

Online Supermarket Web Application

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ABSTRACT

The main purpose of this paper is to present facts about a web application created for a supermarket. Two of the main problems faced by consumers today are lack of time to come and buy goods and transportation problems. By using this web application, customers can save the cost and time of visiting the supermarket. Customers who come to the supermarket using this web application will have the facility of ordering the products they need from home without going to the supermarket and having them delivered to their homes. Customers also get the opportunity to check the order status when they have ordered a product through this web application. Admin can add products to the system using the admin dashboard. Those added products will be displayed to the customers. After registering in the system, a customer can purchase goods. By entering the address of the place where customer wants to bring the purchased product, customer can bring the product to the relevant location. This web application is user-friendly and meets most of the requirements of customers and staff.

Keywords-- Web Application, Supermarket, Customers, Products, Ordering

I. INTRODUCTION

Nowadays, the main objective of every supermarket is to provide the best possible service to the customers who come to the supermarket. Although the first stage is to display the products inside the supermarket in such a way as to attract the customer and introduce various loyalty card methods, it is possible to easily observe that the needs of the customers change over time [1]. Nowadays, it is seen that consumers are more inclined to buy goods online. Internet of Things and Machine to

Machine communications services can be used to meet this requirement [2]. Due to the highly competitive nature of the market, all supermarkets have to adopt these technologies.

It is evident that today, a large number of consumers are showing a greater tendency to buy products from supermarkets online. The main reasons for that are that people do not have enough time to visit the supermarket due to the busy lifestyles of the people and the transportation difficulties they have to go to the supermarket. As a successful solution to the problem of these customers, many supermarkets have made it possible for customers to come and buy the products in their supermarket through the internet as well. For this purpose, it is common to see them create a web application for their supermarkets. Therefore, it can be said that there is a great demand in the market for this created supermarket web application.

II. RELATED WORK

Nowadays, once a certain supermarket becomes popular among people, it is very common to see branches of the same supermarket opening in different parts of the country. In such cases, customers are given the opportunity to order products through the nearest supermarket. It is special to use one web application connected to this supermarket network [3]. Because there is a big competition between supermarkets, if a certain supermarket integrates information technology into its business, other competing supermarkets will also work to integrate those technologies into their own business. The reason for doing so is that it is a very difficult task for any business to survive in the market without joining with the

developing information technology. By using a supermarket web application, it is possible to prevent errors in transactions in the supermarket and to make the tasks done more quickly and accurately [4].

III. METHODOLOGY

A. Technologies

The react library has been used to create the frontend of this system and express, a node web framework, has been used for the backend. React is a library that is more light weight than other web frameworks. Due to this light weight, the time taken to load the web application is significantly reduced. As the loading time of the web application decreases, the tendency to identify this application by search engines like google increases. Due to the presence of a large community support for the React library, it has been possible to remove the bugs very quickly and add new features very quickly. React has become popular among developers because it is easy to learn compared to other web frameworks. Due to its popularity, it is clear that the probability of react being in the industry for a long time is very high.

Express.js is a very famous and popular framework in backend web development. One of the main functions of Express is to create Restful API's. What happens here is to accept the request from the frontend and give a corresponding response. It is a special opportunity to be able to create a complete web application using only one JavaScript programming language while using Express. Also, when express.js is used, a large number of NPM packages can be used very easily.

Mongodb database has been selected as the database of this web application. Because Mongodb is a

full-cloud base database, it has become easy to access the database in the web application. Since Mongodb is a non-relational database, it is very flexible compared to relational databases in creating and changing document schemas. The ability to scale horizontally very easily can be named as an advantage of using mongodb database.

After getting the requirements to create this web application, the agile methodology has been used for development. GitHub has been used as a version control software for this development. By using GitHub, it can be stated as a special fact that everyone in the development team gets the ability to develop the same piece of code in their own local repository.

B. Proposed System

This paper is presenting a web application that was created for the "Wonder Mart" supermarket. With the help of this web application, now users can purchase goods from the supermarket without coming to the physical store. Also, by using the delivery service available on the website, it is also possible to bring the purchased items to the delivery location. Also, by using the delivery service available on the website, it is also possible to bring the purchased goods to the place of delivery. By using this web application, customers can also avoid their valuable time and transportation problems. Also, the customer will be able to know whether the ordered product has been delivered to a delivery person. Thus, customers have the ability to know information about their order. This web application consists of four main parts. Figure 01 is showing the overview of the system. The four parts are shown below.

- 1) User Management
- 2) Product Management
- 3) Payment Management
- 4) Delivery Management

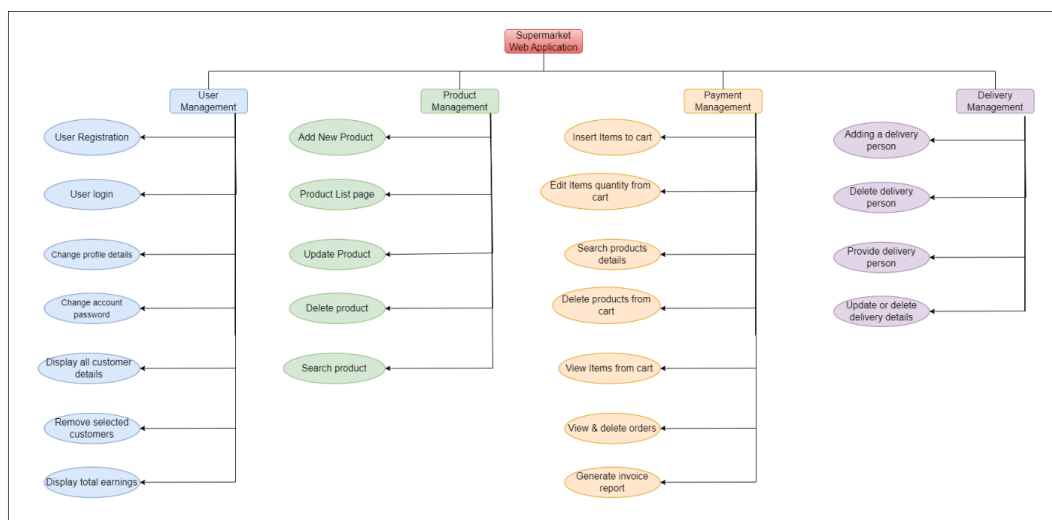


Figure 01: Overview of the system

1) User Management

To purchase goods using this web application, customers need to register for this web application. To register, name, phone number, email and password must be entered in the registration form. After entering the relevant email and password on the login page, you can access the web application. Figure 02 is showing the login interface of the system. Login and registration pages are designed to be easy and simple for users to use.

Customers can view their entered details by visiting their profile page. Figure 03 is showing the profile interface of the system. If a customer wants to change the

name, email and phone number he has entered, he can do so easily by going to the profile edit. Also, if you want to change your password, you can change your existing password by going to password change and giving the current password and the password you want to change. Using the admin dashboard admin has the ability to view all customer details and remove selected customers. Figure 04 is showing the customer management interface of the system. And also, admin views the total earnings of the month. There is also the ability to get a report about the order details if the admin wants.

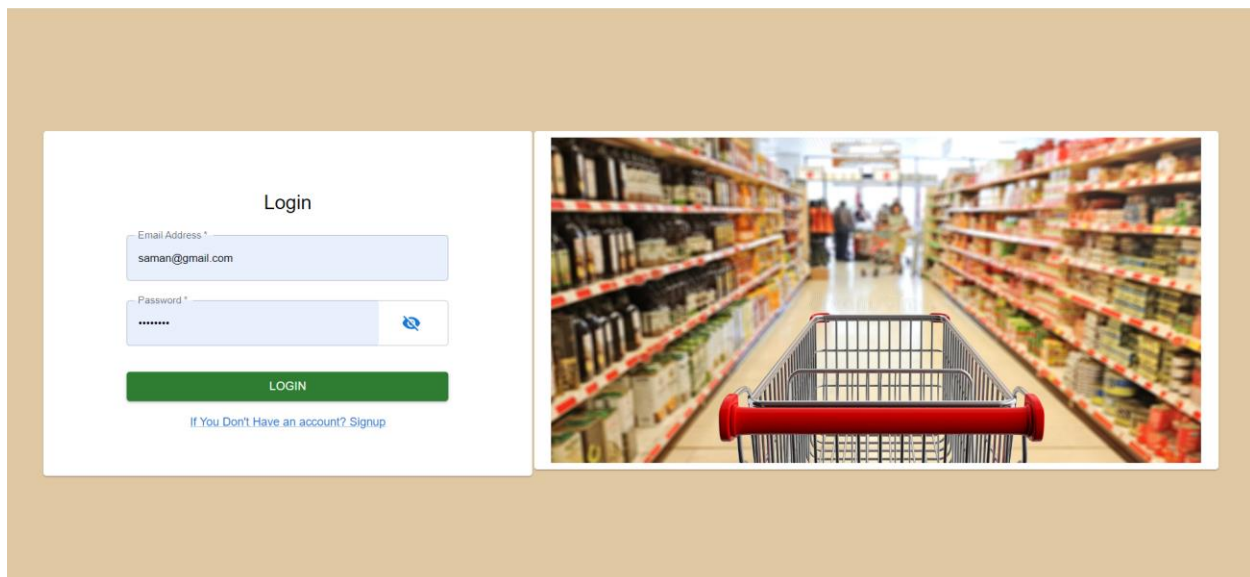


Figure 02: Login interface of the system

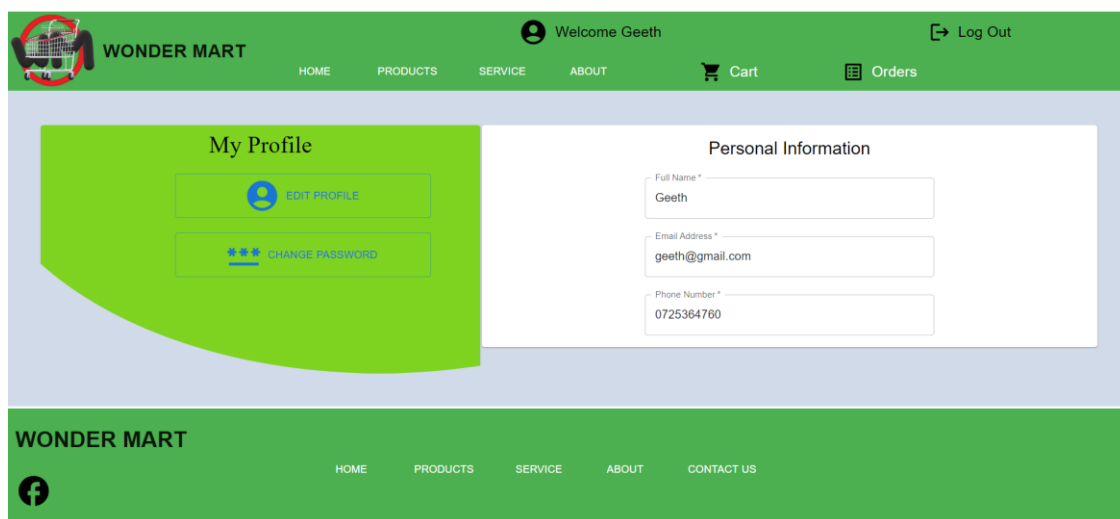


Figure 03: User profile interface of the system

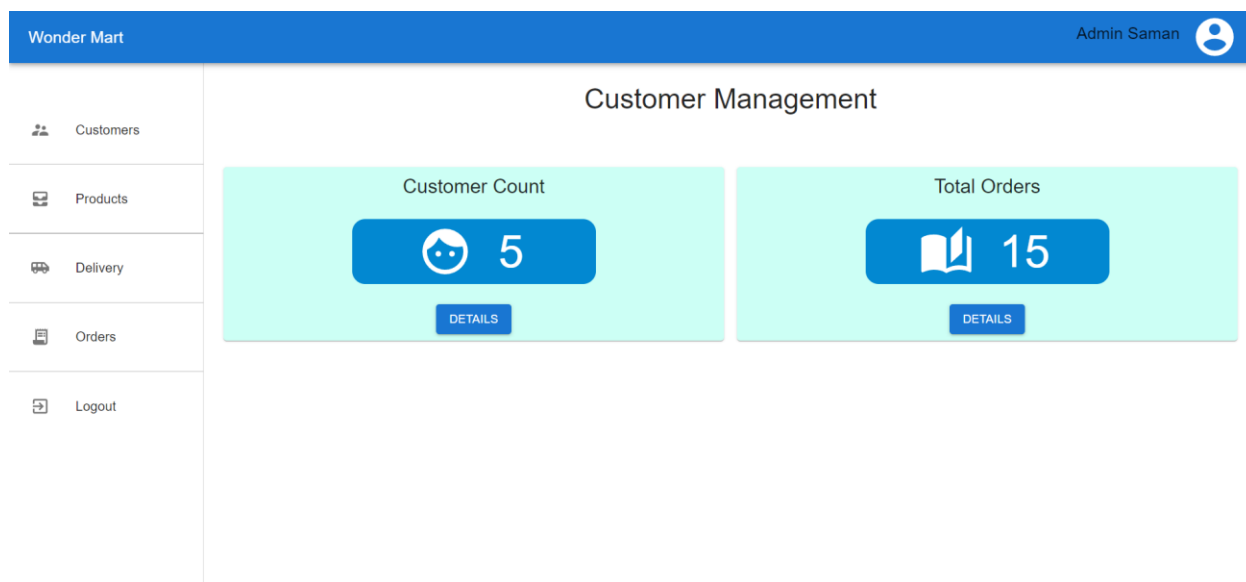


Figure 04: is showing the customer management interface of the system

2) Product Management

Product Management Function Mostly Used in the Online Selling Platform. In This Supermarket Management System Basically Depending on the Product Management Function. Product Management Function Help to Increase selling in this Supermarket. New Product Can Be added to the System using this Product Management Function.

To sell product Seller need to add new product to the system (figure 06). sellers can add new products using the add new product page. To add a new product seller must add product name, quantity, category, product image and price. After clicking the add product button relevant

product added to the system. The new product is shown on the product list page (figure 05).

If a seller needs to update a product, the seller can use the update product button. After editing product details, the seller can click the update product details button. If seller wants to delete some products, seller can use delete product button.

The report generate button generate product list as a pdf (figure 07). If a seller needs to download the current product list as a pdf, he can use the generate report button. When the seller searches for some products using search field, it will only list down requested product.

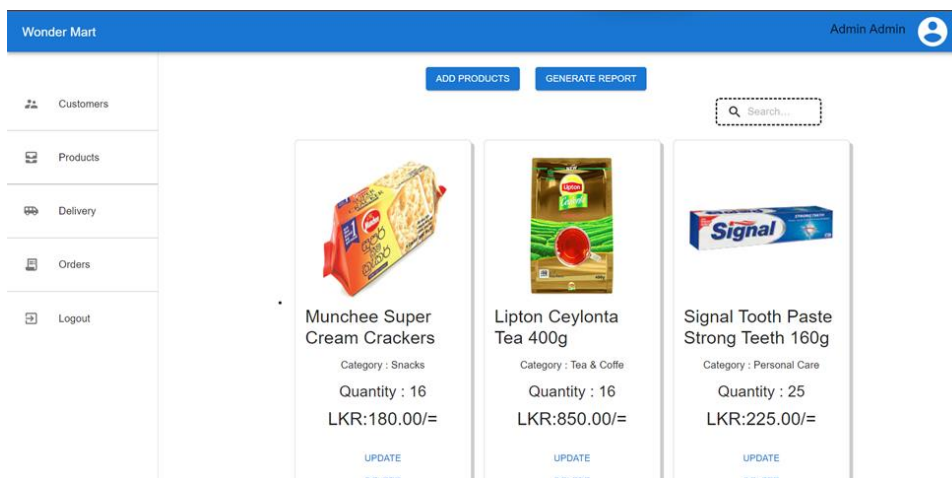


Figure 05 : The product list interface of the system

Figure 06: The add new product interface

Product ID	Product Name	Product Category	Product Price	Product Quantity
63234990999c33d1f609a6a	Munchee Super Cream Crackers	Snacks	180	16
632349a9999c33d1f609a6b	Lipton Ceylonta Tea	Tea & Coffe	850	16
63234b41999c33d1f609afa	Signal Tooth Paste Strong Teeth 160g	Personal Care	225	25
6353be731db2d1a67e1f8a2e	Viva 400G	Milk	1500	50

DOWNLOAD

Figure 07: The product report generate interface

3) Payment Management

After customer login to the system, he should add products to his cart first. Figure 08 is showing the product searching interface of the system. Then he can edit product quantity or remove item one by one. Also, he can remove all items “Remove all”. After that customer can check out for payments by clicking “Checkout”. Figure 09 is showing the shopping cart interface of the system. To checkout card number, expire date and CVV as card details and first name, last name, address, mobile number

and email as a customer detail must be entered in the registration form. And he should confirm to place that order.

Customer can see his orders list as canceled orders, to receive orders and delivered orders. Also, he can see Invoice details of orders by clicking “view order”. Figure 10 is showing the to receive order list interface. Then he can download invoice as a pdf. Also, customer can cancel orders before assign a rider for deliver.

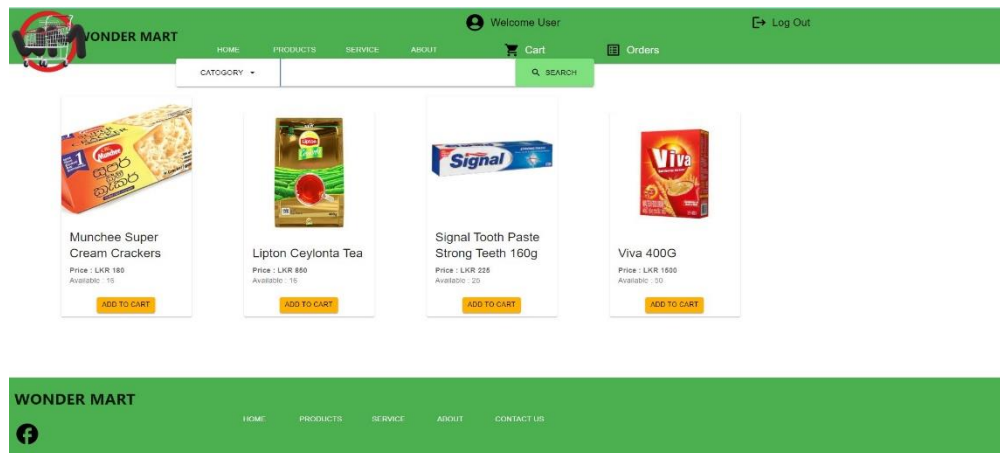


Figure 08: The product searching interface

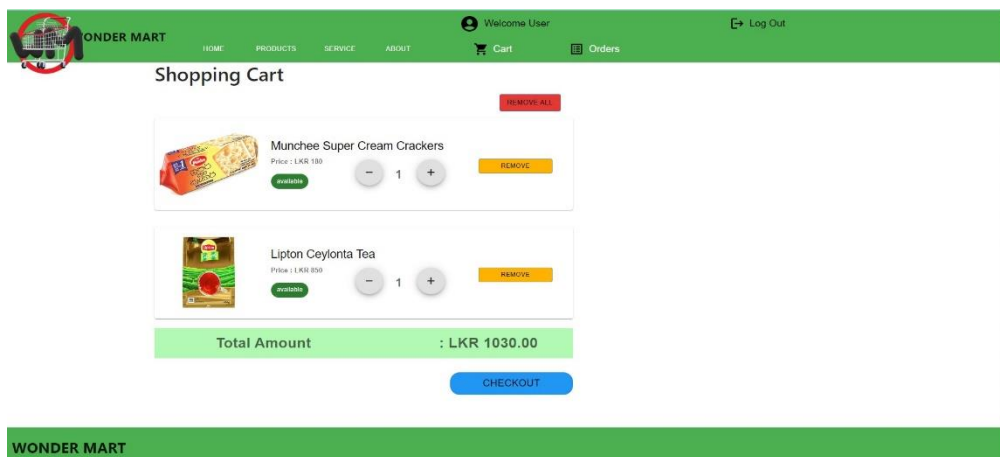


Figure 09: the shopping cart interface

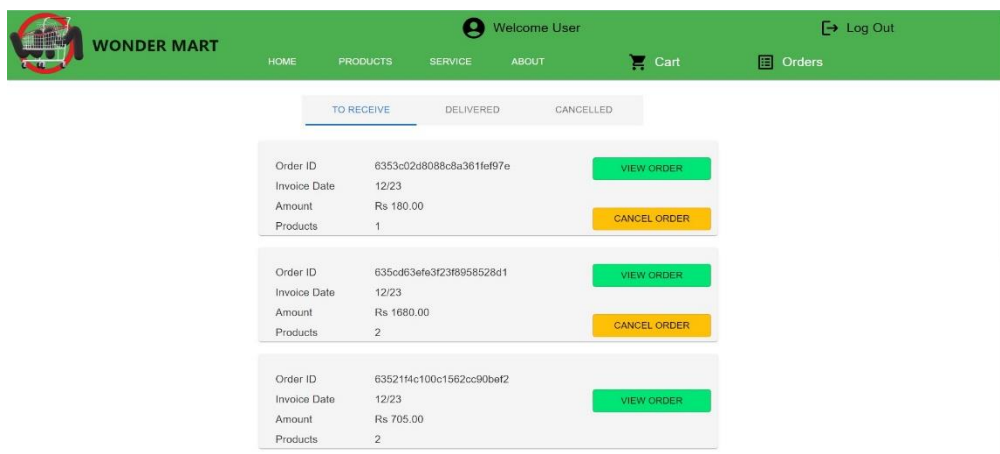


Figure 10: To receive order list interface

4) Delivery Management

In this section, the manager must enter his password and the corresponding email address to access the web application and then the manager is directed to the

main admin page. Here, when the manager presses the Delivery button, he will be directed to the distribution page, where the name, ID number, phone number and address of the distribution person in list form can be seen

.Also, when you press the edit button in front of it, the data in the corresponding line can be changed, and when you press the delete button, the person related to the line can be removed from the system. When you press the blue delivery person button, new delivery persons can be

entered into the system, where the name, ID number, phone number and address must be entered into the system. and by pressing generate report button, a list of engaged delivery people can be downloaded to computer or smartphone (figure 11).

NAME	IDNUMBER	PHONENUMBER	ADDRESS	EDIT	DELETE
Ikhn	888	99989	9698	EDIT	DELETE
Jane	1234	9998900	areess	EDIT	DELETE
geeth	985676	9090909	shaku@gmail.com	EDIT	DELETE
shaRLI JUNE	234234	567	ANAMDUWA	EDIT	DELETE

Figure 11: Delivery person's details interface

The code quality of this web application has been tested using the SonarQube program. And validation has been done using the Selenium automated testing framework. Figure 12 is showing the overview status of

the analyzed web application done by using SonarQube. Figure 13 is showing the verified items for a given scenario on the web application done by using Selenium.

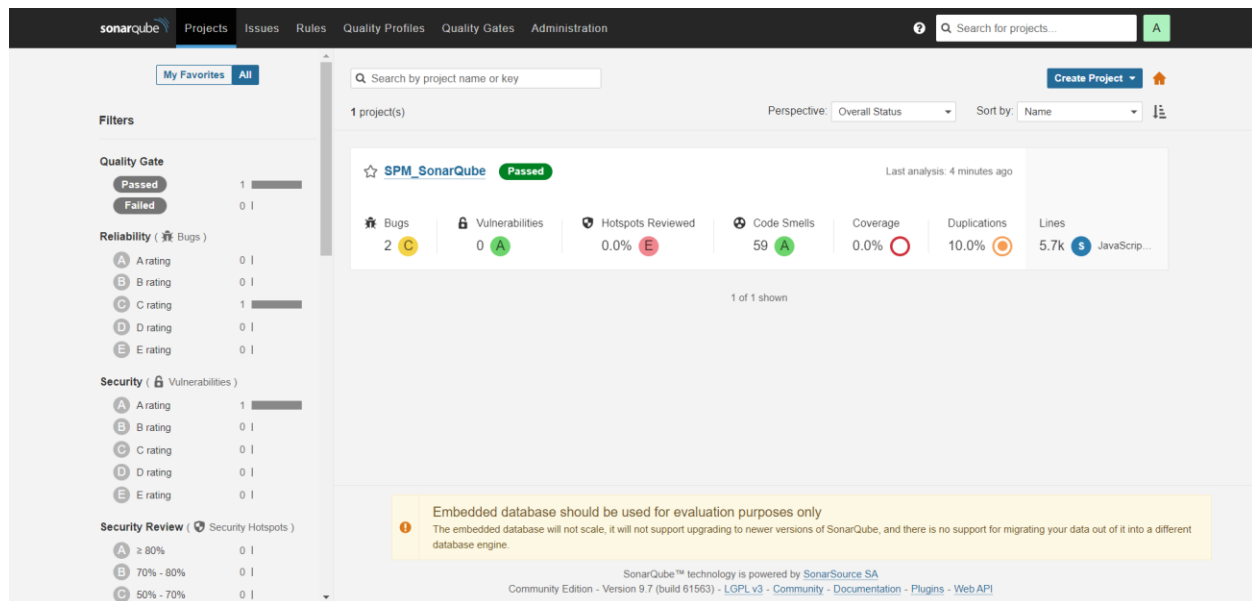


Figure 12: Overview status of the analyzed web application done by using SonarQube

http://localhost:3000/			
Command	Target	Value	
1 ✓ open	http://localhost:3000/		
2 ✓ set window size	1552x832		
3 ✓ click	css= MuiButton-contained		
4 ✓ click	css= css-11rvlqs-MuiButtonBase-root-MuiTab-root-nth-child(2)		
5 ✓ mouse over	css= css-26gu5b-MuiButtonBase-root-MuiIconButton-root > MuiTypography-root		
6 ✓ click	css= css-26gu5b-MuiButtonBase-root-MuiIconButton-root > MuiTypography-root		
7 ✓ mouse out	css= css-26gu5b-MuiButtonBase-root-MuiIconButton-root > MuiTypography-root		
8 ✓ click	css=a.nth-child(2) > MuiButtonBase-root		
9 ✓ click	id=phoneNumber		
10 ✓ mouse over	css= MuiButton-contained		
11 ✓ type	id=phoneNumber	0725364750	
12 ✓ click	css= MuiButton-contained		
13 ✓ mouse out	css= MuiButton-contained		
14 ✓ click	css= MuiButton-root-nth-child(2)		
15 ✓ click	css= Toastify__close-button > svg		
16 ✓ click	css= css-tac8t8-MuiButtonBase-root-MuiIconButton-root > MuiTypography-root		
17 ✓ click	css= react-confirm-alert-button-group > button-nth-child(1)		
18 ✓ type	id=email	geeth@gmail.com	
19 ✓ type	id=password	geeth123	

Figure 13: The verified items for a given scenario on the web application done by using Selenium

IV. DISCUSSION

By using this system, customers can save their time and transportation difficulties. It can also be mentioned as a very special fact that the supermarket staff can easily generate reports about customers' details and earned income. By using the react library for the frontend of the web application, it has been possible to access the system in less time than using other frontend frameworks. Also, due to the use of the express.js backend framework, it has been possible to use a number of NPM packages very easily. Also, by using a non-relational database like mongodb, it is possible to change the schema document very easily. By using the GitHub version control system for development, the development team was able to easily create a web application as well as a backup of the code.

V. CONCLUSION

With the use of this web application, customers have got the opportunity to order goods from their own homes. By using the web application, customers have been able to save their time and avoid the hassle of travel. In creating this web application, the interface has been created in a very simple and easy to understand manner. Also, by using standard icons, it has become easier for users to understand the functions. Also, by displaying a confirmation message before something is done, errors caused by mistakes have been reduced to a large extent.

Using this web application, it is very convenient for the management of the supermarket to be able to see the details related to the orders received and the monthly income. Finally, using this web application has given many significant advantages to both the customers and the staff.

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