



Department of Computer Science

COMP4300-Graduation Project

2023/2024

Title of Project: Tronix web application.

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Title of Project: Tronix Web Application.

Project No: 28

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Key Areas: Php , Database (MY-SQL) , Bootstrap (Front-End), E-Commerce,
Products comparison.

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Abstract

"Tronix" is an electronic platform designed to simplify the process of buying and selling electronic devices in Palestine. It aims to create a trusted local online marketplace that enhances the digital commerce experience. The platform provides an easy-to-use interface that allows customers to easily find detailed information about electronic devices, including prices and specifications. The main advantage is its commitment to fast delivery, with a promise of product delivery within two to three days and round-the-clock customer service to ensure smooth transactions.

The project focuses on high-quality products and well-known companies, meaning that no login process for a company takes place except with the approval of the admin after examining its credibility, communicating with it, and visiting it. Through careful planning, comparative analysis and selection of appropriate technology, the initiative aims to provide suppliers and customers in Palestine with a simplified, efficient and safe online shopping experience.

The " Tronix " project meets the market need of local companies. By focusing on advanced technology and user experience, it sets a new standard for e-commerce in Palestine, representing an important step forward in innovation and convenience in the online electronics market.

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Chapter 1. Introduction

1.1 Goals and Objectives Introduction and Motivation:

1.1.1 Goals

Develop a web application that allows users to purchase devices with specific specifications and features, avoiding the challenges of buying from different places in Palestine.

The application will enable customers to:

- Browse and purchase electronic devices.
- Compare prices and read customer reviews.
- Communicate with store owners through queries.

For business owners, the application will:

- Facilitate reaching customers and increasing sales.
- Provide a platform for small and emerging stores to display their goods, enhancing sales opportunities.

1.1.2 Objectives

To achieve the main goal, several sub-objectives include:

1. Designing a user-friendly interface for easy searching and purchasing.
2. Reducing the time and effort of the search process and saving customers money through company offers and gifts.
3. Helping suppliers increase sales by providing a platform to display products.
4. Enabling customers to track their sales history and suppliers to monitor sales through reports.
5. Implementing strong security measures to protect customer information using advanced encryption protocols.

1.1.3 Motivation:

Today in the world everything happens online, electronics stores have become excellent at giving you all the important details about smart devices. They make it easier for you to choose what you want by sharing information about many different devices. This helps you choose faster and reduce mistakes when purchasing electronic devices. They aim to make shopping for different smart devices easy for you.[7]

E-commerce means selling things or providing a service over the Internet. It is an excellent choice for companies to do business on the Internet. People love it a lot because it saves time and money, and they can shop anywhere. Many people use their phones to connect to the Internet and browse various applications. Technology continues to improve, making it easier to pay and get things delivered faster. That's why e-commerce continues to expand more and more.[7]

In business planning, it is important to learn about different types of e-commerce.

1.1.4 Method:

E-commerce means how businesses sell things online. There are six types[8]:

- Business-to-business (B2B): When companies sell things online to each other, such as large manufacturers and wholesalers.
- Business to Consumer (B2C): When companies sell things directly to people online, just like regular shopping but online. You can buy all kinds of things like electronics and food.
- Consumer to Consumer (C2C): When people sell things to each other over the Internet using a web application designed for that.
- Consumer to Business (C2B): When people sell their services or things to companies. For example, someone might create a logo, and companies pay for the logo they like.
- Business to Administration (B2A): When companies deal with government online, such as tax, health care, and legal matters.
- Consumer to Administration (C2A): When people do things online with the government, like paying taxes, getting health information, or doing things for education.

After reviewing various papers and web applications like Ali Express and Amazon, we identified a gap in platforms supporting local businesses in Palestine. Therefore, we propose developing a web application to sell electronic devices in Palestine. This initiative aims to boost the online visibility of Palestinian companies locally and globally, aiding in brand recognition for Palestinian tech brands. Our goal is to simplify the user experience, allowing users to access device specifications and make informed purchases easily. The platform will enable users to search for devices, review specifications, and make online purchases, emphasizing user simplicity and convenience.

1.2 Overview of the Technical Area:

1.2.1 Methodology:

This section describes our approach to developing an electronic platform to help small businesses in showcasing products and connecting with potential customers. Our main goal is to create a space that allows sellers to efficiently reach a customer base through the platform. This involves helping customers view a wide range of devices from various suppliers, ease comparisons in terms of price and quality.

1. Problem Understanding and Domain Study:

- Gather information, articles, and studies on e-commerce.
- Analyze the increasing trend of online shopping to align our application with user preferences.
- Review similar sites like Mart.ps, iHouse, and Sbitany Company's website.
- Compare and learn from these sites, focusing on product filtering, pricing, company details, and display methods.

2. System Analysis:

- Utilize tools such as Use Diagrams, Activity Diagrams, and Class Diagrams to analyze the system.

3. Application Development:

- Develop the front end for user-friendly interaction, ensuring simplicity and clarity in presenting products.
- Include search and filtering features based on price, company, best sellers, and items within offers.
- Incorporate online payment functionality for ease of transactions.
- Build the Back-End using php , connecting to a MySQL database. Consider parallel development of front and back ends.

4. Testing and Improvement:

- Conduct thorough testing of the implemented features.
- Identify and address any issues or areas for improvement in the application.

1.2.2 Technology:

This section provides a brief description of the technologies to be used for the implementation of the proposed system.

For the Front-End, we will be using HTML, CSS , Bootstrap , and JavaScript:

1. HTML

The Hypertext Markup Language or HTML is the standard markup language for documents designed to be displayed in a web browser. It defines the meaning and structure of web content. It is often assisted by technologies such as Cascading Style Sheets and scripting languages such as JavaScript.[1]

We chose to use HTML for our electronic store website because it is the fundamental language for building web pages. HTML, or Hypertext Markup Language, allows us to structure the content of our application, define headings, paragraphs, lists, and embed multimedia elements. It provides a standardized way to present information on the internet and is a crucial part of web development.

HTML works in conjunction with CSS for styling and JavaScript for interactivity, creating a cohesive and user-friendly interface for the electronic store

2. CSS

Cascading Style Sheets is a style sheet language used for describing the presentation of a document written in a markup language such as HTML or XML.[2]

we opted for CSS in conjunction with HTML for our electronic store web application to address the presentation and styling aspects. CSS allows us to control the visual appearance of the site, including layout, colors, fonts, and spacing. By separating the structure (HTML) from the presentation (CSS), we can maintain a clean and organized codebase, making it easier to manage and update.

CSS enables us to create a consistent and appealing design across different pages of the web application. Its flexibility and cascading nature mean that we can define styles globally or on a per-element basis, ensuring a cohesive and visually pleasing user experience. This separation of concerns also facilitates easier collaboration and maintenance as the project evolves.

In summary, CSS plays a crucial role in enhancing the aesthetics and user interface of the electronic store, allowing for a more polished and professional appearance.

3. Bootstrap

Bootstrap is a free, open-source CSS framework for responsive, It contains HTML, CSS, and JavaScript-based design templates for typography, forms, buttons, navigation, and other interface components[3]. We decided to incorporate Bootstrap into our web application as it offers a robust front-end framework that significantly streamlines the design and development process. Bootstrap provides a set of pre-designed components and responsive layout utilities, allowing us to create a visually appealing and user-friendly interface with minimal effort.

One of the key advantages of Bootstrap is its grid system, which ensures a consistent layout across different devices and screen sizes. This responsiveness is crucial for providing a seamless experience to users accessing the electronic store from various devices, such as desktops, tablets, and smartphones. Additionally, Bootstrap comes with various ready-to-use components like navigation bars, modals, forms, and more. This saves development time and ensures a consistent and professional look and feel throughout the website. By leveraging Bootstrap's styling and functionality, we can focus more on customizing and enhancing the specific features of our web application without getting bogged down in the intricacies of responsive design.

In summary, Bootstrap is a valuable tool for achieving a modern, responsive, and visually cohesive design for our website, ultimately enhancing the user experience across different platforms.

And for Back-End, we will use PHP and MySQL.

4. php

PHP is a server scripting language, and a powerful tool for making dynamic and interactive Web pages.

PHP is a widely-used, free, and efficient alternative to competitors such as Microsoft's ASP.[4]

5. Database (MY-SQL)

MySQL is an open-source relational database management system.

MySQL is fast, reliable, scalable, and easy to use. It was originally developed to handle large databases quickly and has been used in highly demanding production environments for many years. Although MySQL is under constant development, it offers a rich and useful set of functions. MySQL's connectivity, speed, and security make it highly suited for accessing databases on the internet. [5]

In summary, MySQL serves as a powerful and reliable database solution for our web application, supporting the storage and retrieval of data to provide a smooth and efficient user experience.

1.3 Overview of the report

The following parts make up the remainder of this report:

Chapter 2 includes a survey of comparable works in addition to the specifics of the pertinent theory and discussion about the problem statement and solutions.

In Chapter 3, our system is analyzed, the system architecture, and the software diagrams are shown (use case, class, state, sequence, ER, and activity diagrams). A conclusion and a synopsis of the proposed application will then be included in chapter 4.

Chapter2. Background

2.1 Background

This chapter provides details about the proposed solution to the problems facing customers and sellers, in addition to related works of websites and applications, mentioning and comparing their features, in addition to the additional features that our site provides.

2.2 Problem statement

- Creating a web application to sell electronic devices is a good idea, but some issues might make it hard for the web application to work well for Palestinian customers and companies. Unexpected problems often arise when trying to create this online web application, and solving them is essential to make it a helpful space for customers to buy electronics. Understanding how the web application works between customers and companies is one of the problems that might come up. Here, we mention some of the main problems and suggest solutions to make the web application good for marketing.
- Finding the Right Sellers: Connecting customers with trustworthy sellers is a big part of making the electronic device platform work. There are many options, and it can take time to check out different seller profiles, look at what they're selling, and maybe talk to a few. This can be tiring for customers who are already busy. Also, it's a challenge to remember details about each seller, like what they sell and how much it costs.
- Making Transactions Easy: Once customers know what electronic devices they want, the next challenge is making it easy and safe to buy them. A simple way to pay, offering different payment choices, and ensuring secure transactions are important for making the platform user-friendly and trustworthy.

- Helpful Customer Support and Communication: A big challenge is ensuring customers and sellers can talk to each other easily. If communication isn't clear, it can cause problems like misunderstandings, delays, and unhappy customers. Setting up a special system for customer support that quickly deals with questions, solves problems, and keeps communication smooth is important for the platform to succeed.
- Making Sure Products Are Good Quality: It's super important to be sure that the electronic devices sold on the platform are good quality. Customers might be disappointed if what they get isn't what they expected. Ensuring products meet specific quality standards, confirming product details, and being transparent about specifications all help make customers happy.

2.3 Proposed solutions

In this section, we present the proposed solutions to address the challenges customers and sellers face in selling electronic devices through the electronic web application.

- Seller verification system: Implement a seller verification process to ensure that only trusted sellers are part of the platform. This can include checking their credentials, business history, and customer reviews.
- Comprehensive Seller Profiles: Create detailed seller profiles that clearly display what they offer, product types, prices, and any special offers. This allows customers to make informed decisions without conducting extensive research.
- Clear product information: Emphasize clear and comprehensive product information, specifications, features. It helps customers make informed choices and reduces the chances of dissatisfaction.
- Real-time tracking: Providing customers with real-time tracking options for their orders. This feature enhances transparency, allowing customers to monitor delivery progress and get accurate delivery time estimates.
- Reports: Providing reports to both companies and admins. The report shows the extent of the increase or decrease in sales.

- Admin powers: The ability to view customer and company accounts and the ability to control their effectiveness. He also accepts or rejects companies' requests to register on the site after communicating with them and ensuring that they are a reliable company.

2.4 Related Works

Since the idea of electronic shopping is widespread, there must be applications and websites for this purpose, but is there anything dedicated to selling electronic devices?

Here are some examples:

2.4.1 Sbitany.com

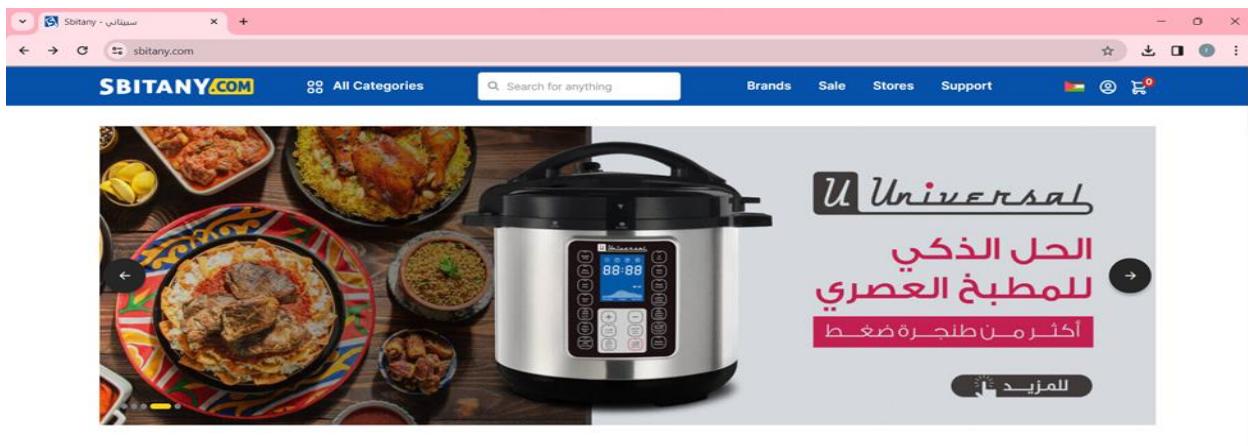


Figure 1 Sbitany Website-main page[6]

Sbitany.com is a website for the Palestinian Sbitany Company, which manages a group of brands such as Beko, LG, Philips, and others.

The site stands out by organizing devices based on category and brand. It supports searching for products and categories for offers and enables the user to add items to the shopping cart and then pay online.



Figure 2 Shop by category-sbitany[6]

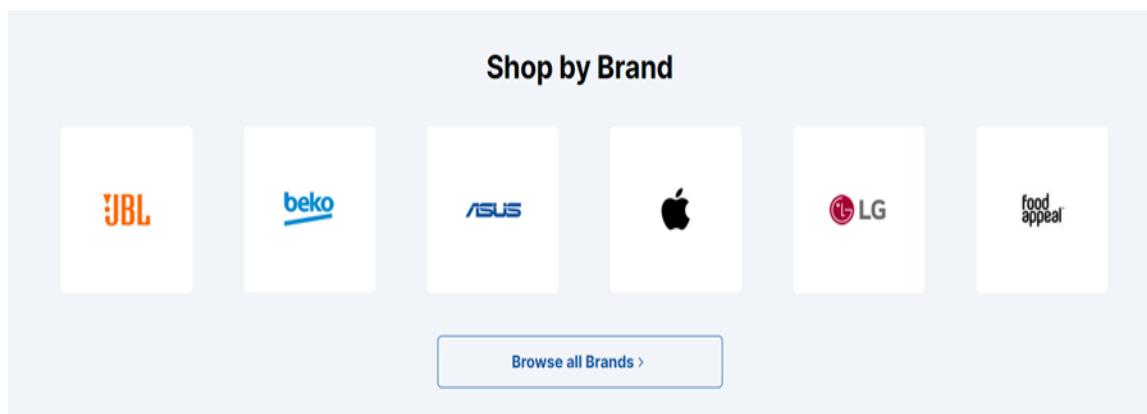


Figure 3 Shop by brand in sbitany website[6]

2.4.2 iHouse

A website affiliated with the Palestinian iHouse company, It is an authorized distributor for Apple and displays the products on its website. It classifies devices according to type. What is striking about the site is that there is a category for used devices, and users can sell their devices on it. Also, It supports the feature of sending notifications when a specific device is available.

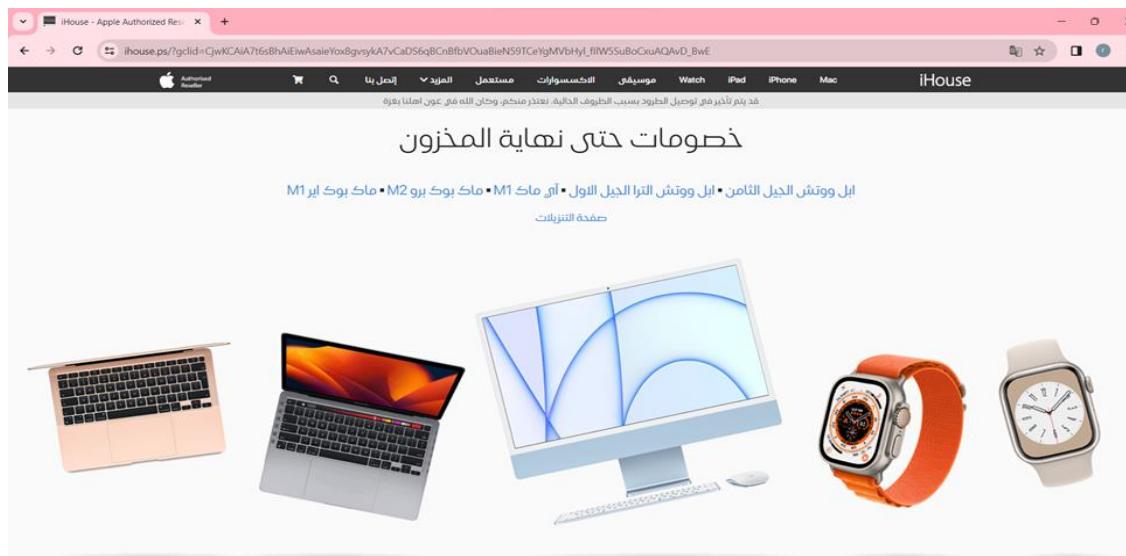


Figure 4 Main page in iHouse website[7]

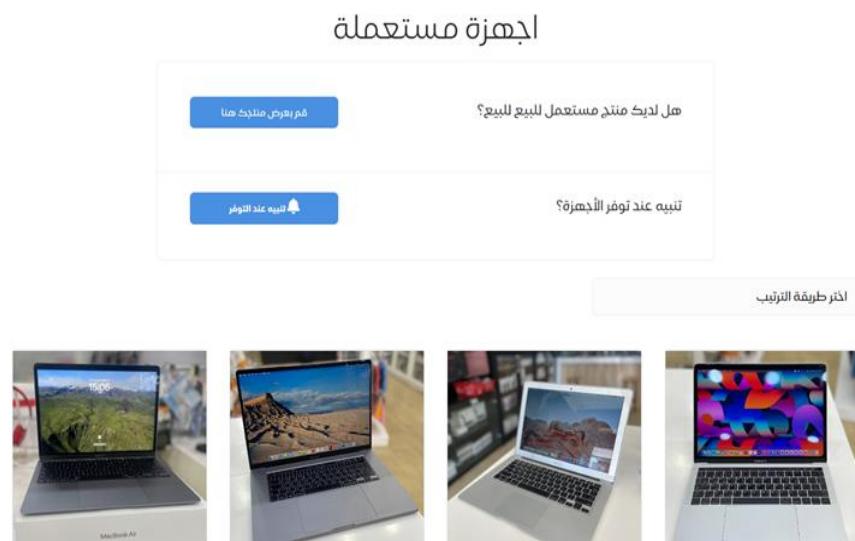


Figure 5 Category of devices used in iHouse website[7]

2.4.3 Mart.ps

An E-commerce web application that does not specialize in selling electrical devices, but it provides different categories, including the electronics category.

The arrangement is inconsistent. Electronics are classified according to brand and category but in an unorganized way. The (Chat with us) icon in the corner of the site is one of the site's positives.



Figure 6 Mart.ps-main page[8]

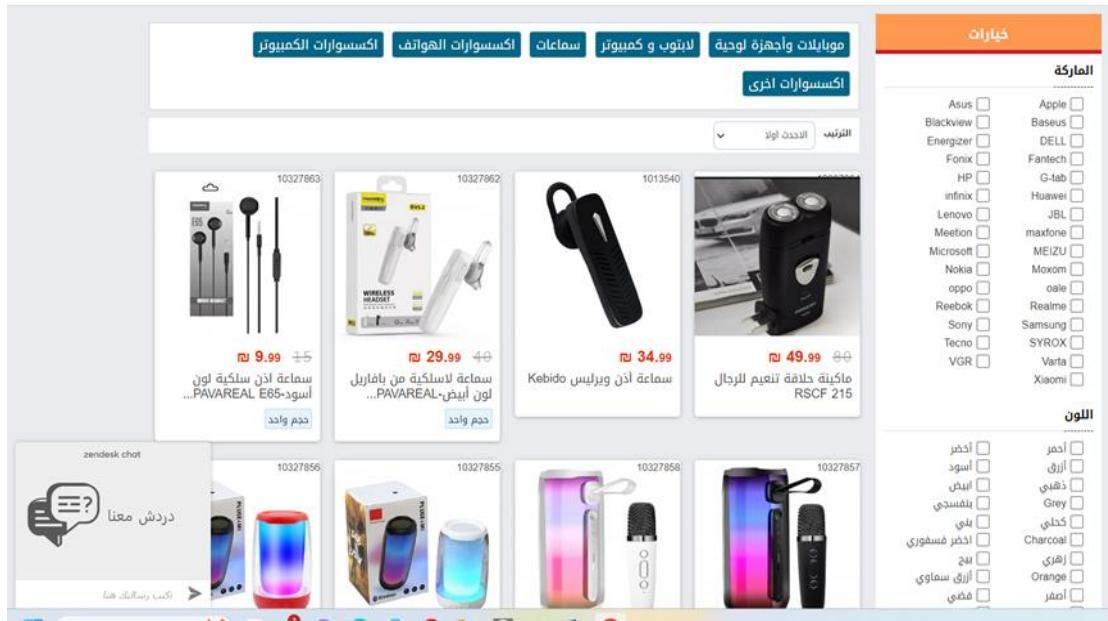


Figure 7 Electronics category on the Mart website[8]

2.5 APP comparison

The table below shows the comparison between the mentioned websites and apps based on some features as shown below:

| Feature | Sbitani | iHouse | Mart.ps | Tronix |
|--|------------|------------|------------|------------|
| Online payment | Yes | Yes | No | No |
| Selling used devices | No | Yes | No | No |
| Send notifications | No | Yes | No | Yes |
| View location and branches | Yes | Yes | No | Yes |
| Search feature | Yes | Yes | Yes | Yes |
| Classification by category and brands | Yes | Yes | Yes | Yes |

Table 1:App Comparison

Chapter3. System Analysis System Model and System Architecture

3.1 Product Description

3.1.1 System Objectives

To achieve the main goal, several sub-objectives include:

1. Designing a user-friendly interface for easy searching and purchasing.
2. Reducing the time and effort of the search process and saving customers money through company offers and gifts.
3. Helping suppliers increase sales by providing a platform to display products.
4. Enabling customers to track their sales history and suppliers to monitor sales through reports.

5. Implementing strong security measures to protect customer information using advanced encryption protocols.

3.1.2 System Main Features

The application offers the main features, which are:

- Home Page.
- Login/Logout
- Registration
- Contact and About us
- Filter search.
- Display devices and their classifications

➤ **Customer main features:**

- Shopping cart: The customer can place the devices he wants to purchase in the shopping cart so he can later confirm the order and track it.
- Cancel the order
- View orders: View orders and their details, and track them.
- Track the order status after placing it.

➤ **Companies main features:**

- The ability to add devices and modify specifications
- Ability to view purchase orders
- Sending notifications to the company when any product runs out
- When listing a specific product, the number of devices from it is listed (it does not appear for the customer)
- Sending notifications to the company when a product is ordered through the web application.
- Company reports: Displaying reports to companies indicating the most purchased devices based on requests.

➤ **Admin main features:**

- Receiving requests for admission to the accounts of companies that want to register on the site and the ability to accept or delete the request.
- The ability to control customers accounts by activating and deactivating them.
- The ability to control corporate accounts by activating and deactivating them.
- Reports showing the number of devices each company has, the number of orders, and the total profit.

3.1.3 Operating environments

Since the site is responsive, it can be accessed by clients from different device types, including smartphones, computers, and laptops, through browsers, provided they are connected to the Internet. The web application's Front-End will be designed using HTML, Bootstrap, and CSS in JS files for easy adoption. We chose a PHP-based solution for the Back-End to provide powerful networking capabilities.

3.1.4 Constraints

1. An Internet connection is required to use the system.
2. Customers must have an email account to register on the web applications.

3.1.5 Functional Requirements

- UR1: The system shall enable the companies to register on the site with the approval of the admin, and customers to register without any restrictions.

- UR2: The system shall enable the companies to manage their profiles, including location, link map, description, company phone, company name, company email, and company picture, enable companies to see reports of sales and profit. .
- UR3: The system shall enable companies to add devices with (description, price, quantity, device image, and brand).
- UR4: the system shall enable companies to show orders and change the state of order (Shipped, Cancelled, Pending, and Delivered) and the system notify the company when a product is ordered through the web application.
- UR5: The system shall enable customers to browse all devices on the web application.
- UR6: The system shall enable the customers to access to the details page of devices, featuring pictures of the device, its specifications, and price, and then enable to add the device to the shopping cart.
- UR7: The system shall enable the customers to show their orders with date and state. (Shipped, Cancelled, Pending and Delivered).
- UR8: The system shall enable the customers to browse company information and see their location on the map
- UR9: The system shall enable the admin to control user accounts (companies and customers) and accept or reject company registration and show reports represented by graphics, showing the number of orders and the sales and profits of all companies.

3.1.6 Non-Functional Requirements

- Usability: The system should be easy to use, with a clean, intuitive interface that allows users to navigate and find information effortlessly. and also used instant feedback on user actions for a positive user experience. Additionally make an introductory video for the site that enables users to learn how to use the site
- Availability: The system should be available at 24/7.
- Portability: The system should allow users to use the system on all devices, including computers, iPads, and mobile phones.

- Security: The system should incorporate robust security measures to protect user data and ensure privacy. Each user should have specific permissions and access levels tailored to their role. Passwords must be securely hashed and never stored in plain text in the database.
- Reliability: by verifying the accounts of companies entering the site.

3.2 Functional Decomposition (Use Case Diagram)

3.2.1 Actors And Description Of Their Tasks

In the context of the proposed system, actors are individuals or other components that play specific roles within the system. The details of these actors are outlined in the tables below.

Principle Actors:

| Actors | Description |
|-----------------|--|
| Admin | This actor represents a person who has full control over user accounts, including approving or rejecting company registrations. The admin can also view system reports and manage user accounts (companies and customers). |
| Customer | This actor represents a person who has an account and can browse and buy from the site. |
| Company | This actor represents the person or several people representing the company who is able to enter the site and display the devices for sale. |

Table 2: Principle Actors

Secondary Actors:

| Actors | Description |
|---------------------|---|
| Email Server | This actor represents part of a system that sends an email password reset to the company email if the responsible person forgets the password |
| Google map | This actor represents maps of the location of companies providing the product. |

Table 3: Secondary Actors

3.2.2 Use Cases Description

| | | | |
|----------------|--------------------|---------------|-----------------|
| UC ID and name | ID#1. Registration | | |
| Created By : | Maryam Abukhalil | Date Created: | 22 January 2024 |

| | | | |
|-------------------|---|-------------------|---------------|
| Primary Actors: | Customer, Company . | Secondary Actors: | Email Server. |
| Trigger: | <i>Table 4: Use case registration</i> The user clicks the “Registration” button. | | |
| Description: | *Click on the (create account) button, then choose if this user is a customer or company supplier if the user chooses (customer) he needs to write his user name, phone, Email, password and location. in their fields; if the user chooses (company supplier) he needs to enter user name, Email, password, Phone number of the company owner, company name, company Email, company image, location, company phone, company address, company location, Link to the company's location on Google Map and description. | | |
| Preconditions: | They must have a valid email address to create an account on the system using the name and password. | | |
| Postconditions: | Create an account. | | |
| Normal Flow: | <ol style="list-style-type: none"> 1. The user enters the site. 2. The user enters the information. 3. Then the user presses on the “Registration” button 4. If the data is valid the account is created otherwise error message appears “error registration information” . | | |
| Alternative flow: | <ul style="list-style-type: none"> • If a specific field is not entered or the conditions for creating an account are agreed to, an error message will be given • If the password is typed again and it does not match the first time, an error message will be given | | |

| | | | |
|-------------------|--|-------------------|-----------------|
| UC ID and name | ID#2. Sign in | | |
| Created By: | Maryam AbuKhalil | Date Created: | 22 January 2024 |
| Primary Actors: | Customer, Company. | Secondary Actors: | Email Server |
| Trigger: | The user clicks the "Sign in" button | | |
| Description: | Write Email and passwords in their fields, then click the "Sign in" button. | | |
| Preconditions: | The user's account must be active and not locked or disabled. | | |
| Postconditions: | After logging in to the web application, a welcome message appears to users, and then users are shown on the home page. They have successfully logged in to the web application. | | |
| Normal Flow: | <ol style="list-style-type: none"> 1. The users enter the site. 2. The users enter his Email and the password that was created. 3. Then the users press the "Sign in" button. 4. The system verifies the entered information. 5. If the information is correct, the system logs the user in. 6. The system redirects the user to the home page/dashboard , otherwise error message appears. | | |
| Alternative flow: | <ol style="list-style-type: none"> 1. If the user enters an incorrect password or Email, the system should prompt the user with an error message. 2. The user can try again by correcting the information entered. 3. If there are several failed attempts to log in, the person will be confirmed that he is not fake by sending a verification code via his Email , which enhances security when unauthorized attempts to log in. | | |

| | | | |
|-----------------|--|-------------------|---------------------|
| UC ID and name | ID#3. <i>Order the product</i> | | |
| Created By: | Hoson Hasqoor | Date Created: | 20 January 2024 |
| Primary Actors: | Customer. | Secondary Actors: | No secondary actors |
| Trigger: | The customer clicks the “Proceed to Payment” button. | | |
| Description: | The customer can purchase a product from the application. The customer must select the desired product and add it to the shopping cart. The customer clicks “confirm order.” The product status changes to "Pending" after ordering. | | |
| Preconditions: | <ol style="list-style-type: none"> 1. The customer has an account. 2. The customer is logged in to the site. 3. The product is in stock (not sold). | | |
| Postconditions: | The order is added to the customer's orders list with the status of Pending. | | |
| Normal Flow: | <ol style="list-style-type: none"> 1. The customer enters the site. 2. The customer logs in to the system. 3. The customer browses the products and chooses the desired product. 4. The customer adds the product to the shopping cart. 5. When entering the shopping cart, the customer clicks to confirm order. 6. The customer provides shipping information (name, address, phone) and click to confirm the order 7. The request is sent to the company or several companies if it was requested from more than one company (each item is sent to the company from which it was requested) 8. It is added to the list of customer orders with the status of shipped. | | |

| | |
|-------------------|---|
| Alternative Flow: | 1. If an error occurs and the device requested by the customer is not available, the order will be canceled by the company and the customer will be contacted using the information he entered. |
|-------------------|---|

Table 6: Use case order the product

| | | | |
|-------------------|---|-------------------|----------------------|
| UC ID and name | ID#4. Log out | | |
| Created By: | Hoson Hasqoor | Date Created: | 22 January 2024 |
| Primary Actors: | Company, Customers | Secondary Actors: | No secondary actors. |
| Trigger: | The user click the “log out” button | | |
| Description: | When the user finishes using the web application, he logs out by clicking the logout button and redirecting the user to a sign-in page. | | |
| Preconditions: | The user logged into the account | | |
| Postconditions: | The user will be logged out of the account after clearing any accessible sensitive data. | | |
| Normal Flow: | <ol style="list-style-type: none"> Click on the “log out” button. After that, the user is directed to the sign-in page. | | |
| Alternative Flow: | If the user logs out, the account will be logged out on all devices he was using. | | |

Table 7: Use case logs out

| | | | |
|----------------|--------------------|---------------|-----------------|
| UC ID and name | ID#5. Accept order | | |
| Created By: | Hoson Hasqoor | Date Created: | 22 January 2024 |

| | | | |
|-------------------|---|-------------------|----------------------|
| Primary Actors: | Company | Secondary Actors: | No secondary actors. |
| Trigger: | The company supplier wants to accept the order | | |
| Description: | The company supplier clicks on “show orders” to check the orders in the orders list, and it changes the status of the request to “shipped” if it accepts it, or changes it to “canceled” if it rejects it | | |
| Preconditions: | The customer must confirm the order. | | |
| Postconditions: | The order is prepared and ready for shipping, the product status changes to “Shipped.” In customer orders and in company orders. | | |
| Normal Flow: | <ol style="list-style-type: none"> 1. The company supplier logged into the account 2. The company supplier clicks on “show orders” to check the orders in the orders list. 3. Change the status of order by the company. | | |
| Alternative Flow: | If the company's supplier decides to reject the order, they can communicate with customer to tell him why. | | |

Table 8: Use case accept order

| | | | |
|-----------------|------------------------------------|-------------------|----------------------|
| UC ID and name | ID#6. Update Devices | | |
| Created By: | Rawan Firas | Date Created: | 22 January 2024 |
| Primary Actors: | Company | Secondary Actors: | No secondary actors. |
| Trigger: | Click on the "Update List" button. | | |

| | |
|-----------------|--|
| Description: | To update the list and perform operations on it (delete, add, modify), click on the "Edit List" button. Two buttons appear next to each item, which are (Delete, Modify), and at the end of the list the Add button appears. |
| Preconditions: | <ul style="list-style-type: none"> • logged in as company suppliers • View the list by clicking the "View list for devices" button |
| Postconditions: | Modifying one or more items, deleting them, or adding a new device |
| Normal Flow: | <p>Add device:</p> <ol style="list-style-type: none"> 1. Company supplier clicks button “add a new device”. 2. The supplier provides the device details, such as the name of the device, pictures of the device, model, description, price, and available quantity (not shown to customers). 3. The system verifies the validity of the information entered from the data base. 4. The system adds the new device to its database. 5. The system generates a confirmation or success message indicating that the device has been added successfully. <p>Delete device:</p> <ol style="list-style-type: none"> 1. The company supplier clicks the button “delete”. 2. The system prompts the supplier to confirm the deletion. 3. Supplier confirms the deletion. 4. The system removes the device from the database. <p>Update Device:</p> <ol style="list-style-type: none"> 1. Company supplier clicks the button “update” for a specific device. 2. The system retrieves the device details for editing. 3. The supplier modifies the necessary information, such as the name, pictures, model, serial number, price, or available quantity. |

| | |
|-------------------|---|
| | <p>4. The system verifies the validity of the updated information from the database.</p> <p>5. If the information is valid, the system updates the device details in its database.</p> <p>6. The system generates a confirmation or success message indicating that the device has been updated successfully.</p> |
| Alternative Flow: | If the supplier enters invalid information during the update process. The system guides the supplier to correct the errors (The system displays error messages next to the fields with invalid data) and ensures that only valid information is submitted and updated in the database. |

Table 9: Use case update device

| | | | |
|-----------------|---|-------------------|----------------------|
| UC ID and name | ID#7. view orders | | |
| Created By: | Hoson Hasqoor | Date Created: | 22 January 2024 |
| Primary Actors: | Company | Secondary Actors: | No secondary actors. |
| Trigger: | when a user (Customer or Supplier) decides to view their orders, whether for reference, tracking, or any other purpose. | | |
| Description: | It represents the process of users (customers and suppliers) (to their order history and viewing it within the system. | | |
| Preconditions: | Orders are submitted by customers. | | |

| | |
|-------------------|--|
| Postconditions: | <p>After viewing orders:</p> <ol style="list-style-type: none"> 1. The system displays a list of the user's past orders (either customer or supplier). 2. Detailed information about the selected order is presented. |
| Normal Flow: | <ol style="list-style-type: none"> 1. The user logs into the system. 2. The user selects a specific order from the list. 3. The system provides detailed information about the selected order, including items, quantities, and current status. 4. The user can back to the list of orders and choose to view another order. 5. If the user is a Company supplier, he has the option to accept or reject the order. |
| Alternative Flow: | No alternative flow. |

Table 10: Use case view orders

| | | | |
|-----------------|---|-------------------|-----------------|
| UC ID and name | ID#8. View company information | | |
| Created By: | Rawan Firas | Date Created: | 22 January 2024 |
| Primary Actors: | Customer | Secondary Actors: | Google map |
| Trigger: | The customer clicks on the company name to view its information. | | |
| Description: | This use case involves customers accessing information about the company, including branches, contact details, and location, by clicking on the company name. | | |
| Preconditions: | None | | |
| Postconditions: | The customer views the company information. | | |

| | |
|-------------------|---|
| Normal Flow: | <ol style="list-style-type: none"> 1. Customer navigates to the webpage displaying the list of companies. 2. Customer clicks on company name. <p>a. The system retrieves and displays the company information.</p> <p>b. The system utilizes Google Maps to display the location.</p> <p>c. Customer can view the following information:</p> <ul style="list-style-type: none"> • Branches of the company. • Contact details, including phone numbers and email addresses. • The location of the company on a map. |
| Alternative Flow: | <p>If there is an issue retrieving the location from Google Maps:</p> <ul style="list-style-type: none"> • The system informs the customer about the technical difficulty. • The customer is prompted to try again later. |

Table 11: Use case View company information

| | | | |
|-----------------|--|-------------------|----------------------|
| UC ID and name | ID#9. Search product | | |
| Created By: | Rawan Firas | Date Created: | 22 January 2024 |
| Primary Actors: | Customers | Secondary Actors: | No secondary actors. |
| Trigger: | The customer initiates a product search. | | |
| Description: | This use case enables customers to search for products by name. | | |
| Preconditions: | The customer is on the system's search page or product catalog. | | |
| Postconditions: | Customer views the search results based on the product name, brand and classification. | | |

| | |
|-------------------|--|
| Normal Flow: | <ol style="list-style-type: none"> 1. 1. The customer clicks on the search bar and enters a specific name, brand, or category to search for. 2. The customer enters what he searching for 3. The system performs a search for products matching the entered words 4. The system displays a list of products that match the search criteria. 5. Customers can view each product's basic details in the search results. |
| Alternative Flow: | <p>If no products match the entered product name:</p> <ul style="list-style-type: none"> • The system notifies the customer that no matching products were found. • The customer may refine the search criteria and try again. |

Table 12: Use case search product

3.2.3 Use case Diagram

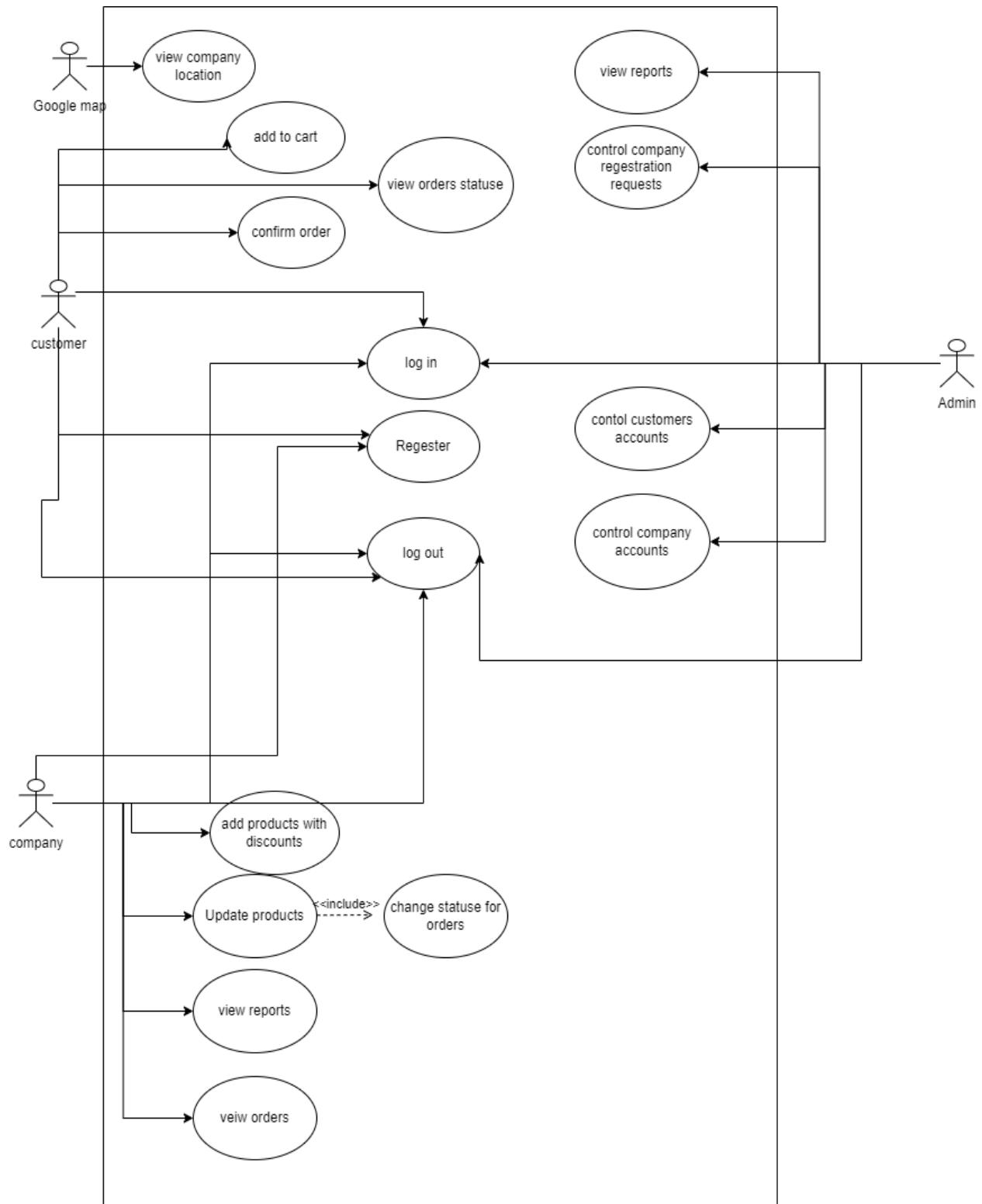


Figure 8 Use case diagram for system operations

3.3 System Model

3.3.1 Class Diagram

Class diagram is used when developing a system that will be implemented using OOP concepts. In order to define every class that may be used in the implementation process with its attributes and methods. Diagrams are shown in **Figure 15** and **Figure 16**.

3.3.1.1 Class Diagram

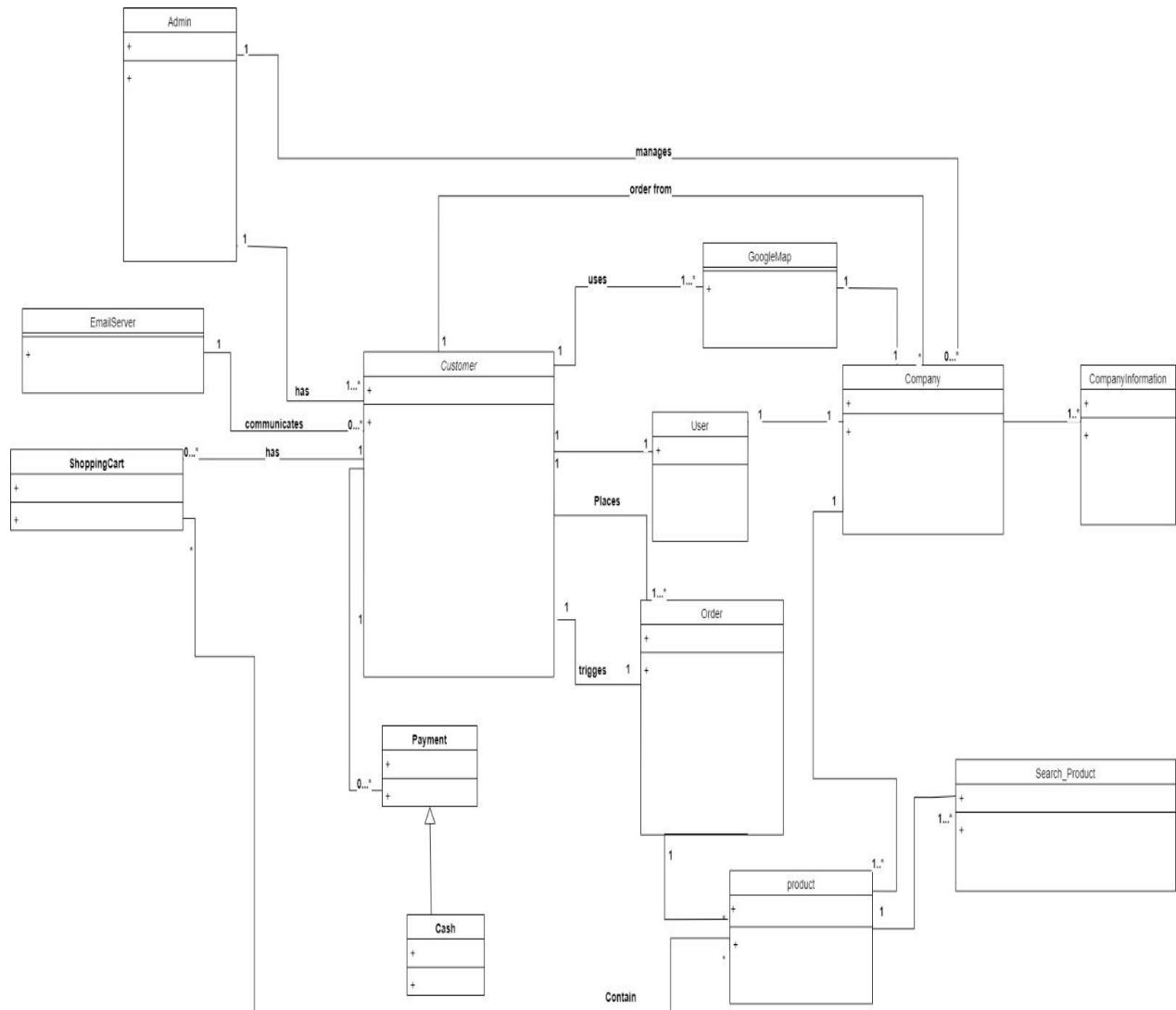


Figure 9 class diagram

3.3.1.2 Detailed Class Diagram

A detailed diagram of each system is shown in **Figure 16**.

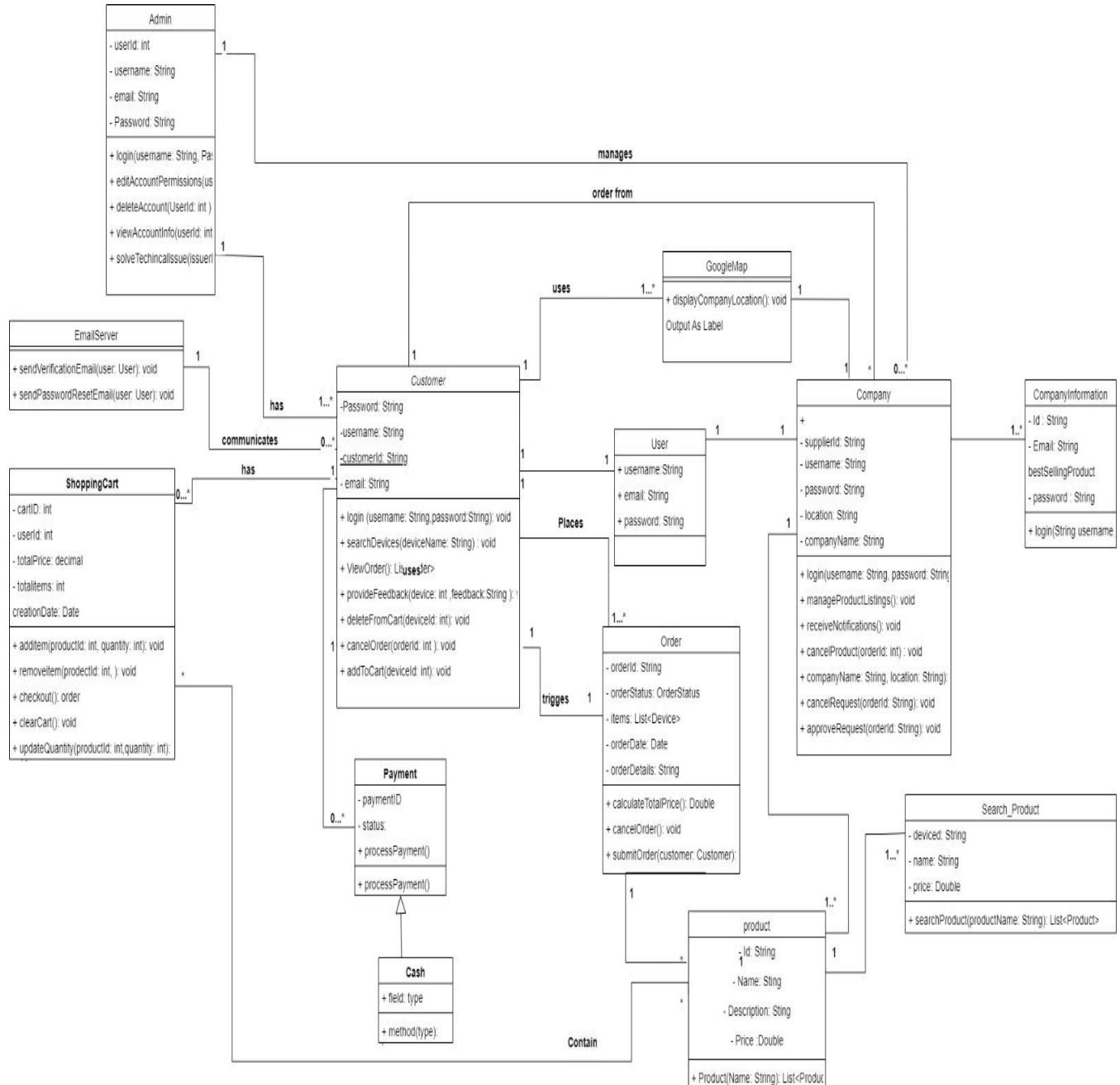


Figure 10 Detailed Class Diagram

3.3.2 Sequence Diagram

The sequence diagram is a UML diagram that shows the interaction between objects in the context of the collaboration within time intervals.

The sequence diagram for registration use case diagram shown in **Figure 17**.

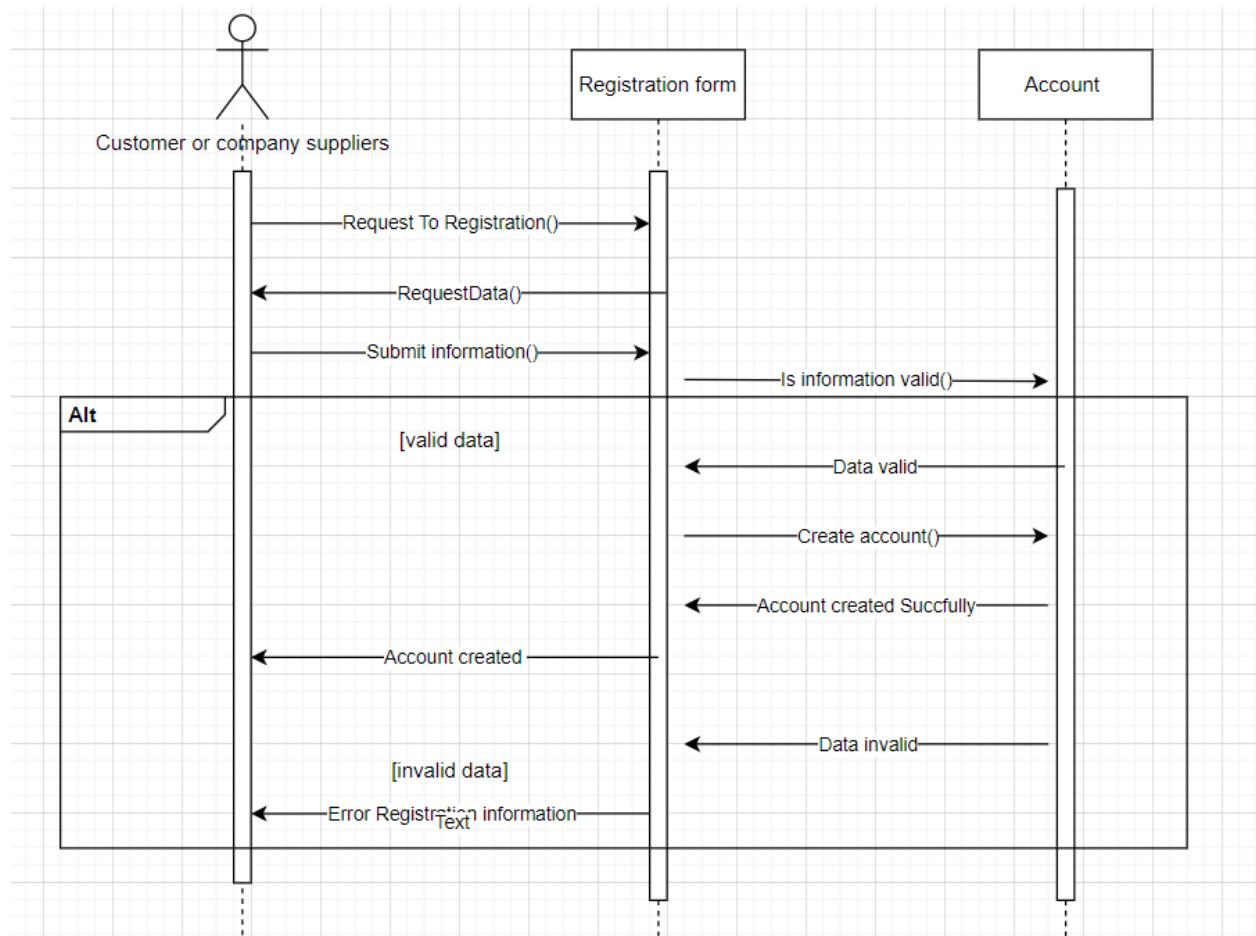


Figure 11 Registration sequence diagram

The sequence diagram for sign in use case diagram shown in **Figure 18**.

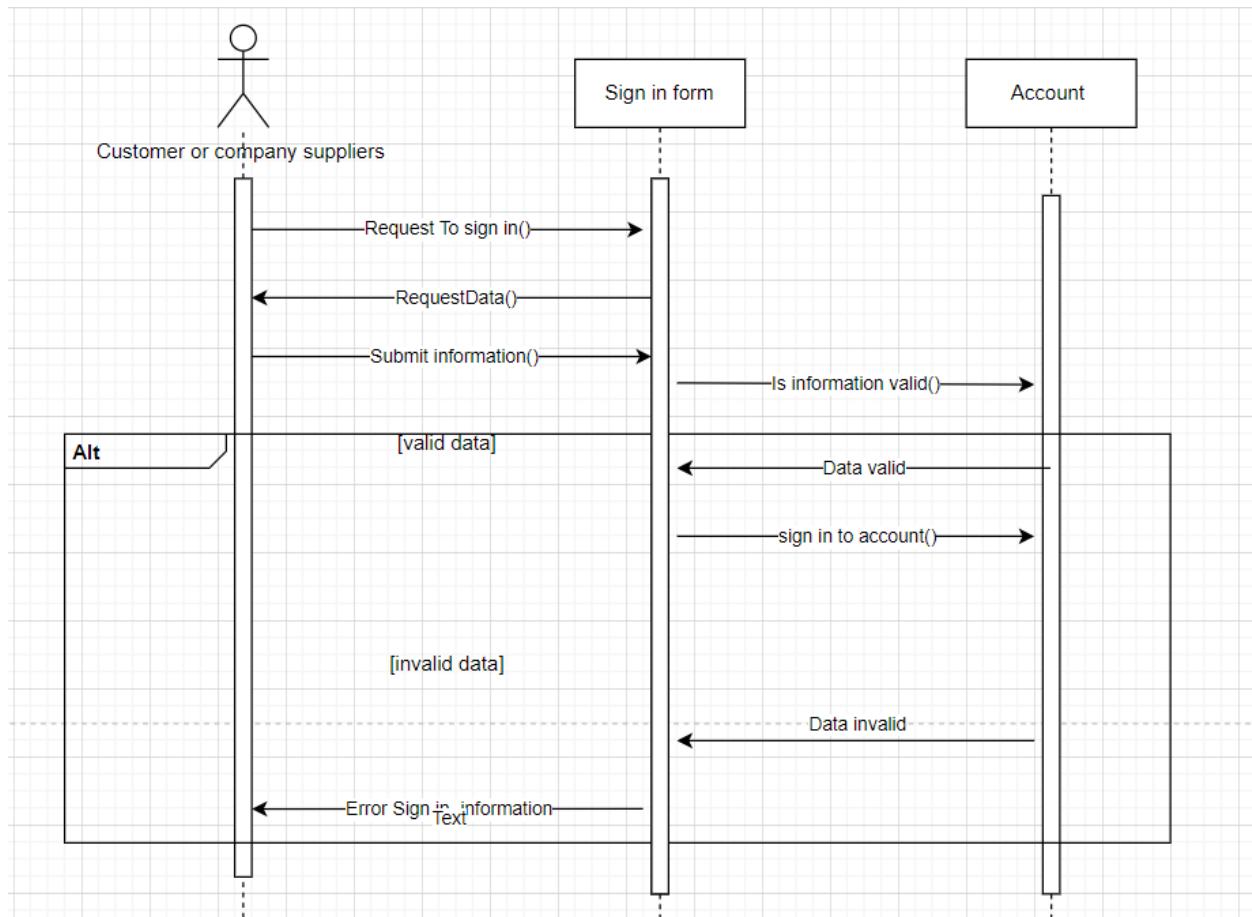


Figure 12 Sign in sequence diagram

The sequence diagram for order the product use case diagram shown in **Figure 19**.

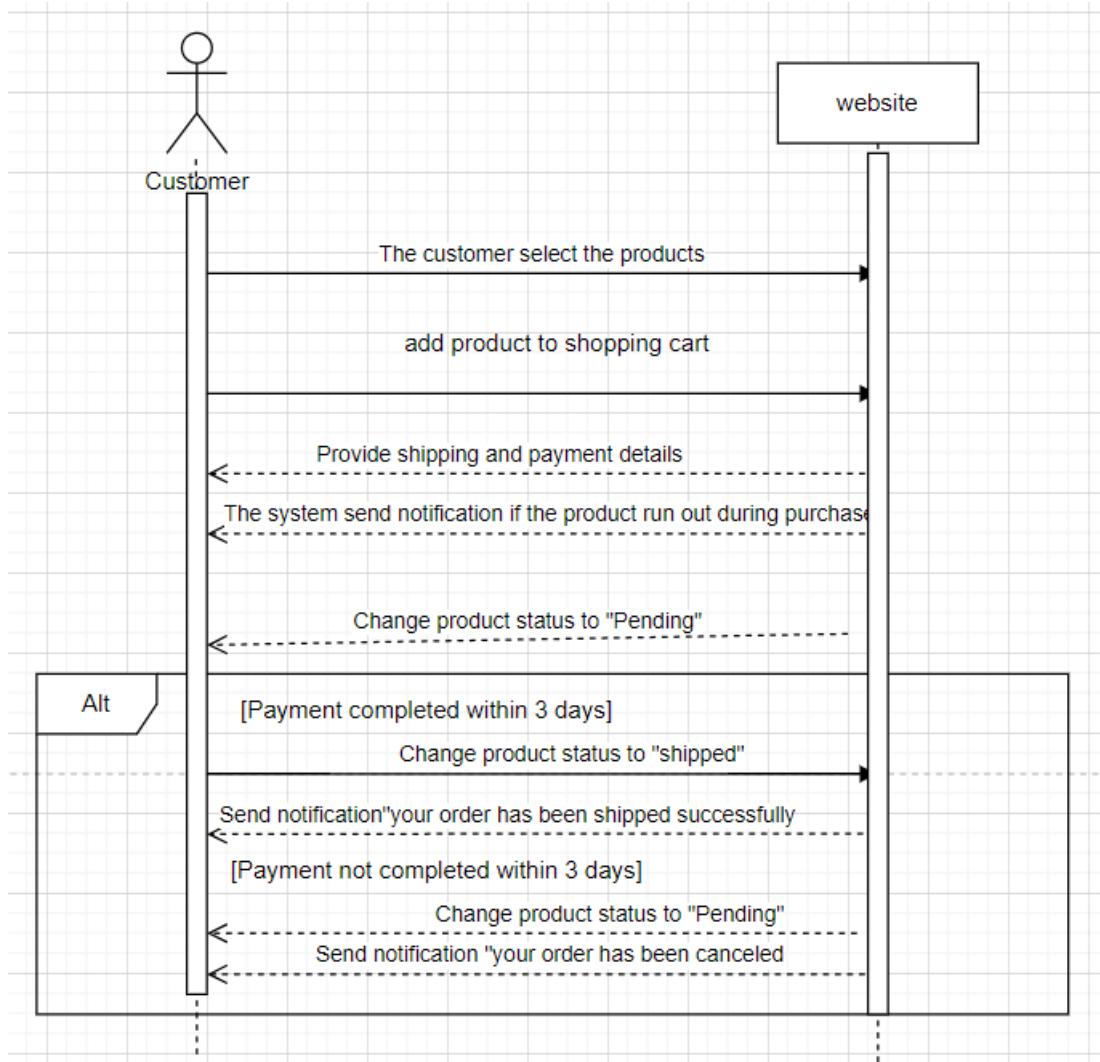


Figure 13 Order the product sequence diagram

3.3.3 Activity diagram.

The activity diagram shows the flow of events from one event to another that may occur in the system in sequence. Diagram is shown in **Figure 25**.

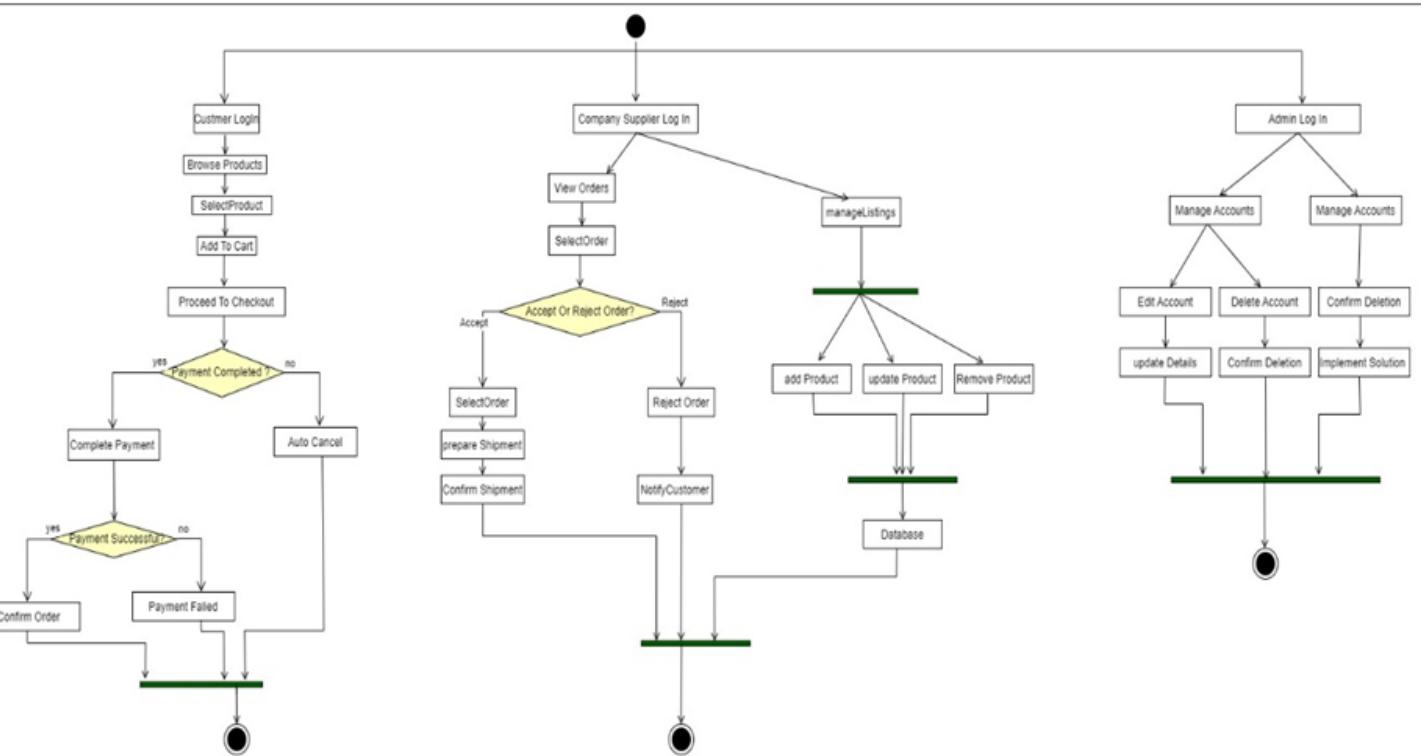


Figure 14 Activity diagram

3.3.4 State chart diagram

State diagram describes different states of a component in a system and transitions among these states. Diagram is shown in **Figure 26**.

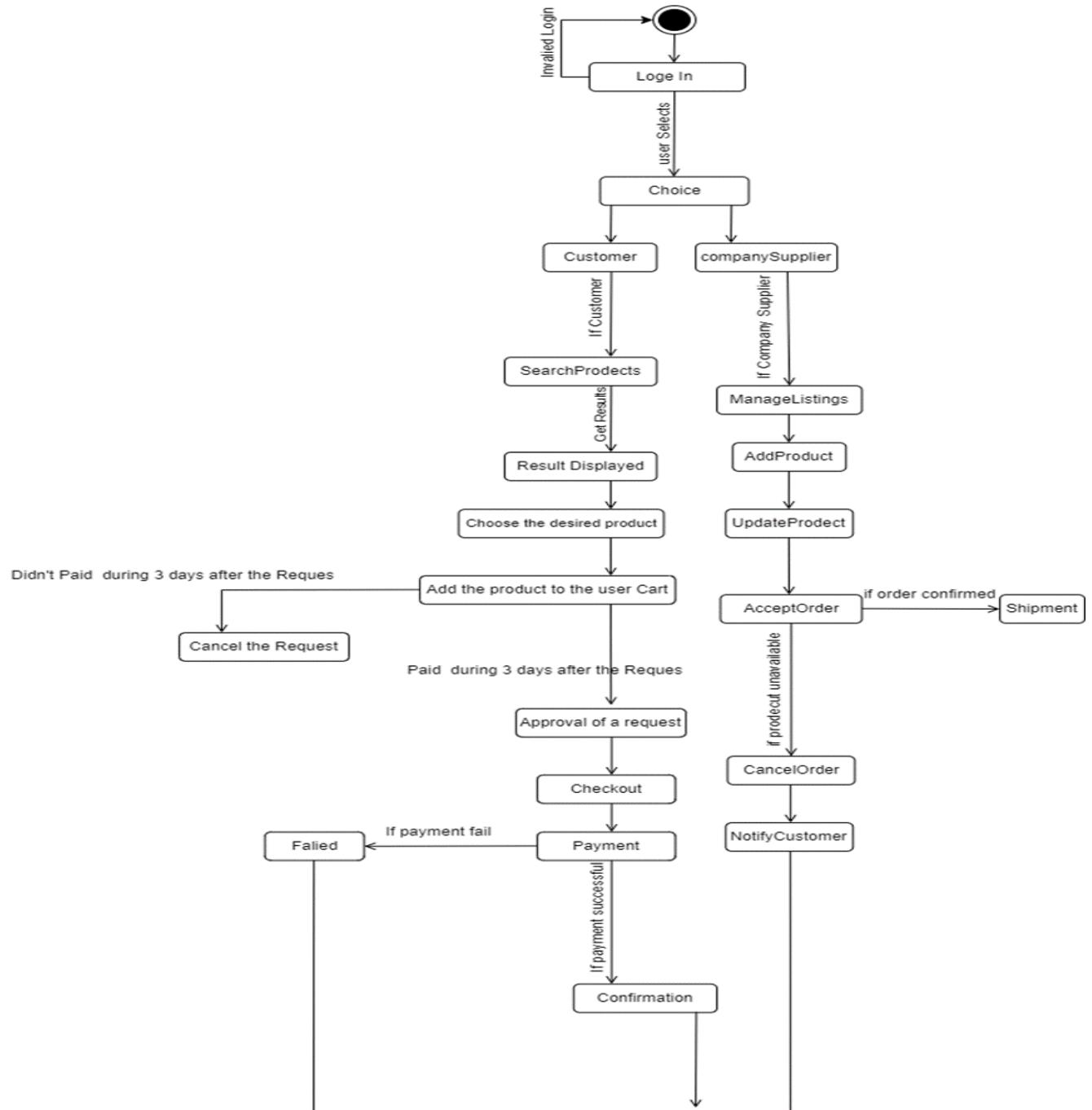


Figure 15 state diagram

3.4 System architecture.

3.4.1 Sub-System (descriptions of the sub-systems and their services)

The system contains different interfaces depending on the user who enters the site

First, if the user is a company supplier, the system consists of sub-systems, which are:

- Device control system: in terms of deletion, modification, and addition: This system is basically a system linked to a database.
- Search system: Searching for a device within the database so that the search result shows the device and its information. The search is done by the name of the device, whether the user is a customer or a company supplier.
- Order display system: Customer orders are displayed in order. In each order, there are payment details, details of the required devices, and location details as well, so that the company supplier can accept or reject while sending the reason for the rejection to the customer.
- Notification system: The company is notified if the quantity of a specific type of device runs out, and also when it receives an order, it is notified of that. The notification system is available if the user is a customer or company supplier.

On the other hand, if the user is a consumer, the sub-systems are as follows:

- Shopping cart system: Devices are added to the cart by clicking on “Add to cart”. Inside this cart there is everything that has been added and the total price and quantity to be ordered for each device.
- Order Request System: After the process of assembling the devices in the shopping cart, the customer completes the ordering steps and enters the payment information and location information. If the process is completed successfully without errors, the system transfers the order to the company or companies that provide these devices.

- Payment system: Customers can choose from three payment methods (cash, via PayPal, via credit card). The system asks the customer to choose a payment method. If it is a credit card, The customer enters credit card details, The system processes the payment and the request is sent to the company. If PayPal, the customer chooses PayPal as the payment method, The system redirects to the PayPal platform., customer completes payment on PayPal and the system receives payment confirmation at the end, The request is sent to the company.

3.4.2 Software architecture

System architecture diagram is used to understand, clarify, and communicate ideas about the system structure and the user requirements that the system must support. Diagram is shown in **Figure 27**.

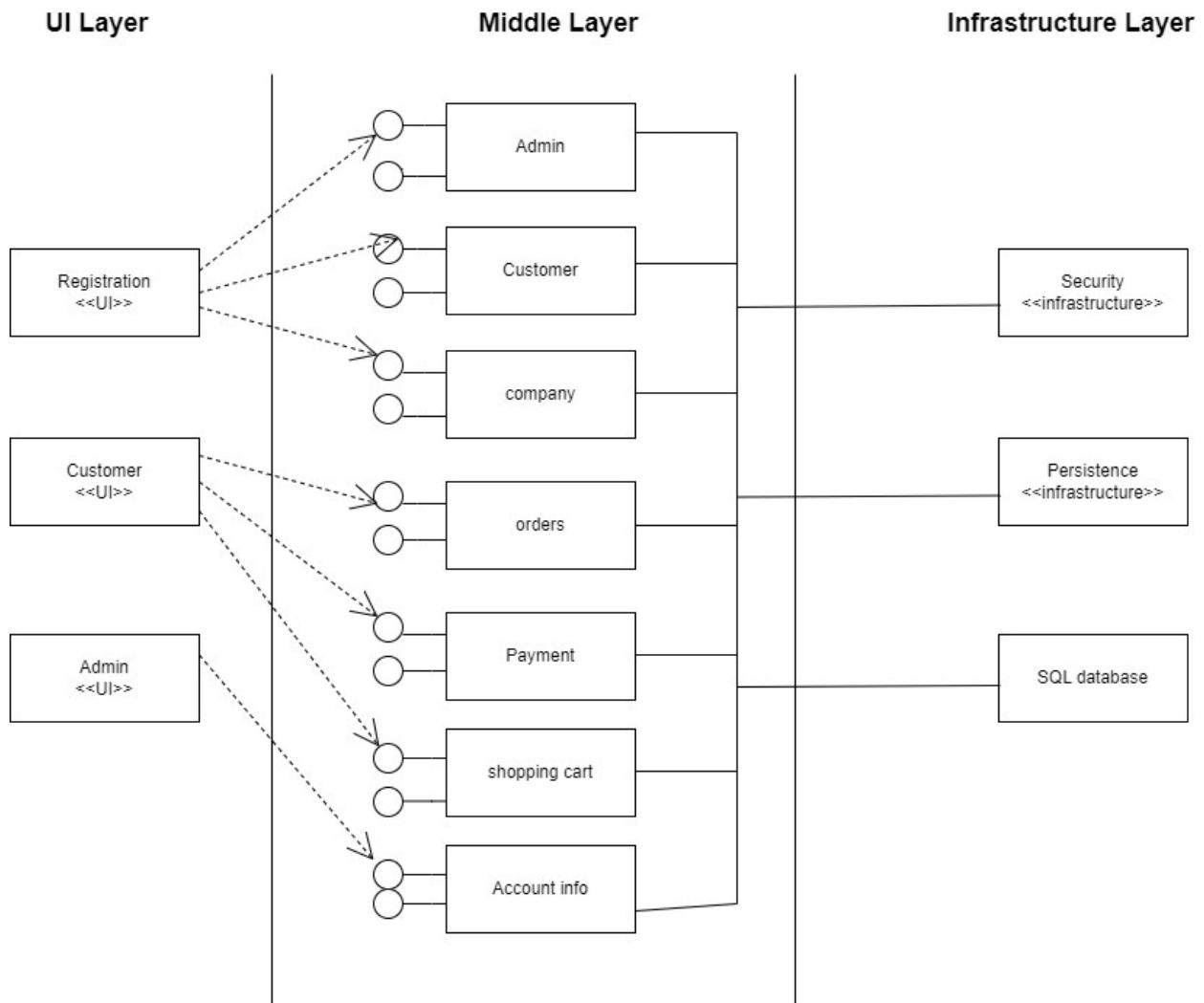


Figure 16 System architecture diagram.

3.4.3 Deployment diagram

A Deployment Diagram in software engineering is a type of diagram that shows the physical deployment of software components and how they are distributed across hardware nodes. Diagram is shown in Figure 28.

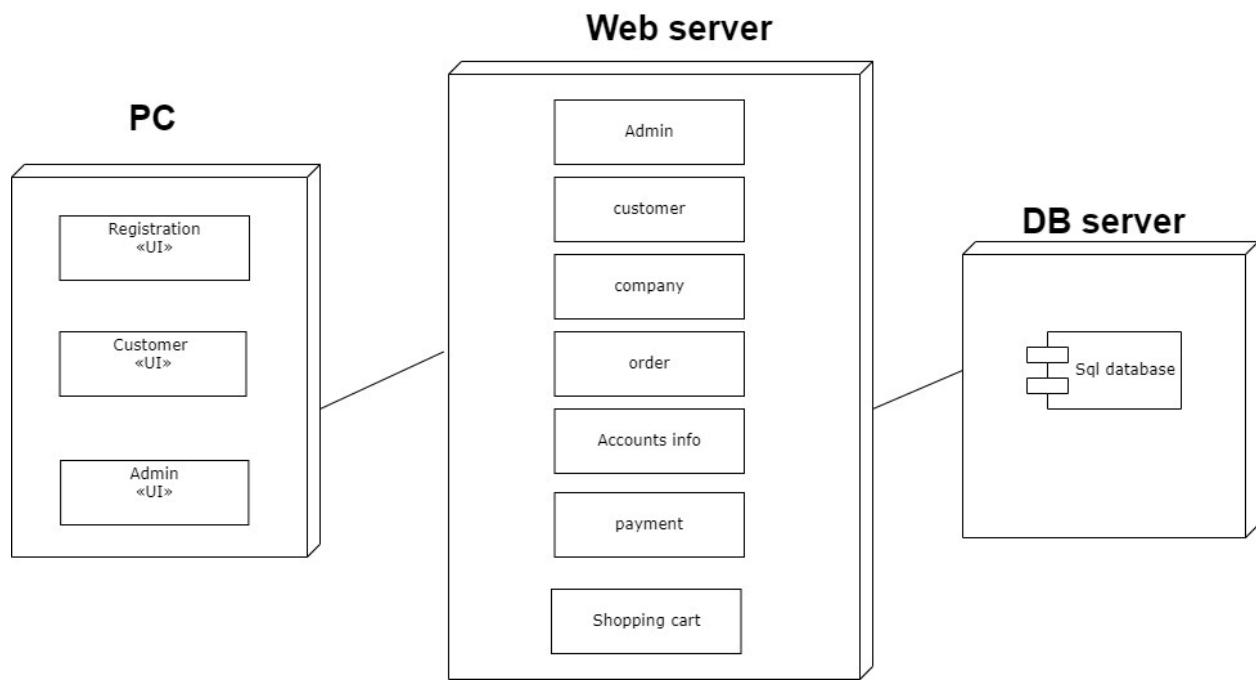


Figure 28: Deployment diagram

3.5 Data Management and Models

Entity Relationship (ER) Diagram is a type of flowchart that shows how "entities" in a system, such as people, objects, or concepts, interact with one another. Diagram is shown in **Figure 29**.

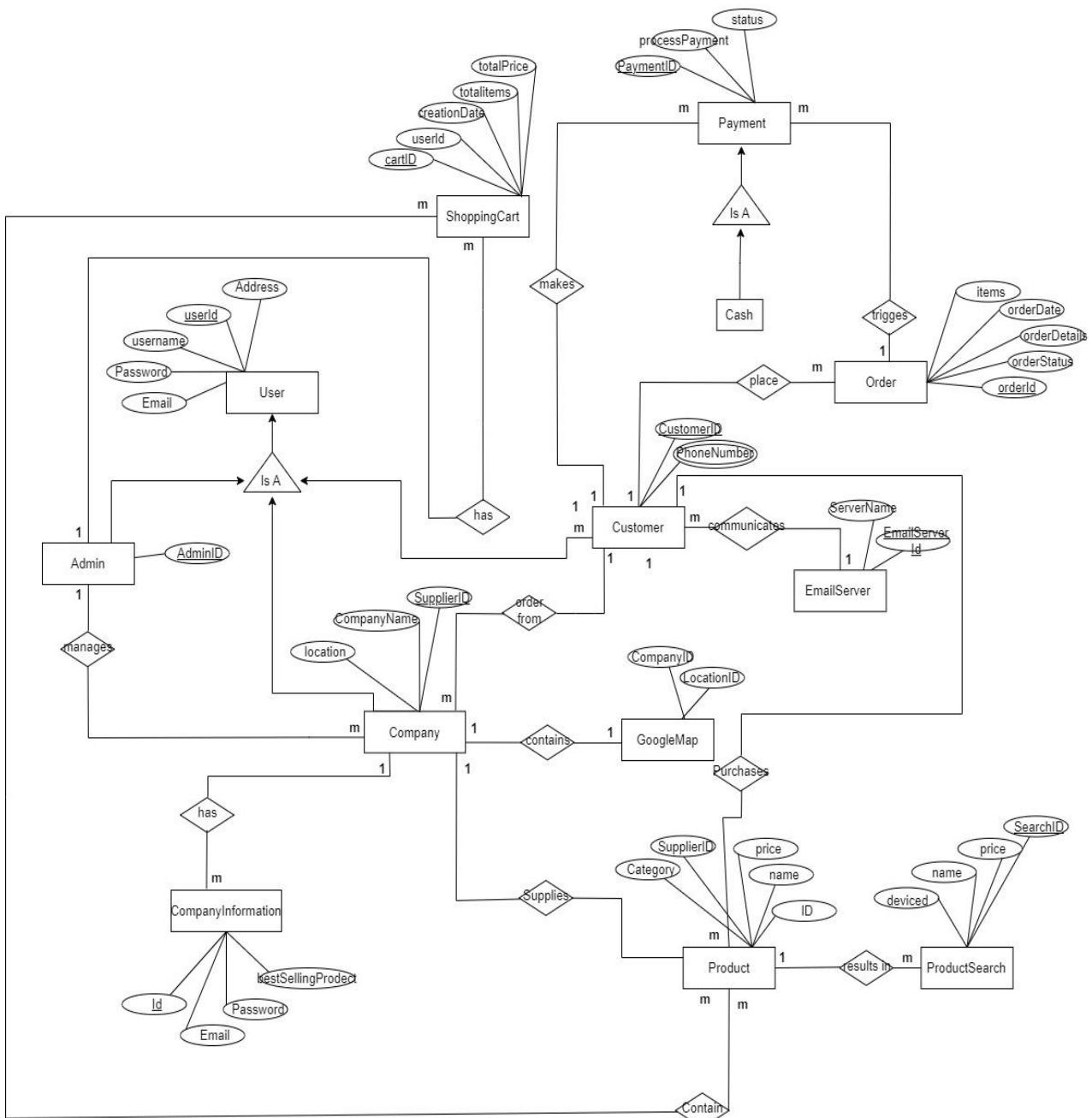


Figure 17 Entity relationship diagram

Chapter 4: Implementation and Testing

4.1 Implementation:

The previous sections presented the software analysis of the proposed system, this chapter describes how the system works and how each of the users interacts with the system and use it.

Welcome page :

This page aims to allow users to choose whether they are a customer or a company, which gives them access to their registration page.

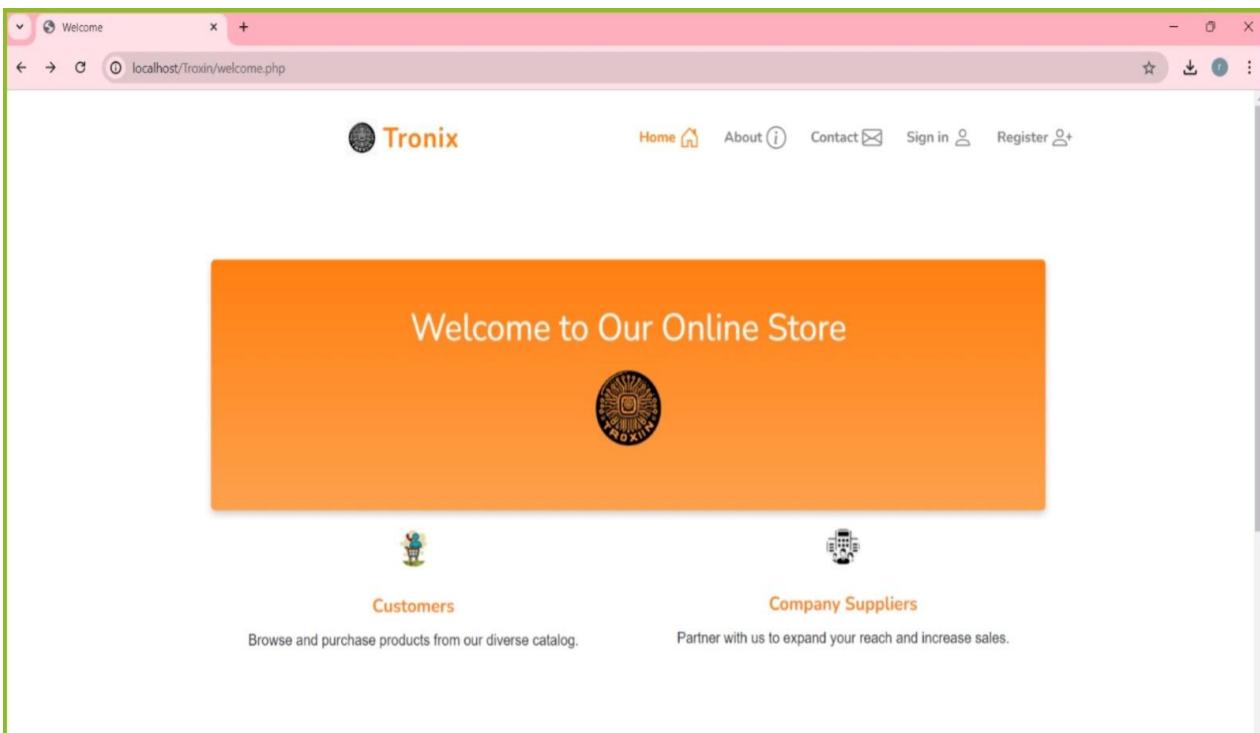
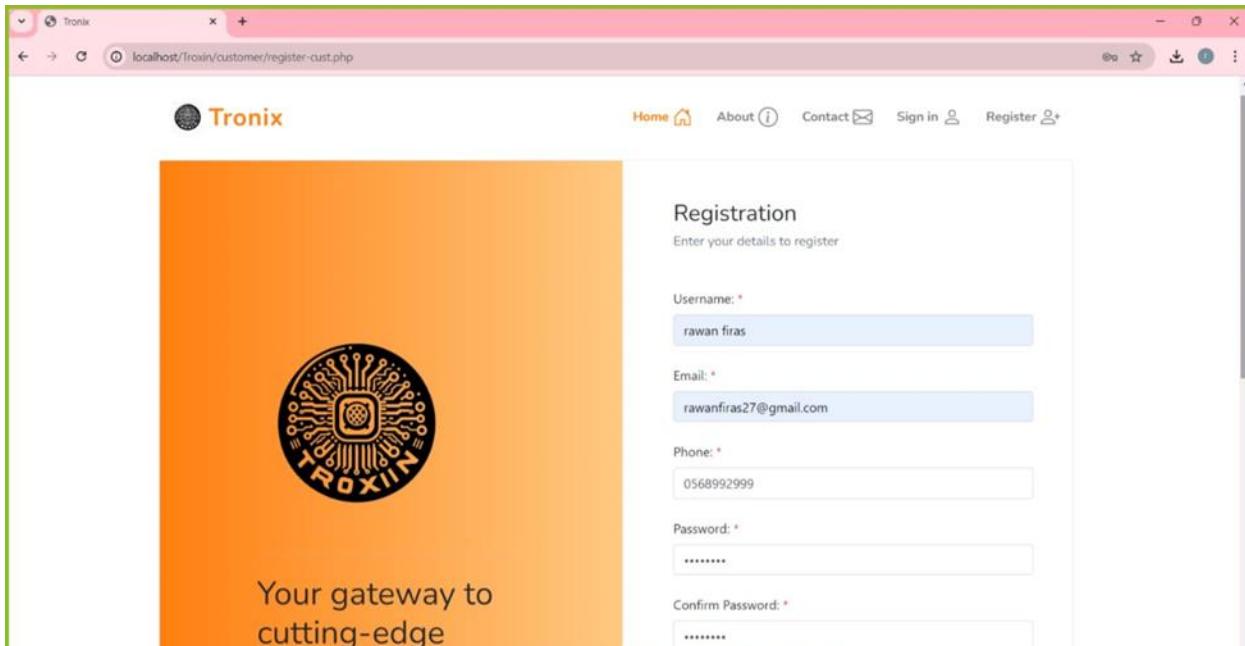


Figure 18 Welcome page and choose the registration type

Registration page:

This page aims to allow customers to register with our site by creating an account and providing personal information (such as user name, Email address, phone number, and password). After creating the account, the customer can access and use all the features of the site.



The screenshot shows a web browser window for the 'Tronix' website. The URL in the address bar is 'localhost/Troxin/customer/register-cust.php'. The page has a header with links for 'Home', 'About', 'Contact', 'Sign in', and 'Register'. On the left, there's a large orange banner featuring the 'Tronix' logo (a stylized circuit board with the word 'TRONIX' inside) and the text 'Your gateway to cutting-edge'. The main content area is titled 'Registration' and contains a sub-instruction 'Enter your details to register'. It includes five input fields: 'Username:' with value 'rawan firas', 'Email:' with value 'rawanfiras27@gmail.com', 'Phone:' with value '0568992999', 'Password:' with placeholder '*****', and 'Confirm Password:' with placeholder '*****'.

Figure 19 customer registration page

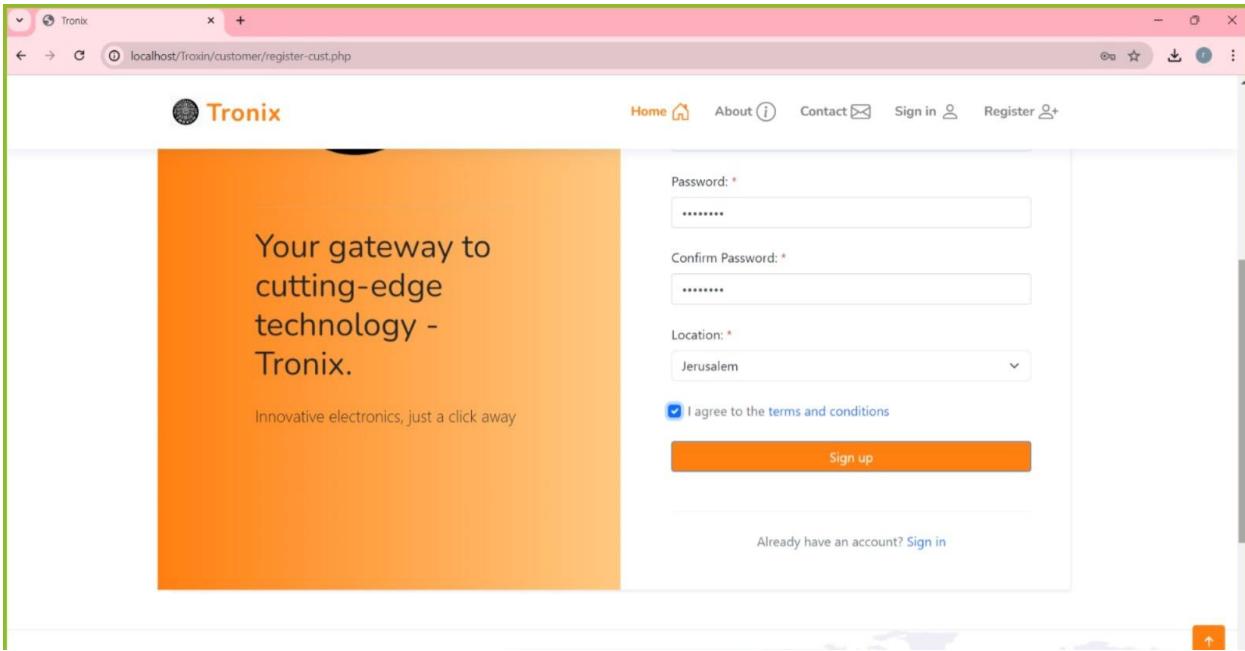
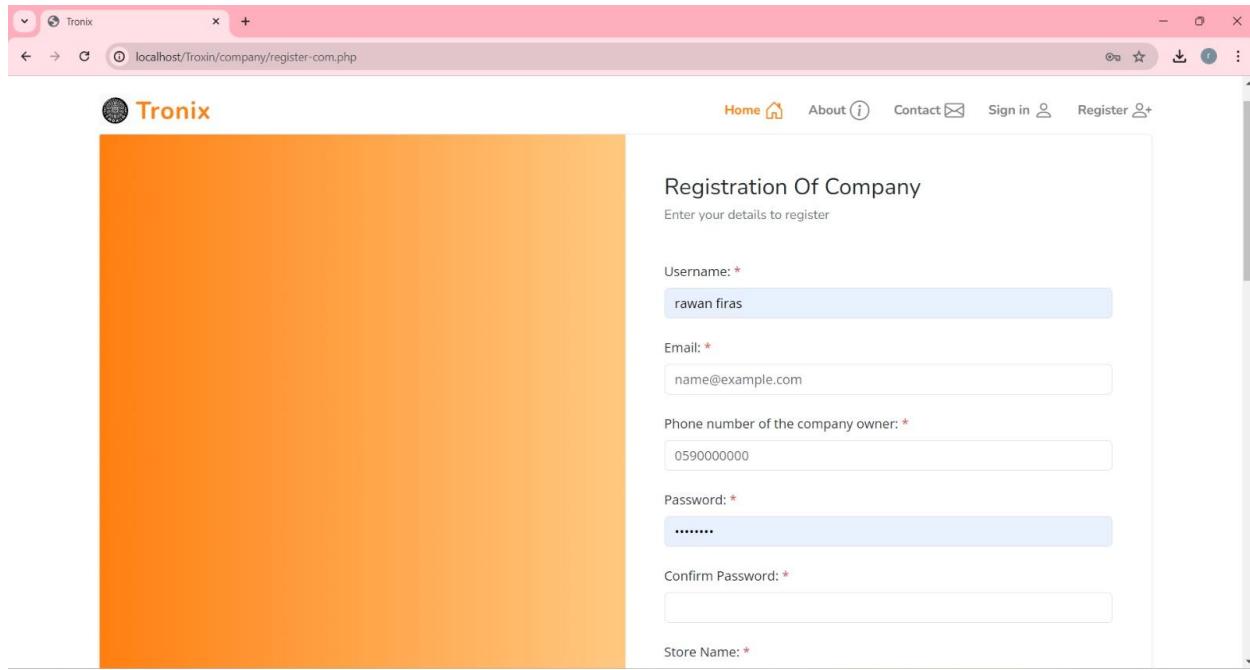


Figure 20 customer registration page 2

This page aims to allow company suppliers to register with our site by creating an account and providing personal information (such as user name, Email address, phone number, Location and password). After creating the account, the request sent to admin to apply or reject it.



Tronix

Home About Contact Sign in Register

Registration Of Company
Enter your details to register

Username: * rawan firas

Email: * name@example.com

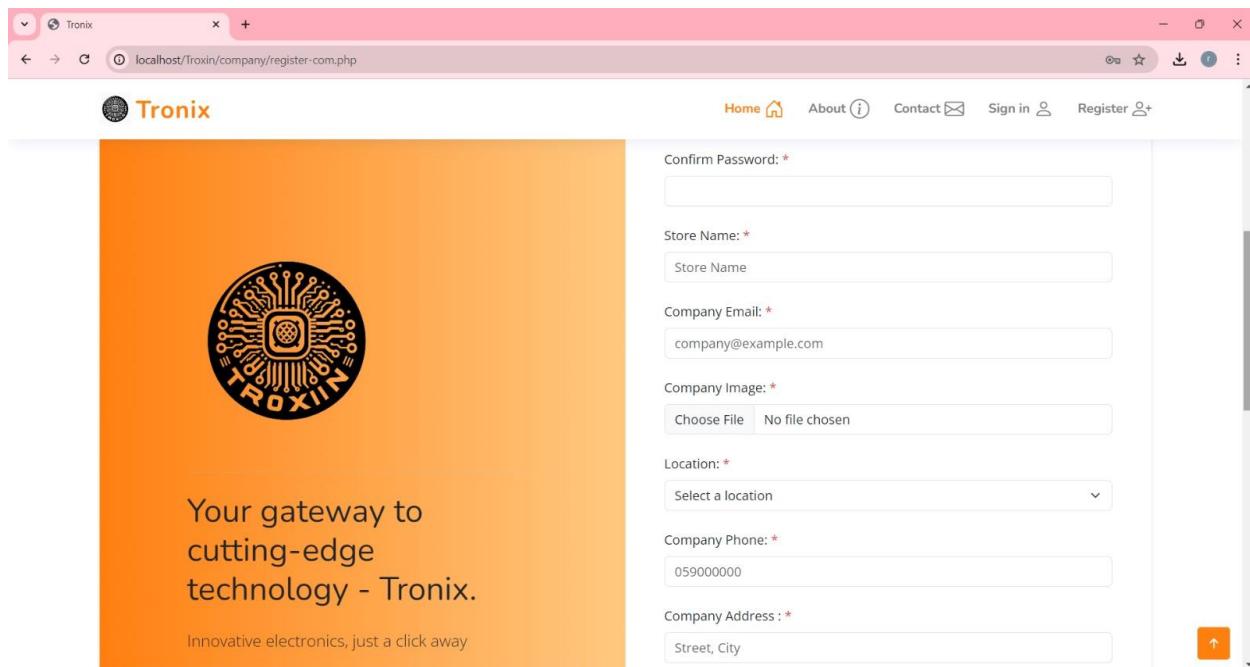
Phone number of the company owner: * 0590000000

Password: * *****

Confirm Password: *

Store Name: *

Figure 21 Registration page for companies1



Tronix

Home About Contact Sign in Register

Your gateway to cutting-edge technology - Tronix.
Innovative electronics, just a click away

Confirm Password: *

Store Name: * Store Name

Company Email: * company@example.com

Company Image: * Choose File No file chosen

Location: * Select a location

Company Phone: * 0590000000

Company Address : * Street, City

Figure 22 Registration page for companies2

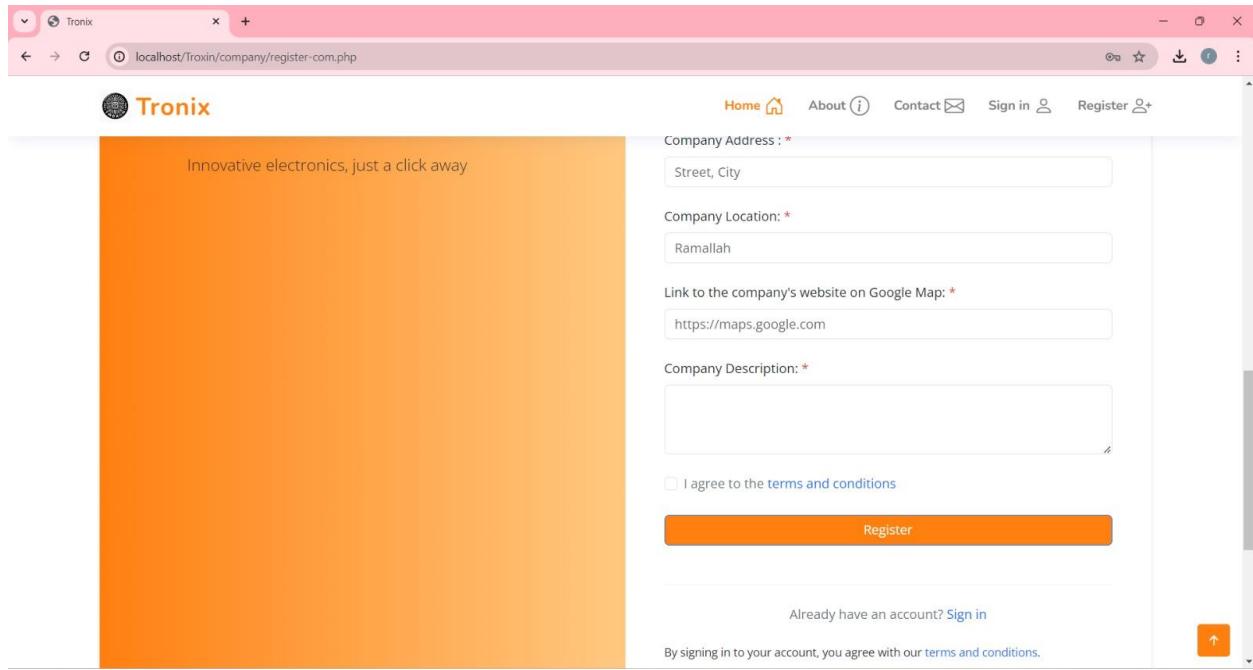


Figure 23 Registration page for companies3

sign in page:

This page aim to allow the Users to login to the Tronix website using their username and password, which allows them to access all of the website's services.

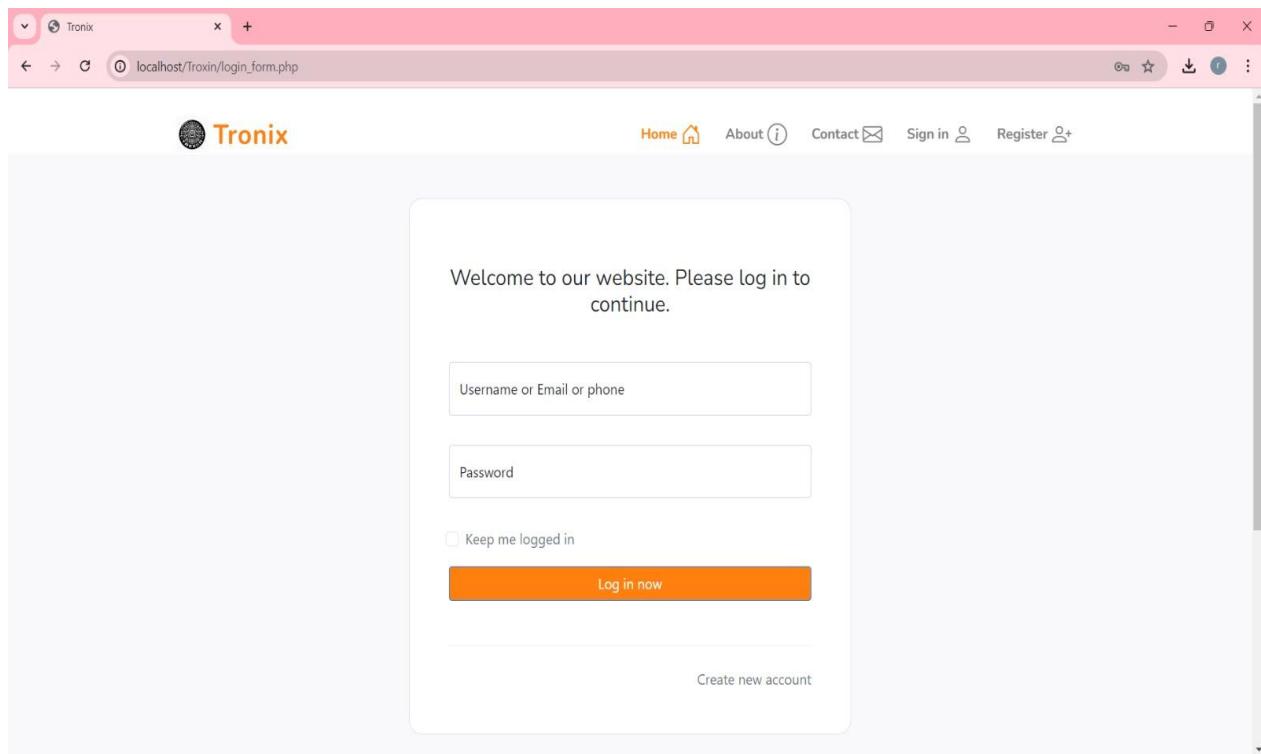


Figure 24 Sign in page.

Home page:

This page was designed to be the main interface, so that the customer can browse all the details of the other pages.

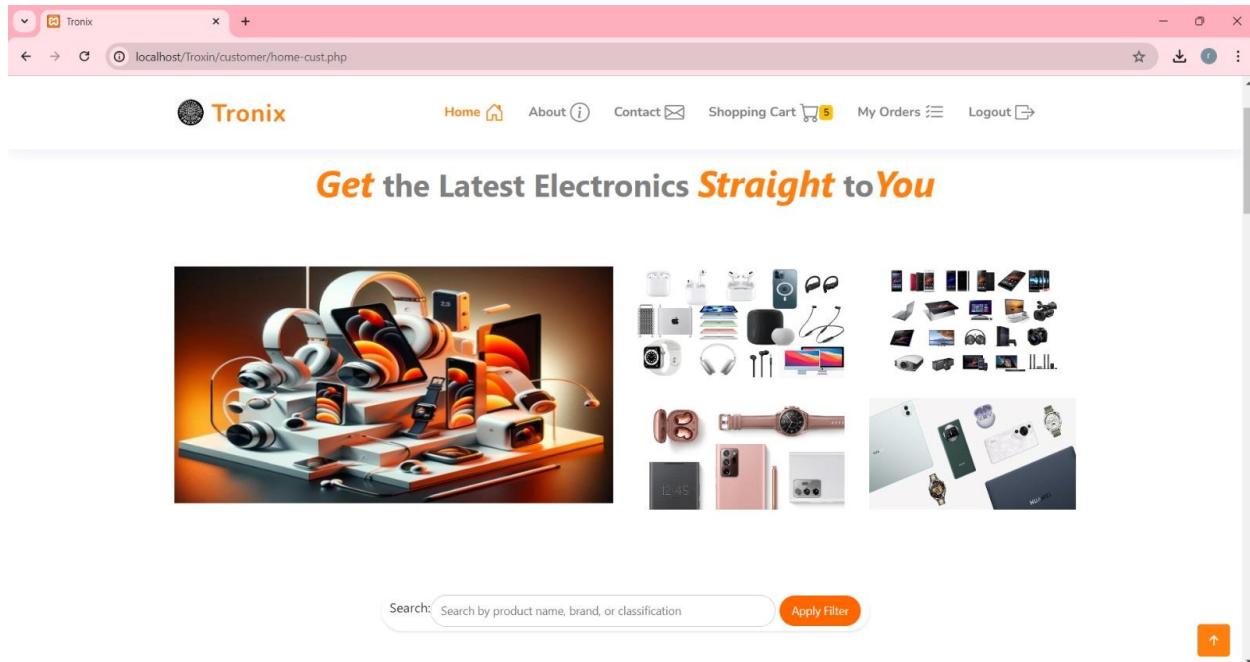


Figure 25 home page1

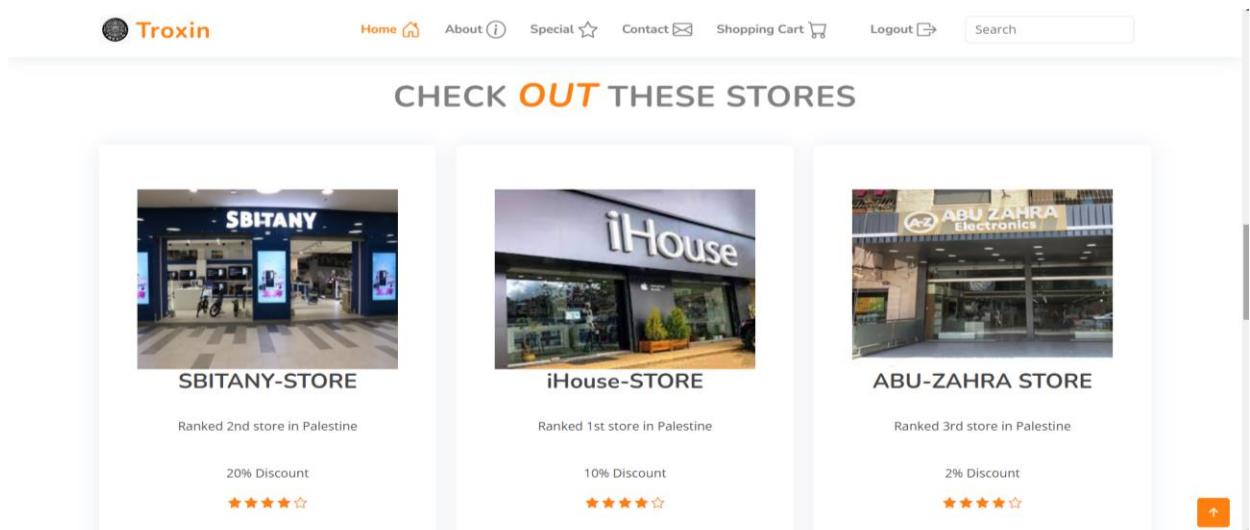


Figure 26 home page 2

TODAY'S OFFER

iPad Pro 11

\$ 799



11-inch Liquid Retina screen

iPhone 15

\$ 890



Featured

apple watch serie 8

\$ 1100



Eighth edition



Figure 27 home page 3

Admin page :

This page aims to allow the admin to track the site, see the accounts that register and accept or reject them. He can also view his own report to see details such as the total orders for each store, etc.

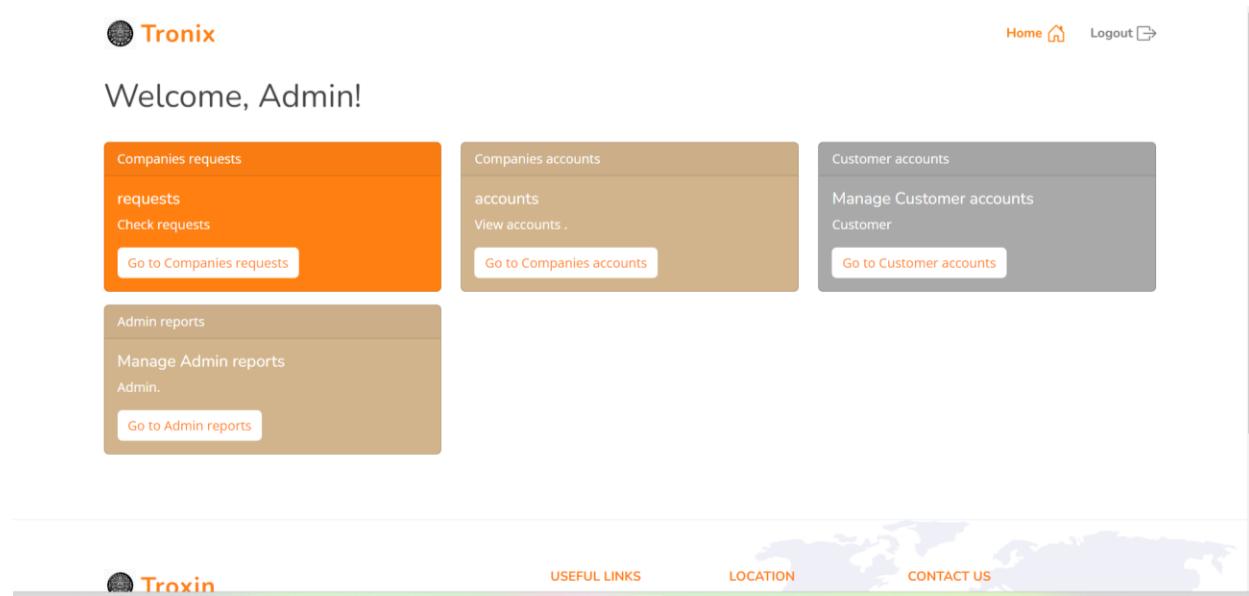


Figure 28 Admin home page

Report admin page:

On this page, the special report is displayed in the admin of the site. Through the graph, all the orders required for each company registered on the site are displayed.

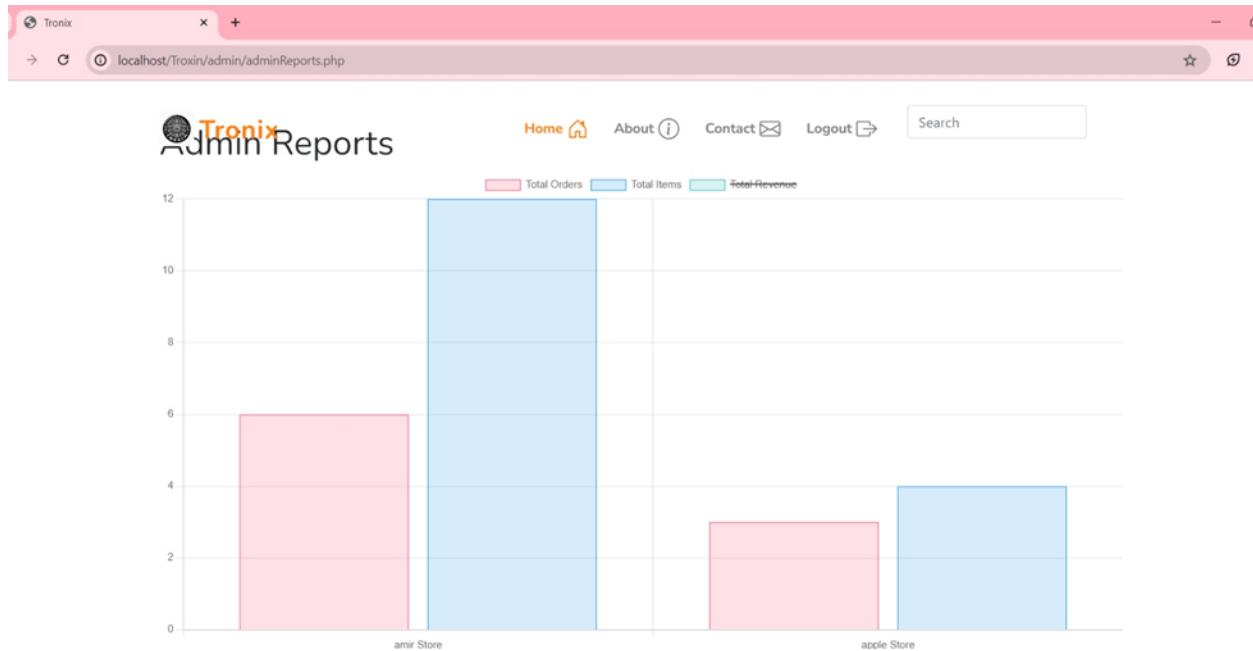


Figure 29 report admin page

Filter search page design:

On this page, the customer can choose the details he needs such as price, brand, etc., and after counting it, a page appears with the devices according to the specifications entered.

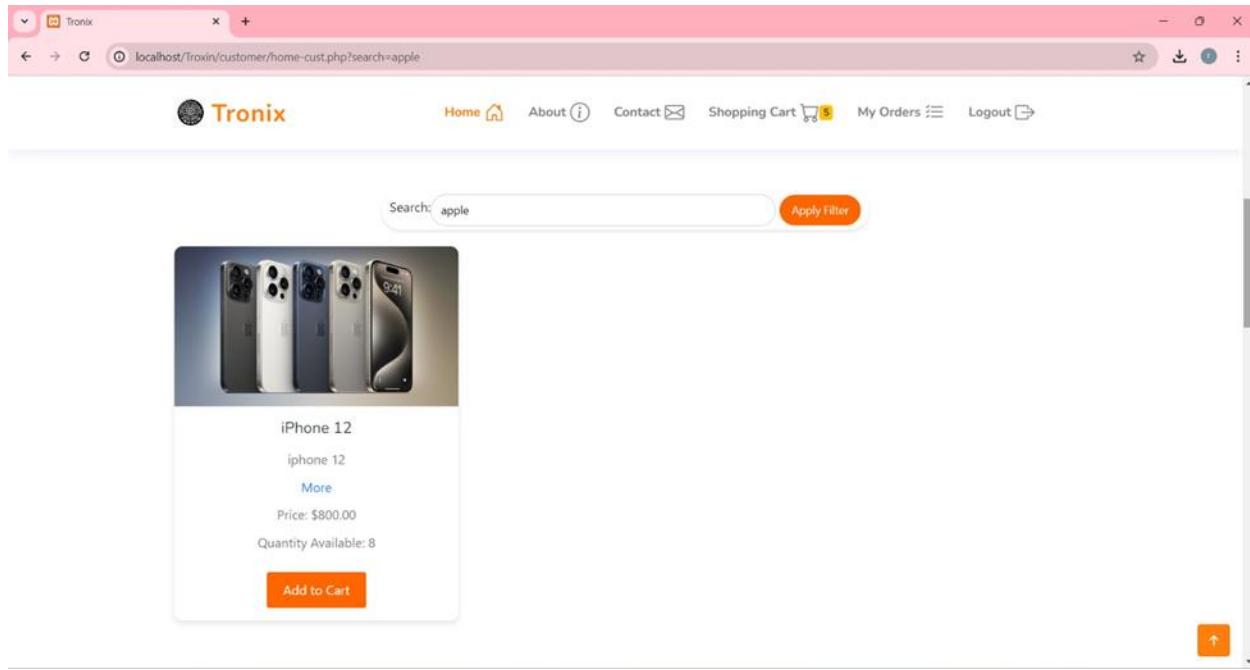


Figure 30 search feature

Product order page:

On this page, the customer can choose the devices he wants from the store he chooses and then adds the devices he wants to the shopping cart.

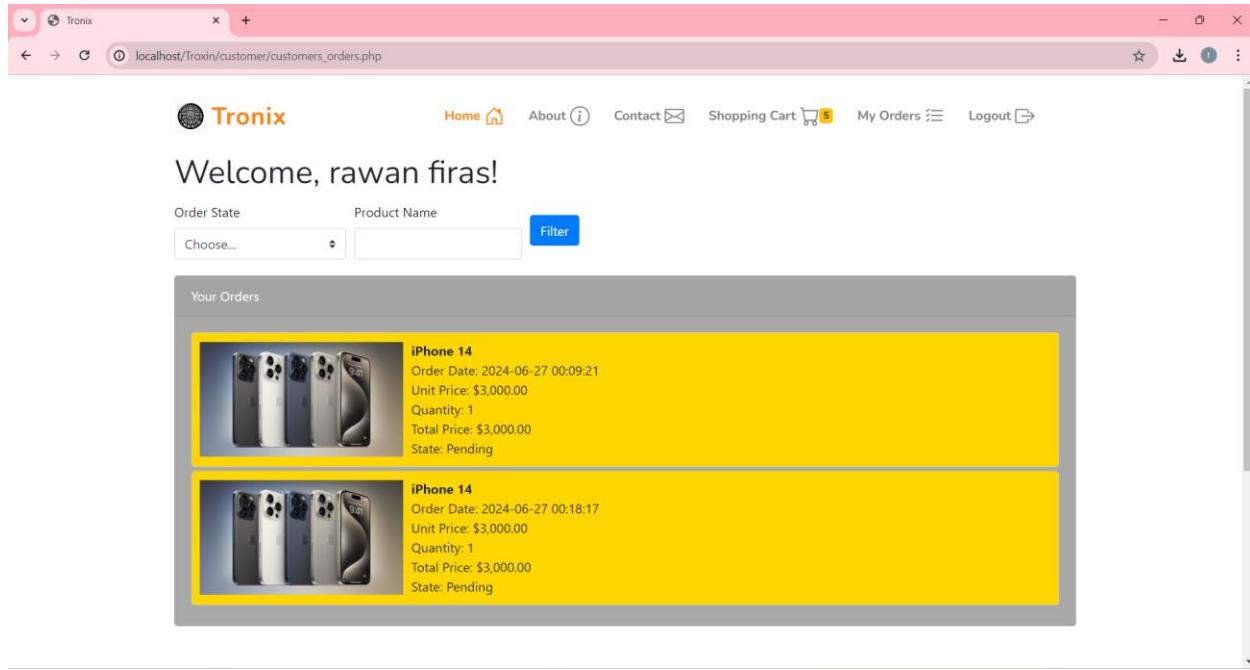


Figure 31 product order page

Shopping cart page:

This page shows the orders that the customer chooses, in terms of quantities and price.

| PRODUCT | PRICE | QUANTITY | TOTAL | ACTIONS |
|----------|---------|---------------------------------------|-------|-------------------------|
| iphone12 | 3000.00 | <input type="text" value="1"/> Update | 3000 | <button>Remove</button> |
| AirPods | 120.00 | <input type="text" value="1"/> Update | 120 | <button>Remove</button> |

Total: 3120

[Confirm Order](#)

USEFUL LINKS

- > Home
- > About us

LOCATION

- palestine
- Nablus
- Hebron

CONTACT US

Phone: +972 598030511
Email: tronix@palestinptronix@gmail.com

Figure 32 shopping cart page

Company page:

This page allows companies to enter their products that they want to sell on the site and also gives them the opportunity to modify or delete them if the quantity is exhausted.

The screenshot shows a company's product management interface. At the top, there is a navigation bar with links for Home, About, Contact, Logout, and a search bar. Below the navigation is an orange "Add Product" button. The main section is titled "List of Products". A table displays one product entry:

| ID | Name | Price | Image | Delete | Edit |
|----|-------------------|---------|-------|--------|------|
| 4 | iphone 15 pro max | 3000.00 | | | |

Below the table, there is a link to "Back to home". The footer contains the company logo, Tronix, and a mission statement: "Our mission is simple: to make technology accessible and enjoyable for everyone. With a carefully curated selection of products from leading brands and emerging innovators, we strive to offer the best-in-class quality and performance in every item we carry." It also includes useful links, location information (Palestine, Nablus, Hebron, Jenin, Bethlehem, Tulkarm), contact details (Phone: +972 598030511, Email: tronixplestintronix@gmail.com), and a world map with an "Activate Windows" section.

Figure 33 company add product page

Company orders page:

This page show the orders for this company:

Orders List

| Order ID | Recipient Name | Phone | Address | No. of Items | Order Date | Product Name | Quantity | Total Price | State | Actions |
|----------|--------------------|------------|---------|--------------|---------------------|-------------------|----------|-------------|-----------|--|
| 3 | amer | 0565465464 | | 0 | 2024-05-12 10:29:20 | iphone 15 pro max | 1 | 50 | Shipped | View Edit Remove |
| 5 | hoson | 0598654654 | | 3 | 2024-06-13 00:27:03 | iPhone 12 | 4 | 3200 | Cancelled | View Edit Remove |
| 5 | hoson | 0598654654 | | 3 | 2024-06-13 00:27:03 | iPhone 14 | 1 | 3000 | Shipped | View Edit Remove |
| 5 | hoson | 0598654654 | | 3 | 2024-06-13 00:27:03 | iphone12 | 2 | 6000 | Pending | View Edit Remove |
| 6 | Amir Raed Manassra | 0598256546 | Nablus | 1 | 2024-06-13 00:36:32 | iPhone 14 | 3 | 9000 | Pending | View Edit Remove |

Figure 34 company orders page

4.2 Testing:

- ✓ **Test1:** Verify the functionality of user registration on the "Tronix Web Application."

| TEST DESCRIPTION | TEST DEPENDENCIES | TEST CONDITIONS | TEST CONTROL |
|---|---|---------------------------------------|--------------|
| Testing the system to ensure that new users can register successfully and receive confirmation. | There must be a registration form available on the web application. | User must have a valid email address. | Manual. |

| STEP ID | STEP DESCRIPTION | TEST DATE | EXPECTED RESULTS | ACTUAL RESULTS | PASS / FAIL | ADDITIONAL NOTES |
|---------|--|-----------|--|---|-------------|---|
| 1 | Open the Tronix web application and log in. | 17/6/2024 | The registration page should be displayed. | Registration page displayed successfully. | Pass | Ensure valid credentials are used. |
| 2 | Enter valid user details (name, email, password, etc.) and submit if not valid appear error message. | 17/6/2024 | User details are entered and submitted successfully. | User details submitted successfully. | Pass | Ensure all mandatory fields are filled. |
| 3 | Log in with the registered email and password. | 17/6/2024 | User is logged in successfully. | User logged in successfully. | Pass | Verify access to the user dashboard. |

Here the welcome page when the user click on register on the header then need to choose the register type(company or customer):

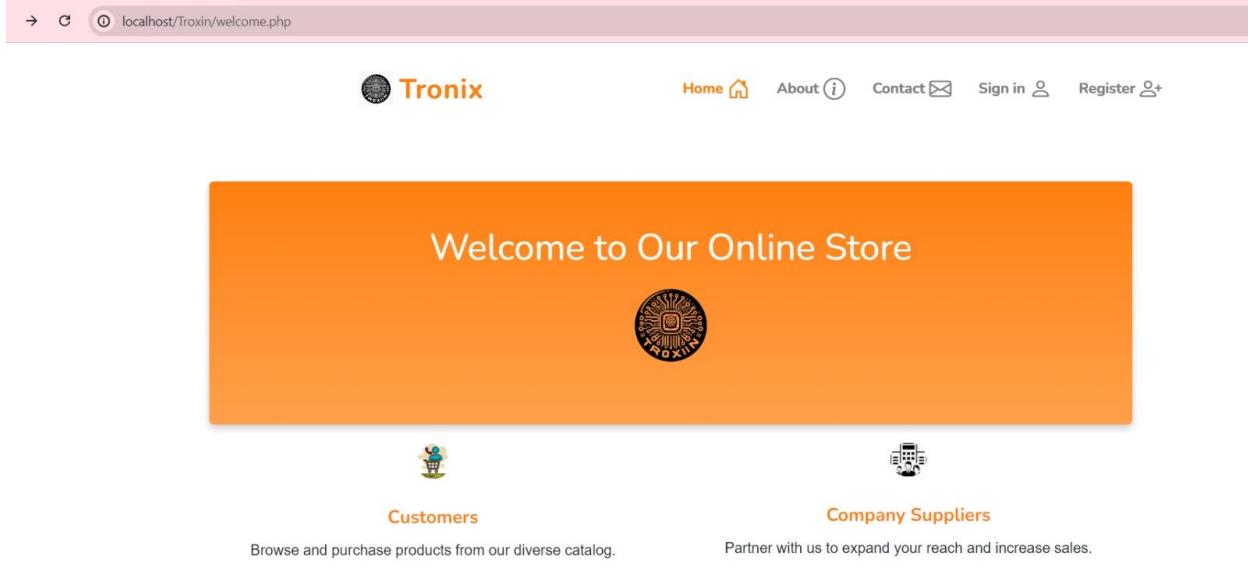


Figure 35 welcome page to register account

After choose customer account , the customer should enter a the form information and agree to the terms and conditions.

The screenshot shows a web browser window with the URL 'localhost/Troxin/customer/register-cust.php'. The page has a light blue header with the 'Tronix' logo and navigation links. The main content area features the Tronix logo and a slogan: 'Your gateway to cutting-edge technology - Tronix.' Below the slogan is the text 'Innovative electronics, just a click away'. To the right is a registration form with fields for Username, Email, Phone, Password, Confirm Password, Location, and a checkbox for agreeing to terms and conditions. A 'Sign up' button is at the bottom right.

Username: *
rawan firas

Email: *
rawanfiras27@gmail.com

Phone: *
0568992999

Password: *

Confirm Password: *

Location: *
Ramallah

I agree to the [terms and conditions](#)

Sign up



Figure 36 A message appears upon successful registration

Then the system redirect the customer to log in page .



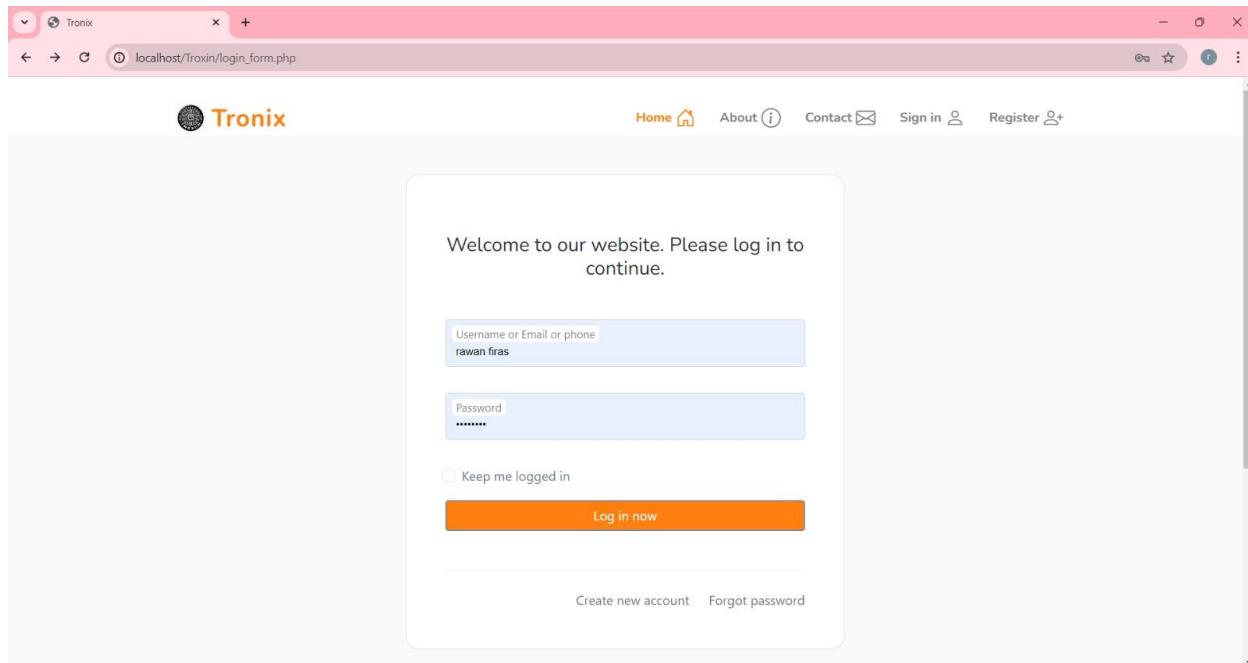
Figure 37 message apeare if the user have an account in the same email

- ✓ **Test2:** Verify the login functionality for regular users on the "Tronix Web Application."

| TEST DESCRIPTION | TEST DEPENDENCIES | TEST CONDITIONS | TEST CONTROL |
|--|---|--|--------------|
| Testing the system to ensure that regular users can log in successfully using their credentials. | The web application must have a login page. | User must have a valid registered account. | Manual. |

| STEP ID | STEP DESCRIPTION | TEST DATE | EXPECTED RESULTS | ACTUAL RESULTS | PASS / FAIL | ADDITIONAL NOTES |
|---------|--|-----------|-------------------------------------|------------------------------------|-------------|----------------------------------|
| 1 | Access the web application and go to the login page. | 20/5/2024 | The login page should be displayed. | Login page displayed successfully. | Pass | Ensure the page loads correctly. |
| 2 | Enter valid email and password in the login fields. | 20/5/2024 | User details are entered correctly. | User details entered correctly. | Pass | Ensure the fields accept input. |
| 3 | Click the "Login" button. | 20/5/2024 | User is logged in successfully | User logged in successfully | Pass | Verify the redirection URL. |

| | | | | | | |
|----------|--|-----------|--|--|------|---|
| | | | and redirected to the dashboard. | and redirected to the dashboard. | | |
| 4 | Verify the appearance of the user dashboard. | 20/6/2024 | Verify the appearance of the user dashboard. | User dashboard displayed correctly. | Pass | Ensure all elements are visible. |
| 5 | Log out from the account. | 20/6/2024 | User is logged out and redirected to the homepage. | User logged out successfully and redirected to the homepage. | Pass | Verify the redirection URL and session termination. |



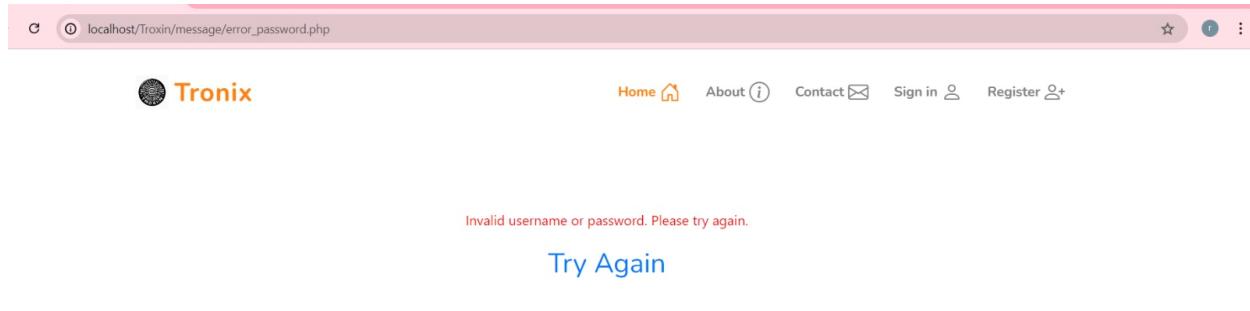


Figure 38 message appears if the user enter incorrect information in login form.

If the admin deactivates an account, this customer will not be able to enter the site. This step aims to control customer accounts. If a company is notified of the existence of an account that makes orders and does not receive them, or in similar cases, the admin deactivates it.

A screenshot of a web browser window showing the 'Customers Accounts' section. The address bar shows 'localhost/Troxin/admin/customersAccounts.php'. The page displays a table with one row of data:

| Username | Email | Status |
|-------------|------------------------|--------|
| rawan firas | rawanfiras27@gmail.com | Active |

The page also features a footer with the Tronix logo, social media links, useful links, location details, and contact information.

Figure 39 customer accounts defult status(Active)

The screenshot shows the 'Customers Accounts' section of the Tronix admin dashboard. A table lists one customer account:

| Username | Email | Status |
|-------------|------------------------|----------|
| rawan firas | rawanfiras27@gmail.com | Disabled |

Footer Information:

- Tronix Logo:** Includes a small icon and the word "Tronix".
- USEFUL LINKS:** Home, About us, Contact, Special Offers.
- LOCATION:** palestine, Nablus, Hebron, Jenin, Bethlehem, Tulkarm.
- CONTACT US:** Phone: +972 598030511, Email: tronixplestintronix@gmail.com.
- Social Media:** Twitter, Facebook, Instagram, LinkedIn icons.

Figure 40 admin can deactivates customer accounts by clicking on

After deactivation, if the customer logs in or returns to the site, an error will be displayed to the customer and he will be asked to try again.

The screenshot shows the Tronix user interface with an error message displayed:

your account is disabled. Please try again.

[Try Again](#)

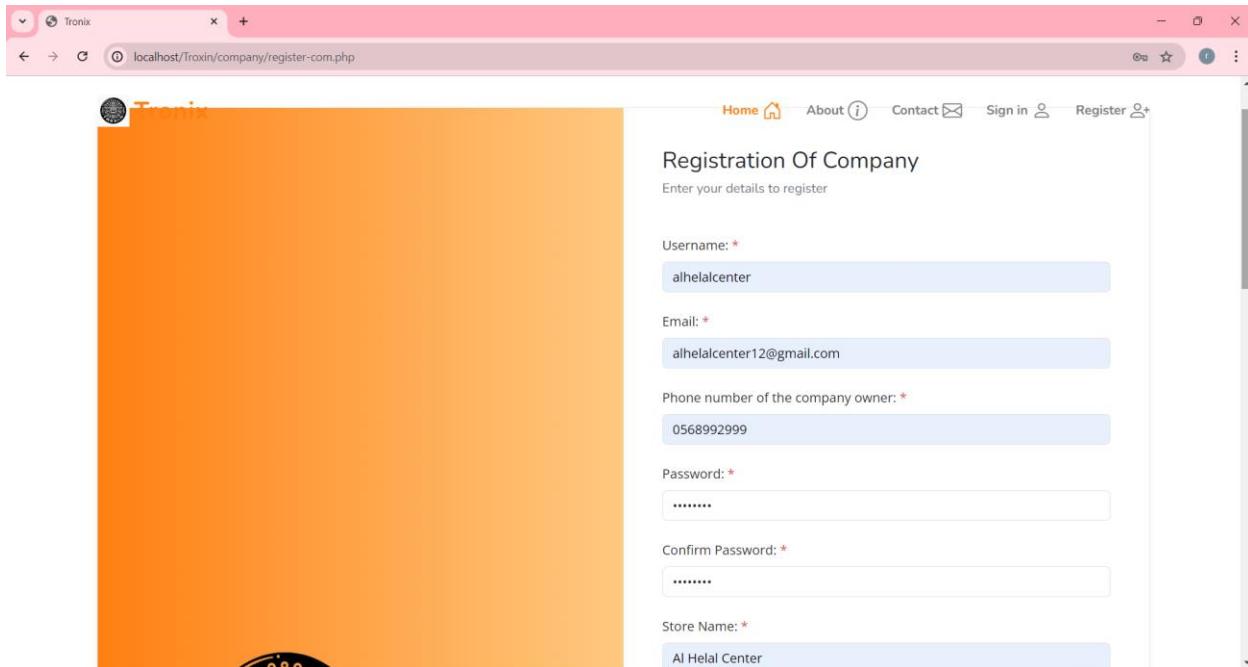
Footer Information:

- Tronix Logo:** Includes a small icon and the word "Tronix".
- USEFUL LINKS:** Home, About, Contact, Sign in, Register.
- LOCATION:** palestine, Nablus, Hebron, Jenin, Bethlehem, Tulkarm.
- CONTACT US:** Phone: +972 598030511, Email: tronixplestintronix@gmail.com.
- Social Media:** Twitter, Facebook, Instagram, LinkedIn icons.

Figure 41 error appear when user with disabled account try to log in

This test applies to all Users' accounts (companies and customers).

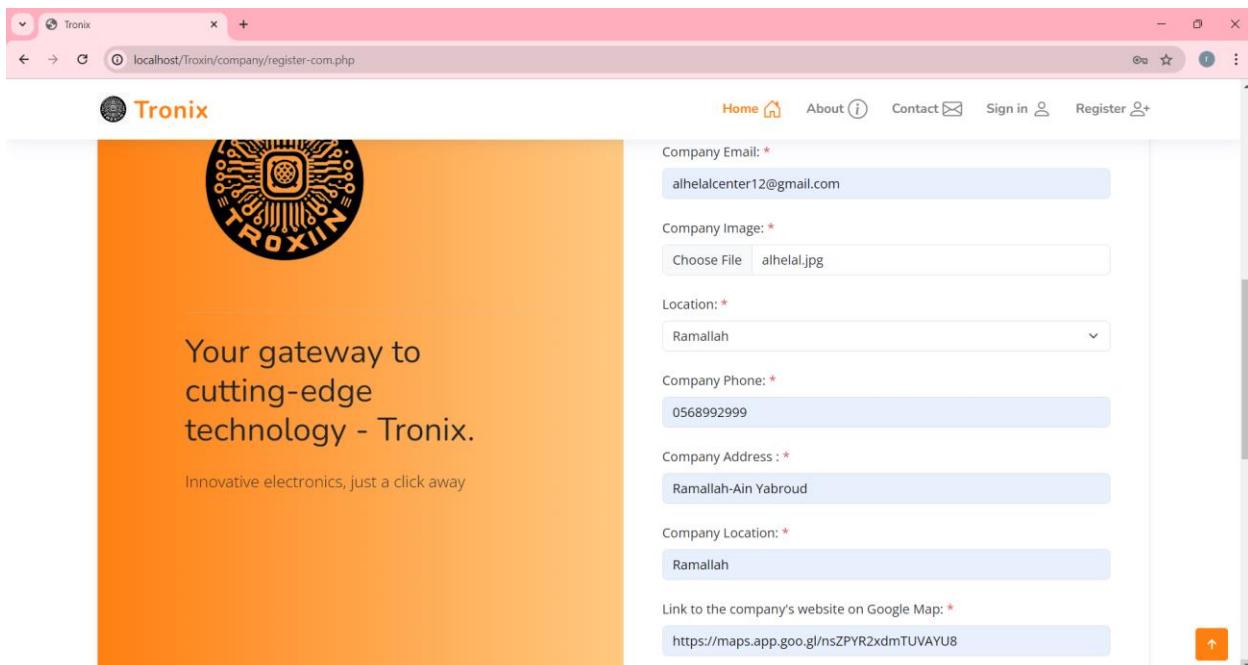
However, registering a company on the site requires the approval of the administrator, which increases the reliability of the site so that no suspicious entity or non-company entity will be able to register as a company.



The screenshot shows a web browser window for the 'Tronix' website. The URL in the address bar is `localhost/Troxin/company/register-com.php`. The page title is 'Registration Of Company'. It has a header with links for Home, About, Contact, Sign in, and Register. The main content area contains fields for entering details:

- Username: * alhelalcenter
- Email: * alhelalcenter12@gmail.com
- Phone number of the company owner: * 0568992999
- Password: * (redacted)
- Confirm Password: * (redacted)
- Store Name: * Al Helal Center

Figure 42 company registration1



The screenshot shows the same web browser window for the 'Tronix' website. The URL is the same: `localhost/Troxin/company/register-com.php`. The page title is 'Registration Of Company'. The main content area contains fields for entering company details:

- Company Email: * alhelalcenter12@gmail.com
- Company Image: * Choose File alhelal.jpg
- Location: * Ramallah
- Company Phone: * 0568992999
- Company Address : * Ramallah-Ain Yabroud
- Company Location: * Ramallah
- Link to the company's website on Google Map: * <https://maps.app.goo.gl/nsZPYR2xdmTUVAYU8>

Figure 43 company registration 2

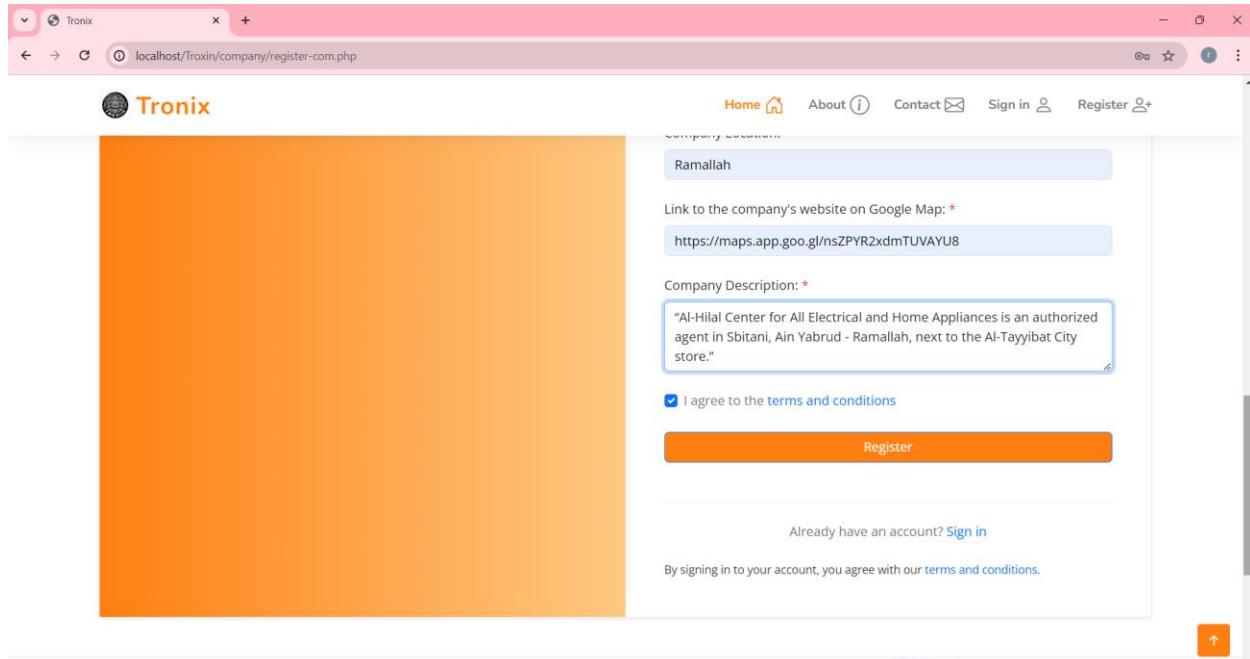


Figure 44 company registration3

| Username | Email | Phone | Address | Location | Store Name | Email Company | Description | Map | Status |
|-------------|-------------------------|------------|----------------------|----------|-----------------|-------------------------|---|---|----------|
| alhelcenter | alhelcenter12@gmail.com | 0568992999 | Ramallah-Ain Yabroud | Ramallah | Al Hilal Center | alhelcenter12@gmail.com | "Al-Hilal Center for All Electrical and Home Appliances is an authorized agent in Sbitani, Ain Yabroud - Ramallah, next to the Al-Tayyibat City store." | https://maps.app.goo.gl/nsZPYR2xdmTUVAYU8 | Disabled |

Figure 45 company request in (companies requests page) in admin page.

- ✓ **Test 3:** Verify the functionality of the "Tronix Web Application" for adding products to the cart and checking out.

| TEST DESCRIPTION | TEST DEPENDENCIES | TEST CONDITIONS | TEST CONTROL |
|---|--|---|--------------|
| Verify that users can add products to their cart and successfully complete a purchase | The web application must be running and accessible to users. | <ul style="list-style-type: none"> User must be logged in. Product availability in company. | Manual. |

| STEP ID | STEP DESCRIPTION | TEST DATE | EXPECTED RESULTS | ACTUAL RESULTS | PASS / FAIL | ADDITIONAL NOTES |
|---------|--|-----------|-------------------------------------|---|-------------|---|
| 1 | Open the Tronix web application and log in. | 01/6/2024 | User is logged in successfully. | User successfully logged in. | Pass | Ensure valid credentials are used. |
| 2 | Browse products and select an item. | 01/6/2024 | Product details are displayed. | Product details displayed correctly. | Pass | Verify product availability. |
| 3 | Add the selected product to the cart. | 01/6/2024 | Product is added to the cart. | Product added to the cart successfully. | Pass | Check cart updates. |
| 4 | View the cart. | 01/6/2024 | Cart displays the selected product. | Cart displays the selected product correctly. | Pass | Verify cart contents. |
| 5 | Proceed to checkout. | 01/6/2024 | Checkout page is displayed. | Checkout page loaded successfully. | Pass | Ensure payment options are available |
| 6 | Enter order information details and place the order. | 01/6/2024 | Order is placed successfully. | Order placed successfully | Pass | Confirm order information. |
| 7 | Verify order confirmation. | 01/6/2024 | Order confirmation is received. | Order confirmation on customers orders. | Pass | The order has been added to customer's orders (my order page) |

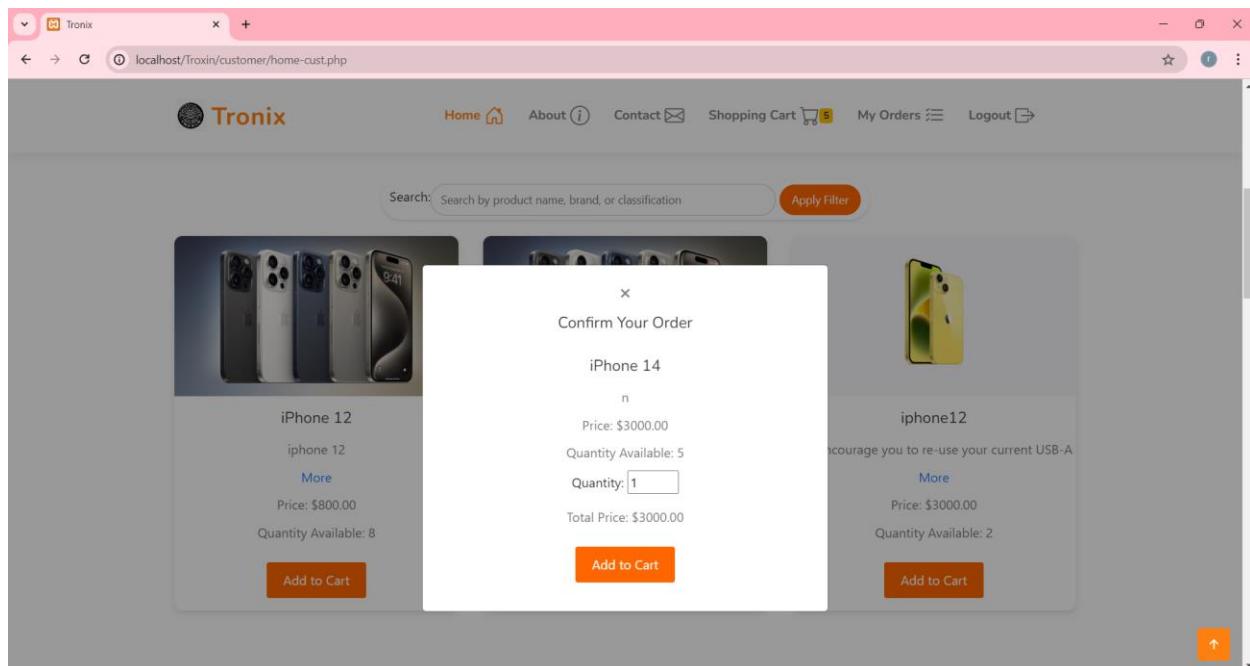


Figure 46 Confirm adding to cart

| PRODUCT | PRICE | QUANTITY | TOTAL | ACTIONS |
|-----------|---------|---------------------------------------|-------|-------------------------|
| iPhone 14 | 3000.00 | <input type="text" value="1"/> Update | 3000 | <button>Remove</button> |

Total: 3000

[Confirm Order](#)

Tronix

Our mission is simple: to make technology accessible and enjoyable for everyone. With a carefully curated selection of products from leading brands and emerging innovators, we strive to offer the best-in-class quality and performance in every item we carry.

USEFUL LINKS

- > Home
- > About us
- > Contact
- > Special Offers

LOCATION

- palestine
- Nablus
- Hebron
- Jenin
- Bethlehem
- Tulkarm

CONTACT US

Phone: +972 598030511
Email: tronixpalestinetrонix@gmail.com

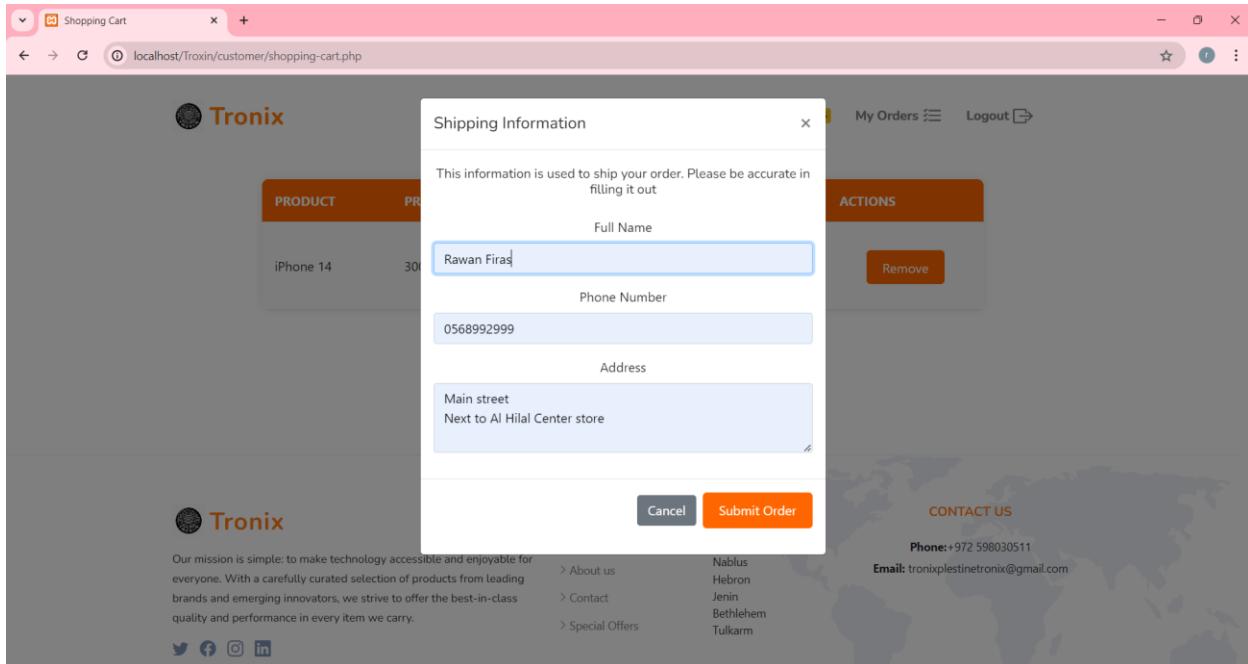


Figure 47 Enter the order delivery information

Figure 48 The order has been added to the orders and the company has the authority to change its status

- ✓ **Test4:** Verify the functionality of the search feature on the "Tronix Web Application."

| TEST DESCRIPTION | TEST DEPENDENCIES | TEST CONDITIONS | TEST CONTROL |
|------------------|-------------------|-----------------|--------------|
|------------------|-------------------|-----------------|--------------|

| | | | |
|---|--|--|---------|
| Testing the search functionality to ensure it returns relevant results based on user queries. | The search feature must be implemented on the website. | User must have access to the search bar. | Manual. |
|---|--|--|---------|

| STEP ID | STEP DESCRIPTION | TEST DATE | EXPECTED RESULTS | ACTUAL RESULTS | PASS / FAIL | ADDITIONAL NOTES |
|---------|--|-----------|---|---------------------------------------|-------------|--|
| 1 | Access the website and locate the search bar. | 22/6/2024 | The search bar should be visible and accessible. | Search bar is visible and accessible. | Pass | Ensure the search bar is prominently placed. |
| 2 | Enter a search query for an existing product. | 22/6/2024 | Enter a search query for an existing product. | Relevant search results displayed. | Pass | Ensure results match the query. |
| 3 | Enter a search query for a non-existing product. | 22/6/2024 | A message indicating no results found is displayed. | "No results found" message displayed. | Pass | Verify the message is clear. |
| 4 | Use filters to refine search results. | 22/6/2024 | Search results are refined based on selected filters. | Search results refined correctly. | Pass | Ensure filters work as expected. |
| 5 | Check the pagination of search results. | 22/6/2024 | Pagination works and allows navigation through results. | Pagination works correctly. | Pass | Ensure navigation between pages is smooth. |
| 6 | Verify the display of search suggestions. | 22/6/2024 | Search suggestions appear as the user types. | Search suggestions appear correctly. | Pass | Ensure suggestions are relevant. |

Search: Search by product name, brand, or classification



iPhone 12

high quality

[More](#)

Price: \$800.00

Quantity Available: 8



iPhone 14

n

[More](#)

Price: \$3000.00

Quantity Available: 5



iphone12

We encourage you to re-use your current USB-A

[More](#)

Price: \$3000.00

Quantity Available: 2

Figure 49 The search bar appears clearly on the page

If the brand or mobile phone does not exist, it appears “No product available”

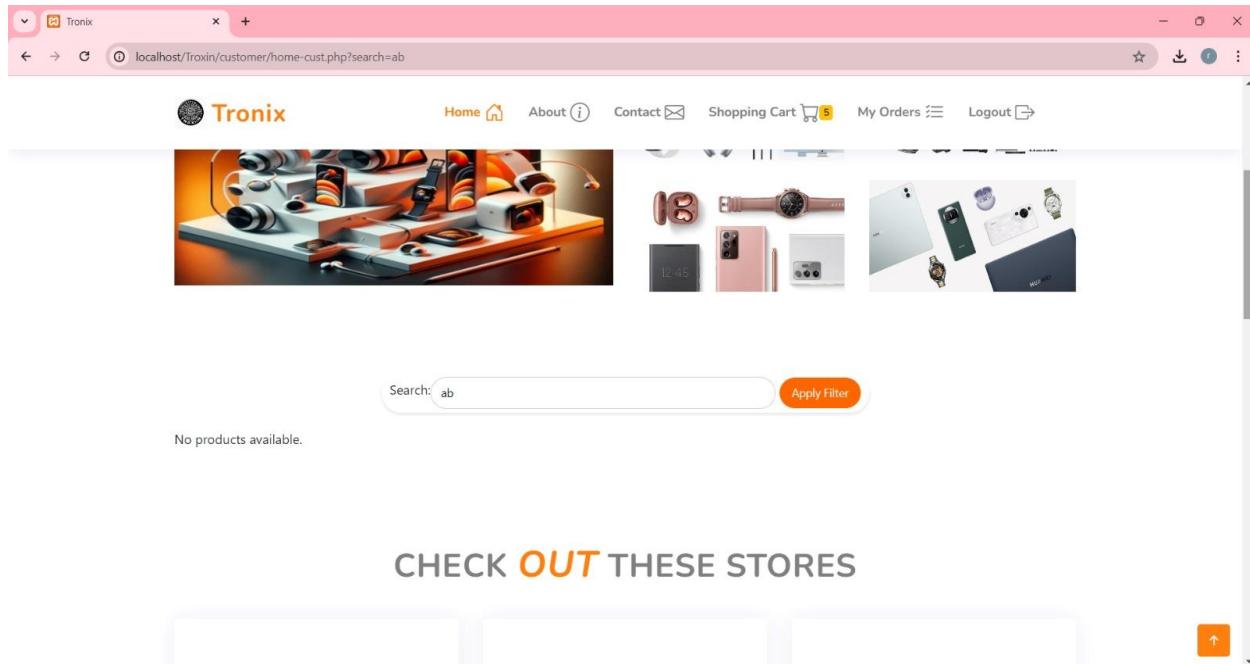


Figure 50 Search result for device or brand or classification not available

When you choose to search by a specific brand, the devices related to that entered brand appear:

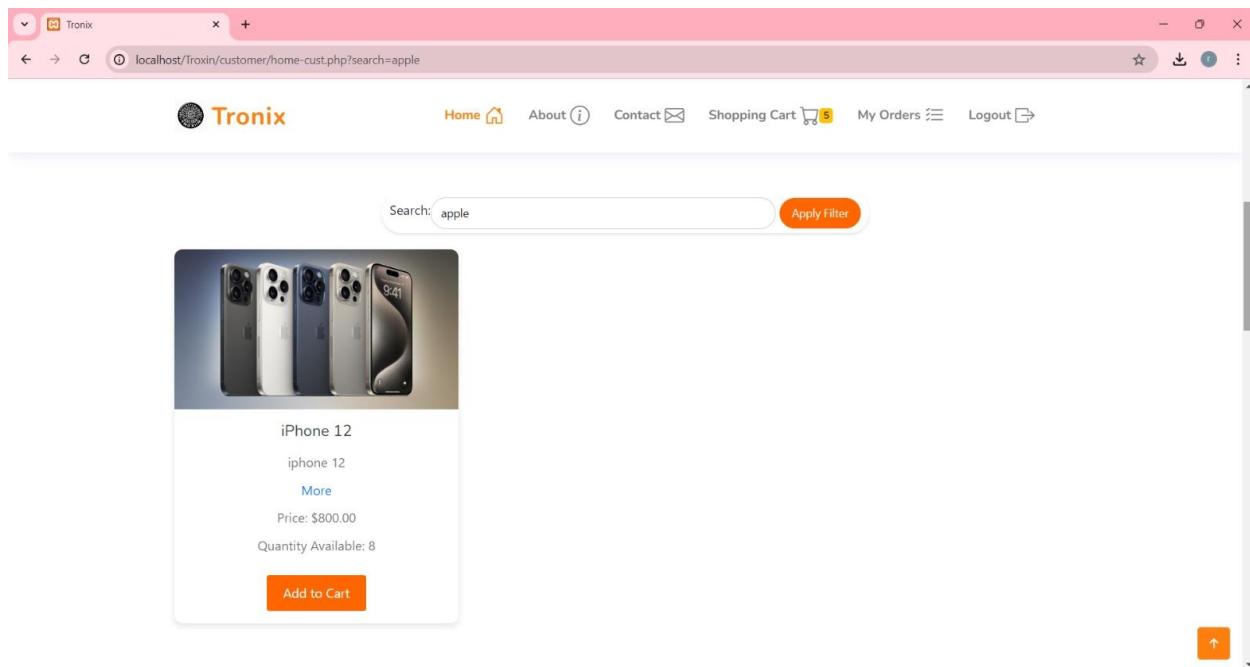


Figure 51 Search result for an existing device

Chapter5. Conclusion and Future works

5.1 Review of the project

The project began with compiling a list of locations in Palestine and conducting on-site visits. During the information gathering phase, business and store managers were invited to join a platform that would enable them to manage their profiles, easily receive customer orders, and minimize the need for frequent in-person meetings and discussions.

The platform was designed to offer a multitude of features, including showcasing their businesses, the ability to update, add, or remove products or services, manage incoming requests, and promote their offerings and discounts. Additionally, administrators would have the capability to view customer feedback directly.

The feedback from the managers was overwhelmingly positive, expressing strong support for the initiative and a willingness to participate in the web application and promote it to their customers. This enthusiasm was motivated by the absence of similar platforms that could assist Palestinian businesses in expanding their operations and increasing profitability.

The "Tronix" is a web application dedicated to the sale of electronic devices, enabling customers to browse and compare products from various companies and retailers. This semester marked the commencement of the project, starting with initial visits and progressing to the design of the system's architecture and analysis. The project's objectives were clearly defined, including addressing customer challenges and proposing solutions through the web application's features. After outlining these features, the decision was made on the technologies and frameworks to be used. A comparison with similar web applications was conducted to refine our understanding and ensure our application stood out. The design of the software's graphics and the selection of programming languages were carefully aligned with the project's goals.

The design of the user interfaces for several pages was also completed, setting the stage for user interaction with the web application and facilitating the commencement of development work in the upcoming semester.

5.2 Future Works

This section shows the future steps we will take to implement the “Tronix” web application.

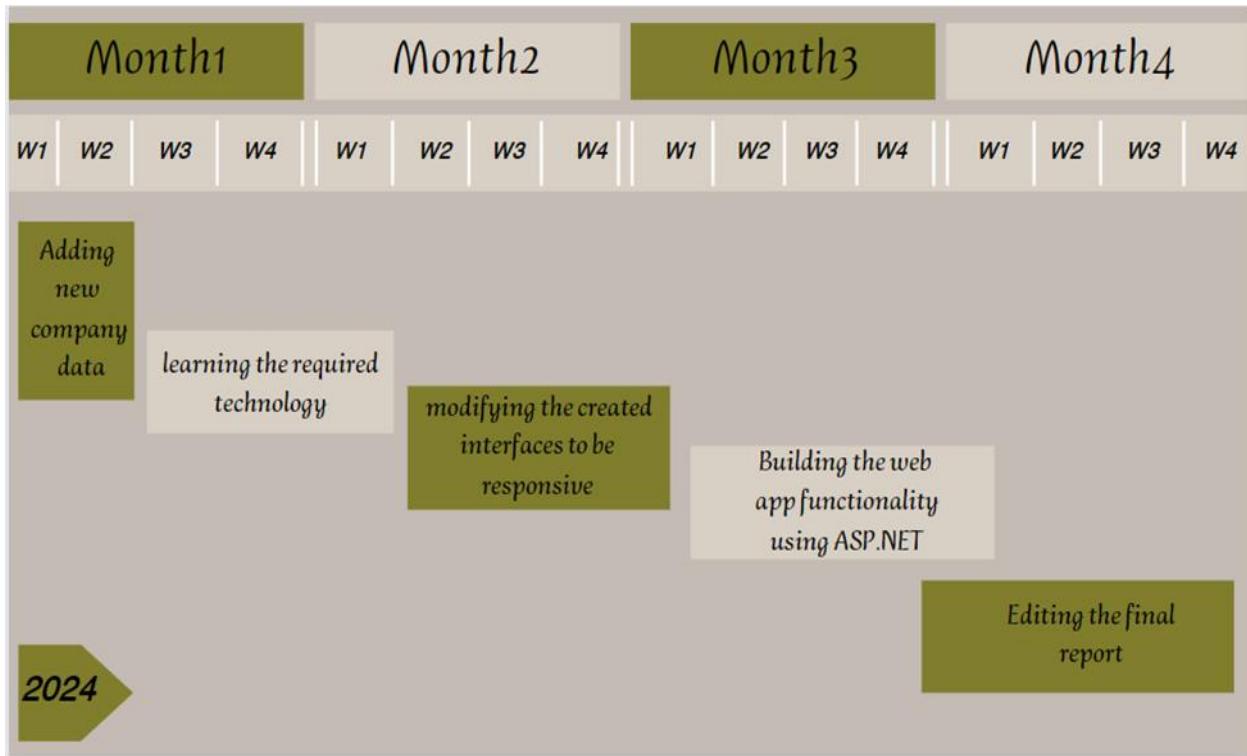


Figure 40: Future works

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