

**A Project Report**  
**on**  
**SMART FASHION RECOMMENDER APPLICATION**

Under the guidance of

**Industry Mentor**

**Prof. Krishna Chaitanya**

**Faculty Mentor**

**Dr.S. Geeitha AP/IT**

**TEAM ID: PNT2022TMID16338**

Submitted by,

PRAVEEN KUMAR S	(927619BIT4070)
PREMKUMAR C	(927619BIT4071)
RAGHU K V	(927619BIT4073)
SRINATH S	(927619BIT4099)

## TABLE OF CONTENTS

Chapter No.	Title	Page No.
1	INTRODUCTION	
	1.1 PROJECT OVERVIEW	
	1.2 PURPOSE	
2	LITERATURE SURVEY	
	2.1 EXISTING PROBLEM	
	2.2 REFERENCES	
	2.3 PROBLEM STATEMENT DEFINITION	
3	IDEATION & PROPOSED SOLUTION	
	3.1 EMPATHY MAP CANVAS	
	3.2 IDEATION & BRAINSTORMING	
	3.3 PROPOSED SOLUTION	
	3.4 PROBLEM SOLUTION FIT	
4	REQUIREMENT ANALYSIS	
	4.1 FUNCTIONAL REQUIREMENT	
	4.2 NON-FUNCTIONAL REQUIREMENTS	
5	PROJECT DESIGN	
	5.1 SOLUTION & TECHNICAL ARCHITECTURE	
	5.2 USER STORIES	
6	PROJECT PLANNING & SCHEDULING	
	6.1 SPRINT PLANNING & ESTIMATION	
	6.2 SPRINT DELIVERY SCHEDULE	
	6.3 REPORTS FROM JIRA	
7	CODING & SOLUTIONING	
	7.1 FEATURE 1	
	7.2 FEATURE 2	
	7.3 DATABASE SCHEMA	
8	TESTING	
	8.1 TEST CASES	
	8.2 USER ACCEPTANCE TESTING	
9	RESULTS	
	9.1 PERFORMANCE METRICS	

10	ADVANTAGES & DISADVANTAGES	
11	CONCLUSION	
12	FUTURE SCOPE	
13	APPENDIX	
	13.1 SOURCE CODE	
	13.2 GITHUB & PROJECT DEMO LINK	

# **1.INTRODUCTION**

## **1.1 Project Overview**

Fashion is a kind of symbol that represents people's internal perceptions through their outer appearance. It conveys information about their choices, faith, personality, profession, social status, and attitude towards life. Therefore, clothing is believed to be a nonverbal way of communicating and a major part of people's outer appearance. Recent technological advancements have enabled consumers to track current fashion trends around the globe, which influence their choices. The fashion choices of consumers depend on many factors, such as demographics, geographic location, individual preferences, interpersonal influences, age, gender, season, and culture. Moreover, previous fashion recommendation research shows that fashion preferences vary not only from country to country but also from city to city. The combination of fashion preferences and the above mentioned factors associated with clothing choices could transmit the image features for a better understanding of consumers' preferences. Therefore, analyzing consumers' choices and recommendations is valuable to fashion designers and retailers. Additionally, consumers' clothing choices and product preference data have become available on the Internet in the form of text or opinions and images or pictures. Since these images contain information about people from all around the world, both online and offline fashion retailers are using these platforms to reach billions of users who are active on the Internet. Therefore, e-commerce has become the predominant channel for shopping in recent years. The ability of recommendation systems to provide personalized recommendations and respond quickly to the consumer's choices has contributed significantly to the expansion of e-commerce sales.

## **1.2 Purpose**

The smart fashion recommended application come up with a new innovative solution through which you can directly do your online shopping based on your choice without any search. The combination of fashion preferences and the above-mentioned factors associated with clothing choices could transmit the image features for a better understanding of consumers' preferences. Therefore, analyzing consumers' choices and recommendations is valuable to fashion designers and retailers. A recommendation system is an artificial intelligence or AI algorithm, usually associated with machine learning, that uses Big Data to suggest or recommend additional products to consumers. These can be based on various criteria, including past purchases, search history, demographic information, and other factors. A recommender system aims to estimate the utility of a set of objects belonging to a given domain, starting from the information available about users and objects.

## **2.LITERATURE SURVEY**

### **2.1 Existing Problem**

Humans are inevitably drawn towards something that is visually more attractive. This tendency of humans has led to development of fashion industry over the course of time. With introduction of recommender systems in multiple domains, retail industries are coming forward with investments in latest technology to improve their business. Fashion has been in existence since centuries and will be prevalent in the coming days as well. Women are more correlated with fashion and style, and they have a larger product base to deal with making it difficult to take decisions. It has become an important aspect of life for modern families since a person is more often than not judged based on his attire. Moreover, apparel providers need their customers to explore their entire product line so they can choose what they like the most which is not possible by simply going into a cloth store.

### **2.2 REFERENCE**

**2.2.1 TITLE-** Scenery-Based Fashion Recommendation with Cross-Domain Generative Adversarial Network

**AUTHOR-** Sang-Young Jo; Sun-Hye Jang; Hee-Eun Cho; Jin-Woo Jeong

**DESCRIPTION** To build an effective fashion recommendation system is a still challenging issue due to its high complexity. Previous research works generally have focused on how to provide fashion items visually similar to the user's current fashion taste. However, a scenery (natural landscape) around users is also an important affective factor in recommending fashions. This paper presents a novel system to recommend fashion designs that fit target sceneries. To address this, the exemplar photos regarding the target landscape are first collected from the database. Afterwards, a cross-domain generative adversarial network (GAN) is applied to generate fashion designs from the sceneries. The experimental results demonstrate the feasibility of the proposed system and imply further research directions.

**2.2.2 TITLE-** Visual Based Prediction of Physical Characteristics for a Smart Fashion System.

**AUTHOR-** Sophie Xiaofan Liu; Bingju Guo; Xiang Fang; Joshua C. Williams

**DESCRIPTION** This paper proposes a visual based model to predict physical characteristics from the pictures of a group of customers that were taken from a smart fashion system (SFS) at a clothing retail store. This model incorporates image segmentation, object recognition and linear regression to build a prediction model. The physical characteristics that we are interested in includes people's height, weight, BMI, skin color, shoulder length, face widths at eyes level and mouth level and the distance between the eyes and chin. Eventually SFS will use these data to recommend to a customer the best suitable clothing options. An algorithm based on image processing techniques was developed to find some of these data. A linear regression model is used to predict other data which were not easy to find using the image processing techniques due to the poor illuminations in the pictures. The experiments have proved the proposed model is simple but efficient.

**2.2.3 TITLE-** A study of the Intelligent Material towards Fashion Innovation.

**AUTHOR-** Wang Wen

**DESCRIPTION** This paper introduced the mainly application of intelligent materials in fashion and clothing, summarized three operating types of intelligent materials: passive intelligent materials, active intelligent materials and advanced intelligent materials. Including temperature control material of clothing, shape memory material, photosensitive, thermal, humidity and pressure sensitive and other color changing

materials. Meanwhile, four directions towards the future development of intelligent clothing are summarized, including high performance, high precision, information and data security as well as commercial popularity.

#### **2.2.4 TITLE-** Smart power grids — A perfect solution, or just a fashion

**AUTHOR-** A. Wiszniewski; J. Szafran; B. Brusilowicz

**DESCRIPTION** The increase of the electric power demand is at the level 2–3% per year, and in some regions of the world may become much higher. In the same time the infrastructure of power systems develop much slower. The smart grid technology is to use modern telecommunication and informatics to bridge the gap. The aim is to integrate generation, transmission, distribution and consumption of the electrical energy to supply the power in reliable, safe, economic way with consideration of the environmental requirements. The technology consists of four main parts:

- Management of demand.
- Operational control of generation, transmission and distribution.
- Protective devices of the new generation (adaptive and wide area).
- Self healing and fast restitutions after system breakdowns.

### **2.3 PROBLEM STATEMENT DEFINITION**

Create a problem statement to understand your customer's point of view. The Customer Problem Statement template helps you focus on what matters to create experiences people will love and attract towards it. A well-articulated customer problem statement allows you and your team to find the best & ideal solution for the challenges that your customers face. Throughout the process, you'll also be able to empathize with your customers, which helps you better understand how they perceive your product or service.

<b>Problem Statement</b>	<b>I am (Customer)</b>	<b>I'm trying to</b>	<b>But</b>	<b>Because</b>	<b>Which makes feel</b>
Problem Statement 1	I am a Groom	I am trying to buy a groom costume for my marriage	Cant find the suitable match	Either the design or colour doesn't suit	I don't have any choice in choosing right brand for wedding'
Problem Statement 2	I am a Photo Person	I am trying to buy a dress for a photoshoot.	Could not able to choose right dress	Product price not within the budget	Give up and move for other ecommerce site
Problem Statement 3	I am a Student	I am trying to buy a formal dress for college event	I can't find perfect match	Either the brand or colour doesn't suit	I don't have any choice in choosing right brand

### 3.IDEATION & PROPOSED SOLUTION

#### 3.1 Empathy Map Canvas

An empathy map is a simple, easy-to-digest visual that captures knowledge of a user's behaviour and attitudes.

It is a useful tool to help teams better understand their users.

Creating an effective solution requires understanding the true problem and the person who is experiencing it. The exercise of creating the map helps participants consider things from the user's perspective, along with his or her goals and challenges.


Below, we have attached our empathy map to simulate our idea of the users' perspective. We have listed what they think and feel, hear, see and do.



## 3.2 Ideation & Brainstorming


### Step 1: Team Gathering, Collaboration and Select the Problem Statement

Template




#### SMART FASHION RECOMMENDER APPLICATION

Fashion applications have seen tremendous growth and are now one of the most used programs in the e-commerce field. The needs of people are continuously evolving, creating room for innovation among the applications. Having an AI program that understands the algorithm of a specific application can be of great aid. We are implementing such a chat bot, which is fed with the knowledge of the application's algorithm and helps the user completely from finding their needs to processing the payment and initiating delivery.



**Before you collaborate**

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

 10 minutes

A

Team gathering

Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.

B

Set the goal


Think about the problem you'll be focusing on solving in the brainstorming session.

C

Learn how to use the facilitation tools

Use the Facilitation Superpowers to run a happy and productive session.

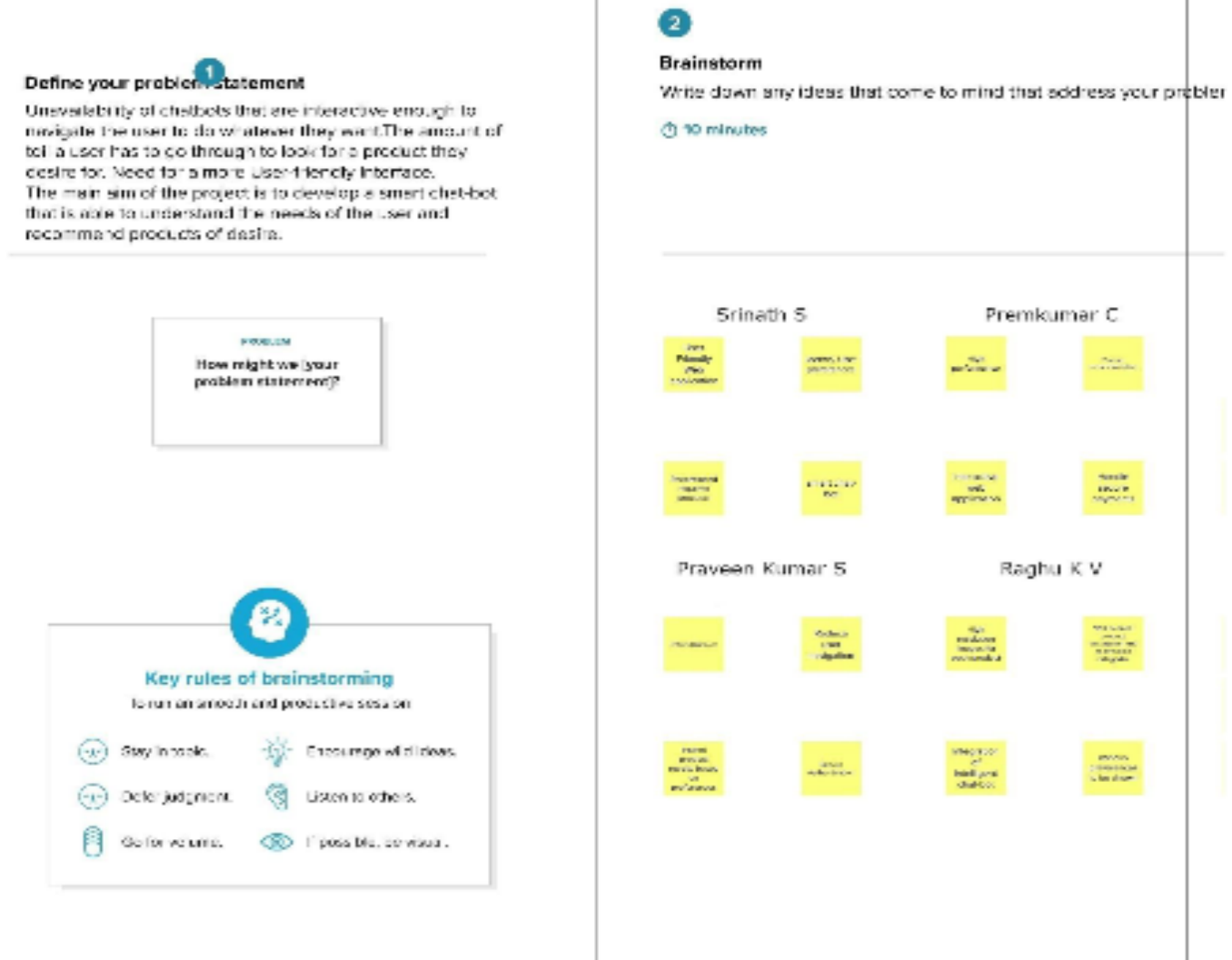
Open article



**Fig 3.2.1 Brainstorm & idea prioritization**



## Step 2: Brainstorm, Idea listing and Grouping



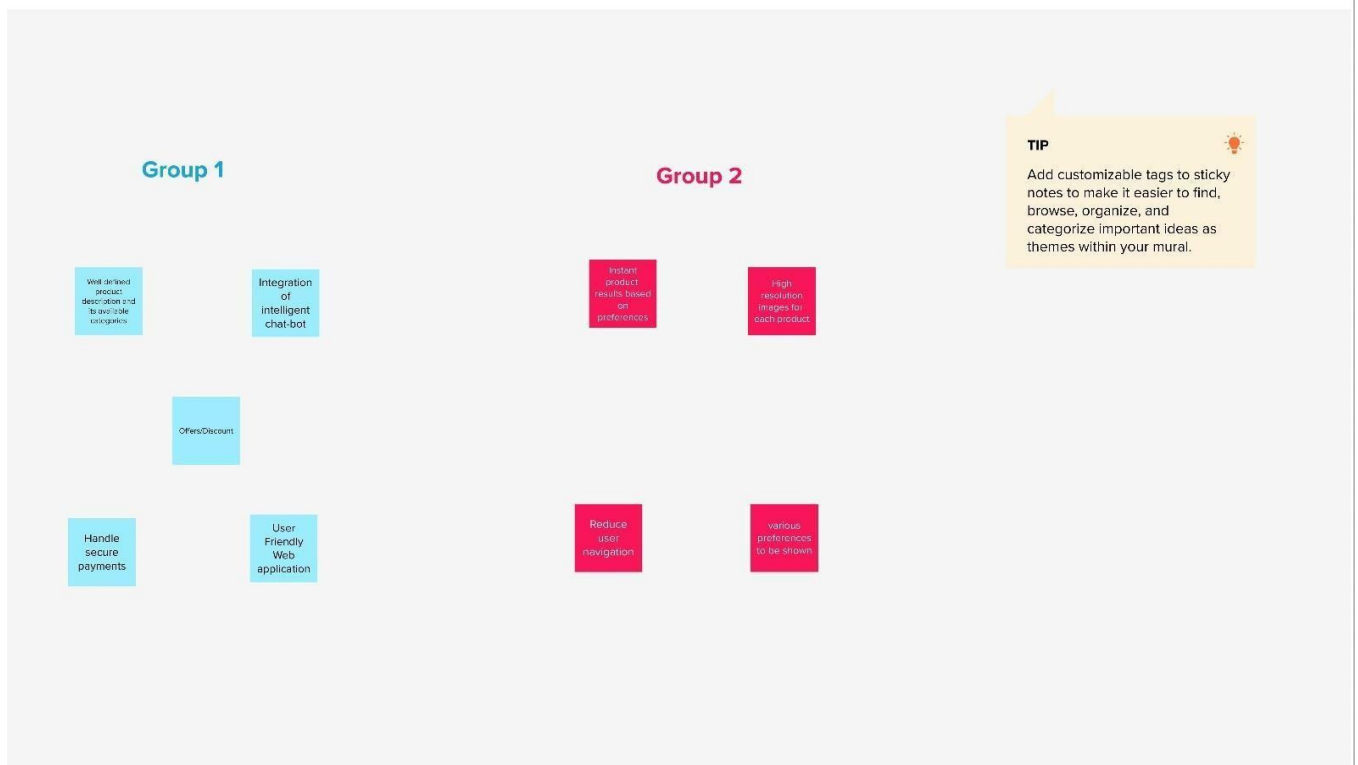
### Fig 3.2.2 Idea Listing & Grouping

3

### Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. In the last 10 minutes, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you and break it up into smaller sub-groups.

🕒 20 minutes



**Fig 3.2.3 Group Ideas**

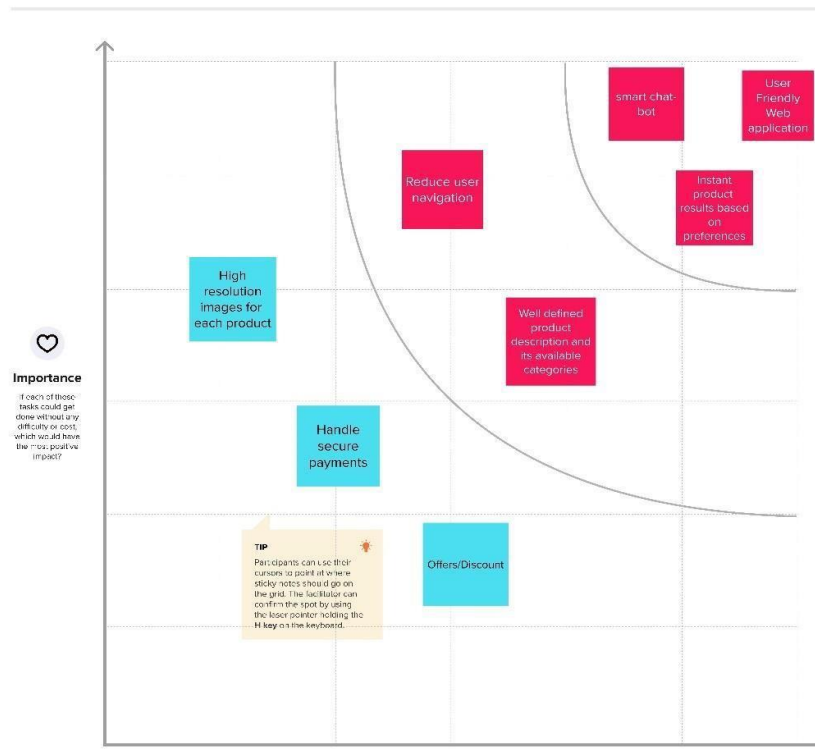
## Step 3: Idea Prioritization

4

### Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

20 minutes



### After you collaborate

You can export the mural as an image or pdf to share with members of your company who might find it helpful.

### Quick add-ons

- A Share the mural!**  
Share a view link to the mural with stakeholders to keep them in the loop about the outcomes of the session.
- B Export the mural**  
Export a copy of the mural as a PNG or PDF to attach to emails, include in slides, or save in your drive.

### Keep moving forward

- Strategy blueprint**  
Define the components of a new idea or strategy.  
[Open the template →](#)
- Customer experience journey map**  
Understand customer needs, motivations, and obstacles for an experience.  
[Open the template →](#)
- Strengths, weaknesses, opportunities & threats**  
Identify strengths, weaknesses, opportunities, and threats (SWOT) to develop a plan.  
[Open the template →](#)

[Share template feedback](#)

Fig 3.2.4 Idea Prioritization

### 3.3 Proposed Solution

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	<ul style="list-style-type: none"> <li>• Lack of interaction between application and user</li> <li>• User need to navigate across multiple pages to choose right product</li> <li>• Confusion in choosing product</li> <li>• Lack of sales</li> <li>• Complex User Interface.</li> <li>• Lack of proper guidance.</li> </ul>
2.	Idea / Solution description	<p>By using Smart fashion recommender application:</p> <ul style="list-style-type: none"> <li>• Improve customer relationship, interactivity and services.</li> <li>• Effective recommendation of products.</li> <li>• Recommendation within a single page via chat-bot</li> <li>• Collect feedback instantly.</li> <li>• Reduce human error</li> <li>• Proper guidance in accessing application.</li> </ul>
3.	Novelty / Uniqueness	<ul style="list-style-type: none"> <li>• Chat-bot asks and learns from user preference which recommends appropriate products to the user without making them to search through various filters. Reduces time in choosing right product thus increases sales.</li> </ul>
4.	Social Impact / Customer Satisfaction	<ul style="list-style-type: none"> <li>• Feedback from the user at the end of session or after placing order is one of the most important factor in deriving customer satisfaction and providing better services.</li> </ul>
5.	Business Model (Revenue Model)	<ul style="list-style-type: none"> <li>• The application can be developed at minimum cost with high performance and interactive user interface.</li> </ul>
6.	Scalability of the Solution	<ul style="list-style-type: none"> <li>• The solution can be made scalable by using micro service architecture provided that each server responsible for certain functionality of the application. Storing user preferences along with product in browser cookie will enable to provide response instantly and allows for fetching related products.</li> </ul>

## 3.4 Problem Solution fit

Define CS, fit into CC	<b>1. CUSTOMER SEGMENT(S)</b> <small>Who is your customer? i.e. working parents of 0-5 y.o. kids</small>	<b>6. CUSTOMER CONSTRAINTS</b> <small>What constraints prevent your customers from taking action or limit their choices of solutions? i.e. spending power, budget, no cash, network connection, available devices.</small>	<b>5. AVAILABLE SOLUTIONS</b> <small>Which solutions are available to the customers when they face the problem or need to get the job done? What have they tried in the past? What pros &amp; cons do these solutions have? i.e. pen and paper is an alternative to digital notetaking</small>	Explore AS, differentiate
	The Customers are Adults and children	Money and Network Connection	Online shopping gives New Collections pros: Easy to use cons: customer confused when have lost of collections	
Focus on J&P, tap into BE, understand RC	<b>2. JOBS-TO-BE-DONE / PROBLEMS</b> <small>Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one; explore different sides.</small>	<b>9. PROBLEM ROOT CAUSE</b> <small>What is the real reason that this problem exists? What is the back story behind the need to do this job? i.e. Customers have to do it because of the change in regulations</small>	<b>7. BEHAVIOUR</b> <small>What does your customer do to address the problem and get the job done? i.e. Directly related: find the right solar panel installer, calculate usage and benefits; indirectly associated: customers spend free time on volunteering work (i.e. Greenpeace)</small>	Focus on J&P, tap into BE, understand RC
	Users hard to find Trending Fashion Clothes.	Customers need to be with new fashions for current trends	Customers spend the time to find the new fashion clothes	
Identify strong TR & EM	<b>3. TRIGGERS</b> <small>What triggers customers to act? i.e. seeing their neighbour <u>make dresses</u> for panels, reading about a new <u>eff</u> revolution in the news.</small>	<b>10. YOUR SOLUTION</b> <small>If you are working on an existing business, write down your current solution <u>first</u> if in the canvas, and check how much it fits reality. If you are working on a new business proposition, then keep it blank until you fill <u>into</u> canvas and come up with a solution that fits within customer limitations, solves a problem and matches customer behaviour.</small>	<b>8. CHANNELS of BEHAVIOUR</b> <b>11. ONLINE</b> <small>What kind of actions do customers take online? Extract online channels from #7</small> <b>12. OFFLINE</b> <small>What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development.</small>	Identify strong TR & EM
	Seeing neighbor Dressing Styles	Make a ChatBot Assistant for shopping with customers and send notifications when new collections <u>arrived</u>	ONLINE: Customers buy the new clothes OFFLINE: Customers will use the clothes	
	<b>4. EMOTIONS: BEFORE / AFTER</b> <small>How do customers feel when they face a problem or a job and afterwards? i.e. lost, insecure &gt; confident, in control-use it in your communication strategy &amp; design.</small>			
	Felling Sad and Frustration > <u>Selfconfident</u>			

## 4. REQUIREMENT ANALYSIS

### 4.1 Functional Requirement

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through mail Registration through Gmail
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	User Login	Login using username & Password
FR-4	Personal Details	Personal details through Form Personal details through UI Tab
FR-5	Delivery Confirmation	Confirmation via Email Confirmation via Phone

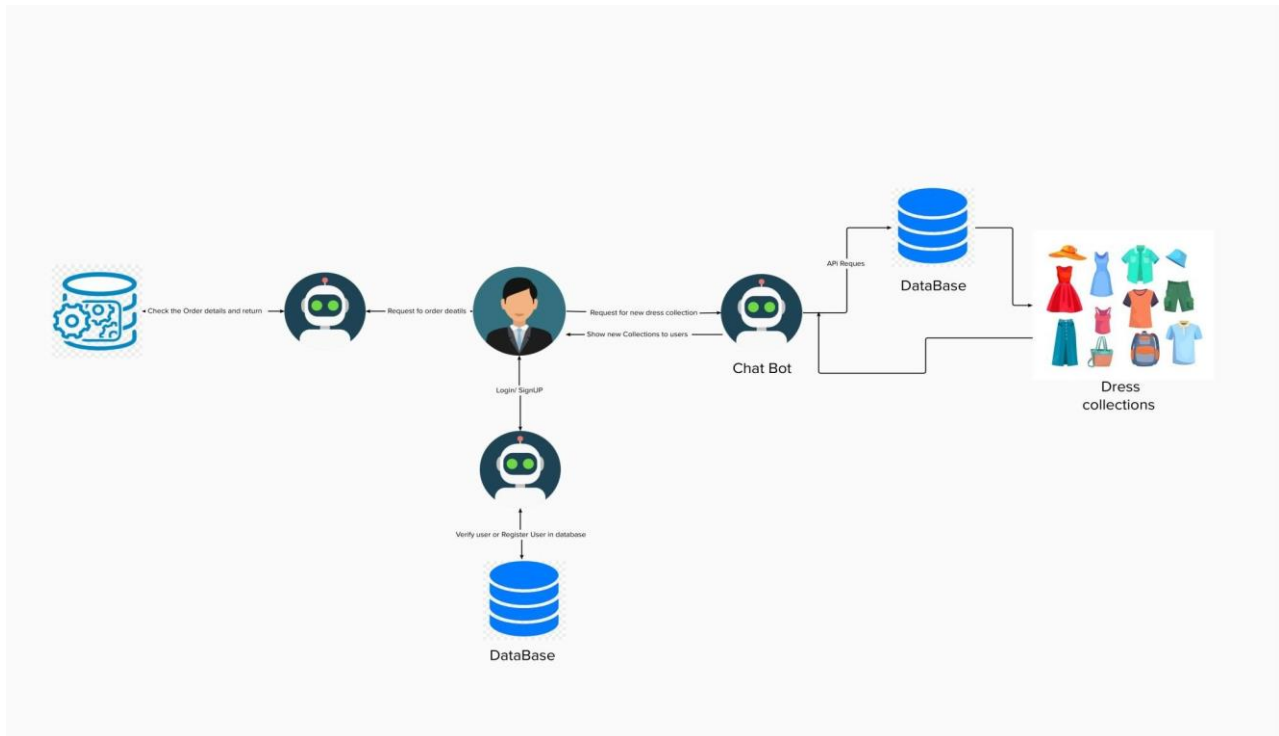
### 4.2 Non-Functional Requirement

Following are the non-functional requirements of the proposed solution.

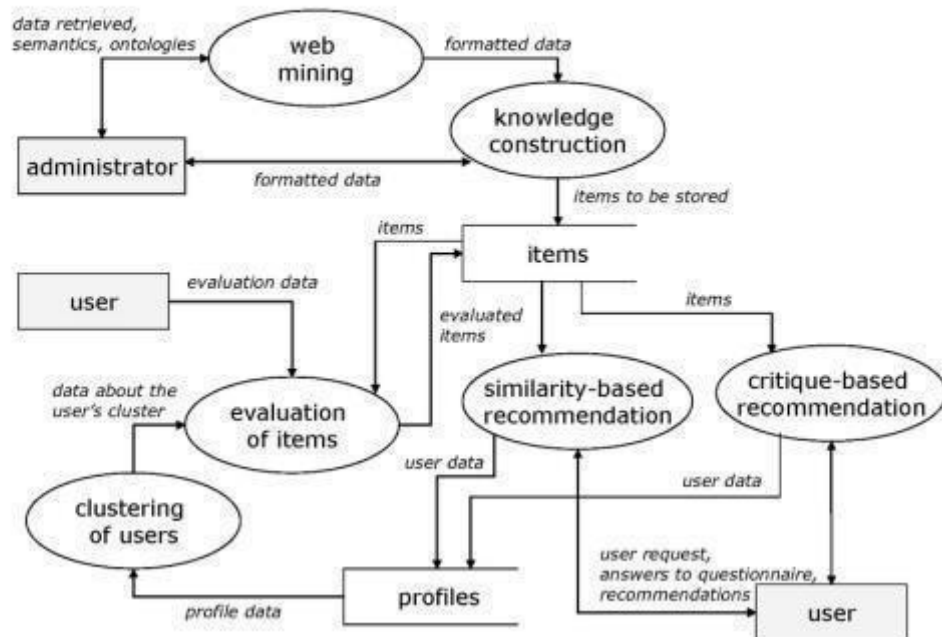
FR No.	Non-Functional Requirement	Description
NFR-1	<b>Usability</b>	Ease of use of the application for the user
NFR-2	<b>Security</b>	User privacy is the highest priority of the application. Security measures are undertaken for the user
NFR-3	<b>Reliability</b>	It can handle more than 2000 users at a time. It can process and initialize most functions.
NFR-4	<b>Performance</b>	The application can handle complex tasks and supports multi-tasking.
NFR-5	<b>Availability</b>	It is a free web and application available on all platforms.
NFR-6	<b>Scalability</b>	With higher workloads the user will experience a 10 to 17% drop in performance.

## 5. PROJECT DESIGN

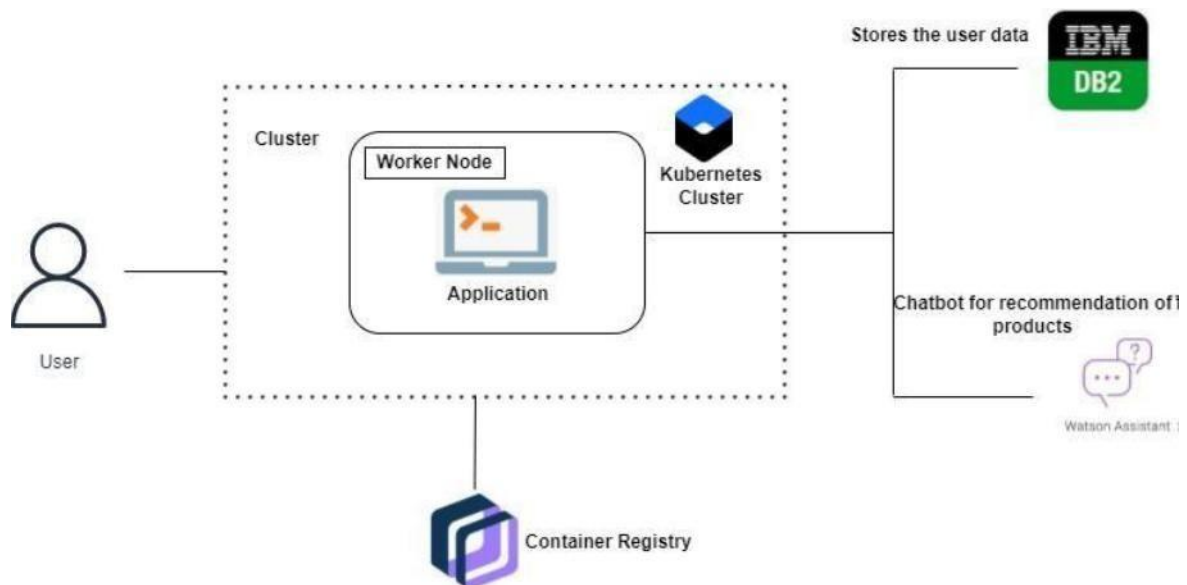
### 5.1 Data Flow Diagrams



## DFD of Fashion Recommender (Industry Standard)



## 5.2 Solution & Technical Architecture





**USER**



**Chat Bot**



**recommender  
systems**



**DataBase**



**Dress Collections**



**USER**

**Admin**



**Dartabase**



**StockManitanace**

**Table-1 : Components & Technologies:**

S.No	Component	Description	Technology
1	User Interface	user interaction with application e.g. Web UI & Chatbot	HTML, CSS,Bootstrap JavaScript
2	Application Logic	Logic for a process in the application	Python - Flask
3	Email Service	For verify user and mail ads	SendGrid
4	Chatbot	Get details from user and store	IBM Watson Assistant
5	Cloud Database	Database Service on Cloud	IBM DB2
6	Infrastructure(Server/Client)	Application Deployment on Cloud System	Docker, Cloud Foundry, Kubernetes, etc.

**Table-2: Application Characteristics**

S.No	Characteristics	Description	Technology
1	Open Source Frameworks	Used Web technologies	HTML , CSS , JS , Python , Flask
2	Security Infrastructure	User verification through Email Service	Sendgrid
3	Scalable Architecture	Run the app in Local and Cloud System	Docker and Kubernetes
4	Availability	Justify the availability of application (e.g. use of load balancers, distributed servers etc.)	Docker,IBM
5	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's) etc.	IBM Cloud , Kubernetes Cluster , Container Registry

### 5.3 User Stories

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Re
Customer(Mobile user)	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account / dashboard	High	Sp 1
		USN-2	As a user, I will receive confirmation email once I have registered for the application	I can receive confirmation email & click confirm	High	Sp 1
		USN-3	As a user, I can register for the application through Facebook	I can register & access the dashboard with Facebook Login	Low	Sp 2
		USN-4	As a user, I can register for the application through Gmail		Medium	Sp 1
	Login	USN-5	As a user, I can log into the application by entering email & password	I can access my data by login	High	Sp 1
	Dashboard	USN-6	As a user , I can view the dashboard and byproducts		High	Sp
Customer (Web user)	Registration /Login	USN-7	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account / dashboard		Sp 1
Customer Care Executive	Contact with Customers	USN-8	As a Customer customers care executive,I solve the customer Requirements and feedback	I can receive calls from customers	High	Sp 1

Administrator	Stock and price order	USN-9	As a Administrator , I can Check the database And stock details and buying and selling prices	I am the administrator of the company	High	Sp 1
---------------	-----------------------	-------	---	---------------------------------------	------	------

## 6. PROJECT PLANNING & SCHEDULING

### 6.1 Sprint Planning & Estimation

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	User Panel	USN-1	The user login into	20	High	Praveen Kumar S Premkumar C

			the website and go through the availability of products on it.			Raghu K V Srinath S
Sprint-2	Admin Panel	USN-2	The role of the admin is to check out the database of the product stock and track all the things that the customers are purchasing.	20	High	Praveen Kumar S Premkumar C Raghu K V Srinath S
Sprint-3	Chat Bot	USN-3	The user can directly talk to Chatbot about the products. Get the recommendations based on the information provided by the users.	20	High	Praveen Kumar S Premkumar C Raghu K V Srinath S
Sprint-4	Final delivery	USN-4	Container of applications using kubernetes and deployment of the application. Create the documentaion and final submit the application.	20	High	Praveen Kumar S Premkumar C Raghu K V Srinath S

## 6.2 Sprint Delivery Schedule

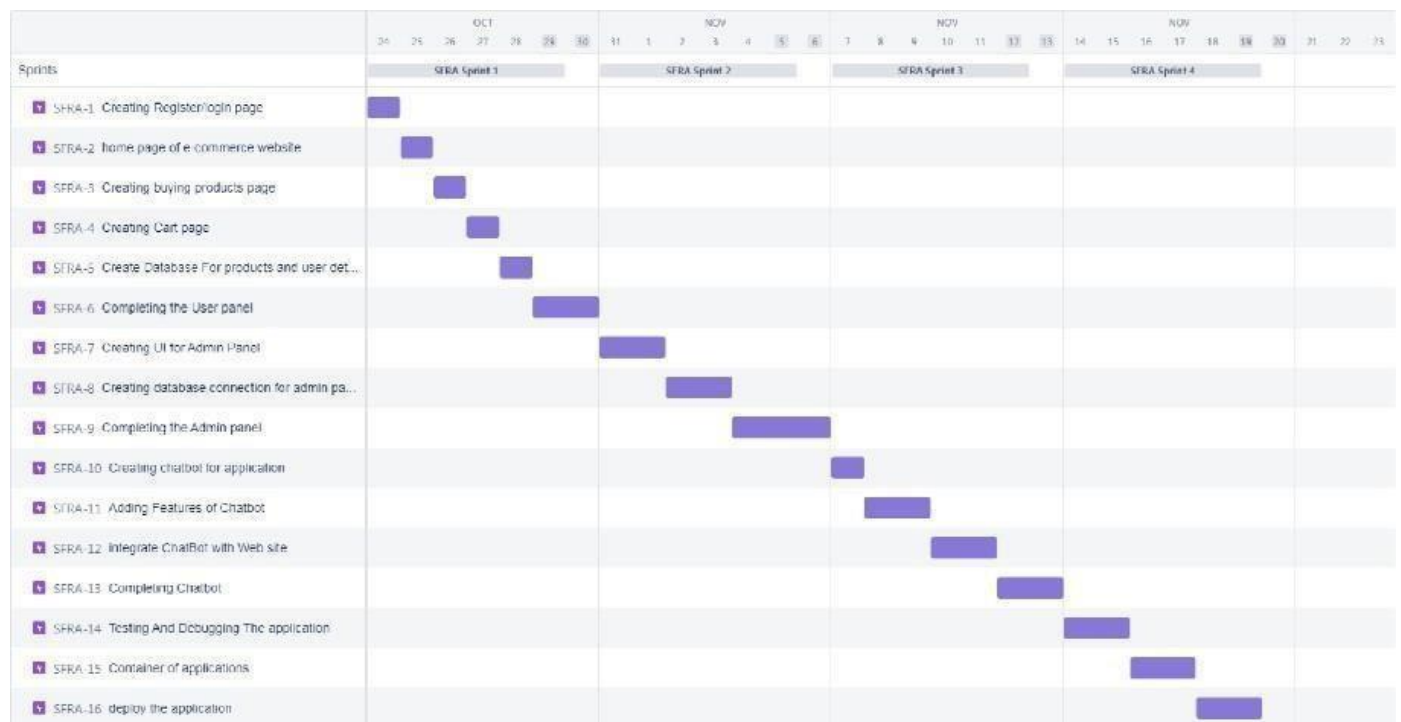
Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned	Sprint Release Date (Actual)

Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	05 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	12 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	19 Nov 2022

## 6.3 Reports from JIRA

### Burndown Chart:

A burn down chart is a graphical representation of work left to do versus time. It is often used in agile software development methodologies such as Scrum. However, burn down charts can be applied to any project containing measurable progress over time.



## 7. CODING AND SOLUTIONING

### Feature 1

#### Cart Page

```
<!DOCTYPE html>
```

```
<html lang="en">
```

```
<head>
```

```
  <meta charset="UTF-8">
```

```
  <meta http-equiv="X-UA-Compatible" content="IE=edge">
```

```
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
```

```
  <title>Cart</title>
```

```
  <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/4.7.0/css/font-awesome.min.css">
```

```
  <link rel="stylesheet" href="https://rakesh87.s3.us-east.cloud-object-storage.appdomain.cloud/style.css">
```

```
</head>
```

```
<body>
```

```
  <section id="header">
```

```
    <a href="#"></a>
```

```
  <div>
```

```
    <ul id="navbar">
```

```
      <li><a href="index.html">Home</a></li>
```

```
      <li><a href="products.html">Products</a></li>
```

```
      <li><a href="blog.html">Blog</a></li>
```

```
      <li><a href="about.html">About</a></li>
```

```
      <li><a href="contact.html">Contact</a></li>
```

```
      <li><a class="active" href="cart.html"><i class="fa fa-shopping-bag"></i></a></li>
```

```
      <li><a href="register.html"><i class="fa fa-user-secret"></i></a></li>
```

```
    </ul>
```

```
  </section>
```

```
  <section id="page-header" class="about-header">
```

```
    <h2>#Cart</h2>
```

<p>Add your coupon code & SAVE upto 70%!</p>

</section>

<section id="cart" class="section-p1">

<table width="100%">

<thead>

<tr>

<td>Remove</td>

<td>Image</td>

<td>Product</td>

<td>Price</td>

<td>Quantity</td>

<td>Subtotal</td>

</tr>

</thead>

<tbody>

<tr>

<td><i class=" fa fa-circle" ></i></td>

<td></td>

<td>Men's brown wallet</td>

<td>₹1000</td>

<td><input type="number" value="1"></td>

<td>₹1000</td>

</tr>

<tr>

<td><i class=" fa fa-circle" ></i></td>

<td></td>

<td>Men's hoodie jacket</td>

<td>₹1500</td>

<td><input type="number" value="1"></td>

<td>₹1500</td>



```
</tr>

<tr>

<td><i class=" fa fa-circle" ></i></td>

<td></td>

<td>Leather Shoe-Brown</td>

<td>₹9800</td>

<td><input type="number" value="1"></td>

<td>₹9800</td>

</tr>

</tbody>

</table>

</section>
```

```
<section id="cart-add" class="section-p1">

<div id="coupon">

<h3>Apply Coupon</h3>

<div>

<input type="text" placeholder="Enter your Coupon">

<button class="normal" >Apply</button>

</div>

</div>
```

```
<div id="subtotal">
```

```
<h3>Cart Total</h3>
```

```
<table>
```

```
<tr>
```

```
<td>Cart Subtotal</td>
```

```
<td>12300</td>
```

```
</tr>
```

```
<tr>
```

```
<td>Shipping</td>
```

<td>Free</td>

</tr>

<tr>

<td><strong>Total</strong></td>

<td><strong>12300</strong></td>

</tr>

</table><br>

<button class="normal">Proceed to checkout</button>

</div>

</section>

<footer class="section-pl">

<div class="col">



<h4>Contact</h4>

<p><strong>E-Mail: </strong>rstsmartfashion@gmail.com</p>

<p><strong>Phone: </strong>1234567890</p>

<div class="follow">

<h4>Follow us</h4>

<div class="icon">

<i class="fa fa-facebook-f"></i>

<i class="fa fa-twitter"></i>

<i class="fa fa-instagram"></i>

<i class="fa fa-pinterest-p"></i>

<i class="fa fa-youtube"></i>

</div>

</div>

</div>

<div class="col">

<h4>About</h4>

[About us](#)

[Delivery Information](#)

[Privacy Policy](#)

[Terms & Conditions](#)

[Contact us](#)

#### My Account

[Sign In](#)

[View Cart](#)

[My Wishlist](#)

[Track my order](#)

[Help](#)

C 2022, PNT2022TMID16242- Smart Fashion Recommender Application

## Index Page

<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="UTF-8">

<meta http-equiv="X-UA-Compatible" content="IE=edge">

<meta name="viewport" content="width=device-width, initial-scale=1.0">

```
<title>RST/Home</title>

<link      rel="stylesheet"      href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/4.7.0/css/font-
awesome.min.css">

<link rel="stylesheet" href="https://rakesh87.s3.us-east.cloud-object-storage.appdomain.cloud/style.css">
</head>

<body>

<section id="header">

    <a          href="#"></a>

<div>

    <ul id="navbar">

        <li><a class="active" href="index.html">Home</a></li>

        <li><a href="products.html">Products</a></li>

        <li><a href="blog.html">Blog</a></li>

        <li><a href="about.html">About</a></li>

        <li><a href="contact.html">Contact</a></li>

        <li><a href="cart.html"><i class="fa fa-shopping-bag"></i></a></li>

        <li><a href="register.html"><i class="fa fa-user-secret"></i></a></li>

    </ul>

</section>

<section id="hero">

    <h4>"Happiness Depends Upon Ourselves"</h4>

    <h2>Smart Fashion Recommender</h2>

    <h1>Application</h1>

    <p>Dress Up In Confidence</p>

    <button class="normal">Shop now</button>

</section>

<section id="feature" class="section-p1">
```

```
<div class="fe-box">

    <h6>Free Shipping</h6>

</div>

<div class="fe-box">

    <h6>Online Order</h6>

</div>

<div class="fe-box">

    <h6>Save Money</h6>

</div>

<div class="fe-box">

    <h6>Promotions</h6>

</div>

<div class="fe-box">

    <h6>Happy Sell</h6>

</div>

<div class="fe-box">

    <h6>F24/7 Support</h6>

</div>

</section>

<section id="product1" class="section-p1">

    <h2>Featured Product</h2>

    <p>New Collections New Modern Designs</p>
```

```
<div class="pro-container">

  <div class="pro">

    <div class="des">

      <span>Attitude</span>

      <h5>Blue n Brown T-Shirts</h5>

      <div class="star">

        <i class="fa fa-star"></i>

        <i class="fa fa-star"></i>

        <i class="fa fa-star"></i>

        <i class="fa fa-star"></i>

        <i class="fa fa-star"></i>

      </div>

      <h4>₹1500</h4>

    </div>

    <a href="#"><i class="fa fa-shopping-bag bag"></i></a>

  </div>

  <div class="pro">

    <div class="des">

      <span>U.S.Polo Assnn</span>

      <h5>Blue strip T-Shirts</h5>

      <div class="star">

        <i class="fa fa-star"></i>

        <i class="fa fa-star"></i>

        <i class="fa fa-star"></i>

        <i class="fa fa-star"></i>

        <i class="fa fa-star"></i>

      </div>

      <h4>₹1570</h4>

    </div>

    <a href="#"><i class="fa fa-shopping-bag bag"></i></a>
```

</div>

<div class="pro">



<div class="des">

<span>Zara</span>

<h5>Plain T-Shirts</h5>

<div class="star">

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

</div>

<h4>₹1400</h4>

</div>

<a href="#"><i class="fa fa-shopping-bag bag"></i></a>

</div>

<div class="pro">



<div class="des">

<span>Ruralking</span>

<h5>Checked T-Shirts</h5>

<div class="star">

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

</div>

<h4>₹2000</h4>

</div>

<a href="#"><i class="fa fa-shopping-bag bag"></i></a>

</div>

<div class="pro">



<div class="des">

<span>Banarasi</span>

<h5>Georgette Bandhani Rama Blue & Olive Green Saree</h5>

<div class="star">

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

</div>

<h4>₹10,000</h4>

</div>

<a href="#"><i class="fa fa-shopping-bag bag"></i></a>

</div>

<div class="pro">



<div class="des">

<span>Banarasi</span>

<h5>Banarasi Silk Jaal Dark Maroon Saree</h5>

<div class="star">

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

</div>

<h4>₹9000</h4>

</div>

<a href="#"><i class="fa fa-shopping-bag bag"></i></a>



</div>

<div class="pro">



<div class="des">

<span>Banarasi</span>

<h5>Banarasi Silk Buttis Yellow Saree</h5><br>

<div class="star">

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

</div>

<h4>₹8000</h4>

</div>

<a href="#"><i class="fa fa-shopping-bag bag"></i></a>

</div>

<div class="pro">



<div class="des">

<span>Banarasi</span>

<h5>Banarasi Silk Jaal Purple Saree</h5><br>

<div class="star">

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

</div>

<h4>₹6000</h4>

</div>

<a href="#"><i class="fa fa-shopping-bag bag"></i></a>

</div>

</div>

</section>

<section id="banner" class="section-m1">

<h4>Repair Services</h4>

<h2>Up to <span>70% off</span> All t-Shirts & Accessories</h2>

<a href="products.html"><button class="normal">Explore More</button></a>

</section>

<section id="product1" class="section-p1">

<h2>New Arrivals</h2>

<p>Branded shoe's and T-shirts </p>

<div class="pro-container">

<div class="pro">



<div class="des">

<span>adidas</span>

<h5>Blue Shoe</h5>

<div class="star">

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

</div>

<h4>₹6000</h4>

</div>

<a href="#"><i class="fa fa-shopping-bag bag"></i></a>

</div>

<div class="pro">

```

<div class="des">
  <span>Bata</span>
  <h5>Brown leather shoe</h5>
  <div class="star">
    <i class="fa fa-star"></i>
    <i class="fa fa-star"></i>
    <i class="fa fa-star"></i>
    <i class="fa fa-star"></i>
    <i class="fa fa-star"></i>
  </div>
  <h4>₹8000</h4>
</div>
<a href="#"><i class="fa fa-shopping-bag bag"></i></a>
</div>
<div class="pro">
  
  <div class="des">
    <span>Nike</span>
    <h5>Sandle High Heel</h5>
    <div class="star">
      <i class="fa fa-star"></i>
      <i class="fa fa-star"></i>
      <i class="fa fa-star"></i>
      <i class="fa fa-star"></i>
      <i class="fa fa-star"></i>
    </div>
    <h4>₹6600</h4>
  </div>
  <a href="#"><i class="fa fa-shopping-bag bag"></i></a>
</div>
```

```
<div class="pro">

  <div class="des">

    <span>Walkaroo</span>

    <h5>Brown High Heel</h5>

    <div class="star">

      <i class="fa fa-star"></i>

      <i class="fa fa-star"></i>

      <i class="fa fa-star"></i>

      <i class="fa fa-star"></i>

      <i class="fa fa-star"></i>

    </div>

    <h4>₹7800</h4>

  </div>

  <a href="#"><i class="fa fa-shopping-bag bag"></i></a>

</div>

<div class="pro">

  <div class="des">

    <span>Zara</span>

    <h5>Black Smile T-Shirts</h5>

    <div class="star">

      <i class="fa fa-star"></i>

      <i class="fa fa-star"></i>

      <i class="fa fa-star"></i>

      <i class="fa fa-star"></i>

      <i class="fa fa-star"></i>

    </div>

    <h4>₹900</h4>

  </div>

  <a href="#"><i class="fa fa-shopping-bag bag"></i></a>

</div>
```

```
<div class="pro">

  <div class="des">

    <span>Zara</span>

    <h5>Pink dog T-Shirts</h5>

    <div class="star">

      <i class="fa fa-star"></i>

      <i class="fa fa-star"></i>

      <i class="fa fa-star"></i>

      <i class="fa fa-star"></i>

      <i class="fa fa-star"></i>

    </div>

    <h4>₹900</h4>

  </div>

  <a href="#"><i class="fa fa-shopping-bag bag"></i></a>

</div>

<div class="pro">

  <div class="des">

    <span>Zara</span>

    <h5>Black and White Trendy Shirt</h5>

    <div class="star">

      <i class="fa fa-star"></i>

      <i class="fa fa-star"></i>

      <i class="fa fa-star"></i>

      <i class="fa fa-star"></i>

      <i class="fa fa-star"></i>

    </div>

    <h4>₹1500</h4>

  </div>

  <a href="#"><i class="fa fa-shopping-bag bag"></i></a>

</div>
```

```
<div class="pro">
  
  <div class="des">
    <span>Zara</span>
    <h5>Green Panda Shirt</h5>
    <div class="star">
      <i class="fa fa-star"></i>
      <i class="fa fa-star"></i>
      <i class="fa fa-star"></i>
      <i class="fa fa-star"></i>
      <i class="fa fa-star"></i>
    </div>
    <h4>₹600</h4>
  </div>
  <a href="#"><i class="fa fa-shopping-bag bag"></i></a>
</div>
</div>
</section>
```

```
<section id="sm-banner" class="section-p1">
  <div class="banner-box">
    <h4>Crazy Deals</h4>
    <h2>Buy 1 get 1 free</h2>
    <span>The best classic dress is on sale at U Nik</span>
    <a href="products.html"><button class="white">Learn More </button></a>
  </div>
  <div class="banner-box banner-box2">
    <h4>spring/summer</h4>
    <h2>upcommig seasons</h2>
    <span>The best classic dress is on sale at U Nik</span>
    <a href="blog.html"><button class="white">Collection</button></a>
  </div >
```

</section>

<section id="banner3">

<div class="banner-box">

<h2>SEASONAL SALE</h2>

<h3>Winter collection 50% off</h3>

</div >

<div class="banner-box banner-box2">

<h2>SEASONAL SALE</h2>

<h3>Winter collection 50% off</h3>

</div >

<div class="banner-box banner-box3">

<h2>SEASONAL SALE</h2>

<h3>Winter collection 50% off</h3>

</div >

</section>

<section id="newsletter" class="section-p1">

<div class="newstext">

<h4>Sign up for NewsLetters</h4>

<p>Get Email updates about our latest shop and <span>special offer</span>

</p>

</div>

<div class="form">

<input type="text" placeholder="Your E-mail Address">

<button class="normal">Sign Up</button>

</div>

</section>

<footer class="section-p1">

<div class="col">



<h4>Contact</h4>

<p><strong>E-Mail: </strong>rstsmartfashion@gmail.com</p>

<p><strong>Phone: </strong>1234567890</p>

<div class="follow">

<h4>Follow us</h4>

<div class="icon">

<i class="fa fa-facebook-f"></i>

<i class="fa fa-twitter"></i>

<i class="fa fa-instagram"></i>

<i class="fa fa-pinterest-p"></i>

<i class="fa fa-youtube"></i>

</div>

</div>

</div>

<div class="col">

<h4>About</h4>

<a href="#">About us</a>

<a href="#">Delivery Information</a>

<a href="#">Privacy Policy</a>

<a href="#">Terms & Conditions</a>

<a href="#">Contact us</a>

</div>

<div class="col">

<h4>My Account</h4>

<a href="#">Sign In</a>

<a href="#">View Cart</a>

<a href="#">My Wishlist</a>

<a href="#">Track my order</a>

<a href="#">Help</a>

</div>



```
</footer>

<div class="copyright">
    <center><p>© 2022, PNT2022TMID16242 - Smart Fashion Recommender Application
</p></center>

</div>

<script src="script.js"></script>
</body>
</html>
```

## Login Page

```
<!DOCTYPE html>
<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta http-equiv="X-UA-Compatible" content="IE=edge">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>Login</title>

    <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/4.7.0/css/font-
awesome.min.css">

    <link rel="stylesheet" href="https://rakesh87.s3.us-east.cloud-object-storage.appdomain.cloud/style.css">
</head>

<body>

    <section id="header">

        <a href="#"></a>

        <div>

            <ul id="navbar">
```

```
<li><a class="active" href="index.html">Home</a></li>
<li><a href="products.html">Products</a></li>
<li><a href="blog.html">Blog</a></li>
<li><a href="about.html">About</a></li>
<li><a href="contact.html">Contact</a></li>
<li><a href="cart.html"><i class="fa fa-shopping-bag"></i></a></li>
<li><a href="cart.html"><i class="fa fa-user-secret"></i></a></li>
</ul>
```

```
</section>
```

```
<section id="login">
```

```
<form>
```

```
<div class="imgcontainer">
```

```
<h2>User Login</h2>
```

```

```

```
</div>
```

```
<div class="container">
```

```
<label for="mailid"><b>E-Mail</b></label>
```

```
<input type="text" placeholder="Enter your E-Mail" name="email" required>
```

```
<label for="psw"><b>Password</b></label>
```

```
<input type="password" placeholder="Enter Password" name="psw" required>
```

```
<button type="submit">Login</button>
```

```
<label>
```

```
<input type="checkbox" checked="checked" name="remember"> Remember me
```

```
</label>
```

```
</div>
```

```
<div class="container signin">
```

<p>Forget Password <a href="#"> Click here </a>.</p>

</div>

</form>

</section>

<footer class="section-pl">

<div class="col">



<h4>Contact</h4>

<p><strong>E-Mail: </strong>rstsmartfashion007@gmail.com</p>

<p><strong>Phone: </strong>1234567890</p>

<div class="follow">

<h4>Follow us</h4>

<div class="icon">

<i class="fa fa-facebook-f"></i>

<i class="fa fa-twitter"></i>

<i class="fa fa-instagram"></i>

<i class="fa fa-pinterest-p"></i>

<i class="fa fa-youtube"></i>

</div>

</div>

</div>

<div class="col">

<h4>About</h4>

<a href="#">About us</a>

<a href="#">Delivery Information</a>

<a href="#">Privacy Policy</a>

<a href="#">Terms & Conditions</a>

<a href="#">Contact us</a>

</div>

```
<div class="col">
```

```
  <h4>My Account</h4>
```

```
  <a href="#">Sign In</a>
```

```
  <a href="#">View Cart</a>
```

```
  <a href="#">My Wishlist</a>
```

```
  <a href="#">Track my order</a>
```

```
  <a href="#">Help</a>
```

```
</div>
```

```
</footer>
```

```
  <div class="copyright">
```

```
    <center><p>  C  2022, PNT2022TMID16242 - Smart Fashion Recommender Application  
</p></center>
```

```
  </div>
```

```
<script src="script.js"></script>
```

```
</body>
```

```
</html>
```

## 8. TESTING

### 8.1 Test Cases

A test case is a set of actions performed on a system to determine if it satisfies software requirements and functions correctly. The purpose of a test case is to determine if different features within a system are performing as expected and to confirm that the system satisfies all related standards, guidelines and customer requirements. The process of writing a test case can also help reveal errors or defects within the system. Test cases are typically written by members of the quality assurance (QA) team or the testing team and can be used as step-by-step instructions for each system test. Testing begins once the development team has finished a system feature or set of features. A sequence or collection of test cases is called a test suite. A test case document includes test steps, test data, preconditions and the post conditions that verify requirements.

#### Why test cases are important:

Test cases define what must be done to test a system, including the steps executed in the system, the input data values that are entered into the system and the results that are expected throughout test case execution. Using test cases allows developers and testers to discover errors that may have occurred during development or defects that were missed during ad hoc tests.

The benefits of an effective test case include:

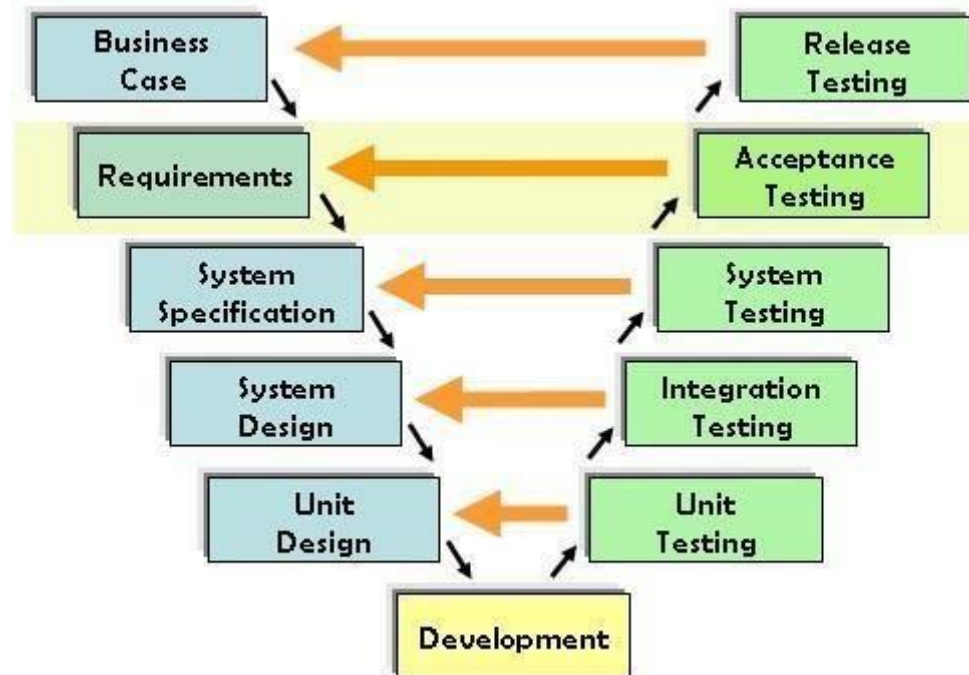
- Guaranteed good test coverage.
- Reduced maintenance and software support costs.
- Reusable test cases.
- Confirmation that the software satisfies end-user requirements.
- Improved quality of software and user experience.
- Higher quality products lead to more satisfied customers.
- More satisfied customers will increase company profits.

Overall, writing and using test cases will lead to business optimization. Clients are more satisfied, customer retention increases, the costs of customer service and fixing products decreases, and more reliable products are produced, which improves the company's reputation and brand image.

### 8.2 User Acceptance Testing

User acceptance testing (UAT), also called application testing or end-user testing, is a phase of software development in which the software is tested in the real world by its intended audience. User Acceptance Testing (UAT) is a type of testing performed by the end user or the client to verify/accept the software system before moving the software application to the production environment. UAT is done in the final phase of testing after functional, integration and system testing is done.

UAT testing meaning can also be defined as the user methodology where the developed software is tested by the business user to validate if the software is working as per the specifications defined. This type of testing is also known as beta testing, application testing, or more commonly end-user testing. The main **Purpose of UAT** is to validate end to end business flow. It does not focus on cosmetic errors, spelling mistakes or system testing. User Acceptance Testing is carried out in a separate testing environment with production-like data setup. It is kind of black box testing where two or more end- users will be involved.



## 8.2 Testing architecture

UAT is performed by:

- Client
- End users

### Need of User Acceptance Testing:

Need of User Acceptance Testing arises once software has undergone Unit, Integration and System testing because developers might have built software based on requirements document by their own understanding and further required changes during development may not be effectively communicated to them, so for testing whether the final product is accepted by client/end-user, user acceptance testing is needed.

1



- Developers have included features on their "own" understanding

2



- Requirements changes "not communicated" effectively to the developers

- Developers code software based on requirements document which is their “own” understanding of the requirements and **may not actually be what the client needs from the software**.
- Requirements changes during the course of the project may not be communicated effectively to the developers.

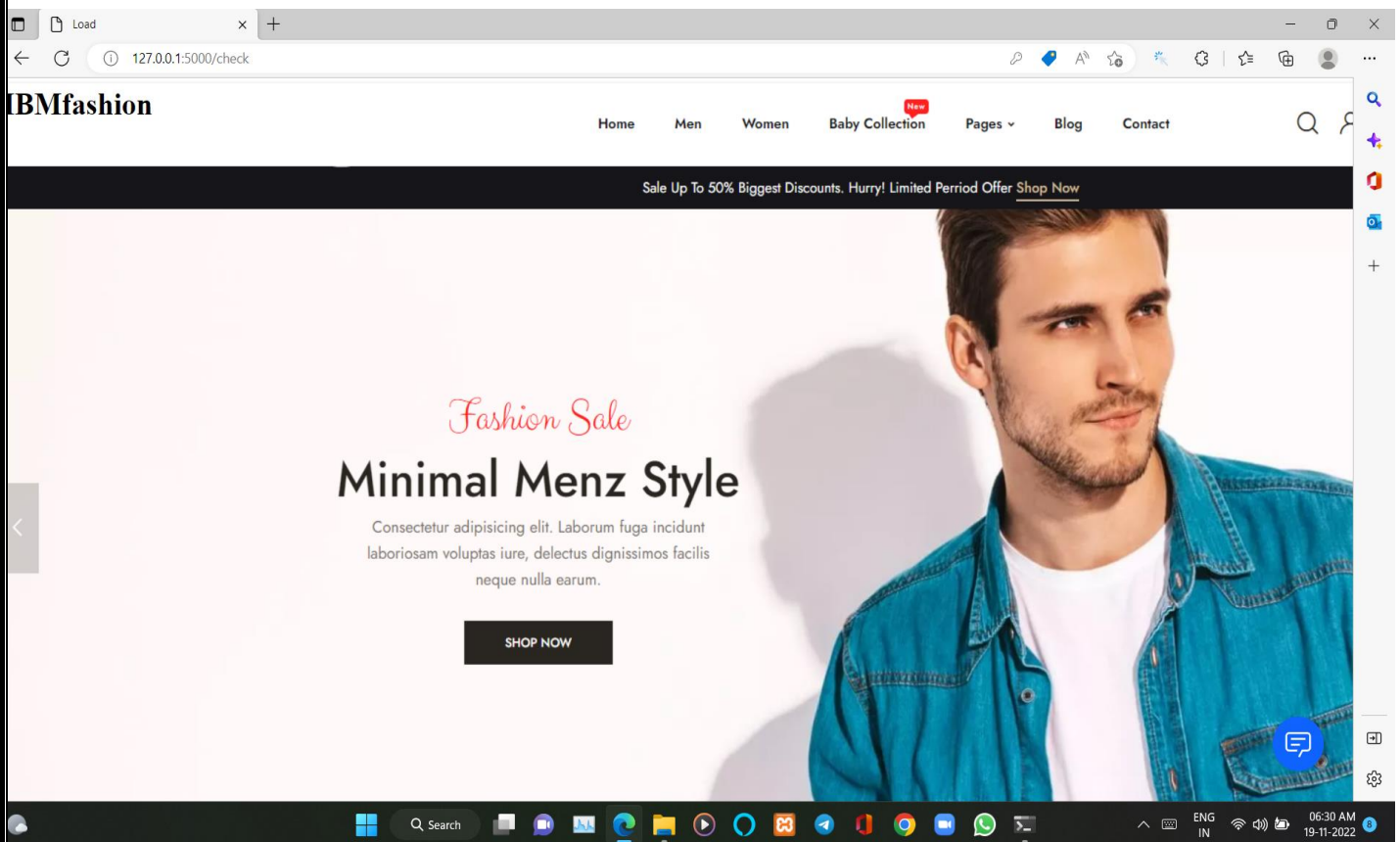
### Prerequisites of User Acceptance Testing:

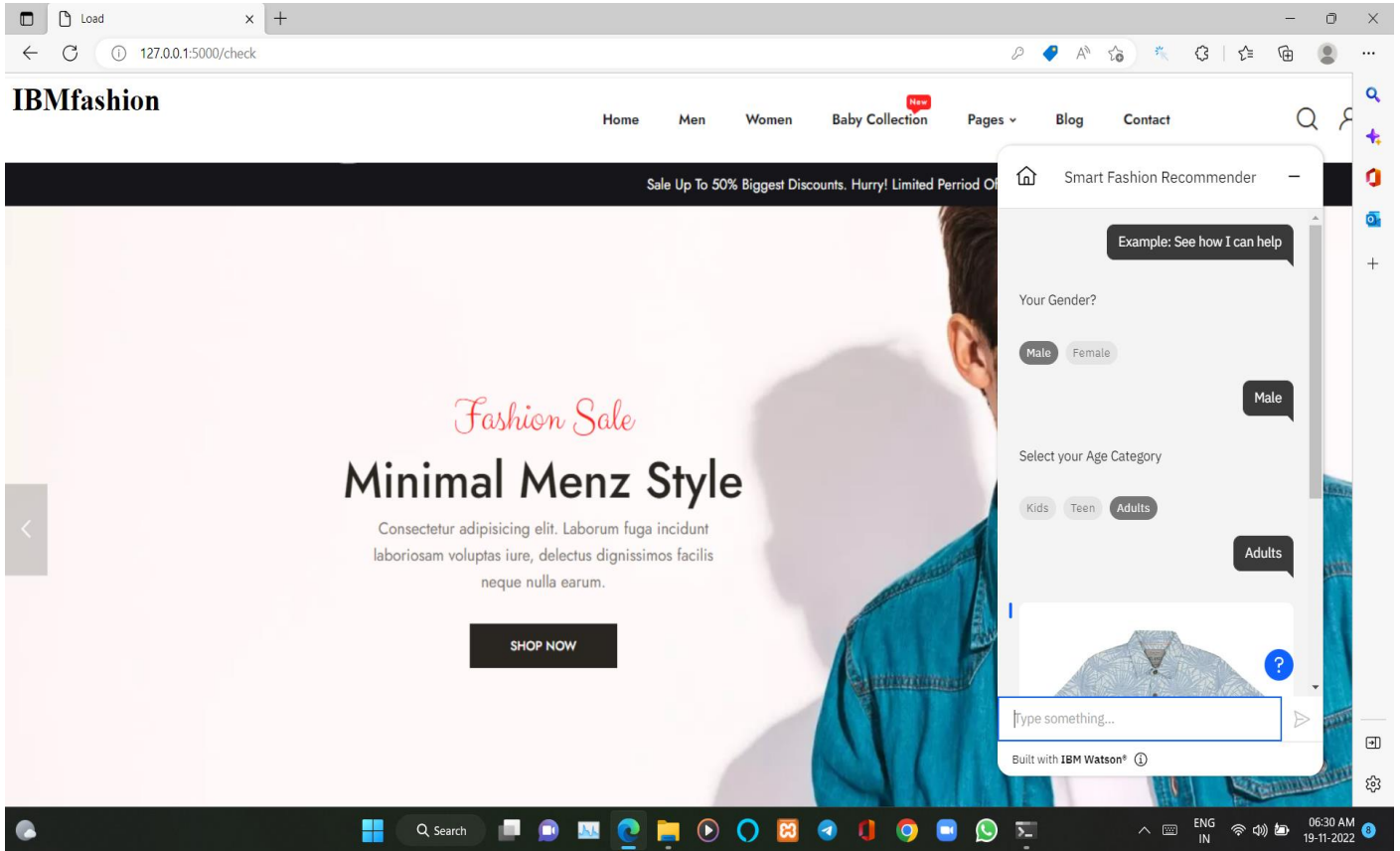
Following are the entry criteria for User Acceptance Testing:

Business Requirements must be available.

- Application Code should be fully developed
- Unit Testing, Integration Testing & System Testing should be completed
- No Showstoppers, High, Medium defects in System Integration Test Phase –
- Only Cosmetic error is acceptable before UAT
- Regression Testing should be completed with no major defects
- All the reported defects should be fixed and tested before UAT
- Traceability matrix for all testing should be completed
- UAT Environment must be ready
- Sign off mail or communication from System Testing Team that the system is ready for UAT execution.

## 9. RESULT





## 9.1. Performance metrics:

The performance of a recommendation algorithm is evaluated by using some specific metrics that indicate the accuracy of the system. The type of metric used depends on the type of filtering technique. Root Mean Square Error (RMSE), Receiver Operating Characteristics (ROC), Area Under Cover (AUC), Precision, Recall, and F1 score is generally used to evaluate the performance or accuracy of the recommendation algorithms. Root-mean-square error (RMSE). RMSE is widely used in evaluating and comparing the performance of a recommendation system model compared to models. A lower RMSE value indicates higher performance by the recommendation model. RMSE, as mentioned can be as represented as follows:

$$RMSE = \sqrt{\frac{1}{N_p} \sum_{u,i} (p_{ui} - r_{ui})^2}$$

Where  $N_p$  is the total number of predictions,  $p_{ui}$  is the predicted rating that a user  $u$  will select item  $i$ , and  $r_{ui}$  is the real rating.

**Precision.** Precision can be defined as the fraction of correct recommendations or predictions (known as True Positive) to the total number of recommendations provided, which can be as represented as follows:

$$\text{Precision} = \frac{\text{True Positive (TP)}}{\text{True Positive (TP)} + \text{False Positive (FP)}}$$

It is also defined as the ratio of the number of relevant recommended items to the number of recommended items expressed as percentages.

**Recall.** Recall can be defined as the fraction of correct recommendations or predictions (known as True Positive) to the total number of correct relevant recommendations provided, which can be as represented as follows:

$$\text{Recall} = \frac{\text{True Positive (TP)}}{\text{True Positive (TP)} + \text{False Negative (FN)}}$$



It is also defined as the ratio of the number of relevant recommended items to the total number of relevant items expressed as percentages.

**F1 Score.** The F1 score is an indicator of the accuracy of the model and ranges from 0 to 1, where a value close to 1 represents a higher recommendation or prediction accuracy. It represents precision and recall as a single metric and can be as represented as follows:

$$\text{F1 score} = 2 \times \text{Precision Recall} / (\text{Precision} + \text{Recalls})$$

**Coverage.** Coverage is used to measure the percentage of items that are recommended by the algorithm among all of the items.

**Accuracy.** Accuracy can be defined as the ratio of the number of total correct recommendations to the total recommendations provided, which can be as represented as follows:

$$\text{Accuracy} = \text{TP} + \text{FN} / (\text{TP} + \text{FN} + \text{TN} + \text{FP})$$

**Intersection over union (IoU).** It represents the accuracy of an object detector used on a specific dataset  $\text{IoU} = \text{TP} / (\text{TP} + \text{FN} + \text{FP})$

**ROC.** The ROC curve is used to conduct a comprehensive assessment of the algorithm's performance.

**AUC.** AUC measures the performance of the recommendation and its baselines as well as the quality of the ranking based on pairwise comparisons. Rank aware top-N metrics. The rank-aware top-N recommendation metric finds some of the interesting and unknown items that are presumed to be most attractive to a user. Mean reciprocal rank (MRR), mean average precision (MAP), and normalized discounted cumulative gain (NDCG) are the three most popular rank-aware metrics.

## 10. ADVANTAGES AND DISADVANTAGES

### Advantages

- Build self-confidence and poise.
- Develop skills in planning, selecting, and making clothing for different occasions.
- Select appropriate accessories
- Develop good posture, grooming, and punctuality habits.
- Complete applications clearly and submit them on time.
- Acquire knowledge and skills in planning, presenting, and participating in fashion revues.
- To introduce the member and his/her project.
- To focus on skills learned in the clothing and textile project.
- To express challenges, fashion trends, and cost savings.
- To interest the audience in 4-H activities.
- To display the garment attractively.

## **Disadvantages**

- That is why smart fashion technology needs to take into consideration not only how it makes consumers feel, but what it does for their bodies.
- The high cost of energy.
- One of the main challenges faced in producing smart fashion accessories the negative environmental impact of the production process and the high cost of electricity in manufacturing these smart clothes.
- While top energy companies are working hard to reduce waste and reduce their energy consumption, smart accessories will only add to waste and energy usage.

### **Skin Problem**

- While there's no major report about getting skin infection because of heavy use of smart fashion, there's a chance of negative impacts of this wearable tech is poorly designed.

### **Smart clothes are expensive**

- Smart clothing technology is still in the infancy stage, and not many companies are producing this smart fabric on a large scale because of the production cost that's huge, therefore, not affordable for everyone at the moment

## **11. CONCLUSION**

In this project, we have presented a novel framework for fashion recommendation that is driven by data, visually related and simple effective recommendation systems for generating fashion product images. The proposed approach uses a two-stage phase. Initially, our proposed approach extracts the features of the image using CNN classifier ie., for instance allowing the customers to upload any random fashion image from any E-commerce website and later generating similar images to the uploaded image based on the features and texture of the input image. It is imperative that such research goes forward to facilitate greater recommendation accuracy and improve the overall experience of fashion exploration for direct and indirect consumers alike.

## **12. FUTURE SCOPE**

- Nowadays, fashion applications and e-commerce are growing more and more. And it also has some problems when finding the customer's wanted product in the web applications.
- Having a chatbot that understands the algorithm of a specific application can be of great aid. We are implementing such a chat bot in a web application, which is fed with the knowledge of the application's algorithm and helps the user completely from finding their needs to processing the payment and initiating delivery.
- It works as an advanced filter search that can bring the user what they want with the help of pictorial and named representation by getting simple user information and activities.

- The application also has two main UI interactions: one is the user panel and the other one is the admin panel.
- Users can interact with the chat bot to search for products, order them from the manufacturer or distributor through chatbot AI, and it can also make payment transactions, track the delivery, and so on.
- The admin interface enables the user to upload products' details ,user details, orders and find how many products have been bought; supervise the stock availability; and interact with the buyer regarding the product reviews.

## 13 . APPENDIX

### Product.html

```
<!DOCTYPE html>

<html lang="en">

<head>
  <meta charset="UTF-8">
  <meta http-equiv="X-UA-Compatible" content="IE=edge">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Product</title>
  <link      rel="stylesheet"      href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/4.7.0/css/font-awesome.min.css">
  <link rel="stylesheet" href="https://rakesh87.s3.us-east.cloud-object-storage.appdomain.cloud/style.css">
</head>

<body>

  <section id="header">
    <a          href="#"></a>

  <div>
    <ul id="navbar">
      <li><a href="index.html">Home</a></li>
      <li><a class="active" href="products.html">Products</a></li>
      <li><a href="blog.html">Blog</a></li>
      <li><a href="about.html">About</a></li>
```

<li><a href="contact.html">Contact</a></li>

<li><a href="cart.html"><i class="fa fa-shopping-bag"></i></a></li>

<li><a href="cart.html"><i class="fa fa-user-secret"></i></a></li>

</ul>

</section>

<section id="page-header">

<h2>Kindness Always Come Back</h2>

<p>Save more with coupons & up to 70% off</p>

</section>

<section id="product1" class="section-p1">

<div class="pro-container">

<div class="pro" onclick="window.location.href='sproduct.html'">



<div class="des">

<span>Serman</span>

<h5>Men's brown wallet</h5>

<div class="star">

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

</div>

<h4>₹1000</h4>

</div>

<a href="#"><i class="fa fa-shopping-bag bag"></i></a>

</div>

<div class="pro">



<div class="des">

<span>Serman</span>

<h5>Men's leather wallet</h5>

<div class="star">

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

</div>

<h4>₹1500</h4>

</div>

<a href="#"><i class="fa fa-shopping-bag bag"></i></a>

</div>

<div class="pro">



<div class="des">

<span>Serman</span>

<h5>Men's military wallet</h5>

<div class="star">

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

</div>

<h4>₹1800</h4>

</div>

<a href="#"><i class="fa fa-shopping-bag bag"></i></a>

</div>

<div class="pro">



<div class="des">

<span>Serman</span>

<h5>Men's hostler belt case</h5>

<div class="star">

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

</div>

<h4>₹2500</h4>

</div>

<a href="#"><i class="fa fa-shopping-bag bag"></i></a>

</div>

<div class="pro">



<div class="des">

<span>Zara</span>

<h5>Men's silver necklace</h5>

<div class="star">

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

</div>

<h4>₹1500</h4>

</div>

<a href="#"><i class="fa fa-shopping-bag bag"></i></a>

</div>

<div class="pro">



<div class="des">

<span>Lige</span>

<h5>Men's silver watch</h5>

<div class="star">

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

```
<i class="fa fa-star"></i>
<i class="fa fa-star"></i>
<i class="fa fa-star"></i>
</div>
<h4>₹5000</h4>
</div>
<a href="#"><i class="fa fa-shopping-bag bag"></i></a>
</div>
<div class="pro">
  
  <div class="des">
    <span>Zara</span>
    <h5>Men's chocolate perfume</h5>
    <div class="star">
      <i class="fa fa-star"></i>
      <i class="fa fa-star"></i>
      <i class="fa fa-star"></i>
      <i class="fa fa-star"></i>
      <i class="fa fa-star"></i>
    </div>
    <h4>₹2500</h4>
  </div>
  <a href="#"><i class="fa fa-shopping-bag bag"></i></a>
</div>
<div class="pro">
  
  <div class="des">
    <span>Zara</span>
    <h5>Men's blackbelt</h5>
    <div class="star">
      <i class="fa fa-star"></i>
      <i class="fa fa-star"></i>
      <i class="fa fa-star"></i>
      <i class="fa fa-star"></i>
    </div>
  </div>
</div>
```

```
        <i class="fa fa-star"></i>
    </div>
    <h4>₹1000</h4>
</div>
<a href="#"><i class="fa fa-shopping-bag bag"></i></a>
</div>
```

```
<div class="pro">
    
    <div class="des">
        <span>Ruralking</span>
        <h5>Men's hoodie jacket</h5><br>
        <div class="star">
            <i class="fa fa-star"></i>
            <i class="fa fa-star"></i>
            <i class="fa fa-star"></i>
            <i class="fa fa-star"></i>
            <i class="fa fa-star"></i>
        </div>
        <h4>₹1500</h4>
    </div>
    <a href="#"><i class="fa fa-shopping-bag bag"></i></a>
</div>
<div class="pro">
    
    <div class="des">
        <span>U.S.Polo Assnn</span>
        <h5>Men's lycra pant</h5>
        <div class="star">
            <i class="fa fa-star"></i>
            <i class="fa fa-star"></i>
            <i class="fa fa-star"></i>
            <i class="fa fa-star"></i>
            <i class="fa fa-star"></i>
        </div>
    </div>
    <a href="#"><i class="fa fa-shopping-bag bag"></i></a>
</div>
```



</div>

<h4>₹999</h4>

</div>

<a href="#"><i class="fa fa-shopping-bag bag"></i></a>

</div>

<div class="pro">



<div class="des">

<span>U.S.Polo Assnn</span>

<h5>Men's Mantis Green Marble</h5><br>

<div class="star">

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

</div>

<h4>₹1199</h4>

</div>

<a href="#"><i class="fa fa-shopping-bag bag"></i></a>

</div>

<div class="pro">



<div class="des">

<span>Attitude</span>

<h5>Men's striped men round</h5>

<div class="star">

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

</div>

<h4>₹999</h4>

</div>

<a href="#"><i class="fa fa-shopping-bag bag"></i></a>

</div>

<div class="pro">



<div class="des">

<span>Zara</span>

<h5>Men's stylish coat suit</h5>

<div class="star">

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

</div>

<h4>₹7500</h4>

</div>

<a href="#"><i class="fa fa-shopping-bag bag"></i></a>

</div>

<div class="pro">



<div class="des">

<span>adidas</span>

<h5>Leather Shoe-Brown</h5>

<div class="star">

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

</div>

<h4>₹9800</h4>

</div>

<a href="#"><i class="fa fa-shopping-bag bag"></i></a>

</div>

<div class="pro">



<div class="des">

<span>zara</span>

<h5>Men's silver bracelet</h5>

<div class="star">

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

</div>

<h4>₹4000</h4>

</div>

<a href="#"><i class="fa fa-shopping-bag bag"></i></a>

</div>

<div class="pro">



<div class="des">

<span>Ruralking</span>

<h5>Men's combo stylish dress</h5>

<div class="star">

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

</div>

<h4>₹11500</h4>

</div>

<a href="#"><i class="fa fa-shopping-bag bag"></i></a>

</div>

</div>

</section>

<section id="pagination" class="section-p1">

<a href="#">1</a>

<a href="product1.html">2</a>

<a href="product2.html">3</a>

<a href="#"><i class="fa fa-arrow-right"></i></a>

</section>

<section id="newsletter" class="section-p1">

<div class="newstext">

<h4>Sign up for NewsLetters</h4>

<p>Get Email updates about our latest shop and <span>special offer</span>

</p>

</div>

<div class="form">

<input type="text" placeholder="Your E-mail Address">

<button class="normal">Sign Up</button>

</div>

</section>

<footer class="section-p1">

<div class="col">



<h4>Contact</h4>

<p><strong>E-Mail: </strong>rstsmartfashion@gmail.com</p>

<p><strong>Phone: </strong>1234567890</p>

<div class="follow">

<h4>Follow us</h4>

<div class="icon">

<i class="fa fa-facebook-f"></i>

<i class="fa fa-twitter"></i>

<i class="fa fa-instagram"></i>

<i class="fa fa-pinterest-p"></i>

<i class="fa fa-youtube"></i>

</div>

</div>

</div>

<div class="col">

<h4>About</h4>

<a href="#">About us</a>

<a href="#">Delivery Information</a>

<a href="#">Privacy Policy</a>

<a href="#">Terms & Conditions</a>

<a href="#">Contact us</a>

</div>

<div class="col">

<h4>My Account</h4>

<a href="#">Sign In</a>

<a href="#">View Cart</a>

<a href="#">My Wishlist</a>

<a href="#">Track my order</a>

<a href="#">Help</a>

</div>

</footer>

<div class="copyright">

<center><p> ©2022, PNT2022TMID16338 - Smart Fashion Recommender Application

</p></center>

</div>

<script src="script.js"></script>

</body>

</html>

## Register.html

```
<!DOCTYPE html>
<html lang="en">

<head>
  <meta charset="UTF-8">
  <meta http-equiv="X-UA-Compatible" content="IE=edge">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Product</title>
  <link      rel="stylesheet"      href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/4.7.0/css/font-
awesome.min.css">
  <link rel="stylesheet" href="https://rakesh87.s3.us-east.cloud-object-storage.appdomain.cloud/style.css">
</head>

<body>

  <section id="header">
    <a          href="#"></a>

    <div>
      <ul id="navbar">
        <li><a href="index.html">Home</a></li>
        <li><a class="active" href="products.html">Products</a></li>
        <li><a href="blog.html">Blog</a></li>
        <li><a href="about.html">About</a></li>
        <li><a href="contact.html">Contact</a></li>
        <li><a href="cart.html"><i class="fa fa-shopping-bag"></i></a></li>
        <li><a href="cart.html"><i class="fa fa-user-secret"></i></a></li>
      </ul>
    </section>

    <section id="page-header">
      <h2>Kindness Always Come Back</h2>
```

<p>Save more with coupons & up to 70% off</p>

</section>

<section id="product1" class="section-p1">

<div class="pro-container">

<div class="pro" onclick="window.location.href='sproduct.html'">



<div class="des">

<span>Serman</span>

<h5>Men's brown wallet</h5>

<div class="star">

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

</div>

<h4>₹1000</h4>

</div>

<a href="#"><i class="fa fa-shopping-bag bag"></i></a>

</div>

<div class="pro">



<div class="des">

<span>Serman</span>

<h5>Men's leather wallet</h5>

<div class="star">

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

</div>

<h4>₹1500</h4>

</div>

<a href="#"><i class="fa fa-shopping-bag bag"></i></a>

</div>

<div class="pro">



<div class="des">

<span>Serman</span>

<h5>Men's military wallet</h5>

<div class="star">

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

</div>

<h4>₹1800</h4>

</div>

<a href="#"><i class="fa fa-shopping-bag bag"></i></a>

</div>

<div class="pro">



<div class="des">

<span>Serman</span>

<h5>Men's hostler belt case</h5>

<div class="star">

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

</div>

<h4>₹2500</h4>

</div>



[\*<i class="fa fa-shopping-bag bag"></i></a>\*](#)

</div>

<div class="pro">

.jpg)

<div class="des">

<span>Zara</span>

<h5>Men's silver necklace</h5>

<div class="star">

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

</div>

<h4>₹1500</h4>

</div>

[\*<i class="fa fa-shopping-bag bag"></i></a>\*](#)

</div>

<div class="pro">

.jpg)

<div class="des">

<span>Lige</span>

<h5>Men's silver watch</h5>

<div class="star">

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

</div>

<h4>₹5000</h4>

</div>

[\*<i class="fa fa-shopping-bag bag"></i></a>\*](#)

</div>

```
<div class="pro">
    
    <div class="des">
        <span>Zara</span>
        <h5>Men's chocolate perfume</h5>
        <div class="star">
            <i class="fa fa-star"></i>
            <i class="fa fa-star"></i>
            <i class="fa fa-star"></i>
            <i class="fa fa-star"></i>
            <i class="fa fa-star"></i>
        </div>
        <h4>₹2500</h4>
    </div>
    <a href="#"><i class="fa fa-shopping-bag bag"></i></a>
</div>
<div class="pro">
    
    <div class="des">
        <span>Zara</span>
        <h5>Men's blackbelt</h5>
        <div class="star">
            <i class="fa fa-star"></i>
            <i class="fa fa-star"></i>
            <i class="fa fa-star"></i>
            <i class="fa fa-star"></i>
            <i class="fa fa-star"></i>
        </div>
        <h4>₹1000</h4>
    </div>
    <a href="#"><i class="fa fa-shopping-bag bag"></i></a>
</div>
<div class="pro">
```

```


<div class="des">
  <span>Ruralking</span>
  <h5>Men's hoodie jacket</h5><br>
  <div class="star">
    <i class="fa fa-star"></i>
    <i class="fa fa-star"></i>
    <i class="fa fa-star"></i>
    <i class="fa fa-star"></i>
    <i class="fa fa-star"></i>
  </div>
  <h4>₹1500</h4>
</div>
<a href="#"><i class="fa fa-shopping-bag bag"></i></a>
</div>
<div class="pro">
  
  <div class="des">
    <span>U.S.Polo Assnn</span>
    <h5>Men's lycra pant</h5>
    <div class="star">
      <i class="fa fa-star"></i>
      <i class="fa fa-star"></i>
      <i class="fa fa-star"></i>
      <i class="fa fa-star"></i>
      <i class="fa fa-star"></i>
    </div>
    <h4>₹999</h4>
  </div>
  <a href="#"><i class="fa fa-shopping-bag bag"></i></a>
</div>
<div class="pro">
  

```

```
<div class="des">
  <span>U.S.Polo Assnn</span>
  <h5>Men's Mantis Green Marble</h5><br>
  <div class="star">
    <i class="fa fa-star"></i>
    <i class="fa fa-star"></i>
    <i class="fa fa-star"></i>
    <i class="fa fa-star"></i>
    <i class="fa fa-star"></i>
  </div>
  <h4>₹1199</h4>
</div>
<a href="#"><i class="fa fa-shopping-bag bag"></i></a>
```

```
</div>
```

```
<div class="pro">
```

```
  
```

```
  <div class="des">
    <span>Attitude</span>
    <h5>Men's striped men round</h5>
    <div class="star">
      <i class="fa fa-star"></i>
      <i class="fa fa-star"></i>
      <i class="fa fa-star"></i>
      <i class="fa fa-star"></i>
      <i class="fa fa-star"></i>
    </div>
    <h4>₹999</h4>
  </div>
  <a href="#"><i class="fa fa-shopping-bag bag"></i></a>
```

```
</div>
```

```
<div class="pro">
```

```
  
```

```
  <div class="des">
    <span>Zara</span>
```

<h5>Men's stylish coat suit</h5>

<div class="star">

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

</div>

<h4>₹7500</h4>

</div>

<a href="#"><i class="fa fa-shopping-bag bag"></i></a>

</div>

<div class="pro">



<div class="des">

<span>adidas</span>

<h5>Leather Shoe-Brown</h5>

<div class="star">

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

</div>

<h4>₹9800</h4>

</div>

<a href="#"><i class="fa fa-shopping-bag bag"></i></a>

</div>

<div class="pro">



<div class="des">

<span>zara</span>

<h5>Men's silver bracelet</h5>

<div class="star">

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

</div>

<h4>₹4000</h4>

</div>

<a href="#"><i class="fa fa-shopping-bag bag"></i></a>

</div>

<div class="pro">



<div class="des">

<span>Ruralking</span>

<h5>Men's combo stylish dress</h5>

<div class="star">

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

<i class="fa fa-star"></i>

</div>

<h4>₹11500</h4>

</div>

<a href="#"><i class="fa fa-shopping-bag bag"></i></a>

</div>

</div>

</section>

<section id="pagination" class="section-p1">

<a href="#">1</a>

<a href="product1.html">2</a>

<a href="product2.html">3</a>

<a href="#"><i class="fa fa-arrow-right"></i></a>

</section>

```
<section id="newsletter" class="section-pl">
```

```
<div class="newstext">
```

```
<h4>Sign up for NewsLetters</h4>
```

```
<p>Get Email updates about our latest shop and <span>special offer</span>
```

```
</p>
```

```
</div>
```

```
<div class="form">
```

```
<input type="text" placeholder="Your E-mail Address">
```

```
<button class="normal">Sign Up</button>
```

```
</div>
```

```
</section>
```

```
<footer class="section-pl">
```

```
<div class="col">
```

```

```

```
<h4>Contact</h4>
```

```
<p><strong>E-Mail: </strong>rstsmartfashion@gmail.com</p>
```

```
<p><strong>Phone: </strong>1234567890</p>
```

```
<div class="follow">
```

```
<h4>Follow us</h4>
```

```
<div class="icon">
```

```
<i class="fa fa-facebook-f"></i>
```

```
<i class="fa fa-twitter"></i>
```

```
<i class="fa fa-instagram"></i>
```

```
<i class="fa fa-pinterest-p"></i>
```

```
<i class="fa fa-youtube"></i>
```

```
</div>
```

```
</div>
```

```
</div>
```

```
<div class="col">
```

```
<h4>About</h4>
```

```
<a href="#">About us</a>
```

```
<a href="#">Delivery Information</a>
```

[Privacy Policy](#)

[Terms & Conditions](#)

[Contact us](#)

#### My Account

[Sign In](#)

[View Cart](#)

[My Wishlist](#)

[Track my order](#)

[Help](#)

>

©2022, PNT2022TMID16338 - Smart Fashion Recommender Application