THE UNIVERSITY OF DODOMA

COLLEGE OF INFORMATICS AND VIRTUAL EDUCATION

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

FINAL YEAR PROJECT PROPOSAL

PROJECT TITLE**: DISTRIBUTION OF TEACHING AND LEARNING MATERIALS MONITORING SYSTEM IN PUBLIC PRIMARY AND SECONDARY SCHOOLS IN TANZANIA**

GROUP MEMBERS

NAME	REG#	DEGREE PROGRAMME
IDRISA JUMA	T/UDOM/2017/02666	BSc SE
MAHADHI JUMA MAHADHI	T/UDOM/2017/02671	BSc SE
ANGANILE ADAM	T/UDOM/2017/11736	BSc SE
KEVIN C. SHAYO	T/UDOM/2017/02668	BSc SE
ABDUL ALLY	T/UDOM/2017/02648	BSc SE

Name of Supervisor: Signature:

Dr. FREDRICK CHALI ……

Contents

LIST OF FIGURES:

CHAPTER1: INTRODUCTION

1.1. Overview

Teaching and learning materials are very important in academic issues especially in public primary and secondary schools.

Tanzania Institute of Education (TIE) is a government institution under the Ministry of Education, Science and Technology established in 1975, by Act of Parliament No. 13 of 1975, (RE, 2002). The Institute is charged with the responsibility of interpreting government policies on education to befitting curriculum programs and instructional materials in order to facilitate provision of quality education at pre- primary, basic, secondary and teacher education levels.

(Tanzania Institute of Education, 2018) External analysis of TIE performance indicates that there is a number of stakeholders and customers who need textbooks for pre- primary, primary and secondary schools. Further analysis indicates that the textbooks do not reach to schools in time. This has been causing difficulties in teaching using the appropriate books.

Good use of technology can help tackle some of the challenges faced in education. Technology can be an effective tool to increase efficiency, help reduce work load, support effective working environment where staff can focus on teaching and hence raise student attainment

1.2. Problem Statement and Justification

Problem Statement

The distribution of teaching and learning material in public primary and secondary schools in Tanzania has been a major challenge due to the manual way of doing, the study conducted by (Tanzania Institute of Education, 2018)shows that the textbooks do not reach to schools in time, delay of materials to the target people and delay of feedback from the target people.

Justification:

By developing distribution monitoring system for teaching and learning materials into public primary and secondary schools in Tanzania, (Tanzania Institute of Education, 2018) TIE has witnessed fast growth of pupils' enrolment in primary and secondary schools, has not been supported by corresponding increase in supply of teaching and learning materials. To improve information for new demands of materials.

will be able to get the information concern with confirmation that teaching and learning material distributed have reached to a targeted people, their actual number, specific location that material required, suggestions concern those materials and requests of those materials at a right time.

Therefore, the development of the system will improve efficiency in distribution of those materials, reduce or eliminate corruption and reduce government cost for distribution of those materials, that will lead to development of students in academic performance and simplify teaching for the teachers since they have all material required for teaching.

1.3. Objectives

1.3.1. Main objective

- To build a distribution monitoring system for teaching and learning materials into public primary and secondary schools in Tanzania.

1.3.2. Specific objectives:

- To analyze the teaching and learning materials monitoring in distribution process in Tanzania in public schools.
- To design a digital distribution for teaching and learning materials monitoring.
- To develop a digital distribution prototype for teaching and learning materials monitoring.
- Test the developed prototype.

CHAPTER 2: LITERATURE REVIEW

Teachers have few, if any teaching aids, while government regulation says that class size is no more than 40 pupils but they can be up to 200 in the same class. Teachers adequately trained, the delivery of quality education under the circumstances is not possible (www.earthassistance.org). Limited access to textbooks and a large number of under-qualified teachers. These challenges are progressively being addressed with notable improvements. (Chacha, 2013)

External analysis of TIE performance indicates that there is a number of stakeholders and customers who need textbooks for pre- primary, primary and secondary schools. Further analysis indicates that the textbooks do not reach to schools in time. This has been causing difficulties in teaching using the appropriate books. TIE will intervene this challenge by strategizing in the next Plan. (Tanzania Institute of Education, 2018)

The last 3 years' period, Tanzania has witnessed fast growth of pupils' enrolment in primary and secondary schools. The growth in primary and secondary education, however, has not been supported by corresponding increase in supply of teaching and learning materials. The policy statement on supply of teaching materials in schools has an impact to TIE functions, and therefore call for strategic intervention to increase the supply of teaching and learning materials. (Tanzania Institute of Education, 2018)

The government's decision in year 2016 to provide free basic education has led to a profound increase pupils' enrollment in pre-primary and primary levels. This transitional expansion will no doubt be reflected at the secondary school levels as years pass by. This has a lot of implication to TIE in terms of developing education support materials to sustain the increased number of pupils in schools. This entails the need for TIE to enhance its capacity, human, financial and infrastructure in order to meet the expected demand. (Tanzania Institute of Education, 2018)

CHAPTER 3: METHODOLOGY

3.1. Methodology used

We will adapt agile development methodology because it gives us a room to constantly communicate with our stakeholders.

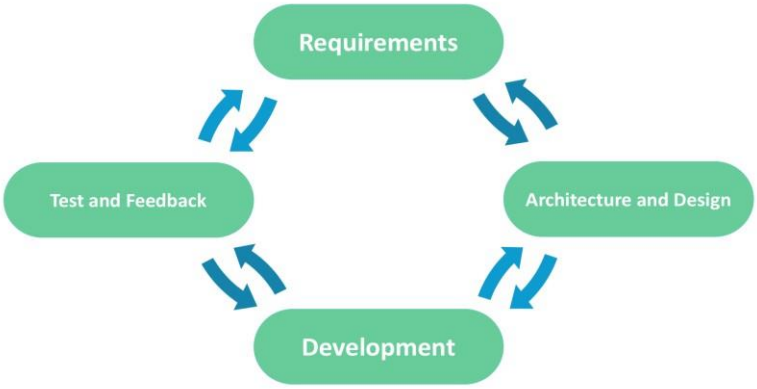


Figure 1: Agile Methodology

3.1.1. Requirements.

Towards accomplishing the distribution of learning and teaching monitoring materials model design we decide to use the following methods to get the required data and information:

- **Interviewing institution professionals:** By asking questions Head of instructional technology of Tanzania Institute of Education (TIE).
- **Interviewing head master of schools:** By asking head master of school in KIKUYU PRIMARY SCHOOL and MAKULU PRIMARY SCHOOL both found in DODOMA.
- **Surveying in district council:** by statistical officer in DODOMA urban district council.

3.1.2. Architecture

3.1.2.1. Physical architecture

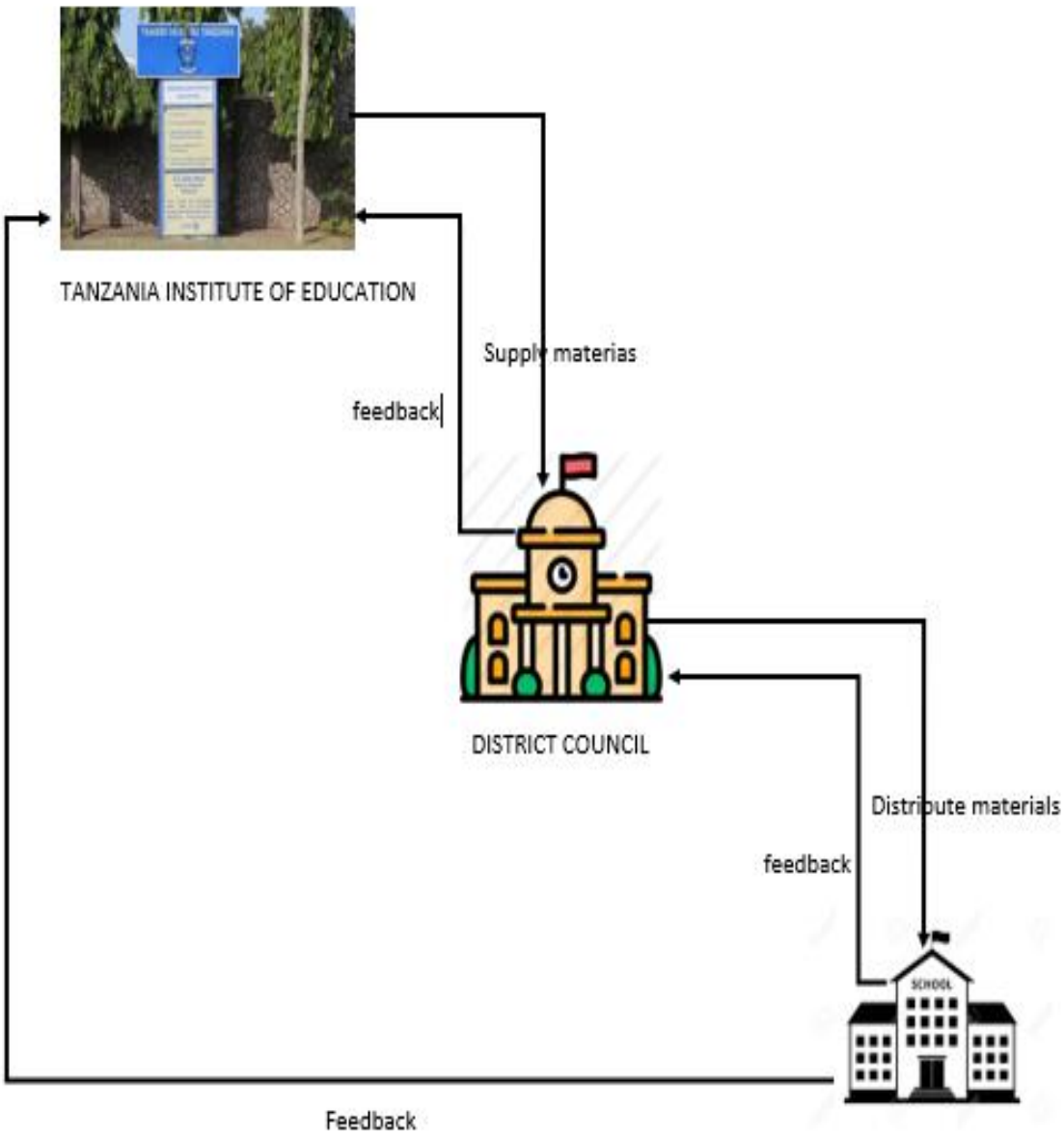


Figure 2: Business process flow

3.1.2.2. Logical architecture

For the logical architecture, the Model View Controller architecture, will be used as it structures the system into separate backend and front-end elements, which is useful during the integration of the modules and easy updating of the codes.

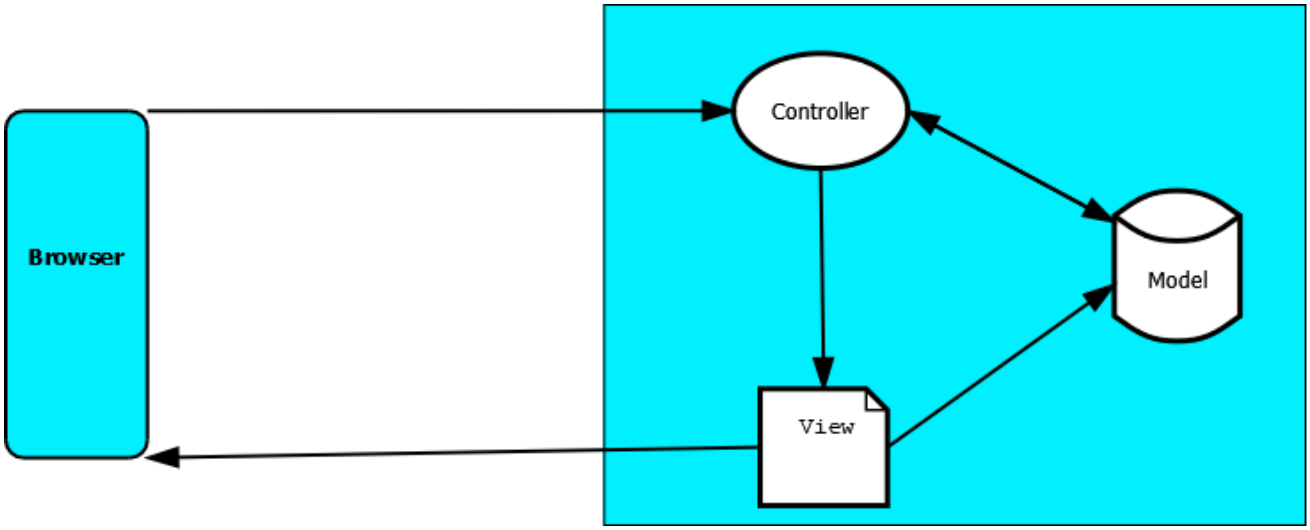


Figure 3: Logical Architecture

3.1.3. Design

The design part of this of project is divided 3 categories: -

a. **Modules design**: we are going to design classes of each module by using object oriented design pattern and especially the design pattern strategy. The UML class diagram for each module as well as for the whole system will be the output of this step. Sequence diagram and use case diagram will also be designed to show interactivity of users with the system.
b. **Database design:** the database design will involve the collection of all entities and the attributes as well as their relationship to design the entity relationship diagram that will lead us to the physical schema until the implementation of the database using a relation database management system. And also, Data flow diagram to show how the stored in the system.
c. **User Interface:** We are going to design interface for every screen that the user will interact with.

3.2. Implementation

3.2.1. Technology that will be used: -

i. PHP Laravel framework, JavaScript (ajax) for back-end implementations.

ii. JavaScript (jQuery), Bootstrap and HTML for front-end implementations.

iii. Android plugin for front implementations.

3.2.2. Tools that will be used: -

Software tools which will be used are: -

i. Apache server with MySQL database.

ii. Web design and mobile application prototype

- Adobe XD
- Adobe Photoshop

iii. Text Editors/IDE

- Sublime, visual studio code, php storm (JetBrains), android studio.

iv Browsers used

- Firefox
- Google chrome
- Opera
- Microsoft edge

v. Version controlling systems

- Git

vi. Postman

Hardware tools which will be used are: -

- Personal computers.
- Modems and/or Ethernet cables.
- Wireless routers
- Mobile phones

3.2.3. Required Technical skills

- Skills on HTML.
- Skills on bootstrap.
- Skills on JavaScript.
- Skills on PHP, Laravel

- Skills on version control/git.
- Skills on responsive design.
- Skills on testing/debugging.
- Skills on designing databases and optimize queries.
- Skills on android applications.
- Skills on JSON

3.3. Testing

3.3.1. Unit Testing:

- Here we are going to test individual modules to make sure that they meet all requirements.

3.3.2. Integration Testing:

- Modules will be integrated one after another and at each integration, a testing will occur to ensure that there are no errors generated after that integration. And ensure that all functions for each integrated module still work properly after integration.

3.3.3. System Testing:

- The system will be tested as a whole to ensure that the system has no errors and provide all the services as intended.
- Personal computers will be connected on a XAMPP server and we connect to a system and act like connected users to see if it will work as intended.

3.4. Evaluation

Upon evaluating on Distribution of teaching and learning material monitoring system. We will allow access of users to the system. And we will evaluate how the system requirements and its intended goals are met.

CHAPTER 4: ANALYSIS AND DESIGN

4.1. FUNCTIONAL AND NON-FUNCTIONAL REQUIREMENTS

- The proposed system has the following users:
  - **Head master:** he/she is a head of school who control the management of school, who request books, send feedback to both Tanzania Institute of Education (TIE) and council in the system.
  - **Statistical Officer:** he/she is a person at Council who receive invoice of books details from Tanzania Institute of Education (TIE), also send books request to TIE that come from school and send feedback to TIE.
  - **Project Manager:** he/she is a person at TIE who deals with distribution of books to council and send invoice to council, and will be responsible for user services.
  - **Super admin:** is a person who deals with managements of the system.

4.1.1. Functional requirements

- The system shall allow super admin to create roles of users
- The system shall allow super admin to create other users
- The system shall allow head master to enter numbers of his/her students for each class level
- The system shall allow Project manager to enter each type of books details in each class level
- The system shall allow Project manager to enter the weight of each type of books in each class level
- The system shall be able to calculate total weight of the books in every package
- The system shall be able to calculate the ratio of each type of books for students in each class level for every package
- The system shall allow project manager to update new region, council and school
- The system shall allow Project manager to select region, council and school
- The system shall be able to generate invoice for each package
- The system shall allow project manager to send invoice to each council for every package
- The system shall allow statistical officer to receive invoice of the package from project manager
- The system shall allow statistical officer to send feedback to project manager
- The system shall allow statistical officer to send information to each school
- The system shall allow head master of school to receive information's from statistical officer
- The system shall allow statistical officer to receive feedback from head master of school

4.1.2. Non-functional requirements

- **Availability:** The system shall meet or exceed 99.99% uptime (52 minute/year).
- **Reliability:** Out of every 1000 request, the system should be able to satisfy 999 requests.
- **Performance:** The system shall be able to process 100 user requests per second.
- **Privacy and security:** The system shall allow the user to login using their email and password
- **Usability:** The system should be easy to use in such a way within 30 minutes the user will be very familiar with it.

4.2. SYSTEM DESIGN

This part describes in details how the application interface will be and showing activities within the system

4. 2.1. UML use case diagram

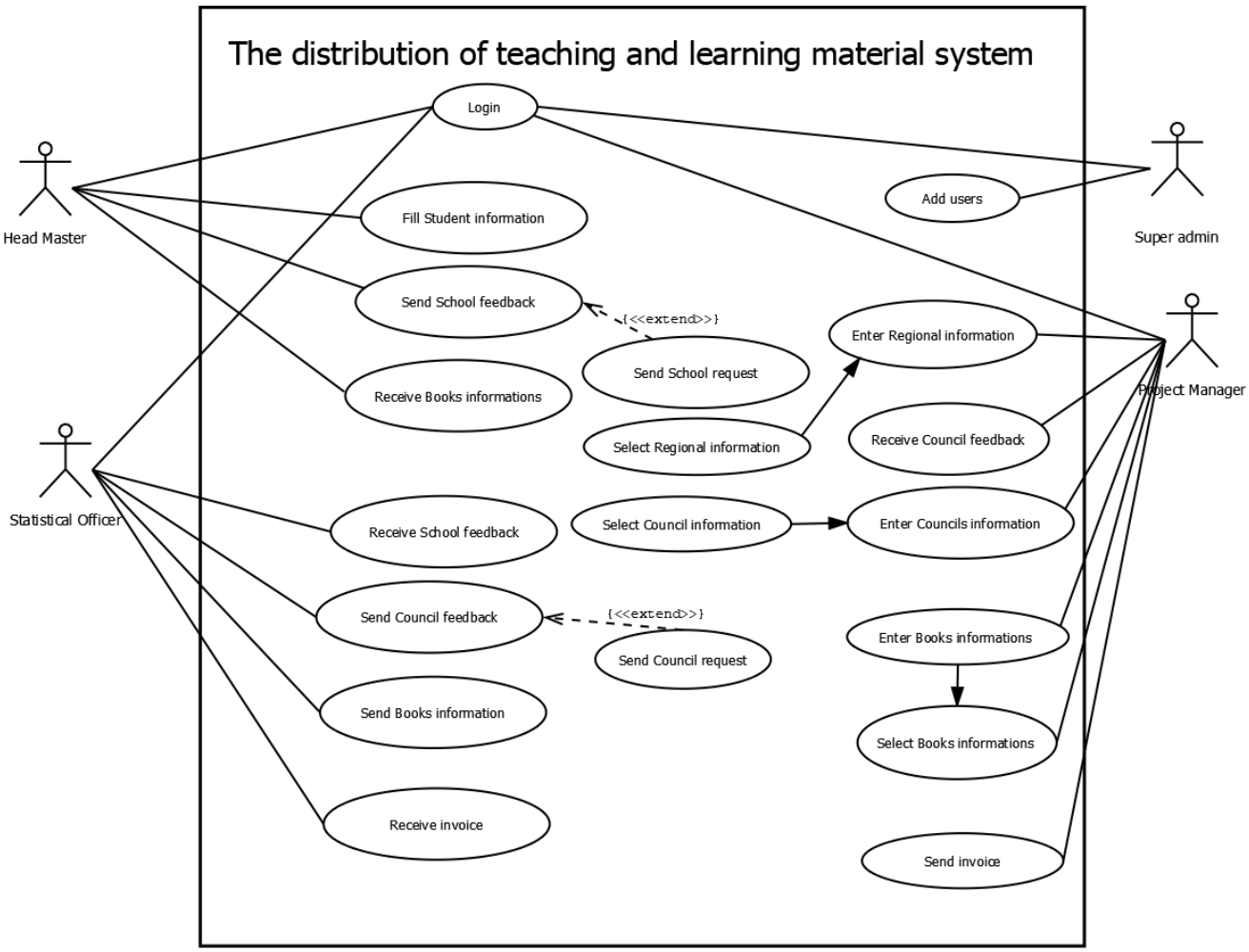


Figure 4: Use Case Diagram

4.2.2. UML sequence diagram

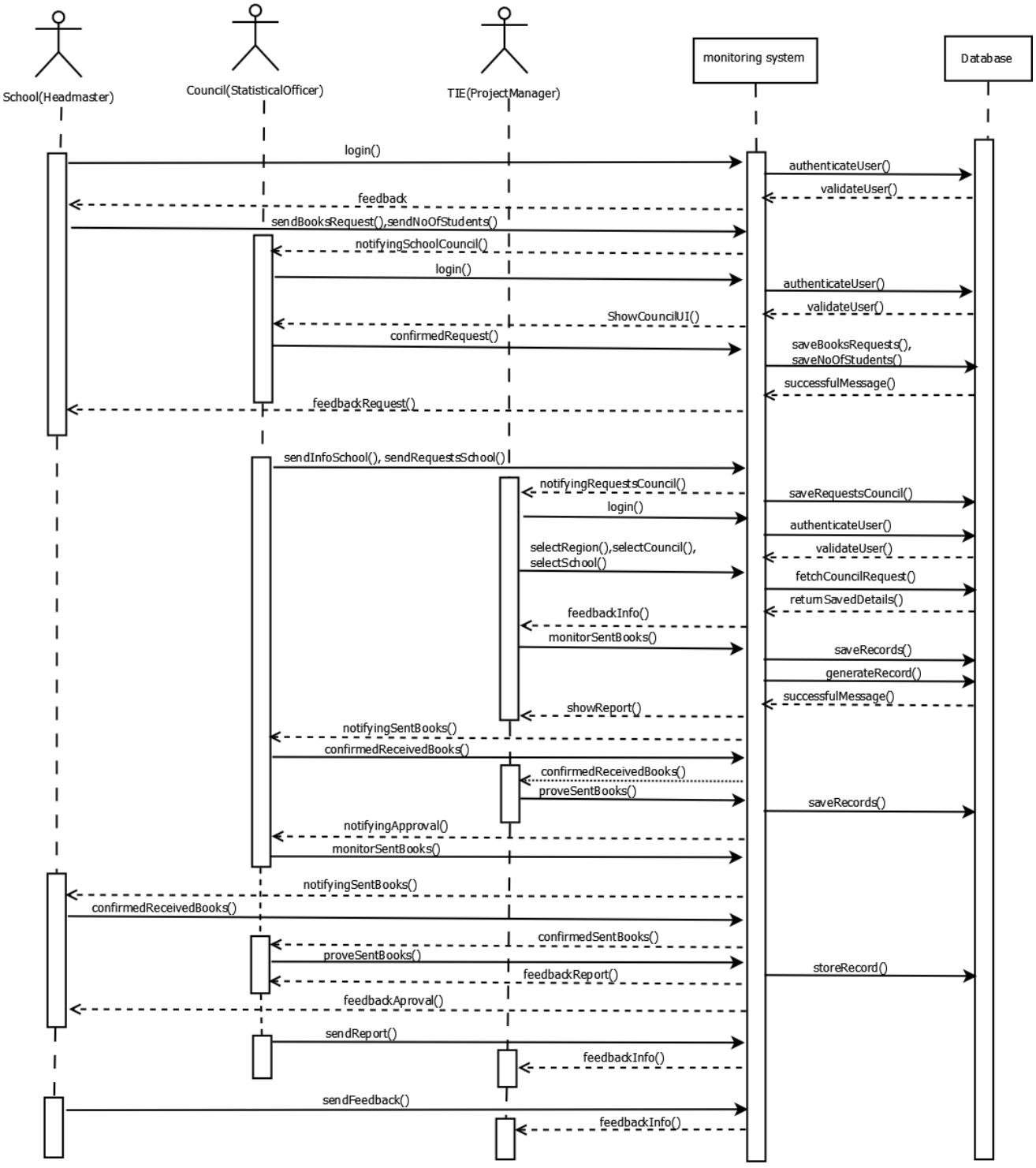


Figure 5: Sequence Diagram

4.2.6 Entity Relationship Diagram

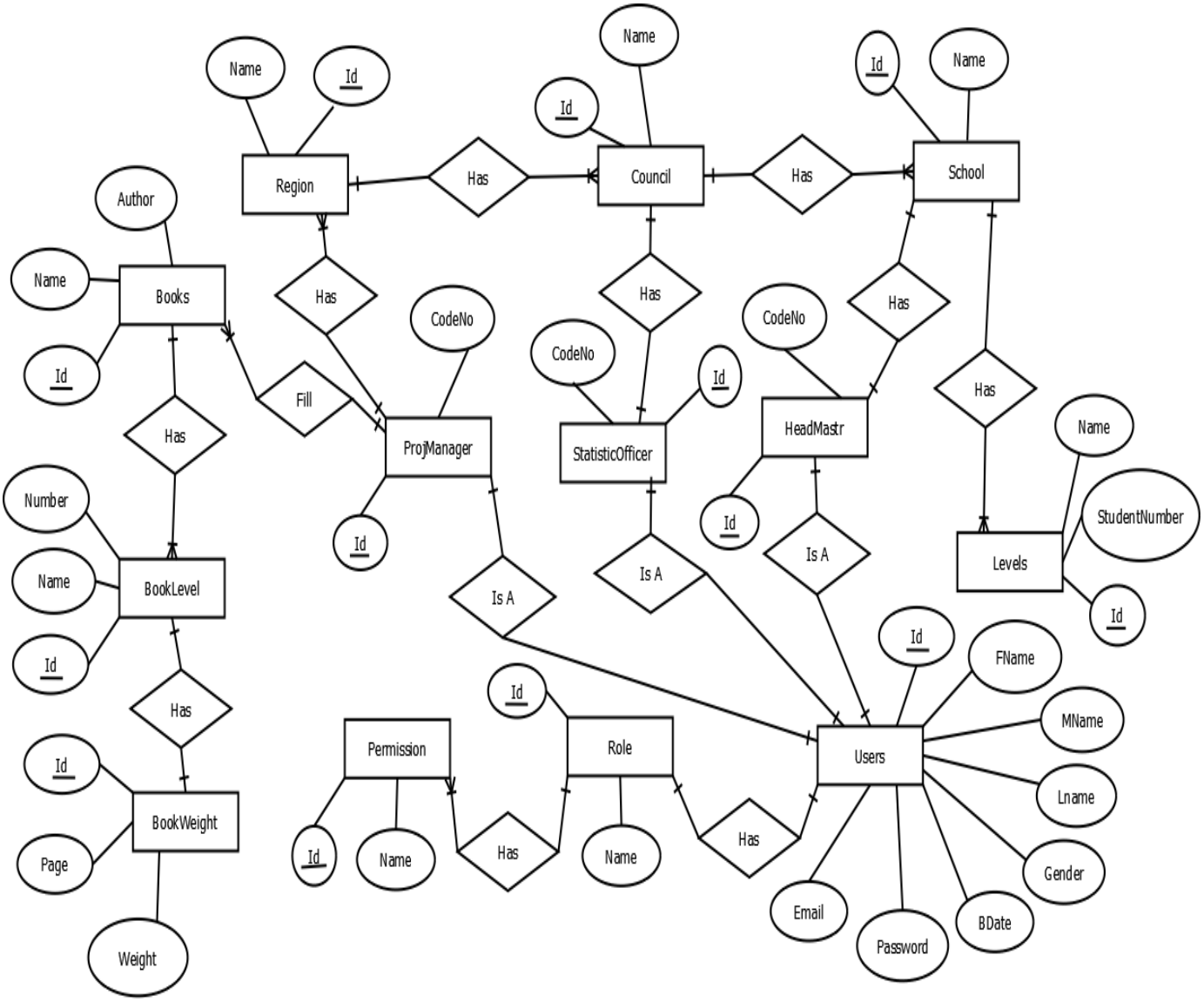


Figure 6: Entity Relationship Diagram

4.2.4 UML Class Diagram

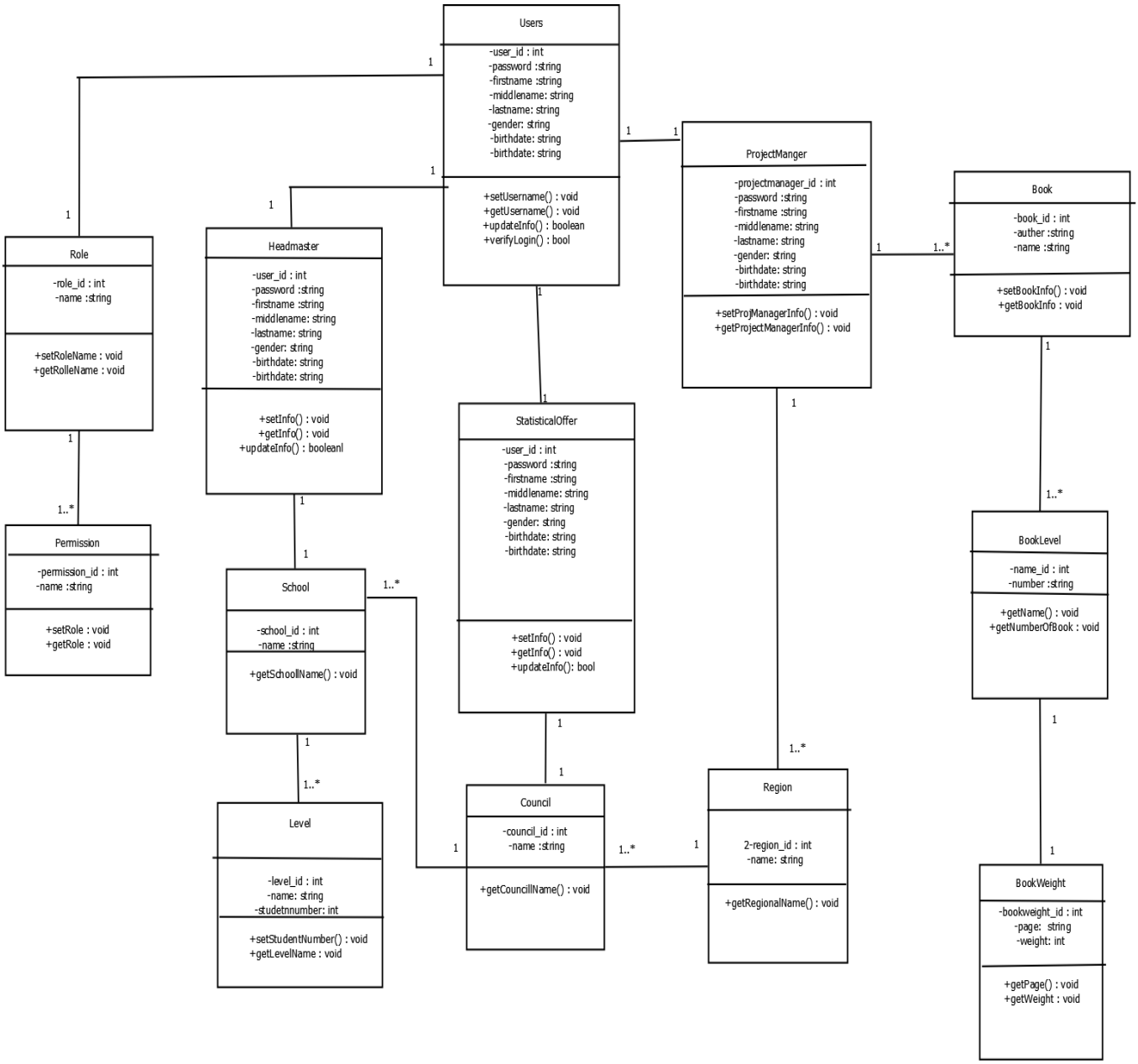
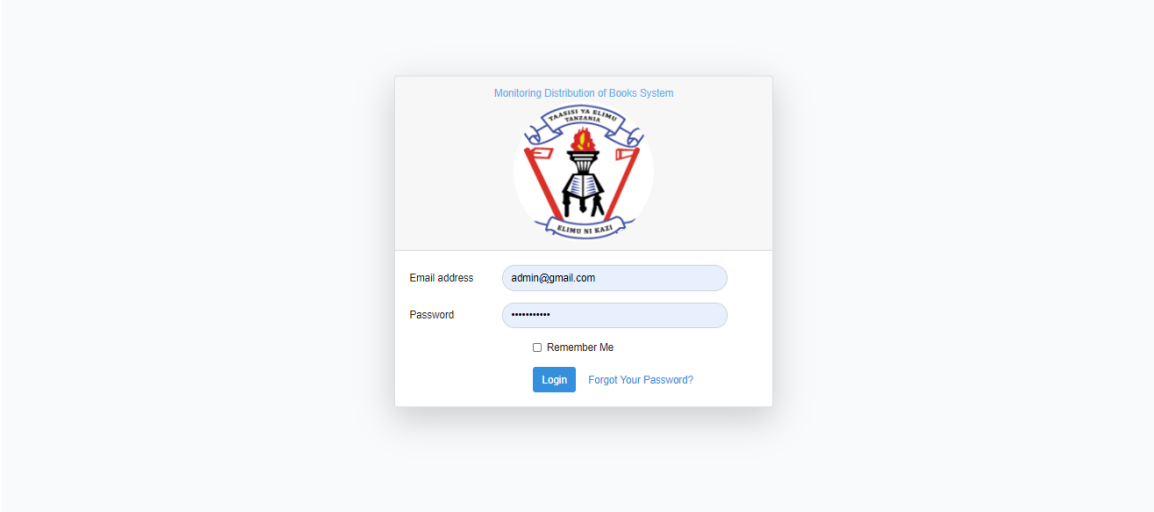


Figure 7: Class Diagram

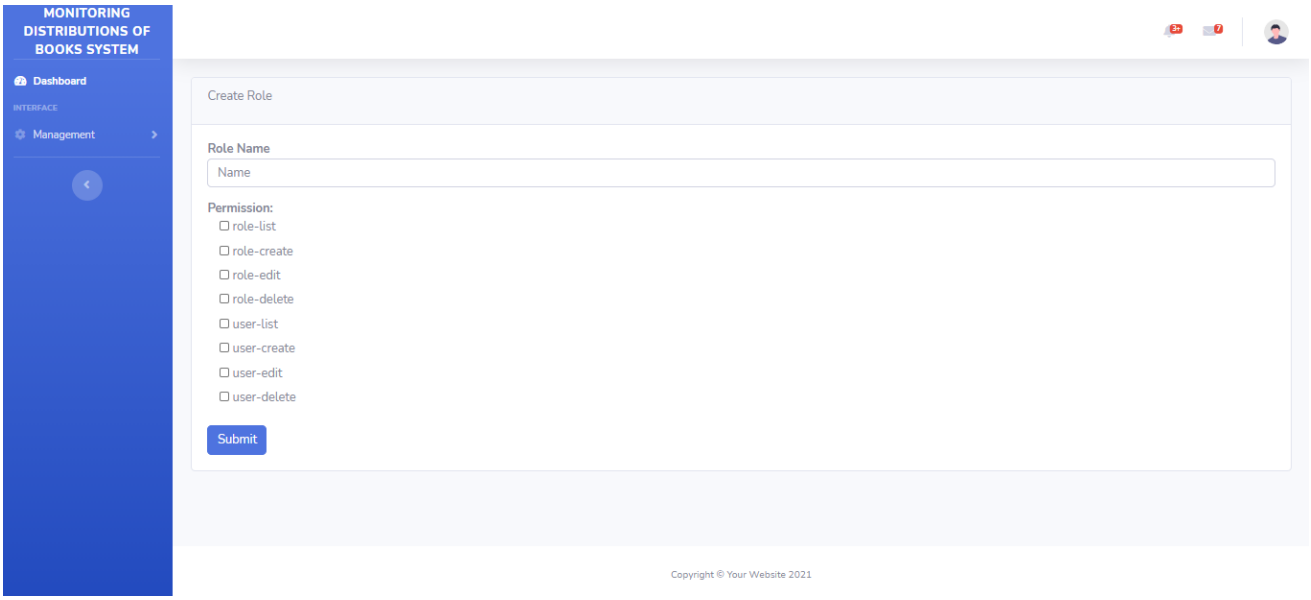
4.2.5. User interface design

- **In a web design**

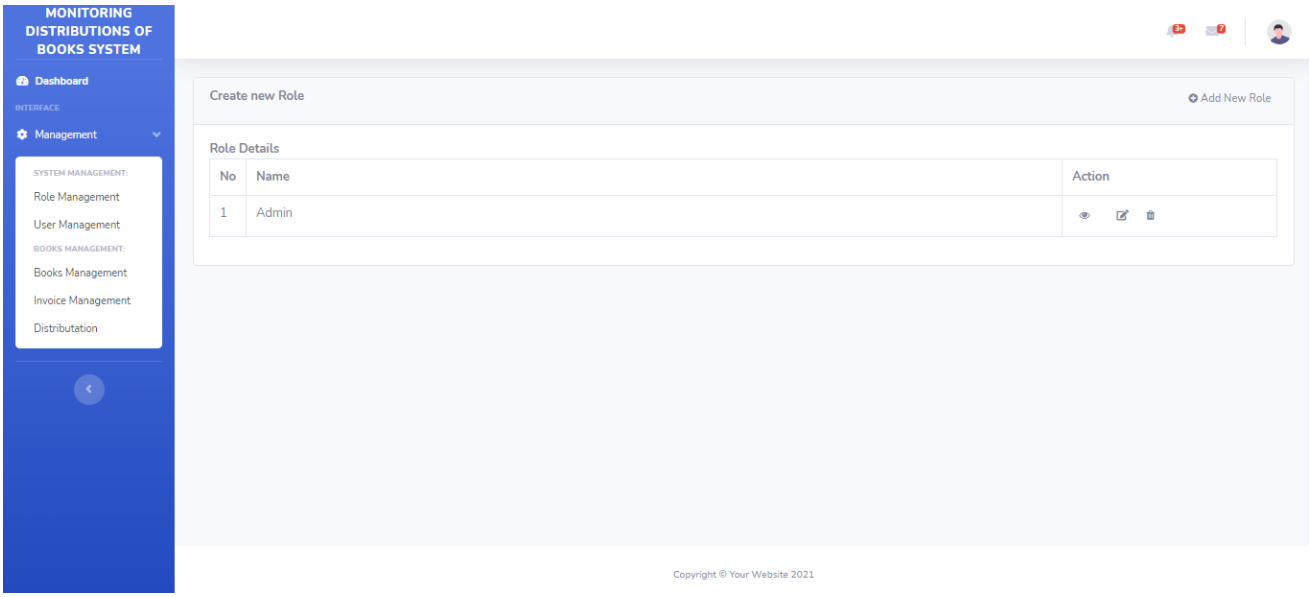
User authentication



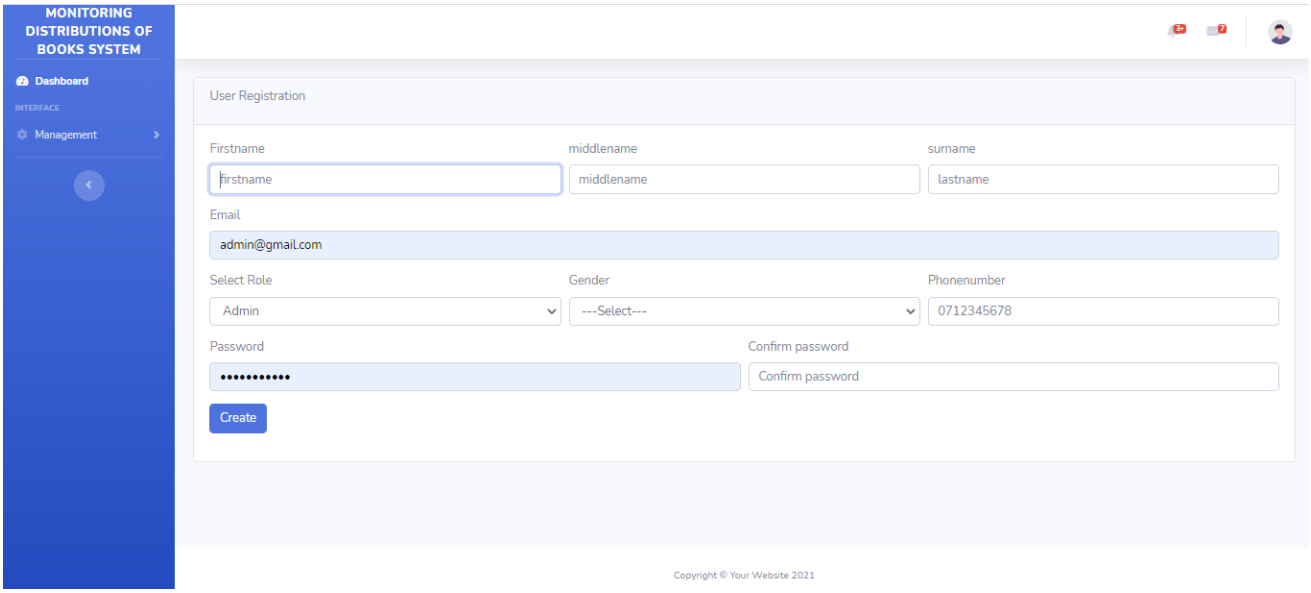
Admin create roles



Roles created

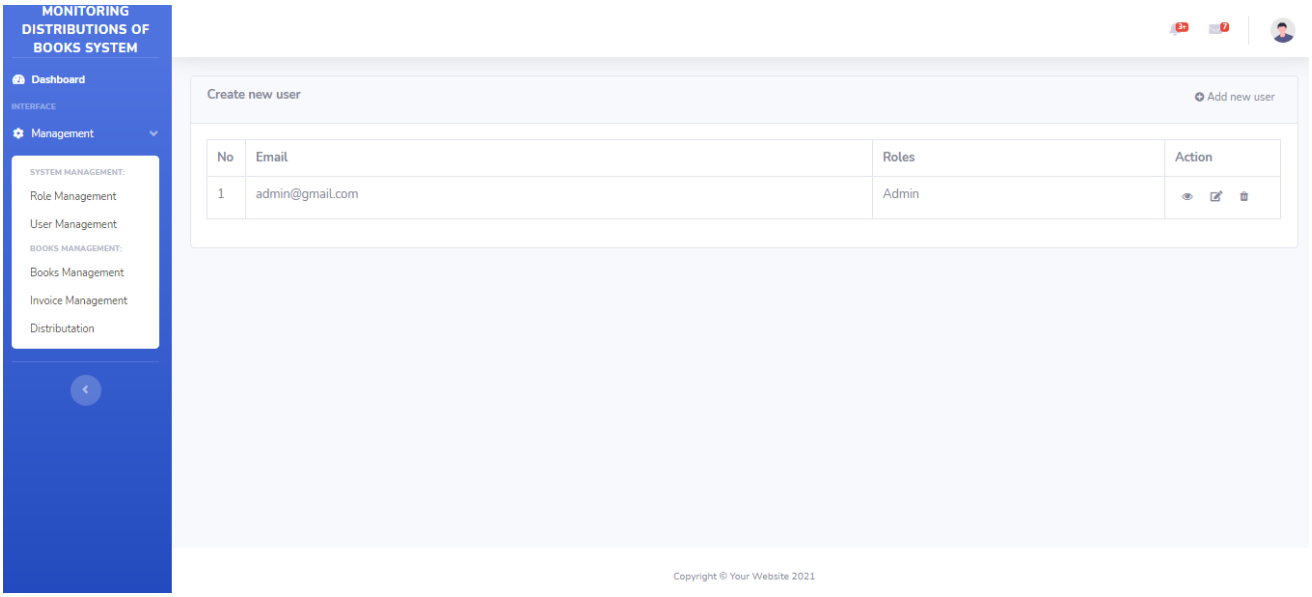


Admin create users

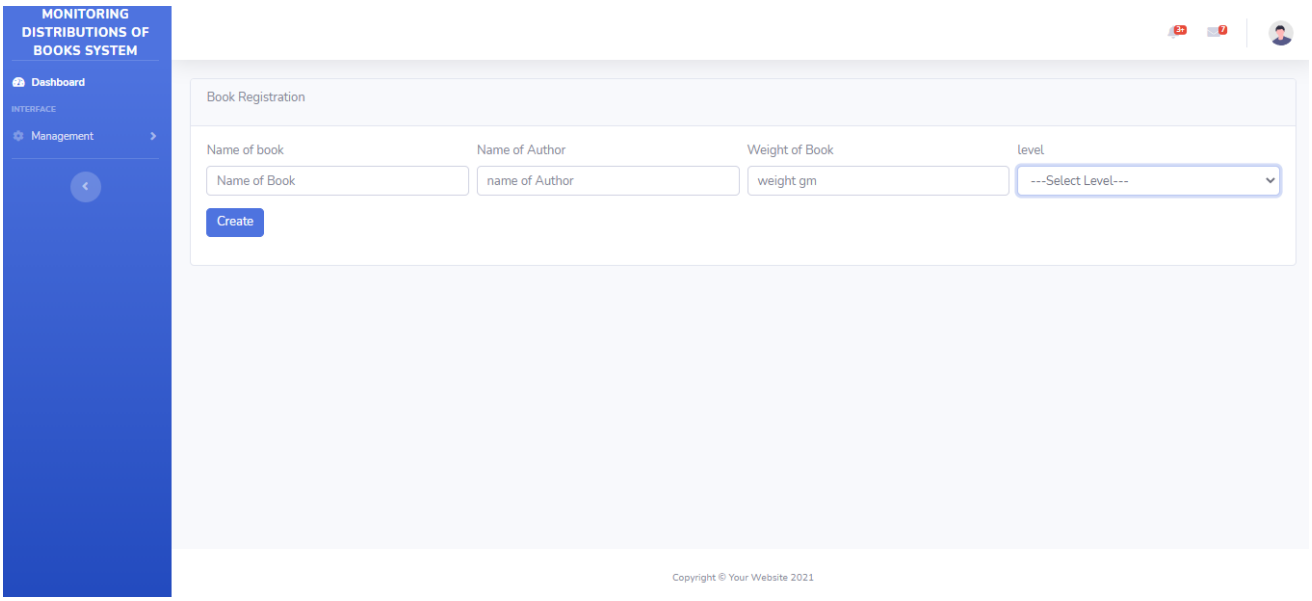


l

Users created

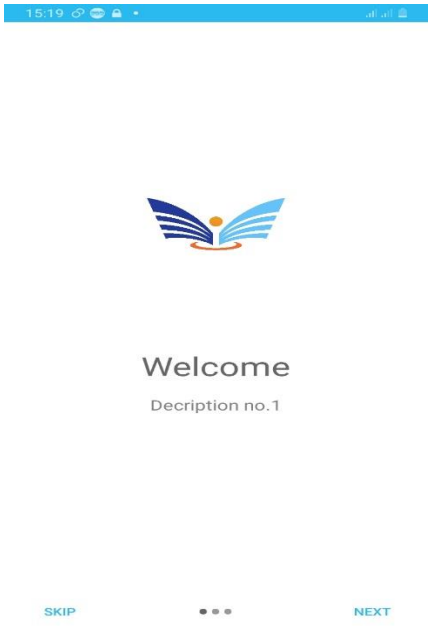


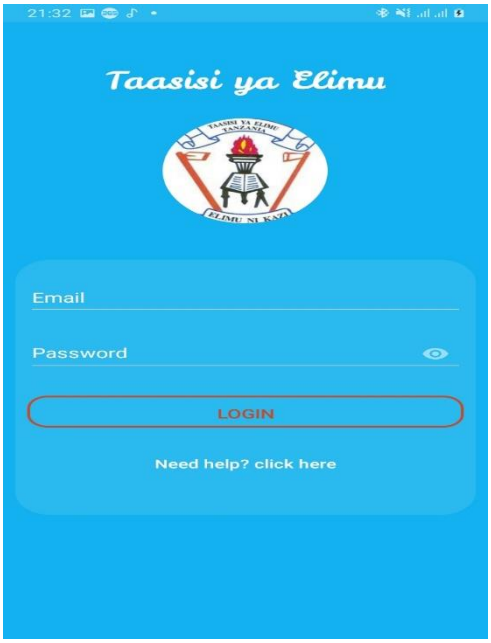
Admin fill books details



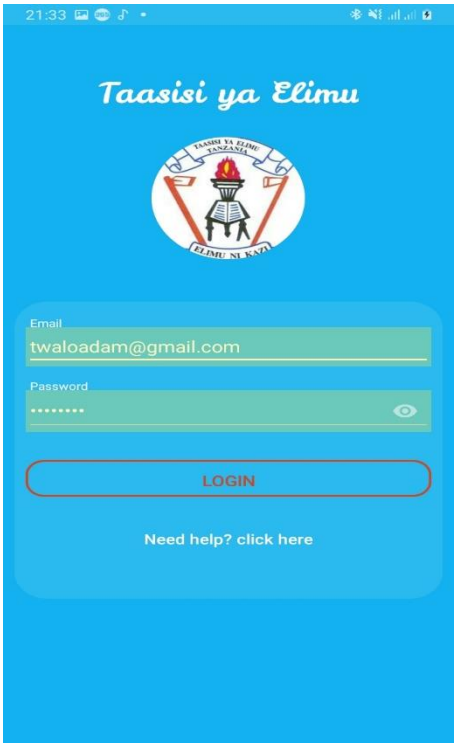
- **In android design**

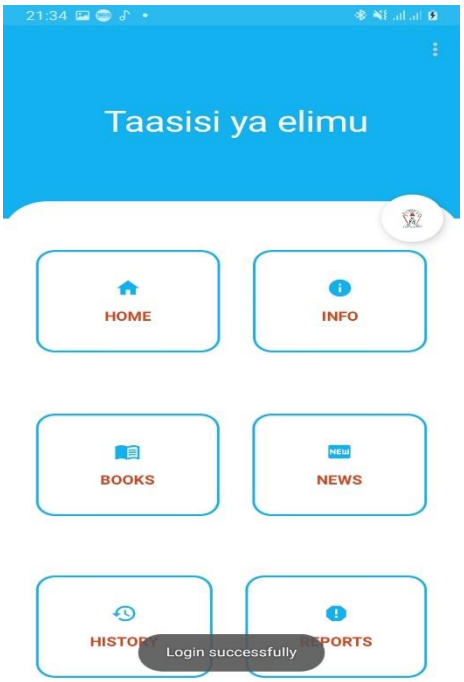
On board welcome and authentication page



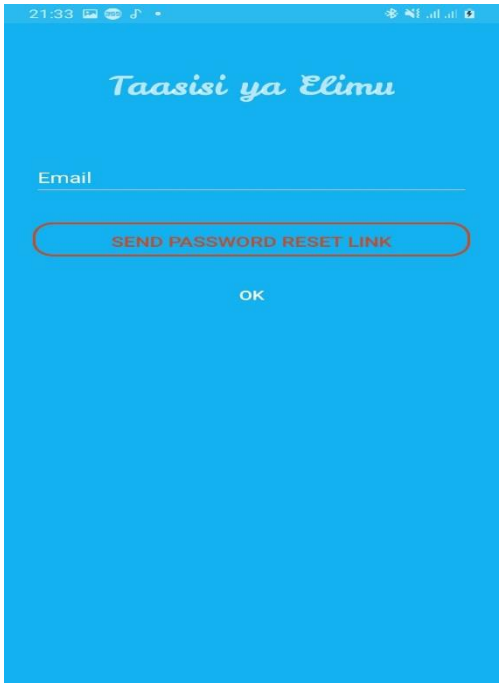


If head master want login must insert his/her password and email correctly

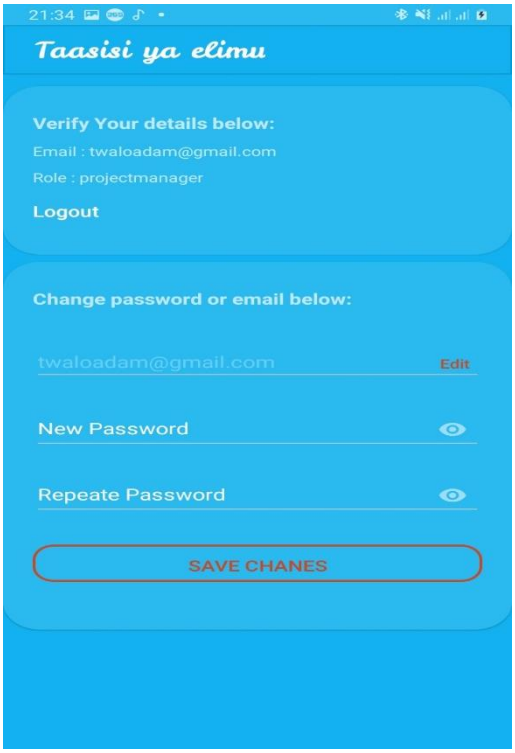




If head master forgets password or email, he/she can go to forget password page and write his/her email



If you head master want to modify his/her credential after login



WORK DONE

- REQUIREMENT GATHERING.
    - Functional requirements.
    - Non-functional requirements.
- SYSTEM DESIGNING
    - UML use case diagram.
    - UML sequence diagram.
    - UML class diagram.
    - Entity Relationship Diagram
    - GUI Designs.
- SOME OF FUNCTIONALITIES

FUTURE PLAN

- TESTING THE SYSTEM.
- VALIDATING THE SYSTEM.

LIMITATION

- Some modulus requires some skills to learn and well understand before to actually start to implement.
- Internet bundle also was challenging for we required it for learning and for implementation.
- COVID-19 created tension among us and lowered the power of concentration to the project.

CONCLUSION

Therefore, the development of DISTRIBUTION OF LEARNING AND TEACHING MATERIALS solves major challenge such as saving time for the distribution process, provide feedback to the suppliers of those materials. Also improves efficiency, eliminate corruption and serve unnecessary government costs.

However, there is common challenge which is due to human factors that is user's readiness to participate in system whenever the needed, but by provide them with clear education about the importance and necessity of using the system will encourage their full participation to use the system.