UNIVERSITI TEKNOLOGI MARA

FACULTY OF COMPUTER AND MATHEMATICAL SCIENCE

CSC584: ENTERPRISE PROGRAMMING

CLASS GROUP: NBCS2404B

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USER MANUAL

TITLE: HEALTHCARE EQUIPMENT

MANAGEMENT SYSTEM

GROUP HEALTCARE

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1.0 Introduction

In today's healthcare environment, the proper management of medical equipment is essential to ensure efficient service delivery, patient safety, and regulatory compliance. Hospitals and clinics often face challenges such as equipment misplacement, delayed maintenance, lack of real-time status updates, and inefficient inventory tracking. These issues not only increase operational costs but can also negatively impact patient care outcomes.

This proposal describes the creation of a digital platform called a Healthcare Equipment Management System, which will automate and simplify the management of medical equipment in healthcare institutions. Comprehensive equipment inventory tracking will be made easier by the system, which will also automate maintenance plans, track usage trends, and produce calibration or failure notifications. Additionally, it will facilitate reporting and recordkeeping in compliance with healthcare laws and standards.

The primary goal of Healthcare Equipment Management System is to improve the efficiency, reliability, and transparency of equipment management processes. The suggested method seeks to improve the operational readiness of critical medical devices, minimize manual intervention, and lower human error by utilizing technology. It is anticipated that the systems deployment will greatly improve the delivery of healthcare services and result in long-term cost reductions. Medical equipment is essential to diagnosis, treatment, and patient monitoring in contemporary healthcare institutions. On the other hand, poor management can result in equipment failure, postponed processes, and higher operating expenses. In order to expedite equipment tracking, maintenance, and performance monitoring, this proposal describes the design and implementation of a centralized Healthcare Equipment Management System.

2.0 Problem Statement

Hospitals and clinics increasingly depend on a wide array of medical equipment to deliver effective and timely patient care. However, many healthcare facilities continue to rely on manual or fragmented systems to manage these critical assets. This results in a number of persistent challenges, such as

- Inadequate tracking and visibility of medical devices across departments.
- Missed preventive maintenance schedules, leading to avoidable equipment failures.
- Unplanned downtime of essential equipment, affecting service delivery.
- Difficulties in meeting regulatory compliance and preparing for audits due to incomplete or inconsistent records.
- Redundant and error-prone manual record-keeping practices.

These issues collectively contribute to significant operational inefficiencies, increased maintenance costs, and ultimately compromise the quality and safety of patient care. Without a centralized, automated system in place, healthcare institutions face difficulties in optimizing equipment usage, ensuring timely maintenance, and making informed decisions based on reliable data. To address these challenges, there is a clear need for a comprehensive Health are Equipment Management System that enables real-time tracking, automated scheduling, and streamlined reporting to support efficient and accountable equipment management.

3.0 Project Objectives

The primary objective of this project is to design and develop a Healthcare Equipment Management System that enhances the efficiency, reliability, and transparency of medical equipment management within healthcare facilities. The system aims to reduce manual processes, improve equipment uptime, and support compliance through automation and real-time data access.

The specific objectives of the project are to:

- Design and implement a centralized digital platform for managing the entire lifecycle of medical equipment, from acquisition to decommissioning.
- Enable real-time tracking and status monitoring of medical devices to ensure visibility across departments and reduce equipment loss or underutilization.
- Automate maintenance scheduling and alerting to ensure timely servicing, minimize unexpected breakdowns, and extend equipment lifespan.
- Facilitate fault reporting and maintain repair logs, enabling quick response to equipment failures and supporting informed maintenance planning.
- Generate compliance, utilization, and performance reports to aid in regulatory audits, improve decision-making, and ensure operational accountability.

These objectives collectively aim to improve equipment availability, reduce administrative burden, and contribute to higher standards of patient care in healthcare institutions.

4.0 Scope of the Project

The scope of this project encompasses the design, development, and deployment of a comprehensive Healthcare Equipment Management System to support the end-to-end management of medical equipment in healthcare facilities. The system will be modular, user-friendly, and scalable to accommodate various types and sizes of healthcare institutions.

The Healthcare Equipment Management System will support the following key functionalities:

- Equipment Registration and Inventory Management

  Maintain a centralized digital inventory of all medical equipment, including details such as model, serial number, location, status, and associated documentation.

- Maintenance Scheduling and Notifications

  Automate the scheduling of preventive maintenance tasks and generate alerts for upcoming or overdue maintenance to reduce equipment downtime.

- Breakdown Reporting and Ticket Tracking

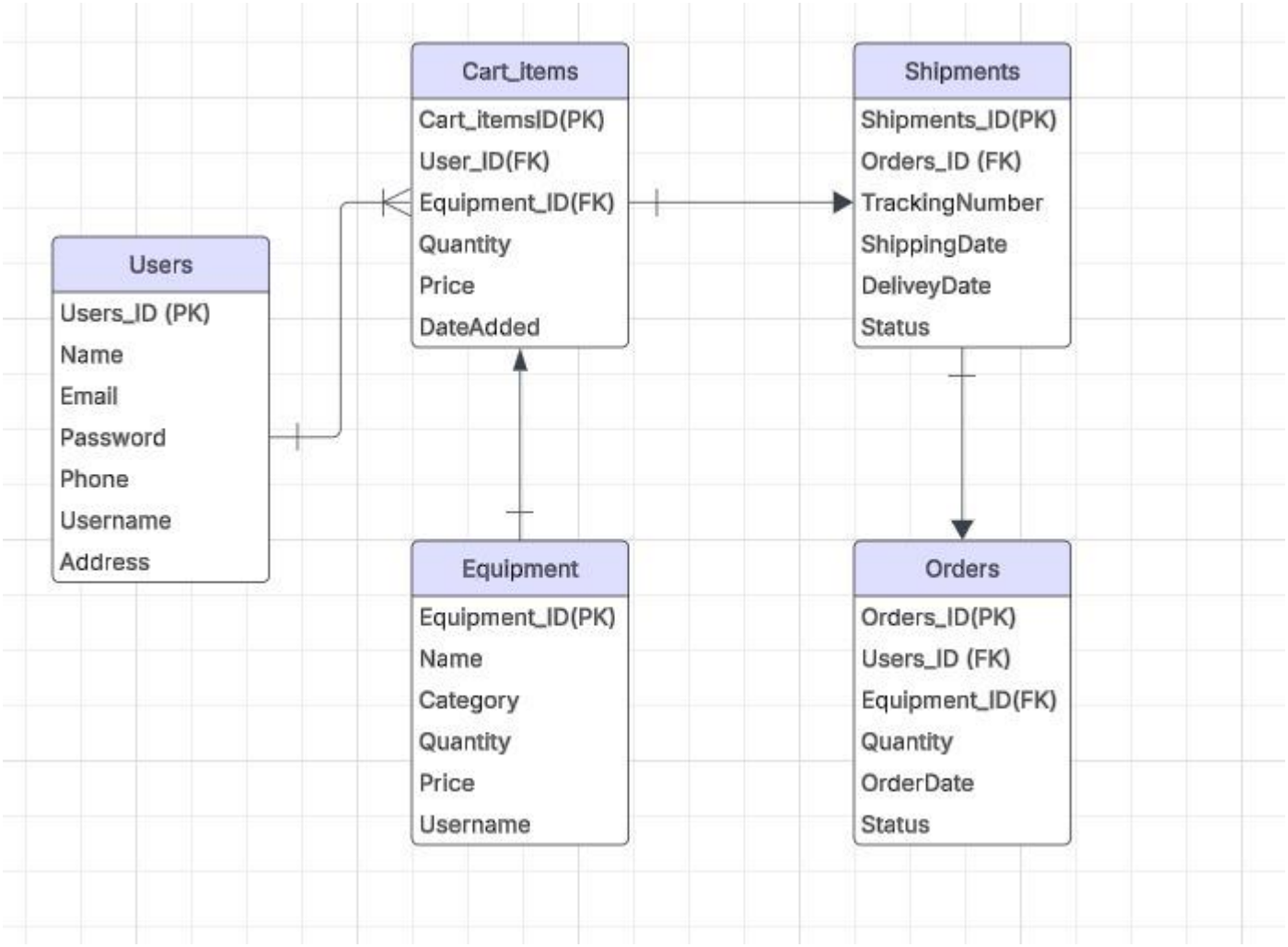
  Allow users to report equipment faults, generate service tickets, and track repair status through a streamlined workflow.

- Asset Lifecycle Management

  Manage the complete lifecycle of equipment from procurement, deployment, and maintenance to decommissioning and disposal.

5.0 Database Design

ERD



6.0 User Interface

Admin section

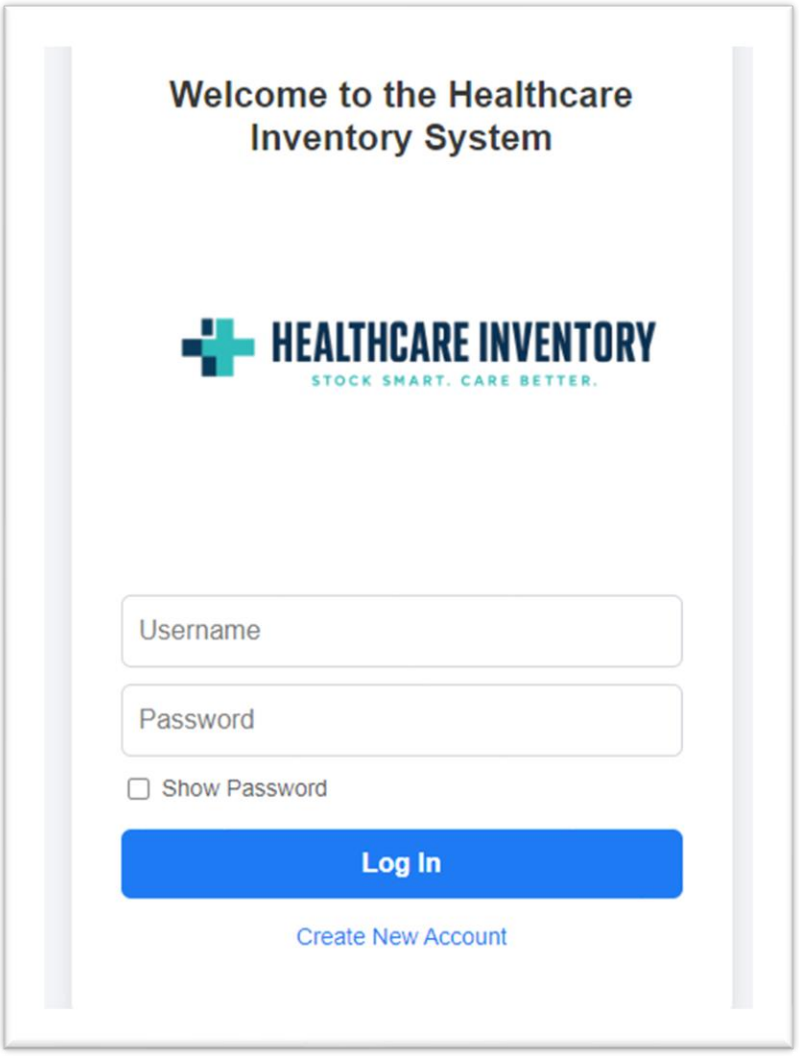


FIGURE 1.1 LOGIN PAGE

Figure 1.1 is to log in to the Healthcare Inventory System, enter your Username and Password in the designated fields, check the Show Password box if you wish to view your password while typing, then click the Log In button. If you are a new user, click Create New Account to register.

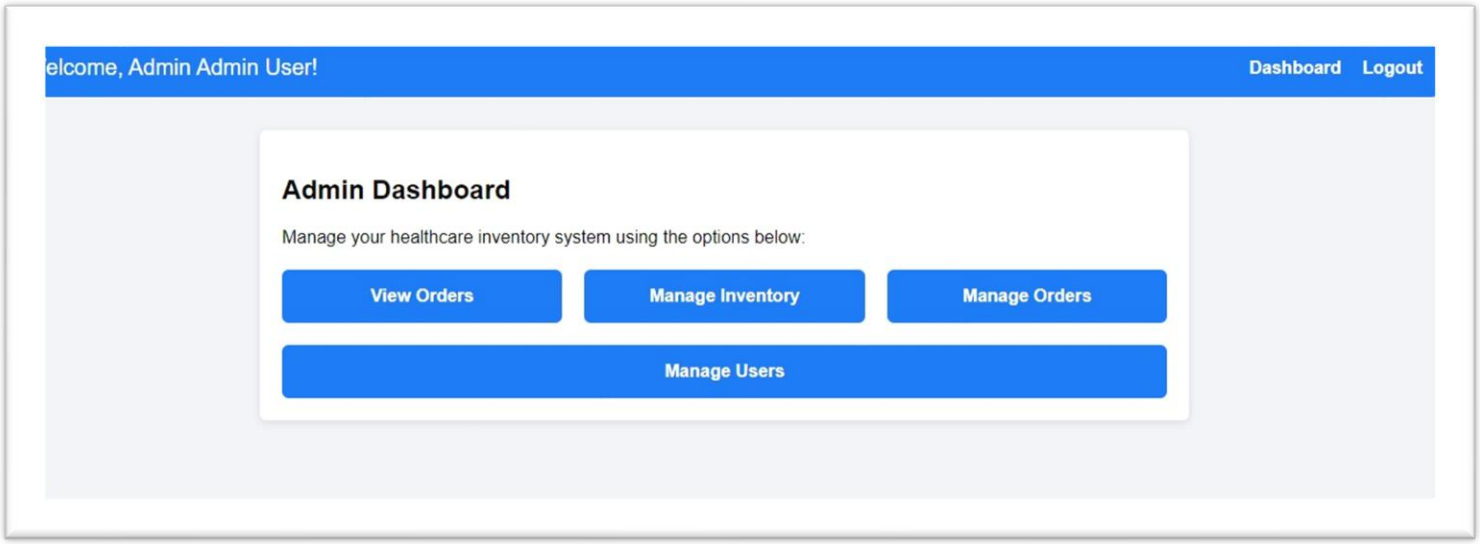
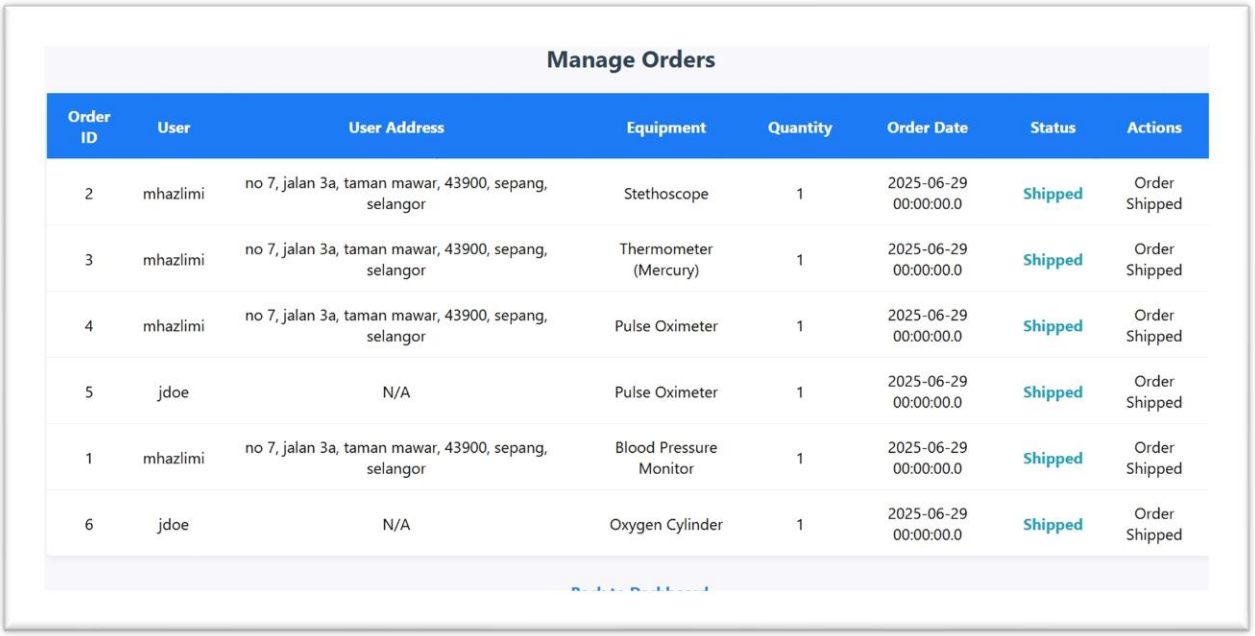


FIGURE 1.2 ADMIN DASHBOARD

On the Admin Dashboard, you can view a quick overview of your healthcare inventory system, including the number of completed orders and shipments, pending orders, total inventory, and active users, along with navigation buttons to manage orders, inventory, and users

FIGURE 1.3 MANAGE USER

The Manage Users page displays all registered accounts in a table with ID, Name, Phone, Email, Username, and Role columns, provides Update/Delete action buttons for each user record, features an Add New User button above the table for account creation, and includes a Back to Dashboard link at the bottom of the page.

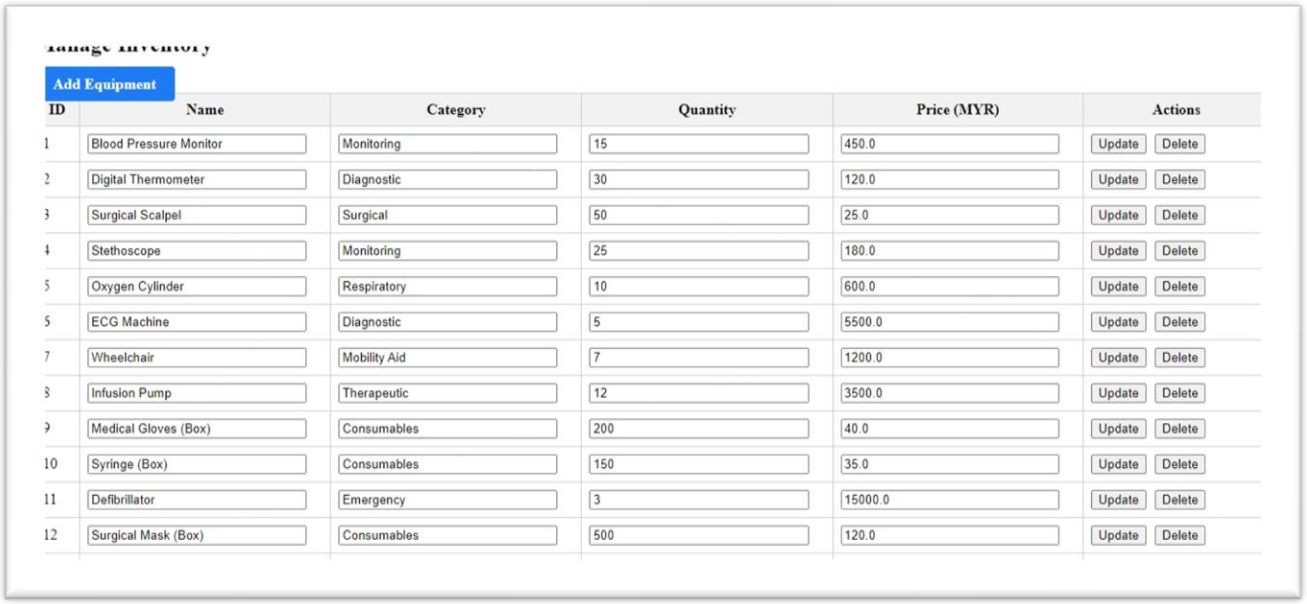


Manage Orders

Order ID	User	User Address	Equipment	Quantity	Order Date	Status	Actions
2	mhazlimi	no 7, jalan 3a, taman mawar, 43900, sepang, selangor	Stethoscope	1	2025-06-29 00:00:00.0	Shipped	Order Shipped
3	mhazlimi	no 7, jalan 3a, taman mawar, 43900, sepang, selangor	Thermometer (Mercury)	1	2025-06-29 00:00:00.0	Shipped	Order Shipped
4	mhazlimi	no 7, jalan 3a, taman mawar, 43900, sepang, selangor	Pulse Oximeter	1	2025-06-29 00:00:00.0	Shipped	Order Shipped
5	jdoe	N/A	Pulse Oximeter	1	2025-06-29 00:00:00.0	Shipped	Order Shipped
1	mhazlimi	no 7, jalan 3a, taman mawar, 43900, sepang, selangor	Blood Pressure Monitor	1	2025-06-29 00:00:00.0	Shipped	Order Shipped
6	jdoe	N/A	Oxygen Cylinder	1	2025-06-29 00:00:00.0	Shipped	Order Shipped

FIGURE 1.4 MANAGE ORDERS

The Manage Orders page displays all order records in a table format with columns for Order ID, User, User Address, Equipment, Quantity, Order Date, Status, and Actions which shows the current order status in a descriptive phrase like Order Shipped and provides a Back to Dashboard link at the bottom for navigation.



Add Equipment

ID	Name	Category	Quantity	Price (MYR)	Actions
1	Blood Pressure Monitor	Monitoring	15	450.0	Update Delete
2	Digital Thermometer	Diagnostic	30	120.0	Update Delete
3	Surgical Scalpel	Surgical	50	25.0	Update Delete
4	Stethoscope	Monitoring	25	180.0	Update Delete
5	Oxygen Cylinder	Respiratory	10	600.0	Update Delete
6	ECG Machine	Diagnostic	5	5500.0	Update Delete
7	Wheelchair	Mobility Aid	7	1200.0	Update Delete
8	Infusion Pump	Therapeutic	12	3500.0	Update Delete
9	Medical Gloves (Box)	Consumables	200	40.0	Update Delete
10	Syringe (Box)	Consumables	150	35.0	Update Delete
11	Defibrillator	Emergency	3	15000.0	Update Delete
12	Surgical Mask (Box)	Consumables	500	120.0	Update Delete

FIGURE 1.5 MANAGE INVENTORY

The Manage Inventory page displays equipment records in a table format with ID, Name, Category, Quantity, and Price columns, provides 'Update'/'Delete' action buttons for each item, and features an Add Equipment button at the top for creating new entries, with a Back to Dashboard option at the bottom of the list.

User section

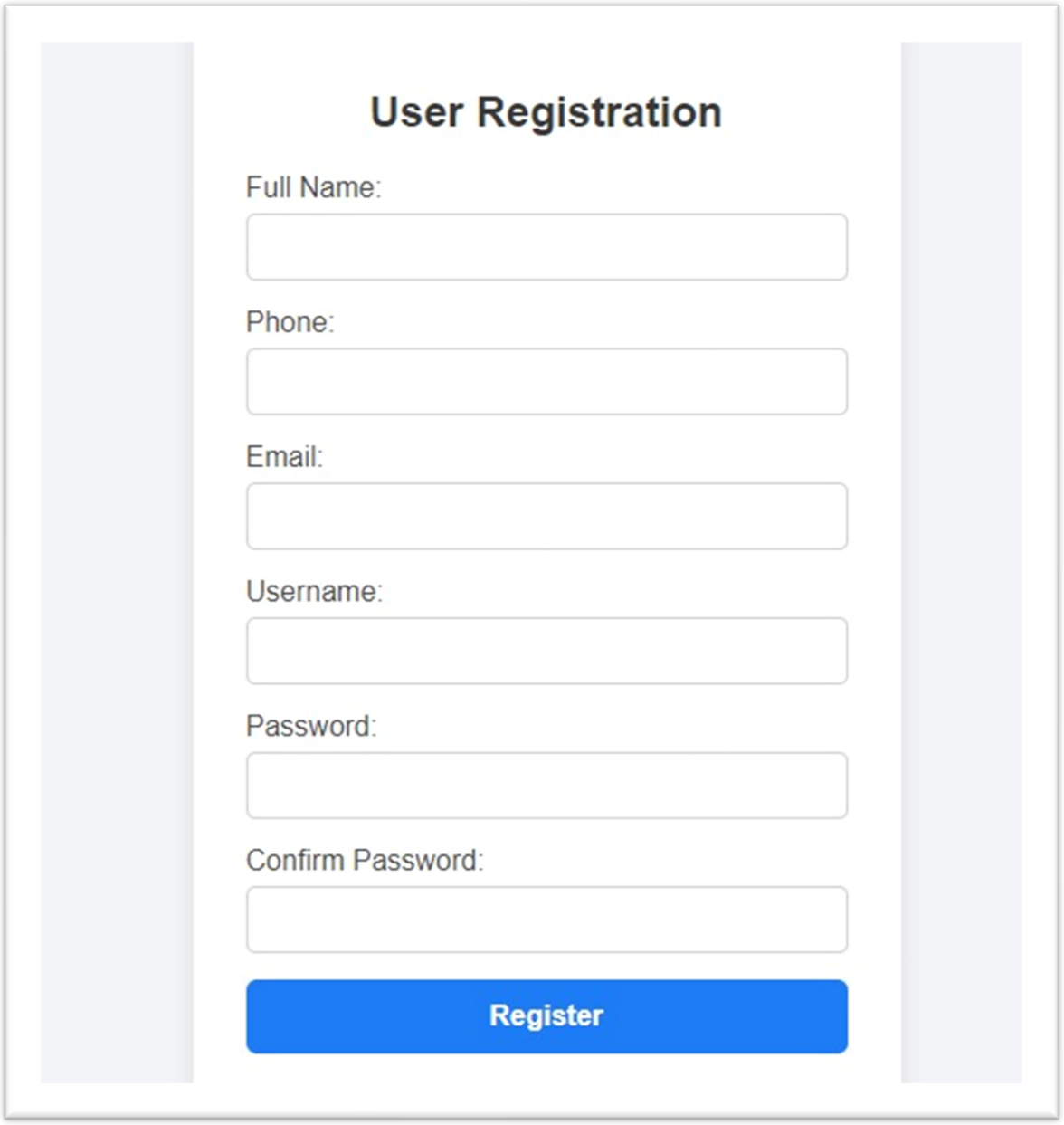


FIGURE 1.6 USER REGISTRATION

For this page user need to register their details and insert full name,phone number , email address and set the username with passsword and confirm the password. After confirm all the details user need to select button register.

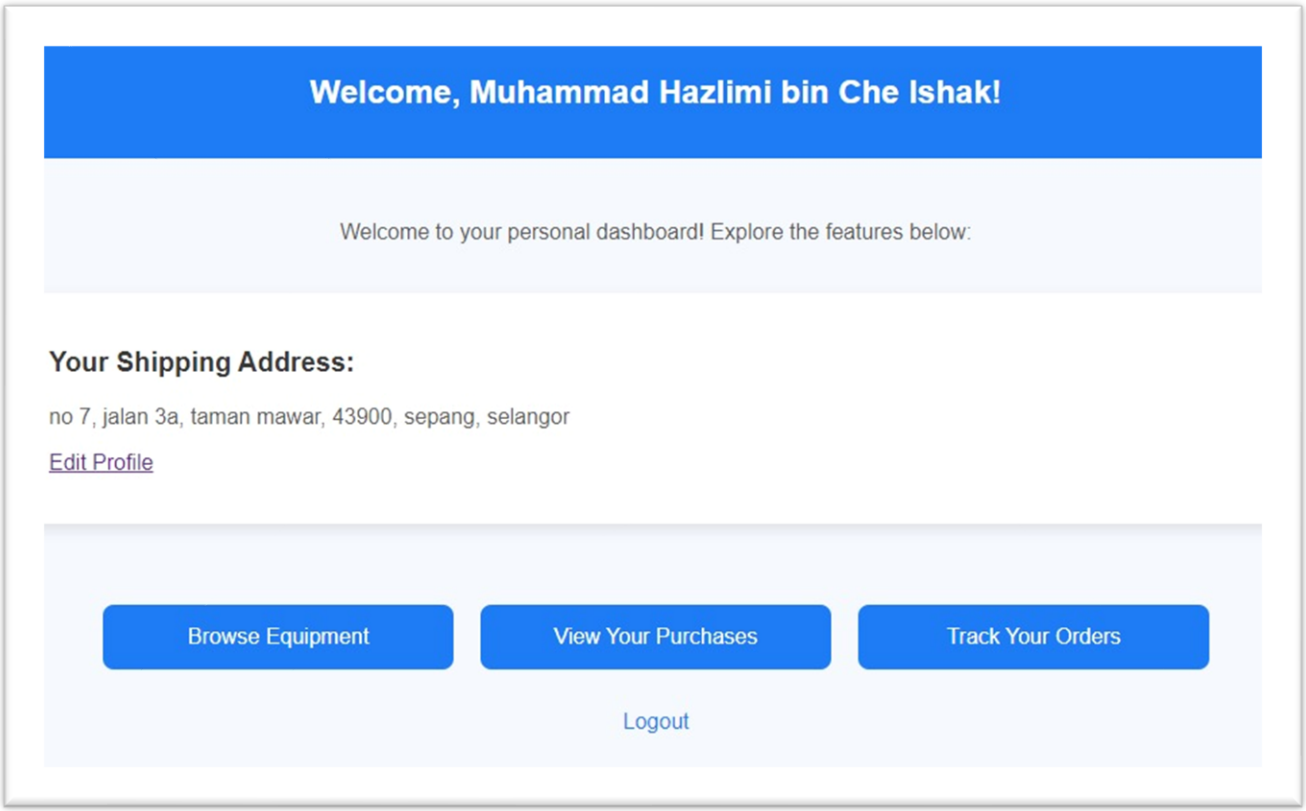


FIGURE 1.7 USER DASHBOARD

On the User Dashboard, you can view a quick overview of your status order and details shipping address along with navigation buttons to browse equipment ,view our purchases and track the orders.

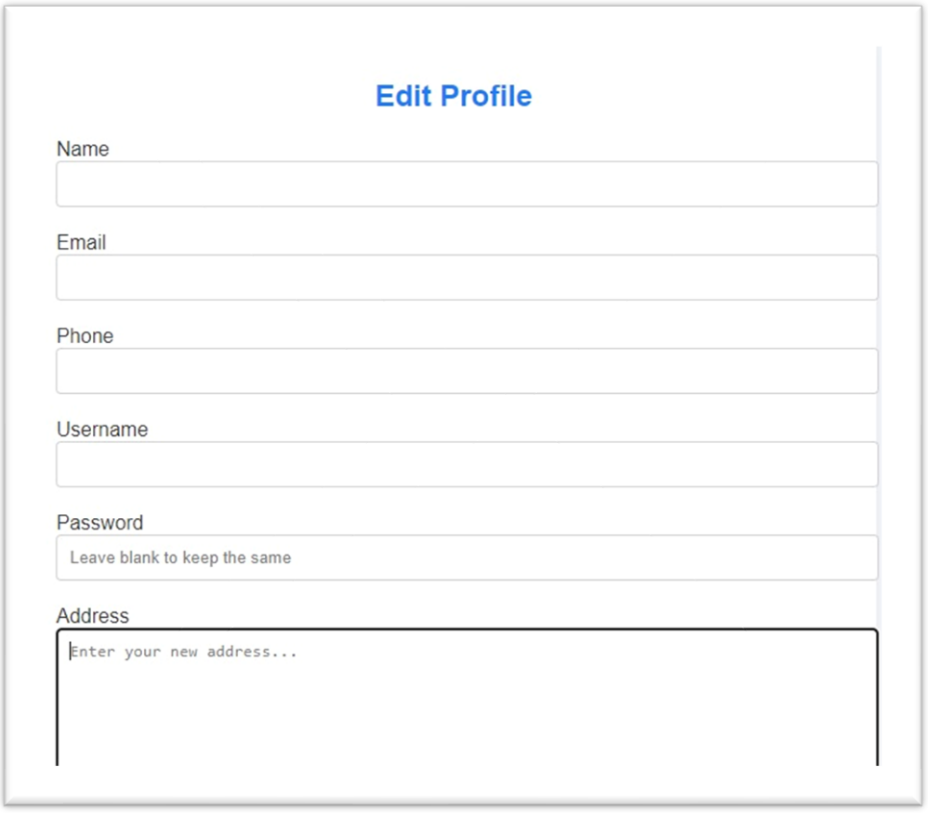


FIGURE 1.8 EDIT PROFILE

For this page user can edit their profile. So that if user need to change their details user just edit profile details into this page. The Edit Profile page is a standard feature in user account management systems. It enables users to maintain accurate and up-to-date information, which essential for personalized services, and communication.

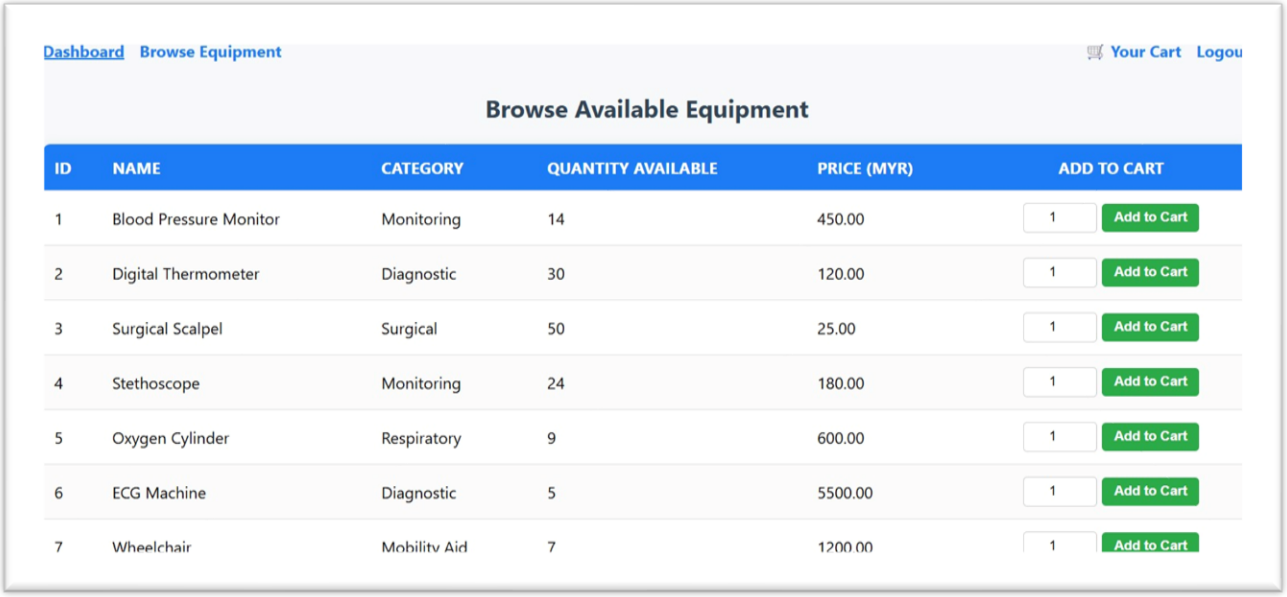


FIGURE1.9 BROWSE AVAILABLE EQUIPMENT

For this page user can view or browse what the equipment that can available to add to shopping cart into cart items. That page can have many equipment and user can view the quantity available, category what price for each equipment and name.

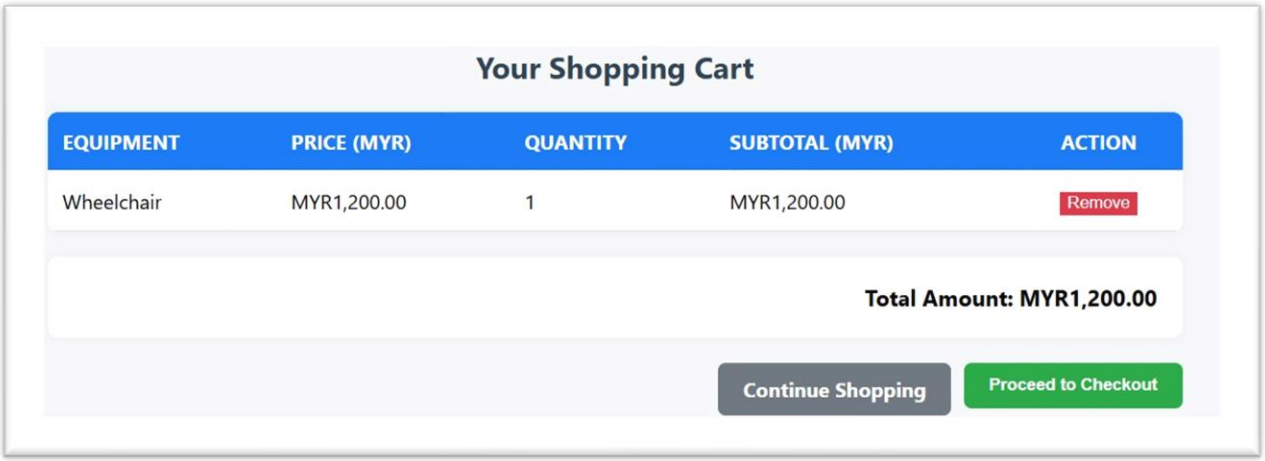


FIGURE1.10 SHOPPING CART

Shopping cart page can view the item that have been select in the browse available equipment page. So that user can view the items what to buy and see the details such as the name of equipment, price, quantity and subtotal for the equipment. After user confirm user can proceed for payment or to add more equipment need to click continue shopping.

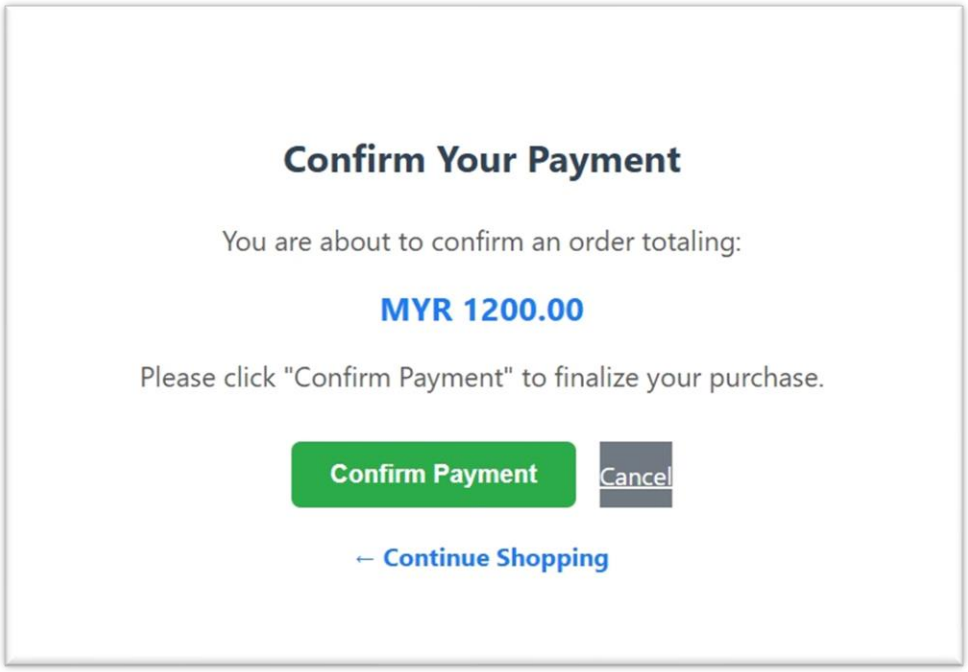


FIGURE1.11 CONFIRM YOUR PAYMENT

After complete add item into the shopping cart user just click proceed to checkout and the page for confirm your payment can be popup .User just easily make the payment by click the confirm payment.

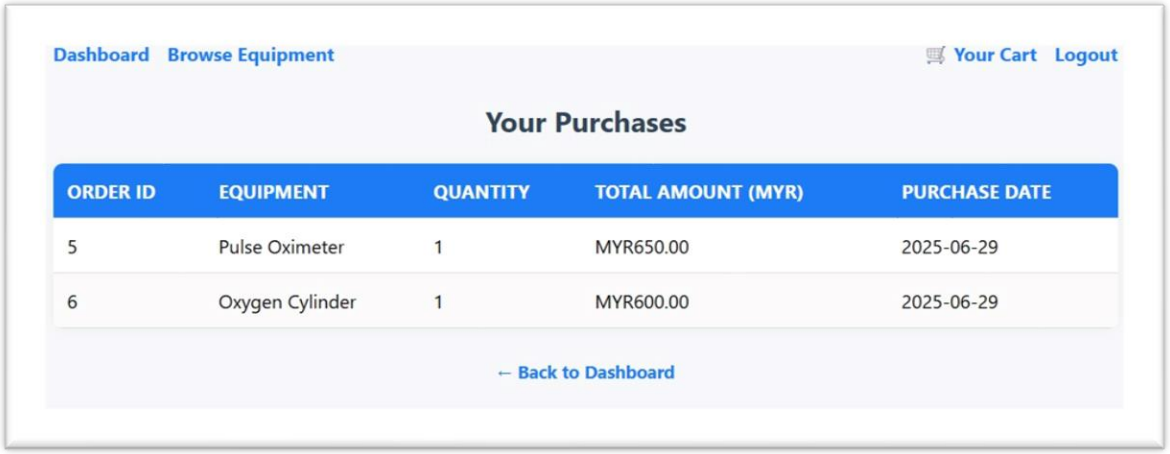


FIGURE1.12 YOUR PURCHASE

For this page user can view their purchase item after complete the payment. User also can see the details of purchases that can show the ordered, name of equipment that have been purchase, the quantity of each equipment, total amount and the date of purchased.

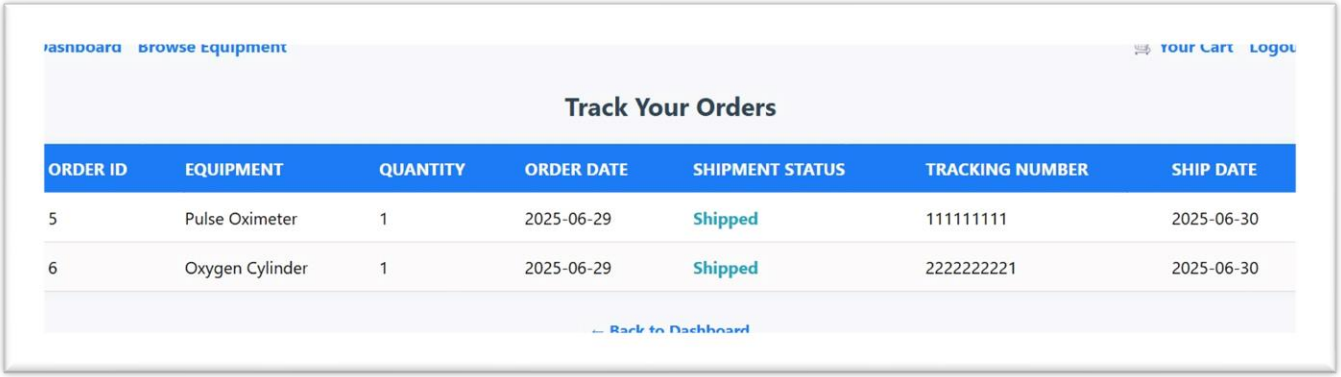


FIGURE1.13 TRACK YOUR ORDERS

On page track orders user can view their details order based on what user order in cart. For this page we have the details about order id, quantity for this order, orderdate, tracking number and the date of shipments.

7.0 Flow Of Application

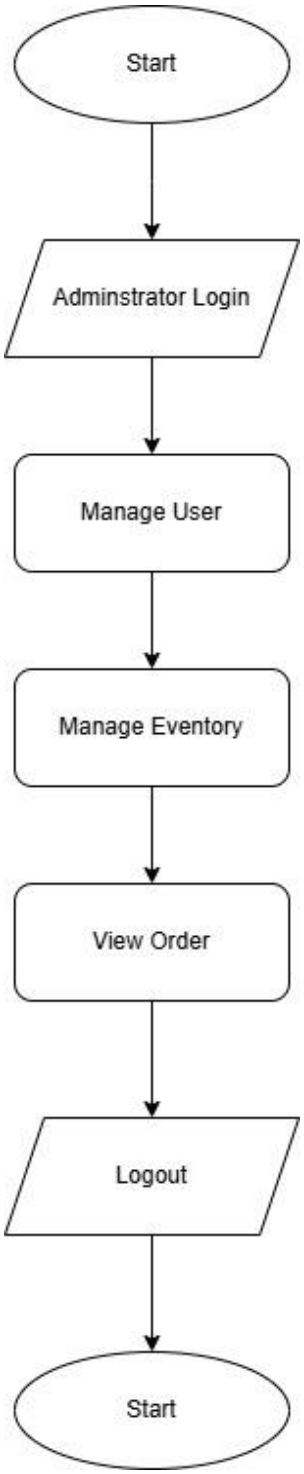


FIGURE 1.14 FLOW OF APPLICATION FOR ADMIN

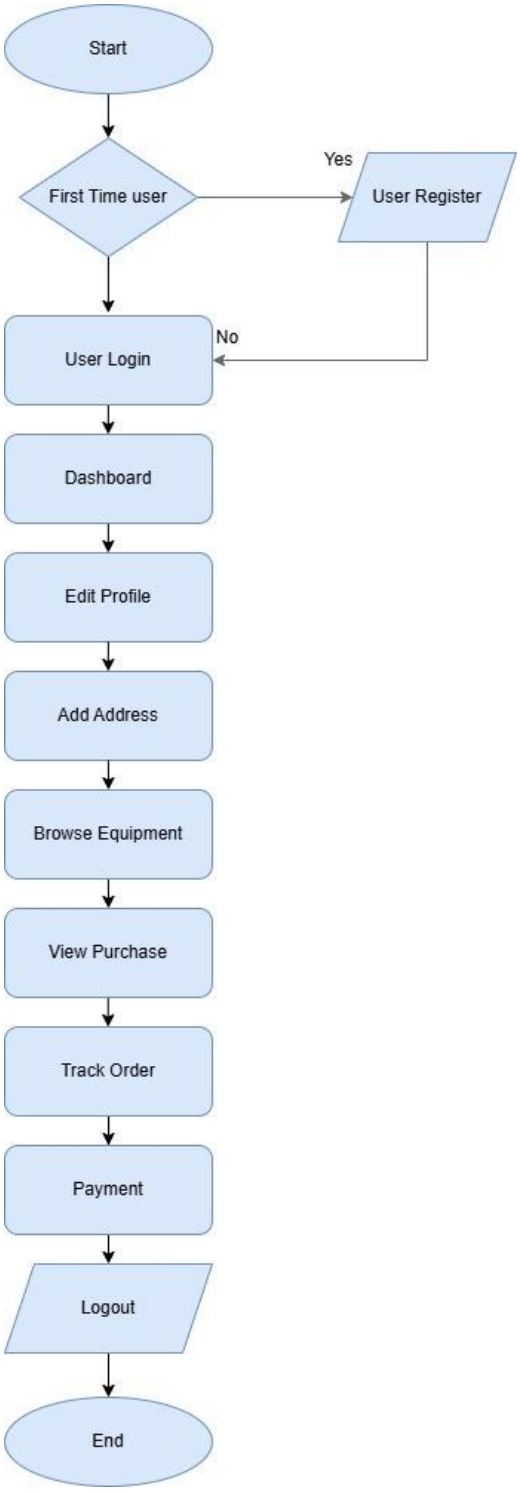


FIGURE 1.15 FLOW OF APPLICATION FOR USER

8.0 Conclusion

The development of the Healthcare Equipment Management System using NetBeans has successfully demonstrated how modern software solutions can be applied to improve the efficiency and reliability of healthcare operations. This project aimed to address the common challenges faced in managing medical equipment, such as equipment tracking, and ensuring the timely servicing of critical healthcare tools.
Throughout the development process, the system was designed using the Java programming language within the NetBeans Integrated Development Environment (IDE), which provided a structured and efficient platform for building, testing, and deploying the application. Java object-oriented features, combined with NetBeans user-friendly tools, made it easier to manage code, connect to databases, and implement Graphical User Interface components.

By automating these tasks, the system minimizes human error, increases transparency, and helps hospital staff make better decisions regarding equipment usage and maintenance planning. This project also emphasizes the importance of digitizing manual processes in healthcare. Poorly managed equipment can lead to delays in treatment. Through this system, hospitals and clinics can ensure that all equipment is regularly maintained and available when needed, ultimately supporting better patient care and operational efficiency.

In conclusion, the Healthcare Equipment Management System is a scalable and practical solution for modern healthcare institutions. It reflects the integration of technology with healthcare services and demonstrates how software development skills, particularly using tools like NetBeans, can contribute significantly to solving real-world problems. This system lays the groundwork for future enhancements, such as cloud integration, real-time alerts, and mobile application support, which can further improve healthcare equipment management in both small clinics and large hospitals.