

Design And Implementation Of Postgraduate Students Progress Monitoring And Interactive Decision Support System

Igwe J. S., Odi C. M., Ituma C., Ogbu H.N.

Department Of Computer Science, Ebonyi State University, Abakaliki – Nigeria.

Abstract

Projects, Dissertation and Thesis cannot be over emphasized in Postgraduate research. It is mandatory and one of the requirements for graduating in a tertiary institution. Nevertheless, there are many problems facing the current system of project managements in tertiary institution. These ranges from topic duplication, busy schedule by students and supervisors and expenses involved in transportation to meet supervisors and others. This Dissertation is on Design and Implementation of Postgraduate Student's Progress monitoring and Interactive Decision Support system. The programming language used includes PHP, jQuery, HTML, CSS, and MySQL, where the front-end designed was done using HTML, CSS, jQuery, and back-end designed using PHP and JavaScript; the Database was designed using MySQL. The methodology employed in this Dissertation is a hybrid of Structured System Analysis and Design Method (SSADM) and Object-Oriented Analysis and Design Methodology (OOADM). The new system has a module for users to register and login into the system and access the various modules and resources. Design a module for assigning a project topic to students and supervisor. This system eradicates submission of duplicated project topics and provide a convenient time for both supervisors and students to meet virtually. It also has a progress management module that enable the supervisor to assign tasks to students and monitor the students' progress. Integrate module that allow the student to chat and share interactive platform with his/her supervisor.

Keywords: Project Development, SSADM, OOPD, Software Development, Progress, Monitoring,

Date of Submission: 05-01-2024

Date of Acceptance: 15-01-2024

I. INTRODUCTION

Writing a project, Dissertation or Thesis is one of the core requirements for every Postgraduate student in a tertiary institution. This is intended to evaluate the student's experience and skills developed over the years of study, through the school process [6]. Though a project is required of every student in the school, the procedures for project writing differ for every Department in the school. For every Postgraduate student of Ebonyi State University, the research student must first submit a proposal of the intended project or Dissertation topics to his or her supervisor for approval. If approved, the student proceeds with developing the proposal presentation for the approved topic, which serves as a guide to the project writing following the Postgraduate School and Department's standard before proceeding to the main project chapters. These manual procedures in project topic proposal, verification, registration, and submission are posed with lots of challenges and stress both on the side of the students and the supervisors. Hence the need to study these problems and proffer solutions to make the process easier and faster for all that are involved in the project writing process is very important.

The importance of research and project work cannot be over emphasized for this is the bedrock of learning in tertiary institutions as it helps students to acquire skills for living in a knowledge-based, and highly technological society [8]. The old-school model of passively learning facts and reciting them out of context is no longer sufficient to prepare students to survive in today's world. Solving highly complex problems requires that students have both fundamental skills (reading, writing, and mathematics) [3]. Skills include personal and social responsibility acts such as Teamwork, Problem Solving, Research Gathering, Time Management, Information synthesizing, utilizing high technological tools, Planning, critical thinking, Reasoning and creativity, Strong communication skills, both for interpersonal and presentation needs, Cross-cultural understanding, and Visualizing, and decision making.

With this combination of skills which are acquired through project research, students become directors and managers of their learning process.

II. OVERVIEW OF THE SYSTEM

It is imperative in any organization to have a sound and smooth information flow to implement policy effectively and efficiently to the utmost advantage of the organization or institution.

In the existing system, project proposals are being manually submitted and registered with some limitations associated with it, the student presents proposed topics to the supervisor, the proposal for the topic is to include the intended background/motivation of study, statement of problems, aim and objectives of the study, methodology involved and the benefits that may be derived from implementing the study.

The supervisor receives the proposals of the research interest, approves it by appending his or her signature on the proposal form, provides guidance and assesses the work. After the proposal has been approved by the supervisor, the student then proceeds to the office of the project coordinator for further approval and registration into a thick cover notebook. In some cases, another student under the supervision of another supervisor or lecturer may come with the same topic and the supervisor may go ahead to approve the project topic oblivious of that the same topic had already been approved for another student. In such cases, if the coordinator finds out that there is duplication after a long check of the list of registered projects, the topic is then cancelled by the project coordinator for the student that brought the most recent already existing project topic irrespective of the fact that it had already been approved unknowingly by another supervisor, this technically frustrate the effort of the student and make such student to starts the whole process of project proposal submission and approval. But if the project coordinator did not find out on time that there is duplication, he may go on to further approve and register the same topic for the student. At the end, more than one student may end up writing on the same topic as this is usually the case on the day of defense, and then it is late for changes to be implemented.

On the other hand of the actual research or project writing, the student has to be physically present with the project supervisor for work review and almost all corrections, this implies that both individuals must be at the same geographical location for easy project reviews, therefore at any point where any of the individual (supervisor or student) travels out or have a pressing function elsewhere, the project would have to be paused, pending when they are both in the same location [9].

Having that in mind, the student makes research on a project and hand write it on a paper, in most cases type and print the research documents, and then take it to the supervisor for further review and correction, or in some cases waits for the approved day or days of project supervision before seeing the supervisor. The supervisor reads and make necessary corrections and observations to be amended, and gives the student at the next meeting day, this process is repeatedly done until the project writing comes to an end, and other documentations that follows thereafter. The traditional way of project allocation and research writing is faced with so many deadlocks, which tends to alter the actual flow of the research.

1. **Stressful Activities:** It is very tedious to get a topic assigned to a student, due to the rigorous activities involved in choosing a project topic to a student.
2. **More costly:** Student tends to incur more cost to photocopy and printing of project work and correction.
3. **Duplication of topics:** Different supervisors tend to approve same topic (sometimes with slightly different title) for different students in the department.
4. **Time difference between student and supervisor:** Most times, submitting the project proposal or visiting the supervisor becomes hectic due to time schedule or personal issues.
5. **Slow system:** because the student needs to be physically present with the supervisor to submit every project document the system tends to be very slow, because if any of the individual (supervisor or student) happens to travel, the project would come to a pause, pending when such person arrives.

The New system “Design and Implementation of a Web-based Postgraduate Students Progress Monitoring and Interactive Decision Support System” has two perspectives: the “Project section” and the “Project Writing section”. Even though they tend to be seemingly two different systems, they are working together to achieve a common goal of digitalizing or automating and simplifying the process of student’s project activities for both the supervisors and students.

III. METHODOLOGY

The methodology adopted in this project work is the Structured System Analysis and Design Method – SSADM and OOPD. This system covers those aspects of the life cycle of a system from the feasibility study stage to the production of a physical design.

This information stored by the system is for the supervisors and students have a smooth conversation and exchange of data, the system has been developed using Apache as the local server, PHP, jQuery, HTML, CSS on Laravel framework and MySQL (database). The front-end is designed using HTML and CSS with excerpts of code written using jQuery and back-end is designed and managed using PHP, and the database is designed using MySQL. This system is more secured, user-friendly, and less time-consuming and its layout or user interface is comprehensively simple and interactive.

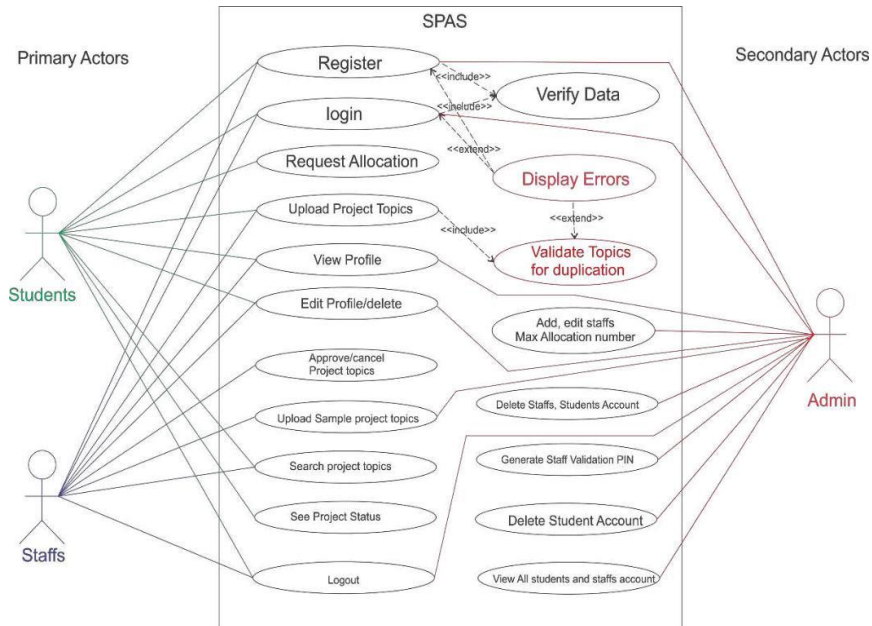
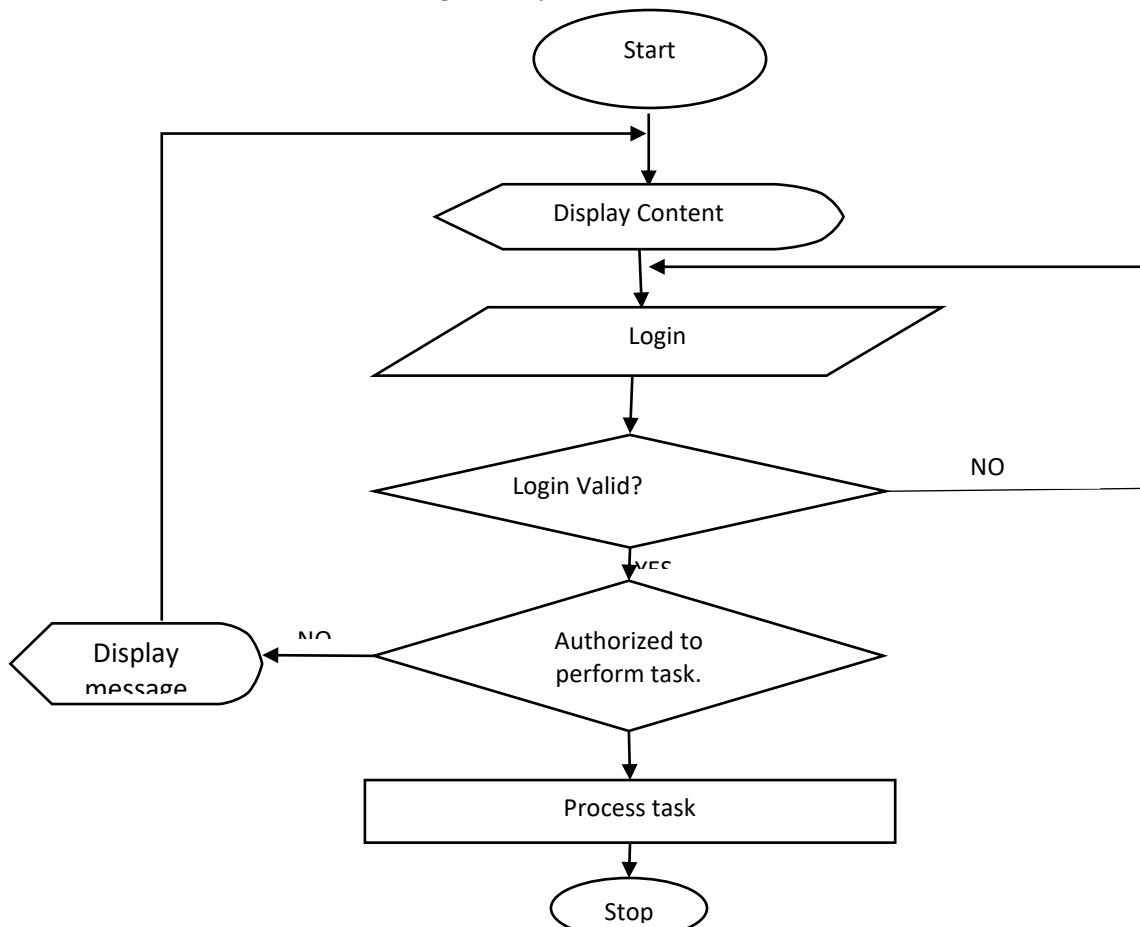


Figure 5, use case diagram.

The use case diagram entails all the activities that actors (users) can perform in the system and some internal functions performed by the system.

This is a graphical representation of the systems steps necessary to solve problems. This diagram is used to illustrate the order in which a variety of decisions are to be made and activities preferred. Its emphasis how the computer system handles various data through the stages of input, processing, output, and storage [7].

Figure 7, System Flow Chart



IV. SYSTEM DESIGN AND RESULT

LOGIN PAGE: This is an interface where the user login to the system and access the necessary resources.

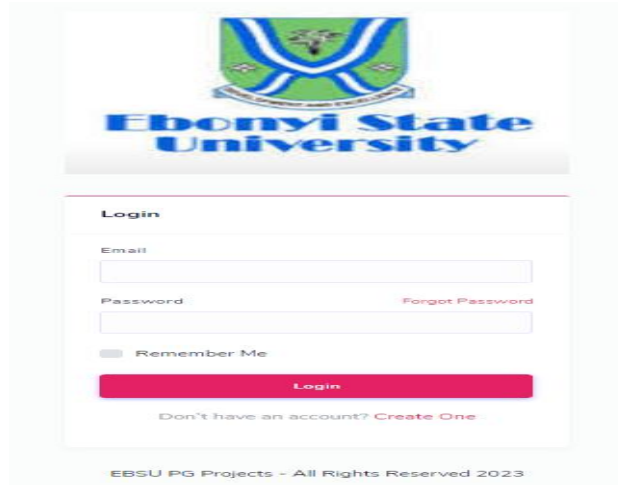


Figure 12, The user login page

Project Menu:

Here is the section where all project activities take place, which include progress monitoring and students' submission of their various project topics.

Here is a module testing for project topic duplications and giving a notification upon encountering. It checks the project topics submitted by a student and signifies the ones that are duplicates or already submitted by other students to their supervisors.

Students Menu: Here is a module testing for students that have already submitted a topic and have been approved, to avoid data redundancy, and abuse where students flood the database with topics after their topics have already been approved.

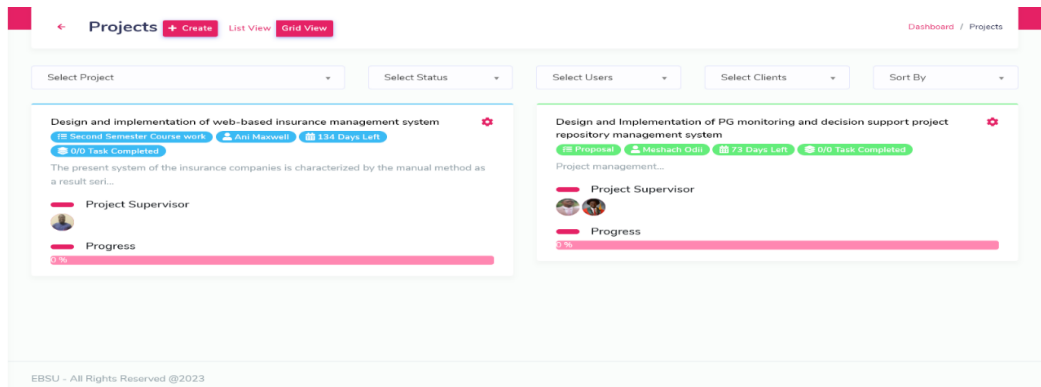


Figure 9, Submitted project topics.

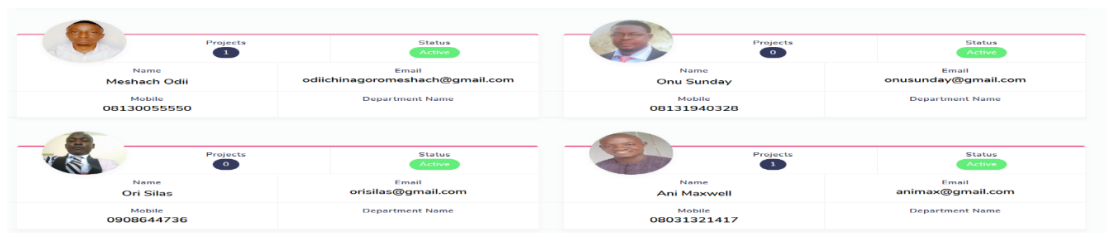


Figure 10, Notification for already approved Allocated and approved students.

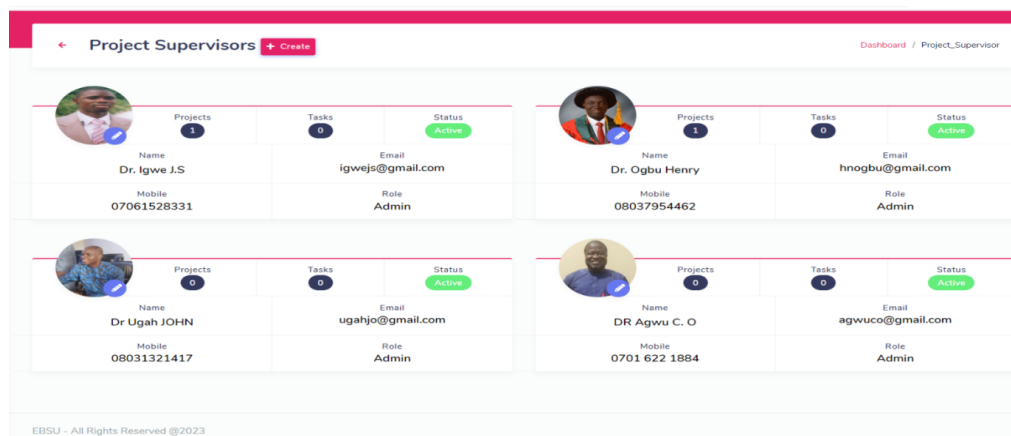


Figure 11, Notification for successful Allocation to a supervisor

Above is a test for supervisor allocation by a student, haven selected his/her first choice the system automatically matches such student with a supervisor suited for the sleeted domain, displays the supervisor's name and image, and disables the action for another match because it is a one-time action.

V. DISCUSSION AND CONCLUSION

This work is aimed at replacing and improving the manual method of Postgraduate project monitoring and Submission in Ebonyi State university, Abakaliki.

The program aids the students, supervisors, and the management to have a proper organization of the system. The benefits of this new software include:

Speed: the program will fasten the process of the project activities from topic submission, approval, and actual project materials submission [5]. Reliability/Convenience: This is achieved because it is a web-based system and thus allows project materials submission right from the convenience and comfort of student's location, Hence the system achieve it stated aims and objectives as follows.

1. A module for users to register and login into the system and access the various task and resources was developed.
2. A module for assigning a project topic to students and supervisor was developed.
3. Task management module that will enable the supervisor to assign tasks to students and monitor the students' progress was integrated.
4. Integrate module that gives the student a chatting area with his/her supervisor.
5. A module that provides information about the post graduate projects.
6. Create a platform where Student's project proposal and materials can easily be submitted to their supervisors without the problem of unfavorable time schedule by the supervisors.
7. A central database that manages implemented.

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