International Journal of Advances in Scientific Research and Engineering (ijasre)

E-ISSN : 2454-8006

DOI: 10.31695/IJASRE.2022.8.6.6

Volume 8, Issue 6
June - 2022

Web-Based Management System for Student Score Passing Grades

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ABSTRACT

In the current digital era, all schools from elementary to tertiary levels certainly require computer equipment and supporting applications to support teaching and learning activities. One indicator of learning success is seen from the students or their learning outcomes. Learning outcomes are the success achieved by students, namely student learning achievements in schools that manifest in numbers or grades. Many schools in managing grades currently use a media system for storing student data, teacher data, class data, lesson schedule, and score data that are still done offline without a database, as well as what happened at the Santa Ursula Junior High School of Jakarta. Filling in the assignments, daily tests, semester test scores, and final semester examinations is always done in writing on paper, which results in a slow score calculation process, so it takes a long time. Based on this condition, the researchers designed and created a web-based information system that precisely handled the management of student scores and printed them out. The design of the grading management information system for the academic administration of grading management was built using the PHP programming language with a database with MySQL and XAMPP Server. This system aimed to facilitate the academic administration of schools, teachers, students, and homeroom teachers.

Keywords: Information Systems, Academic Administration, Scores, Students, Teachers.

INTRODUCTION

Learning outcomes are the success achieved by students, namely student learning achievements in schools that manifest in numbers or grades. Many schools in managing grades currently use a media system for storing student data, teacher data, class data, lesson schedule data, and grades data that are carried out while still offline without a database. This condition also happened at the Santa Ursula Junior High School of Jakarta. This school is a leading Catholic private school in Jakarta. Thus, it is often used as an option for parents of students because this school is classified as advanced and until now. It has not had a particular application for managing student grade data yet. The implementation of its management uses a conventional or manual system, namely the class teacher when making reports on the score of learning outcomes for one semester. Students must write them in the learning outcomes assessment sheet based on the subjects taught by the school. The sheet of paper containing this score and the score sheet for other subjects is then collected to the administration section and must be collected within the specified deadline. Regarding calculating the final score of the report card, the administration has used the Microsoft Excel application.

The manual student grading management system carried out by entering grades manually or written on paper is quite time-consuming. There, the collecting grades process usually delay, and the calculation of grades usually gets errors. Score recap data in the form of sheets of paper cannot be appropriately controlled so that data can be tucked away or lost, or accidentally wasted. Therefore, it is necessary to create a system that focuses on entering data consisting of student data, lesson schedule data, teacher data, and student assessment data in the form of average assignments, final grades, semester test scores, and daily test scores. This grading management process is in the school administration management section.

Academic administration management, which is ongoing, continues to be improved, including an information system for managing student grades. It is hoped that with this information system, homeroom teachers and subject teachers will be easier not to submit the students' scores to the administration. Subject teachers simply use a laptop or computer to enter student scores into the information system, where the data entered will occur automatically in the database. Then, automatically, the data that has been saved will form the final score, which can then be printed, stored, or viewed by the homeroom teacher as reference material in writing report cards or reports on student learning outcomes.

The web grading management system is an option in grading management. After all, this web-based technology is one of the most frequently used applications in daily life [1], by using a computer as a tool that can store and manage data quickly, precisely, and accurately and makes it easier for users because it is web-based so that it can be accessed easily. Technological developments play a significant role and are not only needed in daily life, including in academic administration management in schools. Administrative management in schools covers many things, from student enrollment to student graduation. Therefore, grading management is part of administrative management in schools.

Researchers designed this system aimed at helping subject teachers in managing student grades effectively and efficiently so that the processed data can be stored neatly and avoid errors in entering the score data. In addition, the existence of an integrated web-based grading management information system can help manage student grades effectively and efficiently.

2. LITERATURE REVIEW

2.1 The Student Learning Outcomes and Assessment

Grades are general concepts about something considered reasonable, proper, worthy, appropriate whose existence is aspired to, desired, internalized, and implemented in daily life. It also becomes the daily life goal within the community group, starting from the smallest social unit to the tribes, nations, and the international community. It is a measure of students' success in taking education in school [6]. The grade is also an expression of concepts that represent a dynamic set of energies. According to the Great Indonesian Dictionary" or "Kamus Besar Bahasa Indonesia" (KBBI), a grade is something that perfects humans according to their nature.

Referring to the provisions regarding the Educational Assessment standards contained in the Regulation of The Ministry of Education, Culture, Research and Technology of Indonesia No. 20 of 2007, it is explained that education, in this case, is the teacher reporting the results of the subject assessment to the head of the education unit at the end of each semester. Some of the principles that are used as the basis for assessing the learning outcomes of elementary and secondary education students are accountable, criteria-based, systematic, comprehensive and sustainable, open, integrated, fair, objective, and valid. The research techniques and instruments could be in the form of assignments, tests, supervisions, or observations.

In determining the KKM (Minimum Completeness Criteria) of each subject, each school must pay attention to the condition of the education unit, the characteristics of the subjects, and the characteristics of students through the board of educators meeting. However, the KKM should be higher or the same as the minimum passing limit for the national exam conducted by the Ministry of Education, Culture, Research, and Technology of Indonesia.

2.2 Web-based information system

A system within an organization is a bridge between the daily transaction processing needs that support organizational operations and strategic activities and provides certain outside parties in reports called an information system. A web-based information system is an application made on a web-based or internet network. In this application, there is a database to manage specific data, in this case, the score data obtained by students.

Data processing is the time used to describe changes in the form of data into useful information [4]. Data processing is the period used to describe changes in data into useful information [5]. The student grade data obtained is processed into information that students can understand and represents complete learning in grades.

2.3 Unified Modeling Language (UML)

The Unified Modeling Language (UML) is defined as a family of graphical notations supported by a single meta-model, which helps design and describe software systems, especially systems built with object-oriented programming [7].UML describes object-oriented programming with several diagrams, namely class diagrams, use case diagrams, sequence diagrams, and activity diagrams.

3. METHODOLOGY

The system design method used was the SDLC (System Development Life Circle) approach model with the waterfall model (Royce, 1970) proposed by pressman (2001). This application used the stages of the SDLC cycle of the waterfall model. The development was started from analysis, design, coding, testing, and maintenance. At the analysis stage, an analysis of the school's needs was carried out, data needs, software readiness needs, and expected outputs in the system to be made. Entering the design stage meant focusing on designing software programs, including data structures, software architecture, interface representation, and coding procedures. The translation of the existing software requirements at the requirements analysis stage into a design could

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be implemented into a program. In the coding stage, the design made was translated into a software program. The result was a computer program following the design made.

Entering the testing and maintenance stage, it would be ensured that all parts were tested and errors that occurred were recorded to be corrected during the testing so that the expected output was obtained in this system. The maintenance seems needed by any products, including repairs and the needs adjustments as these may develop.

4. RESULT AND DISCUSSION

The resulting system design in this study is shown in a use case diagram in Figure 1 after analyzing the existing needs.

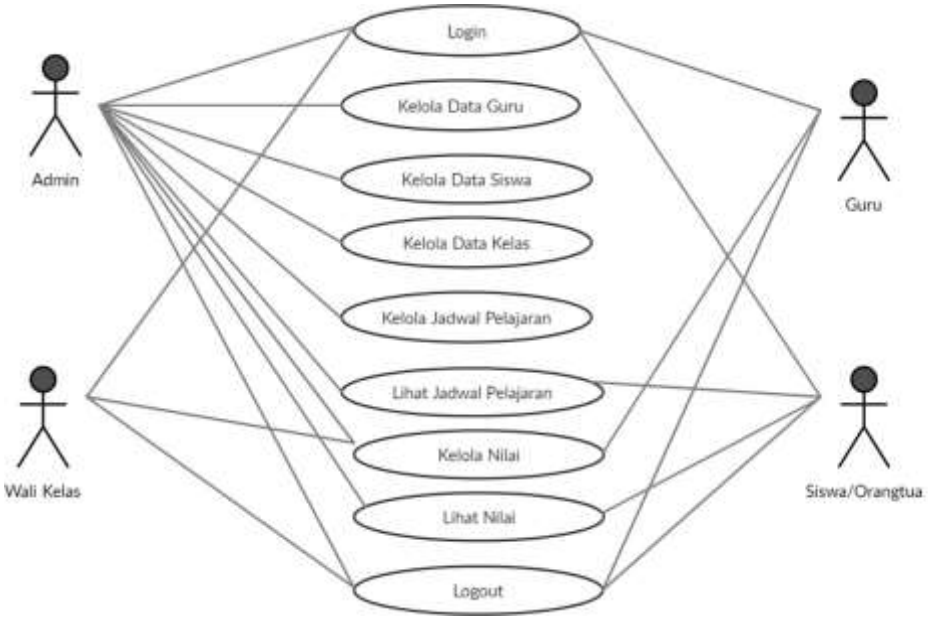

Figure 1. Use Case Diagram of Grade Management System

Four actors were proposed in this grade management system, namely admin, teacher, student, and homeroom teacher at their rules in Table 1, respectively. The proposed use case consisted of logging in, managing teacher data, managing student data, managing class data, managing lesson schedules, viewing lesson schedules, managing grades, viewing grades, and the last was logging out.

Table 1. Description of Actors in a System

Actor	Role
Admin	The actor plays to carry out to *log in* to the system, *inputs* class schedule, class data, grade data, student data, teacher data, and creates reports for the principal.
Teacher	The actor plays to *log in* to the system, can *input* grades, and manage students' grades.
Student	The actor plays to *log in* to the system. Then, students can see the lesson schedule and the grade they got.
The homeroom teacher	The actor plays to *log in* to the system. Then, the homeroom teacher can *input* the grades data.

The description of the relationship between the entity classes created in the grade management system by the researcher is described in the class diagram in Figure 2.

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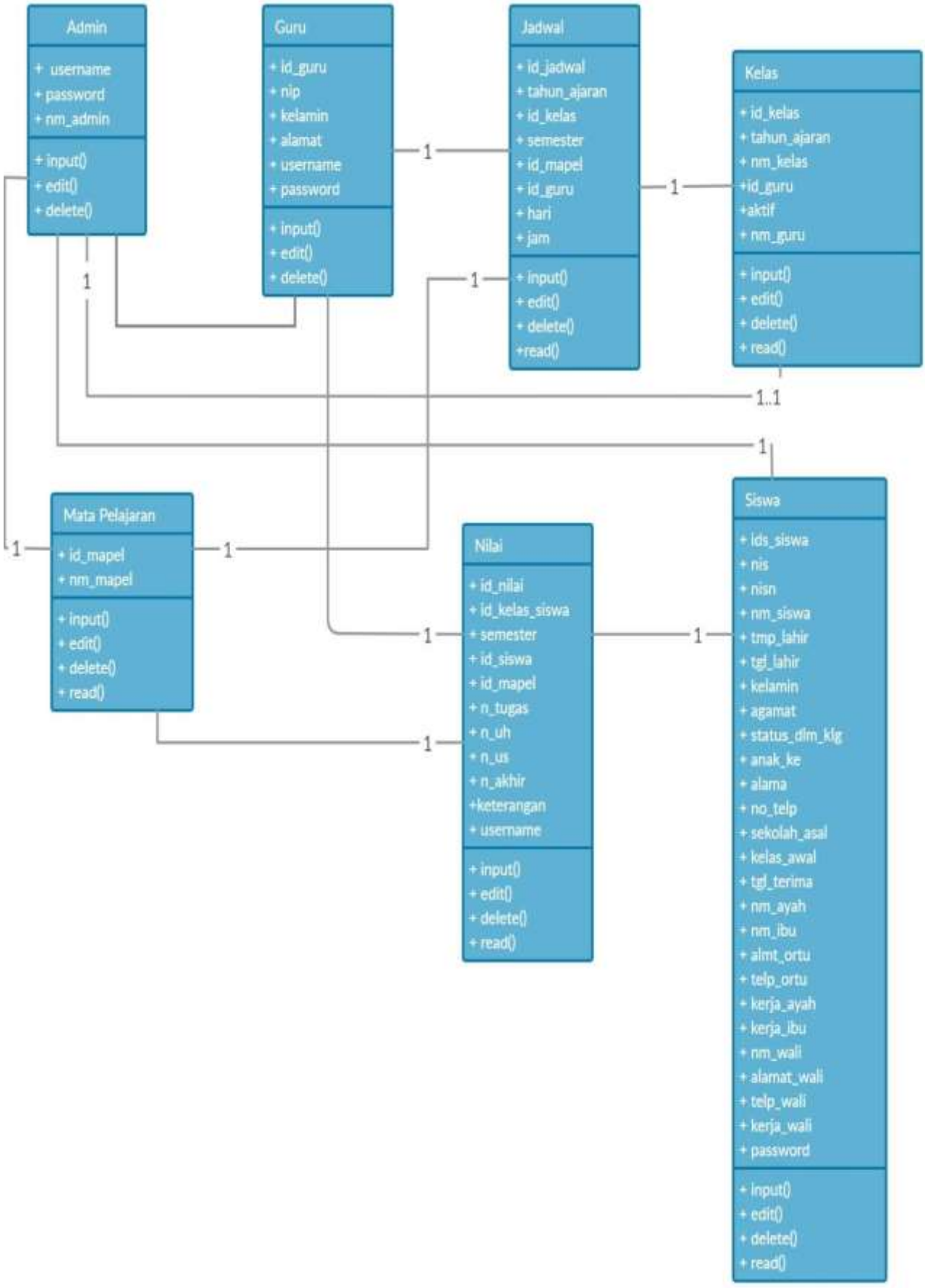

Figure 2. Class Diagram of Grade Management System

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The implementation of the resulting program included a dashboard for the grade management menu process that involved four actors and could display assessments, student report cards, and reports.

Figure 3. Display of the home page of the grade management system

Teachers were facilitated to *input* students' grades, both grades for assignments, mid-semester exams, and final exams, and could make reports based on students or classes taught during the academic year. Students could also view reports on the scores they got without editing. The editing and input process was only carried out by the teacher of the relevant subject.

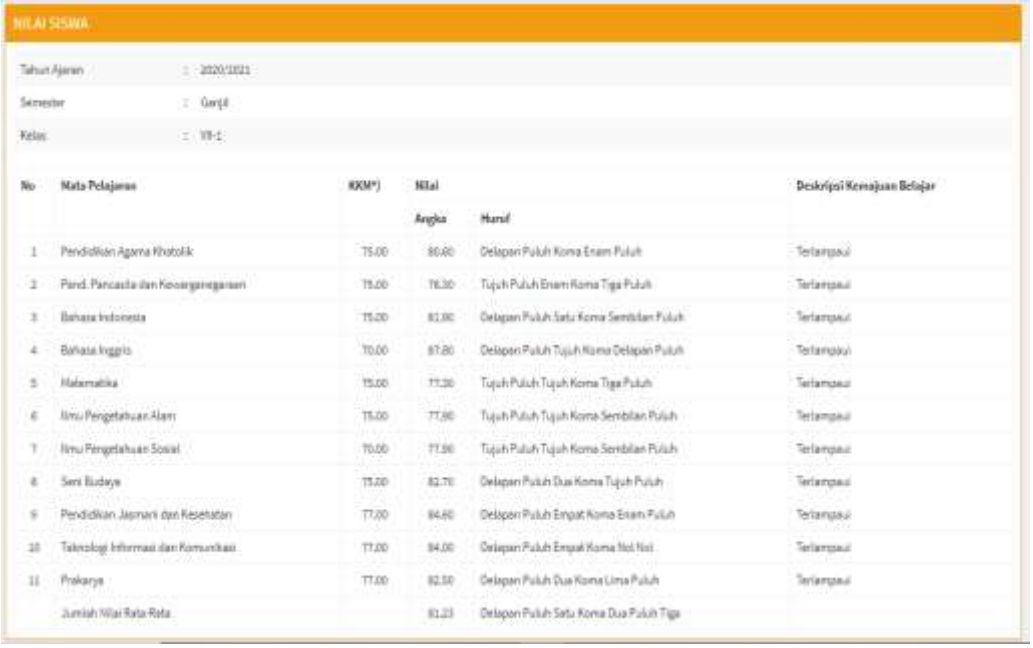

Figure 4. Display of the students' grades obtained

4. CONCLUSION

The academic administration system in Santa Ursula Junior High School can be facilitated in processing data, such as teacher data, student data, lesson schedule data, class data, and grade data. Teachers and students can edit the profile if there are errors that occur in the data that may be done. In grade management, teachers can input student grades that include the scores for assignments, daily tests, and test scores (UTS and UAS). The grade processing information is managed directly by the teacher. Teachers have the access to their right to manage the grades data. For students, it is easy to see the lesson schedule data, class data, and the grades data obtained by the students themselves. Another advantage is that the school can collect data on students, teachers, and classes effectively and efficiently.

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DOI: 10.31695/IJASRE.2022.8.6.6