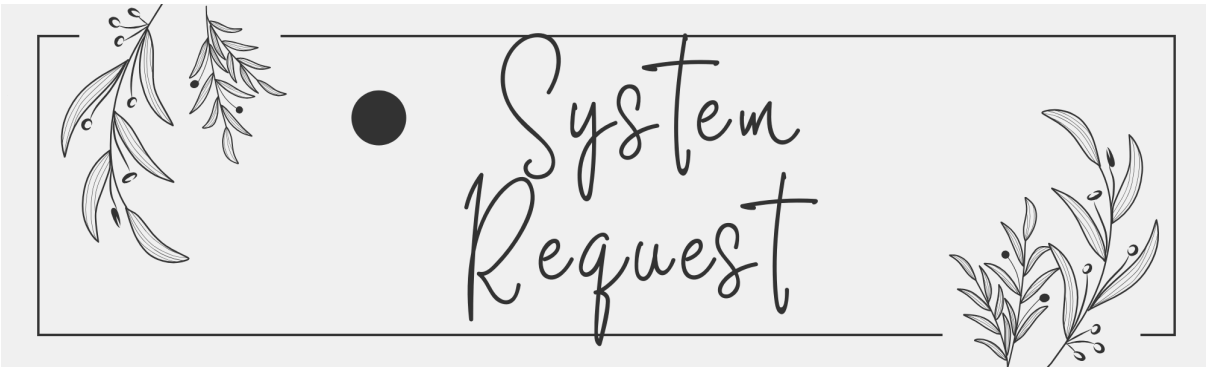
Project Name: TryOnOnline

Project idea: Our project is an online shopping website that allows users to input their body measurements and body type. This enables them to virtually try on clothes before purchasing, using a 3D simulation that accurately represents their body.



Introduction of our Project that Identifies the Problem

An online shopping website is one of the projects that people are highly drawn to, as it offers convenience and modernizes the shopping experience. Many people prefer to shop online but often face difficulties in finding clothes that fit perfectly, due to the lack of accurate size references. Shopping for clothes online can be challenging without the ability to try them on, leading to dissatisfaction or the hassle of returns. Therefore, the founders and the marketing team decided to develop an online shopping platform that allows users to input their body measurements and body type. This feature enables them to virtually try on clothes before purchasing through a 3D simulation that accurately represents their body. The goal is to enhance customer satisfaction, reduce return rates, and attract more users to the platform by offering a more personalized and convenient shopping experience.

System Request Form:

Sponsor:	• Director of Marketing and Sales
Business Need:	This project has been initiated to: •Increase Market Share: Expand the reach and appeal of the company to a wider audience by providing a unique and innovative shopping experience. •Improve Customer Satisfaction: Offer a tailored shopping experience to help customers find clothes that fit perfectly. •Reduce Return Rates: Enable virtual try-ons to minimize the common issue of size mismatch and reduce returns. •Save Time and Effort for Customers: Allow customers to input body measurements and view a 3D representation, so they can make better purchasing decisions from the comfort of their homes.
Business Requirements:	•Skilled, Reliable Developers and Web Design Team: To create a robust, user-friendly, and accurate virtual fitting platform. •3D Simulation for Virtual Try-On: A realistic 3D model that accurately represents the user's body, allowing them to try on clothes virtually before buying. •Database of Clothing Items: Comprehensive catalog with various clothing items, including size options and details for each product. •Personalization Features: Allow customers to create profiles with body measurements and body type for a tailored shopping experience. •Interactive and Responsive Website Design: An attractive, easy-to-navigate interface that encourages users to explore and shop comfortably. •Marketing Campaigns on Social Media: Promote the website and its unique features on social media platforms to attract more users. •Partnerships with Clothing Brands: Collaborate with popular brands to offer a wide variety of clothing options that can be tried on virtually.

	•User Feedback Collection: Gather customer feedback to continually improve and update the virtual fitting experience.
Business Value:	•Enhanced Shopping Experience: Provides customers with a unique and engaging way to shop, increasing customer loyalty and repeat purchases. •Increased Revenue: Attract more customers through a personalized shopping experience and reduce costs associated with returns. •Brand Reputation: Establish the company as an innovator in online shopping by implementing cutting-edge technology like virtual fitting. •Attraction of Tech-Savvy Customers: Appeal to younger, tech-oriented customers who are more likely to be drawn to interactive online experiences.
Special Issues:	• Deadlines: Timely completion of the project to capture market interest. • Customer Needs: Ensuring the platform meets diverse body measurements and style preferences. • Competition: Competing with other e-commerce platforms that offer similar services. •Technology Challenges: Overcoming technical challenges related to 3D modeling accuracy and maintaining a responsive website. •Staff Training: Training staff to manage and support the website, handle customer feedback, and troubleshoot issues.

Technical Feasibility

To minimize project failure risks, we need a strong understanding of the system. To meet the technical requirements, we are equipped with:

- **Advanced Technology**: Integrating body measurements and 3D simulations enables users to make virtual clothing reservations, modernizing the shopping experience.
- **Employee Training**: Staff will be trained to handle customer inquiries, manage virtual try-on technology, and process online reservations efficiently.
- **Partnerships**: Collaborations with clothing brands and 3D software providers for smoother integrations and technical support.
- **Internet Capabilities**: Relying on a robust internet connection to support high-performance simulations and real-time data processing.
- **Project Scope and Team**: The project is classified as medium risk, with a team of **15** specialists (developers, designers, and customer support).

Economic Feasibility:

Particulars	Amount	Particulars	Amount
Office Space	$30,000	Cloud and Server Costs	$50,000
Computers [8]	$16,000	Internet and Security	$7,000
Printer & Scanners	$5,000	Marketing	$20,000
3D Software License	$80,000	Customer Support Tools	$10,000
Employee Salaries [15]	$450,000	Total Initial Cost	$668,000

Financial Feasibility Over 3 Years:

	Year 0	Year 1	Year 2	Year 3	Total
Total Benefits	$0	$300,000	$450,000	$650,000	$1,400,000
Total Costs	$668,000	$150,000	$180,000	$200,000	$1,198,000
Net Benefits	[$668,000]	$150,000	$270,000	$450,000	$202,000
Cumulative Net Cash Flow	[$668,000]	[$518,000]	[$248,000]	$202,000	
Return on Investment (ROI)	-	22.40%	45.50%	64.40%	

Return on Investment (ROI) and Break-even Point Calculations

- **Break-even Point**: The break-even point occurs in **Year 3**, as cumulative net cash flow becomes positive at this point.
- **Return on Investment (ROI)**: Calculated over the project's lifetime, ROI is as follows:

$$\text{ROI} = \left(\frac{\text{Total Net Benefits}}{\text{Total Initial Cost}} \right) \times 100$$

$$\text{ROI} = \left(\frac{202,000}{668,000} \right) \times 100 = 30.24\%$$

- **Summary**: With positive net cash flow beginning in Year 3 and an ROI of approximately **30.24%**, this project demonstrates financial viability.

Organizational Feasibility

- After achieving technical and economic feasibility, benefits will be realized primarily in **Year 2** and **Year 3**.
- **System Roles and Staff Distribution**:
  - **Customer Service Staff**: Handle customer inquiries and assist with virtual try-on functionality.
  - **Brand & Logistics Coordinators**: Manage relationships with brands and ensure virtual products are synchronized with brand catalogs.
  - **IT and System Support Staff**: Oversee the functionality and maintenance of the 3D simulation platform, ensuring smooth performance.
  - **Communications Team**: Manage email notifications, marketing communications, and customer feedback.
  - **Financial Operations**: Handle payment processing, bank communications, and return policies.

Work plan

1. Defining the Main Objectives

The final goals of the project could include:

1-Creating a user-friendly online shopping platform that allows users to enter body measurements and select body types.

2-Developing a 3D clothing simulation that accurately represents the garments on the user's body.

3-Providing a comprehensive and realistic shopping experience that enables users to preview clothing in a near-real way before purchasing.

4-Enhancing the customer experience and building trust in online purchases by offering a virtual clothing try-on feature.

2. Dividing the Project into Main Phases

To facilitate project execution, it can be divided into four main phases as follows:

Phase One: **Research and Analysis** (Estimated Duration: 15 Days)

1. **Gathering User Requirements**

Tasks: Conduct surveys or interviews with target users to gather their ideas and requirements.

Estimated Time: 3 days

2. **Market and Competitor Analysis**

Tasks: Study and analyze competing platforms to identify their strengths and weaknesses.

Estimated Time: 4 days (in parallel with gathering requirements)

3. **Analyzing Functional and Non-functional System Requirement**

Tasks: Define what the system must accomplish (e.g., the 3D simulation function) and identify non-functional requirements like performance and security.

Estimated Time: 3 days (starting after requirements gathering and market analysis

4. **Designing the Initial Prototype**

Tasks: Create an initial interface design to display the website's general concepts to users.

Estimated Time: 5 days (can begin after requirements analysis)

5. Technical Planning and Selection of Tools and Technologies

Tasks: Select necessary tools and technologies, such as Unity for 3D simulation or front-end development tools.

Estimated Time: 2 days (can be done in parallel with the prototype design)

Phase Two: **Database Design and Backend Development** (Estimated Duration: 20 Days)

1. **Database Design**

Tasks: Create and design a database to store user data, measurements, and clothing items.

Estimated Time: 5 days

2. **Backend Development**

Tasks: Program APIs for communication between the database and the front-end interface.

Estimated Time: 8 days (begins in parallel with database design)

3. **Setting Up Security Protocols and Data Protection**

Tasks: Develop security policies to ensure user data privacy and protection.

Estimated Time: 3 days (runs in parallel with backend development)

4. Backend Unit Testing

Tasks: Test each backend unit individually to ensure they work as expected.

Estimated Time: 4 days (begins after backend development)

Phase Three: **Frontend Development and 3D Simulation** (Estimated Duration: 25 Days)

1. User Interface (UI) Design

Tasks: Design main website pages, such as the measurements input page and 3D display page.

Estimated Time: 7 days

2. Frontend Development Tasks: Translate the design into code using HTML, CSS, and JavaScript to build the website page.

Estimated Time: 10 days (in parallel with 3D simulation development)

3. 3D Simulation Development

Tasks: Create the simulation system using tools like Unity to represent clothing on the user's body.

Estimated Time: 12 days (in parallel with frontend development)

4. Testing and Integration of Frontend with Backend and 3D Simulation

Tasks: Integrate the frontend with backend services and 3D clothing simulation, ensuring seamless interaction.

Estimated Time: 4 days (begins after frontend and simulation development

Phase Four: **Testing and Launch** (Estimated Duration: 10 Days)

1. System Testing

Tasks: Perform comprehensive system testing, including the frontend, backend, and 3D simulation to ensure all components work together.

Estimated Time: 5 days

2. Final Adjustments and Improvements

Tasks: Make any necessary adjustments or improvements based on test results.

Estimated Time: 3 days

3. Website Launch

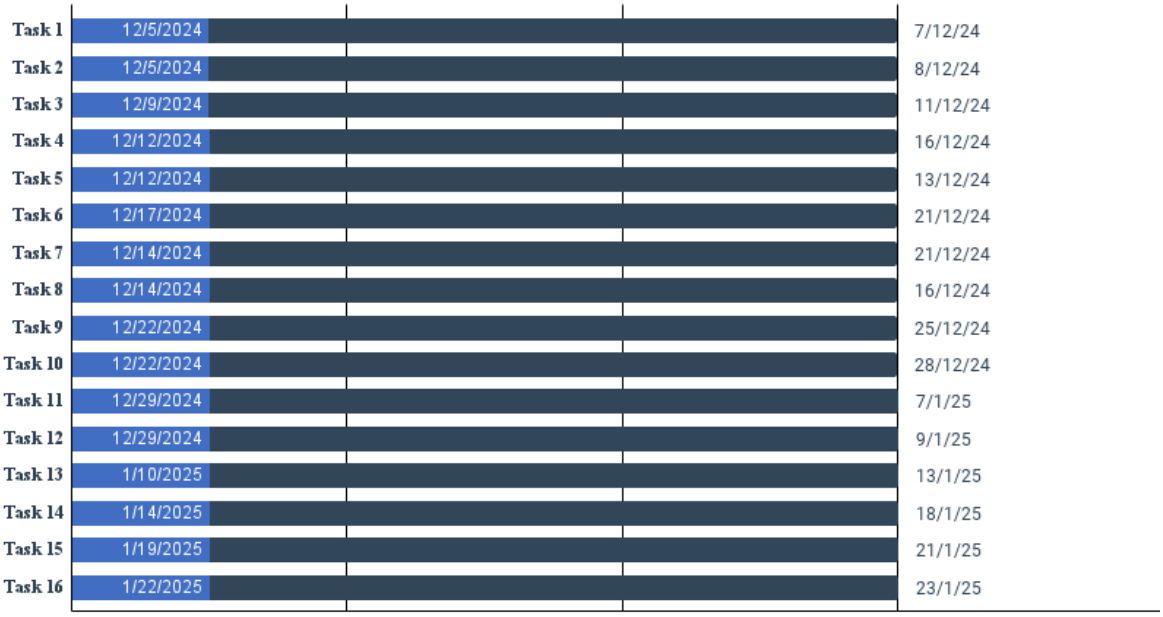
Tasks: Publish and launch the website, making it available to users.

Estimated Time: 2 days (can be done concurrently with final adjustments)

WBS code	Task name	Duration (days)	dependencies
1.0	Gathering user requirements	3 days	none
1.1	Market and competitor analysis	4 days	none
1.2	Analysis functional and non- functional system requirement	3 days	1.0 1.1
1.3	Designing the initial prototype	5 days	1.2
1.4	Technical planning and selection of tools and technologies	2 days	1.2 With 1.3
2.0	Database design	5 days	1.4
2.1	Backend development	8 days	With 2.0
2.2	Setting up security protocols and data protection	3 days	With 2.1
2.3	Backend unit testing	4 days	2.1
3.0	User interface (UI) design	7 days	2.3
3.1	Frontend development	10 days	3.0
3.2	3D simulation development	12 days	With 3.1
3.3	Testing and integration of frontend with back and 3D simulation	4 days	3.1 3.2
4.0	System testing	5 days	3.3
4.1	Final adjustments and improvements	3 days	4.0
4.2	Estimated time	2 days	4.1

Gantt chart:

#	Task Name	Start Date	End Date	Duration	Days Complete	Days Remaining	Progress
1	Task 1	12/5/2024	7/12/24	2	2	0	50%
2	Task 2	5/12/24	8/12/24	2	2	0	25%
3	Task 3	9/12/24	11/12/24	3	3	0	0%
4	Task 4	12/12/24	16/12/24	3	3	0	0%
5	Task 5	12/12/24	13/12/24	2	2	0	0%
6	Task 6	12/17/2024	12/21/2024	4	4	0	0%
7	Task 7	14/12/24	21/12/24	5	5	0	0%
8	Task 8	14/12/24	16/12/24	1	1	0	0%
9	Task 9	22/12/24	25/12/24	3	3	0	0%
10	Task 10	22/12/24	28/12/24	5	5	0	0%
11	Task 11	29/12/24	7/1/25	7	7	0	0%
12	Task 12	12/29/2024	9/1/25	9	9	0	0%
13	Task 13	10/1/25	13/1/25	2	2	0	0%
14	Task 14	14/1/25	18/1/25	4	4	0	0%
15	Task 15	19/1/25	21/1/25	2	2	0	0%
16	Task 16	22/1/25	23/1/25	2	2	0	0%



Project Methodology - Agile Development

We chose the Agile methodology because it is the most suitable way for our project.

Aspect	Description
Clarity of User Requirements	User requirements may evolve as the project progresses, especially with feedback on 3D simulation accuracy and user experience. Agile allows for iterative adjustments based on feedback, refining the virtual try-on feature.
With Familiar Technology	Agile supports using familiar 3D and web development tools, allowing quick adaptations based on user feedback, ensuring technology aligns with project goals.
That are Complex	The project involves moderately complex elements, such as real-time 3D body simulation and accurate measurement algorithms. Agile enables phased integration of these complex features.
System Reliability	Ensures reliability with continuous testing, protecting user data like measurements and ensuring accurate simulation in each sprint.
With Short Time Schedule	Agile enables faster development and regular updates, allowing quick implementation of the virtual try-on prototype and rapid iterations based on feedback.

Functional Requirements:

Requirement	Description
User Registration	• The system must allow users to create personal accounts and log in.
Account Management	• Users should be able to manage their accounts, update personal information, and save their body measurements for future purchases.
Virtual Try-On	• Users can input their body measurements and body type to generate a 3D simulation that allows them to virtually try on clothes before purchasing.
Clothes Recommendations	• The system provides recommendations for clothing items based on the user's body type and size preferences.

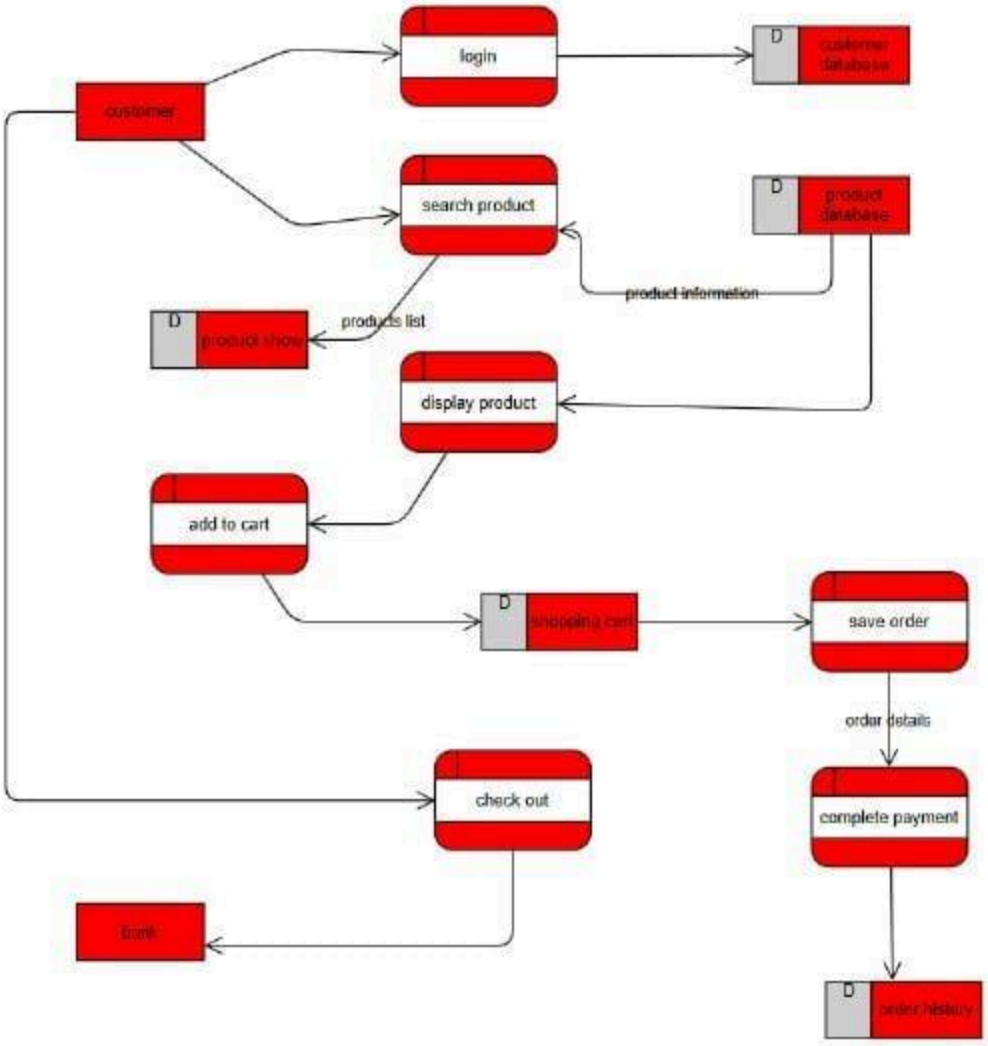
Product Search and Filter	**• Users should be able to search for products, apply filters (e.g., size, color, price), and view detailed product information.**
Ratings and Reviews	**• The system allows users to view and submit reviews and ratings for products, enabling them to make informed purchasing decisions.**
Shopping Cart	**• Users can add items to a shopping cart, edit quantities, and save items for later.**
Payment	**• The system should support multiple payment options (credit cards, PayPal, etc.) and ensure secure transactions.**
Customer Support	**• A dedicated section for customer support should be available to assist users with inquiries or issues regarding purchases or the virtual try-on feature.**
Order Tracking	**• After purchasing, users can track the status of their orders and receive updates on shipping and delivery.**
Promotions	**• Based on user preferences, the system can notify users of discounts and special offers on relevant products.**

Non-Functional Requirements:

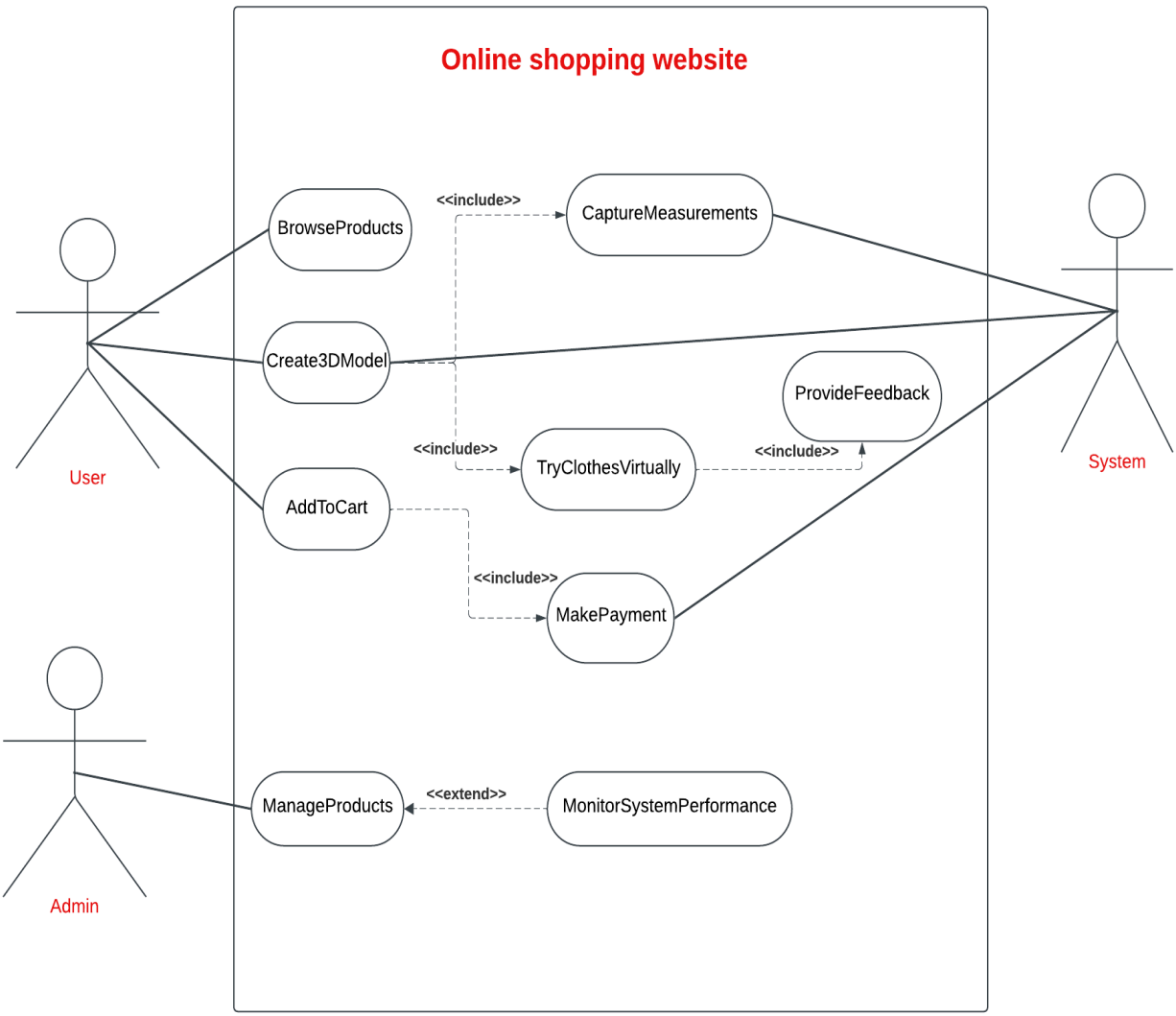
Requirement	Description
System Performance	stem should be fast and responsive. • Pages should load in under 3 seconds for a smooth user experience. • The website must handle a large number of concurrent users without performance degradation. • The virtual try-on simulation should process and display results quickly (within a few seconds).
Compatibility	• The system should be accessible on all devices (mobile, desktop, tablet). • It should support popular operating systems and browsers. • The system should offer multi-language support for global accessibility.
Availability	• the website should be available 24/7 to users without downtime.

Security	• **User data, including body measurements and payment information, must be securely stored and encrypted.** • **The system must comply with standard data protection regulations (e.g., GDPR).**
Usability	• **The website should have a user-friendly interface, enabling easy navigation and quick access to key features such as the virtual try-on and search tools.** • **Tutorials or guidance should be provided for first-time users of the 3D simulation feature.**

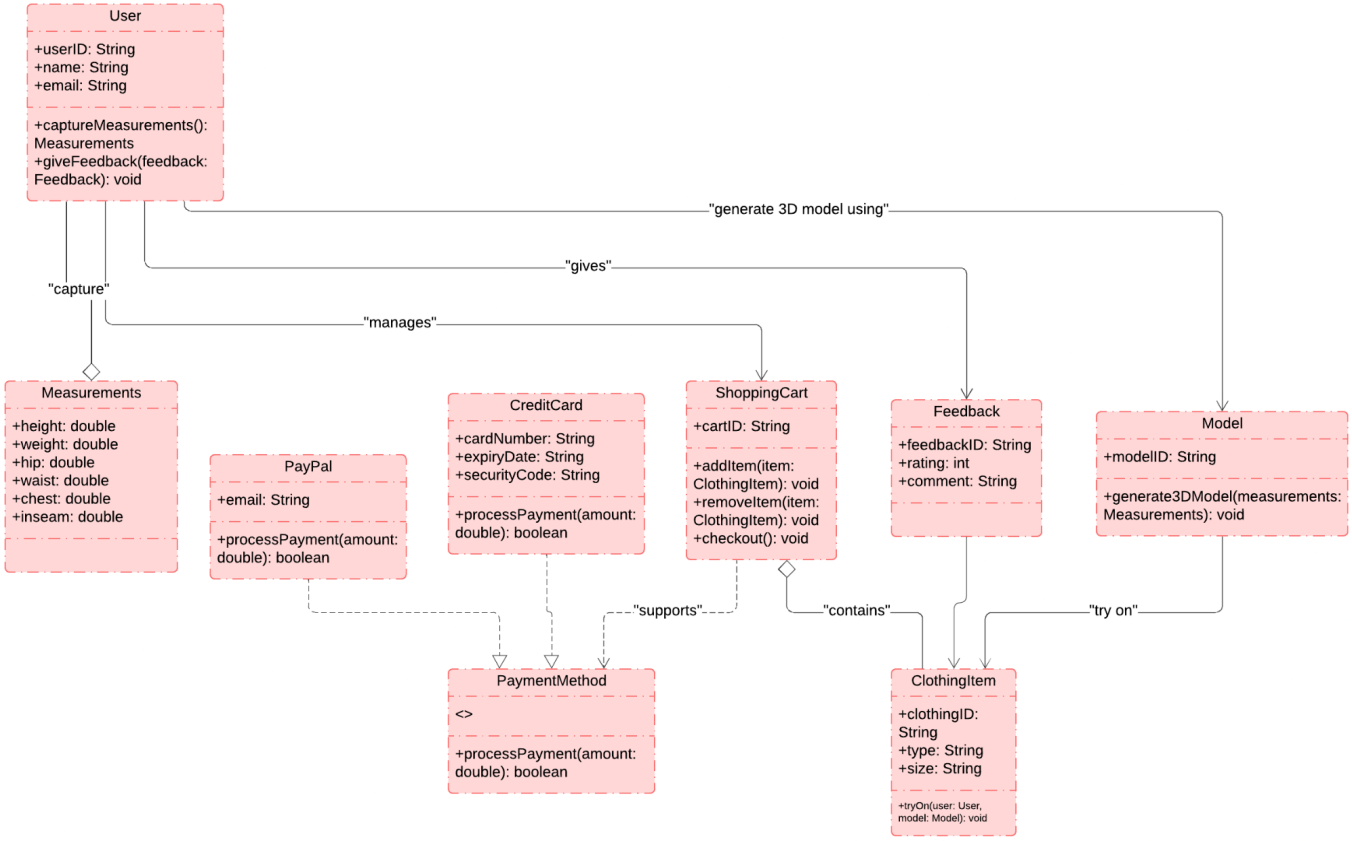
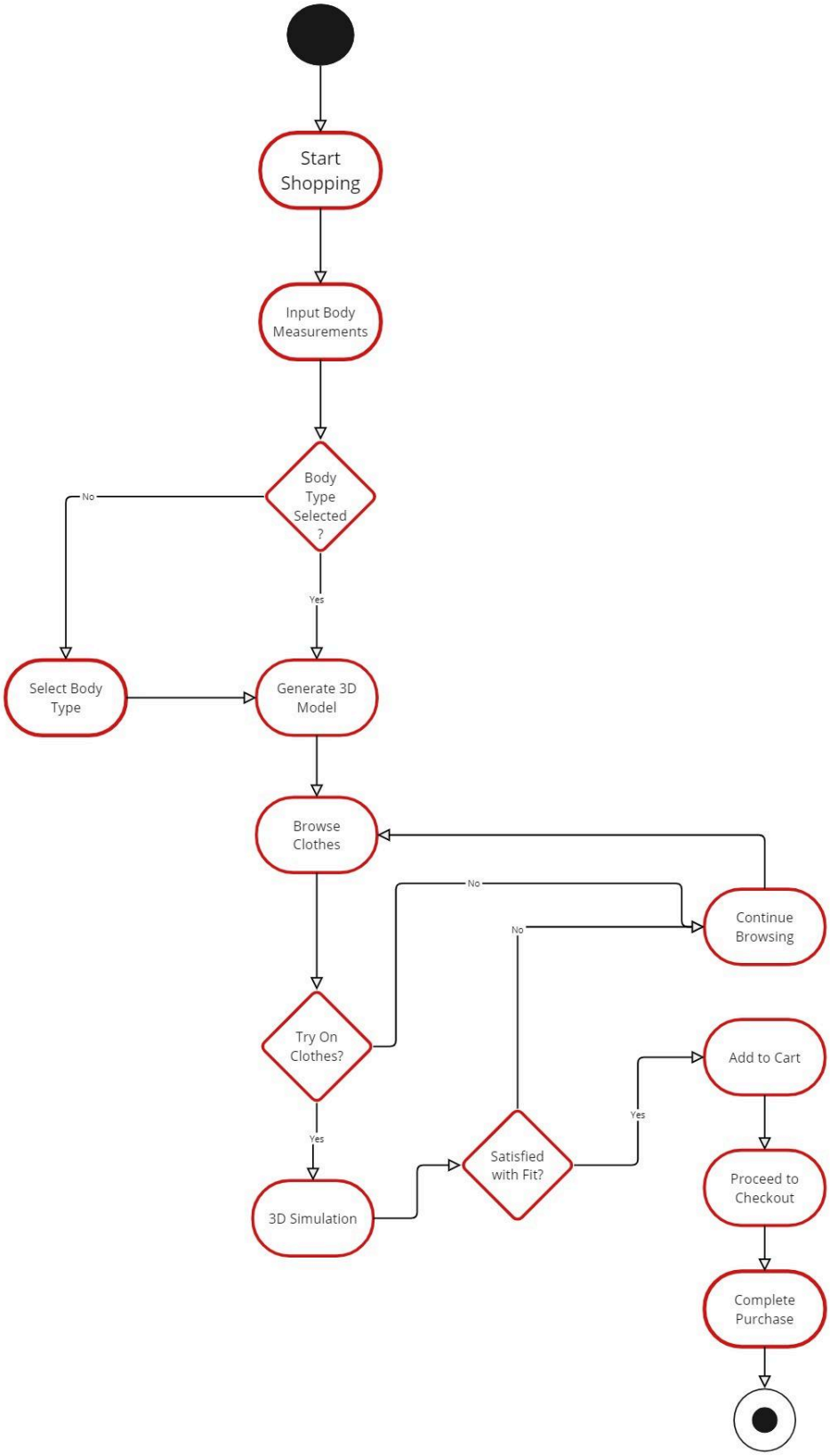
DFD Diagram:


login
customer
search product
product database
product information
products list
display product
add to cart
save order
order details
check out
complete payment

Use Case Diagram:



Class Diagram:



Activity Diagram: