

STATE UNIVERSITY OF ZANZIBAR

SCHOOL OF BUSINESS

DEPARTMENT OF COMPUTER SCIENCE AND INFORMATION  
TECHNOLOGY

FINAL YEAR PROJECT REPORT

PROJECT TITLE: ISLAND ONLINE SHOPPING

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## **DECLARATION**

I, Suhaila Lahdad Mohamed solemnly declare that this report and the enclosed project of ISLAND ONLINE SHOPPING were prepared by my own ability and power.

It has not been prepared or copied from anyone or any place or submitted at any higher learning institution for academic purpose.

Suhaila Lahdad Mohamed     BITA/2/18/019/TZ

Signature: .....

Date: .....

## **ABSTRACT**

This project was out of necessity to the inherent problem encountered by the citizens of Zanzibar. Peoples in Zanzibar were facing a problem of have limited time of shopping and wastage of time and energy when wanting something as they are required to find a store for their needed product.

The software I designed offers to a great extent and the solution to these problems.

The project went further in the usage of different techniques in implementing the new design software in order to facilitate the system so it can be understood by any user.

Island Online Shopping is a system which allows different peoples within a country to find any product they need and place their order without the need of going out and do the traditional shopping and making payment either in cash by paying at the delivery time or in Mobile payment like EzyPesa, TigoPesa, etc.

Island Online Shopping is a new technology which is beneficial as it attracts many customers as they can buy anything they want at anytime and anywhere without any obstacles and get their products at a needed location.

The project aim was to develop the online shopping (e-commerce) which will provide customers to buy anything at any time without the interaction of the crowded places.

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## **ABBREVIATION**

PC:	Personal Computer
SDLC:	System Development Life Cycle
ERD:	Entity Relational Database
CRUD:	Create, Retrieve, Update and Delete
SQL:	Structured Query Language
DB:	Database

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# **1. INTRODUCTION**

## **1.1. DESCRIPTION OF THE PROJECT**

Island Online Shopping is a web system where users are able to buy goods from their electronic devices such as a laptop, mobile, tablet, etc.

E-commerce is often used to refer to the sale of physical products online, but it can also describe any kind of commercial transaction that is facilitated through the internet.

This application shows variety of products, where a user can search for specific product, add to cart, get its list, see a product details with easy to choose a required product by customers, etc.

My intention in developing this application is:

- ❖ Helping peoples who don't have time to visit physical shops and make their transactions when they are at their places in anytime.
- ❖ It's the best way to let a customer see many related products of what he wanted along with the descriptions available as sometimes one doesn't have a satisfaction choices in physical shops.
- ❖ Customers have detailed information of their products along with the images. It helps in customer getting a clear image of the product and its usability.

## **1.2. STATEMENT OF THE PROBLEM**

E-commerce is the trending form of business being carried nowadays by most of the business traders or sellers for retail and wholesale as well. Traditional commerce is still popular where there is no reachability for the delivery of the goods and services to faraway places from the urban areas. Also where few people are not in a position to attain the digital gadgets come under uneducated and traditional commerce is a popular form of business in this case.

### **Statement of the problem**

- ❖ In order for a customer to buy a product, he have to go to physical shop, which can cost him a lot of time, energy and cost as some of the shops are limited by the geographical area.
- ❖ Traditional commerce is difficult to attend many customers at a time as each customer needs attention, so it's hard for one or two sellers to satisfy many customers at a time and there are limited items in each store.
- ❖ When a customer purchase an item, there are limited ways of payments, cash payment is mostly used.



### **1.3. SOLUTION TO THE PROBLEM AND SCOPE**

Island Online Shopping provides solutions to the above described problems as follow:

- ❖ This system is used by anyone who wants to interact with it. A user have to create account at first, so the next time, he will login only direct to his account.
- ❖ A user is able to see different items in different categories also will be able to search for a specific item.
- ❖ A user is able to save an item in cart and view all items in cart.
- ❖ A user is able to order any item based on his demand and fill the required information to complete his order.
- ❖ Administrator is able to view all his customers, messages from his customers and the placed orders.
- ❖ Administrator is able to register various categories and various products and be able to manage them.

### **1.4. OBJECTIVES**

The main objective of this project is to deliver the online shopping systems in electronic devices which helps customers buying any product anywhere and at any time through the internet.

#### **Specific Objectives:**

- ❖ To identify ways of reducing management costs
- ❖ To increase the number of loyal customers
- ❖ To establish ways of increasing sales.
- ❖ To develop the system that will facilitate shopping process

### **1.5. PROJECT BACKGROUND AND MOTIVATION**

In March 2020, much of the world went into lockdown, forcing many businesses to temporarily shut down. As of this writing, cities are gradually relaxing restrictions, but the future is still uncertain. Even businesses that are reopening have restrictions enforcing social distancing, the wearing of masks, and limits on how many customers can enter a space at one time.

When traditional shopping becomes difficult, or may even be scary, people are increasingly inclined to shop online. The fact that consumers were already embracing Amazon and other online retailers with open arms made this transition considerably easier.

Online revenue growth as of April 2020 was up 68%. There's a good chance that this trend will continue in the post-quarantine world. The advantages of online shopping aren't going to disappear even when retail businesses reopen fully. All of this points to why this is the ideal time to either start or double down on your e-commerce efforts.

Factors that will continue to drive e-commerce growth

Let's look at some of the reasons that customers are likely to continue shopping more and more online.

- ❖ The rapid growth of mobile devices is making it easier than ever to browse and shop online. Customers can place orders one-handed from the device that is likely in their hand or pocket at all times.
- ❖ Even as some items became scarce in physical stores there were options for ordering online.
- ❖ It becomes more convenient for consumers to shop anywhere, any time, on and across multiple devices.

Importance of Ecommerce business

- ❖ If the inventory management of goods and services is an automated process then not only there will be a reduction in costs, but also in risk. Also having an ecommerce business is much more cost effective than a physical store as it saves your extra expenses like rent, electricity, etc.
- ❖ The setting up cost of e-commerce business is extremely low as compared to setting up of a physical shop. Moreover, it is quite easier to license and permit e-commerce marketing site than a physical shop.
- ❖ E-commerce provides us round the clock services at all times even in midnight. So the customers do not require visiting a physical market if they need something during the night. It is the most convenient option for the people who are usually busy with their working schedules. So it helps you to be available for your customer 24\*7

## **1.6. FEASIBILITY STUDY**

A systems request must pass several tests, called a feasibility study, to see whether it is worthwhile to proceed further.

Feasibility Study determines the probability of success of proposed system's development project and assesses the project

- ❖ **Operational Feasibility:** Operational feasibility determines if the human resources are available to operate the system once it has been installed. While Island Online Shopping our human resources are every person in Zanzibar who wants to purchase online especially those busy ones.
- ❖ **Technical feasibility:** Technical feasibility refers to technical resources needed to develop, purchase, install, or operate the system. In developing Island Online Shopping, I had all the necessary resources such as all the programs like Chrome, IDE, MySQL, Tomcats, etc. and hardware like PC.

- ❖ Economic Feasibility: means that the project benefits of the system outweigh the estimated costs. As analyst needs to assess tangible and intangible benefits and costs, I was able to overweigh all the estimated costs in developing this system.
- ❖ Legal feasibility: It checks if there are any legal difficulty in developing the system. In developing this system there were no any legal difficulty that I faced.
- ❖ Schedule Feasibility: Assessment of time frame and project completion dates with respect to my university constraints and I was able to complete this project as a specified time and date.

## 2. METHODOLOGY

### 2.1. SOFTWARE DEVELOPMENT APPROACH

Software development is the process programmers use to build computer programs. The process, also known as the Software Development Life Cycle (SDLC), includes several phases that provide a method for building products that meet technical specifications and user requirements.

It provides a series of steps for programmers to create computer programs. This process makes up the phases in the software development life cycle. Understanding the software development method offers vast opportunities in the IT industry.

Object-oriented software is a practice of computer programming that has an end result in mind. It is the idea that objects, which contain data in the form of structured fields, are structured in procedural code, also known as methods. Object-oriented software has the key feature of objects being able to modify or edited by the program within the attributes in which it is found, making it easier to change their relationship with other functions found in the programming. This is critical for front-end and back-end web development and is often found in software that beginners use when first learning computer programming.

Island Online Shopping used Object Oriented Approach because I developed this system by using Java (Spring Boot).

### 2.2. SOFTWARE DEVELOPMENT LIFE CYCLE MODEL

It's a traditional methodology for planning, building, using, and updating an information system which provides overall framework for managing systems development process.

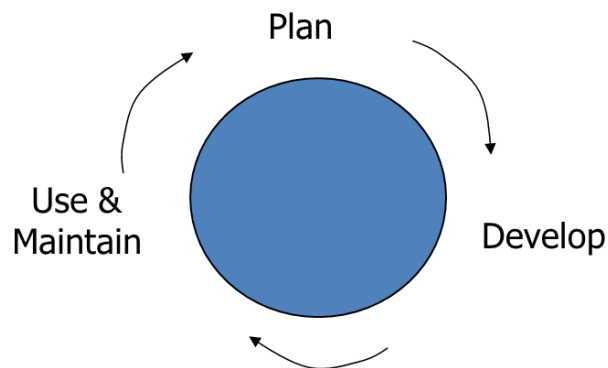


Figure 1: SDLC

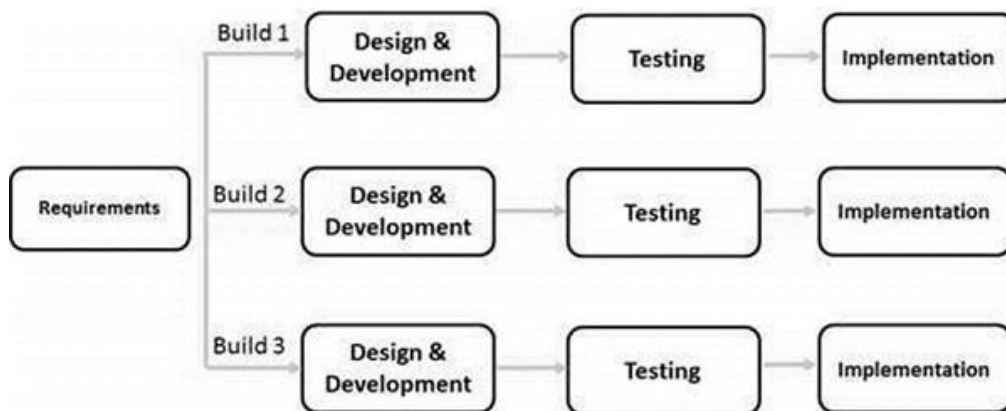
This methodology consists of different phases that describe the procedures for successful system development as follow:

- ❖ Project planning – initiate, ensure feasibility, plan schedule, obtain approval for project
- ❖ Analysis – understand business needs and processing requirements

- ❖ Design – define solution system based on requirements and analysis decisions
- ❖ Implementation – construct, test, train users, and install new system
- ❖ Support – keep system running and improve.

The SDLC Model that I used in developing Island Online Shopping is Iterative software development model as software should be developed in increments, where each increment adds some functional capability to the system until the full system is implemented.

Iterative model is a particular implementation of a software development life cycle (SDLC) that focuses on an initial, simplified implementation, which then progressively gains more complexity and a broader feature set until the final system is complete.



**Figure 2: Iterative Model**

I decided to use Iterative model for this system because of the following:

- ❖ Is best thought of as a cyclical process. After an initial planning phase, a small handful of stages are repeated over and over, with each completion of the cycle incrementally improving and iterating on the software.
- ❖ Enhancements can quickly be recognized and implemented throughout each iteration and allowing the next iteration to be at least marginally better than the last.
- ❖ Tries to combine the benefits of both prototyping and the waterfall model
- ❖ Testing each increment is likely to be easier than testing entire system like in the waterfall model.
- ❖ Furthermore, as in prototyping, the increments provide feedback to the client which is useful for determining the final requirements of the system

#### Application of Iterative Model:

- ❖ Requirements of the complete system are clearly defined and understood.
- ❖ There is a time to the market constraint.
- ❖ A new technology is being used and is being learnt by the development team while working on the project.
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#### Advantages of Iterative Model:

- ❖ Some working functionality can be developed quickly and early in the life cycle.
- ❖ Parallel development can be planned.
- ❖ Progress can be measured.
- ❖ Less costly to change the scope/requirements.
- ❖ Testing and debugging during smaller iteration is easy.
- ❖ Risks are identified and resolved during iteration, and iteration is an easily managed milestone.

#### Disadvantages of Iterative Model:

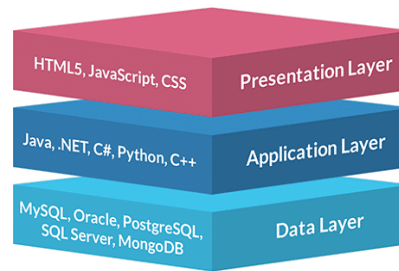
- ❖ More resources may be required.
- ❖ Although cost of change is lesser, but it is not very suitable for changing requirements.
- ❖ Defining increments may require definition of the complete system.
- ❖ Not suitable for smaller projects.
- ❖ Management complexity is more.

### **2.3. SYSTEM ARCHITECTURE**

System architecture is the conceptual model that defines the structure, behavior, and more views of a system. An architecture description is a formal description and representation of a system, organized in a way that supports reasoning about the structures and behaviors of the system.

A type of software architecture which will be used in this system is 3-tier architecture which is composed of three tiers or three layers of logic computing as this is often used in applications as a specific type of a client-server system.

3-tier architectures provide many benefits for production and development environments by modularizing the user interface, business logic, and data storage layers. Doing so gives greater flexibility to development teams by allowing them to update a specific part of an application independently of the other parts. This added flexibility can improve overall time-to-market and decrease development cycle times by giving development teams the ability to replace or upgrade independent tiers without affecting the other parts of the system.



**Figure 3: System Architecture**

The following are the three layers:

- ❖ **Presentation Tier:** is the front end layer in the 3-tier system and consists of the user interface. This user interface is often a graphical one accessible through a web-based application and which displays content and information useful to an end user. This layer will be developed using web and mobile technologies such as HTML5, CSS5, JSP and Dart or through other popular web development frameworks, and communicates with others layers through API calls.
- ❖ **Application layer:** contains the functional business logic which drives an application's core capabilities. It will be written in Java, etc.
- ❖ **Data layer:** The data tier comprises of the database/data storage system and data access layer. The system that will be used for database is MySQL. Data is accessed by the application layer via API calls.

## **2.4. SOFTWARE DEVELOPMENT TOOLS**

It is important to stay on track with the fast moving and ever changing world of software development. There are many options when it comes to deciding on which software development tools to use for your daily tasks at work, and to build working software efficiently, you need the best software development tools around as they'll make life a lot easier.

There are thousands of software development tools and selecting the best ones could be a challenge. Therefore, the following tools are the tools that I decided to use in developing Island Online Shopping:

- ❖ Github: is the world's leading software development platform. GitHub is a web-based Git repository hosting service. In simple words, it is like a Google Drive for software projects, where you can find code. When uploading your project, you have the choice of making it public or private. The community is huge and the project base even bigger. GitHub is also an excellent place for collaborative development, where developers can discover, share, and build better software.

In developing Island Online Shopping I created a private repository in Github to upload my project as backup which is known as "project" and I choose my supervisor "Mr. Massoud" as a collaborator. My Github name is "Bint-Lahdad"

- ❖ IntelliJ IDEA: IntelliJ is an Integrated Development Environment. An IDE integrates all the tools that I need to develop my system, so it has a code editor, a compiler, a debugger, etc. After IntelliJ IDEA's indexed my source code, it offers fast and intelligent experience by giving relevant suggestions in every context: instant and clever code completion, code analysis and reliable refactoring tools.



## 3. REQUIREMENTS ANALYSIS AND MODELLING

### 3.1. REQUIREMENT DETERMINATION

#### 3.1.1 Information Gathering Techniques

It's the technique that is used in determining the requirements of the system. The techniques that I used in gathering information about Island Online Shopping is by searching from the browser about my topic and observing from other systems that are same as my system.

#### 3.1.2 Functional Requirements

A functional requirement is a description of the service that software must offer. It describes a software system or its component. A function is nothing but inputs to the software system, its behaviour, and outputs. It can be a calculation, data manipulation, business process, user interaction or any other specific functionality which defines what function a system is likely to perform.

Various functional requirements that I implemented in my system are:

FREQ ID	Requirement Description
FREQ001	System allow user registration
FREQ002	System capture all registered users
FREQ003	System allow registration of various categories
FREQ004	System display all registered categories
FREQ005	System allow registration of various products in categories
FREQ006	System display all registered products
FREQ007	System allow users to place their orders
FREQ008	System capture and display all placed orders
FREQ009	System allow a user to cancel his order
FREQ010	System allow interaction (communication) between customers and supplier
FREQ011	System capture and display all comments
FREQ012	System provide various reports

#### 3.1.3 Non-Functional Requirements

Are any requirements that specify how the system performs certain functions

In other words, a non-functional requirement will describe how a system should behave and what limits there are on its functionality.

Non-functional requirements cover all the remaining requirements which are not covered by the functional requirements. They specify criteria that judge the operation of a system, rather than specific behaviors, for example: "Modified data in a database should be updated for all users accessing it within 2 seconds."

Once the functional requirements are defined then it's time to think about the non-functional requirements, such as:

- ❖ Usability: This focuses on the appearance of the user interface and how people interact with it. What color are the screens? How big are the buttons?

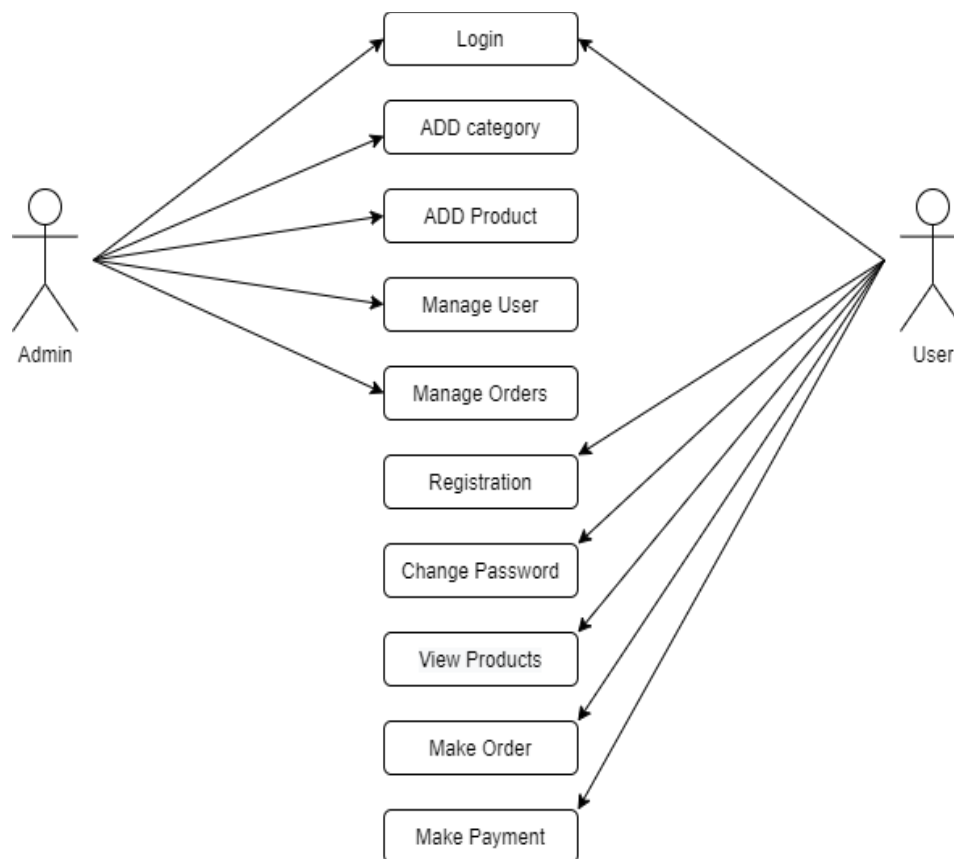
- ❖ Reliability / Availability: What are the uptime requirements? Does it need to function 24/7/365?
- ❖ Scalability: As needs grow, can the system handle it? For physical installations, this includes spare hardware or space to install it in the future.
- ❖ Performance: How fast does it need to operate?
- ❖ Supportability: Is support provided in-house or is remote accessibility for external resources required?
- ❖ Security: What are the security requirements, both for the physical installation and from a cyber perspective?

## 3.2. REQUIREMENT STRUCTURING

### 3.2.1 Process Modelling

#### 3.2.1.1 Use Case Diagram

A use case diagram for Island online shopping represents a user's interaction with the system which shows the relationships between the user and the different use cases in which the user is involved. This captures the system's functionality and requirements for the system and how a user will handle the system.



**Figure 4: Use case**

### 3.2.1.2 Use Case Model

In Island Online Shopping Administrator will be able to login to the system, register categories and products that he wants and manage categories, products, orders, and users along messages.

And a user in Island Online Shopping will be able to create an account, login, choose any product that he wants and place his order and he will also be able to cancel his order, change password along with making payments.

### 3.2.2 Data Modelling

Data modeling helps in the visual representation of data and enforces business rules, regulatory compliances, and government policies on the data. Data Models ensure consistency in naming conventions, default values, semantics, and security while ensuring quality of the data.

#### 3.2.2.1 Class Diagram

Class diagrams are the main building block in object-oriented modeling. They are used to show the different objects in a system, their attributes, their operations and the relationships among them.

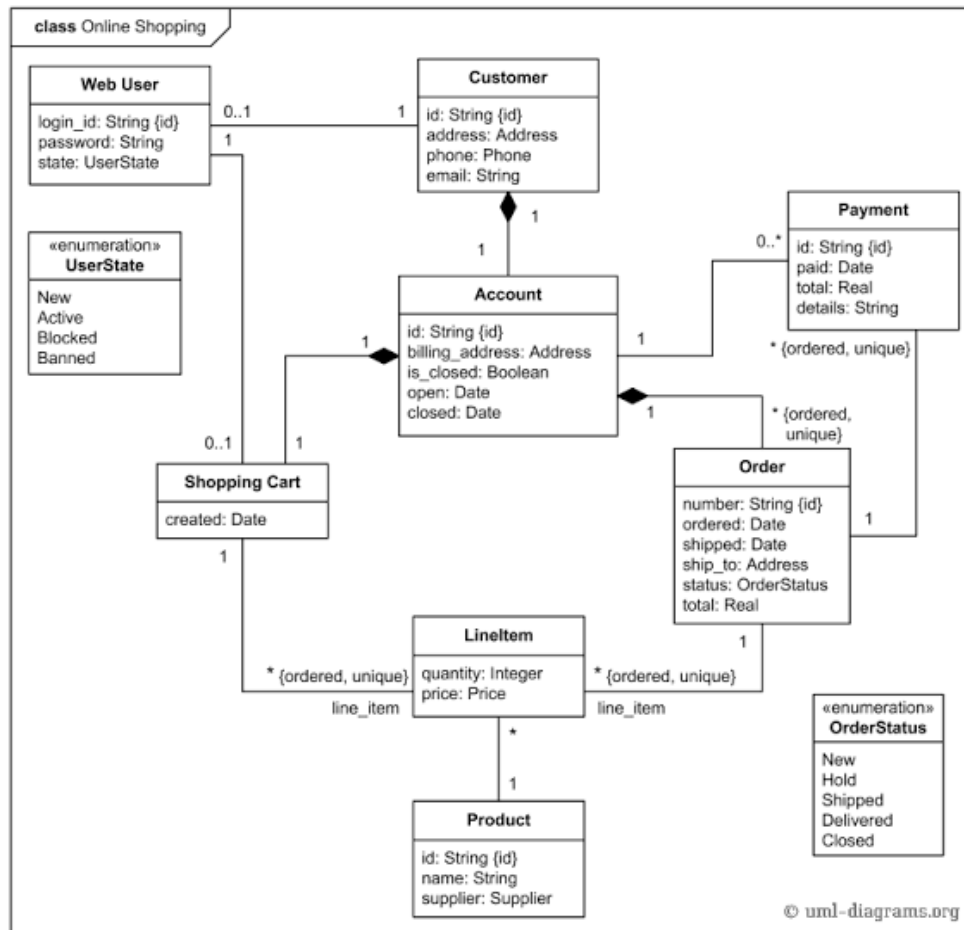


Figure 5: Class Diagram

### 3.2.2.2 Entity Relational Diagram (ERD)

It's a graphical representation that depicts relationships among people, objects, places, concepts or events within an information technology (IT) system.

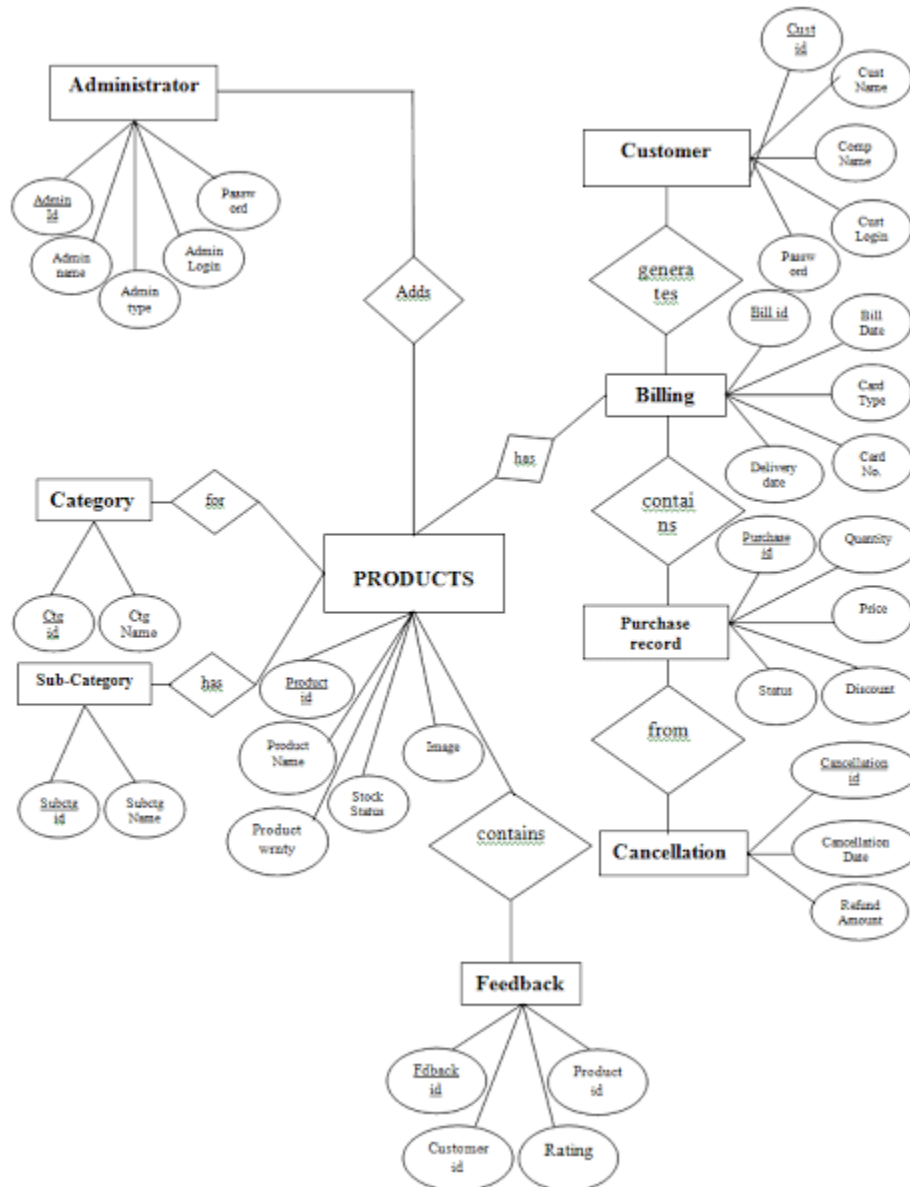


Figure 6: ERD

## **4. SYSTEM DESIGN**

### **4.1. ARCHITECTURAL DESIGN**

It defines the structure, behavior and more views of a system. An architecture description is a formal description and representation of a system, organized in a way that supports reasoning about the structures and behaviors of the system.

In developing Island Online Shopping, first a created user interface that dealt with the backend and created models, controllers, repositories and services along with CRUD to make this system function as wanted.

### **4.2. DATABASE DESIGN**

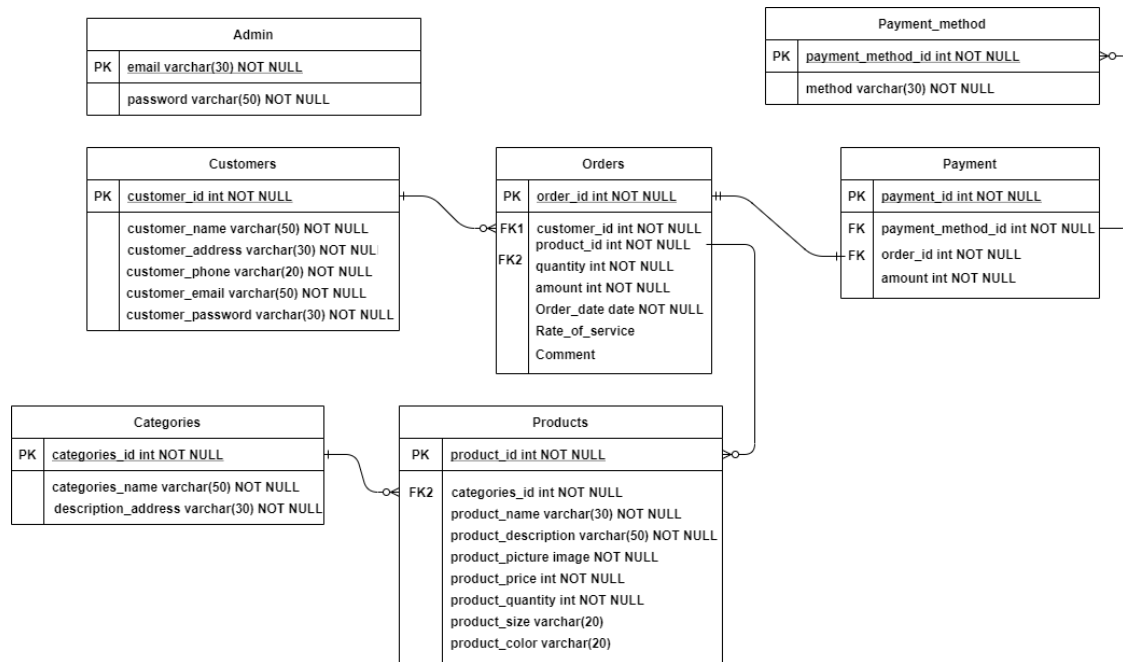
Database Design is defined as a collection of steps that help with designing, creating, implementing, and maintaining a business's data management systems. The main purpose of designing a database is to produce physical and logical models of designs for the proposed database system.

#### **4.2.1 Relational Model**

It's a model that shows entities along with the relations between them.

Island online shopping will contain seven tables known as: user, order, products, categories, contact, payment methods and payments.

The following is the database design along with their attributes, constraints and relationships between tables of the Island online shopping:



**Figure 7: DB Design ERD**

## 4.2.2 Data Description

The goal of data description is to record all information about data files and their contents so that someone can use the data in a future research project and understand the data's content and structure.

I created a database named island\_shopping which saves all data from the system and provide information needed to the users.

## 4.2.3 Data Dictionaries

A set of information describing the contents, formats and structure of a database and the relationship between its elements used to control access to and manipulated of the database.

I created all tables in my project as models which have various names according to the tables' names such as users, categories, products, etc.

# 4.3. USER INTERFACE DESIGN

## 4.3.1 Forms and Reports

The following are some forms that I created in my system:

The screenshot shows a web browser window with the URL `localhost:9090/register`. The page header includes the site name "ISLAND ONLINE SHOPPING" and a navigation menu with links: Home, About, Contact, Shop, and Login. The main content area is titled "ISLAND ONLINE SHOPPING" and includes a welcome message: "Welcome to our online shopping! Island online shopping is a great system that is perfect for your online purchases. Below are some of the benefits you can have when purchasing in this system." Two benefits are listed: "24\*7 services" (This system carry out it's business 24 hrs and on all days of the week. You can avail our services all the time at your home comfort.) and "Easy Navigation" (The product required can be easily searched in). On the right side, there is a "Sign Up" form. The form includes a link "Already a member? Sign In", a "Name" field with sub-fields for "Your Firstname" and "Your Lastname", an "Email Address" field, a "Password" field, and a "Sign Up" button.

Figure 8: Registration Form

The screenshot shows a web browser window with the URL `localhost:9090/checkout`. The page header is identical to the registration page. The main content area is titled "ISLAND ONLINE SHOPPING" and contains a "Billing details" form and a "The total amount" summary. The "Billing details" form includes fields for "First name", "Last name", "Country - TANZANIA", "Address (Line 1)", "Address (Line 2)", "Postcode / ZIP", and "Town / City". The "The total amount" summary shows: "Amount Payable: TZS2000.0", "Shipping: Gratis", and "The total amount of (including VAT): TZS2000.0". Below the summary is a "Pay Now" button and a link "Pay Now to finalize with your order".

Figure 9: Checkout Form

## Reports:

Product

localhost:9090/admin/productReport

### ISLAND ONLINE SHOPPING

#### Products Report








SN	Product Name	Category	Image	Description	Price
1	Potatoes	Fruits - Vegetables		1kg of fresh potatoes of a medium size	2000.0
2	Tomatoes	Fruits - Vegetables		Fresh 1kg Tomatoes	4000.0
3	Limes	Fruits - Vegetables		A pack of fresh limes	3000.0
4	Onions	Fruits - Vegetables		Fresh onions of a medium size	4000.0
5	Avocado	Fruits - Vegetables		A pack of fresh Avocados	6000.0
6	Spinach	Fruits - Vegetables		Fresh spinach	2000.0
7	Green Peppers	Fruits - Vegetables		Pack of fresh Green Peppers	2000.0

Figure 10: Products Report

Categories

localhost:9090/admin/categoryReport

### ISLAND ONLINE SHOPPING

#### Categories Report

SN	Category Name
1	Fruits - Vegetables
2	Beverages
3	Meat
4	Snacks
5	Cleaning - Household Products
6	Shoes

Back

Figure 11: Categories Report



### 4.3.2 Interface design sample

The following are the user interface designs:

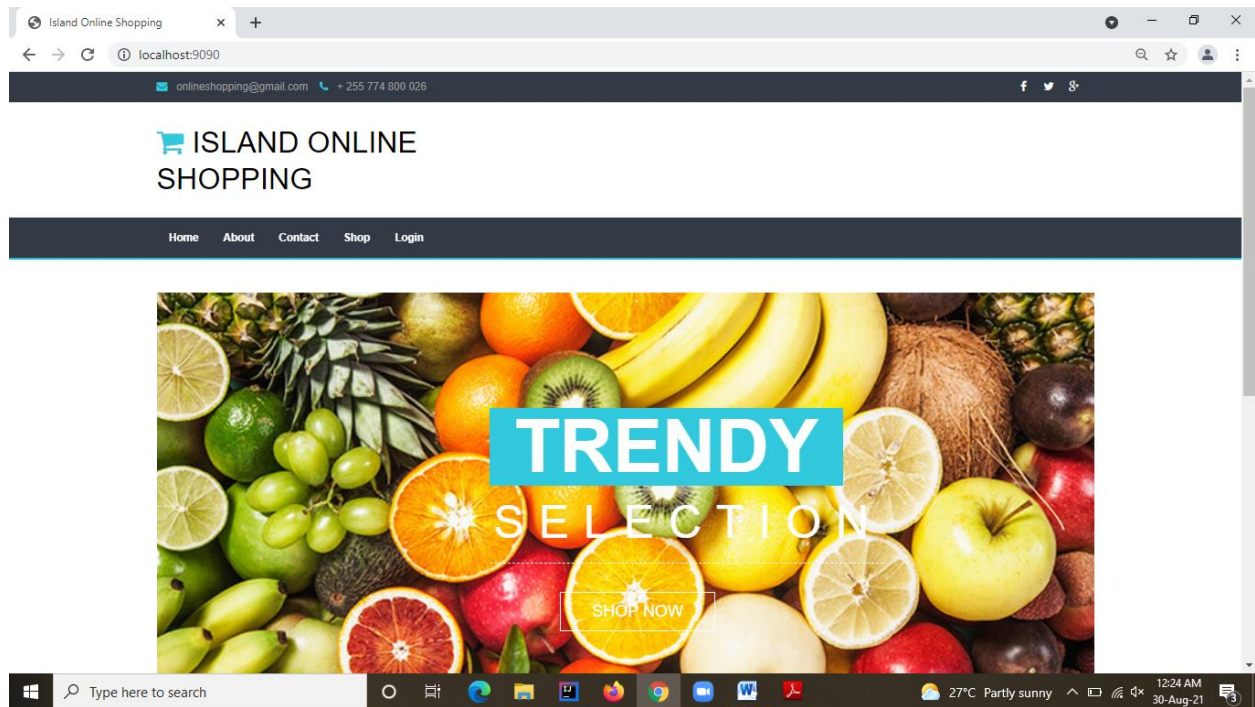


Figure 12: Index page

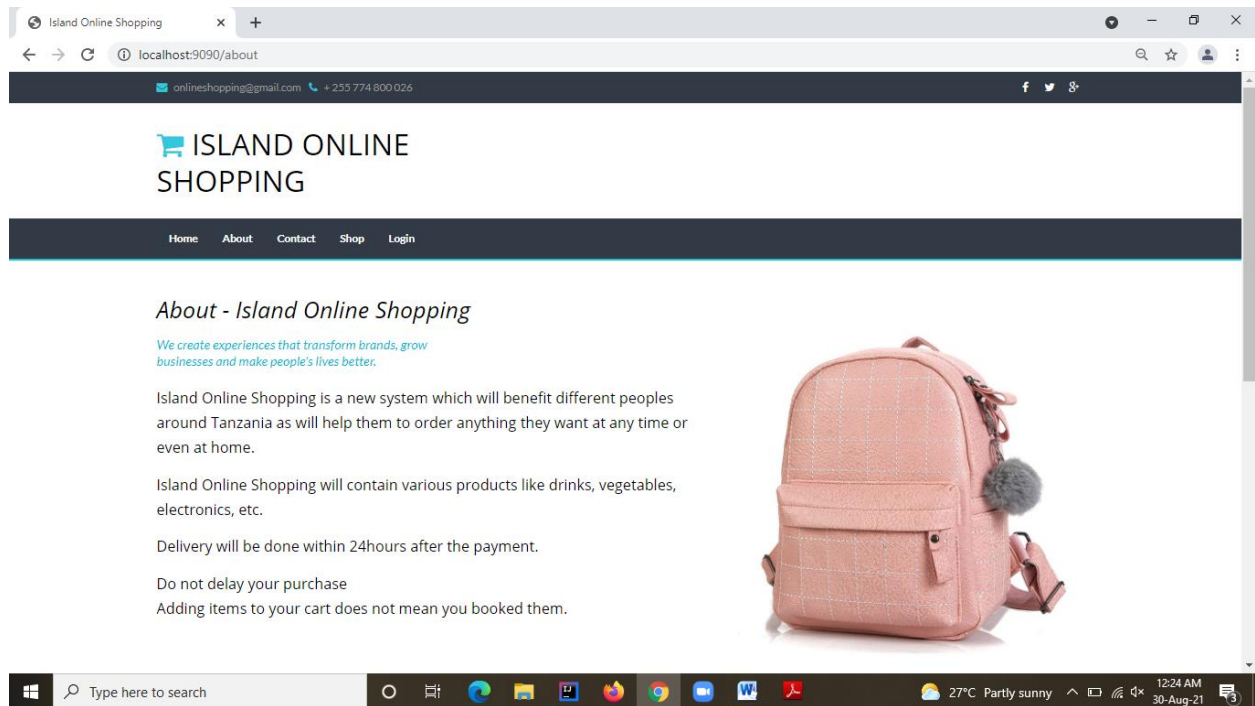
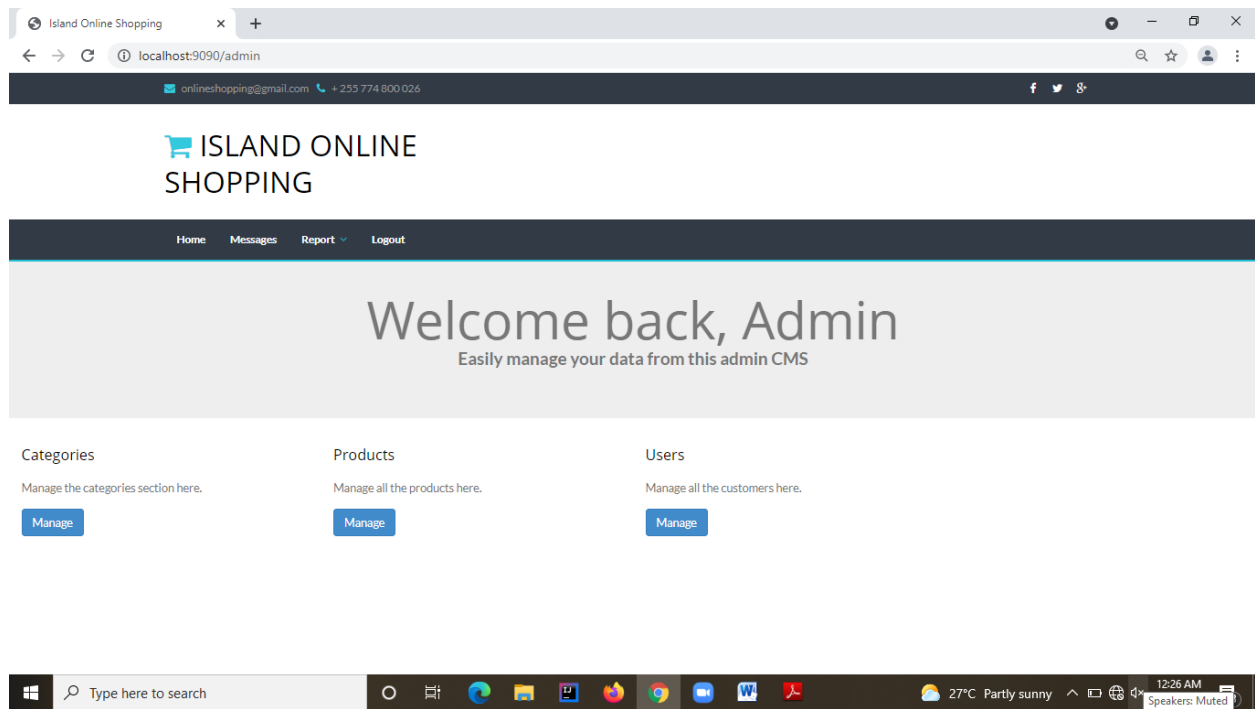


Figure 13: About us page



**Figure 14: Admin Interface**

## 5. SYSTEM IMPLEMENTATION AND TESTING

### 5.1. TECHNOLOGIES

I used various technologies in implementing my system (Island Online Shopping) as listed below:

- ❖ Spring Boot: is an open source Java-based framework used to create a micro service. It provides an easier and faster way to set up, configure and run both simple and web-based applications. I used Spring Boot as a backend to my system for creating APIs.
- ❖ HTML5: is a markup language used for structuring and presenting content on the World Wide Web. It's the fifth and last major HTML version that is a World Wide Web Consortium recommendation. The current specification is known as HTML Living Standard.
- ❖ CSS3: Cascading Style Sheets is a style sheet language used for describing the presentation of a document written in a markup language such as HTML.
- ❖ JavaScript: is a programming language that conforms to the ECMAScript specification. JavaScript is high-level, often just-in-time compiled, and multi-paradigm.
- ❖ MySQL: is an open-source relational database management system where "SQL" is the abbreviation for Structured Query Language

### 5.2. DATABASE IMPLEMENTATION

It's the process of starting to take actions on developing a planned database. In developing Island Online Shopping I created a database in MySQL by using the following command:

Create database island\_shopping;

After I created a database, I created tables inside my project by creating a new class of java as model and name it with any name that I want.

The following are the codes of creating category table:

```
package com.project.islandshopping.Models;

import lombok.Data;

import javax.persistence.*;

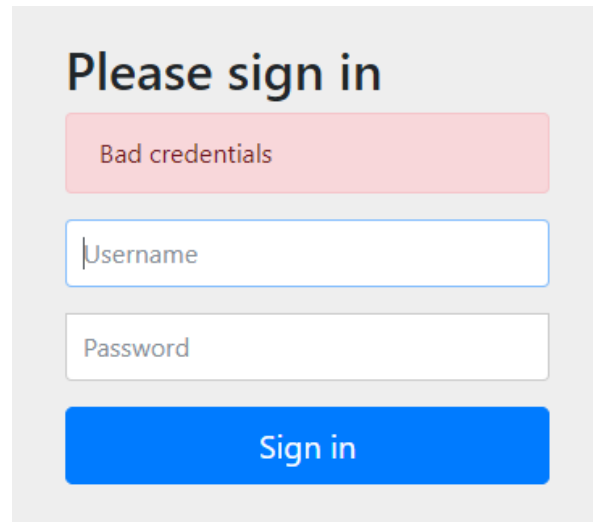
@Entity
@Data
@Table
public class Category{
    @Id
    @GeneratedValue(strategy = GenerationType.AUTO)
    @Column(name = "category_id")

    private int id;
    private String name;
}
```

### 5.3. TESTING

To test m system, first i run the system and make sure there is no error and the tables are created accordingly. I go to browser and try to get my website and then test each form that I created a tables and check if the data are inserted accordingly.

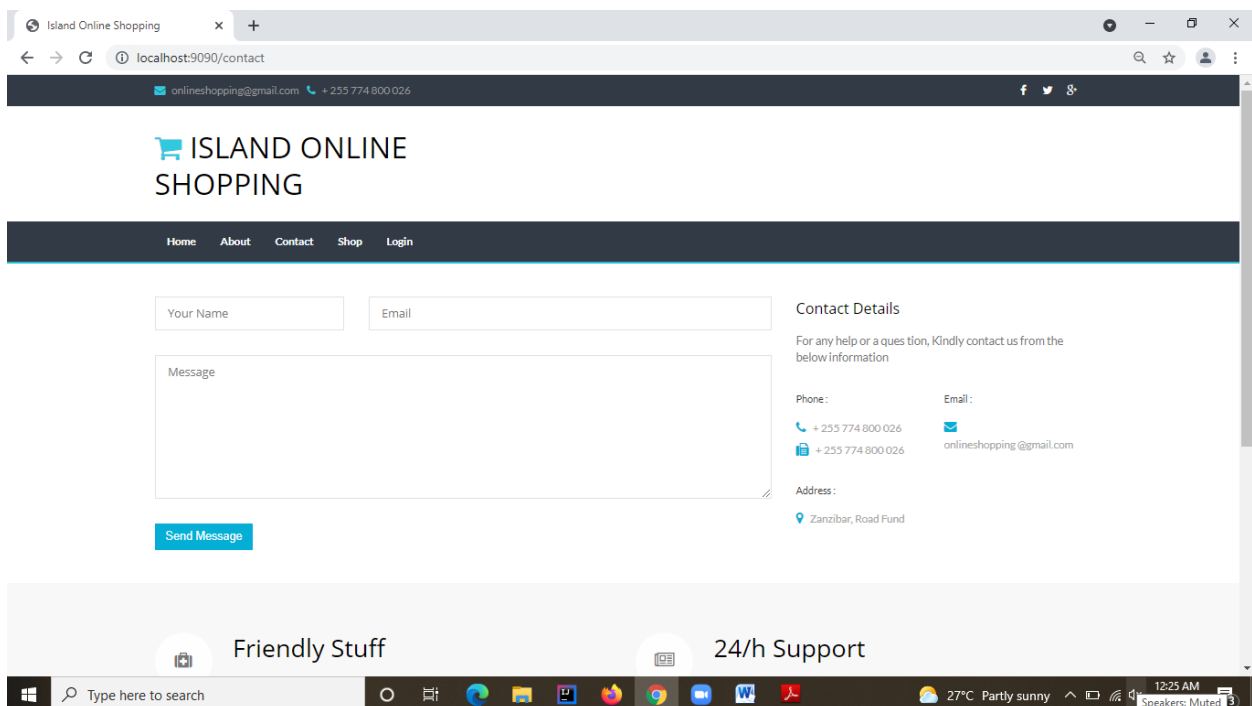
Island Online Shopping responds to the individual login credentials as shown below:



A login form titled "Please sign in". It features a red error box at the top with the text "Bad credentials". Below this are two input fields: "Username" and "Password". At the bottom is a blue "Sign in" button.

Figure 15: Login credentials

### 5.4. USER INTERFACES



A screenshot of the "Island Online Shopping" contact page. The page has a dark header with the site name and a navigation menu (Home, About, Contact, Shop, Login). The main content area includes a contact form with fields for "Your Name", "Email", and "Message", and a "Send Message" button. To the right of the form is a "Contact Details" section with phone numbers, email, and address. The footer contains "Friendly Stuff" and "24/h Support". The browser window shows the URL "localhost:9090/contact" and the Windows taskbar at the bottom.

Figure 16: Contact Page

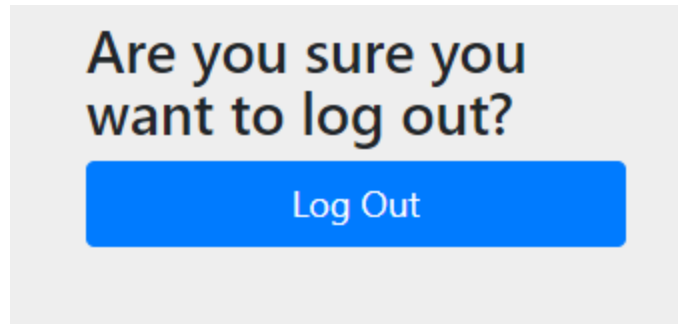


Figure 17: Logout message box

## **5.5. STRENGTH AND LIMITATION OF THE SYSTEM**

### **5.5.1 What is covered**

- ❖ Users login
- ❖ Customers registration
- ❖ Categories registration
- ❖ Products registration
- ❖ List of products based on the categories
- ❖ Add to cart for customers
- ❖ Go to checkout to place his order
- ❖ Logout

### **5.5.2 What is not covered**

- ❖ Display all the placed orders
- ❖ Add payments methods

## **6. CONCLUSION AND RECOMMENDATION**

### **6.1. CONCLUSION**

The project has come to its final stage as a complete system and satisfies to solve the problems of making booking operations as pre-stated the objectives of this project. The system has been developed with much care that it is free from errors and at the same time it's efficient and less time consuming. The important thing is that the system is strong. I have tried my level best to make the system online as possible. The system solves the problem. It was intended to solve as requirement specification.

### **6.2. RECOMMENDATION**

School of Business itself should provide facilities that will enable us to conduct our project very easily for the levels that conduct a project as a final study and also we would like to request the School of Business Management to increase the Project period from three months before Exam, to at least four months after Exam paper. This will help students to gain more experience.

However the IT department and IT lectures need to give the students the opportunities to learn software development by using programming languages includes C, C++, Java, PHP, C#, VB and other current programming language in order to increase their programming skills and develop the related applications.

### **6.3. CHALLENGES**

The following are some of the challenges that I faced in developing this system:

- ❖ Waste a lot of time in learning a new language that I didn't know before(Spring Boot)
- ❖ Interaction of other courses at a time leads to confusions
- ❖ There are no many people who know how to use the language that I used. So the only help I was getting is from my supervisor.

## REFERENCES

1. Spring Boot tutorials  
<https://spring.io/projects/spring-boot>
2. Youtube
3. Amigoscode  
<https://www.youtube.com/watch?v=9SGDpanrc8U>  
<https://www.youtube.com/watch?v=QwQuro7ekvc>
4. Creating shopping cart  
<https://o7planning.org/10683/create-a-shopping-cart-web-application-with-spring-boot-hibernate>

## APPENDICES

### Contact Model

```
package com.project.islandshopping.Models;

import lombok.Data;

import javax.persistence.*;

@Entity
@Data
@Table
public class Contact {
    @Id
    @GeneratedValue(strategy = GenerationType.AUTO)
    @Column(name = "contact_id")

    private int id;
    private String name;
    private String email;
    private String message;
}
```

### Contact Controller

```
package com.project.islandshopping.Controller;

import com.project.islandshopping.Models.Contact;
import com.project.islandshopping.Services.CategoryService;
import com.project.islandshopping.Services.ContactService;
import com.project.islandshopping.Services.ProductsService;
import com.project.islandshopping.global.GlobalData;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.stereotype.Controller;
import org.springframework.ui.Model;
import org.springframework.web.bind.annotation.*;

@Controller
public class HomeController {
    @Autowired
    ContactService contactService;

    @GetMapping("/contact")
    public String contact(Model model){
        model.addAttribute("contact", new Contact());
        return "contact";
    }
    @PostMapping("/contact")
    public String postcontact(@ModelAttribute("contact") Contact contact){
        contactService.addContact(contact);
        return "redirect:/contact";
    }
}
```



## Contact Repository

```
package com.project.islandshopping.Repository;

import com.project.islandshopping.Models.Contact;
import org.springframework.data.jpa.repository.JpaRepository;

public interface ContactRepository extends JpaRepository<Contact, Integer> {
}
```

## Contact Service

```
package com.project.islandshopping.Services;

import com.project.islandshopping.Models.Category;
import com.project.islandshopping.Models.Contact;
import com.project.islandshopping.Repository.ContactRepository;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.stereotype.Service;

import java.util.List;

@Service
public class ContactService {
    @Autowired
    ContactRepository contactRepository;
    public void addContact(Contact contact) {
        contactRepository.save(contact);
    }
    public List<Contact> getAllContact() {
        return contactRepository.findAll();
    }
}
```