Object Oriented Programming (1)

Final Project Report

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Introduction

The Wahaj platform offers a solution to the difficulties faced by various participants of the learning process in managing academic data. It incorporates features like project and task management, students and courses data, and grading in one system. Through object-oriented programming, Wahaj improves academic and related practices. The system has also been modified to include a secured login so as to limit access as well as enhance usability.

Consistency in managing those numerous academic entities can be challenging without a comprehensive system. Students have problems of reorganizing their work and of checking their scores, and administrators have problems of supervising extensive data for students and courses. Moreover, these processes are not integrated which increases the inefficiency and the possibility of inaccuracies in the handling of data. Therefore, the main purpose of Wahaj is to help to make these processes less complex and isolated to be more productive, with the focus on the simplest ways of input and output of data.

System Overview

Wahaj presents an all-in-one approach for users' requirements. Users are able to manage projects by adding, viewing, modifying, deleting and searching for them. Furthermore, the projects can be associated with tasks that have specific characteristics such as name, description, status, and due date. Similarly, with respect to the management of students and courses, the system allows users to enter student information connected to specific courses and their grades.

Besides, the application also tackles the issue of grading – it facilitates students and courses connection, which allows users to assign, check and alter grades. To make the usage of the system safe, Wahaj includes such a security feature as login where end users create accounts and log in to manage their accounts. All these components simply put together make Wahaj a fully functional and powerful tool for taking care of educational processes and their organization.

The target users for this system are the university managements, faculty members and students. Administrators are able to manage the academic information for a number of students and courses using Wahaj while faculty members can manage the status of a project and task completion. There are also areas which addresses students concerns such as monitoring their grades and managing their courses eliminating unnecessary complication in their studies.

Class Diagram Explanation

The Wahaj system is based on an object-oriented architecture that defines the main classes of the project. The ProjectManagementSystem class is the core part as it deals with dynamic lists of projects, courses, students, and tasks by utilizing ArrayList. Every list has fundamental operations such as adding, updating, and deleting a set of elements.

The Project class elaborates on certain projects and stores a project name and the description. Also, the project has a number of tasks defined by the Task class with attributes such as task name, description, status, and due date.

The Student class oversees the students' data, which includes the students' name and ID, as well as a list of grades. Each Course is associated with a Grade and, thus, the students' grades are linked to their respective courses. Finally, the system has the LoginSystem and User classes which guarantee security by allowing or denying users access according to system privileges. These classes form a completely coherent academic management that is also very effective

System Functionality

As it has been earlier mentioned, the Wahaj system includes several fundamental classes to meet the needs of users. An aspect of managing projects through lists inclusive of creating, viewing, editing, deleting and searching the projects by their names. The tasks can be created, related to a specific project, and while assigning the task, it is possible to indicate its status and due date to control the effectiveness easily.

In terms of student and course, the system enables the entry/addition and modification of student and or course data. Every student belongs to definite courses and has grade records connected with them. This a helpful application for altering and monitoring academic achievement as it organizes the grading process and system.

Login system protects data as it engages the user to enter their credentials each time they want to log in. Also it is used registration of users and account maintenance, so each user can exercise his/her own account. When all of these are integrated, the Wahaj serves to be a useful and all-compassing tool for dealing with academic data.

Challenges and Solutions

Designing Wahaj proved unproblematic but implementing it required several trials, a fact best illustrated by the numerous issues involving interfaces and communication between the various elements of the system. Store management of the data for projects, tasks, students, and courses had been dynamic which necessitated the need for dynamic management. This was achieved using ArrayList since it provides ability to add data to the list, remove data, as well as retrieving it.

One of the tests seen was the desire to adhere to the fundamental principles of object-oriented programming as, for example, inheritance and encapsulation. This was accomplished by designing and implementing highly coherent and well coordinated classes in order to maintain modularity and flexibility of the system. These measures meant that various developmental obstacles were overcome and established a strong framework to the system.

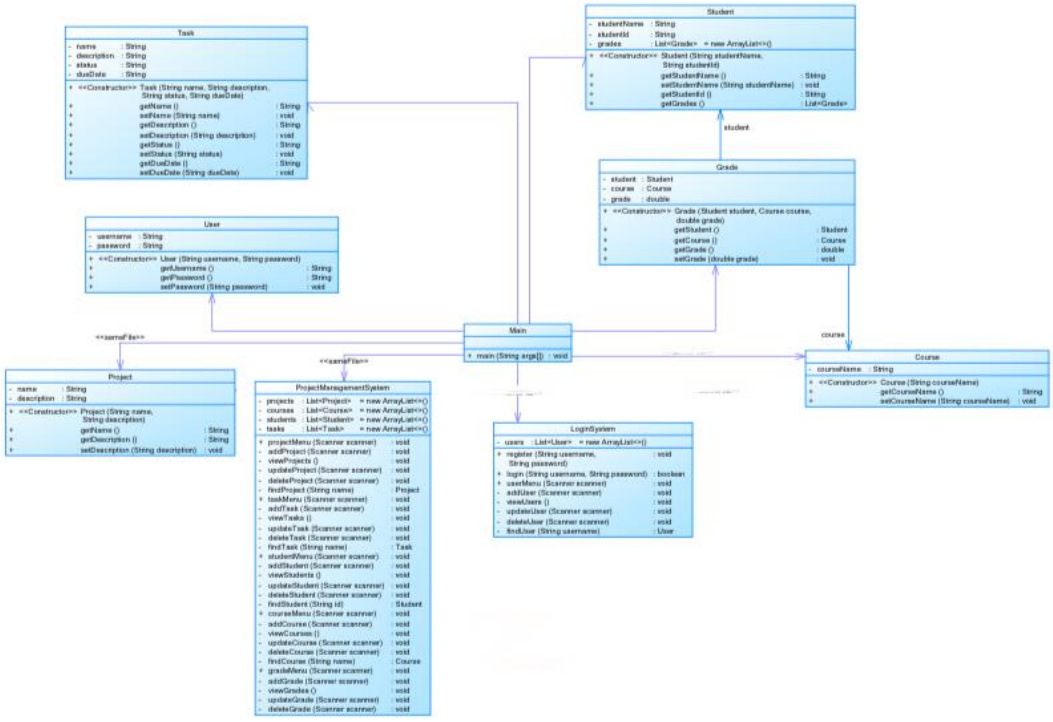
Conclusion and Future Work

In conclusion, Wahaj manage to incorporate project management, task tracking system, students and course management system and grading system all at once in its system. From the findings of the project, this research work has been able to show the practical application of the principles of object-oriented programming to actual academic management issues. It offers the users the simplest methodology, and at the same time safest, to plan their academic activities effectively.

However, there are some things which can be worked on in order to enhance the situation. The current implementation provides an interface with text mode only, and this can be enhanced with graphical mode for improved user interaction. Further development of the work can be done in the following ways: the system can be developed to accommodate a large volume of data and designed for users other than students including the faculty and the administrators. Additional features of the system such as notification and analytical of student academic performance could also improve on the system.

With these enhancements, Wahaj can become a powerful academic management tool.

Frame work
(UML diagram)



References :

• Y. Daniel Liang, "Introduction to JAVA Programming, Comprehensive Version, Tenth
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