SECJ2203: Software Engineering

Web Project Report

Online Pay2Use System for Service Labs

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1.0 Introduction

The Pay2Use card is a prepaid card that can be used for sample testing or examination at some MJIIT laboratories (Analytical 1, Analytical 2, and Microscopy). Clients fill out a Google form to apply for a card, which is then manually approved by management. Using Google Forms, you can also apply for a sample test manually. To address this problem, our team has created a new online system. The system will be accessible at all times, allowing clients to apply for new cards and sample testing whenever they want.

2.0 Problem Statement

- Pay2Use Card is a prepaid payment system established for service unit laboratories in UTMKL.
- Analytical 1, analytical 2, and microscopy laboratories are service labs that acquire payment upon sample testing and analysis.
- The current system using google sheets to record all registrations, payment transactions, and analysis/testing records.

3.0 Objective

- Ease of use

The system will be easy to use and navigate, with a basic design.

- Performance

All tasks must be completed successfully, and the system must respond quickly.

- Availability

To avoid issues, the device needs to be accessible at all times.

- Security

To avoid the possibility of a data breach, all account information must be securely stored and encrypted.

- Capacity

At any given time, the server must be able to handle a large number of users.

- Scalability

The system should be planned in such a manner that it can be enhanced to provide more improvements in the future.

4.0 Overview of the System

Instead of the current google forms and sheets system which is a longer and more manual process we have proposed that an online system that will be introduced. This website helps to eliminate the need to manually gather and store data using Google Forms and Google Sheets. The website also aims to completely automate the application process for a Pay2Use card as well as the application for samples. This relieves some of the management's tasks and speeds up operations while reducing the risk of errors caused by manual work. In terms of user positions, all three user types (clients, managers, and staff) must be able to register accounts and access the online system's functionality.

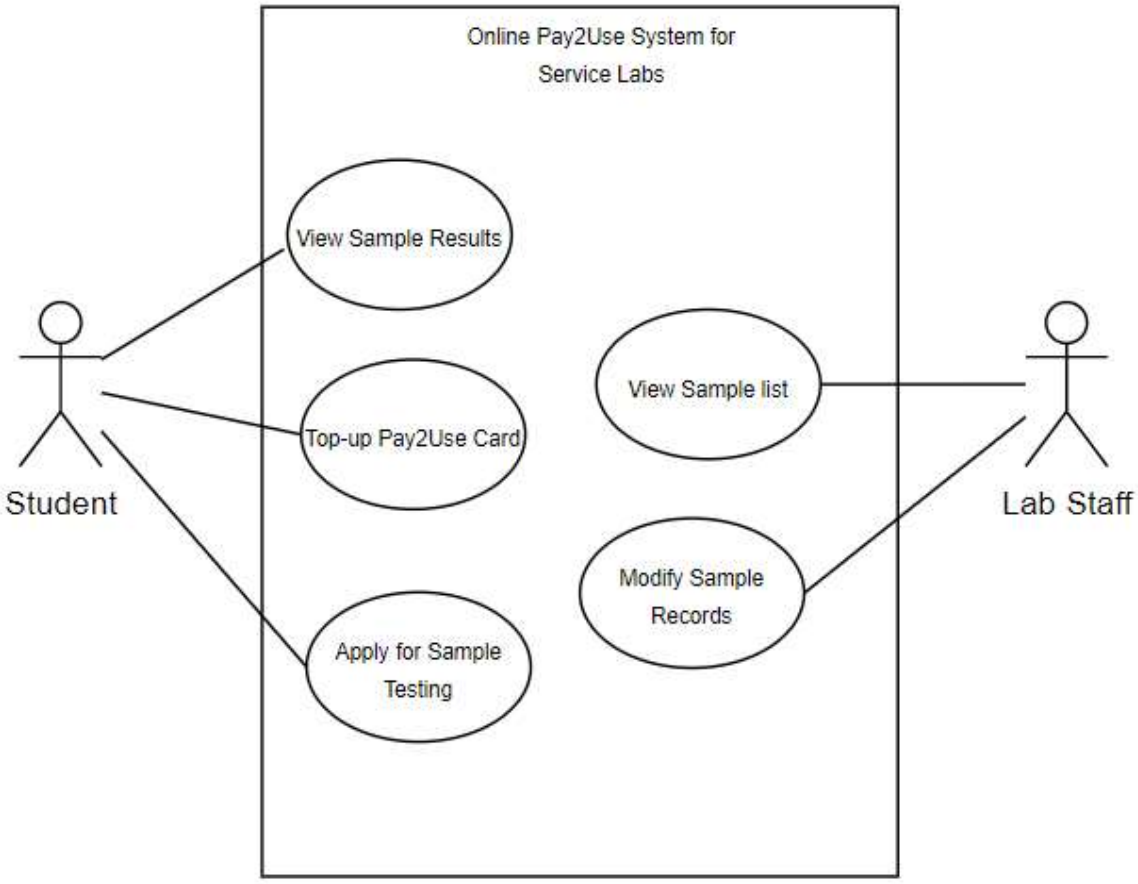
In consideration of the user, they must be able to apply for a Pay2Use card and also sample testing. The user must also be able to top up their card for it to be used for sample testing. The user must be able to view the sample results and download the file once they are available.

The management team is in charge of ensuring that everything is under control and functioning efficiently. They must be able to register and maintain labs as a result. It is also important for management to be able to produce reports. These reports are typically used to track current progress and identify any issues.

The employees of the laboratory staff are in charge of conducting sample tests. Therefore, they must be able to produce reports like sample test result reports. They must also be able to make changes to sample records. This could be used to submit a test report and register a sample result. This can also be utilized if there are any inconsistencies in the data samples.

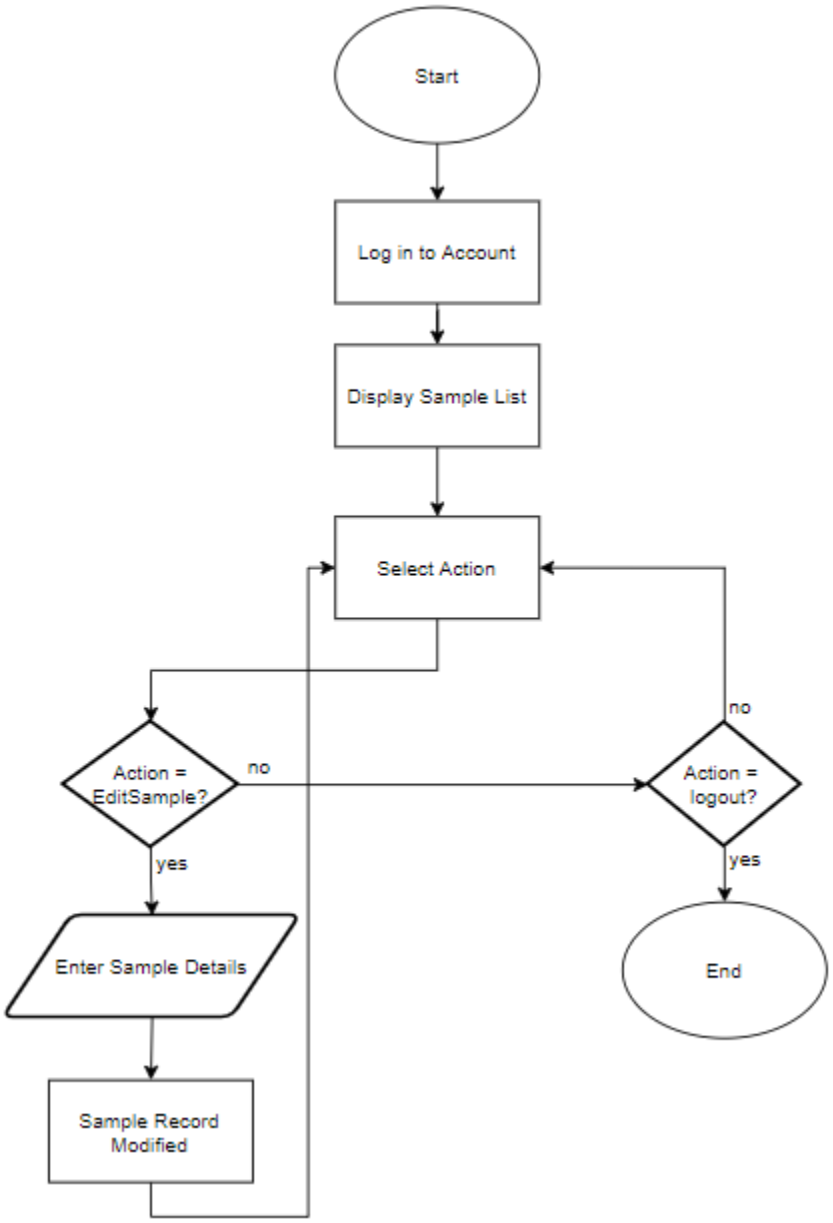
Our system will perform the required tasks mentioned above and will do it efficiently as it removes the need for manual work. It will not only save the time of all the users but also make the process easier.

5.0 Use-Case Diagram

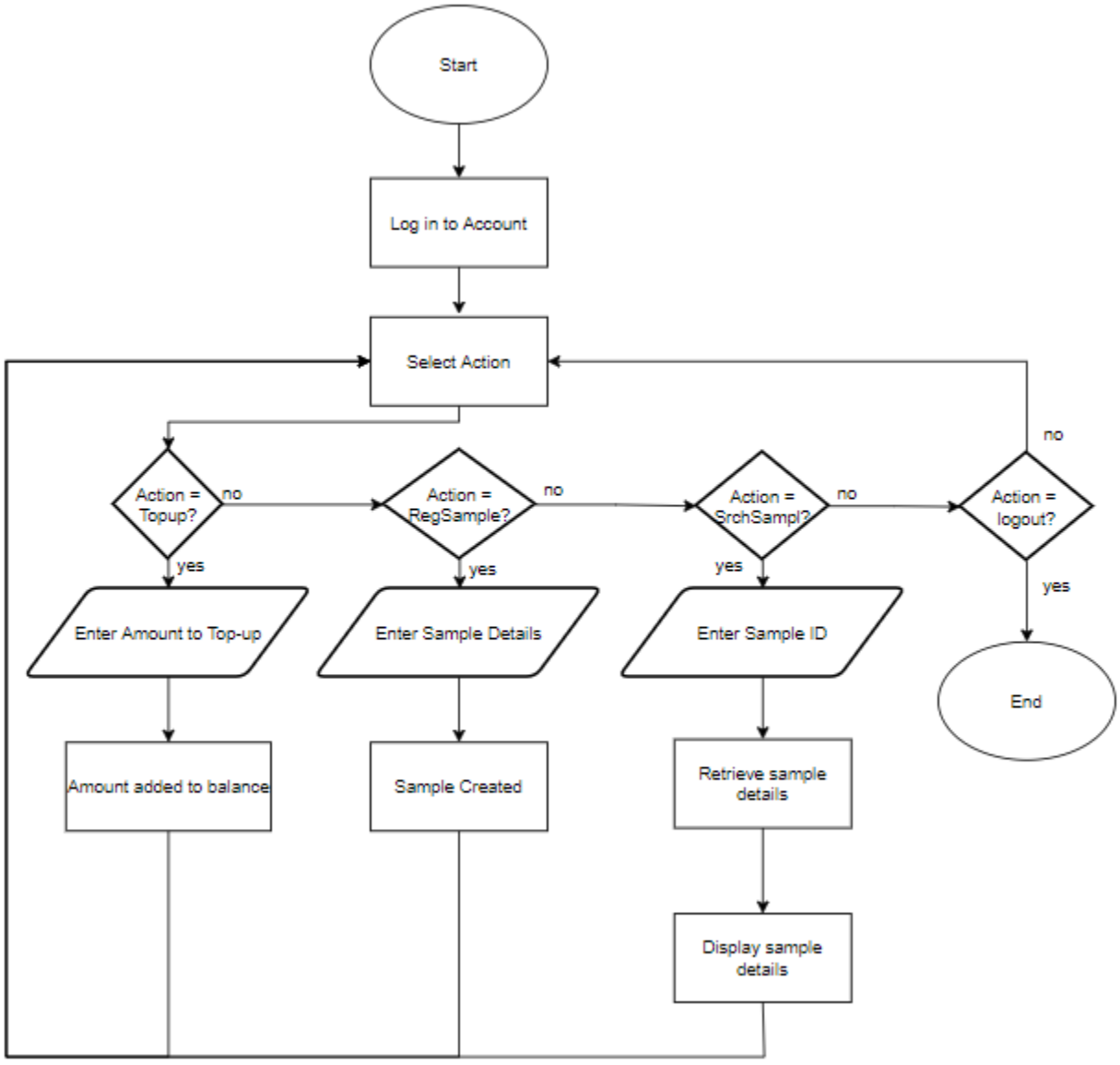


6.0 FlowChart

6.1 Student



6.2 Staff



7.0 Implementation

7.1 Software Used

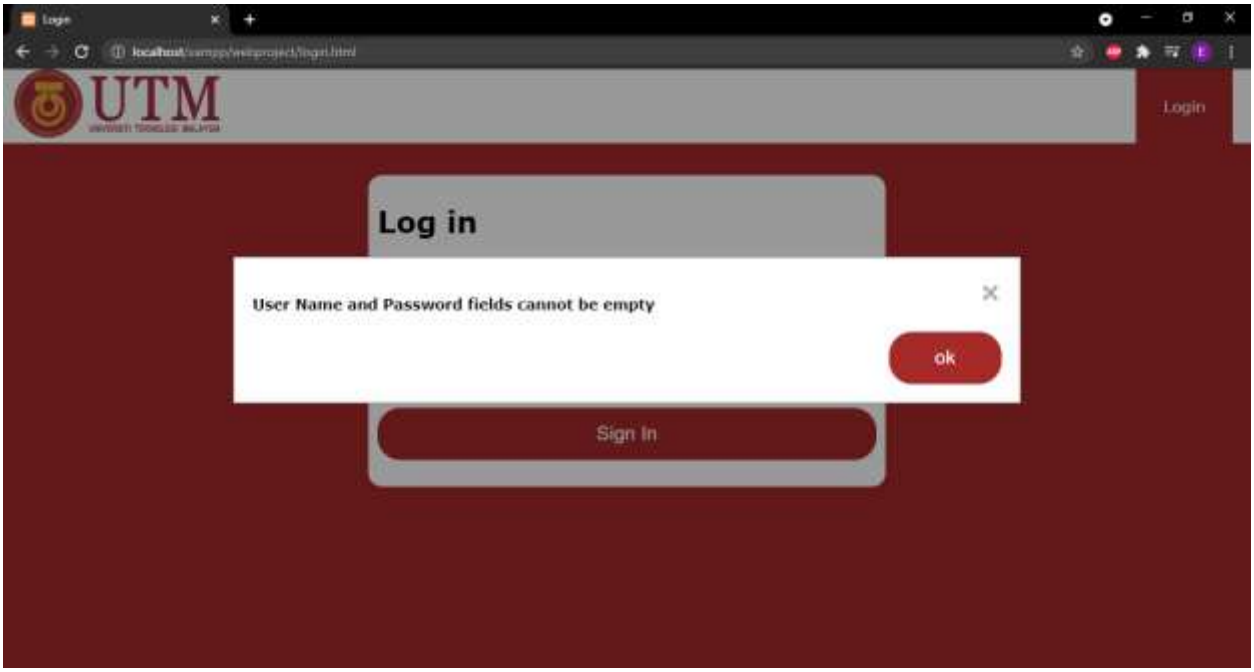
For the development of our system our team has utlized many tools to aid with the development. Starting off with coding, we have resorted to using Visual Studio Code to write all our coding for the website. As for the backend server and MySQL database, our team has used XAMPP since it is simple and easy to use.

7.2 Website Development

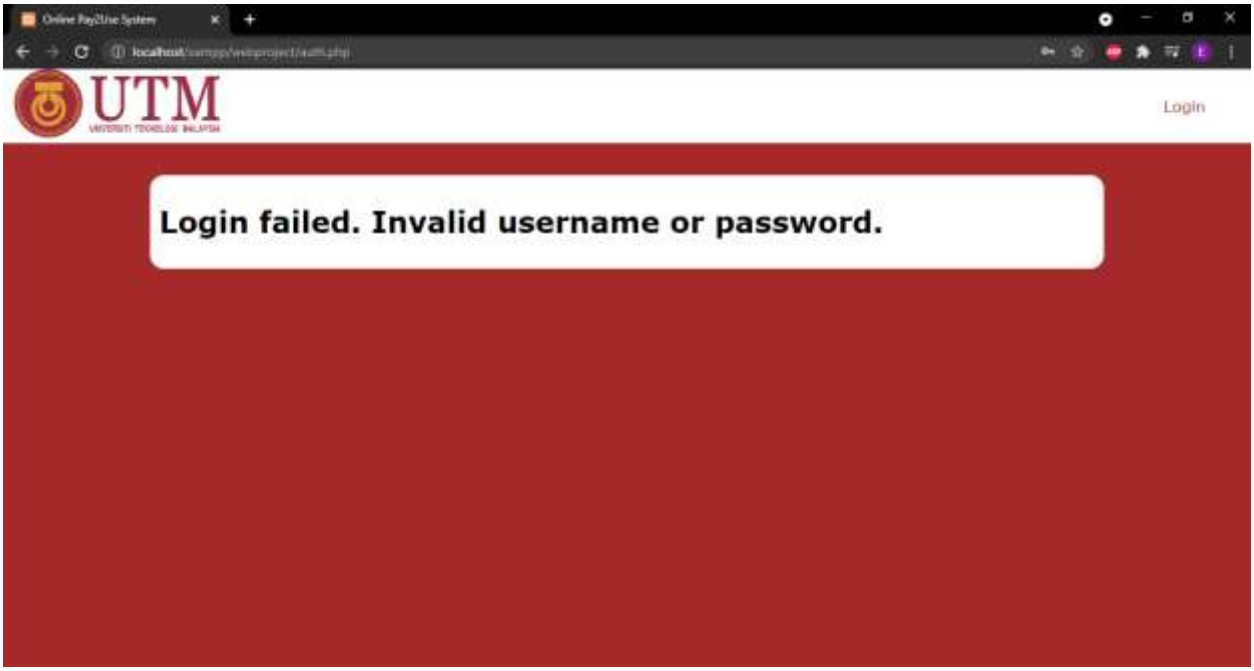
The website consists of a total off 12 pages, including main page login and various php authentication pages. The website implements sessions using PHP. The login system features a validation method and 2 different types of accounts with different actions to be executed by each account type. The system also features a database to store all the required data that is to be handled by our system. There are also multiple methods of data modification and data addition to those tables. In addition, the system features a search capability. The features will be discussed in details in the following sections:

7.2.1 Login

First of all, the login system has many features to it. First of all, the form verfication method. This JS method was implemented to verify that the input username and password cannot be empty. If an empty field is found. The website will display a message to the user.



After the user has inputted the username and password, the system will check the information entered and match it with the values in the database. If the data matches, a new session is created and user is logged in. However, if the data doesn't match, the website displays to the user that the username and password are incorrect.

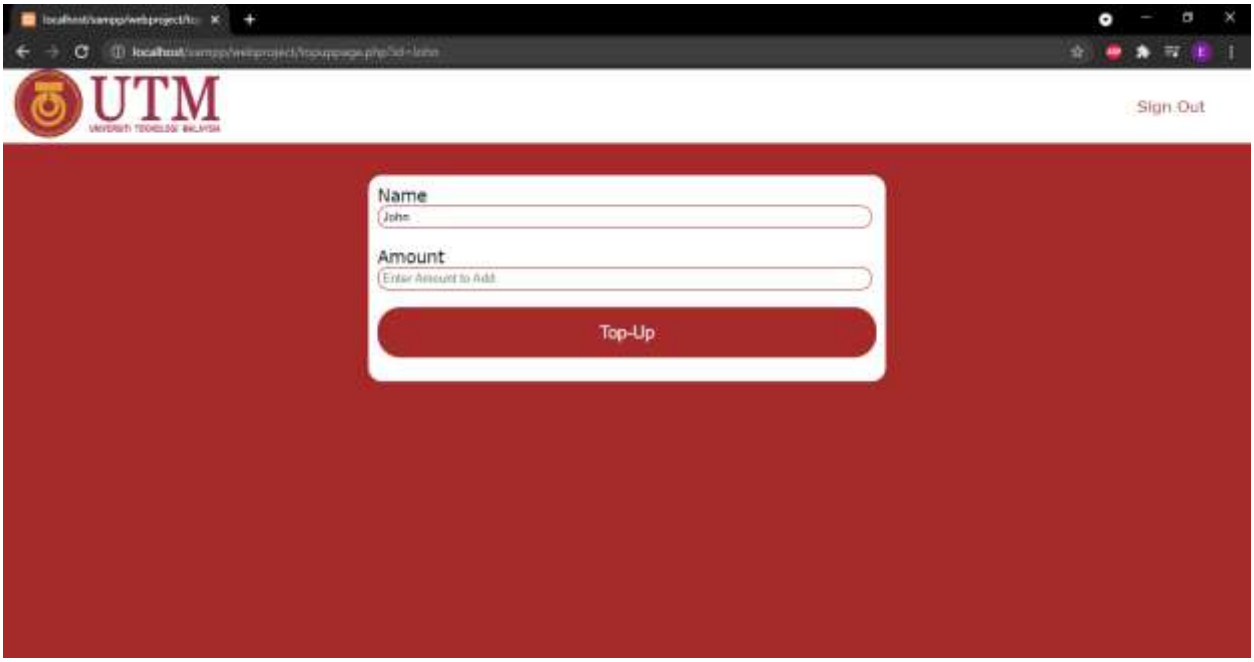


7.2.2 Student Account

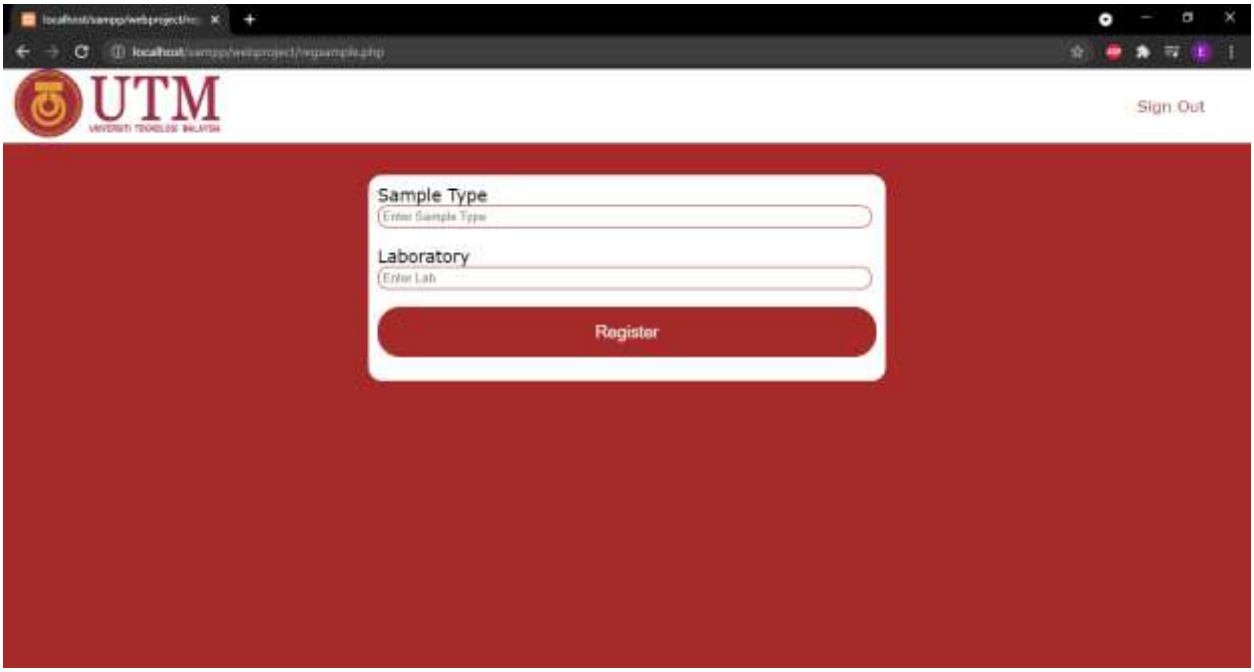
Moving on to the student account type, after a student has logged in to their account. They have the following choices:

- Top-up card
- Apply for Sample testing
- View Sample Result

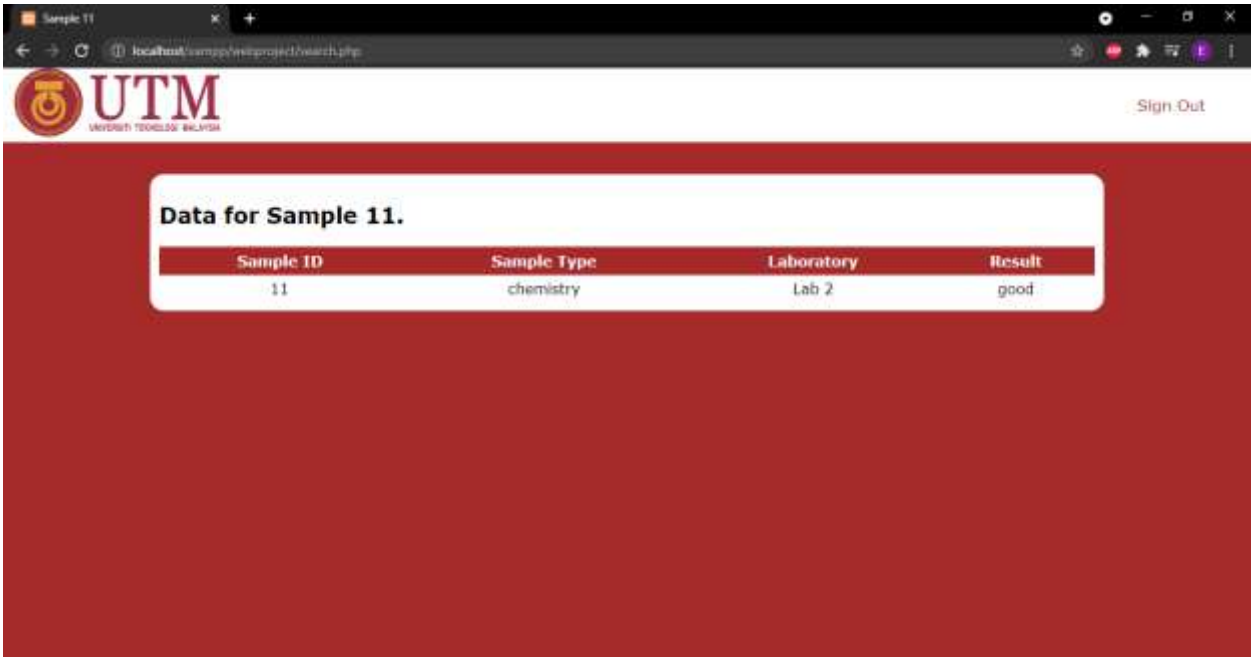
If they choose to top-up their card the system will display a page where they can enter the amount they would like to top up and click on “top-up”.



If the student chooses to apply for sample testing, the website displays a form that they must fill. After the student is done filling the form, they can click on “Register” and a new sample will be created in the database.

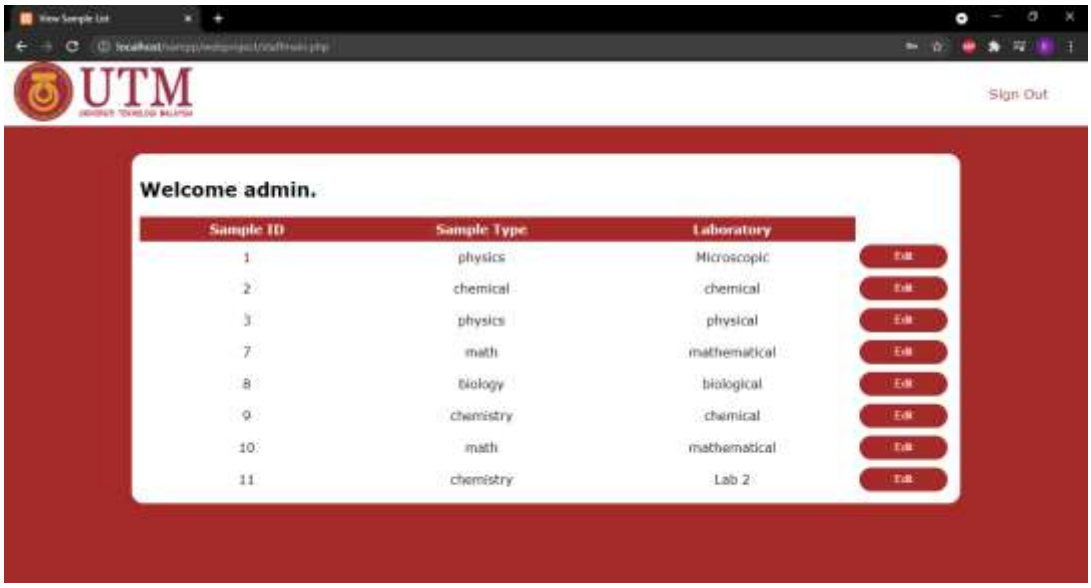


If the student chooses to view sample result. The website then displays a page asking them to input the ID of the sample they wish to retrieve the information for. If the record is found, the details are then displayed for the user to view.

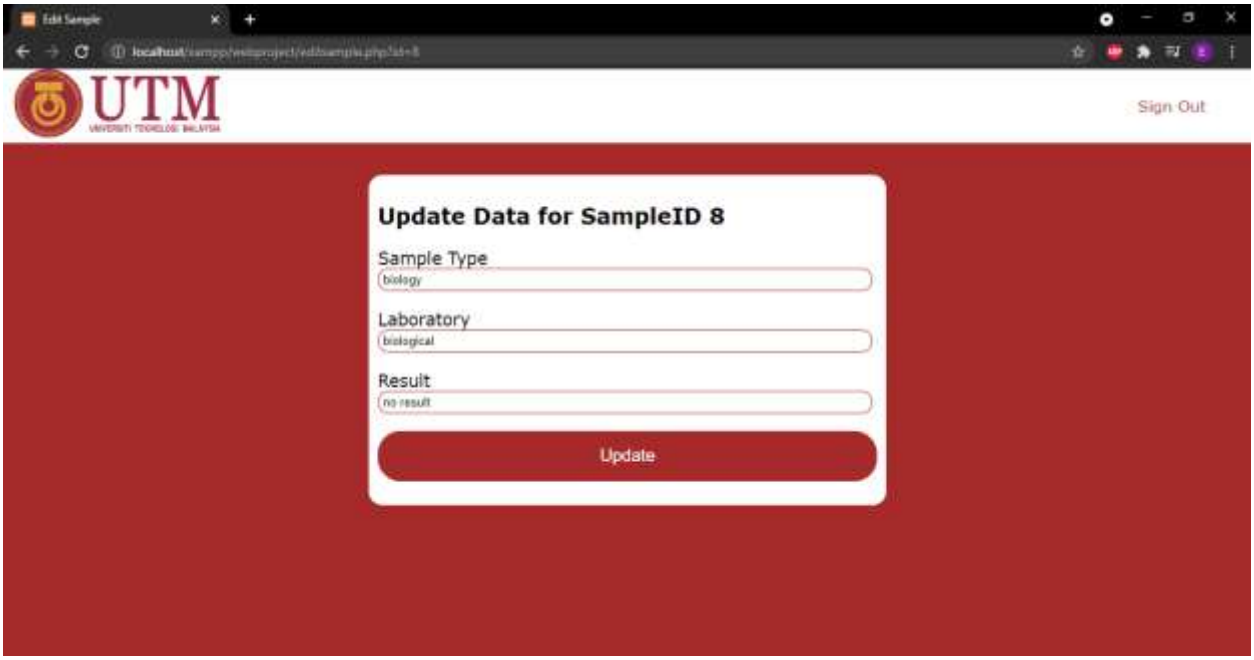


7.2.3 Staff Account

Moving on to the staff account, after the staff member has logged in to their account, the website displays a list of the samples that are currently registered in the database. The list is displayed in a table layout. Next to each row is an option to edit that sample record.



If the staff selects to edit any of the sample records in the list, they will be taken to the sample edit page where the details of the sample are displayed. There, the staff member is free to edit any of the sample attributes. After the staff member is done editing, they click on save and the modified record is then saved in the database.



7.3 Database

Our website features a database to store all the information that is to be used. The database consists of 3 tables:

- Accounts: stores account data.

Attribute Name	Type	Description
username	varchar	Username of account
password	varchar	Password of account
type	int	Type of account (student / staff)

- Cards: stores Pay2Use Card information

Attribute Name	Type	Description
User	varchar	Username that card belongs to
Balance	int	Balance of card

- Samples: stores sample data

Attribute Name	Type	Description
SampleID	varchar	Uniquely identifies each record
SampleType	varchar	Type of sample
Lab	varchar	Lab sample is processed in
Result	varchar	Result of sample (default = “no result”)

8.0 Conclusion

To conclude, this report outlines the purpose of our project, to automize the existing Pay2Use Card system that is currently implemented in UTM. While working on this our group has acquired a lot of valuable skills. To start off, we have learnt the anatomy of a website and how HTML, CSS, and JS work together to create an appealing and interactive web page. We also learnt how to create a simple backend using php and how to incorperate a database into our website to further improve its functionality. Our group worked well together as a team and exceptionally well under pressure. One of our weaknesses was time management.

9.0 References

[1] https://mjiit.utm.my/microscopy-lab/guide-faq/