LONDON
METROPOLITAN
UNIVERSITY

islington college

(इस्लिङ्टन कलेज)

Module Code & Module Title

CS6004NI– Application Development

Assessment Weightage & Type

30% of Individual Coursework

Year and Semester

2022-Autumn Semester

Student Name: Punam Thapa Magar

London Met ID: 20048968

College ID: np01cp4s210273

Assignment Due Date: 5th January 2023

Assignment Submission Date: 5th January 2023

Word Count: 1505

Table of Contents

Table of Tables

Table of Figures

1. Introduction

This is the first coursework from the "Application Development" module that we had to finish. By using Visual Studio 2022, the software is completed. This course's main goal is to design and construct a C# desktop application that will assist a bike repair shop in keeping track of their stock and inventory. Additionally, each stock item's details must be recorded in this application along with staff members' names and the dates that each item was "authorized by and taken by." The admin should also be the only person with access to the stock or inventory as they are the only ones with the authority to approve the addition of things to the stock or to remove items from the stock.

In all sincerity, the application includes a login system, a feature for adding items to the inventory, a way to save and retrieve information about each addition and removal, and a table for keeping track of the items that have been taken from the inventory each month. This table should include columns for the item, the quantity taken out, the person who approved the withdrawal, the date it was made, and the person who approved the withdrawal. The admin can also store and retrieve the addition and removal of each item's details from the inventory, which can only be done between 9 am and 4 pm, five days a week, and import the record of the service center from the "CSV file" or "JSON file" for the bulk data input (from Monday to Friday). Items without a time or date constraint can be added to the inventory by the administrator. Based on how many of each item have been removed, the application presents a bar graph of those objects.

2. Detailed instructions to run the program

2.1.   Program execution and Logging in:

The desktop application's first appearance is depicted in the figure below. It is the Bike Service Centre login page. When the user enters the correct username and password to log in, the system opens the home page. Logging in as administrator will allow the user to edit the items, quantity, remove and approve users' withdrawal items as well as see the reports. Logging in as a user will allow the user to add items and withdraw items in a specific time.
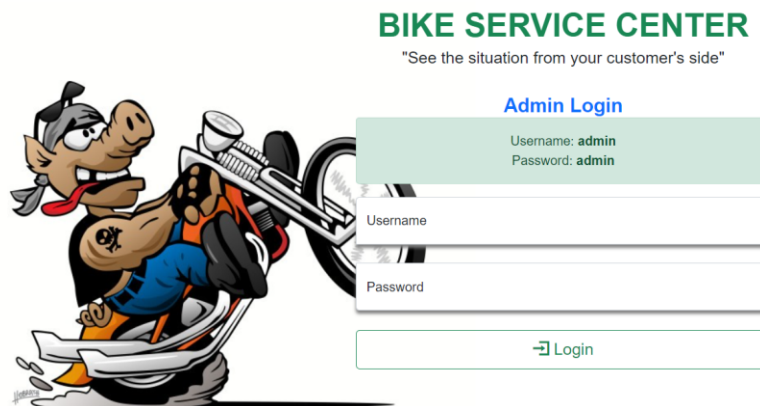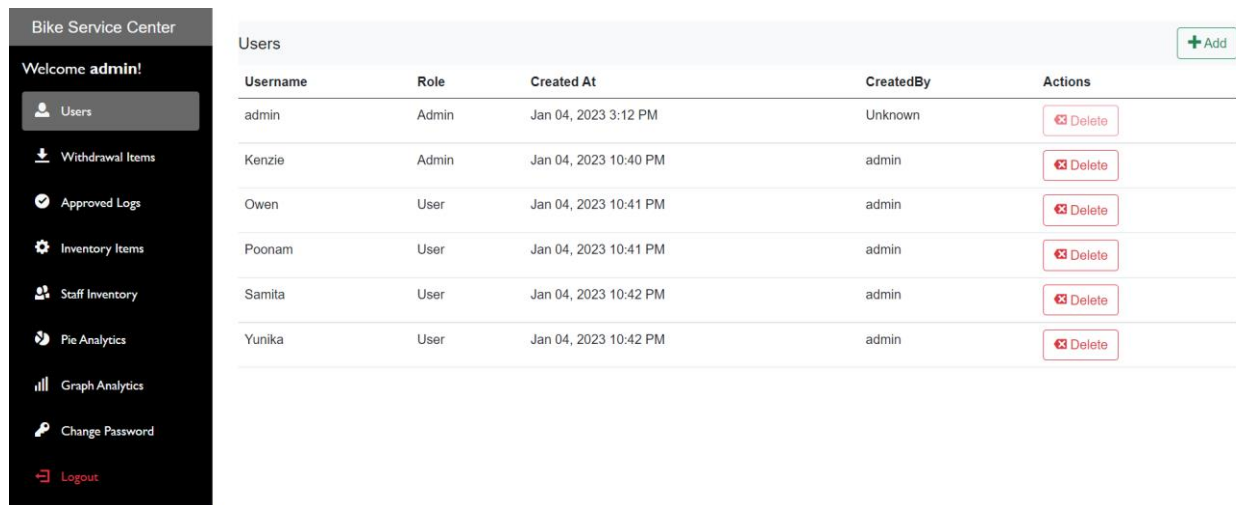

Figure 1 Login Prompt

2.2.   Logging in as administrator

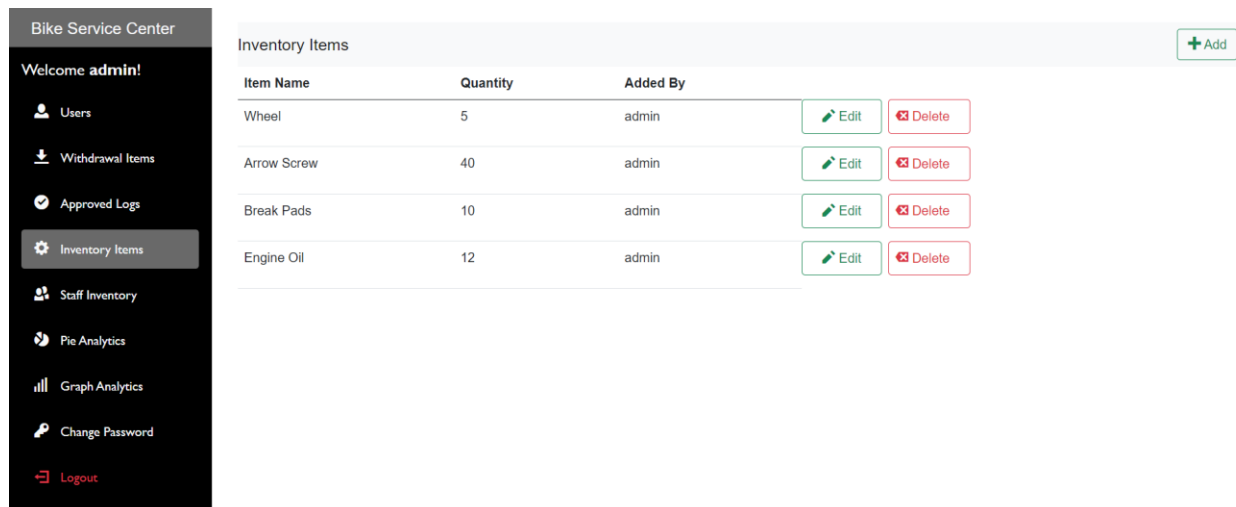The default username for administrator is "admin" and the default password is also "admin"

This below is the main page of the system which can only be accessed after login to the system which includes the details of inventory items, users, approved log, staff inventory and so on.

Figure 2 Admin Panel

Figure 3 Inventory Items for Admin Panel

2.3.   Logging in as a user

Logging in as a user will allow the user to view the inventory items and withdraw the items.

Figure 4 User Panel

2.4.   Withdrawable Items form Inventory list by staff

Figure 5 Withdrawable Items list by user from staff inventory (1)
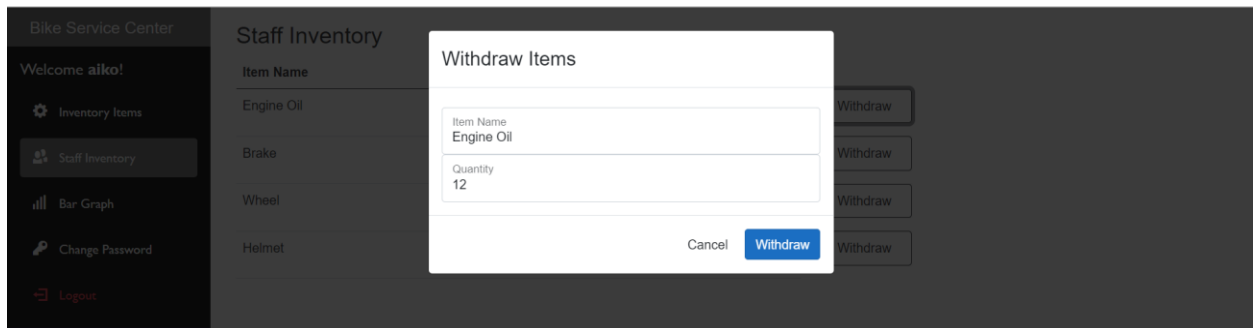
Figure 6 Withdrawable Items list by user from staff inventory (2)
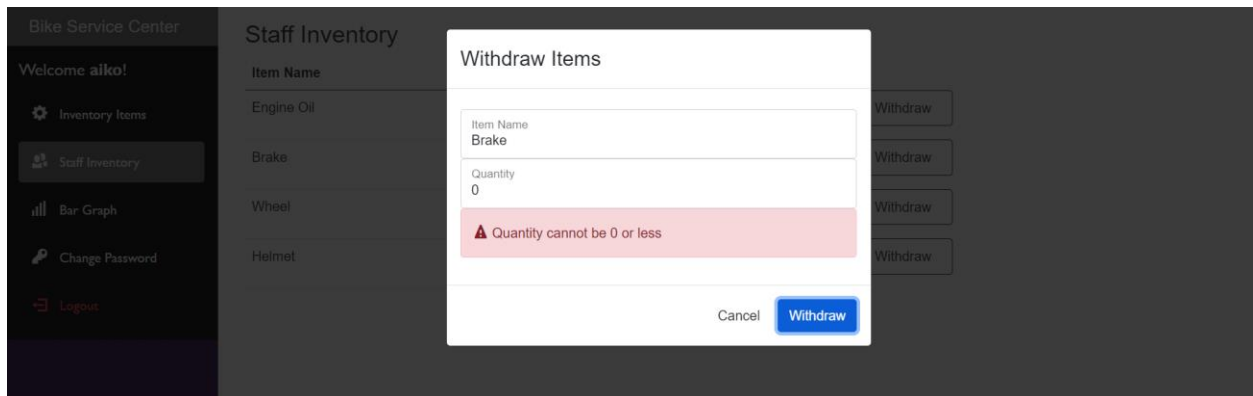
Figure 7 Withdraw Items error message when the quantity is 0
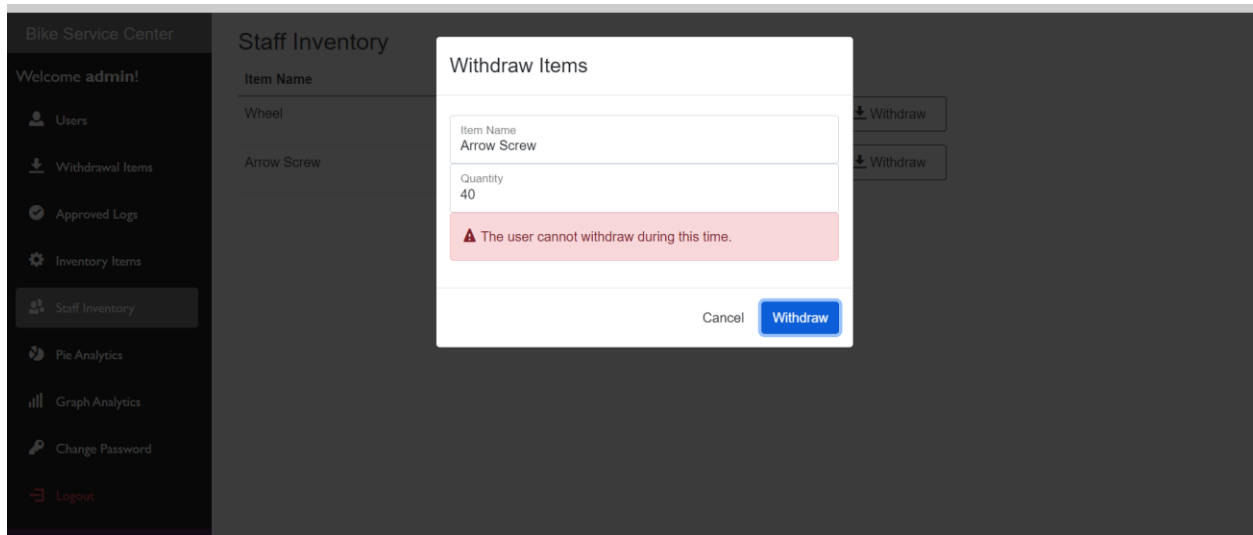
Figure 8 Error message after withdrawing items by user after 4pm

2.5.   List of Items to be withdrawn by the users for approval by admin

Figure 9 List of items to be withdrawn by the users for approval by admin

2.6.   Approved Log of the items requested by user

Figure 10 Approved Log of the items requested by the user

2.7.   Change Password for users

Figure 11 Change Password Form

Figure 12 Changing password with the same old password

Figure 13 Success message after entering a new password

2.8. Bar Graph
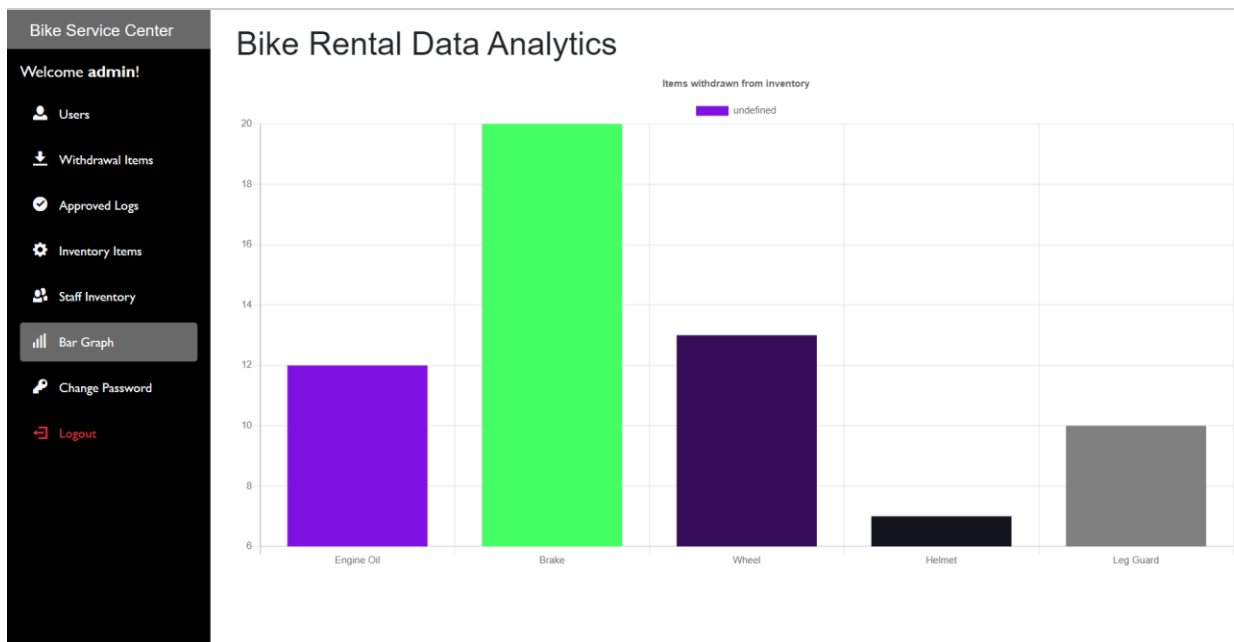
Figure 14 Bar Graph

2.9.   Pie Chart
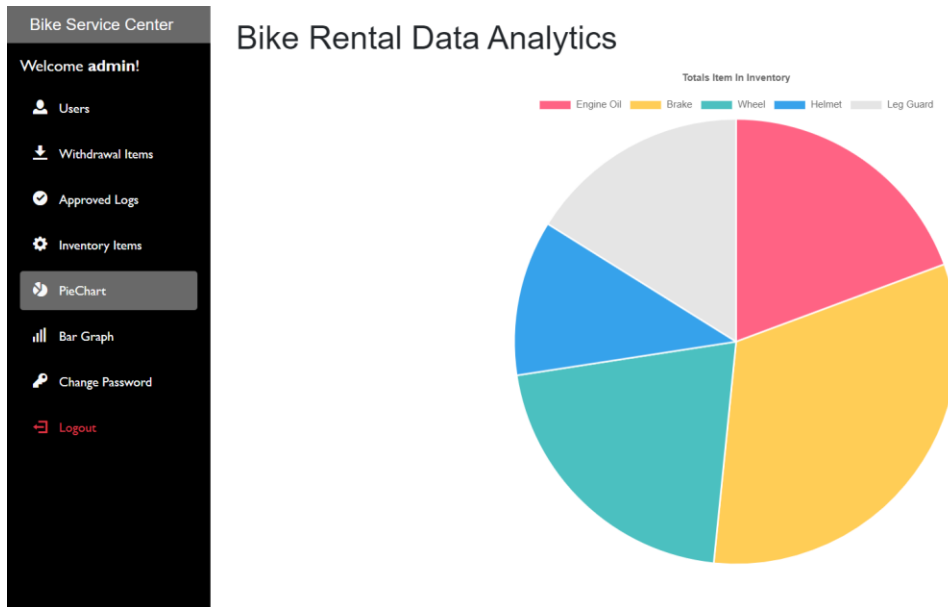
Figure 15 Pie Chart

3. Class Description

The detailed description of the classes is described below:

Class Name	Description of Class
class Utility	It is a utility class that is in charge of adding the data for the items in a text file.
class Login	This class contains the user interface and login features, enabling user interaction and application-based login information input. User must enter username and password in login class.
Class Users	This class includes both the user interface and the capability for adding users to the system.
Class Items	This class includes both the user interface and the ability to add items to the system.
Class Inventory Items	This class contains the user interface and the ability to add inventory items to the system.
Class Approved Log	After receiving admin clearance, the functionality pulls data from the items.
Class Withdrawal Item	The items that are withdrawn from the inventory of the bike service are displayed in this class.

Class Change Password	The login page is displayed to users in this class once they have changed their passwords.
Class Logout	The logic for exiting a system or application is represented by the user-defined class known as the Logout class.

Table 1 Class Description

4. Method Description

The detailed description of the methods is described below:

Method Name	Returns	Description
_globalState	GlobalState	The field is initialized by a constructor, and a method called "GlobalState" returns the value of the current user.
_users	List<User>	In addition to adding additional behavior when the fields are accessed or modified, this enables us to regulate how the fields are accessed and modified.
_showAddUserDialog	bool	Displays the Boolean value true once users have confirmed their additions.
_showDeleteUserDialog	bool	Displays the Boolean value true for users following deletion confirmation.
_addUserErrorMessage	string	When the Boolean value is false, an error message is sent after the user has confirmed their additions.
_deleteIUserErrorMessage	string	Displays error message when the Boolean value is false after the

		confirmation of deletion for users.
_deleteUser	User	Delete the user and remove the data.
_username	string	Addition of the details of users in a table after passing the string value.
_password	string	Change password and save data after passing the string value.
_role	Role	Differentiates the role of users and admin.

Table 2 Method Description

5. Algorithm

5.1.   Hashing Algorithm

Hashing (also known as hash functions) in cryptography is a process of mapping a binary string of an arbitrary length to a small binary string of a fixed length, known as a hash value, a has code, or a hash. Hash functions are a common way to protect secure data such as passwords and digital signatures (ImmortalCoder, 2015). Since the hashing technique offers a more flexible and safe way of retrieving data than any other data structure, it was chosen for this project. Furthermore, hashed passwords can't be changed, taken, or put in danger. There isn't a well-known and effective key or encryption method that can be abused. A hash code cannot be used anywhere else, thus there is no need to worry if it is stolen (geeksforgeeks, 2022).
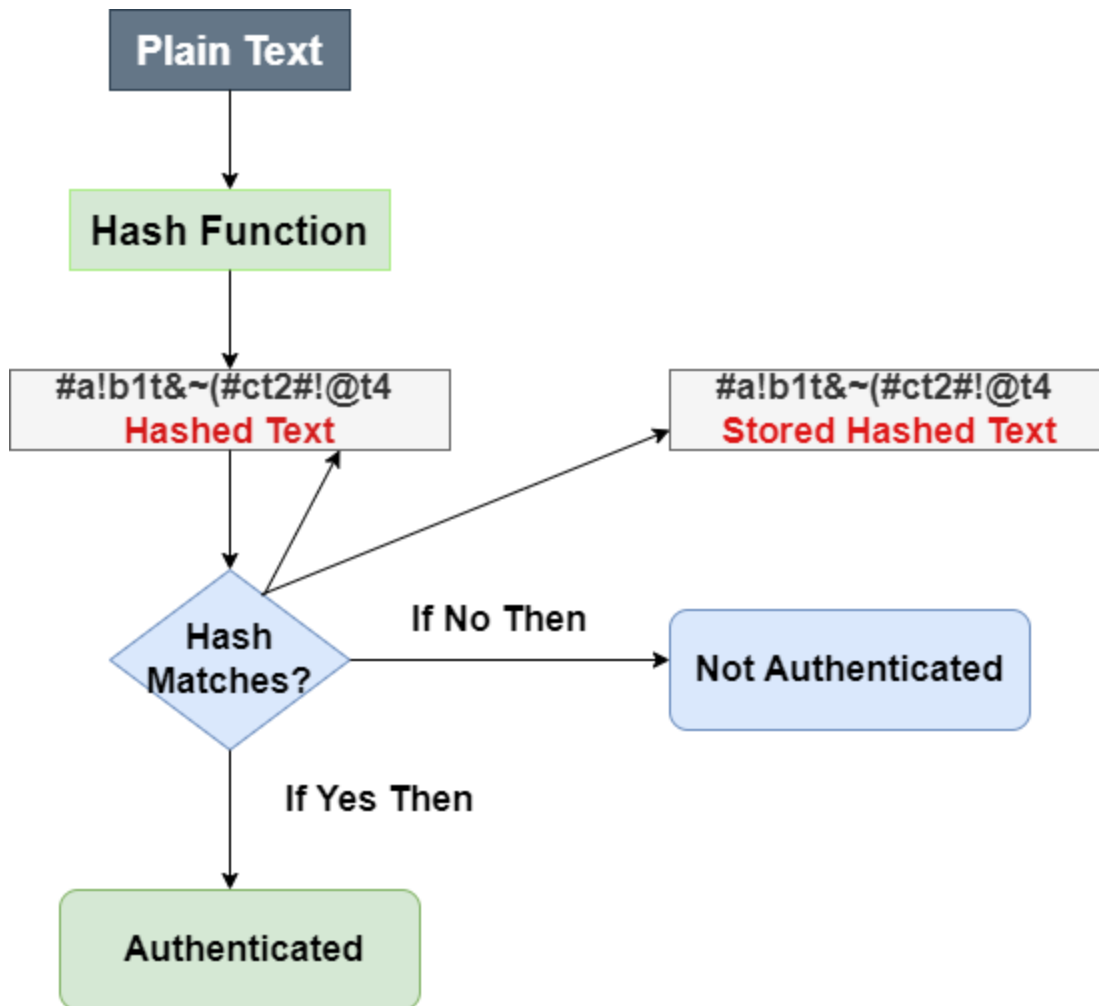
Figure 16 Flowchart example of Hash Work

6. Flowchart

A flowchart is a graphically representation of the structure of process or system, algorithm or the step-by-step solution of the problem. The Flowchart describes the flow of data through an information processing system and the parts of the flows (ConceptDraw, 2023).
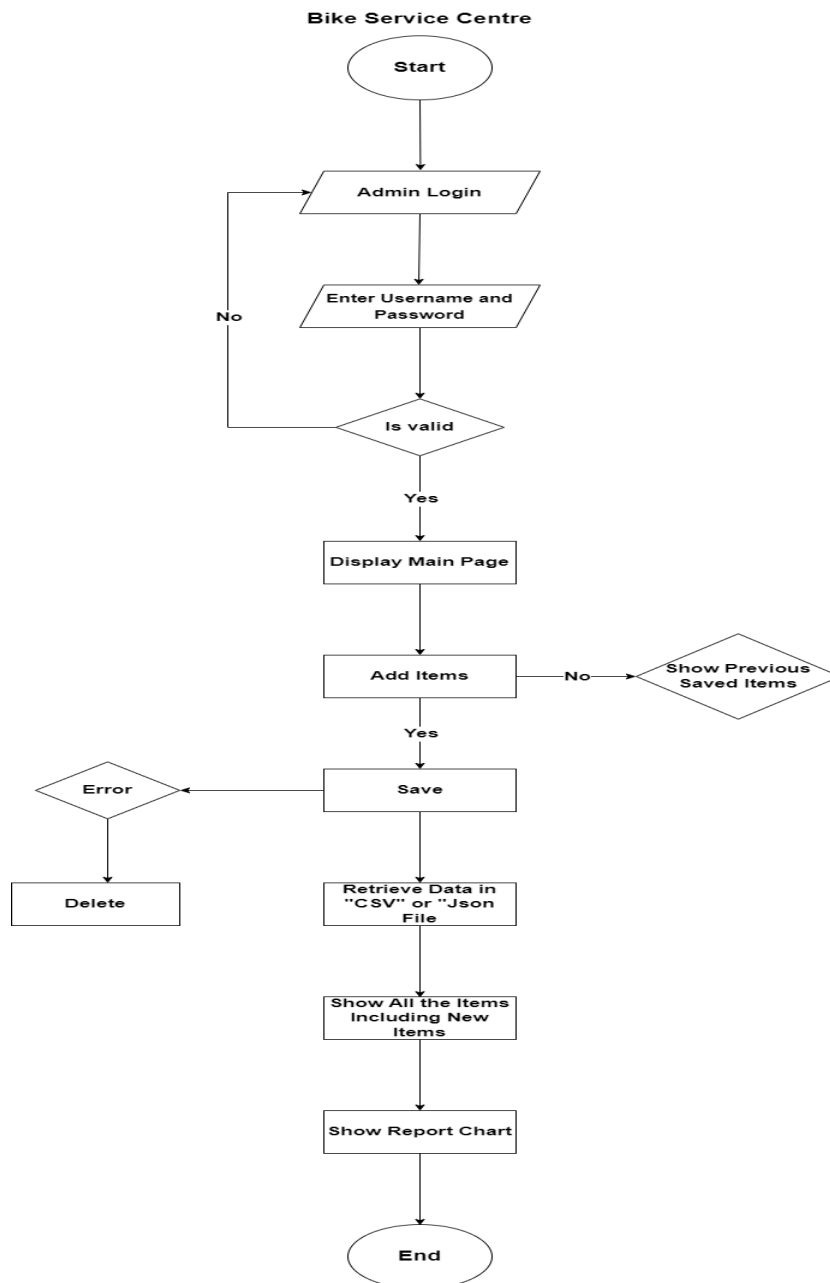

Figure 17 Flowchart

7. Reflection of own experience of using C# and Visual Studio for the development task

As a whole, Programming has advanced quickly as the globe entered a new decade. There are numerous programming languages and IDEs to choose from, each with unique advantages and capabilities. There are benefits and drawbacks to creating applications in C# and Visual Studio. However, it is without a doubt among the best programming languages and IDEs I have ever used. Although C# syntax is straightforward and simple to learn, it is also tremendously expressive.

While doing the development task of this coursework I needed to confront the challenged particular in the coding segment as numerous mistakes occurred and as I was just average at coding too, I was exceptionally confounded at some point. I was likewise somewhat confused in regards to validating implementing the sorting algorithm, and Method Description. Yet in order to conquer the confusion and troubles, a lot of explores were finished with respect to the applicable topics. Cent percent exertion was given to finish the undertaking allocated in this topic. Research was done in regards to .Net Framework from the beginning and it was executed in this which helped a lot to achieve this task. Regular interaction with instructors, consistent exertion and a lot of explores, going through the lecture slides and surfing in the web assisted with acquiring sound information about C# and its purpose. I likewise, became more acquainted with about the various methods which are utilized in the program, I knew about various terms alongside their capabilities.

Despite the fact that it was challenging and troublesome from the outset, the coursework was finished on schedule and submitted on time as well. I had the chance to learn numerous new things and themes which I knew about. It was decent encounter to foster a program utilizing C# and it was enjoyable to chip away at this project as well.

8. References

ConceptDraw, 2023. *Flowchart Definition.* [Online] Available at: https://www.conceptdraw.com/How-To-Guide/flowchart-definition [Accessed 02 January 2023].

geeksforgeeks, 2022. *Importance of Hashing.* [Online] Available at: https://www.geeksforgeeks.org/importance-of-hashing/ [Accessed 5 January 2023].

ImmortalCoder, 2015. *Cryptographic Hashing Algorithm in .NET C#.* [Online] Available at: https://immortalcoder.blogspot.com/2015/10/cryptographic-hashing-algorithm-in-net.html#:~:text=Cryptographic%20Hashing%20Algorithm%20in%20.NET%20C%23.%20The%20idea,Hashing%20can%20be%20used%20in%20two%20different%20ways. [Accessed 5 January 2023].

javaTpoint, 2023. *Software Testing Tutorial.* [Online] Available at: https://www.javatpoint.com/software-testing-tutorial [Accessed 02 January 2023].