



OnShop

Premier Online Marketplace for Businesses of All Sizes

Showcase and sell a diverse range of products with ease.
Elevate businesses with comprehensive ecommerce solutions.

Prepared by:

Tanay Bensu Yurttürk

0538 968 85 79

tbyurtturk@gmail.com

<https://github.com/tb190/OnShop>

July 29, 2024

CONTENTS

1	INTRODUCTION	2
2	BUSINESS RULES	6
2.1	ACCOUNT CREATION	6
2.1.1	User Type Selection	6
2.1.2	Individual Registration	6
2.1.3	Company Registration	6
2.2	LOGIN	6
2.3	PRODUCT MANAGEMENT	6
2.3.1	Product Upload	6
2.3.2	Product Editing and Removal	6
2.4	ORDER and PAYMENT Processing	7
2.4.1	Order Placement	7
2.4.2	Payment Processing	7
2.5	Reviews and Feedback	7
2.5.1	Product Reviews	7
2.6	User Roles and Permissions	7
2.6.1	Role Assignment	7
2.6.2	Manager Responsibilities	7
2.7	Account Security and Data Protection	7
2.7.1	Secure Password Handling	7
2.7.2	Sensitive Data Protection	8
2.7.3	Policy Implementation	8
3	UML CLASS DIAGRAM	9
4	DAILY TASKS	10
5	IMPORTANT CONSIDERATIONS	18

1. INTRODUCTION

OnShop

PROJECT PURPOSE

The OnShop project aims to develop a complete online marketplace that serves as a all-round platform for businesses of all sizes and simplifying the online selling process, offering a seamless user experience for both sellers and buyers. This project supports entrepreneurs, small businesses, and large enterprises by providing a unified space where they can showcase and sell a diverse range of products. The platform includes tools for product listing management, inventory tracking, and sales analytics, helping companies put the data to good use.

PROJECT SUMMARY

The OnShop project includes three primary roles: **Vendor (Producer)**, **User (Consumer)**, and **Manager**. Each role plays a crucial part in the functioning and success of the platform.

Vendor: Vendors are the businesses and individual sellers who utilize the OnShop platform to showcase and sell their products. They have access to a suite of tools that enable them to manage their online storefronts, list products, and track inventory. Vendors can easily upload product images, descriptions, and prices. The platform also provides analytics and reporting tools, helping vendors understand sales trends, customer preferences, and inventory levels.

Consumer: Consumers are the customers who browse and purchase products on the OnShop platform. They benefit from a user-friendly interface that makes it easy to search for products and read reviews. Consumers can also create accounts to save their favorite products and track orders. OnShop aims to provide a safe and enjoyable shopping experience.

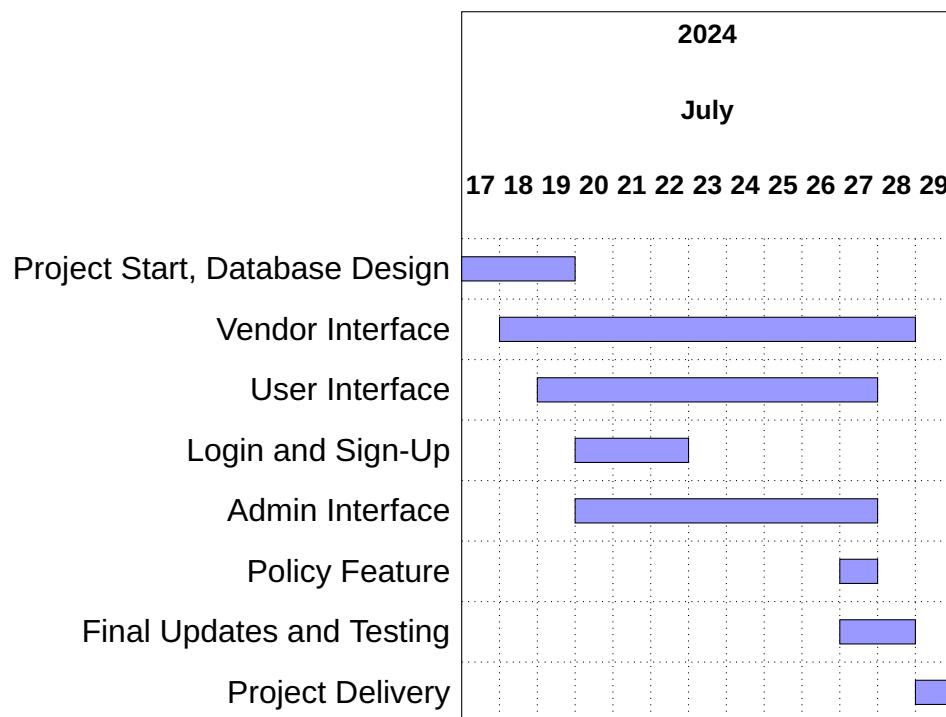
Manager: The Manager role involves overseeing the overall operations of the OnShop platform. Managers are responsible for maintaining the platform's functionality, ensuring that all features are working correctly and efficiently. They also handle user management, including the approval and monitoring of vendor accounts. Additionally, managers are tasked with analyzing platform performance, implementing new features, and conducting marketing campaigns to attract more users to the platform. Their goal is to maintain a balanced ecosystem where vendors and consumers can interact seamlessly and securely.

All in all, the OnShop project is an online marketplace that takes into account many different aspects, such as end users, vendors, consumers, and managers. OnShop eases the transactional process, encourages business expansion, and grants a delightful shopping experience to all users. The project aims to establish an online, trustworthy market, where businesses of all sizes can grow and customers can find a wide range of products under one roof.

PROJECT PLAN

İş No	Date	Description
1	Jul 17, 2024	Project initiation, including basic development, database design, and class design. Completed the Product Add Form functionality.
2	Jul 18, 2024	Continued development of the Products page, focusing on vendor and user interfaces.
3	Jul 19, 2024	Enhanced the User Home interface and layout for improved user experience.
4	Jul 20, 2024	Implemented Company Login, Cookie management, and Company Sign-Up features. Enhanced login functionality and updated the Login Page. Resolved minor issues.
5	Jul 21, 2024	Updated the Admin Companies Page to streamline company management.
6	Jul 22, 2024	Fixed errors in the User Basket functionality and updated the Product Details Page.
7	Jul 23, 2024	Further improvements to the User Basket functionality for better user experience.
8	Jul 24, 2024	Integrated product review functionality, allowing users to leave feedback.
9	Jul 25, 2024	Nearly completed user interface functionalities. Saved intermediate progress. Updated Category Links and Home page.
10	Jul 26, 2024	Finalized the Admin users functionality. Continued development of Guest and User features, nearing completion.
11	Jul 27, 2024	Added a comprehensive Policy feature. Continued ongoing development work, including adjustments to Vendor features, sidebar refinement, and completion of the Admin section.
12	Jul 28, 2024	Final updates to product listings, added new products, and ensured security by hiding connection strings. Completed testing and debugging.
13	Jul 29, 2024	Final project report and delivery.

GANTT CHART



2. BUSINESS RULES

2.1. ACCOUNT CREATION

2.1.1. User Type Selection

- Users must first decide whether they want to register as an individual or a company.
- Based on this selection, users are presented with the appropriate registration form.

2.1.2. Individual Registration

- Individuals must provide personal details such as name, email, and phone number.

2.1.3. Company Registration

- Companies must provide business details, including company name, tax number, and contact information.
- A company representative's details must also be provided.

2.2. LOGIN

- Users must enter their email address and password to log in.
- The system must validate the credentials and allow access to the user's account upon successful verification.

2.3. PRODUCT MANAGEMENT

2.3.1. Product Upload

- Vendors can upload products by providing details such as product name, description, price, and stock quantity.
- Each product must be assigned a unique identifier within the system.
- Vendors must also upload images for each product.

2.3.2. Product Editing and Removal

- Vendors can edit product details, including price, description, stock and status.
- Vendors can remove products from the marketplace.

2.4. ORDER AND PAYMENT PROCESSING

2.4.1. Order Placement

- Consumers can add products to their cart and proceed to checkout.
- The system must validate the availability of products in the cart before finalizing the order.

2.4.2. Payment Processing

- The system supports multiple credit/debit cards for payment processing.

2.5. REVIEWS AND FEEDBACK

2.5.1. Product Reviews

- Consumers can leave reviews and ratings for purchased products.
- Reviews must include a rating system (e.g., 1 to 5 stars) and a text field for detailed feedback.

2.6. USER ROLES AND PERMISSIONS

2.6.1. Role Assignment

- Users must be assigned roles (Vendor, Consumer, Manager) upon account creation.
- Each role comes with specific permissions and access rights within the system.

2.6.2. Manager Responsibilities

- Managers oversee the platform's operations, including user management, content moderation, and system maintenance.
- They have the authority to approve or deny vendor applications and to suspend or ban users who violate the platform's terms of service.

2.7. ACCOUNT SECURITY AND DATA PROTECTION

2.7.1. Secure Password Handling

- All user passwords are hashed using a secure hashing algorithm before being stored in the database.

2.7.2. Sensitive Data Protection

- Sensitive information, such as the database connection string, is securely stored and not exposed in the application's source code.

2.7.3. Policy Implementation

- Policies are implemented to prevent SQL injection attacks and other security threats.
- The platform also uses policies to manage user roles and permissions, ensuring secure and appropriate access within the system.

3. UML CLASS DIAGRAM

In class diagrams we take a more detailed look at our functions and variables of our components. It also shows the relations and attributes the classes have between each other.

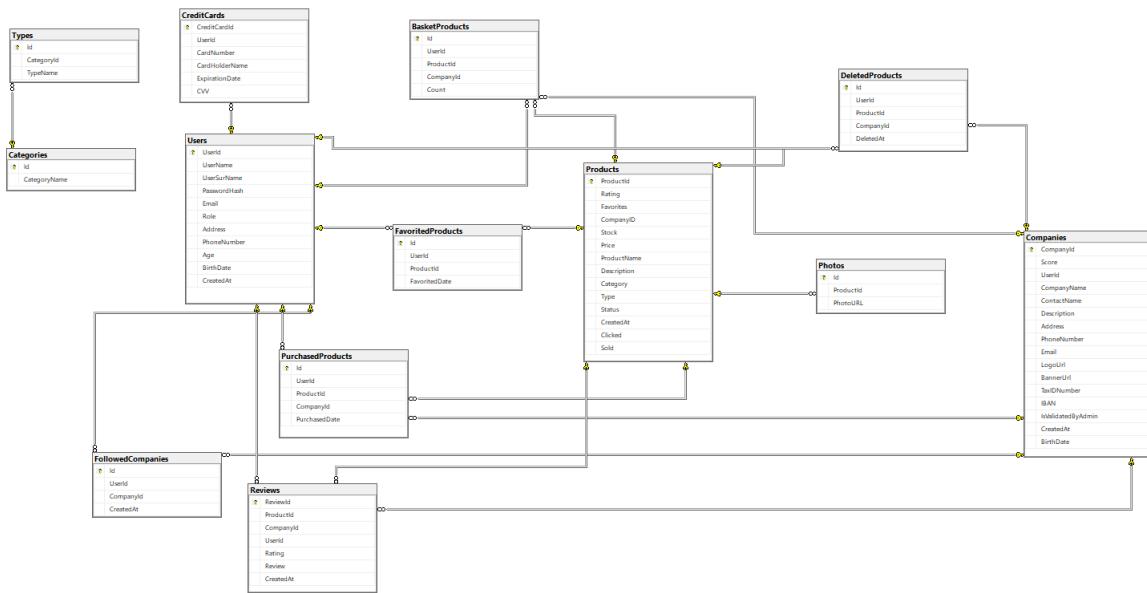


Figure 3.1: Class Diagram

4. DAILY TASKS

17.07.2024 Activities:

- Initial setup of the OnShop project, including basic development, model design.
- Implemented the Product Add Form functionality, allowing vendors to add new products with detailed information.

```
namespace OnShop.Models
{
    public class ProductModel
    {
        public int ProductID { get; set; }
        public int Rating { get; set; }
        public int CompanyID { get; set; }
        public int Stock { get; set; }
        public int Clicked { get; set; }
        public int Sold { get; set; }

        public decimal Price { get; set; }

        public string ProductName { get; set; }
        public string Description { get; set; }
        public string Type { get; set; }
        public string Status { get; set; }

        public DateTime Created { get; set; }
        public bool IsFavorited { get; set; }

        public ICollection<int> ProductReviewsID { get; set; }
        public ICollection<string> ProductReviews { get; set; }
        public ICollection<ProductReviewModel> ProductReviewsModel { get; set; }
        public ICollection<string> Photos { get; set; }
    }
}
```

(a) Model Design Example

The screenshot shows the 'Add New Product' form in the OnShop application. It includes fields for Product Name, Select Category, Description, Price, Stock, and Status. There is also a file upload section for photos.

(b) Vendor Add New Product

Figure 4.1: Different Views

18.07.2024 Planned Tasks:

- Continue enhancing the user and vendor interfaces, focusing on the Products page layout and features.

18.07.2024 Activities:

- Enhanced user and vendor interfaces on products page.

Id	Photos	Name	Description	Category	Price	Stock	Rating	Favorites	Created At	Status	Actions	
											View	Edit
1		White Bow Balloon Sleeve Princess Dress	White Bow Balloon Sleeve Princess Dress is a charming and elegant addition to any wardrobe. Designed...	Fashion Type: Women	\$362.00	143	★★★★★	5	2024-07-29 10:42:01	Online		
2		Knit Cardigan	The Knit Cardigan is the perfect blend of warmth and style for any season. This versatile piece fea...	Fashion Type: Women	\$599.00	123	★★★★★	0	2024-07-29 10:44:21	Online		
3		Buttoned Striped Sweater	The Buttoned Striped Sweater combines style and comfort in a sophisticated design. With a high coll...	Fashion Type: Women	\$259.00	325	★★★★★	0	2024-07-29 10:50:12	Online		
4		Light Olive Crossbody Bag	Light Olive Crossbody Bag is a stylish and functional accessory perfect for everyday use. The bag fe...	Fashion Type: Women	\$1,200.00	250	★★★★★	0	2024-07-29 10:54:36	Online		
5		Elastic Waist Slouchy Jean Pants	The Elastic Waist Slouchy Jean Pants offer both style and comfort with their relaxed fit and high-wa...	Fashion Type: Women	\$459.00	245	★★★★★	0	2024-07-29 10:57:00	Online		

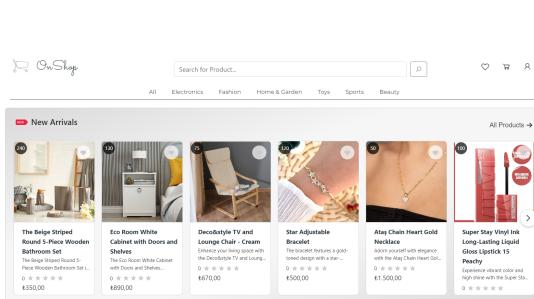
(a) Vendor Products Page

19.07.2024 Planned Tasks:

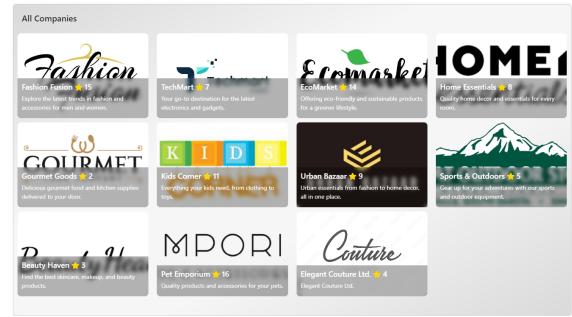
- Improve the User Home interface layout for better user navigation and experience.
- Begin the implementation of the Company Login and Company Sign-Up functionalities.

19.07.2024 Activities:

- Enhanced the User Home interface, improving layout and navigation.
- Updated the layout and guest navigation bar for a more cohesive user experience.



(a) User Home



(b) User Home Companies

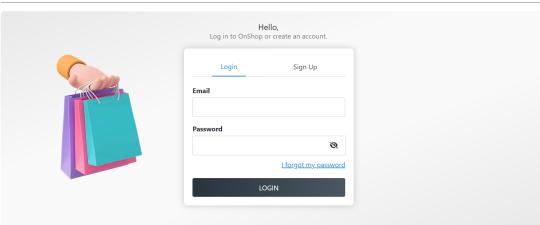
Figure 4.3: Different Views

20.07.2024 Planned Tasks:

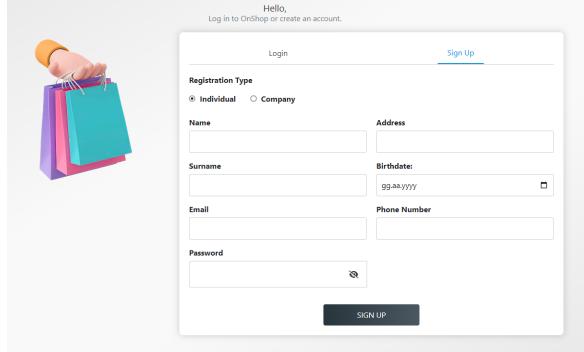
- Implement Login and Sign-Up functionalities, ensuring secure and easy registration for users.
- Start the development of the Cookie management system to enhance user session handling.

20.07.2024 Activities:

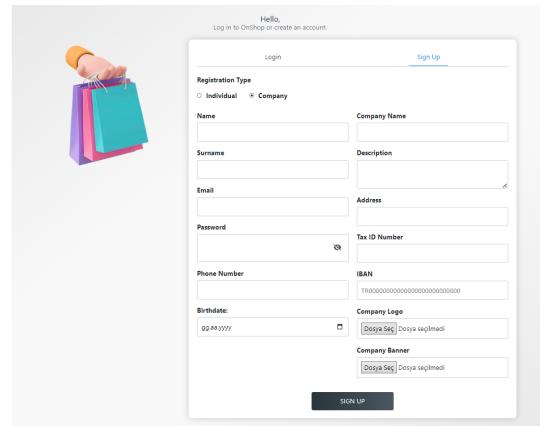
- Implemented Login and Sign-Up functionalities.
- Developed a Cookie management system for better session handling.
- Enhanced the Login Page with different user type redirections.



(a) Login Page



(b) SignUp Page for Customers



(a) SignUp Page for Company(Vendor)

```
if (role == "Vendor") {
    var issuerClaim = new List<Claim>();
    issuerClaim.Add(ClaimTypes.Role, value: "Vendor");
}

var claimIdentity = new ClaimsIdentity(issuerClaim, authenticationType: CookieAuthenticationDefaults.AuthenticationScheme);
await HttpContext.SignInAsync(<string>CookieAuthenticationDefaults.AuthenticationScheme, principal: new ClaimsPrincipal(claimIdentity));
return RedirectToAction("Customer", "Dashboard", routeValues: null);
}

else if (role == "Admin") {
    var issuerClaim = new List<Claim>();
    issuerClaim.Add(ClaimTypes.Role, value: "Admin");
}

var claimIdentity = new ClaimsIdentity(issuerClaim, authenticationType: CookieAuthenticationDefaults.AuthenticationScheme);
await HttpContext.SignInAsync(<string>CookieAuthenticationDefaults.AuthenticationScheme, principal: new ClaimsPrincipal(claimIdentity));
return RedirectToAction("AdminDashBoard", routeValues: null);
}

else {
    var issuerClaim = new List<Claim>();
    issuerClaim.Add(ClaimTypes.Role, value: "User");

    var claimIdentity = new ClaimsIdentity(issuerClaim, authenticationType: CookieAuthenticationDefaults.AuthenticationScheme);
    await HttpContext.SignInAsync(<string>CookieAuthenticationDefaults.AuthenticationScheme, principal: new ClaimsPrincipal(claimIdentity));
    return RedirectToAction("Customer", "Dashboard", routeValues: null);
}
```

(b) Cookie and Redirections

Figure 4.5: Different Views

21.07.2024 Planned Tasks:

- Update the Admin Companies Page to streamline company management processes.
- Begin testing and refining the Vendor features, focusing on improving usability and functionality.

21.07.2024 Activities:

- Updated the Admin Companies Page, adding features to streamline company management.
- Conducted initial testing and improvements to the Vendor feature set, enhancing usability.

Company Name	Contact Name	Description	Address	Phone Number	Email	Score	Validated	View Details
Fashion Fusion	Alice Johnson	Explore the latest trends in fashion and accessories for men and women.	123 Fashion Avenue, Style City	555-123-4567	contact@fashionfusion.com	15	Yes ●	...
TechMart	Bob Smith	Your go-to destination for the latest electronics and gadgets.	456 Tech Road, Innovation City	555-987-6543	info@tecmart.com	7	Yes ●	...
EcoMarket	Carla Martinez	Offering eco-friendly and sustainable products for a greener lifestyle.	789 Green Lane, Eco Town	555-321-7654	support@ecomarket.com	14	Yes ●	...
Home Essentials	David Lee	Quality home decor and essentials for every room.	321 Home Street, Cozy Town	555-654-3210	sales@homeessentials.com	8	Yes ●	...
Gourmet Goods	Emma Brown	Delicious gourmet food and kitchen supplies delivered to your door.	654 Culinary Avenue, Food City	555-789-1234	orders@gourmetgoods.com	2	Yes ●	...

Figure 4.6: Admin Companies Page

22.07.2024 Planned Tasks:

- Fix identified issues with the User Basket functionality to ensure smooth user experience.
- Enhance the Product Details Page to provide more comprehensive product information.

22.07.2024 Activities:

- Fixed errors in the User Basket functionality, ensuring accurate product management.
- Updated the Product Details Page with additional information and improved layout.

(a) User Basket Page

(b) Product Details Page

Figure 4.7: Different Views

23.07.2024 Planned Tasks:

- Further refine the User Basket functionality for enhanced user experience.
- Begin integration of product review and rating systems for consumers.

23.07.2024 Activities:

- Improved the User Basket functionality, ensuring a seamless shopping experience.
- Started integrating the product review and rating systems, enabling consumers to leave feedback.

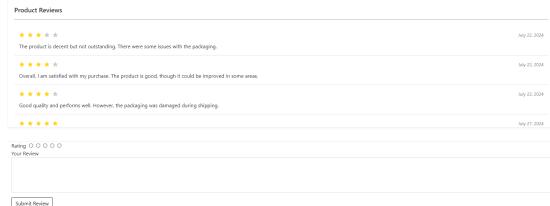


Figure 4.8: Product Reviews

24.07.2024 Planned Tasks:

- Continue enhancements on the User Interface for better user interaction.

24.07.2024 Activities:

- Made further improvements to the User Interface for a more intuitive user experience.

(a) User Basket Enhanced: A screenshot of a shopping basket interface. It shows a list of items with their names, prices, and quantities. At the bottom, there is a summary: "Total Price: \$1,232.00" and a "Proceed to Checkout" button.

(b) User Favorites Page: A screenshot of a page titled "Your Favorites". It displays a grid of five favorite items with their names and small images: "White Bow Balloon Dress", "High-Top Sneakers with Cursive Fabric and Lace", "Ultrax - Smartwatch with Super AMOLED Display", and "Vertical Wireless Rechargeable LED Illuminated Vacuum Cleaner".

(c) User Profile Page: A screenshot of a user profile page for "Tanay Bensu Yurtturk". It shows basic profile information: "Email: tanaybenusuyurtturk@gmail.com", "Role: User", "User ID: 1234567890", "Phone Number: 1234567890", "Birth Date: 01/01/2000", and "Account Created: 01/01/2024". Below the profile is a section for "Credit Cards" with a placeholder card image.

Figure 4.9: Different Views

25.07.2024 Planned Tasks:

- Finalize the development of user functionalities and complete testing.
- Update Category Links and improve the Home page layout.

25.07.2024 Activities:

- Nearly completed user functionality; saved intermediate progress.
- Updated Category Links and Home page layout for better navigation and user engagement.
- Continue enhancements on the Admin Interface for better management.

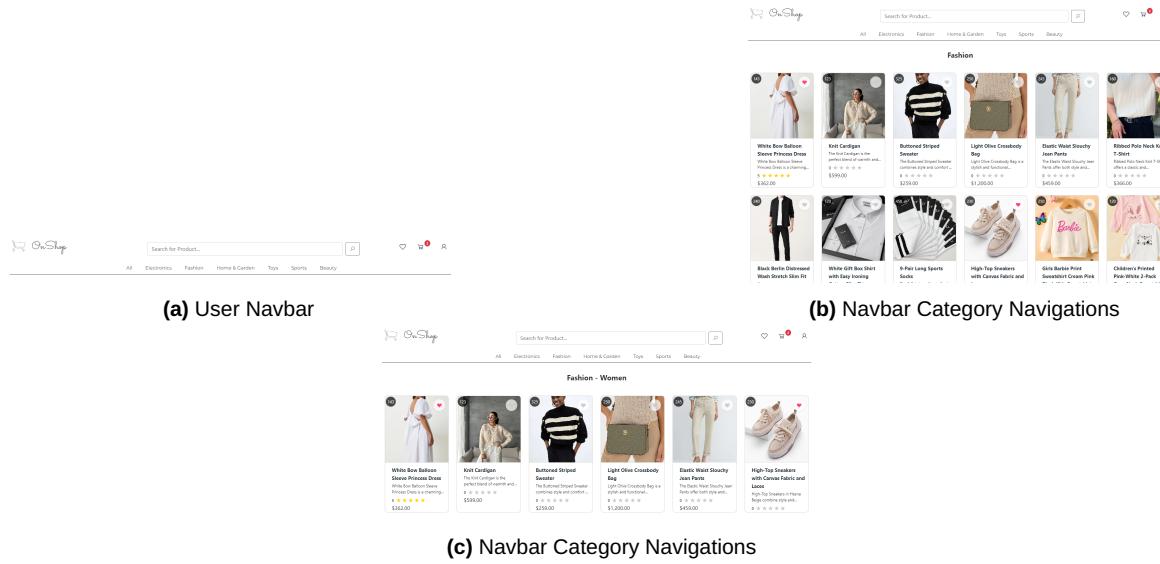


Figure 4.10: Different Views

26.07.2024 Planned Tasks:

- Finalize Admin users functionality and ensure all permissions are correctly assigned.

26.07.2024 Activities:

- Finalized Admin users functionality.



User ID	UserName	User Name	Email	Role	Address	Phone Number	Age	Birthdate	Created At	Action
1	John Doe	John Doe	john.doe@gmail.com	Admin	123 Main Street, AnyCity, USA	555-888-9999	23	2024-01-01	2024-01-01	Edit
2	Alice Johnson	Alice Johnson	alice.johnson@example.com	Vendor	123 Elm Street, AnyCity, USA	555-123-4567	34	2024-02-01	2024-02-01	Edit
3	Bob Smith	Bob Smith	bob.smith@example.com	Vendor	456 Maple Avenue, AnyCity, USA	555-123-4567	31	2024-03-01	2024-03-01	Edit
4	Charlie Brown	Charlie Brown	charlie.brown@example.com	Vendor	789 Oak Lane, AnyCity, USA	555-567-8901	28	2024-04-01	2024-04-01	Edit
5	David Lee	David Lee	daavid.lee@example.com	Vendor	321 Pine Street, AnyCity, USA	555-098-7654	32	2024-05-01	2024-05-01	Edit
6	Eve Davis	Eve Davis	eve.davis@example.com	Vendor	456 Cherry Avenue, AnyCity, USA	555-789-1234	27	2024-06-01	2024-06-01	Edit
7	Frank Wilson	Frank Wilson	frank.wilson@example.com	Vendor	987 Pine Lane, AnyCity, USA	555-456-7890	34	2024-07-01	2024-07-01	Edit
8	Grace Davis	Grace Davis	grace.davis@example.com	Vendor	123 Elm Street, AnyCity, USA	555-567-8901	29	2024-08-01	2024-08-01	Edit
9	Henry Clark	Henry Clark	henry.clark@example.com	Vendor	456 Ash Avenue, AnyCity, USA	555-098-7654	33	2024-09-01	2024-09-01	Edit
10	Sophia Green	Sophia Green	sophia.green@example.com	Vendor	789 Birch Lane, AnyCity, USA	555-789-1234	26	2024-10-01	2024-10-01	Edit

(a) Admin Users Page

ID	Photo	Name	Description	Category	Price	Stock	Rating	Action
1		White Bed	Double Size Premium White Bed Frame Slats ...	Furniture	\$150.00	100	5.0 (5 reviews)	Edit
2		Kite Carabiner	The Kite Carabiner is a spe...	Furniture	\$100.00	120	4.8 (4 reviews)	Edit
3		Wooden Lamp	The Wooden Lamp is a hand...	Furniture	\$200.00	80	4.5 (3 reviews)	Edit
4		Light Bulb	LED Light Bulb - Energy Efficient...	Furniture	\$10.00	200	4.2 (2 reviews)	Edit
5		Electric Water Pump	The Electric Water Pump ...	Furniture	\$450.00	240	4.0 (1 review)	Edit

(b) Admin Products Page

Figure 4.12: Different Views

27.07.2024 Planned Tasks:

- Add a comprehensive Policy feature for user guidance and compliance.
- Make adjustments to Vendor features and refine the sidebar for better navigation.

27.07.2024 Activities:

- Added a comprehensive Policy feature, detailing platform rules and regulations.
- Continued ongoing development work, including adjustments to Vendor features.
- Refined the sidebar and completed the Admin section for improved platform management.

(a) Vendor Dashboard Page

User ID	User Name	User Surname	Email	Role	Address	Phone Number	Age	Birthdate	Created At
11	Emily	Doe	emily.doe@example.com	Customer	123 Main Street, AnyCity, USA	555-123-4567	25	2024-01-01	2024-01-01
12	David	Johnson	john.doe@example.com	Customer	456 Elm Street, AnyCity, USA	555-789-1234	31	2024-02-01	2024-02-01
13	Sarah	Brown	sarah.brown@example.com	Customer	789 Oak Lane, AnyCity, USA	555-098-7654	27	2024-03-01	2024-03-01
14	Emily	Smith	emily.smith@example.com	Customer	321 Pine Street, AnyCity, USA	555-567-8901	29	2024-04-01	2024-04-01
15	Sophia	Green	sophia.green@example.com	Customer	456 Ash Avenue, AnyCity, USA	555-789-1234	26	2024-05-01	2024-05-01

(b) Customers of Company Page

ID	Photo	Name	Description	Category	Price	Stock	Rating	Action
1		Antique Chair	Handmade wooden antique chair ...	Antique Furniture	\$1000.00	10	5.0 (5 reviews)	Edit
2		Small Table	Modern minimalist small table ...	Home & Garden	\$200.00	50	4.8 (4 reviews)	Edit
3		Large Lamp	Large LED floor lamp with ...	Lighting	\$300.00	20	4.5 (3 reviews)	Edit
4		Gaming Chair	High-quality ergonomic gaming ...	Gaming	\$800.00	25	4.2 (2 reviews)	Edit
5		Futon Bed	A compact foldable bed for ...	Furniture	\$400.00	100	4.0 (1 review)	Edit

(c) Products of Company Page

```

builder.Services.AddAuthentication(CookieAuthenticationDefaults.AuthenticationScheme)
    .AddCookie(cookieConfiguration: CookieAuthenticationOptions options =>
    {
        options.LoginPath = "/Login";
    });

builder.Services.AddAuthorization(options =>
{
    options.AddPolicy("AdminPolicy", config => AuthorizationPolicyBuilder(policy => policy.RequireRole(roleName: "Admin")));
});

builder.Services.AddAuthorization(options =>
{
    options.AddPolicy("VendorPolicy", config => AuthorizationPolicyBuilder(policy => policy.RequireRole(roleName: "Vendor")));
});

builder.Services.AddAuthorization(options =>
{
    options.AddPolicy("UserPolicy", config => AuthorizationPolicyBuilder(policy => policy.RequireRole(roleName: "User")));
});

```

(d) Policies

(e) Navbar Enhancement

Figure 4.13: Different Views

28.07.2024 Planned Tasks:

- Finalize product listings, including adding new products and hiding sensitive data like connection strings.
- Complete testing, debugging, and final project delivery preparations.

28.07.2024 Activities:

- Final updates to project.
- Project Report preparation.

Internship is Over

5. IMPORTANT CONSIDERATIONS

In the development of the OnShop platform, several important considerations were taken into account to ensure a secure and efficient user experience.

ADMIN ACCESS AND REPOSITORY INFORMATION

Admin Account

The OnShop platform is configured to have a single admin account. This ensures centralized management and oversight of the system.

Admin Login Details

- **Email:** tbyurtturk@gmail.com
- **Password:** tbyurt123

GitHub Repository

The source code for the OnShop project is hosted on GitHub.

GitHub Repository Information

- **Repository URL:** <https://github.com/tb190/OnShop>

Accessing the Admin Interface

To access the admin interface of the OnShop platform, you need to log in with the admin credentials provided above. After logging in, you will be able to manage various aspects of the platform, including user accounts and vendor activities. For any issues related to accessing the admin interface or the GitHub repository, please contact the project administrator.

USE OF COOKIES

Cookies play a vital role in the user experience on the OnShop platform. By storing a unique user identifier (user ID) in a cookie, the platform can efficiently and securely retrieve user-specific data across different sessions. For instance, when a user logs in, a cookie containing the user's ID is set on their device. This cookie enables the system to identify the user on subsequent visits without requiring repeated login inputs.

SECURITY POLICIES

Security policies are integral to protecting the OnShop platform and its users from potential threats, such as unauthorized access. By enforcing strict policies, the platform can ensure that user data and transactions are handled securely. One specific policy implemented is to prevent unauthorized URL redirection by restricting page redirections to verified domains only.

AUTHENTICATION AND AUTHORIZATION

Authentication

Authentication is the process of verifying the identity of a user or system. In the OnShop platform, authentication is crucial for ensuring that users are who they claim to be and to allow them access to the appropriate resources based on their identity.

To implement authentication, the OnShop platform uses cookie-based authentication. The following code snippet configures the application to use cookies for managing user sessions:

```
builder.Services.AddAuthentication(CookieAuthenticationDefaults.AuthenticationScheme)
    .AddCookie(options =>
{
    options.LoginPath = "/Login";
});
```

The `AddAuthentication` method sets up the authentication scheme using cookies, and the `AddCookie` method configures the options for cookie handling. The `LoginPath` property specifies the path to the login page, ensuring that unauthenticated users are redirected to the login page when attempting to access protected resources.

Authorization

Authorization determines whether a user has permission to access specific resources or perform certain actions. In the OnShop platform, authorization is used to control access based on user roles. This ensures that users only have access to functionalities and data that are relevant to their role.

The following code snippets configure authorization policies for different user roles:

```
builder.Services.AddAuthorization(options =>
{
    options.AddPolicy("AdminPolicy", policy =>
        policy.RequireRole("Admin"));
});

builder.Services.AddAuthorization(options =>
{
    options.AddPolicy("VendorPolicy", policy =>
        policy.RequireRole("Vendor"));
});

builder.Services.AddAuthorization(options =>
{
    options.AddPolicy("UserPolicy", policy =>
        policy.RequireRole("User"));
});
```

Each policy is associated with a specific role:

- **AdminPolicy:** Grants access to users with the Admin role, allowing them to perform administrative tasks.
- **VendorPolicy:** Grants access to users with the Vendor role, enabling them to manage their own products and view relevant analytics.
- **UserPolicy:** Grants access to users with the User role, allowing them to browse products, place orders, and leave reviews.

PASSWORD SECURITY

To protect user credentials from unauthorized access and potential data breaches, passwords are never stored in plaintext in the database. Instead, they are hashed using a secure hashing algorithm before being saved. The following code snippet demonstrates the process of hashing passwords using the SHA-256 algorithm:

```

private string HashPassword(string password)
{
    if (string.IsNullOrEmpty(password))
    {
        throw new ArgumentNullException(nameof(password),
            "Password cannot be null or empty.");
    }

    using (var sha256 = SHA256.Create())
    {
        byte[] bytes = sha256.ComputeHash(Encoding.UTF8.GetBytes
            (password));
        StringBuilder builder = new StringBuilder();
        for (int i = 0; i < bytes.Length; i++)
        {
            builder.Append(bytes[i].ToString("x2"));
        }
        return builder.ToString();
    }
}

```

SECURE HANDLING OF DATABASE CONNECTION STRING

In the configuration of the OnShop platform, the database connection string is a crucial element, as it facilitates communication between the application and the database. This string contains sensitive information, such as the server location, database name, and potentially security credentials. To ensure the security and integrity of the system, this information must be handled.

The database connection string is stored in the ‘appsettings.json’ file, which is a standard configuration file in ASP.NET Core applications. In the context of OnShop, the connection string is defined under the “ConnectionStrings” section, as shown below:

```
{
  "AllowedHosts": "*",
  "ConnectionStrings": {
    "DefaultConnection": "Data Source=(LocalDB)\\MSSQLLocalDB;
      AttachDbFilename=C:\\Users\\Casper\\Documents\\OnShopDB.mdf;
      Integrated Security=True; Connect Timeout=30"
  }
}
```

Storing the connection string in ‘appsettings.json’ enables the application to access the database efficiently. However, it is essential to protect this file to prevent unauthorized access and potential security breaches.