Accessible E-commerce Website for Visually Impaired Users

using HTML/CSS/JS, Springboot and MySQL

Introduction

The "Accessible E-Commerce Website for Visually Impaired Users" is a measure towards developing an environment that is conducive to visually impaired users in purchasing products online. Some of its key components are a safe login and registration mechanism, coupled with easy-to-use navigation and search options for products, as well a simple-to-navigate cart page. The payment modes will also entail net banking and cash on delivery to accommodate all the users' types. The ball is, therefore, on the users and this project to ensure that every visually impaired person gets to enjoy seamless empowering e-commerce experience.

Abstract

❖ This project shall contain a simple login and sign up system through which the customers can log in securely.

❖ Customers are able to smoothly navigate the products available and easily look for products by type they are interested in.

❖ They use a simple cart page on the platform and allowing customers to pay through combinations of their preferred net banking systems as well as cash on delivery.

❖ For administrational control an admin page containing logs of the user activity is important.

❖ The intended purpose of this project is to improve the general accessibility and guarantee that e-commerce is stable and helpful for visually impaired client

Objective

Expand the accessibility to design the e-commerce site that will be usable by blind people. This will involve using a company known as Secure Authentication to incorporate perfect system for users' login and sign up experience. Effectively enable the users to filter product easy through categories. Extended capabilities for searching enable the users to find the necessary products according to their choice. Voice control for Visually Impaired customers to access the whole website.

Existing system and proposed system

Existing System:

Although the presented current e-commerce platforms do not have the devoted accessibility features for visually impaired users, it is clear that the shopping experience of such customers is not comfortable enough. Then there is always a problem with the layout of the page not being compliant, screen readers not being used or being very weak, and the user interface is complicated. Moreover, there is lack of accessibility of more senior users since the processes of authentication and product search options are not developed for blind people. For sellers and administrators, the platform is limited in the control of products and supervision of users' activity when there are no Inclusive design concepts employed.

Existing system and proposed system

Proposed System:

The concern is handled in the "Accessible E-Commerce Website for Visually Impaired Users," which integrates complex accessibility features and intuitive interface for visually impaired consumers through voice commands. This level guarantees that all tasks related to authentication are safe and easy; the product offers optimized navigation by categories; the search function is effective and can be adjusted in accordance with the user's interests. The shopping experience gets even better on the cart page and there are numerous payment methods cash on delivery. The system has special sections for the administration to observe user and product actions and for the sellers to regulate the products they offer.

Hardware and software requirements

Hardware Requirements:

➢ Processor:Dual-Core Processor

➢ RAM: It has storage of 8 GB or higher.

➢ Storage: At least 100 GB.

➢ Network: High-speed internet connection

Software Requirements:

➢ Web Server: Apache Tomcat.

➢ Browser: Chrome or any other browsers

➢ Database: MySQL 8. 0 or higher

➢ Java Development Kit (JDK): Early versionsjdk or JDK 21 or any higher version

➢ Framework: Spring Boot 2. 5 or higher

Table Design

Tabel name: userdata

username	password	name	address	phonenumber	usertype
xxx@gmail.com	xxx	xxx	xxx	1234567890	customer/seller/ admin

Table Design

Tabel name: products

productid	imageURL	productname	productprice	description	highlights	category
1	image	Aquaguard	9000	xxx	xxx	Electronics

cart	solded
0	0

Data Dictionary

Tabel name: userdata

Column name	Data Type	Constraints	Description
username	varchar(100)	primary key, not null	Unique username for each user
password	varchar(100)	not null	Password for the user's account
name	varchar(300)	not null	Full name of the user
address	varchar(300)	not null	Address of the user
phonenumber	long	not null	Contact phone number of the user
usertype	varchar(30)	not null	Type of user (e.g., seller, customer, admin)

Data Dictionary

Tabel name: products

Column name	Data Type	Constraints	Description
productId	int	auto_increment, primary key, not null	Unique identifier for each product
imageURL	varchar(500)	not null	URL to the product's image
productname	varchar(300)	not null	Name of the product
productprice	int	not null	Price of the product
description	varchar(2000)	not null	Detailed description of the product
highlights	varchar(2000)	not null	Key features or highlights of the product
category	varchar(30)	not null	Category to which the product belongs
cart	int	not null	Number of times the product is added to the cart
solded	int	not null	Number of times the product has been sold

Architecture Diagram
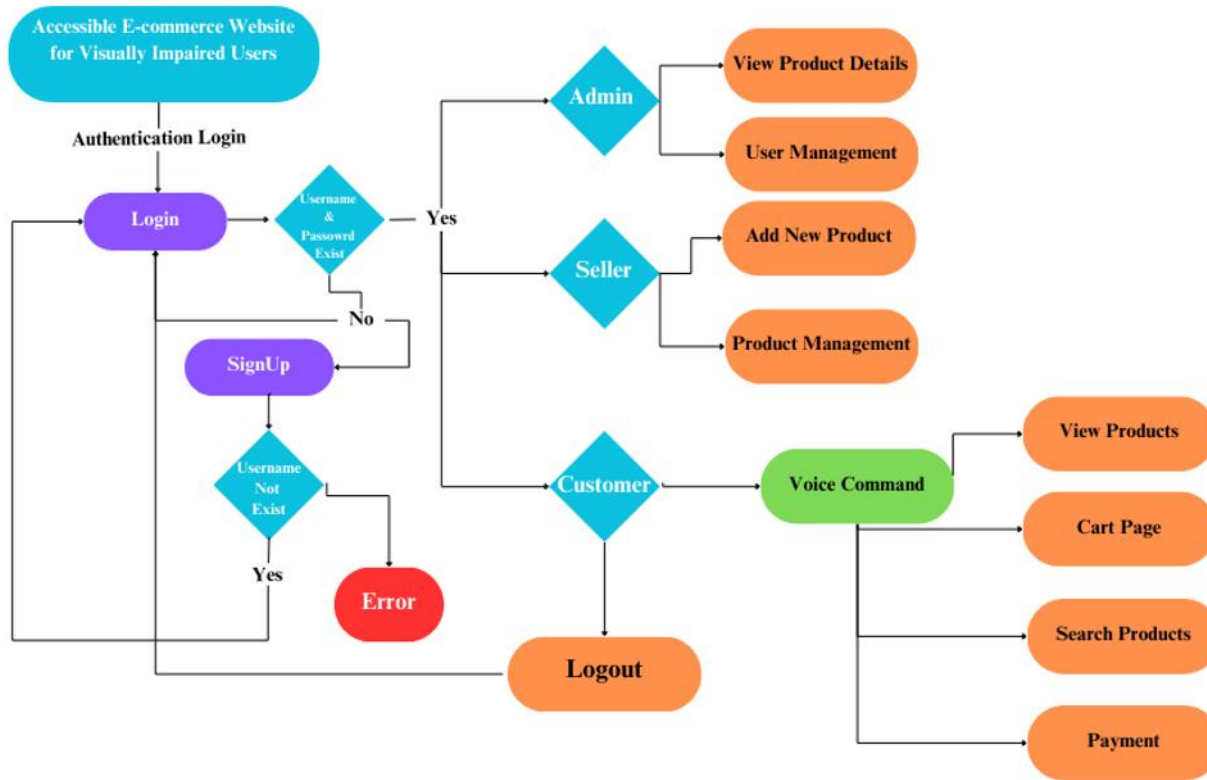
Use Case Diagram

ER Diagram
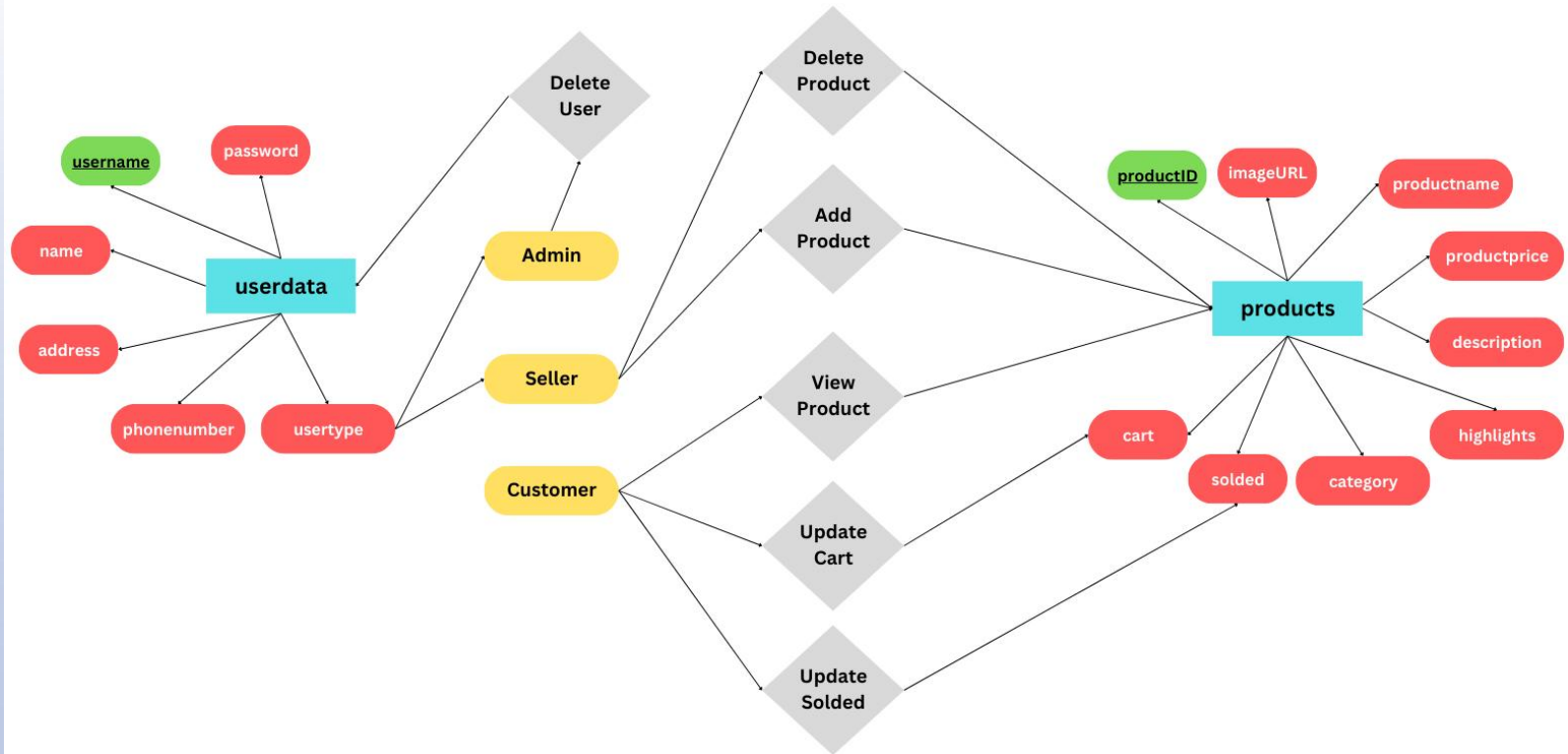
Modules

1) User Authentication

2) Product Viewing

3) Product Search

4) Cart Page

5) Checkout and Payment

6) Admin Dashboard

7) Seller Management

Outputs

Signup Page

Create a new account

ashokkumarprogrammer@gmail.con

•••••••••   SHOW

Ashok Kumar

92, 2nd kailasapuram St

09489458843

Customer

Signup

If you already have an account? Login

Login Page

Home Page (Customer)

Products Page (Customer)

Search Page (Customer)

Search Products

PHILIPS BT3101/15
Trimmer 45 min
Runtime 10 Length
Settings

Cart Page (Customer)

Cart - 1 items

PHILIPS BT3101/15 Trimmer 45
min Runtime 10 Length Settings

− 1 +

₹949.00

Price

Products	₹949.00
Address	Nazerath, Tamilnadu
Delivery Charge	Free

Payment Method

○ Net Banking

○ Cash on Delivery

Total amount ₹949.00

Order Now

Success Page (Customer)

Your order was successfully placed

Thank you for your order. we will
be in contact with more details shortly
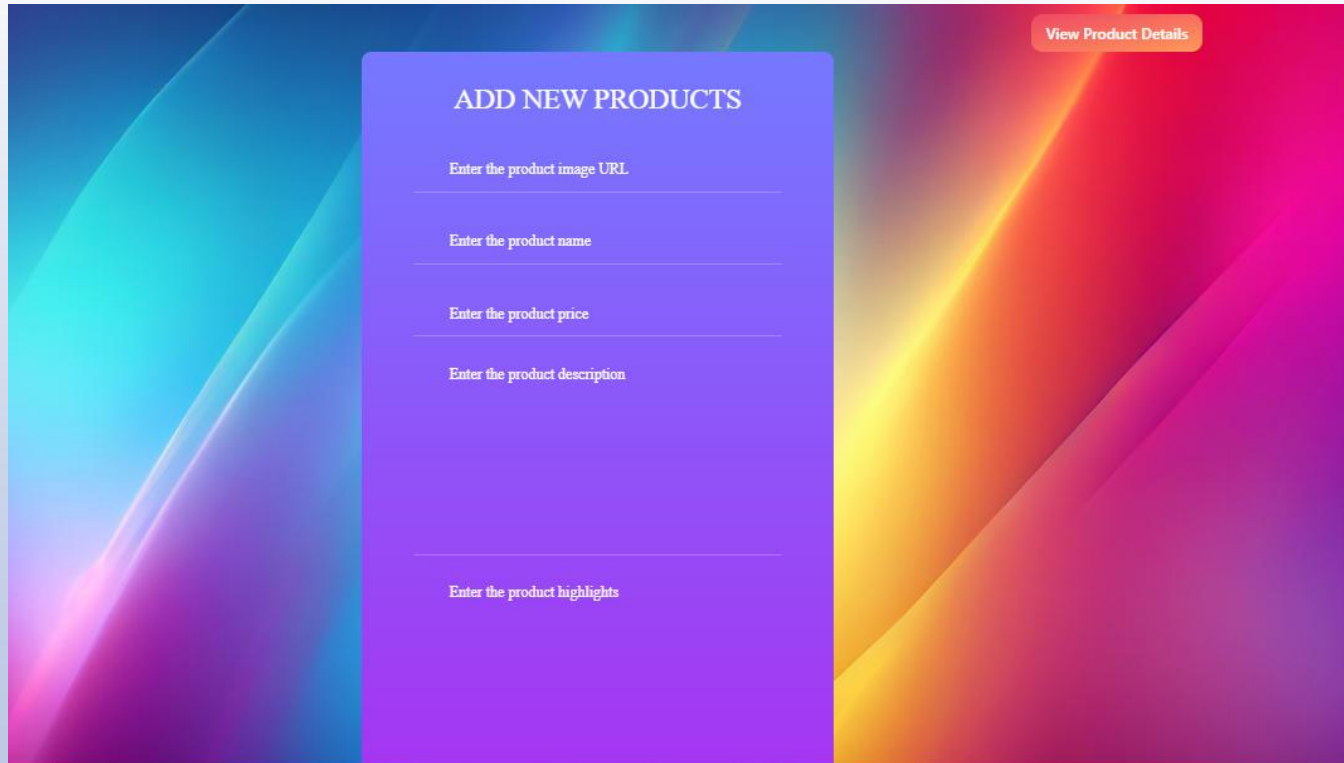
Admin Page (Admin)

User Details

USERNAME	NAME	ADDRESS	USERTYPE	
ashokkumarprogrammer@gmail.com	Ashok	Nazerath, Tamilnadu	customer	DELETE
hariharan@gmail.com	Hari Haran	Tirunelveli	seller	DELETE
hariharan02ms@gmail.com	Hariharan	No 8 Chokker Kovil Street Kurichi Melapalayam Tirunelveli	customer	DELETE

Product Details

PRODUCT NAME	PRODUCT PRICE	PRODUCT CATEGORY	NO. OF SOLDED
Aquaguard Delight NXT 6 L RO + UV + UF Water Purifier	8999	Electronics	1
Pigeon Favourite IC 1800 W Induction Cooktop	1399	Electronics	1

Add Product Page (Seller)

View Product Details

ADD NEW PRODUCTS

Enter the product image URL

Enter the product name

Enter the product price

Enter the product description

Enter the product highlights

Product Details Page (Seller)

Product Details

PRODUCT NAME	PRODUCT PRICE	PRODUCT CATEGORY	NO. OF SOLDED	
Aquaguard Delight NXT 6 L RO + UV + UF Water Purifier	8999	Electronics	1	DELETE
Pigeon Favourite IC 1800 W Induction Cooktop	1399	Electronics	1	DELETE
HAVELLS by Havells Dazzle 1100 W Dry Iron	698	Electronics	0	DELETE
PHILIPS BT3101/15 Trimmer 45 min Runtime 10 Length Settings	949	Electronics	0	DELETE

Testing Methodologies

❖ **Unit Testing (JUnit)** – applies for using JUnit for the test of such objects as controllers, services, repositories.

❖ **Integration Testing (Spring Boot Test)** - It includes core items; Spring Boot Test Auto-Configure is used for auto test configuration.

❖ **Integration testing (JUnit, Spring Boot Test)**

Research Methodology

❖ Enhance Accessibility

❖ Secure Authentication

❖ Comprehensive Search

❖ Admin Control

❖ Server: Apache Tomcat

❖ Voice Recognition: Voice based navigation for customer using javacsript

Conclusion

The proposed "Accessible E-Commerce Website for Visually Impaired Users" is the way to build an equal online shopping sphere. Focusing on the needs of the target audience of visually impaired users, this project guarantees a comfortable and convenient choice of navigation, product search, and purchase. Implementing secured means of logging in and out of the platform, simplified ways through which customers can browse through the products, effective search bar and multiple methods of payment makes the experience enjoyable. Further, the separate modules for administrators and sellers help to control the activities of users and products easily. With this tackling, we are seeking to close the gap of disability when shopping online for the visually impaired users.

Future Enhancement

❖ **Superior Voice Recognition:** Incorporate Natural Language Processing into it the to enhance the comprehension of the users' commands.

❖ **Adaptive Design:** Make sure the platform is fully 'mobile friendly' and is easily viewable on tablets and smartphones.

❖ **Advanced Encryption**: Ensure that users' data are and their transactions are encrypted using the most sophisticated methods that are available.

❖ **Net Banking:** Add the options like GPay, PayTM and PhonePe for payments.

❖ **Search Bar** (Autocomplete and Suggestions): This is a Search Bar contained within the application, whose purpose is to include autocompletion and suggestion fields when the user is searching for a particular item.