

IMPLEMENTING A DEPARTMENTAL ACTIVITY INFORMATION SYSTEM FOR TERTIARY INSTITUTIONS IN DEVELOPING COUNTRIES

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Abstract

There are several activities that take place in academic department of a higher institution. Reports from these activities influence the decisions affecting the running of the department. These decisions ensure that the university is still in line with its vision and goals. In some institutions, particularly the public institutions in developing countries, there is the lack of proper records for activities within an academic department such as participation of staff and students in competitions, excursions, conferences, internship programs, etc. There is also the unavailability of sufficient data of graduated students within the department to aid decision making for providing reference and recommendation information. The objective of this study is to develop a Web-based Departmental Activity Information System (DAIS) for academic departments of a university. The tools used for the implementation of this system are Hypertext Mark-up Language (HTML), Cascading Style sheet 3 (CSS 3) and Bootstrap Framework as user interface, PHP as server side programming language and MySQL as the database. The system will aid academic departments and units in decision making process.

Keywords: Academic, Activity, Department, Information System, Learning and Academic.

1 INTRODUCTION

An information system (IS) is a group of components which can increase the competitiveness and gain better information for decision making. Consequently, many organisations decide to implement IS in order to improve the effectiveness and efficiency of their organizations [1]. The quantity and quality of information determines the effectiveness of a decision. Decisions are made based on availability of knowledge. In order to improve the decision making of the department; it is essential that information is readily available and complete. The need arises to present relevant information of activities such as results, trends of events in the department, achievements in the department, progress of research works, projects, and a lot more.

Decision making has become a major part of everyone's lives because people have to make decisions about almost everything [2]. The scope of organizational and managerial decision making is very broad [3]. At the various levels of a department, decisions are made. The decisions could be made by the Head of Department (HOD), faculty, staff, student representatives and even the students themselves. Every organizational structure is made up of various departments, performing various functions. Each department performs specific tasks towards the attainment of organizational goals. Some of these departments may be further broken down into a number of programmes in order to improve overall efficiency and productivity. The functionality of these programmes is what determines the effectiveness of its respective parent department and the university as a whole.

There is the problem of keeping records of students at both undergraduate and graduate level. In cases where students require recommendation letters from staff of the departments. It is sometimes difficult to access information involving values, achievements, contributions, conducts, peer assessment, position held and academic performance of such student. Certain information about such students requires consultation. There are lots of students who belong to a department or have graduated from the department, and attempt to identify them can be quite cumbersome. Lack of sufficient information about such students may result in vague recommendation.

This paper is sub divided into sections as follows. Section 2 describes the literature review. The following section provides a System Design and Implementation of the system. Section 4 provides users' interfaces. Finally, section 5 concludes the paper.

2 LITERATURE REVIEW

On an annual basis, the students of Computer and Information Sciences department in Nigeria participates in several competitions such as the annual Institute of Software Practitioners of Nigeria (ISPON) competition in Calabar, Nigeria; the annual Ogun State competition organized by the National Association of Computer Science Students (NACOSS); and a national software competition at Federal Capital Territory, Abuja. In this 2013/2014 session alone, students from different schools in Nigeria contested for various awards and some returned with laurels and cash rewards. Having participated in such competitions and won trophies on most instances, questions may arise such as: who were the participants at those competitions that represented the university, who initiated and coordinated such competitions, how much funds were allocated to the coordinator during the period of the competitions, where did the competitions take place, what was the duration of the competition, in what years did the school participated.

Apart from having to keep track of competitions, there is need to monitor and keep record of activities in the department such as seminars, trainings and meetings that lecturers might have undergone while representing the institution and thus make certain decisions based on such information. According to [4], an activity system is built around its object. But activity is open systems that depend on one another, forming various kinds of networks and partnerships around partially shared objects.

Several studies have been carried out in literature that relates to the work presented in this paper. [5] discussed how activity-based costing (ABC) method can be useful in the context of higher education. It also discusses the barrier to the successful implementation of activity-based management (ABM) in the higher education environment. A lot of hindrances especially those relating to supporting information systems were enumerated.

The research in [6] presented a School-Wide Information System. It is a Web-based information system designed to help school personnel use office referral data to design school-wide and individual student intervention. The three primary elements includes: A Web-based computer application, for data entry and report generation, A practical process for using information for decision making. These system give school personnel the capability to evaluate individual student behaviour, the behaviour of groups of students, behaviours occurring in specific settings, and behaviours occurring during specific time periods of the school day.

A learning design was presented in [7] with the potentials to develop e-learning by capturing the "process" of education, rather than simply content. By unfolding the sequences of collaborative learning method, Learning Design offers a new approach on how to re-use e-learning. The study by Michael et al. (2008) involves identification of critical issues within the school and family systems that affect the academic, personal and social development of children.

Nyvang in [8] provided model of ICT implementation in higher education based on activity theory using Danish university as a case study. The model suggest that implementation in itself is an activity system. Drawing from model and the case study, a framework of challenges was suggested in the paper that must be met for an implementation to thrive.

The study in [9] implemented a school-based management system for creating effective school. School effectiveness refers to the capacity of the schools to maximize its function. It reflects the extent to which the schools can perform their core functions such as technical and economics, human and social, political, culture, and educational

3 SYSTEM DESIGN AND IMPLEMENTATION

The Departmental Information System (DAIS) was designed using the Unified Modelling Language (UML). The tools that were employed for the implementation include: Hypertext Mark-up Language (HTML), Cascading style sheet (CSS), Font Awesome framework and Bootstrap framework to provide an interactive user interface for the system, Hypertext Preprocessor (PHP) to handle the dynamic functionalities of the system and MYSQL for storing data. Fig. 1 shows the sequence diagram for viewing and filling recommendation form. In Fig 2, the lecturer select a student from the system, the student's profile is displayed and rating data is entered and submitted. The collaboration diagram for recommendation is presented in Fig. 2. It provides information on how the student, lecturer and manager can collaborate.

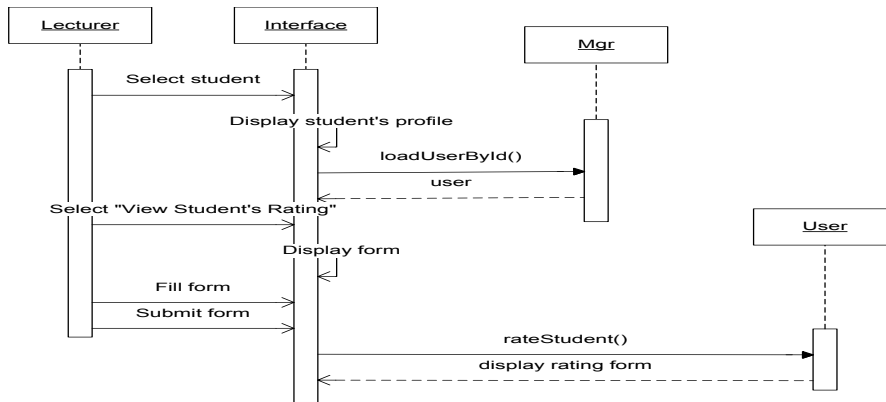


Fig. 1. Sequence Diagram for Recommendation,

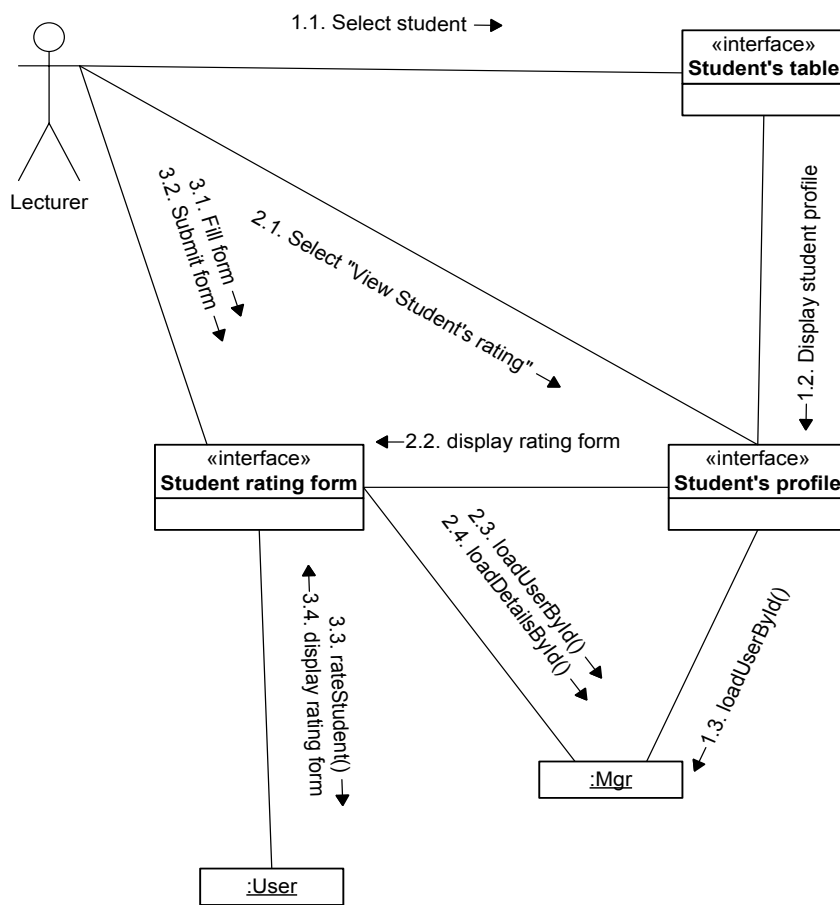


Fig. 2. Collaboration Diagram for Recommendation,

4 USERS' INTERFACES

This section discusses the web users' interfaces for the system. The Activity page comprise of excursion, internship programme, conferences, exchange programme, scholarship and research. The Activity page shows the main menu page for initiating a move to any of the selected items. In activity page, a user can select one of the events and view the details of these events The Administrator page is shown in Fig. 5 with a dash board containing the functions that an administrator can performance. The page shows the dashboard which contains information on the number of users (approved, disapproved, unattended) and the activities in the system. These is a progress bar which can be used to view the percentage of users that have not yet been attended to and the ones that have.

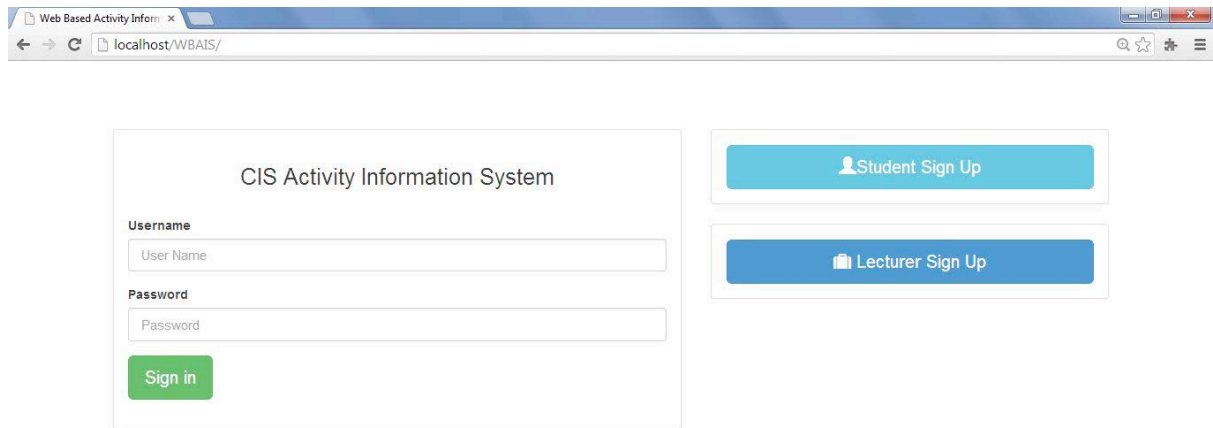


Fig. 3.1 The login page of DAIS,

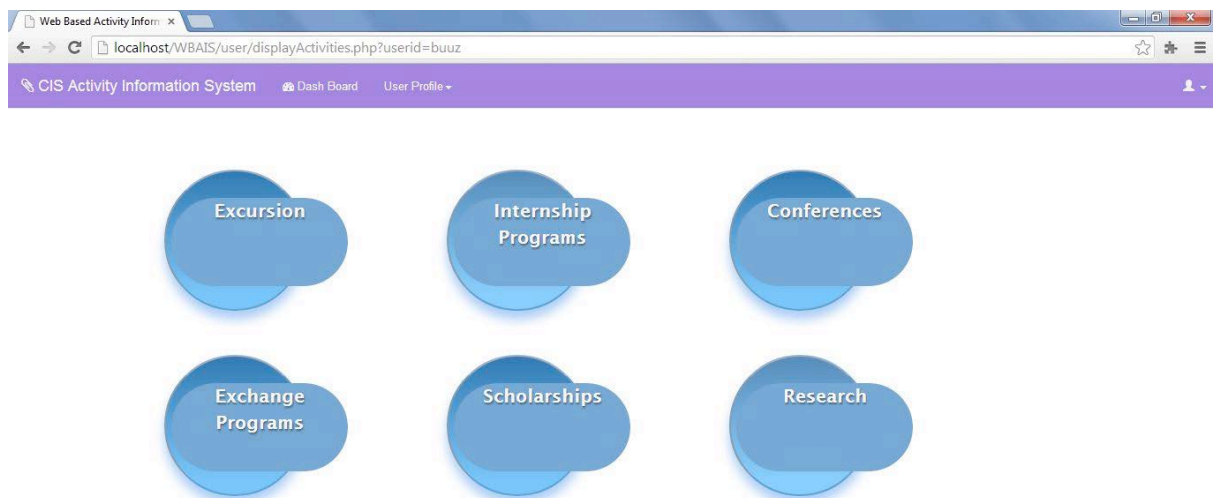


Fig. 4. The Activity Page DAIS,

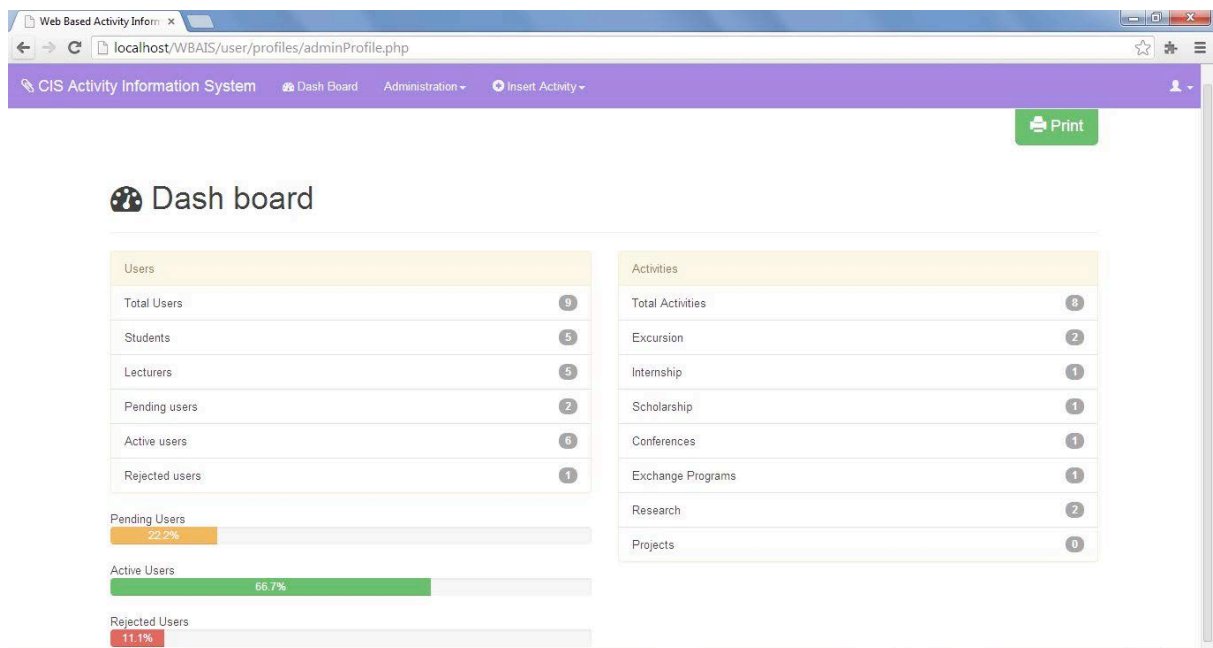


Fig. 5. The Administration page of DAIS,

5 CONCLUSION

In this paper, an implementation of Departmental Activity Information System (DAIS) has been reported. The system is useful in making decisions in a department and can be customized to work on a broader scope. Without good record keeping, there is a large probability of drawbacks in terms of effectiveness of a department. The time it takes to gather relevant information would be longer and could cost the work. With an organized medium of storage of all aspects of the department data, there would be easy access to information which in turn enhances productivity and bring the university closer to meeting her vision.

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