INVENTORY CONTROL SYSTEM

Project report in partial fulfilment of the requirement of Software Engineering Lab
In
COMPUTER SCIENCE & ENGINEERING DEPT.

Submitted By

Subhronil Saha
University Roll No. 12018009019410
Section: 3E, Class Roll No.: 70
Department of Computer Science,
UEM, Kolkata

Suman Kumar Saha
University Roll No. 12018009019524
Section: 3E, Class Roll No.: 71
Department of Computer Science,
UEM, Kolkata

Sutapa Banik
University Roll No. 12018009019413
Section: 3E, Class Roll No.: 72
Department of Computer Science,
UEM, Kolkata

UNIVERSITY OF ENGINEERING & MANAGEMENT, KOLKATA
University Area, Plot No. III – B/5, New Town, Action Area – III, Kolkata – 700 156

Table of Contents

1. Introduction

1.1 Purpose

The main purpose of an inventory control system is to help control our stock in order to hold the least amount of inventory in your warehouses and ultimately improve cash flow and lower holding costs.

A wide range of manufacturing, distribution and retail facilities use inventory control systems to manage the movement of items throughout their business. Some businesses may be tracking the movement of finished products from suppliers to customers while others may need to order raw materials to produce a finished product. Facilities managers may need to track maintenance, repair, and operations (MRO) inventory, which includes items like hand tools and janitorial supplies used to keep an organization running.

In all cases, items must be identified with a name or number, barcode, or radio frequency identification (RFID) tag so that they can be easily tracked. Items are then manually recorded or automatically scanned so that they can be followed and managed in a central computer system.

1.2 Document Conventions

- When writing this document it was inherited that all requirements have the same priority.
- First, an overall view of the system is presented and then all features and functions are analyzed in detail.

1.3 Intended Audience and Reading Suggestions

The intended audience includes:

1. **Developers:** This document serves as a product guide that can be used for future scaling and debugging. Developers would be able to understand the core working of the product through this document.

2. **Users:** This document will serve as a single source of truth for all the features of this project and a ready reference for all its functionalities for ease of use and troubleshooting.

1.4 Project Scope

The main goal of this project is to implement a basic version of an inventory control system that supports the following features:

1. Create, read, update and delete operations on inventory items as well as their categories.

2. Login and signup options for providing access to admins and project managers to view and modify existing database data.
3. A home page for viewing all the items available in the inventory, as well as filtering them by category.

The product is to be developed within a time frame of 15 days.

1.5 References

Possible references may include:

1. https://www.w3schools.com/

2. Overall Description

2.1 Product Perspective

This website is an online inventory control system. It is an independent product and does not depend on any other product or system. The product will automate various tasks associated with handling product details and better organizing the stored information and optimum performance, thus helping the business to ensure smooth working of these processes. This product could grow into a very versatile application that can be used by any business.

Before this digital system, such a manual process of inventory control system had its own drawbacks of lots of paperwork, calculations and henceforth chances of mistakes. This leads to inconsistency and inaccuracy in the maintenance of data and efficiency. The software improves the working methods by replacing the existing manual system with a computer-based system.

• The digitization of the inventory control system will reduce a lot of paperwork.

• All the products and their stock will be managed by the system, hence no chance of errors and moreover the management will be more efficient than ever.

• The product information can be easily tracked, and any required addition, deletion or update can be performed.

2.2 Product Features

The inventory control system provides the user with the following functions:

- **ADMIN LOGIN –** Login is necessary before using other features of the system. The user will enter the email ID and password at the homepage. Then the user can access the desired information.

- **SIGN UP –** New users need to sign up in the same page interface, to be able to access the system.

- **ITEM MANAGEMENT –** Items can be added, removed, viewed and updated by an admin.

- **CATEGORY MANAGEMENT –** Categories can be added, removed, viewed and updated by an admin. Also, categories can be set as active or inactive. Items belonging to inactive categories will not be shown on the homepage.

2.3 User Classes and Characteristics

There are various kinds of users for this product. User classes may be differentiated based on frequency of use, subset of product functions used, technical enterprise, security or privilege levels.

- **Warehouse manager**: manages items in the warehouse, does packaging and delivery.
- **Inventory management**: re-ordering and ordering based on arrival of stocks.
- **Shipping vendor**: picks up the packages from the warehouses and delivers to the users.

2.4 Operating Environment

The developed system should run under any platform i.e. Unix, Linux, Windows etc.

2.5 Design and Implementation Constraints

In order to build an enterprise-level application, only those tools and technologies can be used which provide sufficient support for such kind of development. Therefore, our team will be limited to using a highly mature and robust platform for the development and deployment of the application. Keeping in view the platform independence and robustness, the PHP platform is a strong candidate to be used as a development and deployment platform.

There can be any security risk involved. Details provided by an individual during sign up should be stored in the database. These are some constraints for the developer team and we are working on this.

2.6 User Documentation

There is no specific user documentation as it is a simple product for any user with just some credentials and no major complicated interface and features.

2.7 Assumptions and Dependencies

- We assume that the computers that will use this software will be having proper platform to run it.
- Users with administrator access should be careful in deleting or modifying any information knowingly or unknowingly which will lead to inconsistency of the database.
- The end users of this software are assumed to have basic level of computer knowledge i.e., point and click.

- Currently there is no assumption that any third party software can affect this because of the simplicity of the product and efficiency of the system but in future if we face any kind of issues we will try our best to resolve it.

3. System Features

3.1 Item add/edit/view/delete

3.1.1 Description

- Items can be added, edited, viewed and deleted by the admin.

3.2 Category add/edit/view/delete

3.2.1 Description

- Categories can be added, edited, viewed and deleted by the admin.
- Deleting a category removes all items associated with it as well.

3.3 Admin login, user signup

3.2.1 Description

- Admins need to log in to modify data.
- Users can sign up to become admins.

4. External Interface Requirements

4.1 User Interfaces

The project comes up with easy to use user interface. There is only one type of user interface which is the administrator's user interface. This type of user is the one who can register themselves and, view and track product information.

4.2 Hardware Interfaces

Hardware Interfaces exist in computing systems between many of the components such as various storages devices, other i/o devices these are the minimum requirements for the functionality of the project.
Processor: Intel core 2duo or higher
RAM: 4GB or higher
Monitor: 15 color monitor
Mouse & Keyboard
Hard disk: 8gb of free space

4.3 Software Interfaces

The software is developed with all the basic controls and class provided in Php and SQL, Windows 7 or above installed on the system. Application package must be installed.
Operating system: Windows,
Developing tool: Xampp, Visual Studio Code, MySQL database, PhpmyAdmin.

4.4 Communications Interfaces

The system shall be a standalone product that does not require any communication interfaces.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

The application should be available in minimum down-time. The application should provide users with appropriate error messages and should handle run-time exceptions in a controlled manner in order to avoid abnormal termination. Performance shall depend upon hardware and software components of the computer.

5.2 Safety Requirements

The database may get crashed any certain time due to the virus or operating system failure. Therefore, it is required to take the backup of database.

5.3 Security Requirements

This project provides a genuine security to all those individuals who are having their account on the database as they are password protected. This is very important aspect of the design and should cover areas of hardware reliability fall, back procedures, physical security of data and provision for detection of fraud and abuse.

5.4 Software Quality Attributes

- **Reliability:** The project shall provide storage of all databases on redundant computer with MySQL database. The reliability of the website depends on the web server it will be hosted on, and also on LOGIN mechanisms.
- **Maintainability:** The system shall provide the capability to back up the database.
- **Portability:** The system shall run on any Microsoft Windows environment.
- **Flexibility:** Ability to add new features to the system and handle them conveniently.

- **Availability:** The site should be accessible to as many browsers as possible; including text browsers.

6. Other Requirements

There is no other special requirement except the user given credentials.

7. Future scope

This product could grow into a very versatile application that can be used by any business.

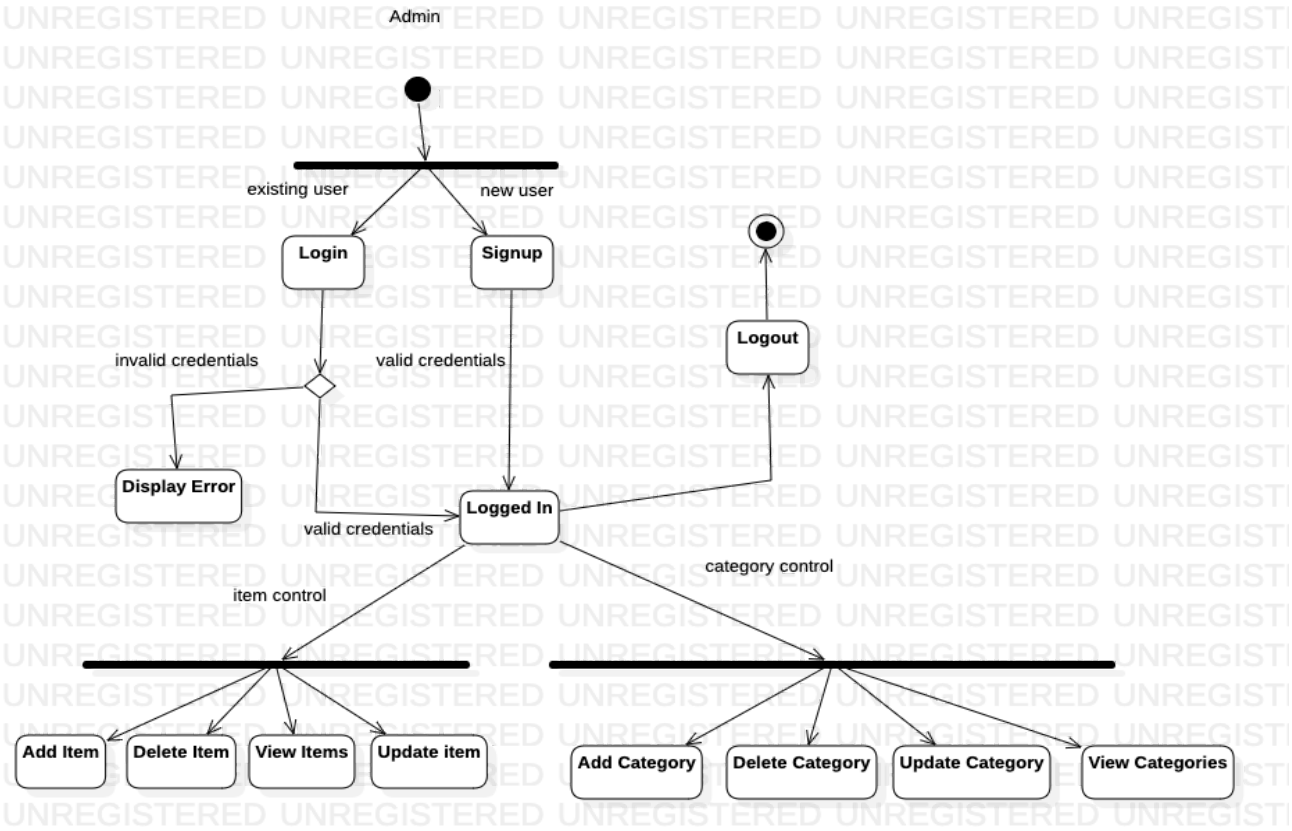
Appendix A: Glossary

Abbreviations & Definitions:

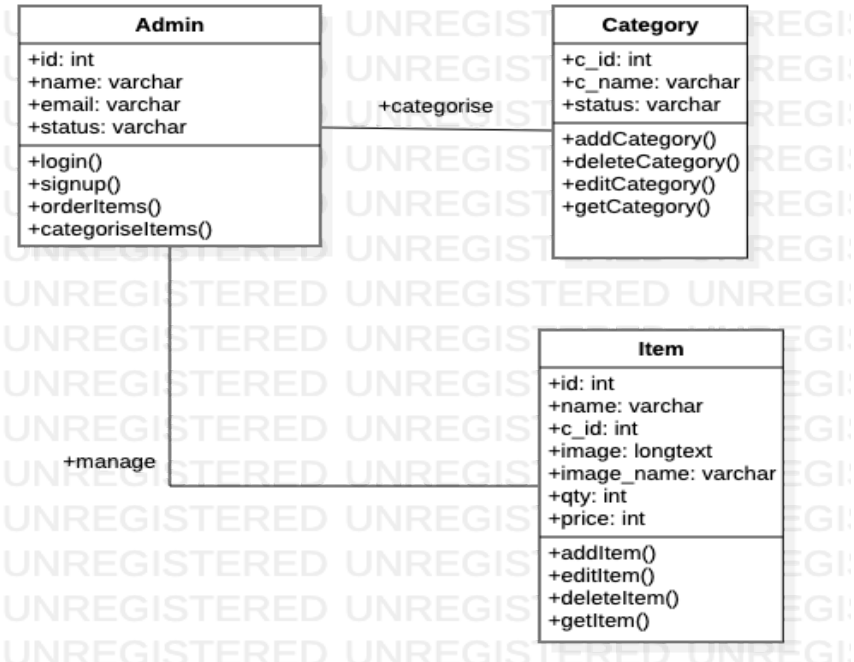
- SRS: System Requirement Specification
- DFD: Data Flow Diagram
- ERD: Entity Relationship Diagram

Appendix B: Analysis Models

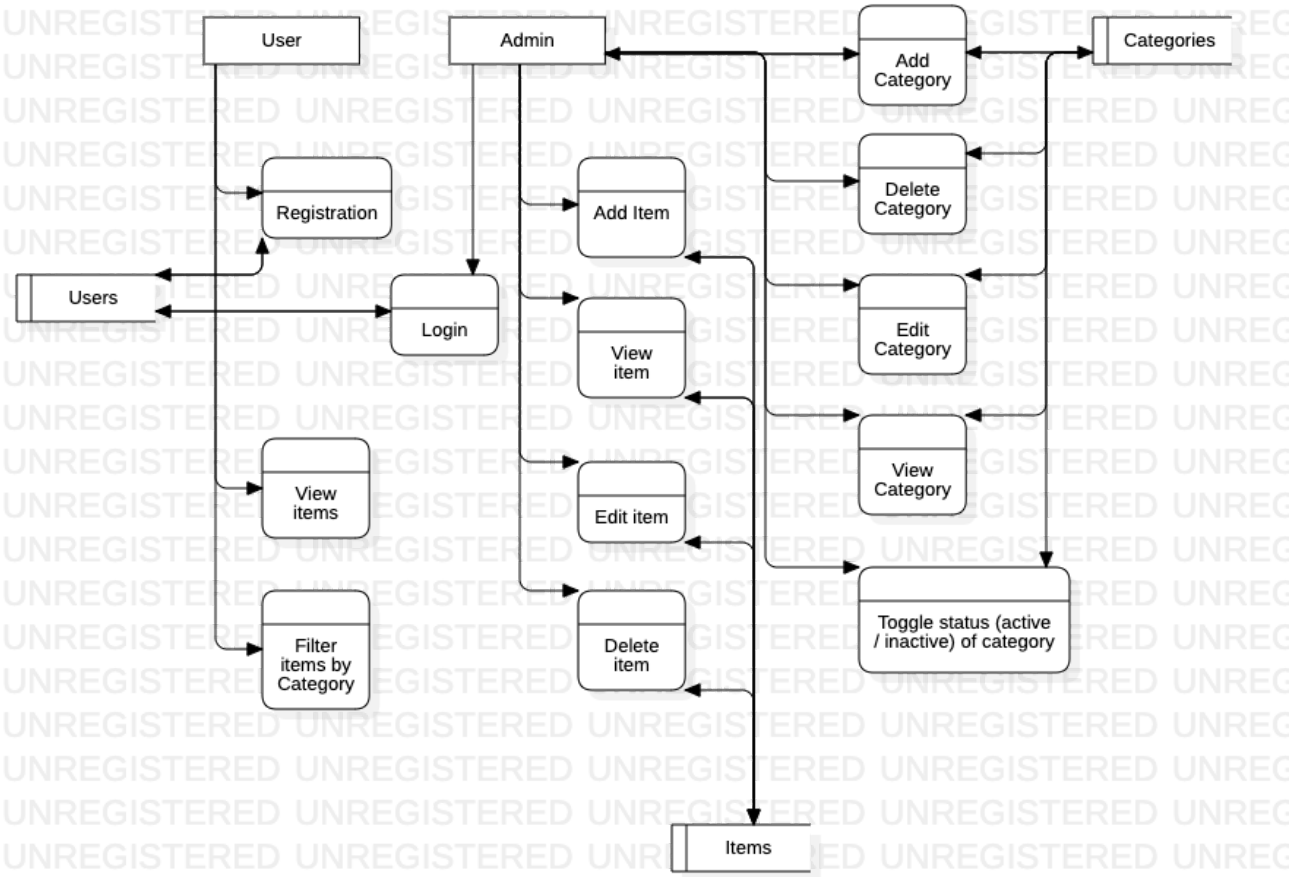
Activity Diagram



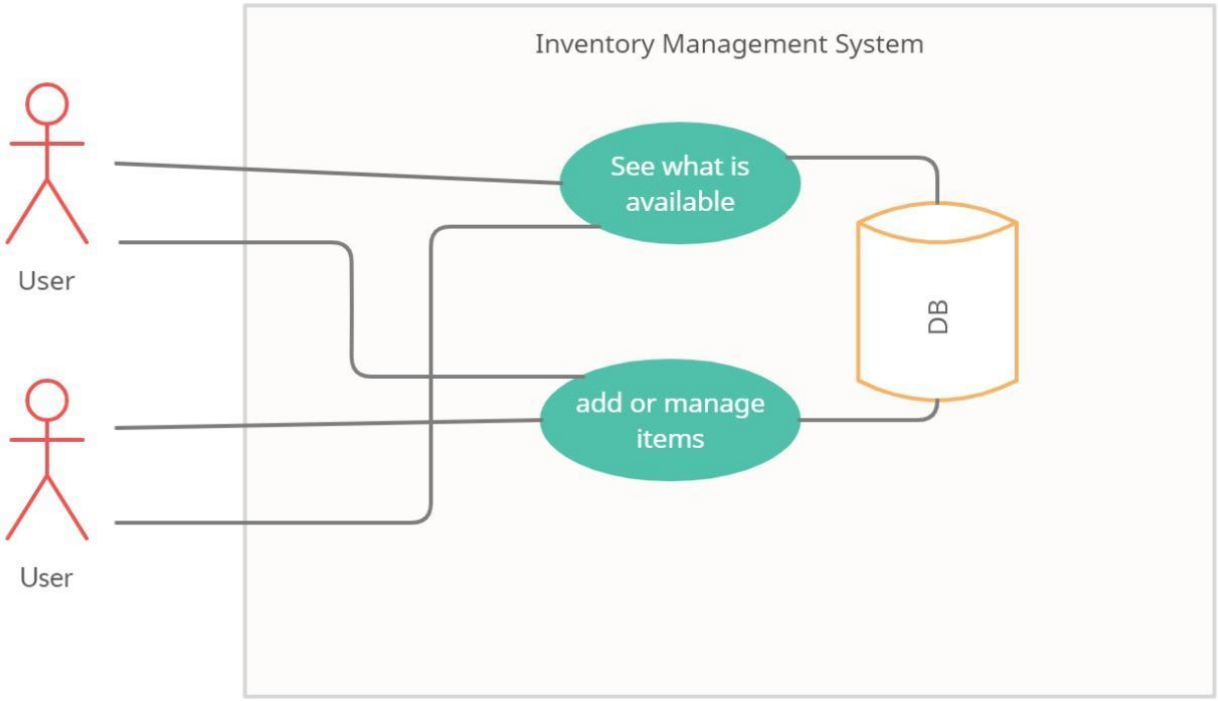
Class diagram



DFD

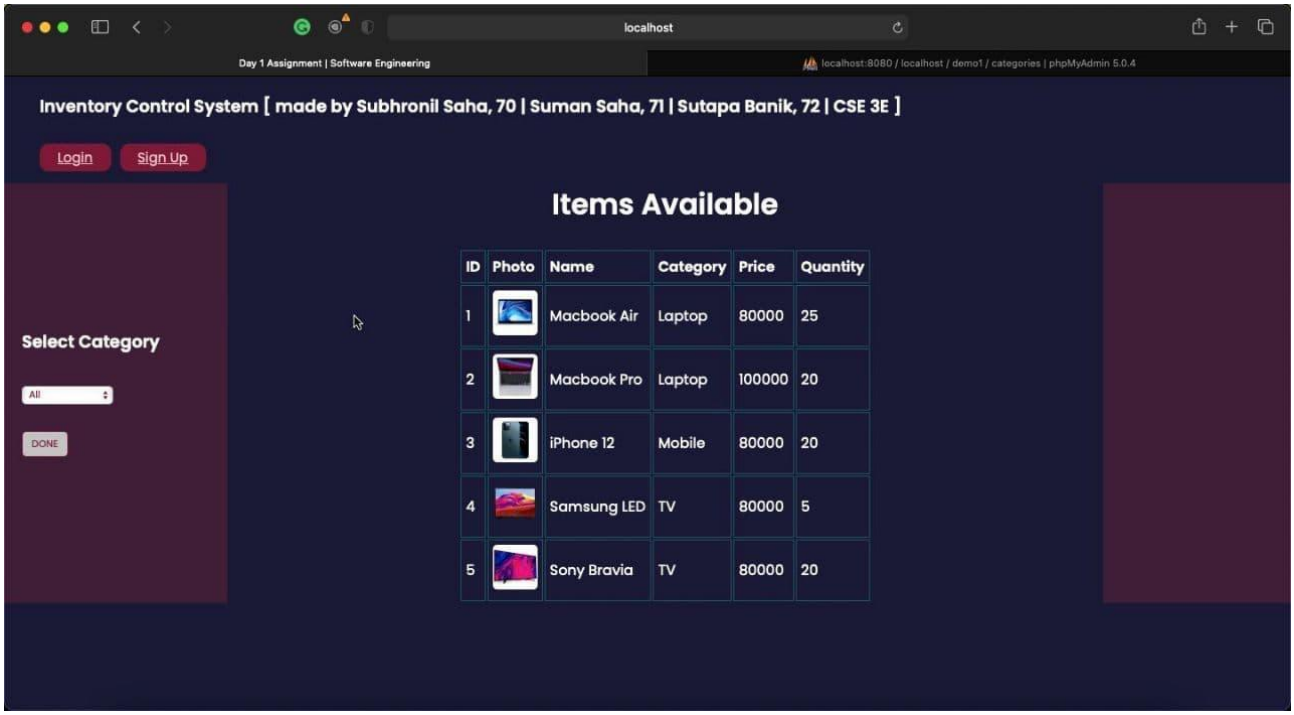


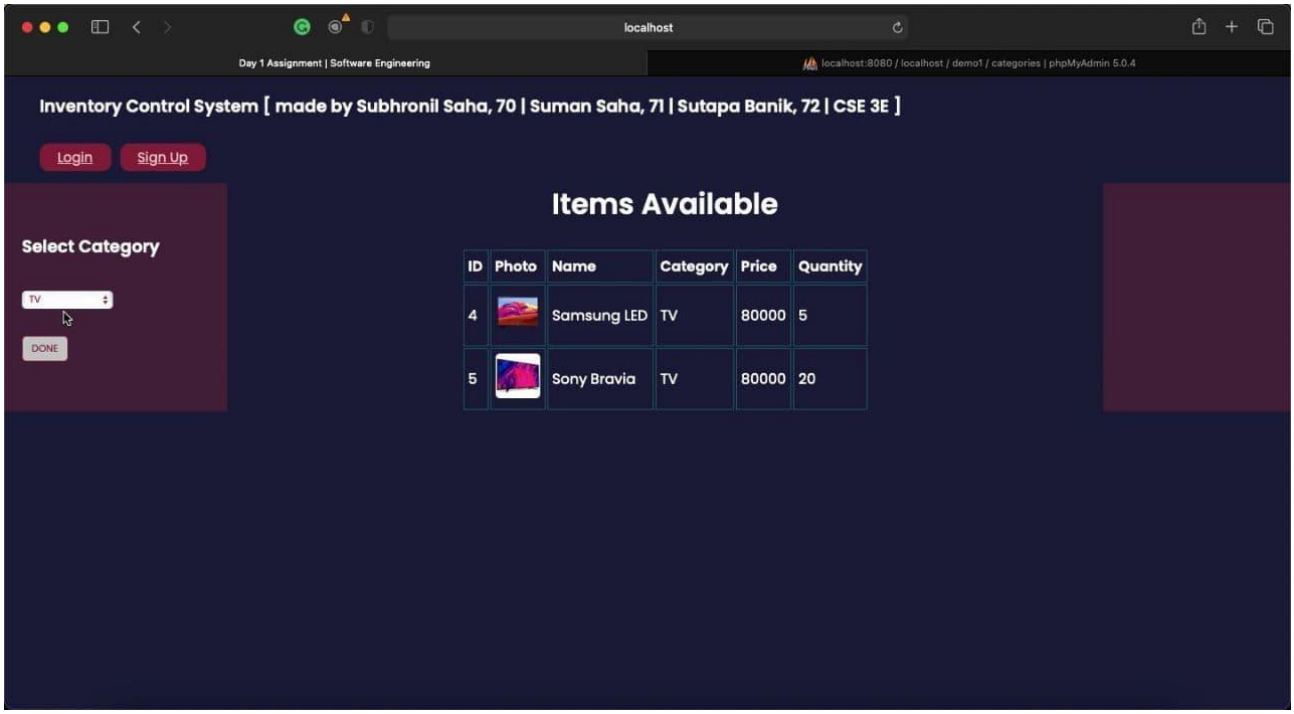
Use case diagram

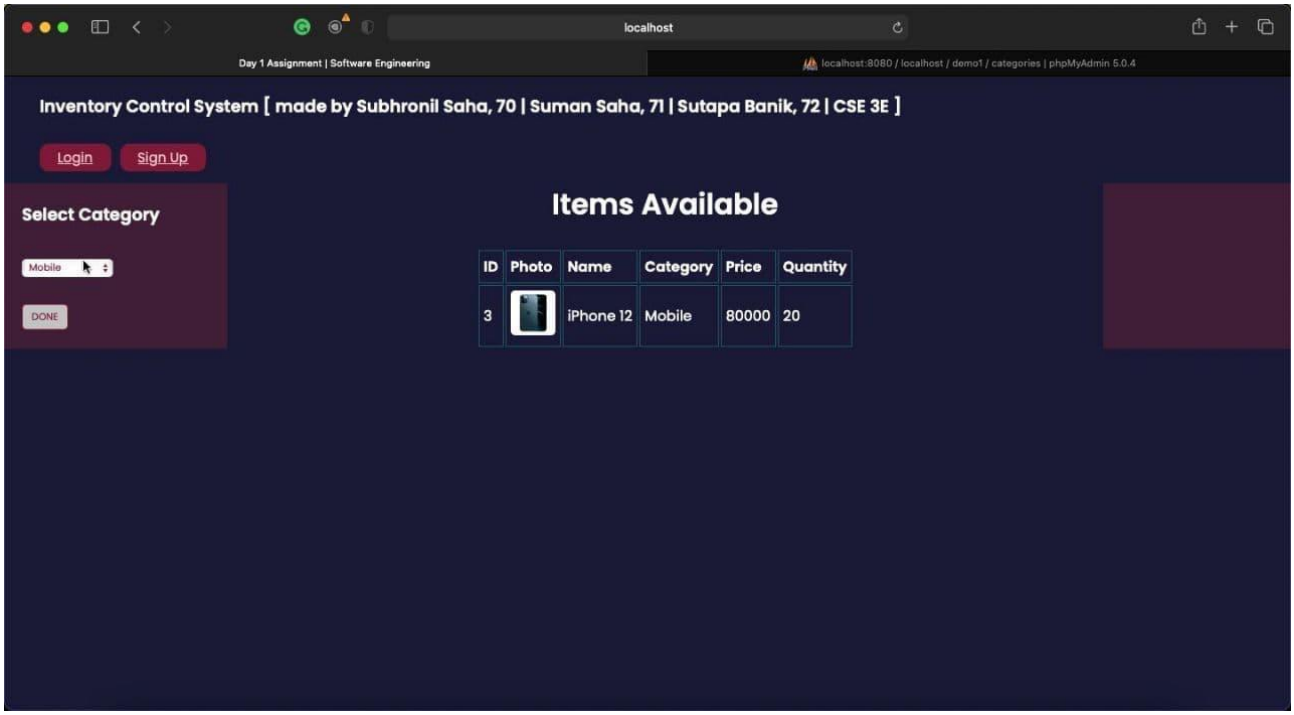


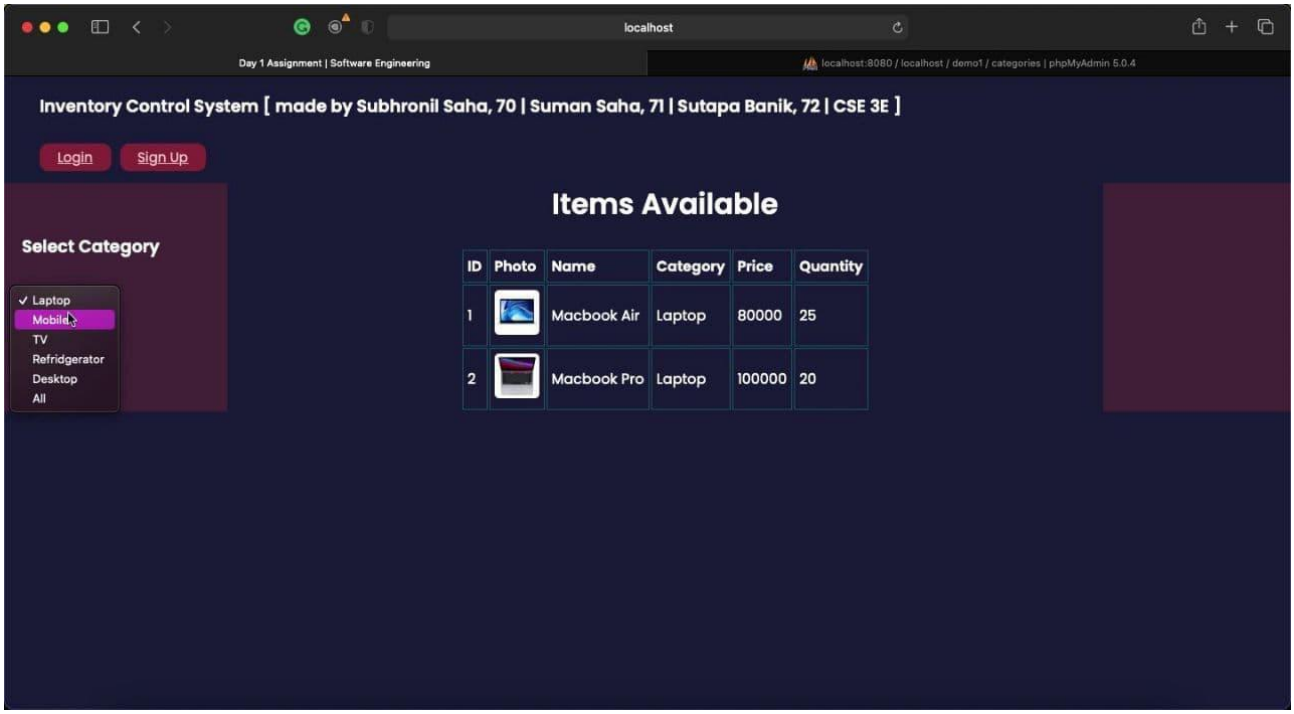
Appendix C: Implementation

1. **Homepage with different category selections**

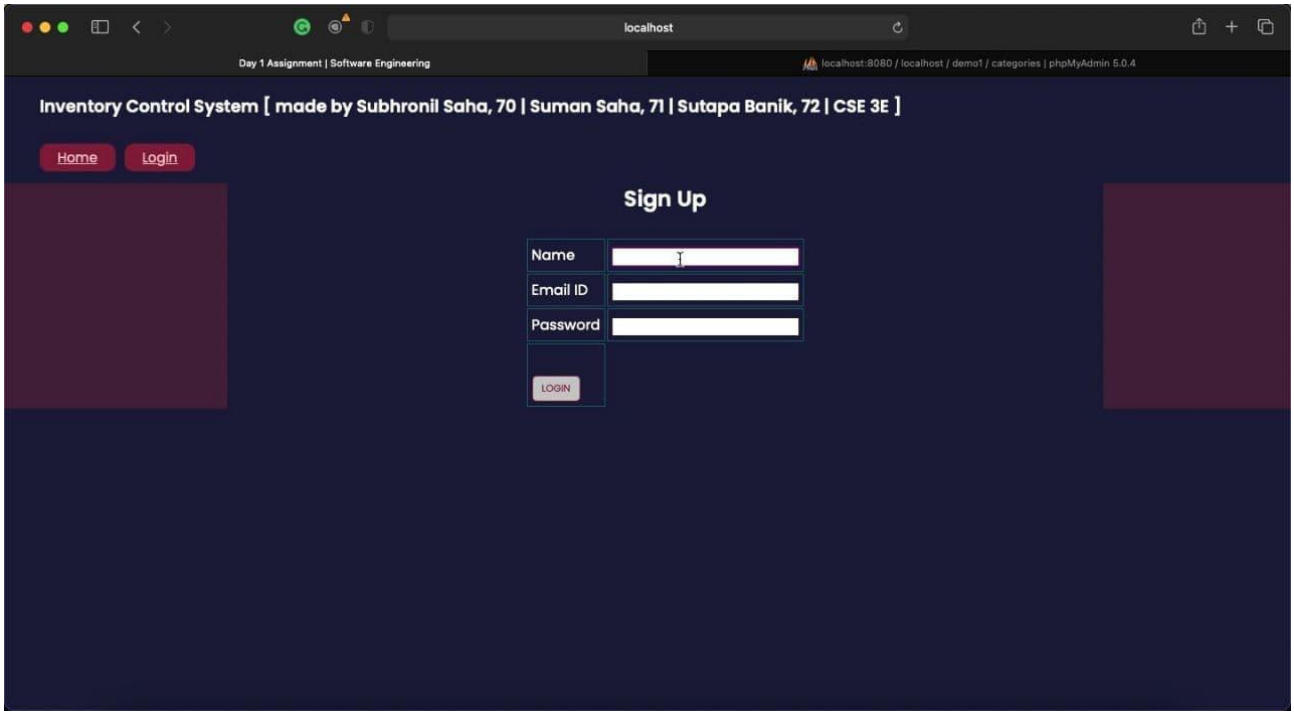



localhost
Day 1 Assignment | Software Engineering
localhost:8080 / localhost / demo1 / categories | phpMyAdmin 5.0.4
Inventory Control System [made by Subhronil Saha, 70 | Suman Saha, 71 | Sutapa Banik, 72 | CSE 3E]
Login
Sign Up
Select Category
TV
DONE
Items Available
ID Photo Name Category Price Quantity
4 Samsung LED TV 80000 5
5 Sony Bravia TV 80000 20

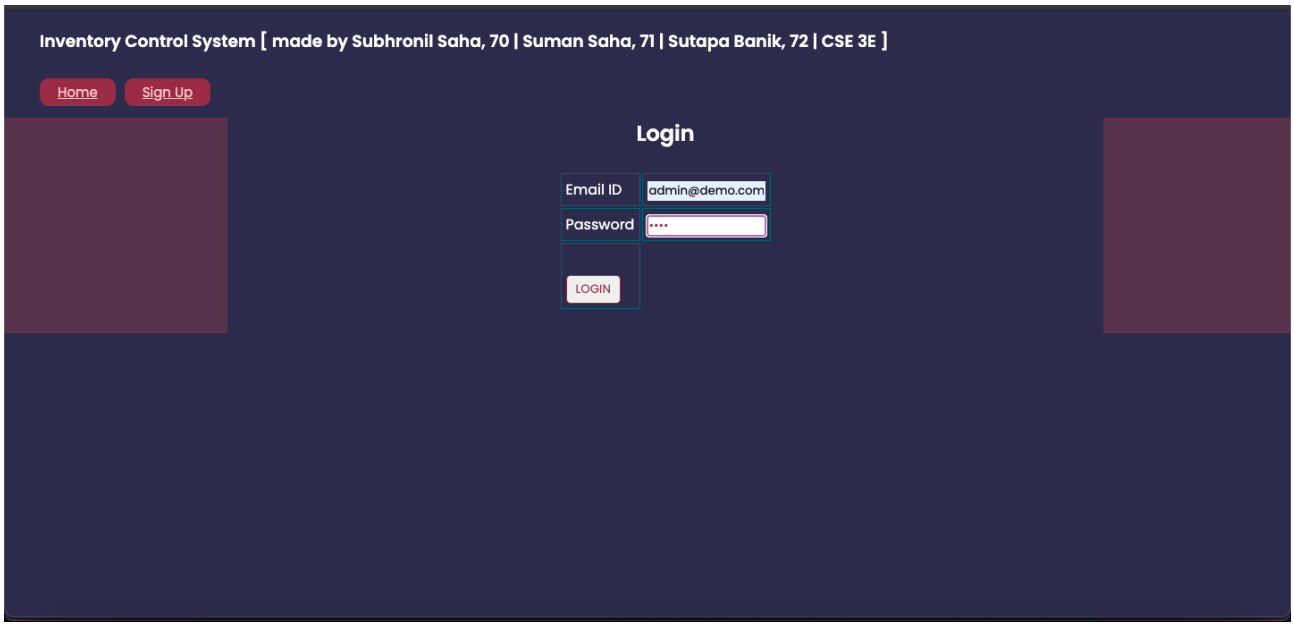

localhost
Day 1 Assignment | Software Engineering
localhost:8080 / localhost / demo1 / categories | phpMyAdmin 5.0.4
Inventory Control System [made by Subhronil Saha, 70 | Suman Saha, 71 | Sutapa Banik, 72 | CSE 3E]
Login
Sign Up
Select Category
Mobile
DONE
Items Available
ID Photo Name Category Price Quantity
3 iPhone 12 Mobile 80000 20



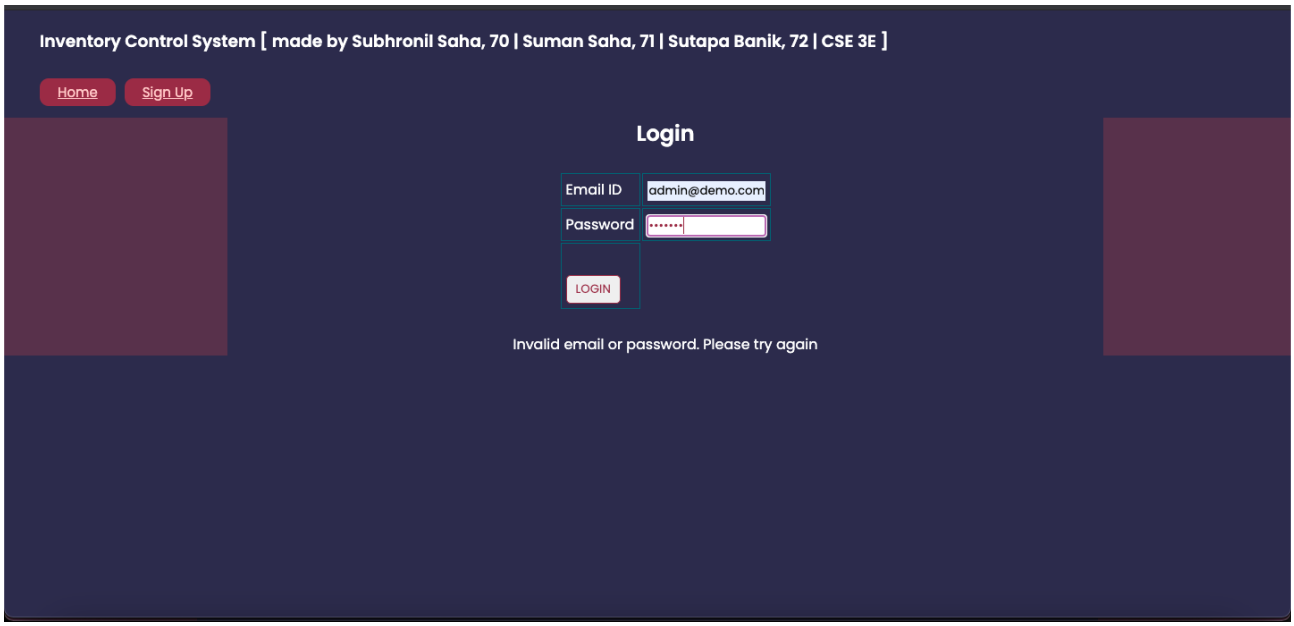
2. Signup page.



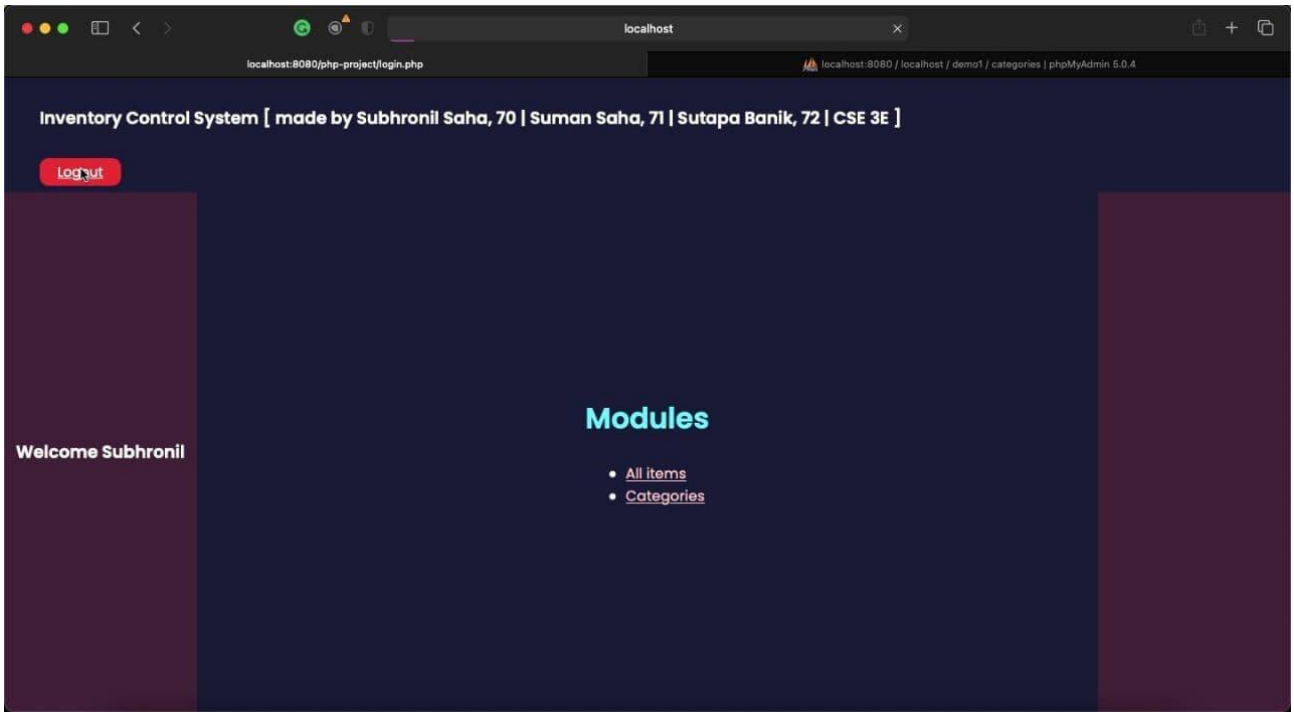
3. Login page.



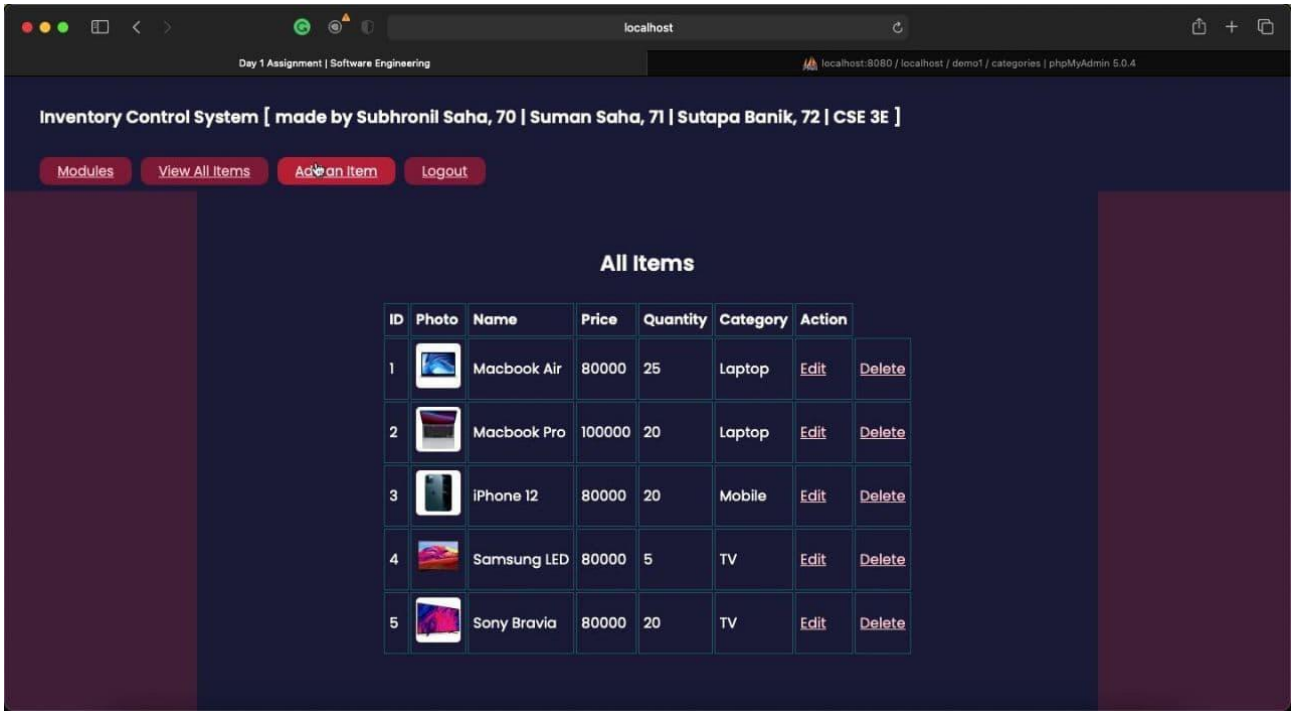
4. Invalid Login page.



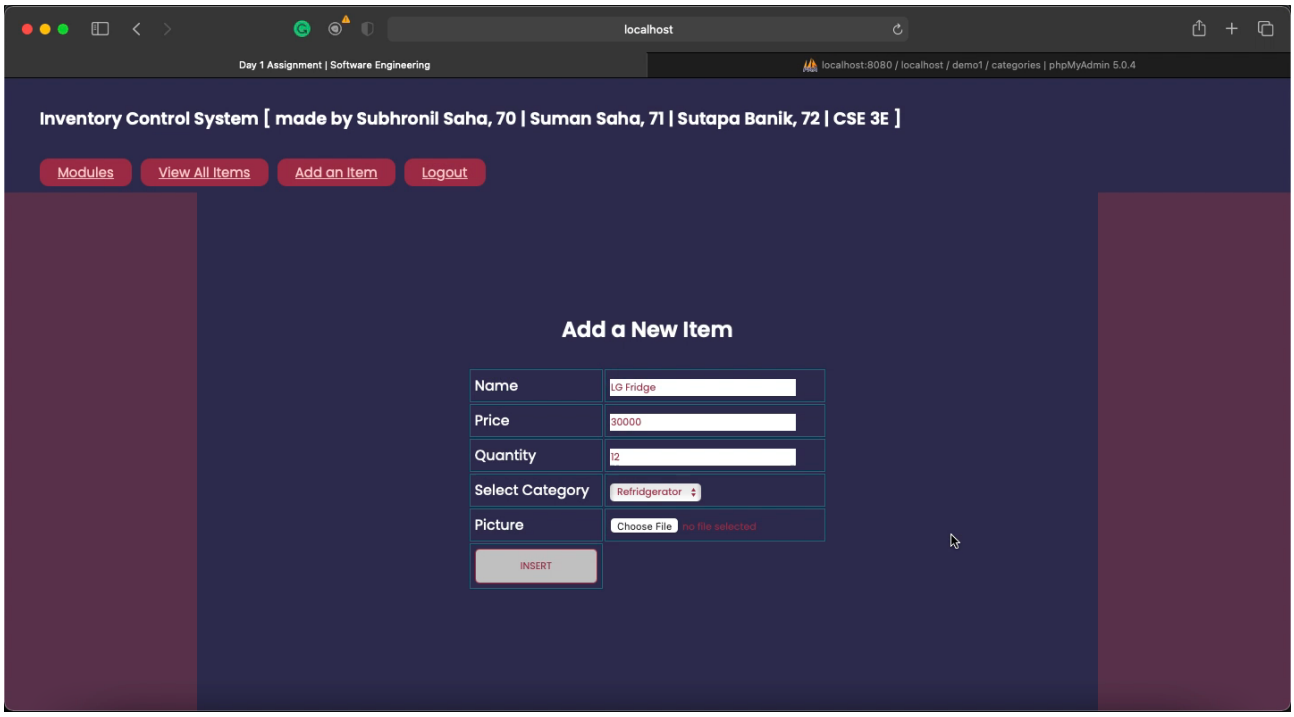
5. Admin dashboard



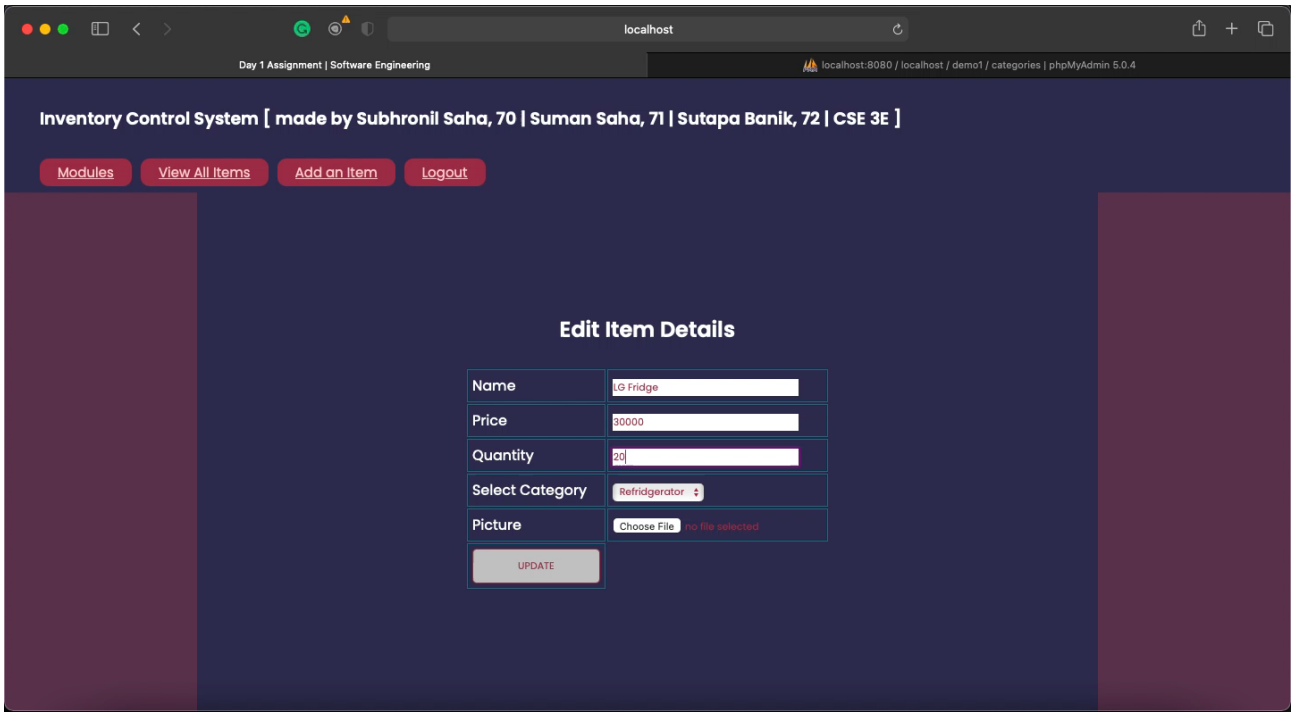
6. View items page



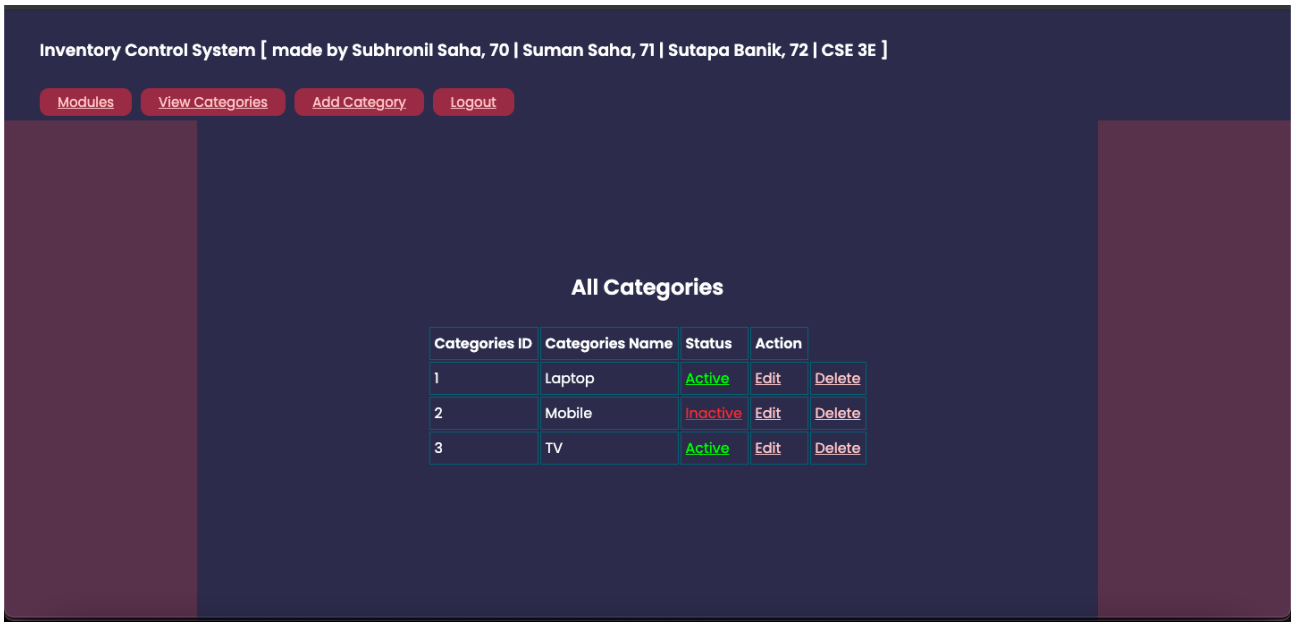
7. Add item page

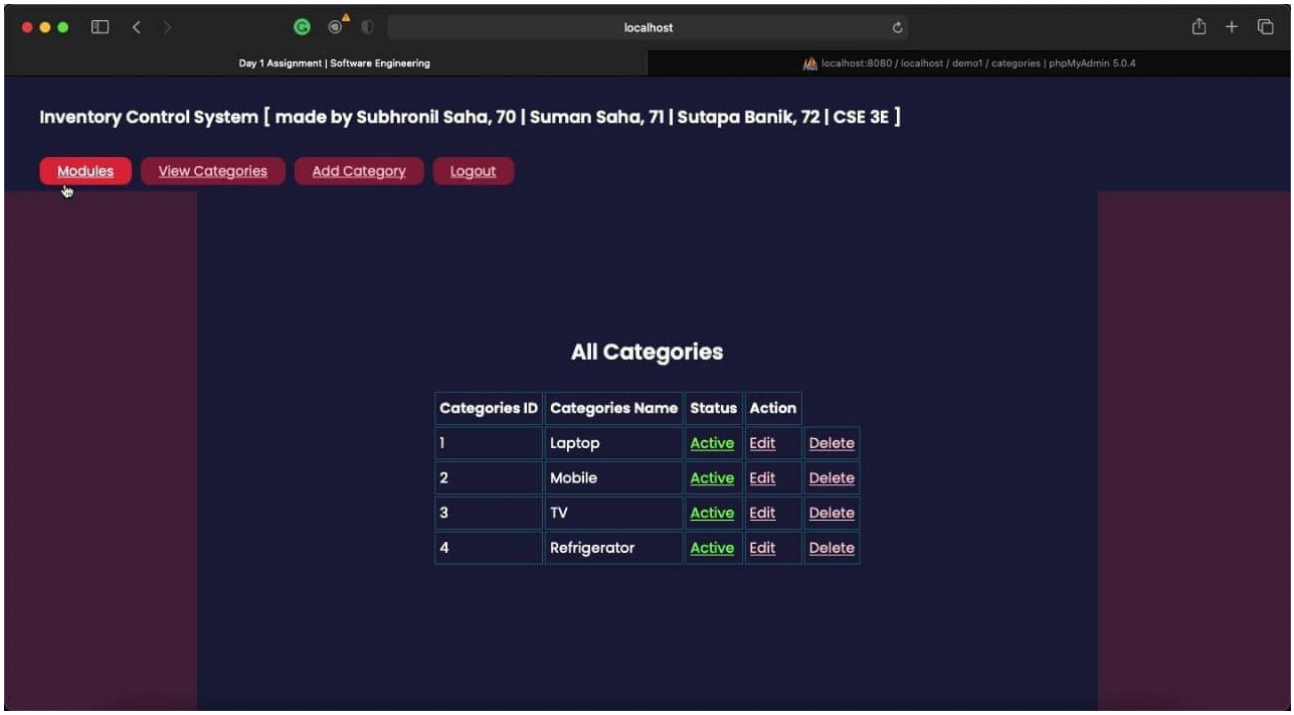


8. Edit item page

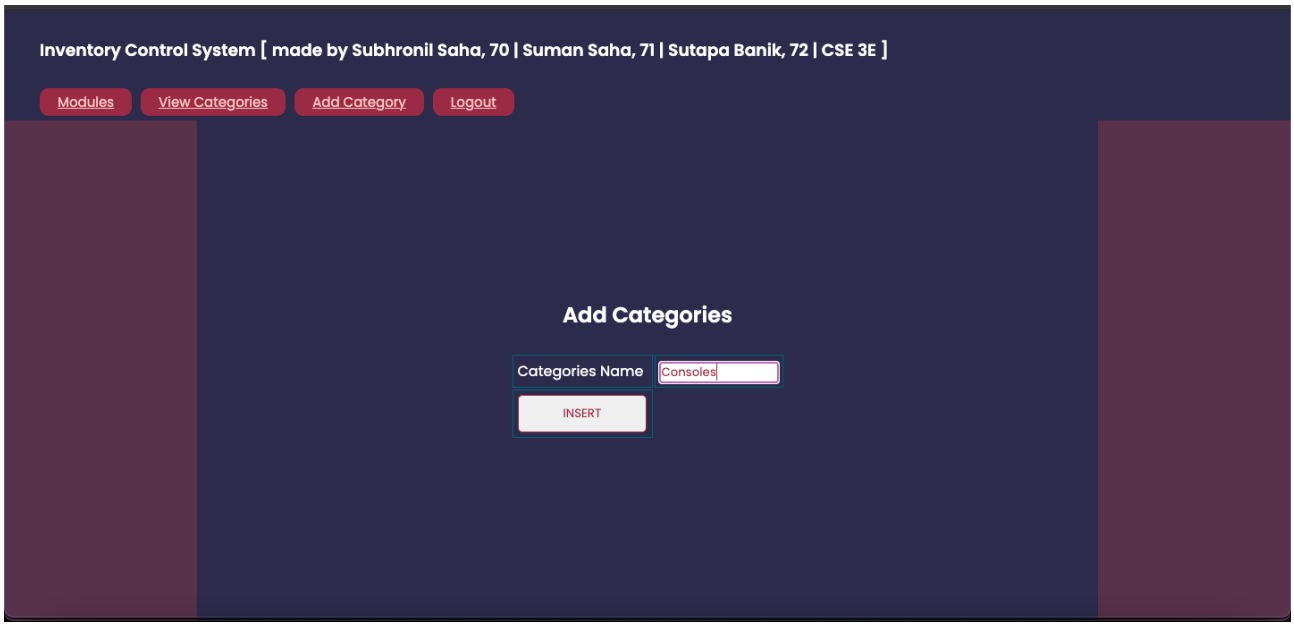


9. View categories page

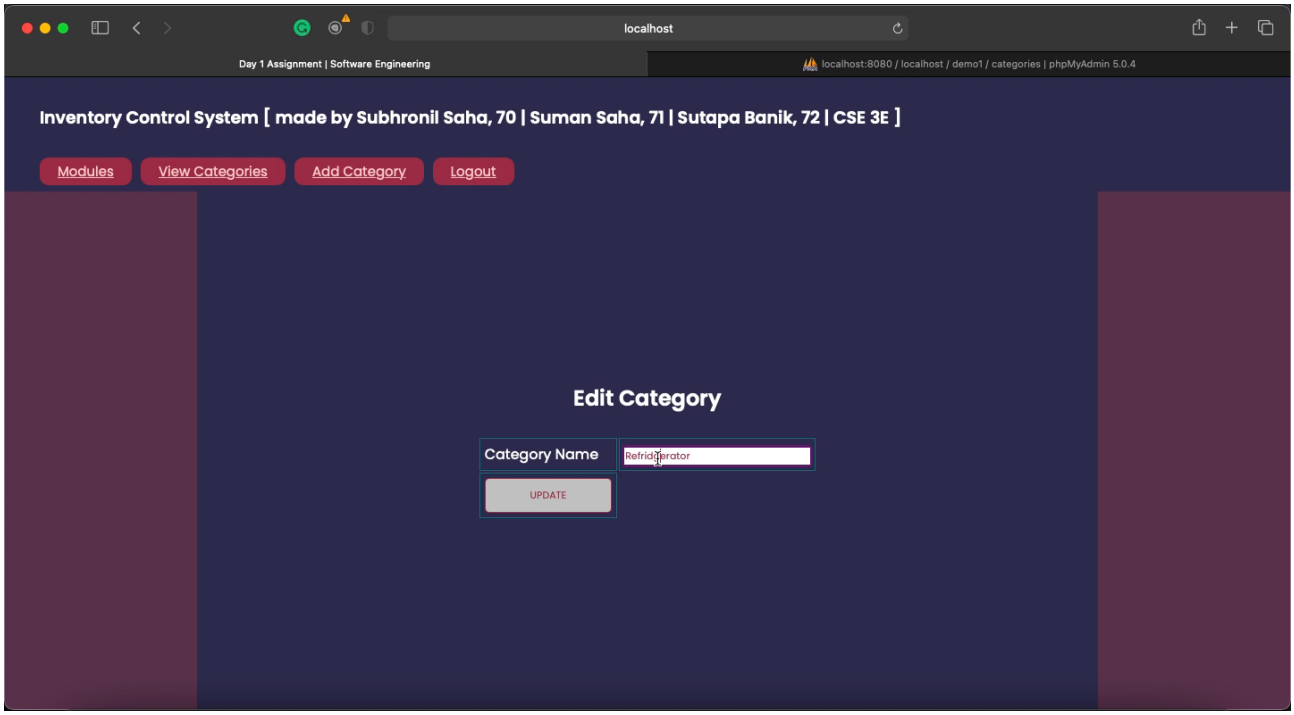




10. Add categories page



11. Edit categories page



Appendix D: Testing

Testing is the process of executing a program with the indent of finding any errors. Testing is vital to the success of the system. Without proper testing hide errors will surface after some time of use and perhaps irreversible damage has been done to valuable data. System testing follows the logical conclusion that is all part of the system are tested and found to be working properly under all kinds of situations, and then the system is achieving its goal of processing the data perfectly according to user rules and requirements. The different types of testing are given below.

- Unit testing
- Validation testing
- Output testing
- User acceptance testing

UNIT TESTING
It involves the basic testing of a piece of code, the size of which is often undefined in practice. During the unit testing it is tested to know whether that particular unit in the proper manner as expecting, if not appropriate modifications are applied to get proper outputs.

VALIDATION TESTING
At the conclusion of the black box testing, s/w is completely assembled as a package. Interfacing errors have been uncovered and the correct and final series of tests, i.e. validation begins. Validation test van is defined with a simple definition that validation succeeds when the software functions in a manner that can be reasonably accepted by the customer. Thus we have successfully done validation testing.

OUTPUT TESTING
After performing the validation testing, next is the output testing of the proposed system. The system cannot be useful if it does not produce required output. The output displayed by the system under consideration will be compared with the user's needs. Here the output format is considered in 2 ways, screen format and printed format. The o/p format on the screen is found to be correct as the format was defined in the design phase according to user needs. As for the hardcopy the o/p comes according to the specification requested by the user. Here the o/p testing does not result in any correction in the system. Thus we have successfully done output testing.

USER ACCEPTANCE TESTING
It is the key for success in any system. The system under consideration is tested for user acceptance by constantly keeping in touch with perspective system at the time of development and making changes whenever required. This is done with regard to the input screen design and output screen design. Thus we have successfully done user acceptance testing.