**PROJECT REPORT**

**For**

**School Management Information System**

**By**

Ernest Lasten (Bed-com-05-17) and Chidziwisano Jambo (Bed-com-17-17)

**Document Version: 1.0**

**Date: 5/04/2022**

# TABLE OF CONTENTS

[TABLE OF CONTENTS i](#_Toc98145100)

[DOCUMENT INFORMATION ii](#_Toc98145101)

[LIST OF ACRONYMS iii](#_Toc98145102)

[LIST OF TABLES iv](#_Toc98145103)

[LIST OF FIGURES v](#_Toc98145104)

[1 INTRODUCTION 1](#_Toc98145105)

[2 PROJECT DESCRIPTION 2](#_Toc98145106)

[2.1 PROBLEM STATEMENT 2](#_Toc98145107)

[2.2 SIMILAR PRODUCTS 2](#_Toc98145108)

[2.3 UNIQUE VALUE PROPOSITION THET YOUR PRODUCT PROVIDES 2](#_Toc98145109)

[3 KEY REQUIREMENTS FOR THE PRODUCT 3](#_Toc98145110)

[4 TECHNICAL DESCRPTION OF THE PRODUCT 4](#_Toc98145111)

[5 PROGRESS SCHEDULE 5](#_Toc98145112)

[6 PROSPECTS FOR CONTINUED DEVELOPMENT AND COMMERCIALIZATION 6](#_Toc98145113)

[7 ROLES PLAYED BY EACH MEMBER OF THE PROJECT TEAM 7](#_Toc98145114)

[8 CHALLENGES FACED & MITIGATION 7](#_Toc98145115)

[9 LESSONS LEARNED 7](#_Toc98145116)

[10 CONCLUSION 8](#_Toc98145117)

# LIST OF ACRONYMS

# LIST OF TABLES

# LIST OF FIGURES

# INTRODUCTION

School Management Information System (SMIS) is web-based application software designed to introduce a conducive and structured information exchange environment for integrating students, parents, teachers and the administration of a primary or secondary school. SMIS will be used by the schools to keep teachers’ records and students’ academic and personal records. It will be a communication tool for teachers and students’ parents or guardians on students’ academic performance through SMS and comment section.

# PROJECT DESCRIPTION

We are to create a system particularly for secondary and primary schools (but colleges can use as well) that will collect data from school staff members, teachers, students and their parents and manage it. School Management System will be configurable and can be configured to meet most individual school's needs. It is a multi-user system and can be used by hundreds of users at same time, anywhere, internet connection is all what is required.

School Management System could make school staff's’, teachers’, students’ and students parents’ life easier than ever. Using the School Management Information System, finding student information is just at a click of a mouse, no more time to search in the paper archive, no more costs for phone calls, post office and transportation for sending and posting students’ results. At the end of the term or semester, students’ exams results will be just viewed or printed out in pdf format. As a way of informing parents, SMS messaging will be used to notify of the results and if the student is absent a text message will be sent to them as well to let them know. There will be very good communication and coordination between teachers and parents since they will be able to communicate through posting notifications and writing comments.

## PROBLEM STATEMENT

Even at this computer age, there still exist some institutions that rely on a manual filing system. Using papers to store data, and managing them is very slow, tiresome and costly process. In this technological era many schools are opting for school management information system where computers are used to manage school records, communications and other transactions. This makes the work much easier, fast and efficient as well as effective. On the other hand, the system is simple, easy to understand and use and, going paperless would reduce the cost of maintaining photocopiers and printers; the cost of ink and toner consumables and spares would definitely feature less in the ICT budget. On top of this, schools will be taking the lead in contributing to an eco-friendly means of communication – helping to reduce waste and save trees.

*“The Student Management Information System works across the entire student life cycle. Keeping control of student information and managing data has never been easy!” S*ymon c. Lubanga.

We are to create a system particularly for secondary and primary schools (but colleges can use as well) that will collect data from school staff members, teachers, students and their parents and manage it. School Management System will be configurable and can be configured to meet most individual school's needs. It is a multi-user system and can be used by hundreds of users at same time, anywhere, internet connection is all what is required.

School Management System could make school staff's’, teachers’, students’ and students parents’ life easier than ever. Using the School Management Information System, finding student information is just at a click of a mouse, no more time to search in the paper archive, no more costs for phone calls, post office and transportation for sending and posting students’ results. At the end of the term or semester, students’ exams results will be just viewed or printed out in pdf format. As a way of informing parents, SMS messaging will be used to notify of the results and if the student is absent a text message will be sent to them as well to let them know. There will be very good communication and coordination between teachers and parents since they will be able to communicate through posting notifications and writing comments.

## SIMILAR PRODUCTS

We also researched about other projects that are related to a School management Information System. This has helped us to see the processes and measures they took in creating working and efficient systems. The review has also helped us appreciate how others implemented the assessments section for example that of Chancellor College and this will help us build a robust application that follows improved and acceptable methods and tools of software development and make necessary modifications to suit the modern needs of users.

Some of the applications that are related to the School management Information System are; Student Information System for Kalinga State University-Rizal Campus, Schoolbic, Classter, OpenEduCat and Chacellor college student portal. Schoolbit has almost similar functionalities to our application while the rest of the apps have lack one or two things as compared to our app. For example, chanco student portal, classter and OpenEduCat have no parent involvement and no SMS system. While our app will have both of these capabilities plus others that are present in the mentioned apps.

## UNIQUE VALUE PROPOSITION THAT OUR PRODUCT PROVIDES

Most of school management information systems have similar functionalities except for few one or two of the reviewed application had functionalities that are not present in others. For instance, only one application had the functionality of SMS messaging while the other had the ability to accommodate parents and allow them to converse with the teachers through commenting section. Our application has the best advantage over most of these applications because it has combined the SMS messaging and parents panel functionalities in additional to the regular functionalities into one application thus giving it the most ultimate and unique application.

# KEY REQUIREMENTS FOR THE PRODUCT

This chapter will provide a full description of the system and its users. Then it depicts the

functional and non-functional requirements that have been collected using several methods from

brainstorming, interview and e-surveys. After determining the most important requirements,

requirement analysis was adopted using several tools such as use-case diagram, sequence

diagram and activity diagram.

**4.2 System description**

E-school (SMS) It is a system serving the student, the teacher and parents. The idea of this system to enable the student to enter the site and get a midterm marks and final exams given by the school, class table and also check for any information posted by the school’s administration so as to keep pace with all that is happening at school. And again it operates a system for teachers to share academic information to students’ parents or guardians so that they can have a follow up of the student’s class attendance and behaviour in general.

The system keeps user information such as Students and their parents data (Name - Address - Telephone - Mobile - date of birth), and school and teacher data (school name, tel number, teacher’s name, date of birth, join date, qualification)

The system can also generate student’s academic performance report which can be downloaded in PDF format.

**4.3 User description**

There are four main users for the proposed system; these are Admin, student, teacher and the

parent. Each user can perform several different functions during the use of the system. These

functions were determined according to the design of the proposed system and a user-friendly

functions to make the system more effective and efficient. Figure 4-1 summarizes the functions

performed by each user.

**4.3.1 Admin**

**Figure 3: Admin Rules**

As shown, the admin can Create New Teacher and Create New Student and Involve Parent in

registration process and Create New Class and Generate Time Table for Student and Generate

Time Table for Teacher.

Create New Teacher

Create New Student

Create New Class

Involve Parent in

registration process

Student

Create New Class

Sign in

Generate Time Table For

Student

Generate Time Table for

Student

Generate Time Table

**Administrator** 23

**4.3.2 Student**

**Figure 4: Student Rules**

As shown, the student can View Personal Information and View Time Table and View Exam's

Mark and Connect with teachers and school management System

View Personal

Information

View Time Table

View Exam's Mark

Connect with teachers

and school

management System

Sign in

**Student**24

**4.3.3 Teacher**

**Figure 5 : Teacher Rules**

As shown, The Teacher can add student marks And Add Students attendance And Connect with

parent about their children And View their Time Table.

Add student marks

Add Students attendance

Connect with parent

about their children

View their Time Table

Sign in

Teacher25

**4.3.4 Parent**

**Figure 6 : Parent Rules**

As Shown, The Parent can sign in And View Report about her child And Connect with Teachers,

school Management and other parent.

View Report about her

child

Connect with Teachers,

school Management and

other parent

Sign in

Parent**4.4 System Requirement**

Before creating any website or a mobile App, it is necessary to visualize the layout, design and

all features intended to be incorporated. In addition, how users will interact with each page and

icon and how the website/App should perform (behavior, load time etc.). Requirements are the

necessary attributes in the system, a statement that identifies a capability, characteristic or quality

factor of the system in order to have value and utility to the users. Once the requirements are set,

developers can initiate the other technical work including system design, development, testing,

implementation, and operation.

For any system, there are functional and non-functional requirements to be considered while

determining the requirements of the //system. The functional requirements are user “visible”

features that are typically initiated by stakeholders of the system, such as generate report, login,

and signup. On the other hand, nonfunctional requirements are requirements that describe how

the system will do what it is supposed to do, for example, security, reliability and maintainability.

**4.4.1 Functional Requirement**

**4.4.1.1 Admin**

 Create, edit and delete student account.

 Create, edit and delete teacher account.

 Create, edit and delete parent account.

 Publish news for users (Teacher, Student, and Parent).

 Store, edit, delete, calculate and print student's grade.

 Add Classes and Subject to the teachers.

 Change user information.

 Search student's grade per name and per ID.

 Create, edit, delete and print timetable.

**4.4.1.2 Teacher**

 Add Student's marks per Subject.

 Add Student's attendance per Subject.

 Connect with student and parent.

26 Publish news for users (Admin, Student, and Parent).

 Add Questions to Questions Bank.

 Add Activity To another Teacher.

 Add Activity To The Admin.

**4.4.1.3 Student**

 View their marks per subject.

 Ask their teacher and the admin

 View Question Bank per subject.

 Publish news for users (teacher, parent and admin)

 Change their account's information.

**4.4.1.4 Parent**

 View the marks of their children.

 View the attendance of their children.

 Publish news for users (Student, Teacher, and Admin).

 Change their account's information.

**4.4.2 Non-Functional Requirement**

**4.4.2.1 Security**

The system have accounts for its users and only authorized users can access the system

with username and password. The passwords are encrypted using a PHP function sha1 ().

**Figure 7: user login interface**

2728

**4.4.2.2 Performance**

Easy tracking of records and updating can be done.

**4.4.2.3 Availability**

The system are available to users anytime, anywhere, just need a PC and Internet

Connection. Also the system work in multiple web browsers like (Chrome, Mozilla,

Opera, and Internet Explorer).

**4.4.2.4 User Friendly**

The system have a friendly user interface and the system very interactive.

# TECHNICAL DESCRPTION OF THE PRODUCT

*Provide a technical description of the product including:*

**4.5 System Analysis**

**User description**

There are four main users for the proposed system; these are Admin, student, teacher and the

parent. Each user can perform several different functions during the use of the system. These

functions were determined according to the design of the proposed system and a user-friendly

functions to make the system more effective and efficient. Figure 4-1 summarizes the functions

performed by each user.

This part contains the analysis of the functional and non-functional requirements using use-case

diagrams, and use-cases details. In addition, the interactive behavior of the activities is analyzed

using sequence diagrams and activity diagrams.

**4.5.1 Use case Diagram**

This part contains the analysis of the functional and non-functional requirements using use-case

diagrams, and use-cases details.

1. Admin

The Admin can do After Login process the following function as shown in figure7:

 Add Teacher include (Modify/Delete).

 Add Student include (Modify/Delete).

 Add Parent include (Modify/Delete).

 Add Class include (Modify/Delete).**Figure 8: Admin use case Diagram**

2. Student

The student can do After Login process the following function as shown in figure8:

 View Personal Information.

 View Timetable.

 View Courses Marks.

 View Personal Details.

**Figure 9: Student use case Diagram**

293. Teacher

The Teacher can do After Login process the following function as shown in figure9:

 Add Attendance include (their Marks).

 Student's Marks.

 Modify or delete mark.

**Figure 10 : Teacher use case Diagram**

4. Parent

The Parent can do After Login process the following function as shown in figure10:

 Generate Report.

 Show their child attendance.

 Show their child marks.

**Figure 11: Parent use case Diagram**

30**4.5.2 Sequence Diagram**

**Figure 12: Sequence Diagram**

31**4.5.3 Activity Diagram**

**Figure 13Activity Diagram**

32**Chapter 5 Design and**

**Implementation**

1. *Overall architecture*
2. *Component diagram*

This is a **Component diagram of School Management System** which shows components, provided and required interfaces, ports, and relationships between the Classes, Registration, Teacher, Student and Course. This type of diagrams is used in Component-Based Development (CBD) to describe systems with Service-Oriented Architecture (SOA). **School Management System UML component diagram**, describes the organization and wiring of the physical components in a system.

**Components of UML Component Diagram of School Management System:**

* Classes Component
* Registration Component
* Teacher Component
* Student Component
* Course Component

**Featues of School Management System Component Diagram:**

You can show the models the components of School Management System.

Model the database schema of School Management System

Model the executables of an application of School Management System

Model the system's source code of School Management System

**Component Diagram:**

1. *Database architecture*
2. *Technologies used*

MySQL is one of the most popular databases in the world, if not the most

popular. Per the 2020 Stack Overfl ow survey, MySQL was the most-loved

database, with more than 55 percent of respondents using it. The community

edition is freely available, supported by a large and active community.

MySQL is a feature-packed relational database first released in 1995. MySQL

runs on all major operating systems like, Linux, Windows, and macOS. Because

of its features and its cost-effectiveness, MySQL is used by big enterprises used by high profile web properties including Facebook, Twitter, YouTube, Yahoo! and many more.

**HTML:** is the standard markup language used to create web pages. Web browsers can read

HTML files and render them into visible or audible web pages. HTML elements form the

building blocks of all websites. HTML allows images and objects to be embedded and can be

used to create interactive forms. It provides a means to create structured documents by denoting

structural semantics for text such as headings, paragraphs, lists, links, quotes and other items.

**CSS:** is a Web page derived from multiple sources with a defined order of precedence where the

definitions of any style element conflict. The Cascading Style Sheet, level 1 recommendation

from the World Wide Web Consortium (W3C), which is implemented in the latest versions of the

Netscape and Microsoft Web browsers, specifies the possible style sheets or statements that may

determine how a given element is presented in a Web page. And describes how HTML elements

are to be displayed on screen, paper, or in other media**.**

1. *Deployment architecture*
2. *Code Documentation (should be system generated and should be provided in a separate document)*
3. *Link to GIT repository*

# PROGRESS SCHEDULE

*Use the template that was provided to indicate what you have accomplished from the plan you prepared*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Activity ID** | **Activity name** | **Objective** | **Priority** | **Activity date** | **Planned output** | **Person assigned** |
| 1 | Database design and implementation | To produce ERD for SMIS database | High | Week 11  21 - 25 Feb, 2022 | ERD for the application | Ernest, Jambo |
| 2 | Interface design | To develop forms for registering teachers, parents and student registration form. | High | Week 11  21 - 25 Feb, 2022 | Front-end interfaces registration for teachers, parents and students | Ernest, Jambo |
| 3 | Connection between Front and back-end | Writing code using NodeJs to connect front end with back end | High | Week 11  21 - 25 Feb, 2022 | working part of the product (admin part - registering and storing information in database) | Ernest, Jambo |

# PROSPECTS FOR CONTINUED DEVELOPMENT AND COMMERCIALIZATION

1. *What is required to further develop you product/service?*
2. *What are the commercialization prospects for your product?*

# ROLES PLAYED BY EACH MEMBER OF THE PROJECT TEAM

* The project is devided into two major ends, front and back. Therefore, Ernest Lasten was mainly working on developing the front-end (user Interface).
* While Jambo Chidziwisano was working on back-end (defining the APIs and the routes and the database queries).

**NOTE**:

* But there are areas we developed together such as the entire database design was done together. And we also interchanged roles in developing the this software for instance, Ernest Lasten developed the entire front end of commenting section as well as its back-end while Jambo developed the entire SMS and feature both on its front and back ends. And for most parts that required technical support we sit down and figure out the solution to the problem together and divide the work accordingly. We also had to sit down and agree on the design of the user interface and discuss the arrangement, coluor and appearance of the buttons and forms as well as the whole user interface.

# CHALLENGES FACED & MITIGATION

1. *During the development of the project we face the following chalenges that hindered the smooth development of our software.*
2. *Network problem. We largely depend on University of Malawi WiFi and sometimes the network could be down for some days as such our work would go slow since some dependencies rely on the network connectivity to function.*
3. *Unfamiliarity with some technology we used. There were some technologies we used that we were not very familiar with for example, Axios, Express and some react hooks that have been modified and upgraded over the years. So we had to spend some time studying them then get back to using them. This consumed much of our time during the development of the software.*
4. *Electrical problem. We depended on university lab’s computers to access the internet and develop our software. But many times there were electricity outage and this affected our work as we had no power back up and our laptops have no batteries. So if this happens we could wait until electricity fault is fixed.*
5. ***What challenges remain unresolved?***

***The following challenges remain unresolved !!!!!!!!!***

# LESSONS LEARNED

# CONCLUSION

In recent years, with the pace of technological development, people have become more and more

demanding in terms of quality of life, and the schools managers in recent years look to improve a

performance in their schools to get the highest rate of knowledge and experience in their students. As such using this School Management Information System will give them the flexibility and ability to improve performance in records keeping, fast information processing and retrieval and facilitation of faster communication between teachers and parents. All of this will result in efficiency and effectiveness of the school’s administration.

**Areas of improvement**

Here are some ideas and features that can be considered as a future work for this project.

* Let the students take a testing exams Online. This can be an aptitude test or any exams to improve their learning or to assess them on what they learn.
* Fees payment functionality
* Library Management section
* Online registration. Parents can register for their children or children can register for themselves.
* Teacher leave application

