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FIT N STYLE

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ABSTRACT

Online shopping in the fashion industry often falls short in addressing two major concerns of users: uncertainty about correct size and difficulty visualizing how products will look when worn. These challenges can lead to low customer satisfaction, high return rates, and hesitation in purchasing. This mini project presents **Fit N Style**, a fashion-focused web application aimed at transforming the online shopping experience through personalization and intelligent user interaction.

The system allows users to register, explore a catalog of clothing items, and interact with innovative features such as **Size Fitting** and **Virtual Try-On**. By enabling users to input their body measurements and visualize garments in real time, the platform provides a more confident and tailored shopping journey. Additionally, users can manage shopping carts and preferences, while sellers or administrators can add and update product listings.

By integrating user-centric features with an intuitive interface, **Fit N Style** bridges the gap between traditional e-commerce and personalized retail. The system aims to reduce uncertainty, enhance user engagement, and set a foundation for future smart fashion platforms powered by AI and computer vision.

1. INTRODUCTION

Online fashion shopping continues to grow, but it presents significant challenges such as size uncertainty and the inability to visualize how garments fit individual body types. Customers often make decisions based on guesswork, which leads to dissatisfaction and increased return rates. Traditional e-commerce platforms typically offer limited personalization, failing to meet the needs of users seeking accurate Fit N Style previews.

Fit N Style is a personalized fashion shopping platform designed to overcome these limitations by integrating smart features like **avatar-based virtual try-on**, **size fitting through user measurements**, and an **interactive size chart**. Users can create a digital avatar by entering their body measurements, enabling realistic visualization of selected clothing items. The size chart helps users compare their dimensions with standard sizes for better accuracy. Together with a clean interface for registration, product browsing, and cart management, this platform delivers a more confident, engaging, and user-friendly shopping experience.

2. LITERATURE REVIEW

Several research studies have investigated the use of artificial intelligence and computer vision in enhancing user experience within the online fashion and retail sectors. Lee et al. (2020) explored a virtual fitting system that uses 3D avatars and body scanning technology to simulate garment fitting, aiming to reduce product return rates and improve customer satisfaction. While such systems improve visualization, their implementation often requires advanced hardware and high computational resources, limiting scalability for web-based solutions.

Chattaraman et al. (2013) examined the role of virtual avatars in online retail, noting that personalized avatars significantly increase user

engagement and purchase confidence. More recent systems incorporate measurement-based fitting and size recommendation models using content-based filtering techniques, which compare user body dimensions with standard size charts to suggest optimal clothing sizes. Cosine similarity is frequently applied in these systems to match user measurements with product sizing data, providing a tailored recommendation engine. Despite these advancements, challenges like accurate avatar rendering, cold-start issues with new users or products, and the need for real-time interaction remain areas for continued research and refinement.

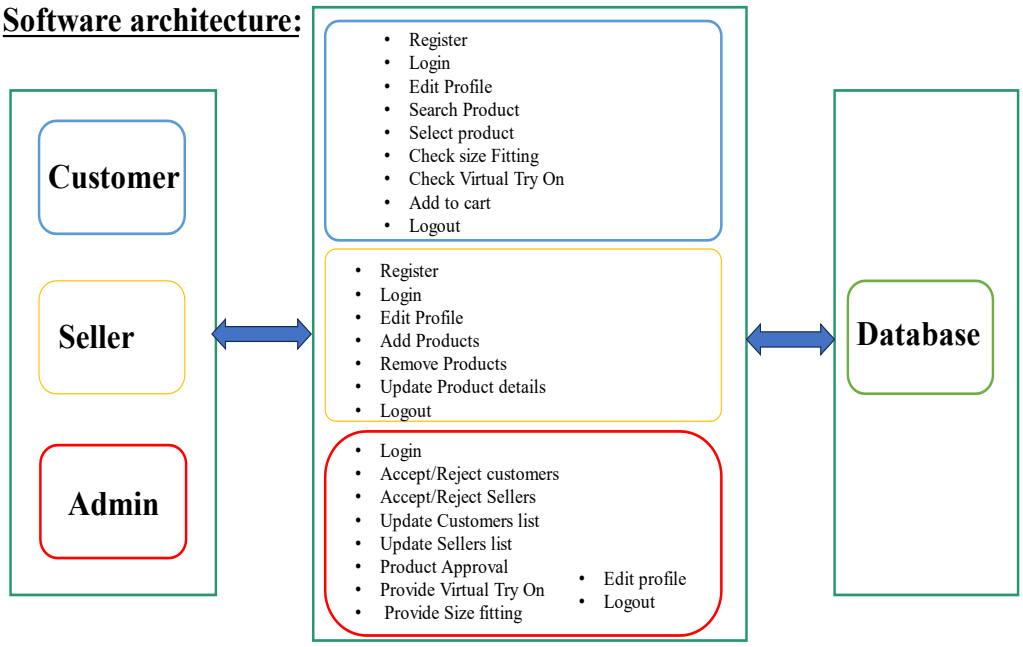
3. METHODOLOGY

Methodology

The project follows a structured approach starting with requirement analysis for both customers and product administrators. The frontend is developed using HTML, CSS, and JavaScript to build an interactive and responsive user interface. The backend is built with Node.js and Express.js, and MongoDB is used for data storage.

User data, including body measurements and style preferences, along with product details, are collected and encoded appropriately. A content-based filtering algorithm using cosine similarity is applied to match user preferences with clothing items. Additionally, virtual try-on technology is integrated to enhance the user experience by allowing real-time visualization of garment fit.

After testing the recommendation and virtual try-on features, the system is integrated and evaluated through functional testing to ensure all modules—including registration, login, product listing, size input, virtual try-on interaction, and purchase workflow—function correctly.



ALGORITHM

1. **Collect user and product data**

   Users register and input their body measurements and style preferences through frontend forms built with HTML, CSS, and JavaScript. Product administrators add product details, including size charts, images, and style information.

2. **Validate and store data**

   Validate user inputs for correctness and completeness on the frontend and backend. Store

user and product data securely in the MongoDB database via the Node.js and Express.js backend.

3. **Size fitting logic**
   Use the input body measurements to compare with product size charts. Implement logic in JavaScript to suggest the best fitting size for each product based on user data.
4. **Virtual Try-On integration**
   Use JavaScript to create a digital avatar based on user body measurements. Clothing items are overlaid on this avatar to simulate fit and appearance, providing a virtual try-on experience without real-time webcam input.
5. **Product browsing and cart management**
   Allow users to browse available products, filter by categories or sizes, and add selected items to their cart for purchase.
6. **User authentication and session management**

   Implement user registration, login, and session management to provide personalized access to product listings and user profile.
7. **Functional testing**
   Test all modules including registration, login, size fitting suggestions, virtual try-on interface, product browsing, and cart functionality to ensure smooth user experience.
8. **Finalize the system for deployment**
   Integrate frontend with backend services and test all modules for smooth operation. Prepare and deploy the fully functional application on a web server.

4.TESTING

The testing of the **Fit N Style Online Shopping Platform** was conducted in multiple stages to ensure the system is reliable, accurate, and user-friendly.

Stages of Testing:

- **Unit Testing**: Individual modules such as registration, login, product upload, add-to-cart, and checkout were tested separately to ensure they functioned correctly.
- **Integration Testing**: Verified the interaction between various modules (e.g., user login and product listing, product upload and display on homepage, cart and checkout process).
- **System Testing**: Assessed the application as a whole to ensure it meets functional requirements and behaves correctly across all use cases.
- **Acceptance Testing**: Final system was reviewed by test users to ensure it meets expectations and business needs.

Phases of Testing:

- Requirement Validation
- Test Planning:
- Test Execution
- Bug Fixing:
- Final Validation:

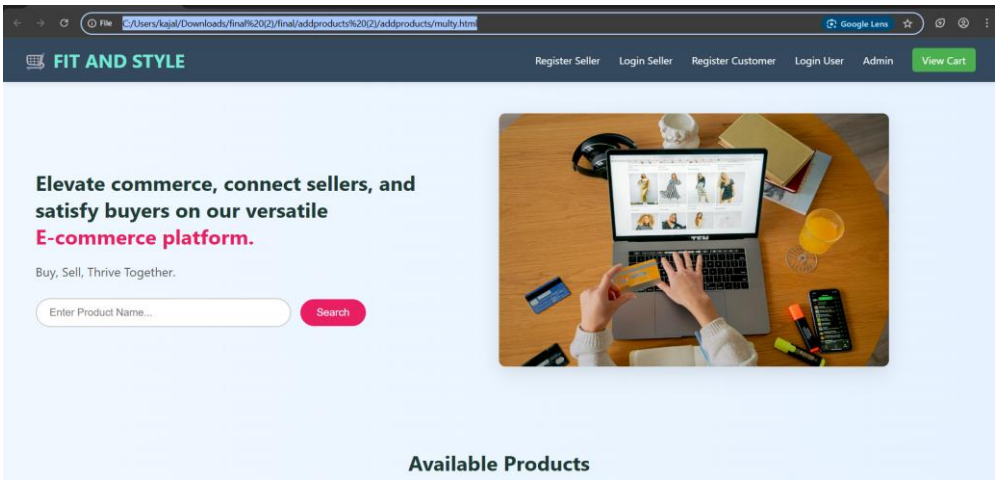
Types of Testing:

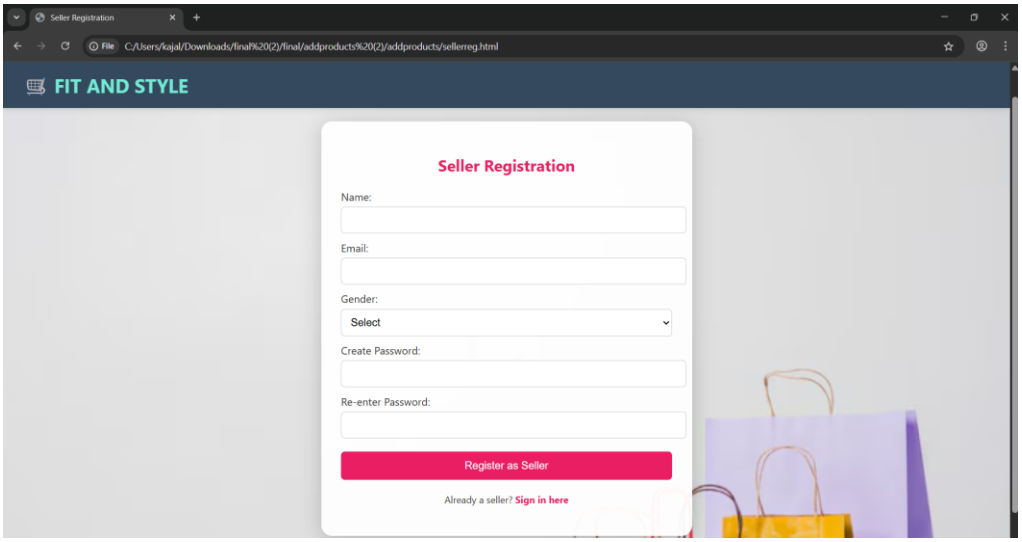
- **Functional Testing:** Checked whether all features work correctly**.**
- **Usability Testing:** Ensured the UI is easy to use.
- **Performance Testing:** Tested the speed and efficiency of recommendations.
- **Black Box Testing:** Focused on inputs and outputs.
- **Regression Testing:** Ensured previous features work after changes.

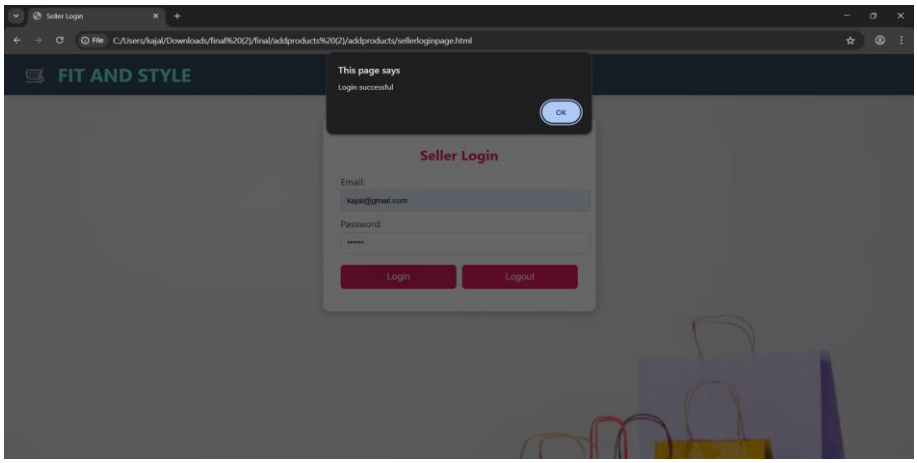
This structured approach to testing ensured that **Fit N Style** delivers a stable, secure, and engaging shopping experience for both customers and sellers.

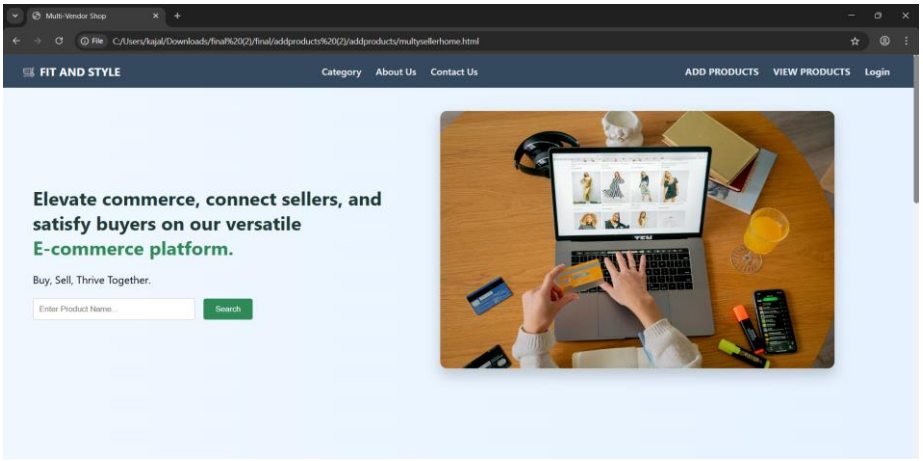
5.SCREENSHOTS

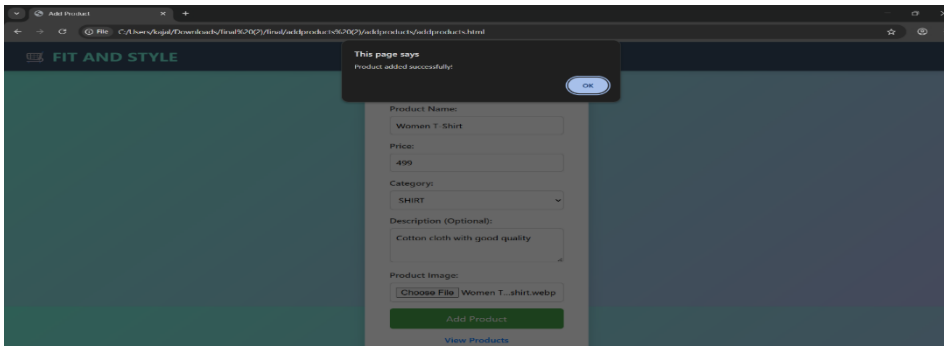
```
C:\Users\kajal\Downloads\final (2)\final\addproducts (2)\addproducts\backend>npm init -y
Wrote to C:\Users\kajal\Downloads\final (2)\final\addproducts (2)\addproducts\backend\package.json:

{
  "name": "backend",
  "version": "1.0.0",
  "main": "index.js",
  "scripts": {
    "test": "echo \"Error: no test specified\" && exit 1",
    "start": "node server.js"
  },
  "keywords": [],
  "author": "",
  "license": "ISC",
  "dependencies": {
    "body-parser": "^2.2.0",
    "cors": "^2.8.5",
    "dotenv": "^16.5.0",
    "express": "^5.1.0",
    "mongoose": "^8.15.1"
  },
  "devDependencies": {},
  "description": ""
}


C:\Users\kajal\Downloads\final (2)\final\addproducts (2)\addproducts\backend>npm install express mongoose

up to date, audited 87 packages in 996ms

16 packages are looking for funding
  run `npm fund` for details

found 0 vulnerabilities

C:\Users\kajal\Downloads\final (2)\final\addproducts (2)\addproducts\backend>npm install -g nodemon

changed 29 packages in 809ms

4 packages are looking for funding
  run `npm fund` for details

C:\Users\kajal\Downloads\final (2)\final\addproducts (2)\addproducts\backend>node server.js
MongoDB connected
Server running on port 5000
```

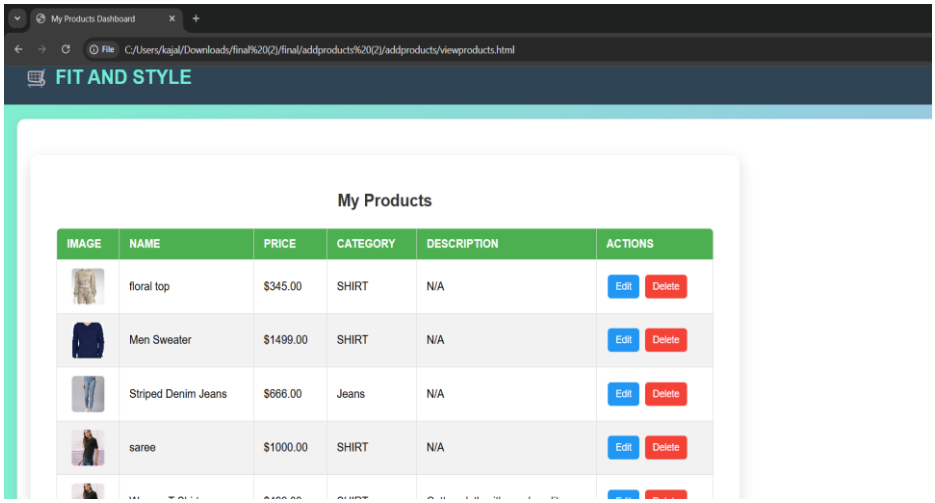


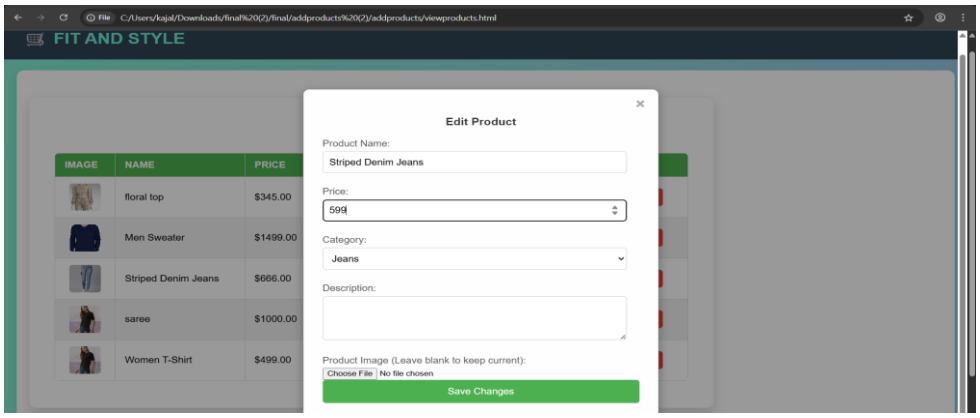


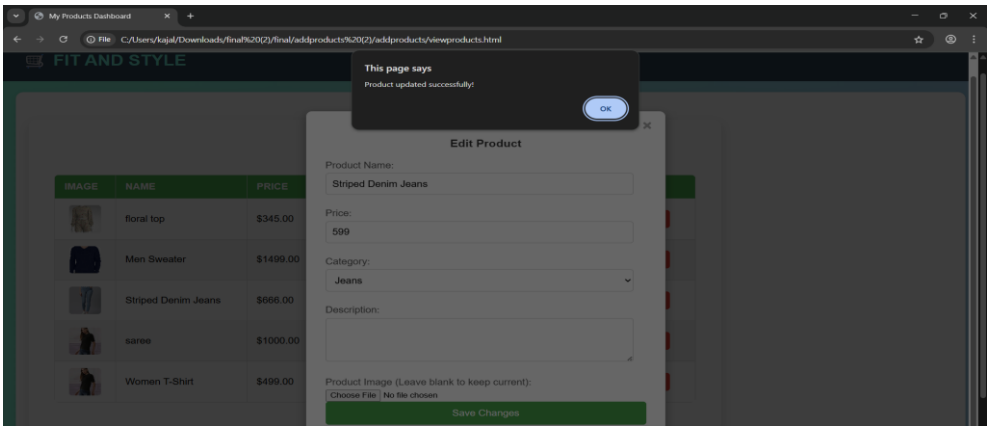

FIT AND STYLE
This page says
Login successful
OK
Seller Login
Email:
kajal@gmail.com
Password:
Login
Logout

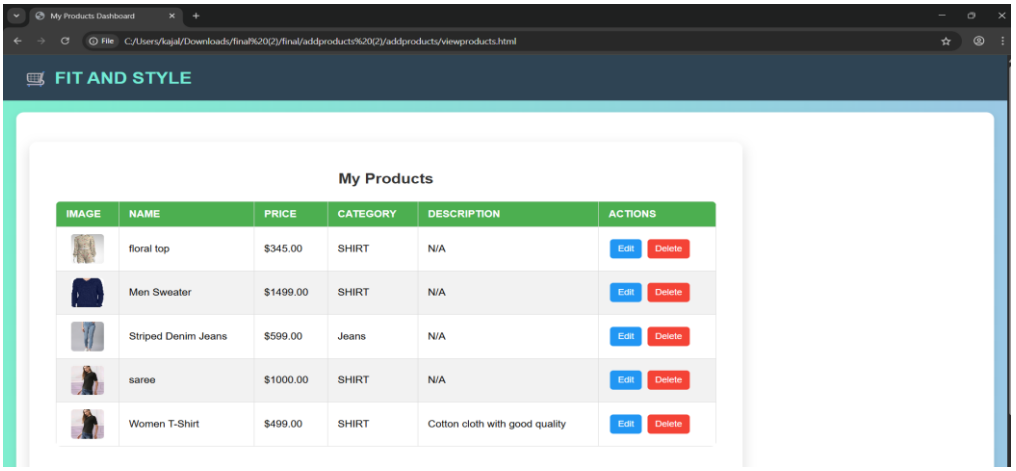

FIT AND STYLE
Category
About Us
Contact Us
ADD PRODUCTS
VIEW PRODUCTS
Login
Elevate commerce, connect sellers, and satisfy buyers on our versatile
E-commerce platform.
Buy, Sell, Thrive Together.
Enter Product Name...
Search

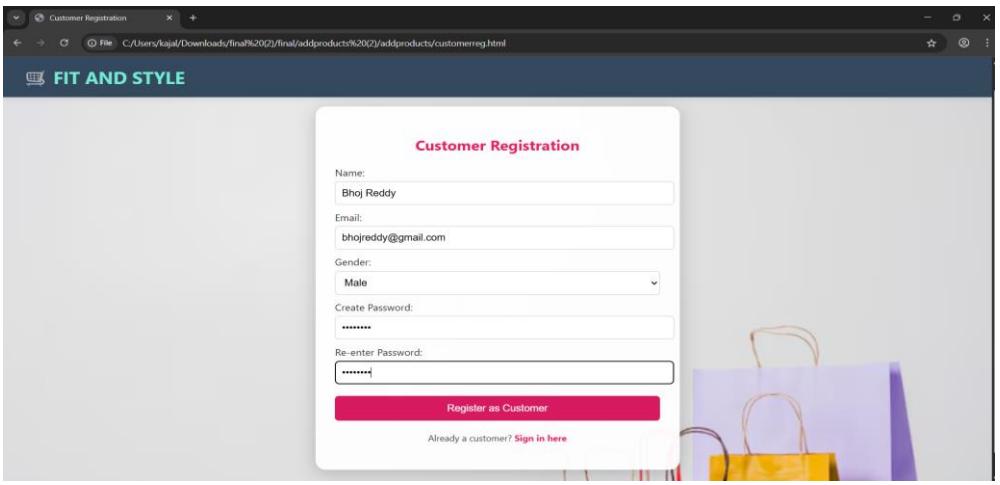

FIT AND STYLE
This page says
Product added successfully!
OK
Product Name:
Women T-Shirt
Price:
499
Category:
SHIRT
Description (Optional):
Cotton cloth with good quality
Product Image:
Choose File
Women T...shirt.webp
Add Product
View Products

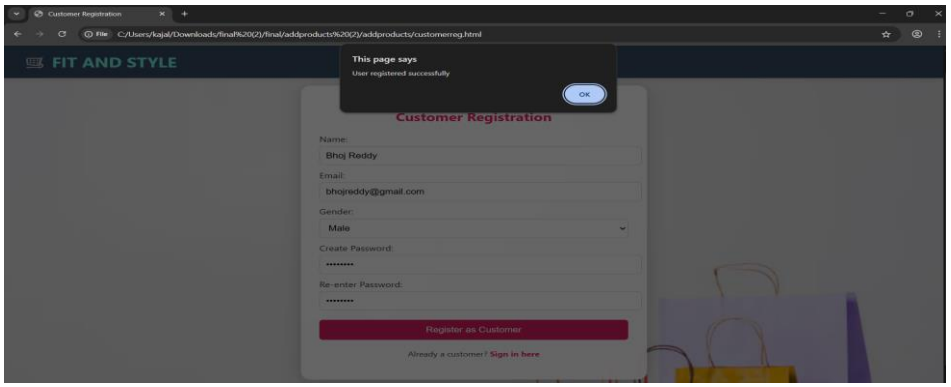

FIT AND STYLE
My Products
IMAGE
NAME
PRICE
CATEGORY
DESCRIPTION
ACTIONS
floral top
$345.00
SHIRT
N/A
Edit
Delete
Men Sweater
$1499.00
SHIRT
N/A
Edit
Delete
Striped Denim Jeans
$666.00
Jeans
N/A
Edit
Delete
saree
$1000.00
SHIRT
N/A
Edit
Delete

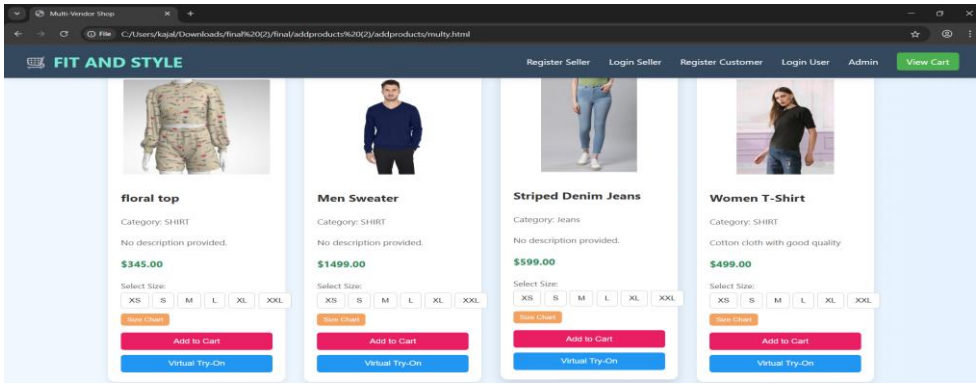

FIT AND STYLE
Edit Product
Product Name:
Striped Denim Jeans
Price:
599
Category:
Jeans
Description:
Product Image (Leave blank to keep current):
Choose File
No file chosen
Save Changes
IMAGE
NAME
PRICE
floral top
$345.00
Men Sweater
$1499.00
Striped Denim Jeans
$666.00
saree
$1000.00
Women T-Shirt
$499.00

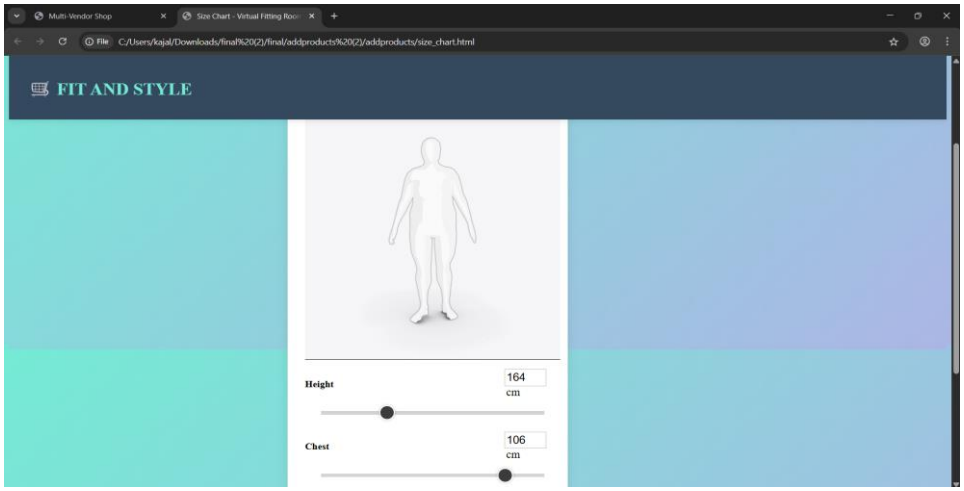

My Products Dashboard
FIT AND STYLE
This page says
Product updated successfully!
OK
Edit Product
Product Name:
Striped Denim Jeans
Price:
599
Category:
Jeans
Description:
Product Image (Leave blank to keep current):
Choose File
No file chosen
Save Changes

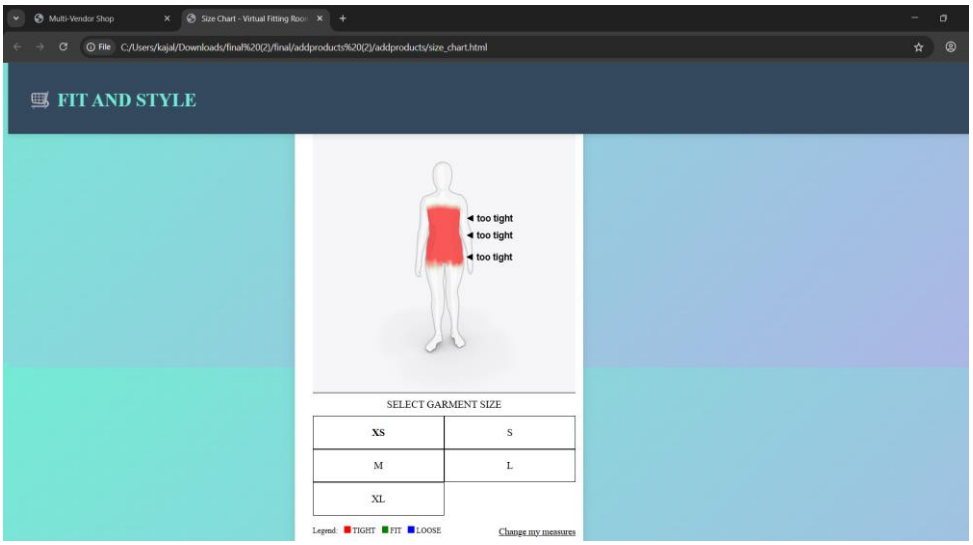

My Products Dashboard
FIT AND STYLE
My Products
IMAGE
NAME
PRICE
CATEGORY
DESCRIPTION
ACTIONS
floral top
$345.00
SHIRT
N/A
Edit
Delete
Men Sweater
$1499.00
SHIRT
N/A
Striped Denim Jeans
$599.00
Jeans
N/A
saree
$1000.00
SHIRT
N/A
Women T-Shirt
$499.00
SHIRT
Cotton cloth with good quality


Customer Registration
FIT AND STYLE
Customer Registration
Name:
Bhoj Reddy
Email:
bhojreddy@gmail.com
Gender:
Male
Create Password:
Re-enter Password:
Register as Customer
Already a customer? Sign in here


FIT AND STYLE
This page says
User registered successfully
OK
Customer Registration
Name:
Bhoj Reddy
Email:
bhojreddy@gmail.com
Gender:
Male
Create Password:
Re-enter Password:
Register as Customer
Already a customer? Sign in here


FIT AND STYLE
Register Seller
Login Seller
Register Customer
Login User
Admin
View Cart
floral top
Category: SHIRT
No description provided.
$345.00
Men Sweater
Category: SHIRT
No description provided.
$1499.00
Striped Denim Jeans
Category: Jeans
No description provided.
$599.00
Women T-Shirt
Category: SHIRT
Cotton cloth with good quality
$499.00
Add to Cart
Virtual Try-On


FIT AND STYLE
Height
164
cm
Chest
106
cm



6-CONCLUSION

This project makes online shopping easier and more interactive with **Virtual Try-On** and **Size fitting**. Users can see how products look on them and getting perfect size which minimize the returns. The system is secure, user-friendly, and improves the overall shopping experience.

REFERENCES

[1] A. Singh, R. Sharma, and P. Verma, "Augmented Reality-Based Virtual Try-On for Online Shopping," *IEEE Access*, vol. 9, pp. 15678-15689, 2021.

[2] J. Kim and H. Sundar, "Enhancing E-Commerce with Social Shopping Features: A Study on User Engagement," in *Proc. 2022 IEEE Int. Conf. on E-Commerce and Technology (ICET)*, San Francisco, CA, USA, 2022, pp. 55-62.

[3] M. Patel, L. Gupta, and S. Rao, "Automated Price Comparison in Online Shopping Using Web Scraping and Data Analytics," *IEEE Trans. Comput. Social Syst.*, vol. 8, no. 3, pp. 112-120, June 2023.

[4] X. Zhao, K. Li, and Y. Zhang, "Real-Time Social Shopping: Integrating Live Chat and AI for Interactive E-Commerce," *IEEE Internet Comput.*, vol. 26, no. 4, pp. 34-42, July 2022.