Design and Build a Student Course Database Using Microsoft Access and Visual Basic.Net at the Guna Rayadi Ilmu Educational Foundation

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Article Info	ABSTRACT
	The advancement of technology is currently developing rapidly and becoming increasingly sophisticated, especially in the fields of information and applications, with many achievements already made by humans. Information technology has now become an inseparable part of human life. In this case, regarding the Design and Development of a Student Course Database Using Microsoft Access and Visual Basic. Net At the Guna Rayadi Ilmu Educational Foundation, which serves as a storage for data and information Learning and student activities software used for designing and planning is a simple programming language as a tool to help manage the database, which is expected to provide facilities and ease to the Management, Staff, and Instructors, to know the foundation's management data currently in use, as well as to fill out or print student and Instructor reports systematically and obtain complete information quickly through this program.
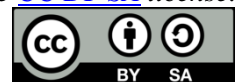
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1. Introduction

The development of information technology, accompanied by the advancement of computer technology in both software and hardware, has successfully realized a form of communication network with the global or international environment known as the internet with various forms of service facilities communication. The network will provide users with the convenience to communicate globally by transcending territorial boundaries. Countries freely. The Informatics Development Education Foundation is an educational course and one of the foundations that has joined the community learning center. community learning (PKBM) includes underprivileged villagers and employees

from private companies, this foundation was established in 2023, its location is in the Ulee Kareng sub-district of Banda Aceh city.

Data is a source of information that is useful for its recipients in making decisions for the present and the future. For that reason, a data processing system is needed that can produce accurate, timely, efficient, and reliable information. In this regard, data and information play an important role in the formulation of programs and planning for educational development. Android provides an open platform for developers to create their own applications. The types of applications that have already been developed include map applications, dictionaries, and others. For that reason, the author will attempt to create a design that includes a database system organized neatly according to the sub-forms needed by the foundation, both from the administrative staff and the reporting of course students, as well as the computer course educators within the foundation. With this design, it is hoped to ease the input of course education management data in more detail without manual data entry.

This is also the background for the author to undertake the design presented, titled "Design and Build a Student Course Database Using Microsoft Access and Visual Basic.Net at the Guna Rayadi Ilmu Foundation." The design of this database system for students can be carried out by the previous administration. Additionally, it simplifies the process of reporting learning and daily schedules, which can be systematically monitored every day, allowing for detailed tracking of learning outcomes and educational programs. From the aforementioned issues, it is expected that the final project titled "Design and Development of a Student Course Database" will facilitate the processing of student data and reporting effectively and efficiently, thereby easing the workload of staff and instructors.

2. Theoretical Basis

Basic Concepts of Systems

A system consists of subsystems. Each subsystem can consist of smaller subsystems or components. The hardware subsystem can consist of input devices, processing devices, output devices, and external storage. To understand the concept of a system, we will further discuss the definition of a system, its characteristics, and system clarification. According to Jogiyanto H.M (2008:34), a system can be defined using a procedural approach and a component approach. With the procedural approach, a system can be defined as a collection of procedures that have a specific purpose.

Basic Concepts of Information Systems

Information can be defined as the result of data processing in a form that is more useful and more meaningful for its recipients who describing real events (fact) that are used to make decisions (Jogiyanto, 2005). Data is a description of an event that we encounter. Another definition of data is that data is a reality that describes events from a real entity. A real unit is in the form of a real object such as a place, thing, and people that truly exist.

For decision-making by management, these factors must be further processed to become information (Ladjamuddin, 2005).

Meanwhile, the definition of information explained by Kadir (2003) states that information is data that has been processed in such a way that it enhances the knowledge of someone using that data. And Gordon B. Davis defines information as data that has been processed into a form that is meaningful to the recipient.

Data ➡ Process ➡ Information

Figure 1. Information Cycle

The value of information is determined by two factors: its benefits and the cost of obtaining it. An information is said to be valuable if its benefits are more effective compared to the cost of obtaining it. Furthermore, some information cannot be interpreted in terms of monetary value but can be interpreted in terms of its effectiveness (Jogiyanto, 2008).

System Design

The system is designed using the Microsoft Access application program and the Visual Basic .NET database, which is a technology that includes programming languages with syntax and rules. Data is an important part of modern programming, so all programming languages provide functions to access databases. storing information in the database and retrieving information from it. Specialized applications and programming environments specialize in interpreting visual data.

Database

A database is a collection of (elementary) data that is logically related to represent phenomena or facts in a structured manner within a specific domain to support applications in a particular system (Hariyanto, 2008). In addition, the database also reflects the facts present in the organization.

3. Research Methodology

It is a stage of system development on the system that is currently running. The stages referred to are as follows:
a. Planning
   The design phase is the initial stage of system development that defines the general estimates of system requirements such as hardware, software, and administration, the determination of system objectives, and the identification of system constraints.
b. Analysis
   The analysis stage is a research phase on the system that is currently running with the aim of determining which variables will be eliminated or improved to design a new system using a Data Flow Diagram as an aid.
c. Design

This stage determines the data flow processes required in the new system with the aim of meeting user needs. At this stage, Data Flow Diagram tools are used to visualize the system design before the program code is written (application development).

d. Maintenance

After the implementation of the new system is completed, the next stage is system maintenance process by performing backup, audit, monitoring, and further system development.

4. Results and Discussion

The data input section has the task of carrying out data compilation, data information services, as well as report preparation and program evaluation based on objectives, programs, and activities. The system development research conducted is more focused on the problem boundaries and the scope of activities in the administration or data input section. The development of this system manages the processing of course student data, from the input process, data verification, to reporting. Here are some processes that will be implemented in the program.

The design (interface design) of the student course database application at the foundation is made as simple as possible with the aim of making it easier for users. After coding the Microsoft Access application, this system must be tested to see if it works according to the expected specifications. The testing phase is the stage where the system is placed to ensure that no errors occur before the system is handed over to the user. The design of the software interface that will be tested is as follows:

a. Login

To access the program, the admin must log in first. The login page is the security page of this program.

Figure 2. Login Menu

b. Main Menu Page

The main menu page is the display page when the program is run. The program can be seen as follows.

Figure 3. Home Page

c. Form Data Instructor

This form is used for the data collection of instructors/tutors at the foundation. The appearance of the data form can be seen in the following image.

Figure 4. Instructor/Tutor Data Form

d. Form Course Student Data

This form is used for recording the data of students at the foundation. The appearance of the student data form can be seen in the following image.

Figure 5. Student Data Form

e. Form Schedule Data

This form is used for recording the course schedule data at the foundation. The display of the student schedule data form can be seen in the following image.

Figure 6. Study Schedule Data Form

f. Education Costs

Educational Costs are the conclusions or data obtained after conducting an experiment. Here is the report of the results or output from the data that has been entered.

Figure 7. Education Costs

g. Report Results

The results report is the conclusion or data obtained after conducting an experiment. Here is the report of results or output from the data that has been entered.

Figure 8. Results Report

5. Conclusion

The purpose of developing the student data information system at this Computer Education Foundation is to assist the data and information sub-section in processing the course student database at the Computer Education Foundation. Based on the results of the analysis and design in the previous chapter, the following conclusions can be drawn:

a. The design system is built into a computerized system that can accommodate an increasing amount of data and improve the validation process accurately at the time the data is entered, ensuring that the information produced is complete and the accuracy level is guaranteed.

b. The computerized academic data of the foundation can provide information about students, instructors/tutors, along with course schedule data.

c. Data entry has been improved with the support of the system and adequate devices, so that the foundation's data processing, such as data addition and editing, can be carried out effectively.

d. Users who can log in as admin and operator are employees who have a username and password that are

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