PROJECT PROGRESS REPORT

GROUP PROJECT

CST 394-2

Group No: CST 06

**Handmade Jewellery Try-On, Customization &
Shopping Platform**

(Wave Mirissa)

Computer Science and Technology

Department of Computer Science and Informatics

Faculty of Applied Sciences

Uva Wellassa University of Sri Lanka

2025

DECLARATION

We hereby declare that the project will be developed by us and will be our own effort and that no part will be plagiarized without citations under the supervision of Ms. K.A. Ayesha Chathurangi, Department of Computer Science and Informatics. This Project Proposal is submitted for the partial fulfillment of the requirement of the course unit CST394-2, Project II for the degree of Computer Science and Technology Degree Program.

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Chapter 1: Introduction

1.1.   Project title

Handmade Jewellery Try-On, Customization & Shopping Platform

1.2.   Project Description

Our project proposes a modern and immersive online platform for *Wave Mirissa*, a local business specializing in handcrafted jewellery. Wave Mirissa is known for its distinct sea-themed collections, inspired by coastal aesthetics and the natural beauty of Sri Lanka's southern shores. Alongside their ocean-inspired designs, they also create and sell a wide variety of other handmade jewellery, crafted with attention to detail and creativity. So, through this project we aim to elevate the online jewellery shopping experience for Wave Mirissa's customers. It will offer suggestions based on the user's facial features and skin tone, helping them discover what suits them best.

In addition, users can personalize their chosen items by selecting materials, choosing from pre-made design templates, or adding unique styles. Once finalized, they can place their orders through a simplified online shopping process. By offering a more interactive, personalized, and user-friendly experience, this project seeks to connect digital convenience with the handcrafted charm of Wave Mirissa's jewellery.

1.3.   Background and Motivation

In recent years, handmade jewellery has gained significant popularity as consumers increasingly seek unique, artistic pieces that reflect personal style and identity. Unlike mass-produced accessories, handmade jewellery offers a sense of exclusivity and emotional value, especially when the customer plays a part in customizing it. From birthdays to anniversaries, people love to gift or wear

jewellery that tells a story and personalization has become a defining factor in buyer satisfaction.

Our team was inspired to take on this project after learning about the journey of *Wave Mirissa*, a small-scale but passionate handmade jewellery business. While their creativity and craftsmanship shine through in every product, —especially their signature sea-themed designs—,they currently face major challenges in managing their operations. Most of their processes, from product creation to customer interactions and order tracking, are handled manually. This makes it difficult to manage time efficiently, track inventory accurately, and consistently deliver a smooth customer experience.

Moreover, in today's digital era, just listing products online isn't enough to grab customer attention. People are drawn to interactive, visually engaging platforms where they can explore, personalize, and feel confident in their purchase decisions. Research by Ashraf et al. (2019) suggests that website interactivity significantly enhances perceived usefulness and ease of use, leading to stronger purchase intentions among online consumers [1]. Similarly, a study by Pather et al. (2024) emphasizes that user experience elements such as navigation, interactivity, and customization greatly influence customers' satisfaction and likelihood to revisit e-commerce platforms [2].

Recognizing these trends and challenges, we were motivated to address the key gaps faced by *Wave Mirissa*, particularly the lack of a structured system for managing their operations and the difficulty in providing an engaging online experience for their customers. The manual handling of tasks has made it increasingly hard for the business to scale effectively and maintain consistency. Additionally, customers often struggle to make confident purchasing decisions without proper guidance or personalization. Our aim is to fill these gaps by introducing a solution that supports both efficient business management and a more meaningful, customer-focused shopping experience.

1.4. Problem in Brief

Despite the growing popularity of handmade jewellery and the uniqueness it brings, small-scale businesses like *Wave Mirissa* struggle to keep up with the evolving digital landscape. Currently, most of their operations, such as product showcasing, order handling, and customer interaction are managed manually through social media and direct messaging. This results in inefficiencies, limited customer reach, and lack of a structured system to manage products, customization requests, and customer preferences.

Moreover, with increasing consumer demand for personalized experiences, simply listing products online is no longer sufficient. There is a gap in offering customers the ability to customize items, receive personalized recommendations, and confidently make purchase decisions. The absence of such digital capabilities puts businesses like *Wave Mirissa* at a disadvantage compared to larger competitors with interactive e-commerce platforms.

This project aims to address these challenges by providing a comprehensive and interactive digital platform tailored to the needs of *Wave Mirissa* and its customers.

1.5. Proposed Solution

To address the limitations currently faced by *Wave Mirissa* and to enhance the overall customer experience, we propose the development of a comprehensive online platform that integrates product customization, AI-based assistance, and a full-featured e-commerce system.

- **Jewellery Customization:** Customers will be able to personalize handmade jewellery items by choosing designs, selecting materials, and adding details ensuring the final product reflects their individual preferences and occasions.

- **AI Assistance:** The platform will analyze customer attributes such as face shape and skin tone to provide tailored jewellery suggestions. It will also offer intelligent support during the customization process by recommending colors, materials, or styles that suit each user's appearance.

- **Personality-Driven Virtual Try-On**: Users answer a few simple questions, and an NLP model analyzes their responses to detect personality traits. A matching necklace is recommended and virtually displayed on their image, along with a personalized story explaining how the jewelry reflects their character.

- **E-Commerce Capabilities:** The system will support browsing of available jewellery collections, a shopping cart, and secure online purchasing, providing a smooth end-to-end shopping experience from selection to checkout.

This solution is intended to modernize the operations of *Wave Mirissa* while delivering a more engaging, guided, and personalized shopping journey for customers.

1.6. Project Aim and Objectives

Project Aim:

To provide Wave Mirissa with a structured digital platform that streamlines business operations, enhances customer engagement through customization and AI-driven guidance, and builds customers' purchasing confidence by ultimately supporting the growth of the business in the digital space.

Project Objectives:

To achieve the stated aim, the following objectives have been identified:

1. To design and develop an online system that streamlines the business operations of Wave Mirissa, including product management and customer handling.
2. To enable jewellery customization features that allow users to personalize items based on their preferences and needs.
3. To integrate AI assistance that analyzes customer attributes and offers personalized product recommendations and customization suggestions.
4. To implement a virtual try-on feature that recommends and displays a necklace based on the user's personality, creating a more meaningful and personalized shopping experience.
5. To provide a complete e-commerce experience, including browsing, cart functionality to facilitate seamless purchases.

1.7.   Significance of the study

In today's e-commerce landscape, especially within the handmade jewelry industry, most platforms are limited to static product listings and conventional virtual try-on features that lack personalization or meaningful user guidance. Our proposed system introduces a set of carefully curated and experience-enhancing features that distinguish it from standard solutions and directly address the limitations of existing platforms.

- **Personalized Recommendation Experience**
  Rather than offering a large catalogue for users to explore independently, our system analyzes user personality traits through a short, text-based questionnaire and suggests a single, symbolic jewelry piece. This focused, emotionally resonant recommendation approach reduces decision fatigue and helps users

connect with products on a personal level—something rarely seen in online jewelry platforms.

- **Emotionally Guided Virtual Try-On**

  Most existing try-on tools serve purely as visual aids. In contrast, our try-on feature is paired with a meaningful narrative that explains how the selected piece reflects the user's character. This approach transforms the experience from a basic preview into an emotionally engaging moment, making the product feel more intentional and personal.

- **AI-Assisted Styling Based on Facial Features**

  While current platforms provide filtering options such as color or material, they overlook individual physical attributes that influence how a piece will look on someone. Our system fills this gap by using facial analysis to detect face shape and skin tone, offering jewelry suggestions that better suit each user visually. This personalized styling guidance adds a layer of confidence and aesthetic accuracy to the shopping process.

- **Thoughtful and Curated Presentation**

  Instead of presenting the entire product range, our platform focuses on guiding users toward selected pieces that are most likely to match their personality and appearance. This focused presentation enhances user satisfaction by offering relevance over volume—helping users feel understood rather than overwhelmed.

By integrating intelligent guidance, emotional relevance, and appearance-based personalization, our system delivers a distinctive and meaningful online shopping

experience. It moves beyond the conventional role of an e-commerce platform and offers a thoughtfully crafted journey that connects users with jewelry that truly reflects who they are—an approach not commonly found in existing handmade jewelry platforms.

Chapter 2: Methodology

2.1.   Introduction

We have selected the Agile methodology for our project due to its flexibility, adaptability to changing requirements, and focus on collaboration and iterative development. Specifically, we are following the Scrum framework, which organizes the work into manageable sprint cycles and promotes cross-functional teamwork.

To date, we have completed the first two sprint cycles and are currently working on the third sprint cycle. The progress for each sprint is as follows:

- ✓ **Sprint Cycle 1**: User Registration and Authentication
- Developed user registration functionality, allowing customers to create accounts on the platform.
- Implemented authentication mechanisms to verify user identities and ensure secure access to user accounts.
- Created user profile management features, enabling customers to update their account information and preferences.

- ✓ **Sprint Cycle 2:** Admin Dashboard and Payment Gateway Integration
- Created an admin dashboard with user management capabilities, allowing admins to manage user accounts.
- Implemented order processing features, enabling admins to monitor and process orders from creation to fulfillment.

- Integrated payment gateway functionality to support secure payment processing.

- **Sprint Cycle 3:** Order Management and Delivery Tracking
- Integrate a comprehensive order management system to manage the entire order lifecycle, from confirmation to shipping and completion.
- Develop delivery tracking features to provide real-time updates on the shipment status to customers.
- Enable customers to view past orders, including item details, status updates, and invoice downloads.

- **Sprint Cycle 4:** Jewellery Customization and 3D Previews
- Develop a jewellery customization interface that allows customers to personalize jewellery using predefined customization options added by the admin, such as metal type, size, stone, and weight.
- Integrate a 3D preview system that dynamically renders a visual model of the selected jewellery design to enhance user engagement and satisfaction.
- Implement a feature that analyzes user inputs from a simple questionnaire to determine their personality[3] and recommends a matching necklace, which is then displayed on their uploaded image through a virtual try-on.

- **Sprint Cycle 5:** AI Assistant for Product Suggestions and Advanced Customization
- Integrate AI-driven facial recognition and analysis to detect users' face shape and skin tone through uploaded images.
- Recommend suitable jewellery products and customization options tailored to the user's facial features and complexion.

2.2.   Requirements Identification

2.2.1. Functional and Non-functional requirements

a) Functional Requirements

- **Jewellery Recommendation and Customization**

  - Recommend products based on user's attributes.
  - Generate 3D previews of selected jewellery designs for better visualization.
  - Allow users to customize jewellery based on decoration limitations or AI-guided suggestions.
  - Present customization options through detailed and user-friendly forms during the ordering process.
  - Display essential product information such as size, weight, and materials used.
  - Provide cost estimations that include material costs, labor charges and customization fees.
  - Enable users to select a **gift option** when placing an order.
  - Automatically calculate and add any additional charges for gift services to the subtotal.

- **Recommend and visualize personality-matched jewellery through virtual try-on**

  - Collect user responses through a simple questionnaire to understand their personality.
  - Suggest a necklace that symbolically aligns with the identified personality traits.
  - Display the recommended piece on the user's uploaded image using a virtual try-on.

- Present a short and personalized description that reflects the user's personality and explains how the jewellery complements it.

- **Order Tracking and Notification**

- Continuously update the status of jewellery orders in the customer's dashboard after purchase.
- Display the courier tracking number in the dashboard once the item is dispatched.
- Send an email notification with tracking details to the customer's provided email address.

- **Payment Gateway Integration**

- Enable secure processing of customer payments during checkout using PayHere.
- Support efficient and reliable transaction handling by managing payments and purchase confirmations with minimal delays or errors.
- Ensure data protection and compliance with standard payment security protocols.

- **Admin Dashboard**

- **Authentication & Authorization**
  - o Provide secure admin login and logout to manage access control.
- **Managing Users**
  - o View, search, and filter registered users.
  - o Modify user roles to manage access permissions.

- **Managing Products**
    - Add, edit, or delete jewellery items.
    - Upload multiple images per product.
    - Tag products (e.g., for round face, warm tone, calm personality).
    - Assign product attributes such as metal type, gemstone, size, weight, style, and available customization options.
- **Managing Orders**
    - View all orders categorized by status (e.g., pending, shipped, delivered, canceled).
    - Update shipping status of orders.
- **Managing Customization Items**
    - Add, edit, or delete customization items.
    - Define attributes for each item (name, price, image).
- **Managing Content**
    - Manage homepage content including hero section and promotional banners.
- **Accessing Reports & Analytics**
    - View generated sales reports (monthly and yearly).
- **Handling customer inquiries**
    - View messages from the Contact Us form.
    - Respond to users via email directly from the system.

b) **Non-Functional Requirements**

- **Security**

  - Encrypt all sensitive user data, including passwords and payment details, both in transit and at rest.
  - Enforce HTTPS across the entire platform to ensure secure communication.

- Implement secure authentication and session management to protect user accounts and maintain data integrity.

- **Usability**

  - Provide an intuitive and accessible user interface with responsive design.
  - Ensure clear navigation and step-by-step guidance during customization and checkout.
  - Include real-time validation for form inputs to enhance user experience and reduce errors.

- **Compatibility**
  - Ensure that the system works seamlessly across different devices and platforms, including desktops, tablets, and smart phones.
  - This system works well on all the common web browsers, so that it can be used easily by many different people.

- **Maintainability**
  - Implement the system, breaking down specific functionalities.
  - Follow clean code standards and guidelines to ensure readability, clarity, and maintainability of the codebase.
  - Use the Model-View-Controller (MVC) architecture to organize code logically and support scalable development.

2.2.2. User Roles

1. Owner (Admin)

- Manage user accounts, including viewing, filtering, and updating user roles.
- Add, edit, or delete jewellery products and assign relevant tags and attributes.
- Oversee order processing, update delivery statuses.
- Manage customization elements by adding, updating or deleting elements.
- Update homepage banners on the website.
- Access sales analytics and generated monthly and yearly reports.
- View and respond to customer messages submitted via the contact form.

2. Registered User

- View 3D visualizations of jewellery designs.
- Customize handmade jewellery through manual forms or AI-guided suggestions.
- Upload a face photo to receive personalized product recommendations.
- Answer a short questionnaire to receive a personality-based necklace recommendation with a virtual preview and a matching personality description.
- Add items to the wish-list, cart, or proceed to direct purchase.
- Track the status of their orders and view complete order history.
- Submit product reviews with images.

3. Unregistered User

- View Jewellery Items.
- Sign up for the system.

2.2.3. System Requirements

a) Hardware Requirements

- **Laptop or Desktop Computer** - A reliable laptop or computer with sufficient processing power, memory (RAM), and storage to handle the development tools and software.
- **Backup Storage** - A reliable backup solution to protect the website project files, code, and other important data, which can involve using external hard drives.

b) Software Requirements

- **Visual Studio Code** - A versatile code editor supporting multiple programming languages, ideal for writing and editing project code files.
- **Figma** - Collaborative interface design tool enabling real-time collaboration on wireframes, prototypes, and high-fidelity designs for the project's user interface.
- **Canva** - Graphic design platform offering templates and tools for creating visual content such as logos, infographics, and social media posts, enhancing the project's visual appeal.
- **Microsoft Word** - Word processing software used for creating and formatting text documents, suitable for project documentation, reports, and textual content.
- **Web browser** - Essential for testing and viewing web-based project components to ensure compatibility and functionality across different browsers.
- **Draw.io** - Diagramming tool for creating various diagrams like flowcharts, network diagrams, and UML diagrams, aiding in visualizing project architecture and workflows.
- **GitHub** - Web-based platform for version control using Git, facilitating code repository hosting, collaboration, issue tracking, and project management.

- **IntelliJ IDEA -** A smart and efficient IDE mainly used for Java development, offering features like code completion, debugging, and version control integration to streamline application development.

2.3. System Analysis and Design

1. Class Diagram
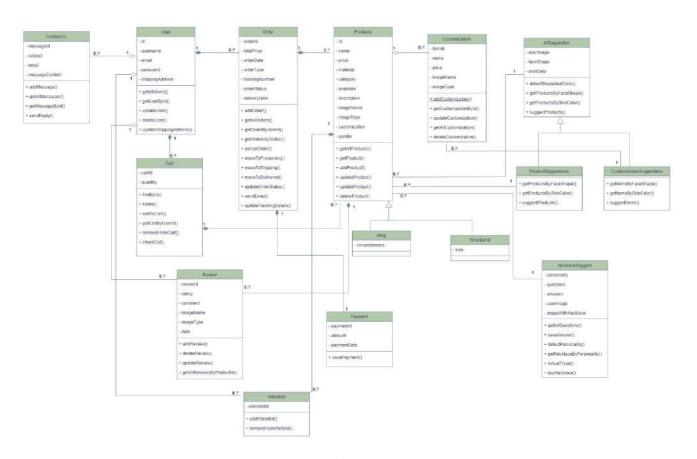
Figure 1:Class Diagram

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2. ER Diagram
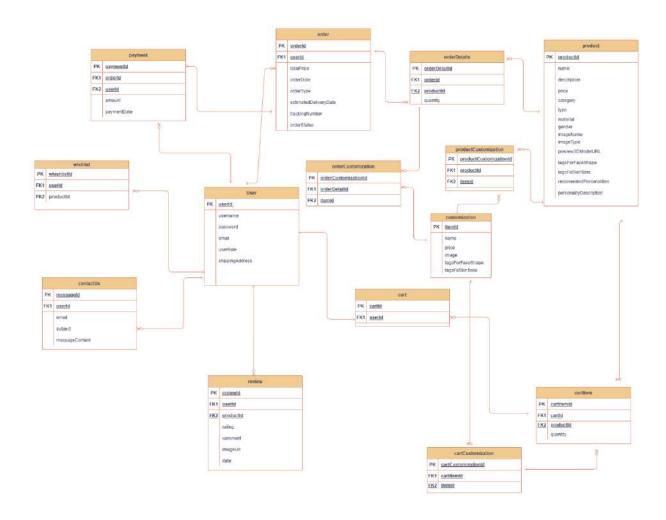
Figure 2:ER Diagram

3. Use case Diagram
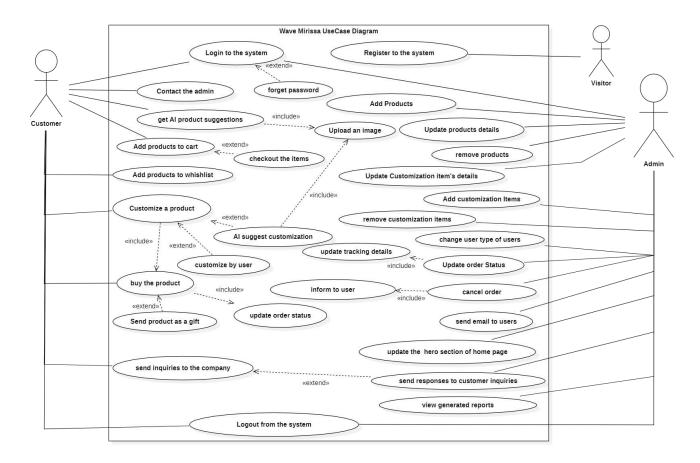
Figure 3:Use case Diagram

Drive Link for System Design Diagrams:

https://drive.google.com/drive/folders/1AjPiZW93bpG9KY6WFdJ9Lci9v2d9izfp?usp=sharing

Chapter 3: Project Plan

3.1.   Gantt Chart
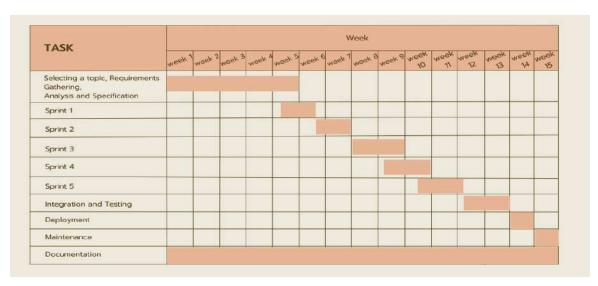
Figure 4: Gantt Chart

3.2.   Individual contribution

Enrollment No	Individual contribution
UWU/CST/21/024	- Product Management - Customization Item Management
UWU/CST/21/042	- Home page, Products page, Cart and Checkout Frontends - Reports & Analytics Generation
UWU/CST/21/087	- User Registration and Authentication - User management in Admin dashboard
UWU/CST/21/029	- Product Preview, Customization and Personality-based jewellery Virtual try-on Frontends - User Profile

3.3.   Future Work

With the successful completion of the first two sprint cycles, we now focus on the remaining three sprints including 3rd Sprint which we are currently working on, that will further enhance the platform's capabilities and ensure a comprehensive experience for both customers and Wave Mirissa owner.

- **Sprint Cycle 3:** Order Management and Delivery Tracking
  - Integrate a comprehensive order management system to manage the entire order lifecycle, from confirmation to shipping and completion.
  - Develop delivery tracking features to provide real-time updates on the shipment status to customers.
  - Enable customers to view past orders, including item details, status updates, and invoice downloads.

- **Sprint Cycle 4:** Jewellery Customization and 3D Previews
  - Develop a jewellery customization interface that allows customers to personalize jewellery using predefined customization options added by the admin, such as metal type, size, stone, and weight.
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  - Implement a feature that analyzes user inputs from a simple questionnaire to determine their personality[3] and recommends a matching necklace, which is then displayed on their uploaded image through a virtual try-on.

- **Sprint Cycle 5:** AI Assistant for Product Suggestions and Advanced Customization
  - Integrate AI-driven facial recognition and analysis to detect users' face shape and skin tone through uploaded images.

- Recommend suitable jewellery products and customization options tailored to the user's facial features and complexion.

References
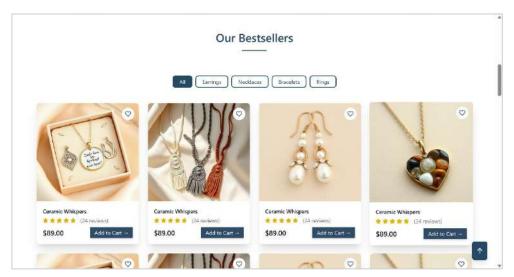
[1] A. R. Ashraf, N. T. Thongpapanl, and S. Auh. 2019. The application of the Stimulus-Organism-Response model to consumers' online buying behavior. *J. Strateg. Mark.* 27, 7 (2019), 594–611. DOI:https://doi.org/10.1080/0965254X.2019.1637923

[2] S. Pather, D. Remenyi, and G. Maponya. 2024. The influence of online store interactivity on customers' shopping experience: An empirical investigation. *J. Contemp. Manag.* 21, 1 (2024), 87–102. Retrieved from https://www.researchgate.net/publication/380603207

[3] Truity. 2024. The 16 Personality Types Explained. Retrieved June 15, 2025 from https://www.truity.com/page/16-personality-types-myers-briggs

Appendix
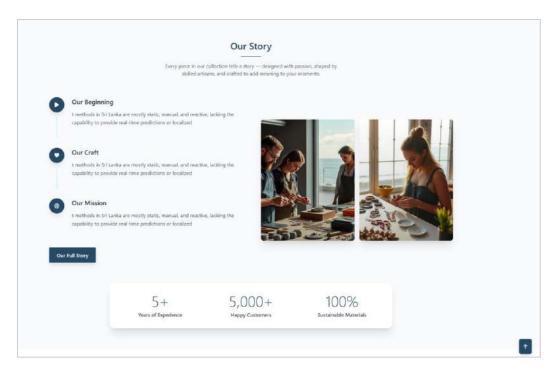
- **User Interface**
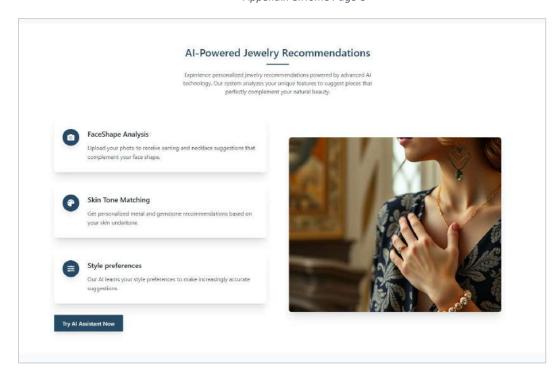
Appendix A:Home Page-1
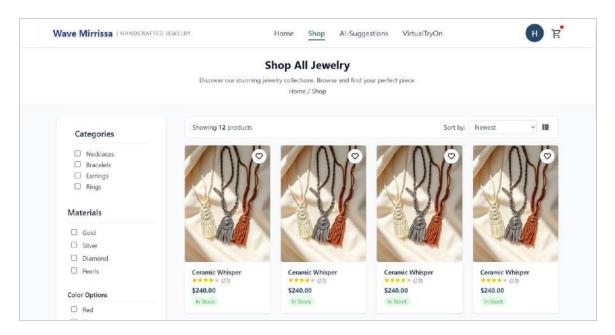
Appendix B:Home Page-2
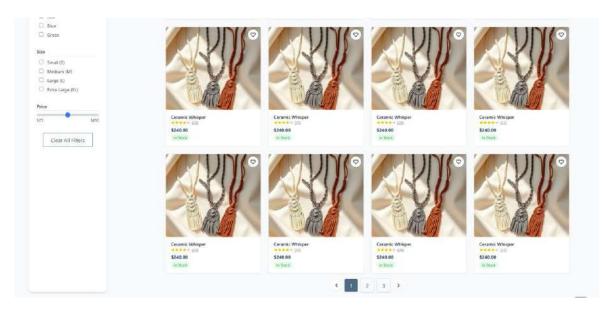
Appendix C:Home Page-3
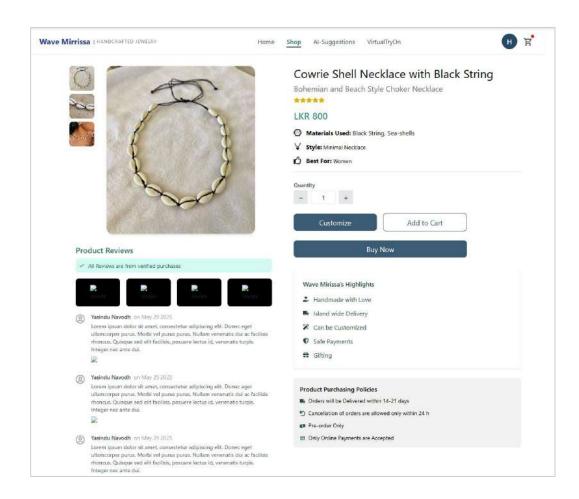
Appendix D:Home Page-4
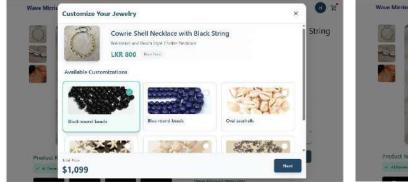
Appendix E:Products Page-1
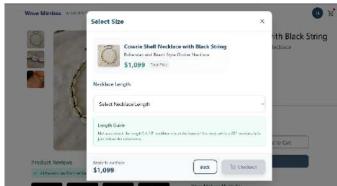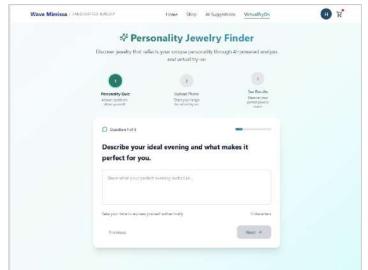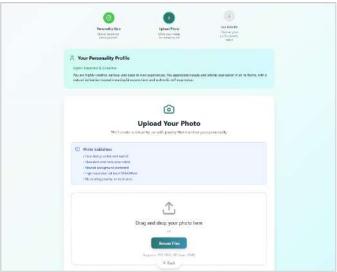

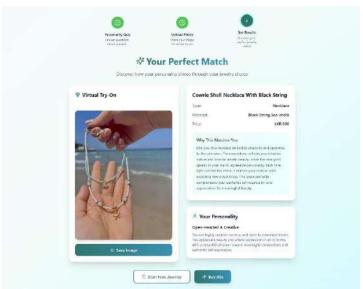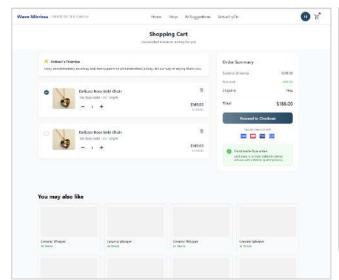*Appendix F:Products Page-2*

Appendix G:Product Preview

Appendix H:Customization & Size selection Modals
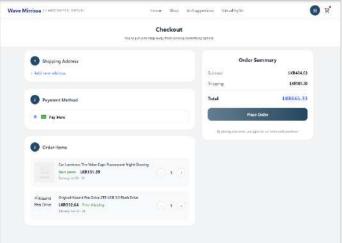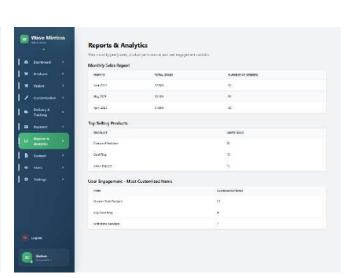
Appendix I:Personality based Jewellery Recommendation & try-on

Appendix K: Cart

Appendix J:Checkout

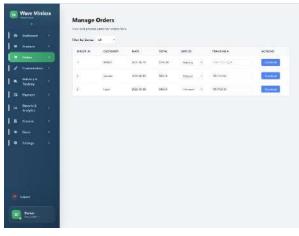*Appendix M:Admin Dashboard*

Appendix L:Admin- Reports & Analytics

Appendix N:Admin-Order Management