**CHAPTER FOUR**

**SYSTEMIMPLEMENTATION AND TESTING**

* 1. **Introduction**

This chapter documents the implementation and testing phase of the project. It contain some important aspect of the project. Accordingly, it is structured as follows: system implementation, implementation tools and environment, system requirements, description of the implemented system, system testing.

* 1. **System Implementation**

Implementation or execution in any project is done when the project planning is complete as details as possible. In this phase it monitors everything that could jeopardize the project or part of it in another words the theory is being tested by implementation to make sure the data in the system changes according to the plan in order to keep track of project plan and keep ourselves in control all the tools and steps involved are applied by the project manager.

Implementation is specifically categorized as the realization of a technical specification or algorithm as a program, software component through computer programming and development (Ernest et al., 2016). Software implementation is the actualization of the design into a working software system based on the requirement elicited during the analysis phase of the project. Software implementation begins with the effort of making a software which involves pragmatic design. Source code editing or programming. The series of technical tasks of implementation represent how software procedures, routines, module, objects, or graphical models are produced (Schmidt, 2010). System implementation therefore, is a very essential stage in which its success determines to a great extent the success of the new system. At this instance, after all is said and done the system is duly ready to be implemented.

* 1. **Implementation Tools and Environments**

This phase comprises of various tools and technologies used in developing and implementing the system. The tools and technologies include:

* + 1. **MySQL Database**

It’s an open source relational database management system that is used to maintain relational databases. SQL is an abbreviation of Structured Query Language. It’s secured, cost effective and high performance database.

* + 1. **Coding**

The objective of coding phase for a given design is to implement the design in best way possible.

In this phase design of the system is translated into code in a programming language. The coding phase effects the maintenance and testing phase of the system development life cycle process. Testing and maintenance effort reduces if the code is well written. Since the testing and maintenance cost of software are much expensive than the coding cost, the goal of coding should be to reduce the testing and maintenance effort. Hence, during coding the emphasis must be in on developing programs which are easy to write. Simplicity and clarity should be achieved, during the coding phase.

In this project HTML, CSS, PHP, Microsoft Office and JavaScript are used.

* HTML: It is basically used to format text as titles and headings, to arrange graphics on this system and also used to link different pages within a system.
* CSS: In this system CSS is used for development sites structure by creating design or outline the html element and describing the presentation to different pages, including colors, layout and fonts. •
* PHP: PHP code is embedded into HTML for making website dynamic and used for connecting website to database. In this system PHP version 7.3.11 is used.
* Microsoft Office: The Microsoft office word document is used for softcopy documentation of the project. All the document design and numeration are done by using Microsoft Office Word 2019
* JavaScript: In this project JavaScript is used for creating some animation in page content.

**4.4 System Requirements**

System requirements are the minimum and/or maximum hardware and software specifications that a system or application must meet in order to function properly.

**4.4.1 Software Requirements**

This section describes the hardware components and software requirements needed for effective and efficient running of the system.

|  |  |
| --- | --- |
| **Software** | **Minimum system requirements** |
| Operating system | Windows 7, 8, 10, Linux, server 2003 or later |
| Database management System | MySQL |
| Web server | Xampp |
| Web browser | Chrome, Internet Explorer, Mozilla Firefox, Opera, Safari |

**Table 4. 12: Software requirement**

**4.2.2.2 Hardware minimum requirements**

|  |  |
| --- | --- |
| **Hardware** | **Minimum System Requirements** |
| Processor | 2.4 Ghz processor speed |
| Memory | 512 mb Ram (1 Gb Recommended) |
| Disk space | 500GB (including 80gb for database management system) |
| Display | 800\*60 colors (1024\*768high color – 16 bit recommended) |

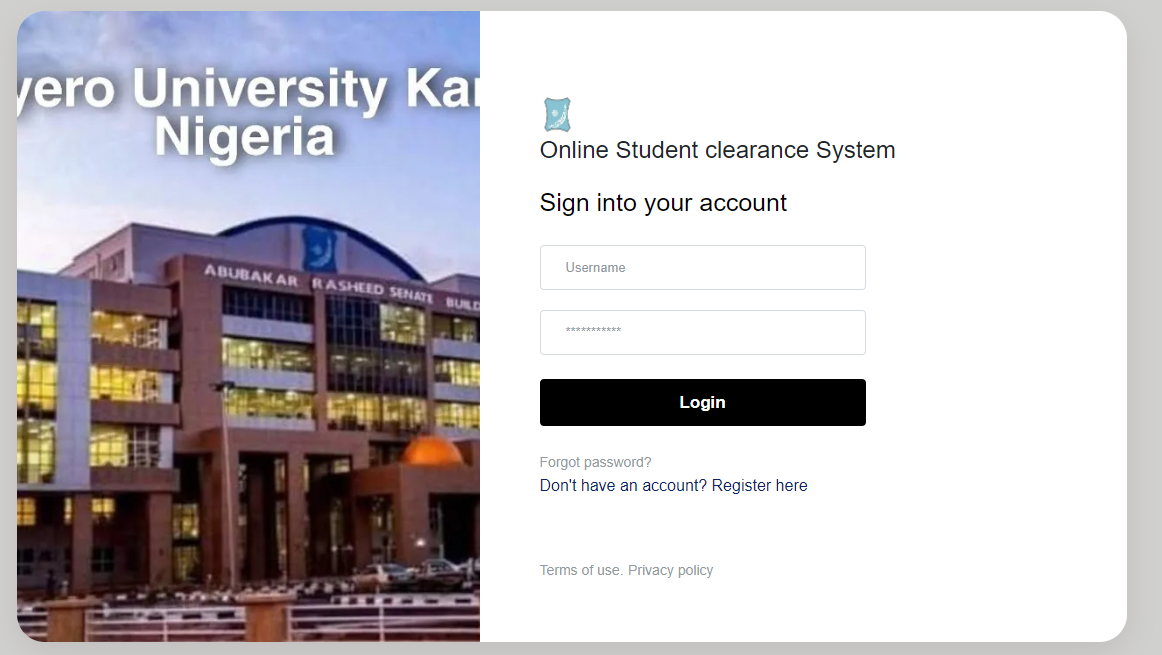
**Table 4. 13: Hardware minimum requirements**

* 1. **Description of the Implemented System**

After going through all the phases of the system development life cycle of this project, the portal is designed successfully. The below figures are the screenshots of the portal

**4.5.1 Login Page**

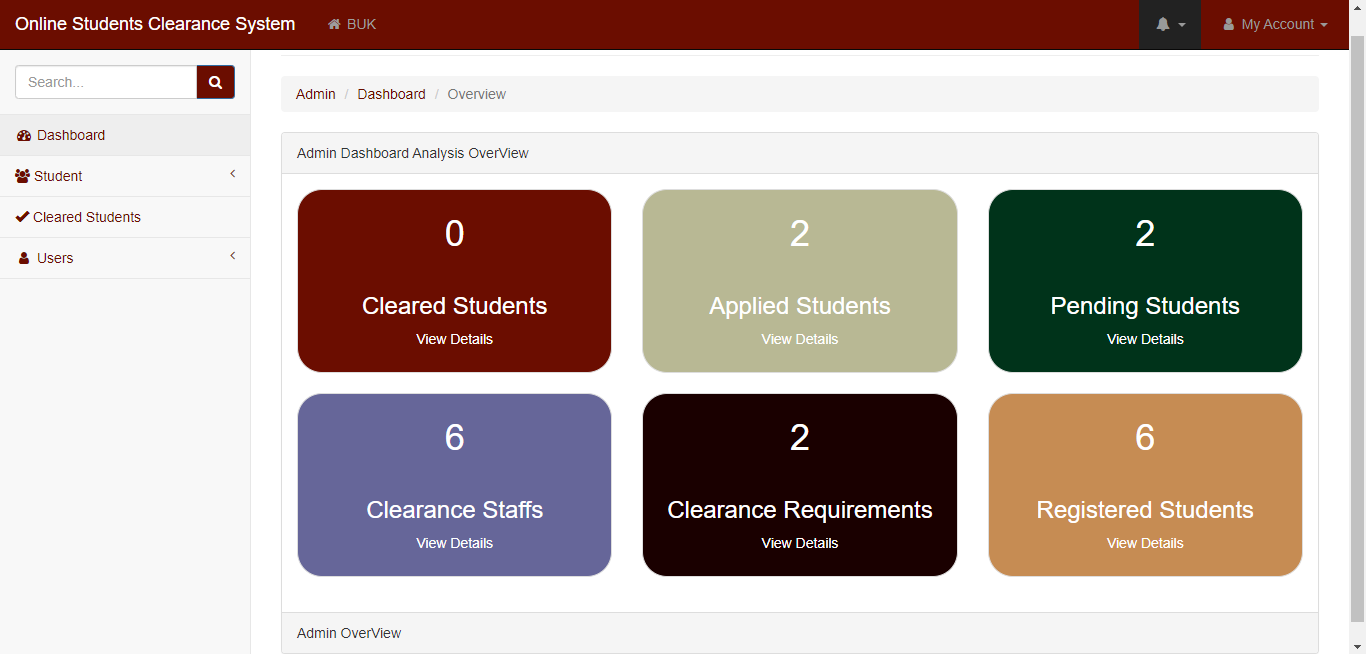
Below is the snapshot of the login page where admin, student, HOD, library, clinic, and hostel staffs insert their details before gaining access to the portal.



**Figure 4.1:** **Login Page**

**4.5.2 Admin Dashboard**

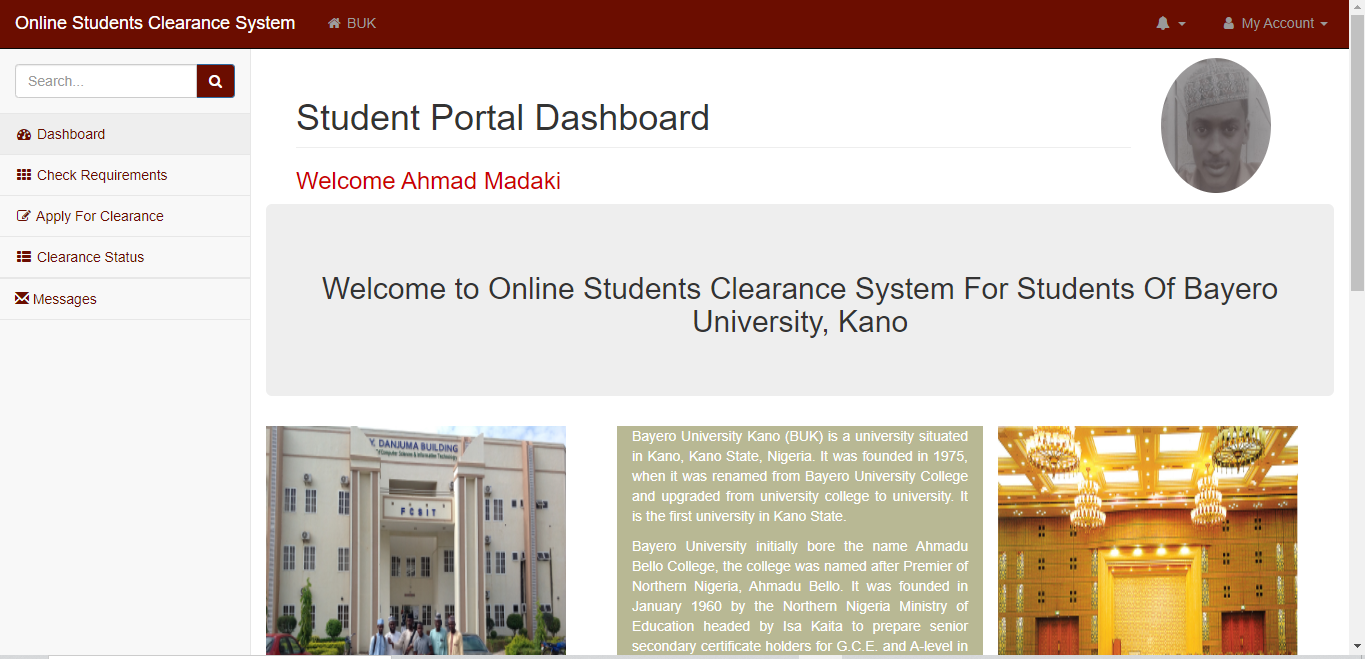
Below is the snapshot of the Admin Dashboard where admin add/manage Students/Users



**Figure 4.2:** **Admin Dashboard**

**4.5.3 Student Dashboard**

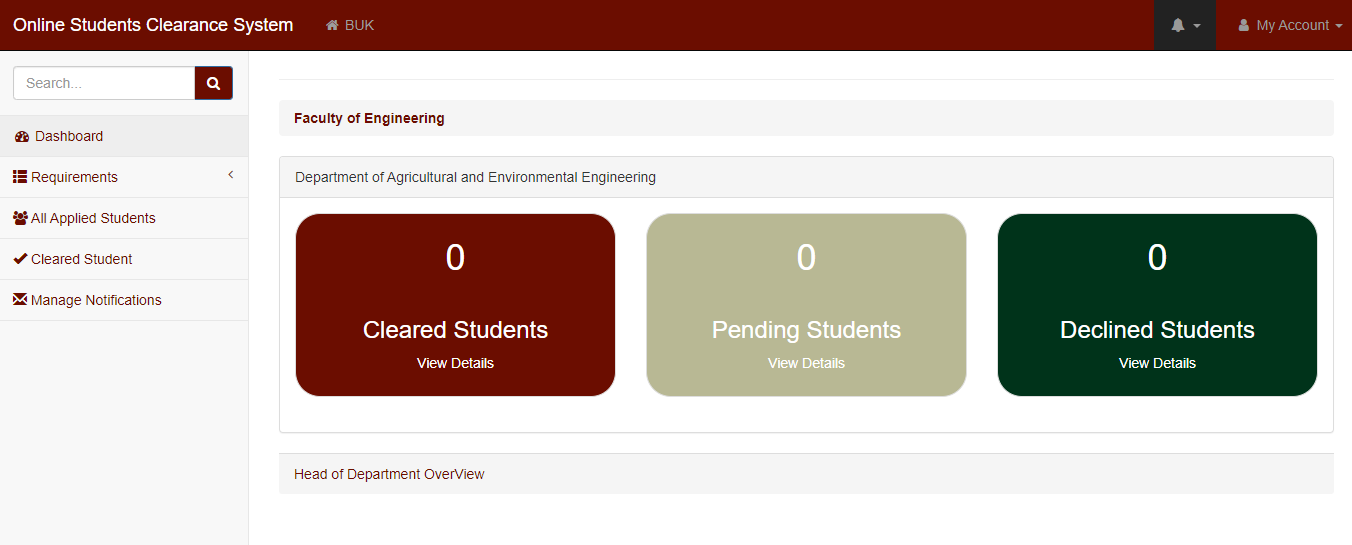
Below is the snapshot of the Student Dashboard where student apply for clearance, check/upload requirement and check his status.



**Figure 4.3:** **Student Dashboard**

**4.5.4 HOD Dashboard**

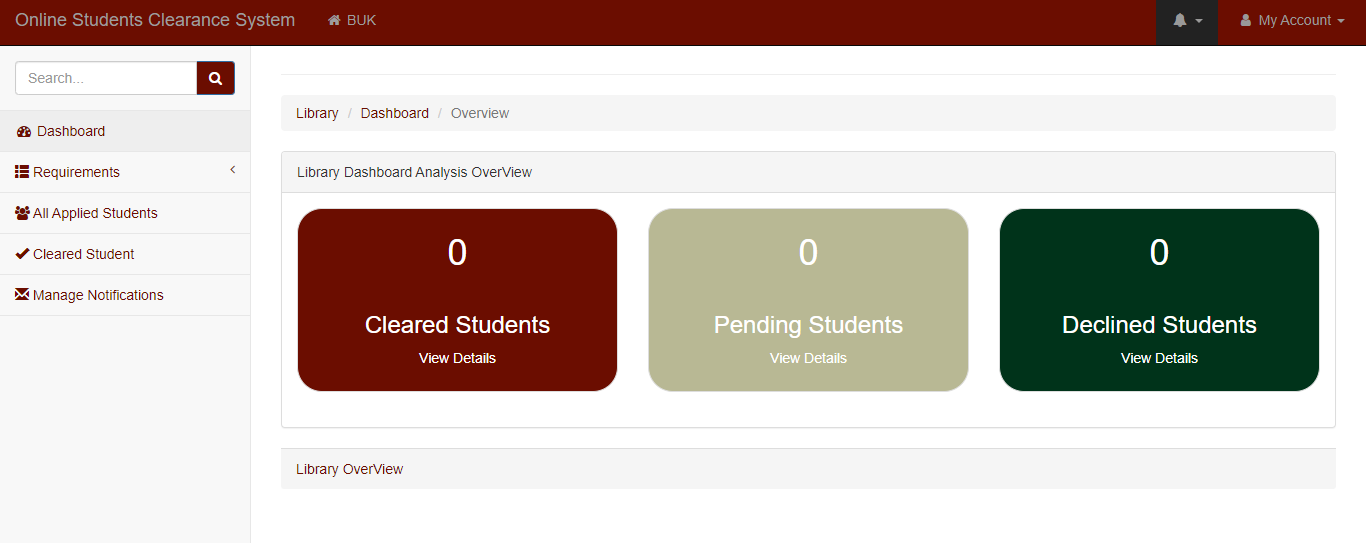
Below is the snapshot of the HOD Dashboard where HOD add/manage requirement, view all applied student, view cleared and approved/reject student.



**Figure 4.4:** **HOD Dashboard**

**4.5.5 Library Dashboard**

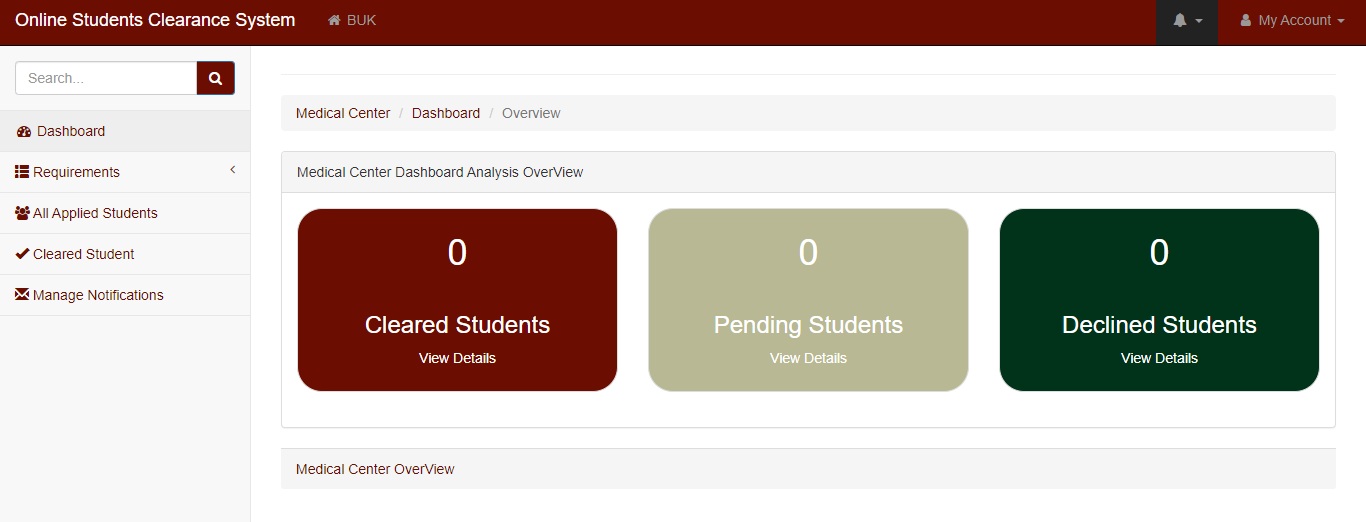
Below is the snapshot of the Library Dashboard where Library add/manage requirement, view all applied student, view cleared and approved/reject student.



**Figure 4.5:** **Library Dashboard**

**4.5.6 Clinic Dashboard**

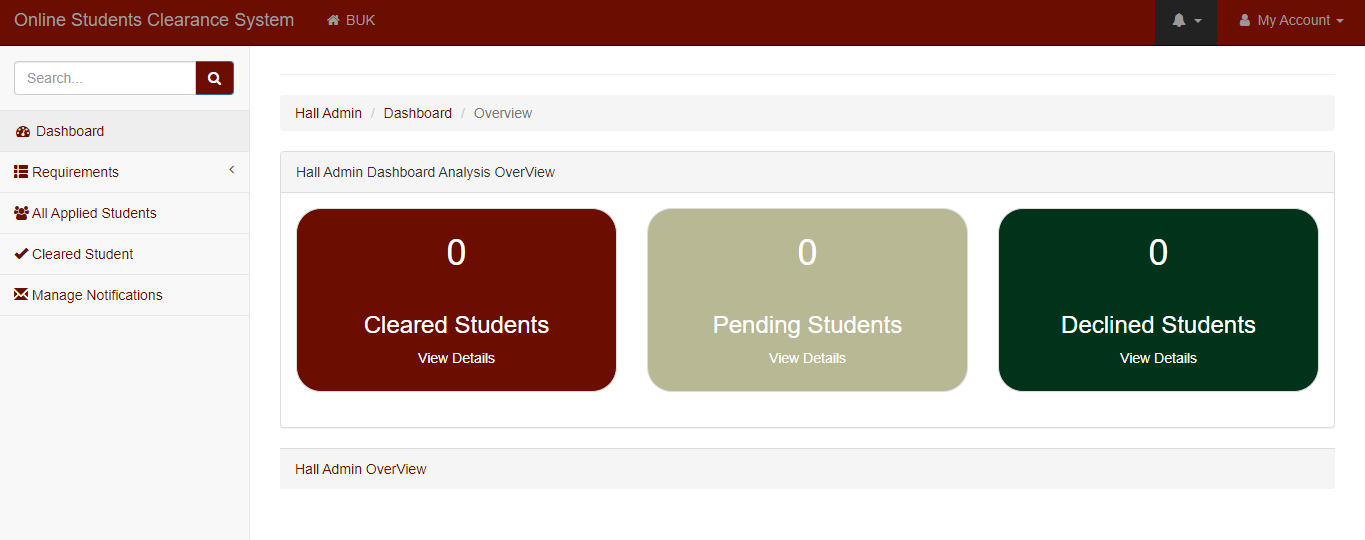
Below is the snapshot of the Clinic Dashboard where Clinic add/manage requirement, view all applied student, view cleared and approved/reject student.



**Figure 4.6:** **Clinic Dashboard**

**4.5.7 Hostel Dashboard**

Below is the snapshot of the Hostel Dashboard where Hostel add/manage requirement, view all applied student, view cleared and approved/reject student.



**Figure 4.7:** **Hostel Dashboard**

**4.6 System testing**

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**4.6.2 Unit testing**

System testing was done after the system was coded. Individual units or components of the system were checked to ensure they are fully functional units before integrating them. This was done by examining each unit and that it performed as exactly intended.

**4.6.2.1 Test Case**

**Title:** Online Clearance System.

**System Description:** The system should be able to have the characteristics of Login functionality.

**Precondition:** The system's database has username="admin" and password="admin"

**Assumption:** The login U/I has text field to enter username and password.

**Test Steps:**

1. Open login file
2. Enter username and password
3. Press Login button

**Expected Result:** The entered username and password must validate with database's username and password and after validation success, it is expected to locate for homepage.

**Post Condition:** System should able to store the activity done by the user after he/she successfully login into the system.

**Table 1: Test Case**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Test Case** | **Test Scenario** | **Test Data** | **Expected Result** | **Status** |
| **1** | Check response when invalid username and password is entered. | Username= username Password= password | Message Display "Either username or password is incorrect" | Pass |
| **2** | Check response with blank username and blank password is submitted | Username=  Password= | Message display "Username and Password cannot be blank" | Pass |
| **3** | Check response when correct username and incorrect password is entered | Username= Admin Password= admin12 | Message Display "Either username or password is incorrect" | Pass |
| **4** | Check Response when incorrect username and correct password is entered | Username= user Password= Admin | Message Display "Either username or password is incorrect" | Pass |
| **5** | Check response when valid username and password is entered. | Username = admin Password = admin123 | Redirect to Admin Panel | Pass |

**4.6.2 System validation**

System validation is concerned with ensuring that data entered into an application meets predefined formats with defined input criteria. It was done to ensure that data entered and retrieved is valid.