

Winner Tennis Sportswear

Project Report

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Acknowledgements:

We would like to sincerely thank everyone who helped to bring this project to a successful conclusion. This project would not have been feasible without their commitment, cooperation, and help.

First and foremost, we would like to express our sincere gratitude to our Tutor Arun Kumar for his help and guidance on this project. Also would like to thank the entire team for their vision, direction, dedication, and commitment in ensuring that the product met the project goals. The combined team efforts and steadfast support have been crucial to accomplishing our mutual objectives and goals.

Introduction:

Project Overview: This project aims to establish an online platform dedicated to selling tennis sportswear. The platform will provide a convenient and efficient way for tennis enthusiasts to purchase high-quality clothes and shoes without the need to visit physical stores.

Goals and Objectives: The primary objective is to create a user-friendly and secure e-commerce website that offers a wide range of tennis sportswear. Key goals include enhancing the shopping experience, increasing accessibility to tennis clothes and shoes, and generating revenue through online sales.

Scope and Limitations: The project's scope includes e-commerce website creation, user authentication, new user account registration, inventory management and payment methods and systems. Time, money, and technology restrictions are a few examples of limitations.

Audience and Stakeholders: The primary audience includes tennis players of all skill levels who are seeking quality tennis sportswear. Stakeholders include the project team members, potential customers, and third-party service providers like Paypal.

Project Overview:

Background and Context: Tennis is a popular sport and as such the demand for quality tennis sportswear is always on the rise. However, traditional brick-and-mortar stores often lack comprehensive product selections and user convenience. So, there is a need for an online platform dedicated to fulfilling this increasing demand.

Problem Statement: Tennis players find it inconvenient to have to rely on generic sports stores and limited selections due to the lack of a dedicated online store for their tennis gear. The purpose of our initiative is to close this gap by offering a dedicated platform designed primarily with tennis enthusiasts in mind.

Motivation for the Project: The driving forces behind this are the ambitions to improve consumer shopping experiences, expedite the acquisition of tennis clothes and shoes and take advantage of the expanding trend of online buying. Furthermore, by increasing the availability of high-quality shoes and clothes, the project hopes to promote tennis.

Project Timeline and Milestones: The project will be divided into several phases including requirement analysis, project planning, design, development, testing, and deployment. Each phase has specific milestones and deadlines to ensure timely completion.

Project Team, Roles & Responsibilities:

Team Members	Role	Responsibilities	Main Tasks
Jiajun Liu	Project Lead and full-stack programmer	Organize the weekly meeting organize and assign tasks to team member	Develop both front and back-end functions.
Changsheng Tian	Full-stack programmer	Front and back-end development	Develop both front and back-end functions.

Pradeep Kandy	Software Test	Test all the functions work as expected	Develop detailed test plans outlining test scenarios, test cases, and acceptance criteria for each feature.
Anup Chapain	Front-end programmer	Front-end development	Develop the front-end functions

Software Requirements:

Front End : HTML, CSS, JavaScript

Backend : C#, ASP.NET

Database : SQLite

Requirement Analysis:

Since the application's main objectives are to be user-friendly and to offer an interactive interface, a good deal of analysis has been done to understand the needs and habits of different customers. The application's operation is made simple and convenient accordingly.

Based on their familiarity with the items that best meet their needs, customers can either search directly for the required product by using the product name in search, or use the filters to refine the results by selecting different criteria such as product category, manufacturer, price range etc. They can add the product to the shopping cart and to wish lists. The customer can also leave reviews and rate their products. The shopping cart will display a summary of selected products, quantities, and total cost. The customer can edit the cart's contents.

Stakeholder identification :

- Customers: includes tennis players of all abilities as the major stakeholders.
- Members of the project team (Developers, designers, and testers)
- Admin users: Employees responsible for managing inventory, processing orders, and maintaining the website
- Third-party service suppliers (shipping partners, payment gateways)

Sprint Task:

Task 1 Requirement Gathering

Duration: 1 week (15-01-2024 to 21-01-2024)

Milestone: All the requirements have been gathered

Task 2: Design website prototype

Duration: 1 week (22-01-2024 to 28-01-2024)

Subtask 1: Create a high-fidelity website prototype

Milestone: Design a high-fidelity website prototype

Task 3: Create database and finish the user register and login function

Duration: 1 weeks (29-01-2024 to 04-02-2024)

Subtask 1: Create customer, admin, product, refund, order, and review database and connect to the project.

Subtask 2: Develop the backend function for customer register, and customer and admin login.

Subtask 3: Create the user interface for user login and register and develop the frontend function to connect with and perform the related backend function.

Milestone: User login and register function properly.

Task 4: Finish functions for production displaying edition, search, and filter

Duration: 1 weeks (05-02-2024 to 11-02-2024)

Subtask 1: Develop the backend function for product displaying edition, search, and filter.

Subtask 2: Create the user interface for product displaying, edition, search, and filter, and develop the frontend function to connect with and perform the related backend function.

Milestone: production displaying, edition, search, and filter function properly.

Task 5: Finish the function for product edition and product review

Duration: 1 week (12-02-2024 to 18-02-2024)

Subtask 1: Develop the backend function for adding, updating, and deleting products.

Subtask 2: Create the user interface for adding, updating, and deleting products and develop the frontend function to connect with and perform the related backend function.

Subtask 3: Develop the backend function for add and display the product reviews.

Subtask 4: Develop the frontend function for adding and displaying product reviews to connect with the related functions at the backend.

Milestone: adding, updating, deleting products, and adding displaying product reviews function properly.

Task 6: Finish the function for order taking and refund

Duration: 1 week (19-02-2024 to 25-02-2024)

Subtask 1: Develop the backend function for adding products to the shopping cart, check out, refund application by customer, and the refund request processing by admin.

Subtask 2: Create the user interface for adding products to the shopping cart, check out, refund application by customer, and the refund request processing by admin and develop the frontend function to connect with and perform the related backend function.

Milestone: adding products to the shopping cart, check out, refund application by customer, and the refund request processing by admin function properly.

Task 7: Testing the project

Duration: 1 week (26-02-2024 to 03-03-2024)

Subtasks 1: Test the user register and login functions.

Subtask 2: Test functions for production displaying, edition, search, and filter.

Subtask 3: Test functions for product edition.

Subtask 4: Test the function for order taking and refund.

Milestone: All the functions perform as expected.

Task 8: Deployment and Finalize

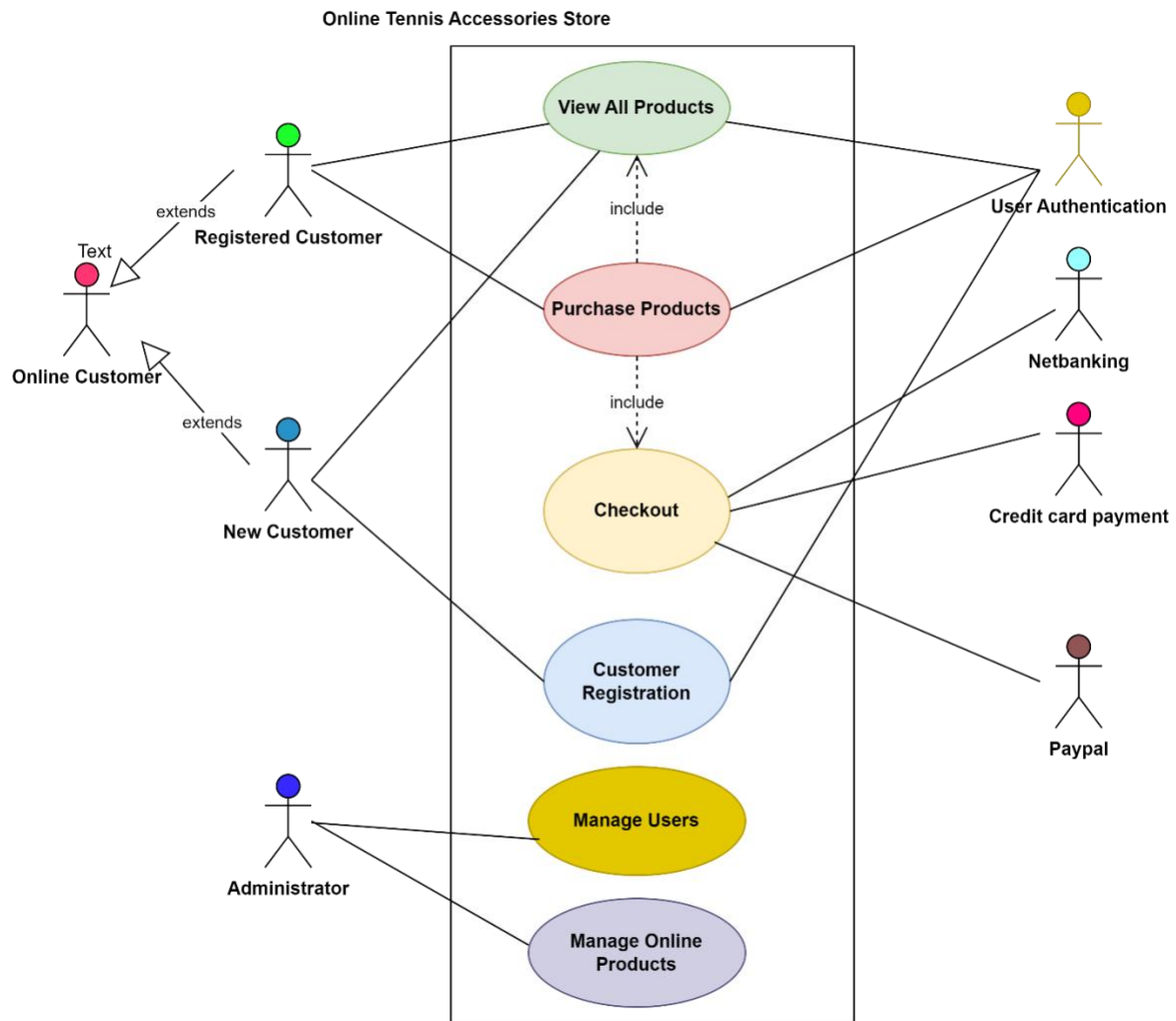
Duration: 1 week (04-03-2024 to 10-03-2024)

Subtask 1: We invite our friend as a new user to use our website as both admin and customer and check his experience.

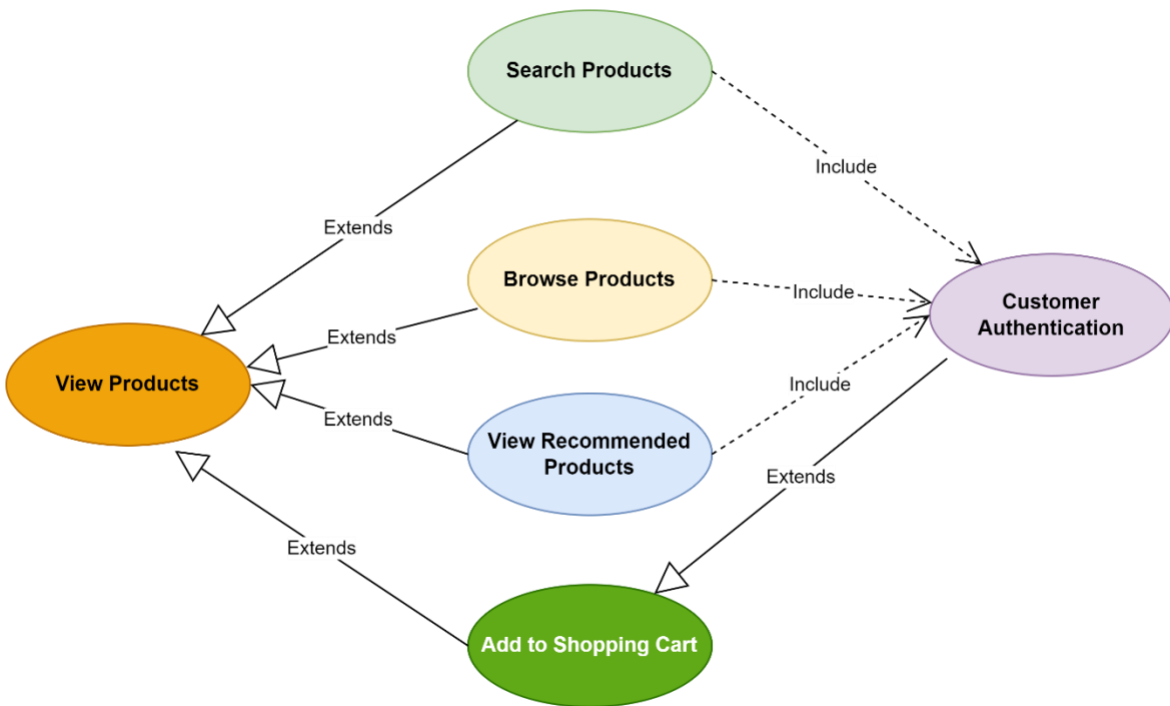
Milestone: Get the positive feedback from the new user.

UML Diagrams:

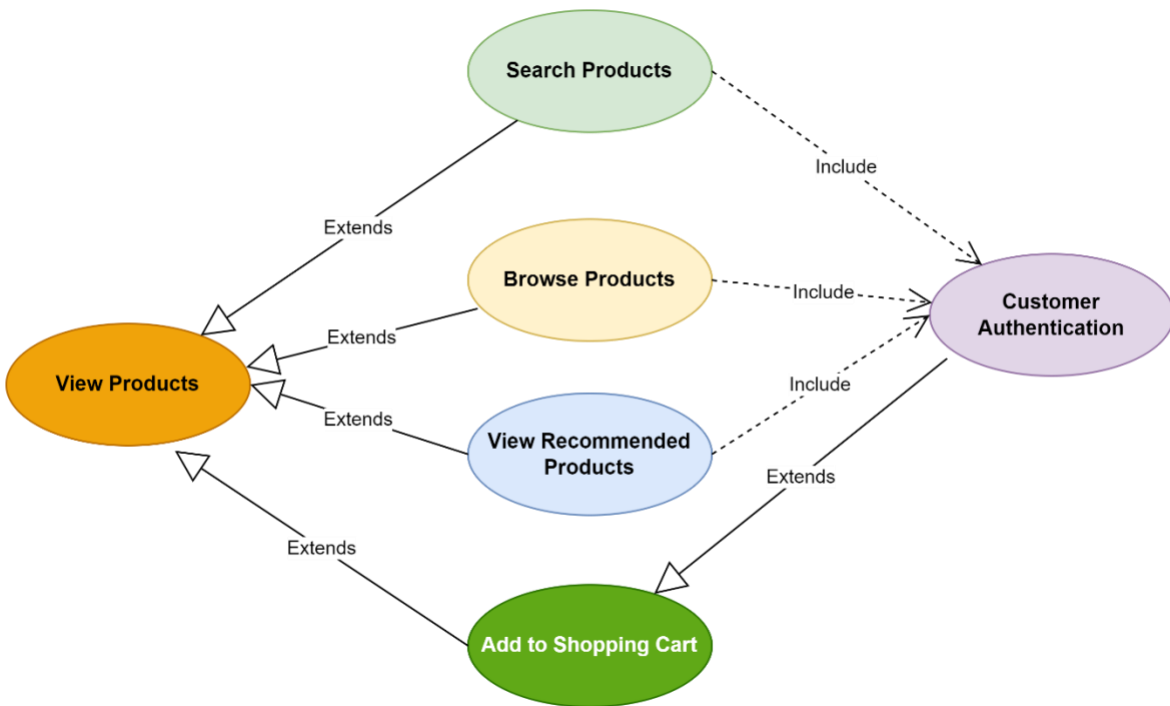
Use case Diagrams:



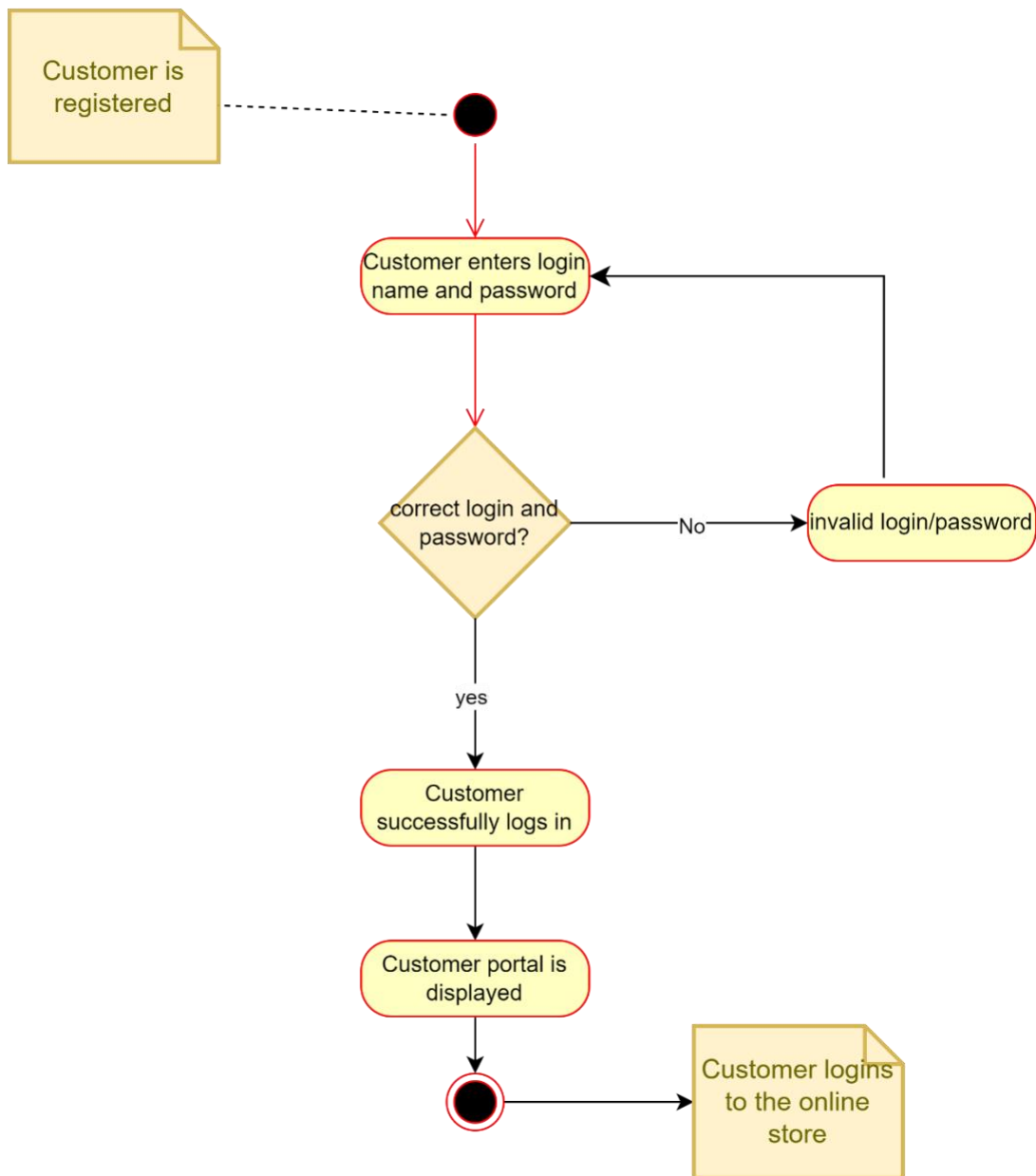
View Products:



Checkout:

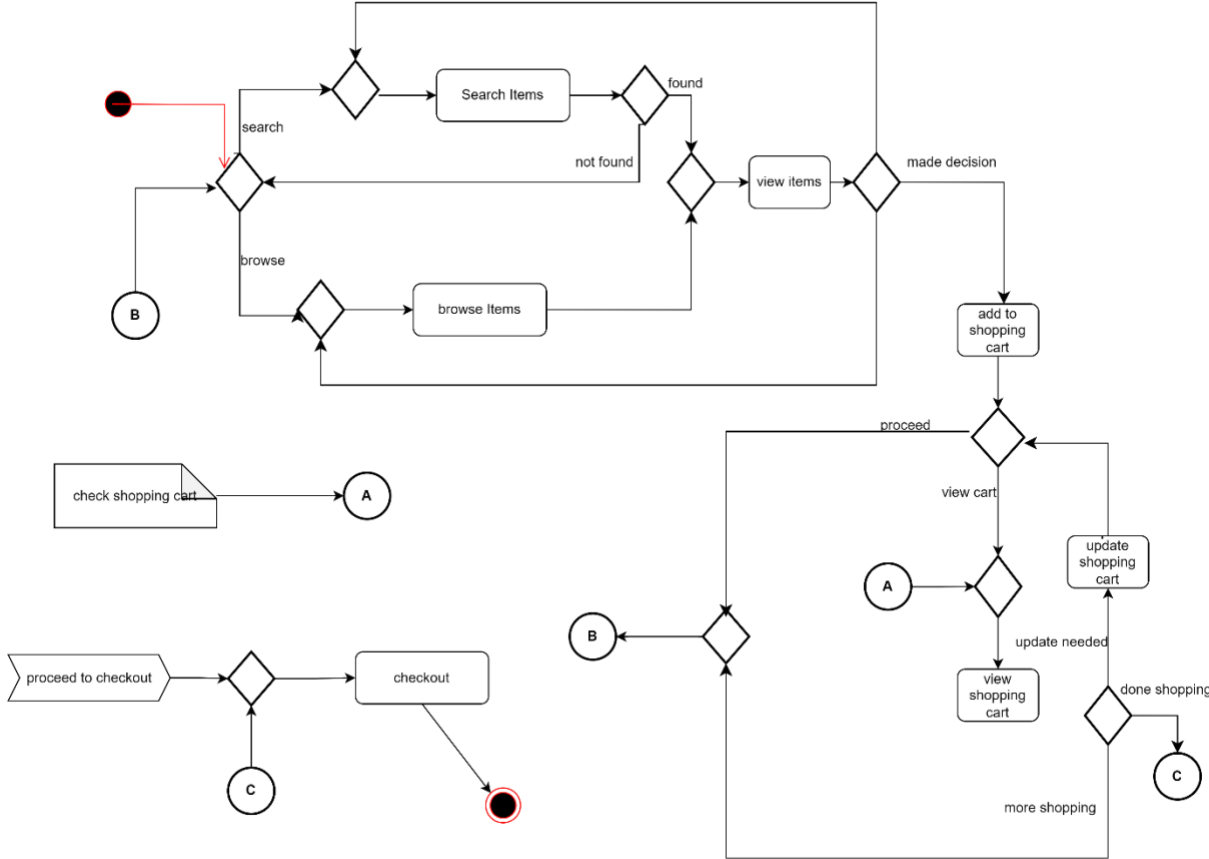


Activity diagram for Customer login page

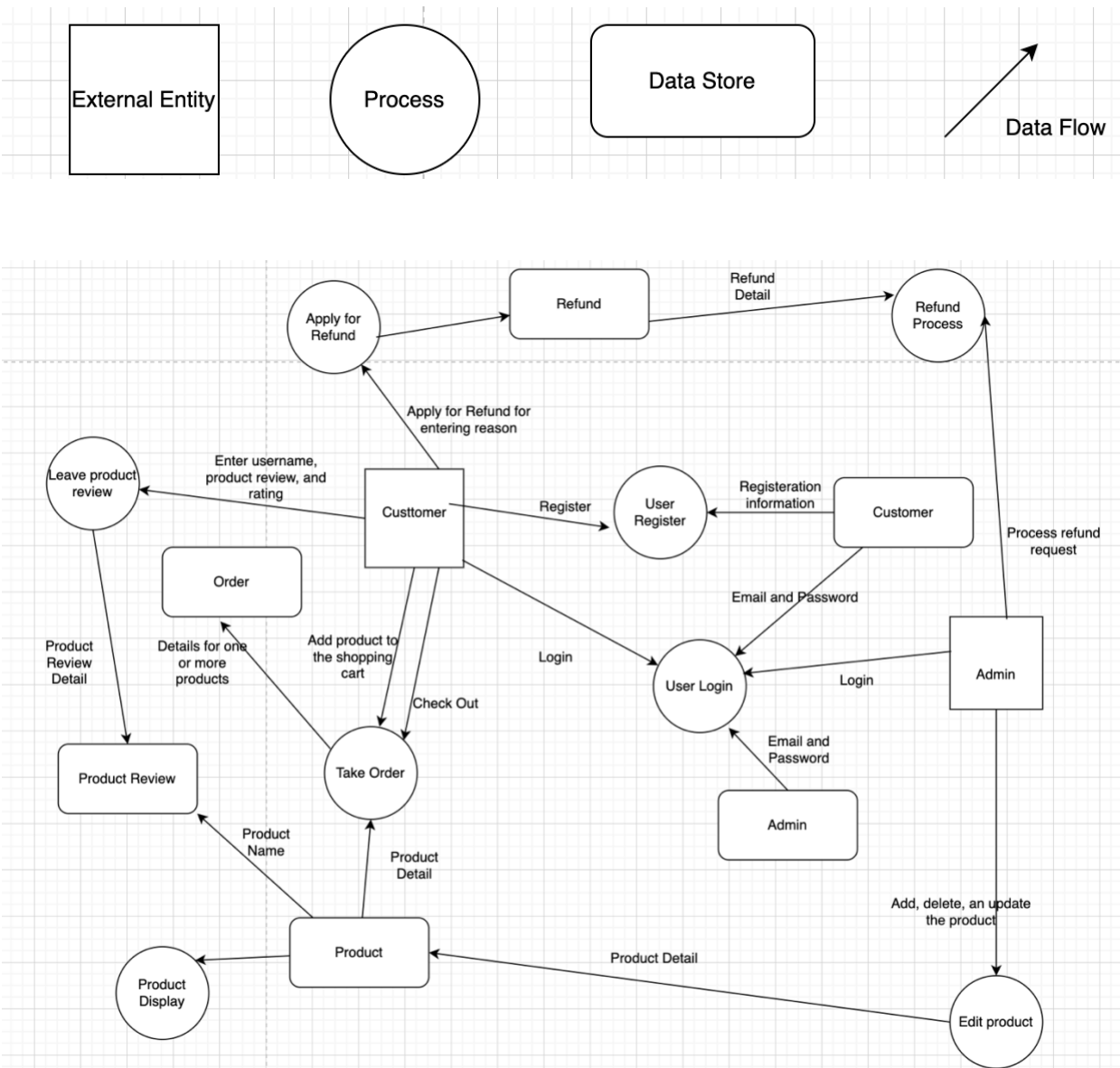


Activity Diagram : Online Shopping

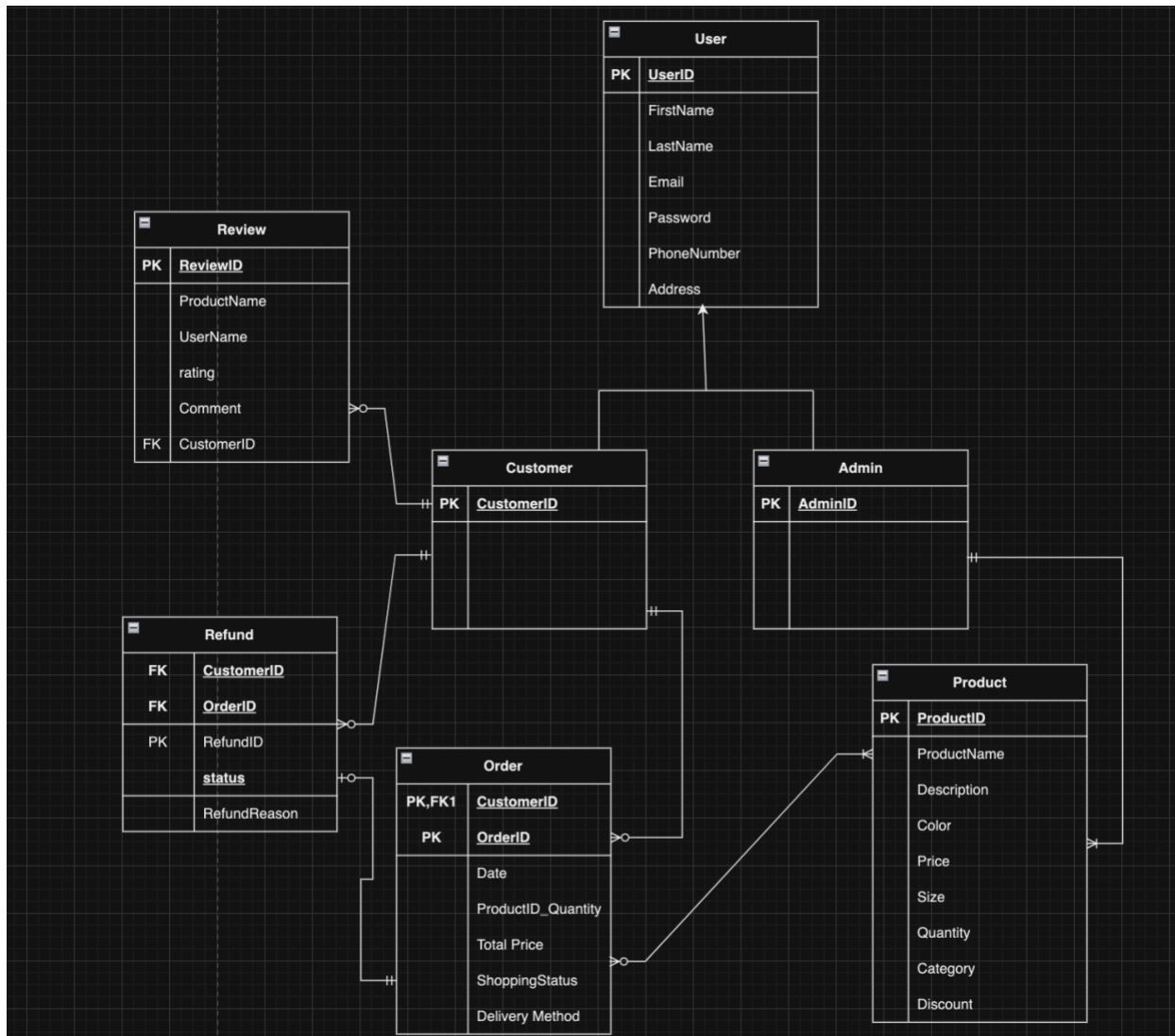
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Data Flow diagram



ERD Diagram:



For the many-to-many relationship between product and order database, the ProductID_Quantity is used as dictionary data structure to contain multiple products in a part, like {"4", 1} means the product ID of 4 with 1 product is added to the order.

Functional Requirements:

1. Customer Registration and Authentication.

1.1 User Account Registration Process:

Customers should be able to register for an account on the online tennis shoes and clothes store.

After accessing the registration page, customers will be asked for their first name, last name, email address, password, phone number, and address.

Upon successful registration, users should receive a confirmation message.

For admin, there is only one account stored in the admin database. The admin can only login with this account to navigate the admin version of website.

1.2 User Authentication:

Admin and customers will go to the login page and input their password and registered email address. The credentials will be verified by the system using the database's stored data.

The user will get access to their account if the credentials match. If the credentials are entered incorrectly, the relevant error messages should be displayed.

2. Product Catalog Management:

2.1 Adding Products:

Admin users should be able to add new products to this online tennis clothes and shoes store. They will fill out a form with details about the new product, including the product name, description, price, quantity, category, color, size, and image. Upon submission, the new product

entry will be added to the web page displaying products and made available for purchase to customers.

2.2 Editing Products:

Admin users should be able to edit existing product information as needed. They can update any information about a product by entering the product id. Any modifications made to the product details should appear on the website right away to guarantee that clients are seeing the most recent version of the product.

2.3 Deleting Products:

Admin users should have the ability to remove products from the web page displaying the product when necessary. Admin can delete the product by entering the related product ID. Then, the product entry will be deleted from the database and taken down from the website.

3. Search and Filter Functionality:

3.1 Search Functionality:

Both admin and customers should be able to search the product by typing the product name or letters within the product name on the search bar. It is case-insensitive.

3.2 Filtering Options:

Both admin and customers can filter the product by click on product categories. There are four types of categories, men clothes, men shoes, women clothes, women shoes.

4. Shopping Cart and Checkout Process:

4.1 Adding Products to the Cart:

When customers open the website, there are multiple products shown on the home page. They can click the product they want to purchase. They can choose the available size, color, and quantity, and click on the “Add to the shopping cart” button to add the product into the shopping cart.

4.2 Check Out

When the products are added into the shopping cart, the customers can view them by clicking the shopping cart button on the navigation bar. Then, the customer can choose the delivery method, including online deliver, pick-up, and then click on the checkout button to check out.

4.3 View Past Orders

When the customers click on the orders button. They can view the past orders with information, like order id, the order date, product name, quantity total price. Then, customers can use the order Id to apply for the refund. At the same time, when the customer applies for the refund, the refund status will be shown for the specific order.

5. Refund Policy & Process

5.1 Refund Policy

When the customer clicks the Refund button on the navigation bar, the refund policy will be shown to them. The refund request will only be submitted successfully when the order is taken within 14 days.

5.2 Apply Refund

When the customer clicks the Refund button on the navigation bar, they can view the button to apply for the refund. They will need to enter the valid order Id shown in the past order page and reason to apply for the refund. When the login customer cannot match with the order, the message, the order id is not identified, will be shown. Furthermore, when the order record with the pending delivery method, which mean the order is not finalized in shopping cart. The message

showing the order id is identified will be displayed as well. If the order is taken within 14 days. They will be shown the successful message, otherwise, the customers will be notified the order is over 14 days.

5.3 Refund Process

When the admin logs in, the admin can click on the process refund button on the navigation bar. There will be multiple refund requests. Then, the admin can choose to accept or reject the refund request. Then, after the refund request is processed, the admin can delete the refund records.

6. Add and display the product review.

6.1 Adding the displaying the product review

The login customer can leave the product preview for the specific product by inputting the optional username (if the username input is empty, the username will be shown as anonymous), rating, and comment. They can also view the product reviews for that product.

Non-functional Requirements:

- Performance: The website must load rapidly and manage large amounts of traffic effectively.
- Security: Secure HTTPS connection, encryption of sensitive data, and protection against SQL injection attacks.
- User Experience: Should have intuitive user interface, mobile responsiveness, and accessibility features.

User Stories & Acceptance Criteria:

User Story 1: User Registration

As a new customer, I want to register for an account on the online tennis clothes and shoes store so that I can make purchases and track my orders.

Acceptance Criteria:

Users should be able to register with a valid email address and password.

Users should receive a confirmation message upon successful registration.

Priority: High

User Story 2: User Login and Logout

As a customer, I want to login to be able to leave the product review, purchase products, and apply for the refund for my order.

As an admin, I want to login to be able to add, update, delete the product details, process the refund request, and delete the refund records.

As a customer or an admin, I want to logout.

Acceptance Criteria:

Customer should be able to login with a correct combination of email address and password.

User should receive a confirmation message upon successful login or unsuccessful login.

Both customer and admin should be able log out, and the logout message will be displayed to them.

Priority: High

User Story 3: Product Search and Filtering

As a user, I want to be able to search for tennis clothes and shoes using keywords and filter the results by category.

Acceptance Criteria:

Users should be able to enter search queries in the search bar and receive relevant results.

Search results should include products matching the search query. It should be possible for users to filter search results by product category.

The results of the filter should change depending on the chosen filter criteria.

Priority: High

User Story 4: Add the product into the shopping cart.

As a login customer, I want to add the products to the shopping cart to view the total price.

Acceptance Criteria:

When the customer checks the product details, they can clearly view the “Add to the shopping cart” button to add the products into the shopping cart.

Priority: High

User Story 5: Check out.

As a login customer, I want to check out for all the products in the shopping cart as an order. At the same time, I want to choose the delivery method.

Acceptance Criteria:

When a login customer goes to the shopping cart page, they can choose the delivery method and check out.

Priority: High

User Story 6: Add the product.

As an admin, I want to add to new products with all the product details, such as product name, category, description, color, size, discount, quantity, and photo and display new products on the website for customers to purchase.

Acceptance Criteria:

The login admin can add the product by entering the product details, including product name, category, description, color, size, discount, quantity, and photo. Then, new products can be displayed on the website.

Priority: High

User Story 7: Update the product.

As an admin, I want to update to new products with all the product details, such as product name, category, description, color, size, discount, quantity, and photo. Then, the new product detail will be updated and displayed.

Acceptance Criteria:

The login admin can update the product by entering the valid product ID and the product information they want to update. If the product ID is not identified, the admin will be notified. Then, the admin just needs to input the information they want to update and inputs corresponding to other product information can be empty. Finally, new updated product details can be shown on the website.

Priority: High

User Story 8: Delete the product.

As an admin, I want to delete the product that is out of stock.

Acceptance Criteria:

The login admin can delete the product that is out of stock by entering the corresponding product id.

Priority: High

User Story 9: View Order History

As a customer, I want to view the past order history, then I can check the order ID and date, and use the order ID to apply for the refund, and I want to check the refund status for the order I have applied for the refund.

Acceptance Criteria:

The Customer should be able to view the past order history and check the order details, like delivery method and other details, and the refund status if the refund request has been applied for.

Priority: High

User Story 10: Apply for Refund

As a login customer, I want to be able to return anything I bought from the online tennis clothes and shoes store if I'm not happy with them or for any other proper reason.

Acceptance Criteria:

Customers should be able to initiate a refund request by accessing their past order history. Then, the customer can apply for the refund on the refund page by entering valid order ID, and reason. If the order is taken within 14 days, it will be delivered to the admin to process, otherwise, the refund request will not be delivered to the admin.

User Story 11: Process the Refund

As a login admin, I want to process the refund request. I can accept or reject the refund request. Then, the processed refund request records can be deleted.

Acceptance Criteria:

The admin can view the refund requests and their related reasons, and other details. Then, they can accept or reject refund request. At the same time, they can also delete the processed refund requests.

User Story 12: Add and view the product review.

As a login customer, I want to add and view the product review when I view a specific product.

Acceptance Criteria:

The login customer can view the product view and leave the product review with rating ranging from 0 to 5 and comment without entering the username.

Project Cost Estimation:**Function Points Calculation Table:**

Software components	External Inputs (EI)	External Outputs (EO)	External Inquiries (EQ)	Internal Logical Files (ILF)	External Interface Files (EIF)	Complexity Weights EI: Low (3) EO: Low (4) EQ: N/A ILF: Low (7) EIF: N/A	Function Points (FP) = (EI * EI weight) + (EO * EO weight) + (EQ * EQ weight) + (ILF * ILF weight) + (EIF * EIF weight)
User registration	1	0	0	1	0	EI (Low), EO (N/A), EQ (N/A), ILF (Low), EIF (N/A)	$FP = (1 * 3) + (0 * 4) + (0 * 3) + (1 * 7) + (0 * 5)$ $= 3 + 0 + 0 + 7 + 0$ $FP = 10$
User Authentication	1	0	0	1	0	EI (Low), EO (N/A), EQ (N/A), ILF (Low), EIF (N/A)	$FP = (1 * 3) + (0 * 4) + (0 * 3) + (1 * 7) + (0 * 5)$ $= 3 + 0 + 0 + 7 + 0$ $FP = 10$

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Product Management	1	1	0	1	0	EI (Low), EO (N/A), EQ (N/A), ILF (Low), EIF (N/A)	$FP = (1 * 3) + (1 * 4) + (0 * 3) + (1 * 7) + (0 * 5)$ $= 3 + 4 + 0 + 7 + 0$ $FP = 14$
Shopping Cart- Add to Cart	1	0	0	1	0	EI (Low), EO (N/A), EQ (N/A), ILF (Low), EIF (N/A)	$FP = (1 * 3) + (0 * 4) + (0 * 3) + (1 * 7) + (0 * 5)$ $= 3 + 0 + 0 + 7 + 0$ $FP = 10$
Update Cart	1	0	0	1	0	EI (Low), EO (N/A), EQ (N/A), ILF (Low), EIF (N/A)	$FP = (1 * 3) + (0 * 4) + (0 * 3) + (1 * 7) + (0 * 5)$ $= 3 + 0 + 0 + 7 + 0$ $FP = 10$
Checkout Process	1	1	0	1	0	EI (Low), EO (N/A), EQ (N/A), ILF (Low), EIF (N/A)	$FP = (1 * 3) + (1 * 4) + (0 * 3) + (1 * 7) + (0 * 5)$ $= 3 + 4 + 0 + 7 + 0$ $FP = 14$
Order Management	1	1	0	1	0	EI (Low), EO (N/A), EQ (N/A), ILF (Low), EIF (N/A)	$FP = (1 * 3) + (1 * 4) + (0 * 3) + (1 * 7) + (0 * 5)$ $= 3 + 4 + 0 + 7 + 0$ $FP = 14$
Payment Processing	1	0	0	0	1	EI (Low), EO (N/A), EQ (N/A), ILF (Low), EIF (N/A)	$FP = (1 * 3) + (0 * 4) + (0 * 3) + (0 * 7) + (1 * 5)$ $= 3 + 0 + 0 + 0 + 5$ $FP = 8$
Refund Process	1	1	0	0	0	EI (Low), EO (N/A), EQ (N/A),	$FP = (1 * 3) + (1 * 4) + (0 * 3) + (0 * 7) + (0 * 5)$

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						ILF (Low), EIF (N/A)	= 3 + 4 + 0 + 0 + 0 FP = 7
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Total FP = 97

Total Function points = 97

Estimated Effort per Function Point (EEF): 2 hours

Total Person-Hours = Function Points * Estimated Effort per Function Point

Total Person-Hours = 97 FP * 2 hours/FP = 194

Project cost involving 4 team members @ \$24 hourly rate = 194 * 24 = \$4656

***** THE END*****