

Design and Implementation of Course Progress Monitoring Information System in Secondary Schools

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ABSTRACT

Course Progress Monitoring is one among tasks done by schools around the world that helps them to know the quality of their studies they deliver, in Rwanda secondary schools have some challenges in terms of data management where their current systems in place are not computerized. We have developed Course Progress Monitoring Information System with Java Programming Language and Water Fall Model as Software Development methodology. The automated course progress monitoring information system is a result of quick, secured and proper way to increase the quality and safety of course information.

Keywords: Course Progress Monitoring, Java, Water fall model.

1. INTRODUCTION

Course Progress Monitoring is an important task in secondary schools. The purpose of Course Progress Monitoring is to strengthen the quality of education. During each course, the academic staff must check that if it has been taught in proper way. The course progress form was filled in each class and submitted to academic master this means that they would receive a form from each class every week and he must check all of them. Course Progress Monitoring Information System was developed by using software development methodology especially water fall model through to the phases of Conception: Requirement Analysis, System Design, Implementation of the System, System testing, Operations & Maintenance.

2. System Requirements Analysis

Requirements analysis is the first stage of software development. This stage is very important where the analyst of the system should describe how system flows and relationship among the entities. It includes both functional requirements and technical requirement analyses.

2.1. Functional Requirements Analysis

In this system there are two sets of functions. The first set of functions is online course progress Monitoring functions that allows the academic master to login, record course, modify course ,delete course, record class, record teacher, modify teacher, delete teacher, record term, record course plan, delete course plan, modify course plan, record course progress, reporting course progress. The operation flow chart is shown in

Figure 1.

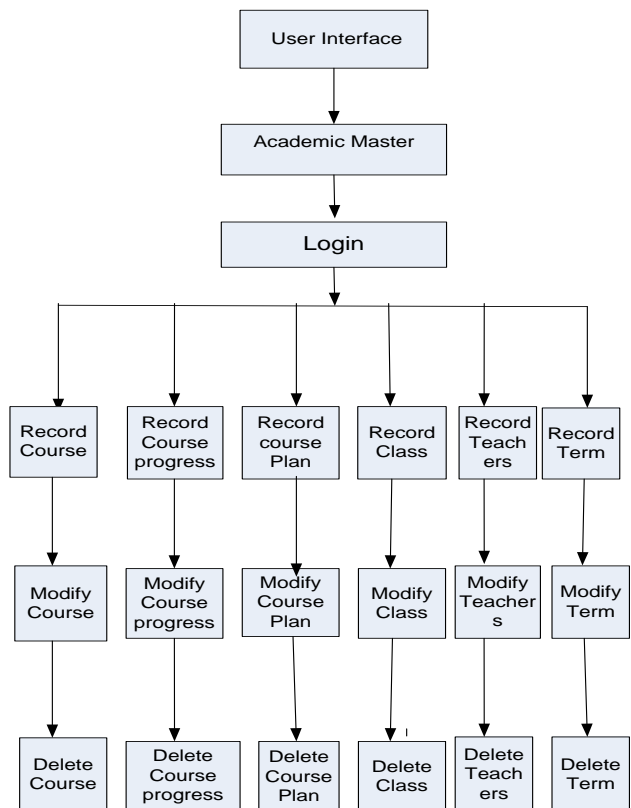


Figure 1. Online Course Progress Monitoring

The other set of functions is system administration that allows the system administrators to manage the users of the system. The operation flow chart of data management is shown in **Figure 2**

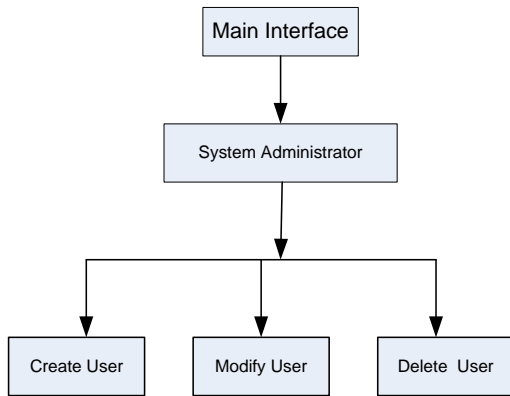


Figure 2. Data Management

2.2. Technical Requirements Analysis

LAN architecture is a client/server based on Windows clients running with Windows Seven and Windows NT Server on the server side, Web Server, Web browser. Java programming language development environment, NetBean as development platform and development tools, SQL server as the database management system.

3. System Design

System design is the second stage of software development especially water fall model. In this stage we have designed all users' interfaces and identified all Inputs, Processes and Outputs. The context and sequence diagrams are showing briefly how users are interacting with the system.

The Context diagram is shown in **Figure 3** and Sequence diagram is shown **Figure 4**.

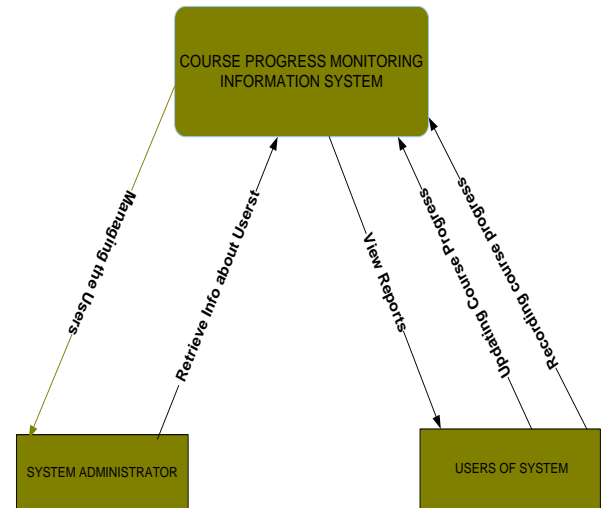


Figure 3: Context Diagram

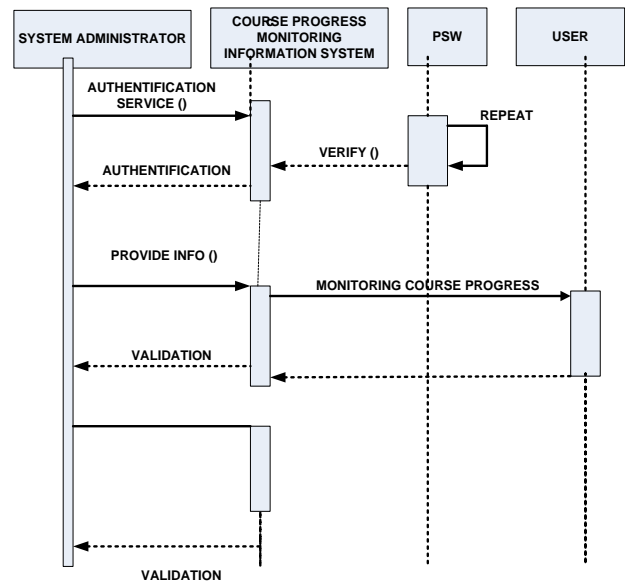


Figure 4: Sequence diagram

3.1. System Functions Modular Design

This system was divided into two types which are the external and internal users. The external users are the teachers while the internal users are academic masters and system administrators.

3.2. Class Diagram

In this research the class diagram is most useful to illustrate relationships among the entities of course

progress monitoring system such as course allocation, teacher, course, class, course plan, term and progress as it is shown in **figure 5**.

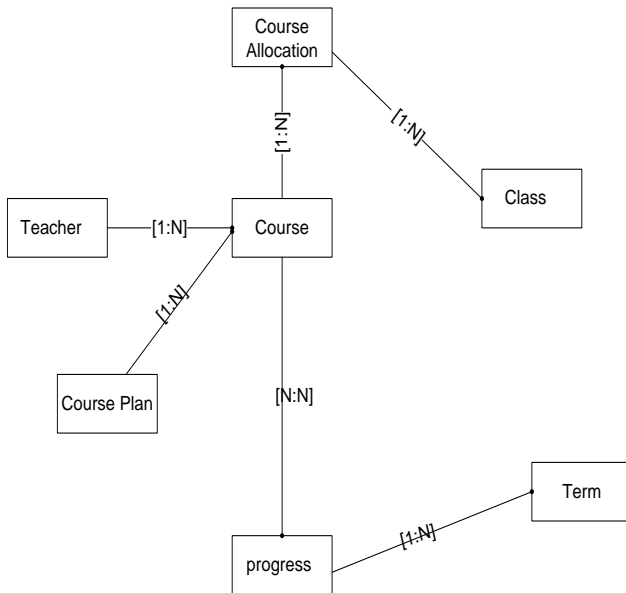


Figure 5: Class Diagram

4. System Implementation

The system implementation is the third stage of water fall model where the Course Progress Monitoring Information System was constructed.

The program was written using Java programming language and the connection of system interface and database was established.

5. Conclusion

The system has been successfully developed using java programming language where the objectives have been achieved. The water fall model helped us to analyze this system, to do the conception and the development of the system. We will continue to improve this system by adding the new technology such as android technology that enables the system to be a mobile application.

6. Acknowledgements

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