A Real time research project

on

VRISKHA E-COMMERCE WEBSITE

submitted in partial fulfillment of the requirements for the award of degree of

BACHELOR OF TECHNOLOGY

in

COMPUTER SCIENCE & ENGINEERING

(Artificial Intelligence & Machine Learning)

by

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Department of Computer Science & Engineering

(Artificial Intelligence & Machine Learning)

BVRIT HYDERABAD COLLEGE OF ENGINEERING FOR WOMEN

(Approved by AICTE, New Delhi and Affiliated to JNTUH, Hyderabad)

Accredited by NAAC with A Grade

Bachupally, Hyderabad - 500090

July 2023-2024

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CERTIFICATE

This is to certify that the Real time research project entitled "VRIKSHA E-COMMERCE WEBSITE" is a bonafide work carried out by Ms. K. LAXMI PRASANNA (22WH1A6620), Ms. R. ASHRITHA (22WH1A6626), Ms. M. SAATVIKA (22WH1A6628) in partial fulfillment for the award of B.Tech degree in Computer Science & Engineering (AI&ML), BVRIT HYDERABAD College of Engineering for Women, Bachupally, Hyderabad, affiliated to Jawaharlal Nehru Technological University Hyderabad, under my guidance and supervision. The results embodied inthe project work have not been submitted to any other.

Internal Guide Ms. V. INDU Assistant Professor Dept of CSE(AI&ML) Head of the Department Dr. B. Lakshmi Praveena HOD & Professor Dept of CSE(AIML)

DECLARATION

We hereby declare that the work presented in this project entitled "VRIKSHA E-COMMERCE WEBSITE" submitted towards completion of real time research project work in II Year of B.Tech of CSE(AI&ML) at BVRIT HYDERABAD College of Engineering for Women, Hyderabad is an authentic record of our original work carried out under the guidance of Ms. V.INDU, Assistant Professor, Department of CSE(AI&ML).

Sign with Date: Ms. K. Laxmi Prasanna (22WH1A6620)

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Finally, Last but not least, we wish to acknowledge our **Parents** and **Friends** for giving moral strength and constant encouragement.

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ABSTRACT

- Vriksha is an emerging e-commerce platform offering a diverse selection of high-quality plants, from common houseplants to rare species, catering to gardening enthusiasts and professionals.
- Vriksha offers secure user registration, a user-friendly shopping cart, and a wish list. Advanced search, filtering options, and a smooth checkout process enhance the shopping experience.
- Vriksha is a mobile-friendly platform promoting sustainable gardening practices as part of the Green India initiative. It offers a wide range of plants and gardening essentials, aiming to be a reliable and convenient destination while supporting environmental responsibility.

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1. INTRODUCTION AND BACKGROUND

The core mission of Vriksha is to streamline and elevate the shopping journey for plant lovers. Our dedicated online marketplace offers a thoughtfully curated range of premium plants, including houseplants, succulents, rare varieties, and vital gardening tools, designed to meet the needs of gardeners at every level. By bringing all these essentials together, Vriksha saves users time and effort, providing an easy-to-use interface with comprehensive plant care guides, honest reviews, and tailored suggestions. We focus on ensuring that all products meet the highest quality standards, giving customers peace of mind. At Vriksha, we aim to make shopping for your gardening needs a joyous and smooth experience, allowing you to focus on what truly matters – nurturing your green space. Join us in creating a better shopping experience for all your plant and gardening needs.

1.1 Problem Statement:

Gardening enthusiasts and professionals often face challenges in locating a reliable and specialized online resource for high-quality plants and gardening supplies.

Vriksha aims for providing a dedicated e-commerce platform focused exclusively on offering a wide range of premium plants and essential gardening products. With its user-friendly interface, comprehensive plant care information, authentic reviews. Vriksha is designed to streamline the shopping process, enhance user satisfaction, and support a seamless gardening experience.

1.2 Objectives:

1. Provide a User-Friendly Shopping Experience :

Develop an intuitive and responsive user interface using HTML, CSS, and JavaScript to ensure a seamless shopping experience for parents and caregivers.

2. Ensure Product Quality and Variety:

Curate a comprehensive selection of high-quality baby products from trusted suppliers and brands.

3. Enhance Customer Satisfaction:

Offer detailed product descriptions, high-resolution images, and user reviews to help customers make informed purchasing decisions.

4. Facilitate Secure and Efficient Transactions:

Integrate a secure payment gateway using Stripe to ensure safe and hassle-free transactions.

5.Promote Convenience for Busy Parents:

Offer features such as wishlists, saved carts, and personalized product recommendations to make shopping more convenient.

6. Support Small Businesses and Suppliers:

Provide a platform for small businesses and suppliers to reach a broader market and grow their customer base.

7.Leverage Technology for Scalability and Performance:

Utilize MySQL Workbench for effective database management to handle large volumes of data and ensure fast query responses.

8.Ensure Data Security and Privacy:

Implement strong security measures such as SSL/TLS encryption and OAuth for secure authentication and data protection.

9. Analyze and Optimize Performance:

Use Google Analytics to track user behavior, monitor website performance, and gather insights to continuously improve the platform.

1.3 Background

Vriksha is a dedicated online platform designed for gardening enthusiasts and professionals. It offers a curated selection of high-quality plants and gardening supplies, simplifying the search for specific items in a clutter-free environment.

The platform features an intuitive design with a user-friendly interface, utilizing HTML, CSS, and JavaScript for a responsive experience. The backend is powered by Java for secure functionality, and MySQL handles data management efficiently. Vriksha is built for scalability and seamless performance, ensuring a reliable shopping experience for plant lovers.

2. LITERATURE SURVEY

SNO	Title of the name	Authors	Description
S.NO.	Title of the paper	Authors	Description Examines the growth of
1	E-commerce	Smith A.,	Examines the growth of
	Platforms for	& Jones	specialized e-commerce
	Plant Enthusiasts	B.	platforms for gardening
			products. Highlights user
			preferences for curated plant
			selection and efficient
	II D	T T 0	shopping experiences.
2	User Experience	Lee T., &	Discusses best practices for
	Design in Online	Wang X.	designing user-friendly e-
	Marketplaces		commerce interfaces. Focuses
			on intuitive navigation and
			seamless transaction
	TI D 1 0	D 10	processes.
3	The Role of	Patel S.,	Analyzes the importance of
	Detailed Product	& Kumar	comprehensive product
	Information in E-	R.	descriptions and care guides
	commerce		in enhancing consumer
			satisfaction and reducing
			return rates.
4	Mobile	Chen L.	Investigates the impact of
	Optimization for		mobile optimization on e-
	E-commerce		commerce performance.
	Platforms		Highlights the importance of
			responsive design for
			improving user engagement
			and sales.
5	Personalization	Martinez	Explores the use of
	and	A., &	personalized
	Recommendation	Singh P.	recommendations and
	Systems in E-		tailored shopping experiences
	commerce		in boosting customer loyalty
			and increasing sales.

6	Sustainability Practices in Online Retail	Green D., & Roberts H.	Reviews the integration of sustainable practices in e-commerce, including ecofriendly packaging and carbon offsetting, and their impact on consumer choices.
7	Technology Integration in E- commerce Platforms	Brown F.	Examines various technologies used in modern e-commerce platforms, including augmented reality (AR) and artificial intelligence (AI), and their benefits for user engagement and operational efficiency.

3. PROPOSED SYSTEM ANALYSIS

a. Existing System

Ugaoo: Ugaoo is an e-commerce platform specializing in gardening products, offering a diverse range of plants, seeds, and gardening tools. The website features a user-friendly design with detailed plant care information and customer reviews. It is optimized for mobile use and provides reliable delivery and support services.

NurseryLive: NurseryLive is an Indian online platform offering a wide range of plants, gardening tools, and accessories for enthusiasts to purchase and cultivate greenery conveniently delivered to their doorsteps.

b. Disadvantages

1. Ugaoo

Disadvantages:

Limited Specialization: While Ugaoo offers a broad range of gardening products, it may lack specialized options or niche plants compared to more focused platforms.

Website Navigation: Some users may find the website navigation challenging or less intuitive, especially when searching for specific products or information.

Customer Service Issues: There have been occasional reports of slow or unresponsive customer service, which can impact the overall shopping experience.

2. NurseryLive

Disadvantages:

- 1. Limited ability to physically inspect plants before purchase.
- 2. Shipping costs or delays could affect plant health upon delivery

c. Proposed System

In Vriksha, the website features are designed to enhance user experience and functionality. Here's a detailed look at the key features:

1. Cart:

- Add to Cart: Users can easily add products to their cart with a single click.
- View Cart: Users can view all the items they have added to their cart at any time, with details like product names, quantities, prices, and total cost.
- **Update Cart:** Users can update quantities or remove items from their cart before proceeding to checkout.
- Checkout: A seamless checkout process that guides users through entering shipping information, selecting payment methods, and placing their order.

2. Wishlist:

- Add to Wishlist: Users can save products to their wishlist for future reference with a single click.
- View Wishlist: Users can view all the items they have saved in their wishlist at any time.
- Move to Cart: Users can easily move items from their wishlist to their cart when they are ready to purchase.

3. Login:

- User Authentication: A secure login system that requires users to enter their email and password to access their account.
- Remember Me: An option for users to stay logged in on their device for convenience.
- Forgot Password: A feature that allows users to recover their password if they forget it.

d. Advantages

1. Convenience:

• Advantage: Provides parents and caregivers easy access to a comprehensive range of high-quality baby products online, saving time and effort.

2. Accessibility:

• Advantage: Enables shopping anytime and anywhere, catering to busy schedules and varied parenting needs.

3. Product Variety:

• Advantage: Offers a wide selection of curated baby products from trusted suppliers, ensuring diverse choices for consumers.

4. User Experience:

• Advantage: Delivers a seamless and intuitive shopping experience with detailed product descriptions, reviews, and personalized recommendations.

5. Support for Small Business:

• Advantage: Provides a platform for small businesses and suppliers to reach a broader market and grow their customer base.

6. Scalability:

• Advantage: Built on scalable technologies like Spring Framework, Java, and MySQL, ensuring the platform can grow with increasing demand and data volumes.

7. Community Impact:

• Advantage: Contributes to economic growth by supporting local suppliers and enhancing parental satisfaction and child care practices.

e. Requirements Software Requirements:

- 1.Operating System Development and Deployment: Windows 10
- **2.Development Environment Primary Languages:** HTML, CSS, JavaScript for frontend development Backend Development: Java (Spring Framework)
- 3. Version Control Git: To track changes and collaborate with the team
- **4. Integrated Development Environment (IDE):** Frontend Development: VS Code or Sublime Text for HTML, CSS, and JavaScript. Backend Development: Eclipse or IntelliJ IDEA for Java
- **5.Database Management System:** MySQL Workbench: For database design and management
- 6.Payment Gateway Integration Stripe: For secure payment processing
- **7.Analytics Tools:** Google Analytics: For tracking user behavior and website performance
- **8.Web Server:** Apache Tomcat: To deploy Java-based web applications
- 9. Security Tools: SSL/TLS Certificates: For securing data transmission

10. Third-Party Libraries and Frameworks:

Spring Boot: For building the backend services

React.js: For creating dynamic and responsive frontend interfaces (if chosen)

Bootstrap: For responsive design.

Hardware Requirements for Vriksha

- **1.Processor:** Multi-core processor (e.g., Intel Core i5 or higher) for efficient development and deployment
- **2.RAM:** Minimum 8 GB RAM; 16 GB or more recommended for handling development tasks and running virtual environments
- **3. Storage:** Sufficient storage space (at least 256 GB SSD) for storing code, databases, and other project-related files
- **4. Network Connectivity:** Stable internet connection for development, testing, and deployment purposes
- **5. Backup Solutions:** External hard drive or cloud storage for regular backups of code, databases, and other critical project files.

f. Architecture

1. Client Side (Frontend):

- HTML: Used for structuring the content of the website.
- CSS: Used for styling and designing the layout of the website.
- JavaScript: Provides client-side interactivity and dynamic content updates.

2. Server Side (Backend):

- Java Servlets: Handle server-side logic, manage HTTP requests, and coordinate responses.
- JSP (Java Server Pages): Dynamically generate HTML content based on serverside logic and data.
- **Spring Tool Suite (STS):** An IDE for developing Spring applications, providing features to simplify backend development.
- Servlet Container (Apache Tomcat): Deployment environment for running Java Servlets and JSP.

3. Database:

- MySQL: Relational database management system to store and manage product, user, and order data.
- JDBC (Java Database Connectivity): Java API for connecting to and interacting with the MySQL database.

4. Admin Interface:

- Product Management: Admin can add, update, and delete products.
- Inventory Management: Tracks product stock levels.
- Order Management: Allows admin to view and manage customer orders

4. DATASET DESCRIPTION

a. Sample Dataset:

```
<\(mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mathref{mat
       Page Encoding="ISO-8859-1"%>
<!DOCTYPE html>
<html lang="en">
<head>
        <meta charset="UTF-8">
       <meta name="viewport" content="width=device-width, initial-scale=1.0">
        <title>Vriksha Header</title>
        link
href=https://fonts.googleapis.com/css2?family=Material+Symbols+Outlined:ops
z,wght,FILL,GRAD@20..48,100..700,0..1,-50..200 rel="stylesheet">
        link
href=https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css
rel="stylesheet" >
link
href=https://cdnjs.cloudflare.com/ajax/libs/fontawesome/6.5.2/css/all.min.css
rel="stylesheet" >
 link
href=https://cdnjs.cloudflare.com/ajax/libs/fontawesome/5.15.3/css/all.min.css
rel="stylesheet" >
 k rel="stylesheet" href="header.css">
 <link rel="stylesheet" href="products.css">
 <!-- Include your CSS stylesheets -->
  link
href=https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css
rel="stylesheet" >
```

```
link
href=https://cdnjs.cloudflare.com/ajax/libs/fontawesome/6.5.2/css/all.min.css
rel="stylesheet">
link
href=https://cdnjs.cloudflare.com/ajax/libs/fontawesome/5.15.3/css/all.min.css
rel="stylesheet" >
  <link rel="stylesheet" href="home.css">
  <link rel="stylesheet" href="https://kit.fontawesome.com/a076d05399.js">
         href=https://cdnjs.cloudflare.com/ajax/libs/font-awesome/4.7.0/css/font-
link
awesome.min.css rel="stylesheet" >
  <style>
     .slideshow-container {
       max-width: 100%;
       position: relative;
       margin: auto;
       height: 500px; /* Fixed height for the slideshow */
       overflow: hidden; /* Hide overflow to contain images within fixed height
*/
     }
     .mySlides {
       display: none;
     }
     .fade {
       animation: fadeEffect 3s infinite; /* Change image every 3 seconds */
     }
```

```
@keyframes fadeEffect {
       0% { opacity: 0; }
       25% { opacity: 1; }
       75% { opacity: 1; }
       100% { opacity: 0; }
     }
    .slideshow-container img {
       width: 100%; /* Ensure images fill the container width */
       height: 100%; /* Ensure images fill the container height */
       object-fit: cover; /* Maintain aspect ratio and cover entire container */
  </style>
</head>
<body>
<!-- Header Section -->
<%@ include file = "/includes/headJSP/header.jsp"%>
<body>
  <!-- End Header Section -->
<div class="slideshow-container">
  <div class="mySlides fade">
                                                                           <img
src=https://cdn.shopify.com/s/files/1/0579/7924/0580/files/MonoonPlants.jpg?v=
1718193388 style="width:100%">
  </div>
```

```
<div class="mySlides fade">
                                                                      <img
src=https://cdn.shopify.com/s/files/1/0579/7924/0580/files/monsoonPlanters.jpg?
v=1718193530 style="width:100%">
  </div>
  <div class="mySlides fade">
                                                                      <img
src=https://cdn.shopify.com/s/files/1/0579/7924/0580/files/monsoonPlanters.jpg?
v=1718193530 style="width:100%">
  </div>
</div>
<!-- "Must haves" Section -->
<h1><center><b>Must haves</b></center></h1>
< hr >
<div class="row must-have">
  <div class="col-md-3 col-sm-6">
                                                                      <img
src=https://smoor.in/cdn/shop/files/CustomiseCakeWebsiteImages 0051 Chocol
ate-lovers-cake 1200x1200.jpg?v=1684319299 alt="Best Seller Cakes">
    Sest Seller Cakes
  </div>
  <div class="col-md-3 col-sm-6">
                      src=https://assets.flowersnfruits.com/uploads/product-
pics/1687421279 13134.png alt="Roses">
    Roses
  </div>
  <div class="col-md-3 col-sm-6">
```

```
<img src=https://www.zoet.co/cdn/shop/files/Cheese-Crunch-Gift-Hamper-
Tray.png?v=1688129765 alt="Hampers">
    Hampers
  </div>
  <div class="col-md-3 col-sm-6">
                          src=https://jumanji.livspace-cdn.com/magazine/wp-
content/uploads/sites/2/2022/09/26215854/shutterstock 684988429.jpg
Purifying Plants">
    Air Purifying Plants
  </div>
  <div class="col-md-3 col-sm-6">
                                                                     <img
src=https://assets.winni.in/c limit,dpr 1,fl progressive,q 80,w 1000/88018 best
ies-forever-personalized-caricature.jpeg alt="Caricature">
    Caricature
  </div>
  <div class="col-md-3 col-sm-6">
                                                                     <img
src=https://assets.bonappetit.com/photos/5a0336552fff8c4e1363fbb3/1:1/w 5792
,h_5792,c_limit/water-bottle-test-group-lede.jpg alt="Water Bottles">
    Water Bottles
  </div>
  <div class="col-md-3 col-sm-6">
           <img src=https://www.fnp.com/images/pr/m/v200/special-surprise-
arrangement.jpg alt="Chocolate Bouquet">
    Chocolate Bouquet
  </div>
  <div class="col-md-3 col-sm-6">
```

```
src=https://static.tnn.in/photo/104440051/104440051.jpg
                <img
alt="Cactus">
     Cactus
  </div>
</div>
<!-- End of "Must haves" Section -->
<!-- Slideshow Section -->
<!-- End of Slideshow Section -->
<!-- Additional JavaScript at the end of the body -->
<script>
  let slideIndex = 0;
  showSlides();
  function showSlides() {
     let slides = document.getElementsByClassName("mySlides");
     for (let i = 0; i < slides.length; <math>i++) {
       slides[i].style.display = "none";
     }
     slideIndex++;
     if (slideIndex > slides.length) {
       slideIndex = 1;
```

```
}
     slides[slideIndex - 1].style.display = "block";
     setTimeout(showSlides, 3000); // Change image every 3 seconds
</script>
<!-- JavaScript for delivery location -->
<script>
  document.addEventListener('DOMContentLoaded', function() {
                                                  deliveryLocationBtn
                                    const
document.getElementById('deliveryLocationBtn');
     const selectedCity = localStorage.getItem('selectedCity');
     if (selectedCity) {
       deliveryLocationBtn.textContent = selectedCity;
     } else {
       deliveryLocationBtn.textContent = 'Select City';
  });
</script>
</body>
</html>
```

5. PROPOSED SYSTEM MODULE

Proposed System Module for Vriksha

- **a.** User Interface Module: The User Interface Module is designed to provide a seamless and intuitive shopping experience for users. This module handles the presentation layer of the website, making use of HTML, CSS, and JavaScript to create responsive and interactive interfaces. The primary goal is to ensure easy navigation, attractive product displays, and efficient interactions with the platform.
- **b. Product Catalog Module:** The Product Catalog Module is responsible for managing the display and organization of products on the website. It includes features such as product search, filtering, and categorization to help users find the items they need. The module ensures that product details, images, and reviews are presented clearly, aiding users in making informed purchasing decisions.
- c. Shopping Cart and Checkout Module: The Shopping Cart and Checkout Module handles the core e-commerce functionalities of the platform. It allows users to add, update, and remove products from their shopping cart, and provides a secure and streamlined checkout process. The module integrates with payment gateways like Stripe to facilitate various payment options and ensures that transactions are processed securely.
- **d.** User Management Module: The User Management Module is crucial for handling user accounts and profiles. It supports user registration, login, and profile management, enabling users to update their personal information and view their order history. This module ensures secure authentication and authorization, protecting user data and privacy.

- **e. Order Management Module:** The Order Management Module tracks and manages customer orders from placement to delivery. It provides order tracking functionality, automated email notifications, and interfaces for the admin to process and monitor orders. This module ensures that users are kept informed about their order status and helps streamline the fulfillment process.
- **f. Product Management Module**: The Product Management Module is designed for administrators to manage the product inventory. It includes features for adding, updating, and removing products, managing stock levels, and setting product attributes. This module ensures that the product catalog remains current and accurate, supporting efficient inventory management.
- **g. Customer Support Module:** The Customer Support Module provides various channels for customer assistance, including live chat, email, and phone support. It also includes an FAQ section and handles return/refund requests. The module aims to enhance customer satisfaction by offering prompt and helpful support.
- h. Analytics and Reporting Module: The Analytics and Reporting Module leverages tools like Google Analytics to monitor website performance and user behavior. It generates reports on key metrics such as sales, traffic, and user engagement, providing valuable insights for continuous improvement. This module helps in data-driven decision-making to optimize the platform's performance.
- i. Security and Compliance Module: The Security and Compliance Module is dedicated to ensuring the platform's security and adherence to regulatory requirements. It implements SSL/TLS encryption for secure data transmission, encrypts sensitive information, and ensures compliance with data protection regulations such as GDPR and CCPA. This module protects user data and maintains the platform's integrity.

6. PARTIAL IMPLEMENTATION

1. Load JSON Dataset

```
import json
with open('products.json', 'r') as
file:dataset = json.load(file)
```

2.Data Preprocessing

a. Cleaned Dataset

```
cleaned_dataset = [{'product_description': entry['description'],
'category': entry['category']} for entry in dataset if 'description' in entry and
'category' in entry]
```

b. Tokenization

```
from nltk.tokeniz import

word_tokenize

import pandas as pd

df = pd.DataFrame(cleaned_dataset)

df['tokenized_description']= df['product_description'].apply(word_tokenize)
```

c. Remove Stopwords

```
from nltk.corpus import stopwords

stop_words = set(stopwords.words('english')) df['filtered_description']=

df['tokenized_description'].apply(lambda

tokens: [word for word in tokens if word.lower() not in stop_words])
```

d. Remove Punctuation

```
import string
df['no_punctuation'] = df['filtered_description'].apply(lambda tokens:
    [word for word in tokens if word.remove]
```

e. Stemming

```
from nltk.stem import PorterStemmer

stemmer = PorterStemmer()

df['stemmed_description']=df['no_punctuation'].apply(lambda tokens:
[stemmer.stem(word) for word in tokens])
```

3. Sentiment Analysis Model

f. Define Model Architecture

```
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Embedding, LSTM, Dense
model = Sequential()
model.add(Embedding(input_dim=5000,
output_dim=64)) model.add(LSTM(64,
return_sequences=True)) model.add(LSTM(32))
model.add(Dense(1, activation='sigmoid'))
```

g. Compile Model

```
model.compile(loss='binary_crossentropy',optimizer
='adam', metrics=['accuracy'])
```

7. EXTENSION PLAN

1. Recommendations

 Personalized Recommendations: Implement AI-driven personalized recommendations based on user behavior, preferences, and purchase history.

2. Product Range Expansion

- New Categories: Expand new variety of plants along with their related products.
- Exclusive Nurseries: Introducing nursery selection options for users to support local nurseries.

8. REFERENCES

1. E-Commerce Best Practices

"E-Commerce UX: How to Create an Outstanding User Experience" - Smashing Magazine Smashing Magazine Article

"The Essential Guide to E-Commerce User Experience" - UX Design UX Design Guide

2. Ugaoo E-Commerce Sites

The Honest Company Known for its focus on plant products and user-friendly design.

Ugaoo features a comprehensive plant products registry and shopping experience.

3. Technical Development

"Full Stack JavaScript: Learn Backbone.js, Node.js and MongoDB" - Packt Publishing

"Learning React: Functional Web Development with React and Redux" - O'Reilly Media

4. Design Inspiration

Dribbble

Behance

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- 2. https://nurserylive.com/