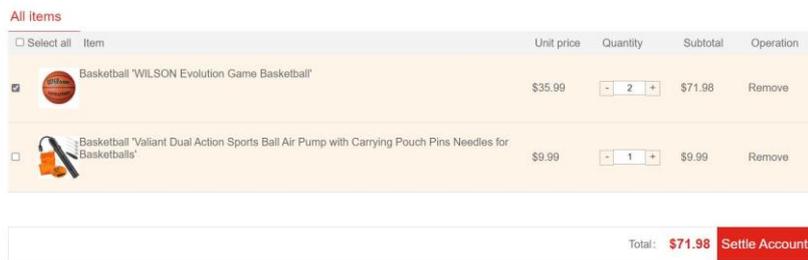
Total: \$0 **Settle Accounts**

The red **Text box** on the top right side of the “My cart” button will show the number of items that are current in the cart. Similar to the login page, user can click “**log out**” the login bar to log out the website and click **home icon** to go back to the home page.

In the **All item window**, user can view the product that he/her has added to the cart, if the user clicks the **select all** button, all the products will be chosen, and the total money will be calculated in **total bar**.



User can also click the **item chosen window** in front of each item to choose the item he/her wish to buy.



If the user wishes to change the quantity of product, he/she can click the “-” button to decrease the quantity of the item while clicking the “+” button to increase the quantity of the item.



User can also click the “**clear cart button**” to remove the item from his/her cart.



Testing strategies

If the shopping process is successful, a message will appear on the top of the window, informing the user that the payment has been successful. After the user clicks “confirm” button in the message, he/her will go back to the home page.



The following picture shows the result when the shopping process is not successful.

If the money in the user's account is not enough to buy the product, a warning will appear to inform the user

that his money is not enough.

All items

<input type="checkbox"/> Select all	Item	Unit price	Quantity	Subtotal	Operation
<input checked="" type="checkbox"/>	 Basketball 'Silverback In-Ground Basketball Hoop with Adjustable-Height Tempered Glass Basketball Goal Backboard'	\$1099.99	<input type="text" value="1"/>	\$1099.99	Remove

Total: **\$1099.99** [Settle Accounts](#)

If the quantity of the item is larger than the existing stock of the item, a warning will also appear to inform the user that the stock is not enough.

<input checked="" type="checkbox"/>	 Basketball 'Valiant Dual Action Sports Ball Air Pump with Carrying Pouch Pins Needles for Basketballs'	\$9.99	<input type="text" value="3"/>	\$29.97	Remove
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Item-viewing bar

Function Description

User can click the item type on the **item-viewing bar** to go to the corresponding page for product.

[ALL](#) [Basketball](#) [Football](#) [Running](#) [Cycling](#) [Swimming](#) [Skating](#) [Exercise](#) [Climbing](#)

Testing strategies

If the user click the basketball button, he/she will go to the basketball page

(<http://shoppingdemo.lemontreex.com/list.html>) , where he/she could view more products.

Basketball

 WILSON Evolution Game Basketball \$35.99 Stock 8 Buy now	 Spalding Street Outdoor Basketball \$40 Stock 2 Buy now	 Silverback In-Ground Basketball Hoop with Adjustable-Height Tempered Glass Basketball Goal Backboard \$1099.99 Stock 3 Buy now	 Valiant Dual Action Sports Ball Air Pump with Carrying Pouch Pins Needles for Basketballs \$9.99 Stock 2 Buy now
			

Quick-searching bar

Function Description

User can type in the **quick searching bar** and click search button to search for the item that he/she wishes to view.

Testing strategies

If the item is existing , user will go to a new page where shown the corresponding searching result. User can also click the **“buy now”** button below the item to view their details while deciding whether to buy the product.



Searching Result



Nike-Kyrie-8 Basketball shoes

\$104.2 Stock 5



Under Armour Curry Flow 9 Basketball Shoes

\$98 Stock 9



Nike Mens KD Trey 5 VIII Basketball Shoes

\$130 Stock 4

If the item is not exist, the searching result will be shown as no product.

Welcome to Loving Sports!

test, [Log out](#)



LOVING SPORTS

Searching Result

No product

Picture viewing window

Function Description

User can click the left arrow or right arrow to view the next picture or the pervious picture. User can also click the picture itself to view the item details.



Testing strategies

Click the right arrow to view the next picture. The first orange dot will also change to the second orange dot.



Click the picture itself to view the product details.



Under Armour Curry Flow 9 Basketball Shoes

join our loving sports family and receive a discount !

Price **\$98**

Stock **9**

discount **Buy more, Save more** Buy 10 balls , receive a 20% dicount, buy 20 balls, receive a 45% discount@details

1

Product viewing window

Function Description

Similar to the picture viewing window, user can click the picture itself to view the item details.

Testing strategies

Click the basketball hoop in the **hot column** , user goes to the details page.



Silverback In-Ground Basketball Hoop with Adjustable-Height Tempered Glass Basketball Goal Backboard

join our loving sports family and receive a discount !

Price **\$1099.99**

Stock **3**

discount **Buy more, Save more** Buy 10 balls , receive a 20% dicount, buy 20 balls, receive a 45% discount@details

1

Loving sports- item listing page: (<http://shoppingdemo.lemontreex.com/list.html>)

The screenshot shows the 'Basketball' category page. At the top, there is a navigation bar with 'Welcome to Loving Sports!', a search bar with 'What do you want?', and a 'My cart' icon with a notification badge. A 'test, Log out' link is also present. Below the navigation bar, the 'Basketball' category is displayed. Four product listings are shown in a grid:

- Wilson Evolution Game Basketball**: Price \$35.99, Stock 8. A 'Buy now' button is located below the product image.
- Spalding Street Outdoor Basketball**: Price \$40, Stock 2. A 'Buy now' button is located below the product image.
- Silverback In-Ground Basketball Hoop with Adjustable-Height Tempered Glass Basketball Goal Backboard**: Price \$1099.99, Stock 3. A 'Buy now' button is located below the product image.
- Valiant Dual-Action Sports Ball Air Pump with Carrying Pouch Pins Needles for Basketballs**: Price \$9.99, Stock 2. A 'Buy now' button is located below the product image.

Annotations on the right side of the page point to various elements: 'Login bar' points to the 'test, Log out' link; 'Home icon' points to the 'LOVING SPORTS' logo; 'Quick-searching bar' points to the search bar; and 'Buy now button' points to the 'Buy now' buttons on the product listings.

User can view the item picture, item name, item price and item stock in this page

Buy now button

Function Description

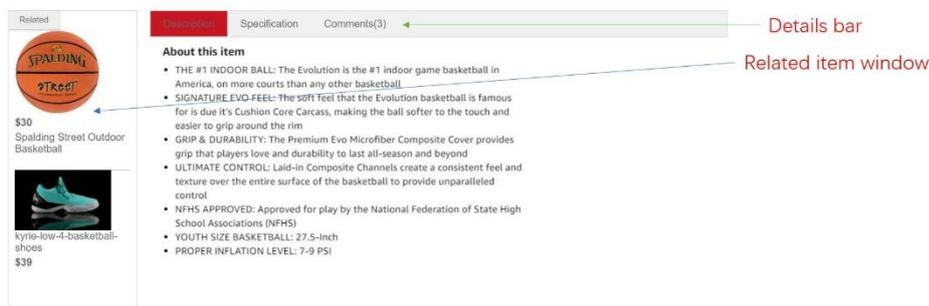
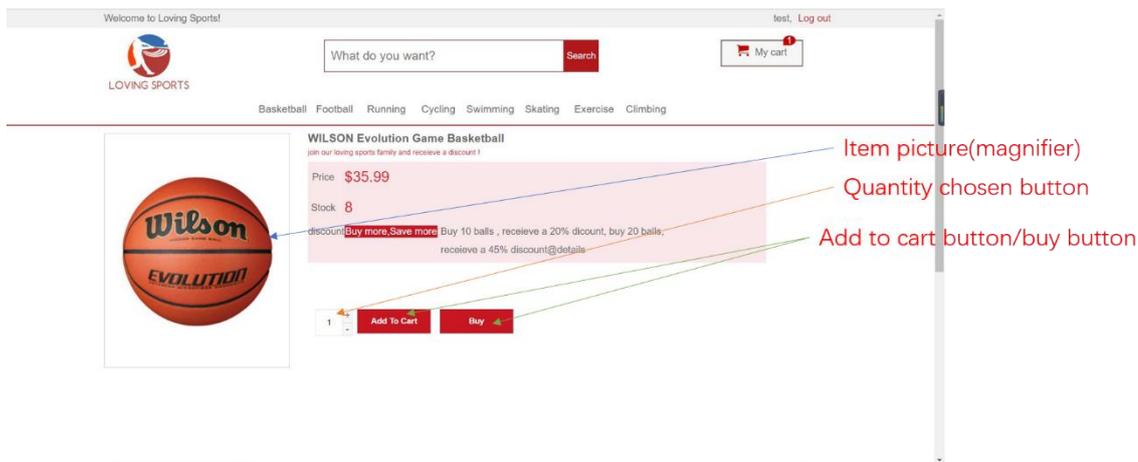
After the user choose the item, he/she wishes to buy or view the detailed information, he/she can click the **buy now button** and enter the corresponding detail page for the product.

Testing strategies

Click the buy now button for the first item. It enters the detail page.



corresponding detail page for the product



Item picture magnifier

Function Description

If the users put their mouse on the picture, a pink square will appear, and they can move the pink square to view the product details within the pick square in a bigger picture.

Testing strategies

Moving the mouse to the picture and a bigger picture of the pink square is shown next to the original picture.



Quantity chosen button

Function Description

Similar to the **quantity chosen bar** in the **shopping chart**, users can click the “-” button to decrease the quantity of the item while clicking the “+” button to increase the quantity of the item they wishes to buy or add to cart. The initial quantity is set to be 1.

Testing strategies

Adjusting the quantity to 3 by clicking the + button for 2 times, the following picture shows the result.



Add to cart button

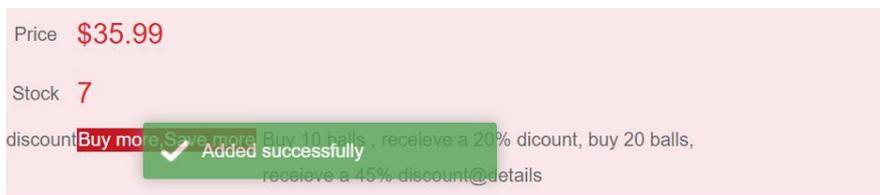
Function Description

User can click the “add to cart” button to add the item and the quantity of the item they wish to buy into the shopping cart.



Testing strategies

If the user clicks the “add to cart” button, a message will appear to inform the user that the adding process is successful.



The content in the shopping chart will also be updated by the corresponding item and quantity.



Buy button

Function Description

If the user wants to buy the product immediately without adding them to cart first, they can click the Buy button to purchase the product.



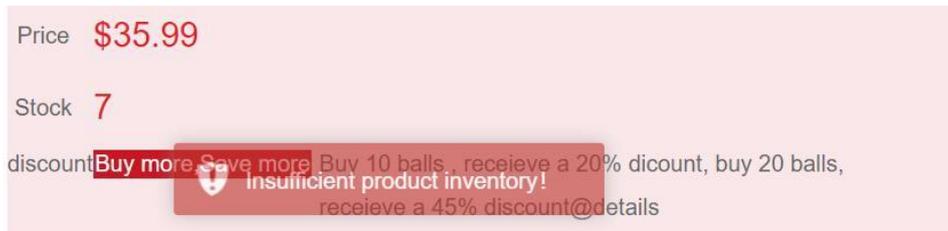
Testing strategies

If the purchase process is successful, a message will appear to inform the user that the purchase is successful.

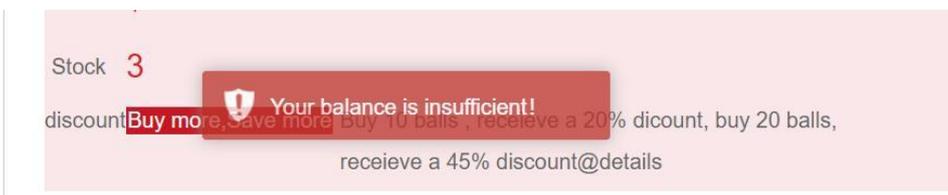


The following pictures show the result if the purchase is not successful.

If the quantity needed by the user is larger than the existing stock of the product, a warning will appear to inform the user that the quantity is not enough.



If the money in the user's account is not enough, a warning will appear to inform the user that the money is not enough.



Details bar

Function Description



The details bar shows three kinds of detail information about the product: description, specification and comments. User can click the corresponding button to view the content. The original content is for description.

Testing strategies

If the user clicks the description. The description button will be marked red and showing the content below the description.



About this item

- THE #1 INDOOR BALL: The Evolution is the #1 indoor game basketball in America, on more courts than any other basketball
- SIGNATURE EVO FEEL: The soft feel that the Evolution basketball is famous for is due it's Cushion Core Carcass, making the ball softer to the touch and easier to grip around the rim
- GRIP & DURABILITY: The Premium Evo Microfiber Composite Cover provides grip that players love and durability to last all-season and beyond
- ULTIMATE CONTROL: Laid-in Composite Channels create a consistent feel and texture over the entire surface of the basketball to provide unparalleled control
- NFHS APPROVED: Approved for play by the National Federation of State High School Associations (NFHS)
- YOUTH SIZE BASKETBALL: 27.5-Inch
- PROPER INFLATION LEVEL: 7-9 PSI

If the user clicks specification, similar to description, it will show the content below the specification.

Description	Specification	Comments(3)
Sport	Basketball	
Color	Black Gold	
Material	Rubber	
Item Diameter	29.5 Inches	
Brand	Senston	

If the user clicks comment, similar to description, it will show the content below the comment.

Description	Specification	Comments(3)
TOM SMITH		
		
"Best ball in the world, i played a lot with my kids, must give 5 stars!"		
JIM JOBCOB		
		

Related item window

Function Description

The related item window gives some related goods information for the user. User can click the picture to go to the corresponding page for the goods.

Testing strategies

If the user clicks the basketball, it will jump to the basketball pages.



Spalding Street Outdoor Basketball
Join our loving sports family and receive a discount!

Price **\$40**

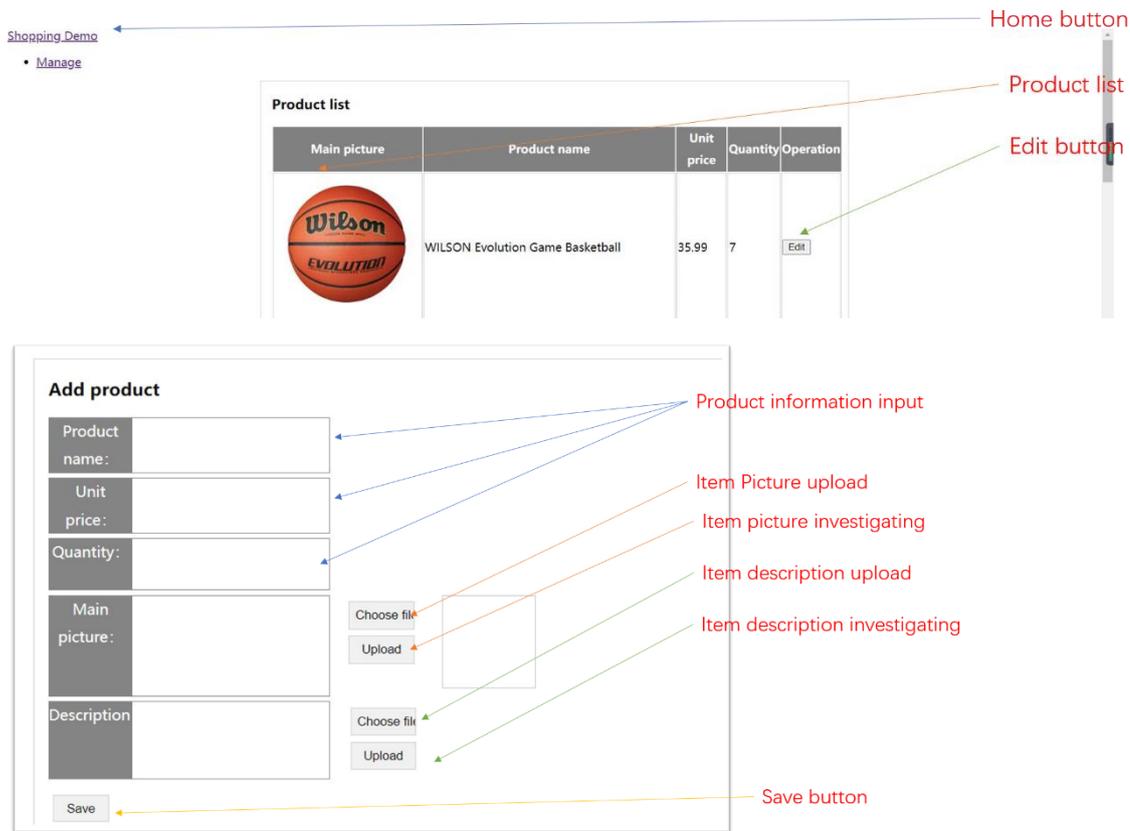
Stock **2**

discount **Buy more, Save more** Buy 10 balls, receive a 20% discount, buy 20 balls, receive a 45% discount@details

1

Administrator interface(<http://shoppingdemo.lemontreex.com/home/manage>)

This interface is developed to help the administrator to manage the goods on the website.



Home button

Function Description

Administrator can return to the home page by clicking the **shopping demo button**.

Testing strategies

After the administrator click the shopping demo. The page jumps back to the home page.

Edit button

Function Description

If the administrator needs to update the goods information in the current website, he could click the edit button and change the information in the add product panel. In the add product panel, he could edit the basic information of the goods: name, price and stock while changing the picture of goods and description by re-upload the file.

Add product

Product name:	WILSON Evolution Game Basl
Unit price:	35.99
Quantity:	7
Main picture:	/uploads/2022-04-18-10-39504
Description	

Choose file

Upload

Choose file

Upload

About this item

- THE #1 INDOOR BALL: The Evolution is the #1 indoor game basketball in America, on more courts than any other basketball
- SIGNATURE EVO FEEL: The soft feel that the Evolution basketball is famous for is due to its Cushion Core Carcass, making the ball softer to the touch and easier to grip around the rim
- GRIP & DURABILITY: The Premium Evo Microfiber Composite Cover provides grip that players love and durability to last all-season and beyond
- ULTIMATE CONTROL: Laid-in Composite Channels create a consistent feel and texture over the entire surface of the basketball to provide unparalleled control
- NFHS APPROVED: Approved for play by the National Federation of State High School Associations (NFHS)

Testing strategies

If the administrator needs to change the price of the Wilson basketball. The following picture show the status of the basketball.



WILSON Evolution Game Basketball
Join our loving sports family and receive a discount!

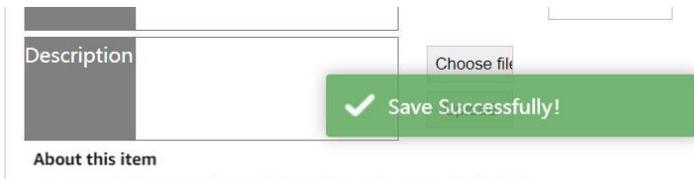
Price **\$35.99**

Stock **7**

discount **Buy more, Save more** Buy 10 balls, receive a 20% discount, buy 20 balls, receive a 45% discount@details

1 + Add To Cart Buy -

If the administrator changes the price to 55.45. He could edit the unit price as 55.45 and click the save button. A message appears to inform the saving is successful.



Save Successfully!

The price of the product has been changed to \$55.45.



WILSON Evolution Game Basketball
Join our loving sports family and receive a discount!

Price **\$55.45**

Stock **7**

discount **Buy more, Save more** Buy 10 balls, receive a 20% discount, buy 20 balls, receive a 45% discount@details

1 + Add To Cart Buy -

Similarly, the administrator can edit the stock/ name/description and picture of the product.

If the administrator forgets to input the information of the product, the editing process will be unsuccessful. A warning will be shown to inform the administrator to input the missing information.

The screenshot shows a product editing form with the following fields and values:

- Product name: WILSON Evolution Game Basl
- Unit price: (empty)
- Quantity: 7
- Main picture: /uploads/2022-04-18-10-39504
- Description: (empty)

Buttons for "Choose file" and "Upload" are present next to the main picture and description fields. A red error message box is displayed over the unit price field, stating: "Unit price cannot be empty!". Below the form, there is a section titled "About this item" with a bullet point: "THE #1 INDOOR BALL: The Evolution is the #1 indoor game basketball in America, on more courts than any other basketball".

Product information input

Function Description

Administrator can add a new product by typing the corresponding information of the product.

Testing strategies

If the administrator forgets to input the information of the product, the adding process will be unsuccessful. A warning will be shown to inform the administrator to input the missing information.

The screenshot shows an "Add product" form with the following fields and values:

- Product name: bb ball
- Unit price: 12
- Quantity: 5
- Main picture: (empty)
- Description: (empty)

Buttons for "Choose file" and "Upload" are present next to the main picture and description fields. A red error message box is displayed over the unit price field, stating: "Please upload the main picture!". A "Save" button is located at the bottom left of the form.

Item picture & description upload & investigating

Function Description

Administrator can upload the picture and description by firstly clicking choose file to investigating the local computer to find the picture and click upload to upload the picture to the database.

Testing strategies

If the uploading process is successful, a message will be shown to inform the administrator. The link to the file will also be shown in the box after the uploading process.

Add product

Product name:	bb ball
Unit price:	12
Quantity:	5
Main picture:	/uploads/2022-04-19-15-2708c

Choose file
Upload



Upload successfully!

Save button

Function Description

Administrator can add a new product to the website by finally click the save button.

Testing strategies

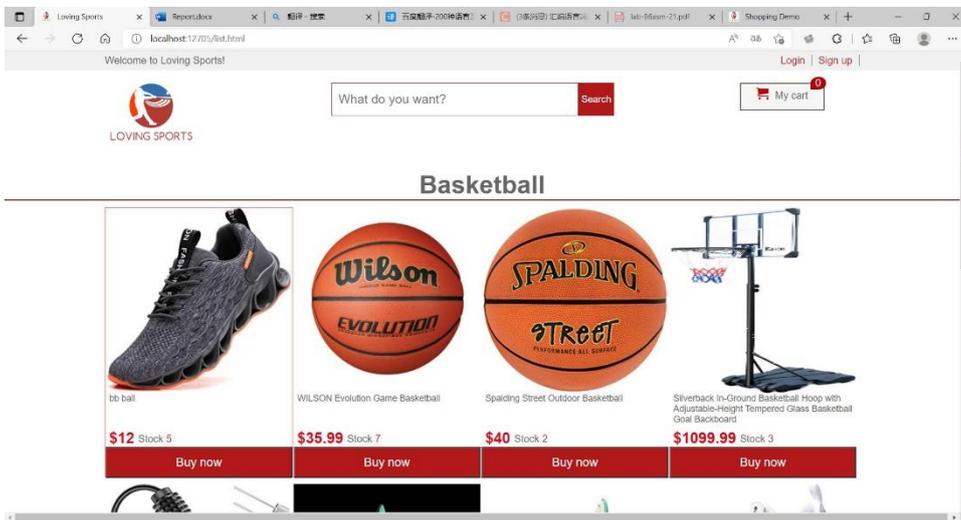
If the uploading process is successful, a successful message will be shown.

Main picture:	/uploads/2022-04-19-15-2708c	Choose file Upload	
Description		Choose file Upload	

Save Successfully!

About this item

- THE #1 INDOOR BALL: The Evolution is the #1 indoor game basketball in America, on more courts than any other basketball
- SIGNATURE EVO FEEL: The soft feel that the Evolution basketball is famous for is due to its Cushion Core Carcass, making the ball softer to the touch and easier to grip around the rim
- GRIP & DURABILITY: The Premium Evo Microfiber Composite Cover provides grip that players love and durability to last all-season and beyond
- ULTIMATE CONTROL: Laid-in Composite Channels create a consistent feel and texture over the entire surface of the basketball to provide unparalleled control
- NFHS APPROVED: Approved for play by the National Federation of State High School Associations (NFHS)
- YOUTH SIZE BASKETBALL: 27.5-inch
- PROPER INFLATION LEVEL: 7-9 PSI



If some of the information is missing, the uploading process will be unsuccessful with a warning message informing which kind of information is missing.

Add product

Product name:	bb ball	
Unit price:	12	<div style="display: flex; align-items: center; justify-content: center;"> <div style="font-size: 1.2em; margin-right: 5px;">!</div> Please upload the main picture! </div>
Quantity:	5	
Main picture:	<input type="button" value="Choose file"/> <input type="button" value="Upload"/>	<div style="border: 1px solid #ccc; width: 60px; height: 60px; margin: 0 auto;"></div>
Description:	<input type="button" value="Choose file"/> <input type="button" value="Upload"/>	

8. Contribution of each group member

ZENG Ruiyi (20076896D): Front-end programmer. Design all web pages. Write all the css and html files for “index”, “list”, “cart”, “detail”, “login”, “sign-up” pages. Linking all the web pages together. Realize many functions on the interface using jQuery. For example, the magnifier function in “detail” page, the pictures automatic rolling and switching function in “index” page. Test and debug all the front-end interfaces and functions.

HAO Jiadong (20084595D): Back-end programmer. Build the database tables. Connect the database to the project. Write all the .cs files and the site.js file to realize all the functions related to the database. For example, the user login and register function, the shopping cart function, the good purchase function, and the administrator management function. Test and debug all the back-end functions.

