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COLLEGE OF ENGINEERING
(AUTONOMOUS)

# WOODCREST

## 20INMCA509 - Mini Project 2


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DEPARTMENT OF
COMPUTER APPLICATIONS

# ABSTRCT

## ONLINE FURNITURE MANUFACTURING AND PURCHASING FURNITURE

The online furniture manufacturing and purchasing furniture, The website enables users to explore a wide range of furniture products, customize their choices based on specific criteria such as wood type, dimensions, design preferences, and required features, and ultimately select or design furniture that fits their unique needs. The platform allows users to browse existing furniture designs or create custom pieces through an interactive design tool that provides real-time visualization of their choices. They can option for a more personalized experience by scheduling a consultation with our designers to collaborate and create custom furniture designs tailored to their specific needs and preferences. Based on these preferences and the available furniture designs showcased on our website, users can select the furniture they desire. By integrating these modules, the online furniture manufacturing and purchasing website aims to optimize user engagement, streamline operational efficiencies, and ensure a user-friendly experience from product selection to final purchase. This structured approach enhances administrative oversight, facilitates seamless transactions, and supports the platform's goal of delivering quality furniture solutions tailored to customer preferences

**Modules and Functionalities:**

1. **Users Module:**

    - User Registration: Allows new users to create accounts by providing necessary information such as username, email address, and password.
    - User Login: to access their accounts by entering their credentials with validation.
    - Profile: Enables users to view and edit their profiles, including updating personal information, changing passwords
    - Password Recovery: users to recover their passwords forget or lose then through email verification.

2. **Manufacture Module:**
    - Product Design and Configuration: Allows manufacturers to create and configure product designs based on specifications provided by customers
    - Payment Processing
    - Selling Furniture

3. **Admin Module:**

- **Product Management**:
    - Adding new products.
    - Allows admins to edit product details such as name, description, price, and availability.
    - Categorization of products within the catalog.

- **Shopping Cart**
    - Allows users to add items to their cart
    - Allows users to wishlist
- **Order Management**:
    - Provides an overview of all orders placed
    - Allows admins to view order details, including customer information, order status, and payment status.
    - order processing tasks such as order confirmation, cancellation
    - Payment Processing

**Technologies Used:**

- Frontend: HTML, CSS, JavaScript, Python
- Backend: Django
- Database: MySQL

## Main Project

Implementing machine learning into online furniture manufacturing and purchasing platform revolutionizes the way users interact with your products and services. Implementing an automated visual inspection system using machine learning can significantly enhance the quality control process for furniture products. Convolutional Neural Networks (CNNs) for image recognition and classification, the system can automatically inspect images of finished furniture items to detect defects such as scratches, dents, misalignments, or inconsistencies in design. The integration of

this technology allows manufacturers to upload images of their finished products to the system. The CNN models analyze these images, identifying and flagging any potential defects for further inspection or correction. Additionally, integrating virtual reality (VR) into the customization and design preview functionality of our online furniture purchasing website revolutionizes the customer experience. Users can now interactively customize furniture dimensions, materials, colors, and styles in real-time within a virtual environment. This immersive capability allows customers to visualize their custom designs in their own spaces, aiding informed decision-making and ensuring personalized satisfaction. VR not only enhances engagement but also provides a seamless and innovative shopping experience that empowers users to create ideal living environments tailored to their unique preferences.

# Feasibility Study

A feasibility study is an assessment of the practicality of a proposed plan or project. A feasibility study analyses the viability of a project to determine whether the project or venture is likely to succeed. The study is also designed to identify potential issues and problems that could arise while pursuing the project. A feasibility study should be relatively cheap and done at the earliest possible time. Depending on the study, the decision is made whether to go ahead with a more detailed analysis. When a new project is proposed, it normally goes through feasibility assessment.

The proposed system will help to solving the problem more efficiently and accurately. The reports obtained after feasibility studies are given below, they are:

- Economic Feasibility
- Technical Feasibility
- Operational Feasibility

**Technical Feasibility**

The online furniture manufacturing and purchasing platform, demonstrates strong technical feasibility based on its structured modules and functionalities. Using Django for backend development ensures robustness and scalability, facilitating essential features such as user registration, profile management, product design customization, and secure payment processing. MySQL serves as a reliable database solution, supporting efficient data management for product catalogs, user profiles, and transaction records. Frontend technologies like HTML, CSS, and JavaScript provide a responsive interface and interactive design tools crucial for engaging user experiences. Integration of these technologies allows seamless navigation through product selection, customization, and purchase processes, enhancing overall user satisfaction. With a focus on security, scalability, and user-centric design, your platform is poised to deliver a streamlined and secure online furniture shopping experience tailored to customer preferences.

- This software is going to run in windows 11 Operating System, which can be easily installed.
- The system can be expanded.

**Operational Feasibility**

The proposed online furniture manufacturing and purchasing platform is operationally feasible. The user module ensures a seamless experience with features like user registration, login, profile management, and password recovery, crucial for engaging users and providing personalized services. The manufacture module supports advanced product design and configuration, enabling real-time customization based on user specifications and secure payment processing, which

integrates smoothly with manufacturing workflows. The admin module enhances operational efficiency by facilitating product management, shopping cart functionalities, and order management, thus streamlining administrative tasks and ensuring smooth transactions. Leveraging existing technologies such as HTML, CSS, and JavaScript for the front end, Django for the backend, and MySQL for data management, the platform is designed to be robust and scalable. It is supported by skilled technical staff, secure servers, and a reliable network infrastructure. This structured approach ensures a user-friendly experience from product selection to final purchase, optimizing user engagement, and delivering quality, customizable furniture solutions tailored to customer preferences

**Economical Feasibility**

The economic feasibility of the online furniture manufacturing and purchasing platform is evident through its structured approach to user engagement and operational efficiencies. The platform enables users to explore a diverse range of furniture products, customize their choices based on specific criteria, and even design custom pieces using an interactive tool with real-time visualization capabilities. This comprehensive functionality aims to optimize user experience from product selection to final purchase, enhancing administrative oversight and facilitating seamless transactions. From an economic standpoint, the initial investment outlined in the feasibility analysis aligns with the platform's development needs, including frontend and backend development, database setup, and integration of specialized tools such as real-time visualization and consultation scheduling features. These investments are essential for delivering a robust user interface, ensuring secure transaction processing, and supporting personalized customer interactions. Operational costs, including ongoing technical support, server maintenance, and marketing expenditures, are projected within feasible ranges relative to the anticipated revenue streams. Revenue projections are based on the platform's ability to attract a substantial user base, generate sales through direct purchases and consultation fees, and achieve a break-even point that aligns comfortably with estimated order volumes. The economic feasibility analysis underscores the platform's potential for profitability and sustainable growth. By leveraging its innovative functionalities and strategic investment in technology and marketing, the platform aims to establish itself as a leading online destination for personalized furniture solutions, delivering value both to users seeking custom designs and to the business through efficient operations and revenue generation.

# Requirement Gathering

1. **Project Overview**:

   This project aims to revolutionize the furniture purchasing experience by establishing an online platform that enables extensive customization options and seamless transactions. It addresses the problem of limited customization and accessibility in traditional furniture shopping by offering users the ability to design and customize furniture based on specific preferences such as wood type, dimensions, and design features. The main objectives include optimizing user engagement through interactive design tools, streamlining operational processes like order management and payment processing, and ultimately delivering bespoke furniture solutions that meet the diverse needs and expectations of modern consumers effectively.

2. **System Scope**:

   The proposed online furniture manufacturing and purchasing system is designed for full-scale implementation, aimed at providing a complete and functional platform for users to explore, customize, and purchase furniture products. With modules encompassing user registration, profile management, product design, payment processing, and comprehensive order management, the system is structured to handle real-world transactions efficiently. Utilizing technologies like Django and MySQL ensures scalability and robust performance, supporting a seamless online shopping experience from product selection to final purchase. The emphasis on optimizing user engagement and operational efficiency reflects its readiness for commercial deployment, targeting broader customer engagement and business growth.

3. **Target Audience**:

   The online furniture manufacturing and purchasing platform caters to a diverse range of users seeking personalized furniture solutions. Potential stakeholders include individual consumers looking to explore and customize furniture based on specific criteria such as wood type, dimensions, and design preferences. These users can either browse existing furniture designs or engage with an interactive design tool for real-time visualization of customizations. Additionally, businesses and interior designers seeking bespoke furniture solutions can benefit from the platform's capability to collaborate on custom designs through scheduled consultations with designers. Administratively, the system supports seamless operations for manufacturers involved in product design and configuration, payment processing, and efficient furniture sales. By integrating these functionalities, the

platform aims to optimize user engagement, streamline operations, and deliver tailored furniture solutions that meet the unique needs and preferences of its diverse audience.

4. **Modules**:

Users Module:

- User Registration: Allows new users to create accounts by providing necessary information such as username, email address, and password.
- User Login: to access their accounts by entering their credentials with validation.
- Profile: Enables users to view and edit their profiles, including updating personal information, changing passwords
- Password Recovery: users to recover their passwords forget or lose then through email verification.

Manufacture Module:

- Product Design and Configuration: Allows manufacturers to create and configure product designs based on specifications provided by customers
- Payment Processing
- Selling Furniture

Admin Module:

- Product Management:
  - Adding new products.
  - Allows admins to edit product details such as name, description, price, and availability.
  - Categorization of products within the catalog.
- Shopping Cart
  - Allows users to add items to their cart
  - Allows users to wishlist
- Order Management:
  - Provides an overview of all orders placed
  - Allows admins to view order details, including customer information, order status, and payment status.
  - order processing tasks such as order confirmation, cancellation
  - Payment Processing

5. **User Roles**:

   Our online furniture manufacturing and purchasing platform features several key user roles essential for seamless operation and customer satisfaction. Customers interact with the system to explore and customize furniture options, manage their profiles, and complete purchases. Designers collaborate closely with customers to create personalized furniture designs through consultations and real-time customization tools. Manufacturers utilize the platform to receive design specifications, configure products, and manage production workflows efficiently. Administrators oversee the entire platform, ensuring smooth order processing, managing product listings, and maintaining user accounts to uphold operational efficiency and deliver a superior user experience tailored to diverse customer needs.

6. **System Ownership**:

   The online furniture manufacturing and purchasing platform is owned and operated by Organization. This platform serves as a comprehensive solution for users to explore, customize, and purchase furniture products tailored to their preferences. Through a user-friendly interface and robust functionalities, Organization aims to optimize user engagement, streamline operational efficiencies, and deliver quality furniture solutions. The system integrates modules for user registration, profile management, product design and configuration, as well as administrative tools for product and order management. By leveraging technologies such as Django for backend operations and MySQL for database management, Organization ensures a seamless and secure online shopping experience for its customers

7. **Industry/Domain**:

   The system is primarily related to the e-commerce and furniture manufacturing domain. This industry focuses on providing online solutions for furniture selection, customization, and purchase, catering to individual customer preferences and needs. The platform integrates interactive design tools, user profiles, and administrative controls to streamline operations from product design to order fulfillment. This structured approach aims to optimize user engagement, operational efficiencies, and overall user satisfaction within the online furniture marketplace.

8. **Data Collection Contacts**:

   Name: Kunjumon

   Role: Carpenter

9. **Questionnaire for Data Collection**:

i. What materials do you primarily use in your furniture manufacturing process, and why are they chosen?

We primarily use hardwoods such as oak and maple for their durability and aesthetic appeal. These materials are chosen for their strength and ability to withstand wear and tear, ensuring longevity for our furniture pieces

ii. Can you describe the process of creating a new furniture piece from concept to completion with your carpenters?

Developing a new piece involves initial design discussions, material selection, and prototype development with our carpenters. We refine the design based on functionality, aesthetics, and customer feedback before final production

iii. What are the main responsibilities for running a Furniture shop?

Effective time management is essential in operating a furniture shop. It requires thorough knowledge of furniture styles, materials, and manufacturers to provide informed guidance to customers. Ensuring a well-organized showroom, staying updated on industry trends, and managing inventory efficiently are key to delivering quality products and excellent customer service, fostering satisfaction and loyalty.

iv. How do you handle customization requests for furniture designs?

Customization requests for furniture designs are managed through initial consultations to understand requirements, feasibility assessments, detailed design approvals, production, regular updates, final inspections, and customer delivery, ensuring satisfaction.

v. How long does it typically take to produce a piece of furniture from order placement to delivery?

Our standard time is 4-6 weeks, but larger or custom orders may take slightly longer depending on the complexity

vi. What is your preferred method of payment for furniture orders

Our preferred method of payment for furniture orders is typically through including cash, credit/debit cards, and bank transfers, or you can make payment by delivery pickup of your furniture order.

vii. What technologies or equipment do you use in your manufacturing process, and how do they enhance your production capabilities?

It follows traditional furniture carpentry, hand tools and modern equipment harmonize to achieve precise craftsmanship and efficient production.

viii. How do you differentiate your furniture shop and online furniture shop?

Our furniture shop offers hands-on experiences with personalized advice and immediate availability, while an online furniture shop provides convenience, a wide selection, competitive pricing, and customer reviews. Each platform caters to different customer preferences, combining tactile engagement with digital accessibility to meet diverse shopping needs effectively.

ix. Do you offer any warranties or guarantees on your furniture?

Yes, we offer warranties on our furniture against manufacturing defects. We stand behind the quality of our products and aim to resolve any issues promptly.

x. Do you have any online website? What are the procedures of online website?

No, a good profit is obtained from the shop

# Table Design

## 1. Register Table

| Field Name | Datatype | Constraints | Description |
|---|---|---|---|
| User_id | INT | PRIMARY KEY | Unique user id |
| Username | VARCHAR(50) | NOT NULL | Username of the user |
| Email | VARCHAR(100) | NOT NULL | Email of the user |
| Mobile number | VARCHAR(100) | NOT NULL | Mobile number of the user |
| Address | VARCHAR(100) | NOT NULL | Address of user |
| Pin Code | VARCHAR(100) | NOT NULL | pin code |
| Password | VARCHAR(255) | NOT NULL | password |

## 2. Login table

| Field Name | Datatype | Constraints | Description |
|---|---|---|---|
| log_id | INT | Primary Key | Login id |
| Email | VARCHAR(100) | NOT NULL | Email Address |
| Password | VARCHAR(255) | NOT NULL | Password |

## 3. Admin Table

| FieldName | Datatype | Constraints | Description |
|---|---|---|---|
| id | INT | Primary Key | Admin login id |
| Admin_email | VARCHAR(100) | NOT NULL | Email Address |

| | | | |
|---|---|---|---|
| Password | VARCHAR(255) | NOT NULL | Password |

## 4. Product Table

| FieldName | Datatype | Constraints | Description |
|---|---|---|---|
| product_id | INT | PRIMARY KEY | Product id |
| product_name | VARCHAR(100) | NOT NULL | Nam of Product |
| category_id | INT | Foreign Key | FOREIGN KEY |
| price | DECIMAL(10, 2) | NOT NULL | Price of Product |
| description | TEXT | NOT NULL | Short Description of Product |
| image | VARCHAR(255) | NOT NULL | Image of Product |
| stock_quantity | INT | NOT NULL | Quantity of Product |
| status | INT | NOT NULL | Status |

## 5. Categories Table

| Field Name | Datatype | Constraints | Description |
|---|---|---|---|
| category_id | INT | PRIMARY KEY | Category id |
| category_name | VARCHAR(50) | NOT NULL | Category name |

## 6. Customizations Table

| Field Name | Datatype | Constraints | Description |
|---|---|---|---|
| customization_id | INT | PRIMARY KEY | Customization id |
| category_id | INT | FOREIGN KEY | Category id |
| wood_type | VARCHAR(50) | NOT NULL | Type of wood |

| | | | |
|---|---|---|---|
| dimensions | VARCHAR(50) | NOT NULL | Dimension |
| design_preferences | TEXT | NOT NULL | Design Preferences |
| features | TEXT | NOT NULL | Features of product |
| Mobile Number | VARCHAR(50) | NOT NULL | Mobile number |

### 7. Orders Table

| Field Name | Datatype | Constraints | Description |
|---|---|---|---|
| order_id | INT | Primary Key | Order id |
| Product_id | INT | Foreign Key | Product id |
| user_id | INT | Foreign Key | User id |
| Payment_id | INT | Foreign Key | Payment id |
| order_date | DATETIME | NOT NULL | Order date |
| status | ENUM | NOT NULL | Status of order |
| total_amount | DECIMAL(10, 2) | NOT NULL | Amount of order |
| billing_address | VARCHAR(255) | NOT NULL | Billing address |

### 8. Customizer Table

| Field Name | Datatype | Constraints | Description |
|---|---|---|---|
| consultation_id | INT | Primary Key | Consultation id |
| consultation_date | DATETIME | NOT NULL | Date of consultation |
| notes | TEXT | NOT NULL | Notes of design |

### 9. Wishlists Table

| Field Name | Datatype | Constraints | Description |
|---|---|---|---|
| wishlist_id | INT | Primary Key | Wishlist id |
| user_id | INT | Foreign Key | User id |
| product_id | INT | NOT NULL | Product id |
| date_added | DATETIME | NOT NULL | Date of added |

### 10. Payments Table

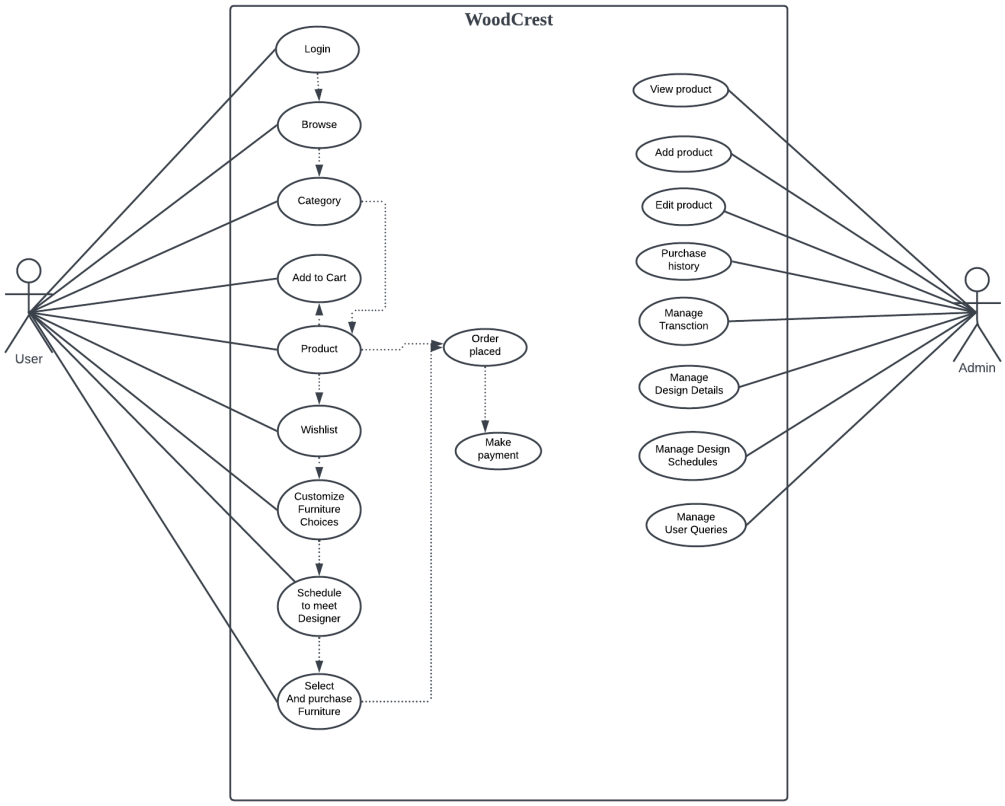
| Field Name | Datatype | Constraints | Description |
|---|---|---|---|
| payment_id | INT | Primary Key | Payment id |
| Product_id | INT | Foreign Key | Product id |
| order_id | INT | Foreign Key | Order id |
| payment_date | DATETIME | NOT NULL | Payment date |
| amount | DECIMAL(10, 2) | NOT NULL | Amount of order |
| payment_method | VARCHAR(255) | NOT NULL | Payment Method |

### 11. Contact us

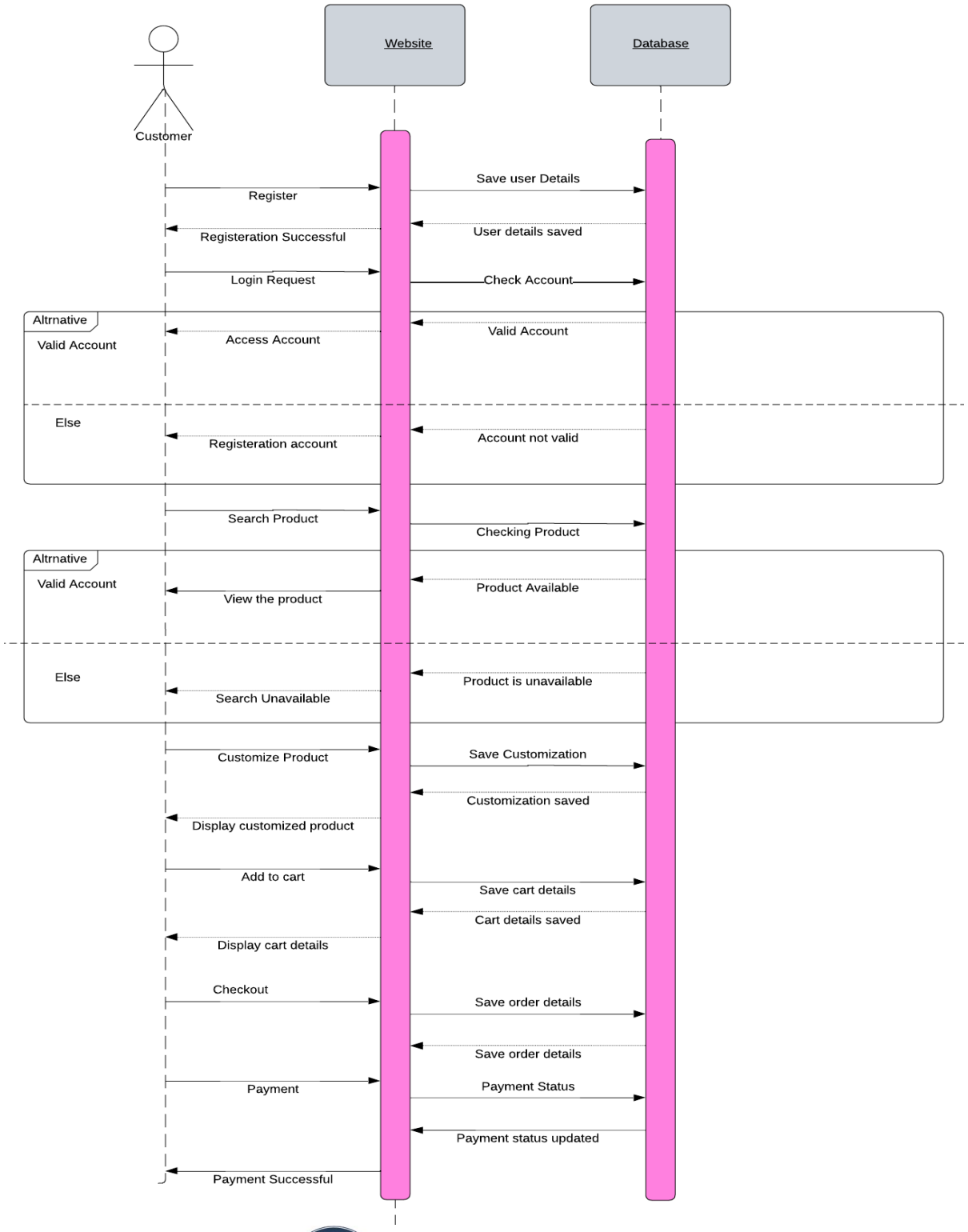
| Field Name | Datatype | Constraints | Description |
|---|---|---|---|
| contact_id | INT | Primary Key | Contact id |
| Name | VARCHAR(25) | NOT NULL | Name |
| Email | VARCHAR(25) | NOT NULL | Email |
| Comment | TEXT | NOT NULL | Comment |

# UML DIAGRAM

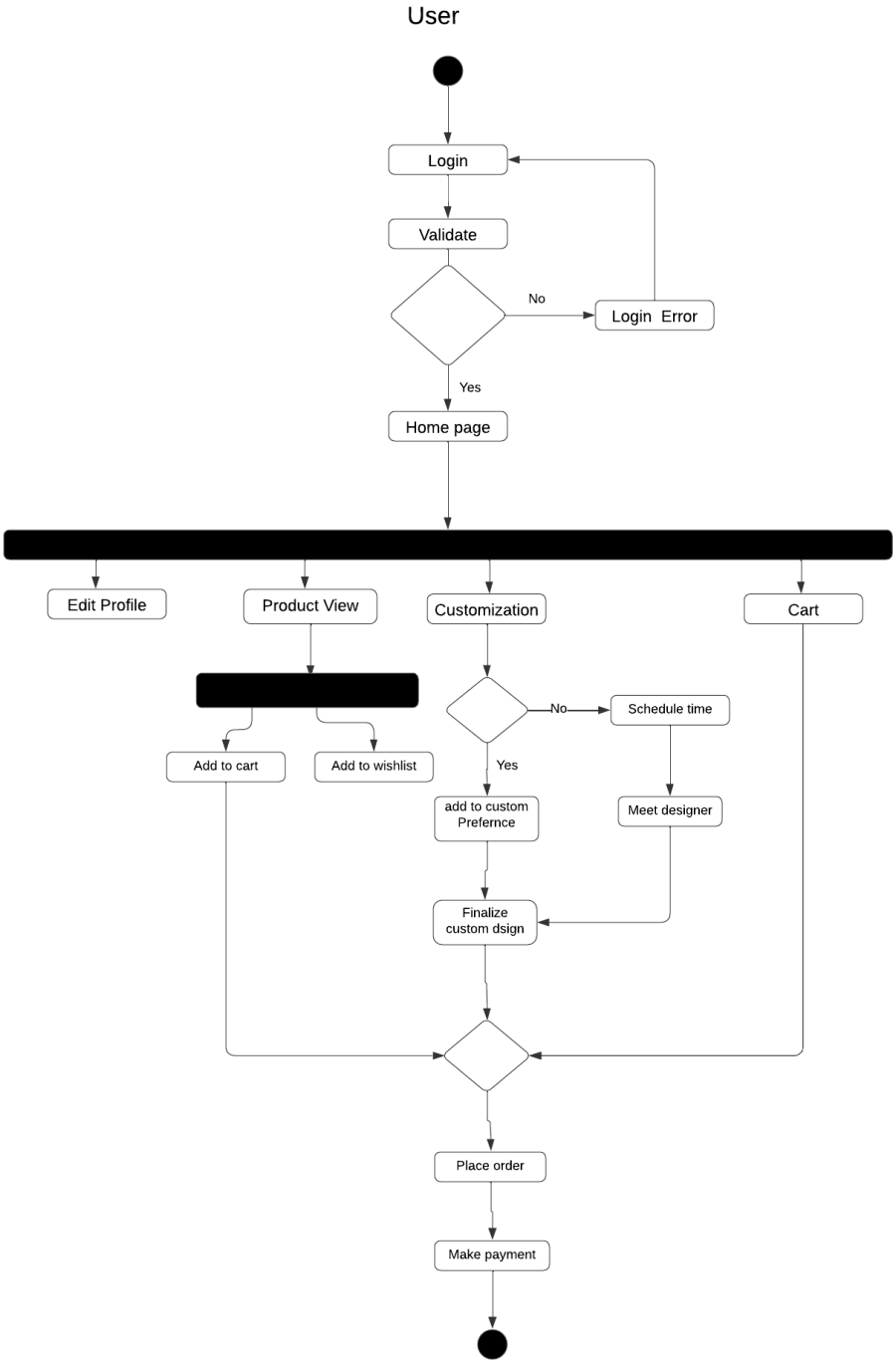
## 1. USE CASE DIAGRAM

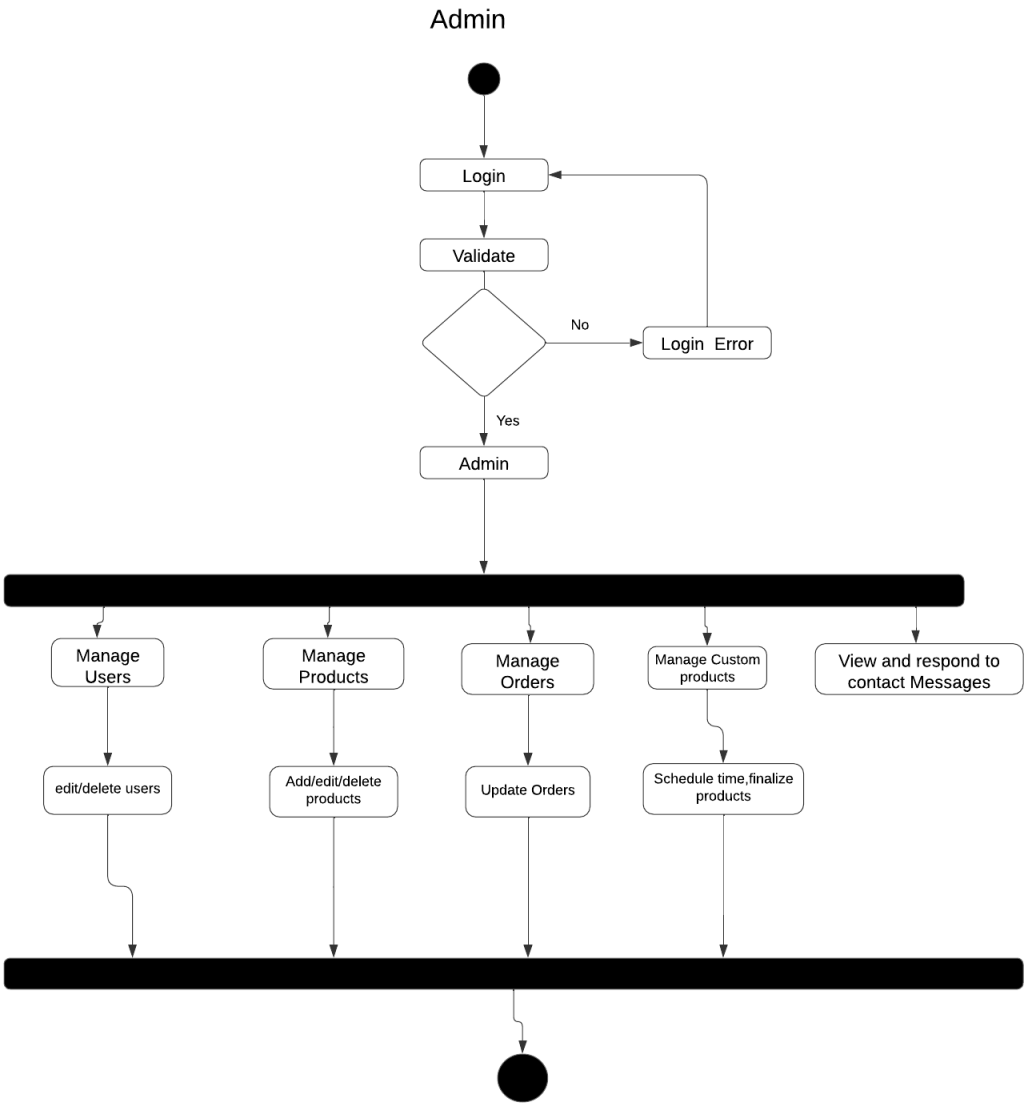



## 2. SEQUENCE DIAGRAM

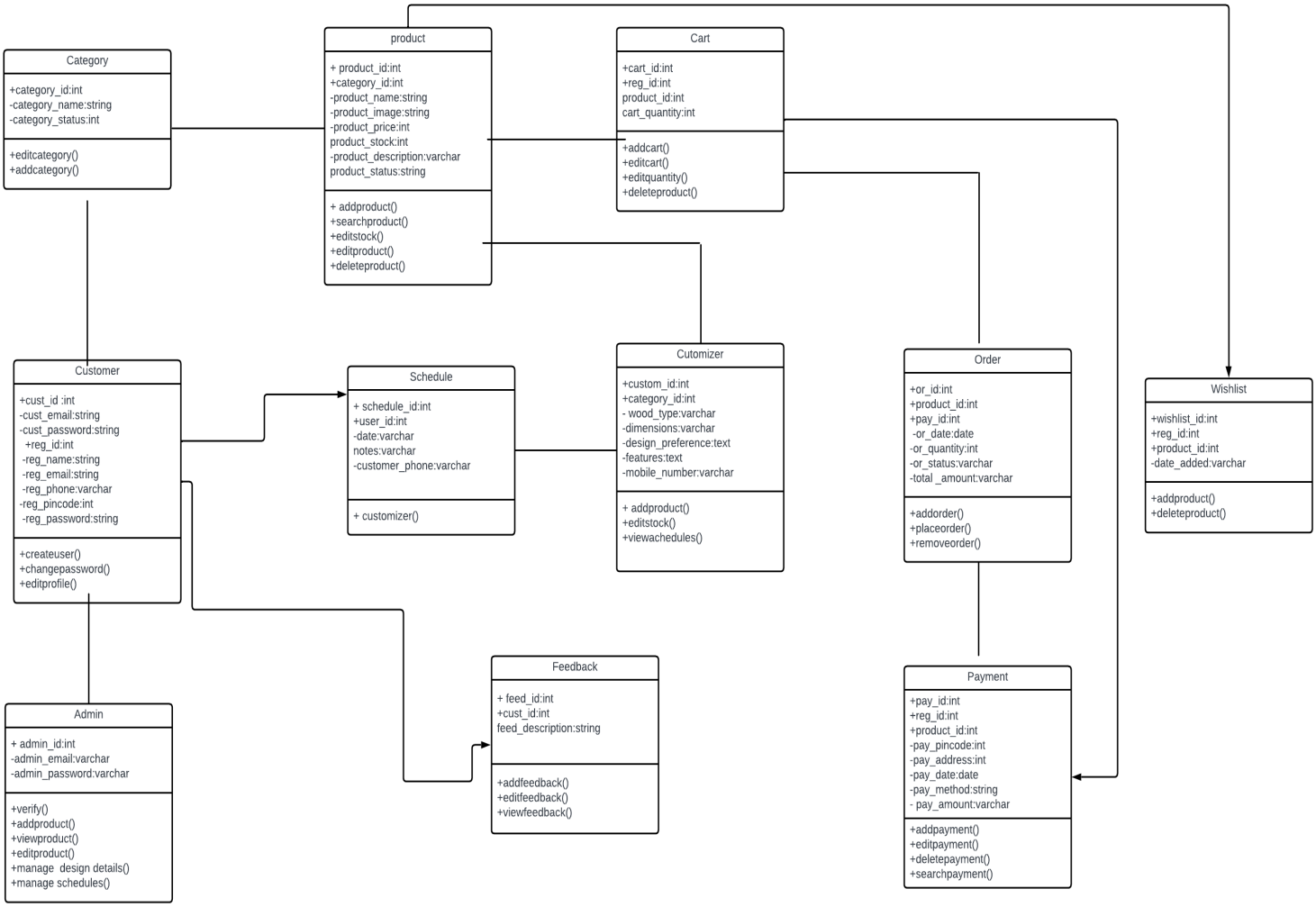

Website
Database
Customer
Register
Save user Details
User details saved
Registeration Successful
Login Request
Check Account
Altrnative
Valid Account
Valid Account
Access Account
Else
Account not valid
Registeration account
Search Product
Checking Product
Altrnative
Valid Account
Product Available
View the product
Else
Product is unavailable
Search Unavailable
Customize Product
Save Customization
Customization saved
Display customized product
Add to cart
Save cart details
Cart details saved
Display cart details
Checkout
Save order details
Save order details
Payment
Payment Status
Payment status updated
Payment Successful

## 3. ACTIVITY DIAGRAM

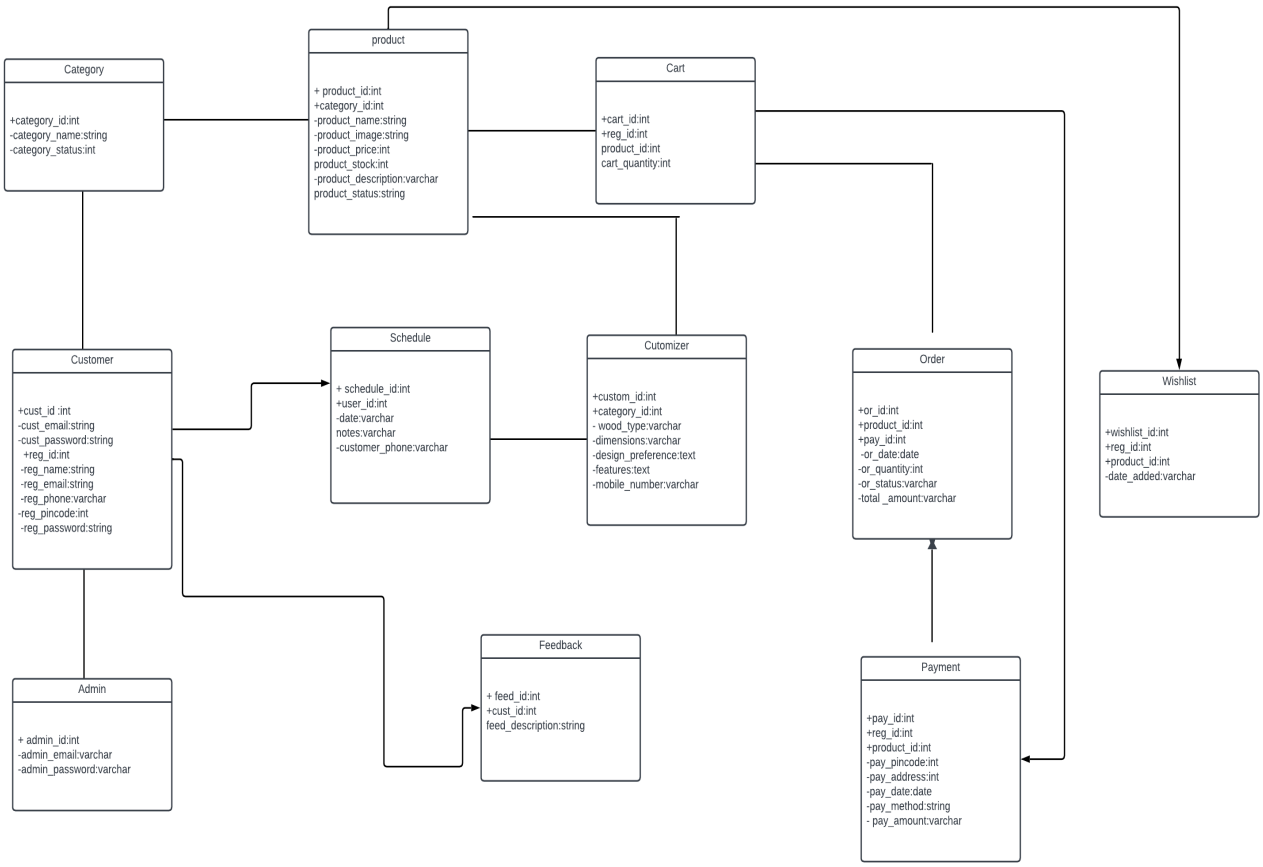





## 4. CLASS DIAGRAM




## 5. OBJECT DIAGRAM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-reg_password:string
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notes:varchar
-customer_phone:varchar
Cutomizer
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-features:text
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Order
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+pay_id:int
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-or_quantity:int
-or_status:varchar
-total _amount:varchar
Wishlist
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+product_id:int
-date_added:varchar
Admin
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-admin_password:varchar
Feedback
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feed_description:string
Payment
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+reg_id:int
+product_id:int
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-pay_address:int
-pay_date:date
-pay_method:string
- pay_amount:varchar