The role of database system on secondary education

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Abstract
Data management that includes the storage of student data as well as reporting the age of students is still done simply where the data is only stored in an excel data. It looks less effective and efficient in the development of current technology. Therefore now implementation of Management Information System (DBMS) in educational institutions that have a variety of activities related to the implementation of education. Database-based applications are one of the solutions aims to address the problem of managing student data in schools. Research methods used is the library method.

The method of collecting library data is done by collecting data from sources or books relevant to the research. with the school that has implemented the management information system (DBMS). The application was developed on schools in general with MySQL programming languages and several tools including file manager, database manager, query processor, and DML Precompiler. From this research and observation it is proven that the application runs in accordance with the features available.

Keywords: Database Management Systems, Education

1. Introduction
Schools are educational institutions that have a variety of activities related to the implementation of education. There are a variety of activities that reflect the implementation of education ranging from the management and administrative to the technical nature of learning. In the decision-making process, the principal needs information. Clear and complete information will facilitate the principal in solving problems effectively and efficiently. A well-managed information system is the biggest asset for schools. The principal in the process of making decisions depends heavily on a well-managed information system.

Currently the school has started to build a School Data Base Management System."The database is the part that contains all the facts, both the initial facts at the time the system starts operating and the facts obtained at the time of conclusion are being implemented. School management applications are defined as a program aimed at the advancement of school institutions, to effectively solve problems with resource feeding through an integrated file system designed to minimize data repetition." (Herawan Hayadi *et al*., 2018) Database management system is expected tomake it easier for the principal to input, process and utilize the existing data for consideration in decision making.

2. Literature Review
The purpose of database design is to determine the data needed in the system, so that the resulting information can be fulfilled properly. A database that is already included in a storage media can never be accessed without an application software familiar with it, for example, database-based application software.
The role of databases in education in the world of education the role of databases is a very important part. Examples of its use in the field of education are:
a. In the Aspect libraryto make it easier to find a document, book, reference and so on, thenby searching by the name of the researcher.
b. In the AdministrativeAspect, there needs to be a database system to make it easier to enter data. For example, in school payments.
c. In aspects of learning data,,for example related to questions such as the following:
    1. How many students take the final exam of the school and pass?
    2. What is the final grade of a student and what is the average grade of the class?
    3. How many students are active in this semester?
    4. How many students are male and female?

5. Who is the teacher in charge of a subject?
6. And many other questions

In a system there is a context diagram. A context diagram is a diagram that consists of a process and describes the scope of a system. Context diagrams are the highest level that describe all inputs to the system or output from the system. Context Diagram gives an idea of the whole system. Context diagrams in secondary schools can be described as follows: (Aditya Prabowo, 2007)
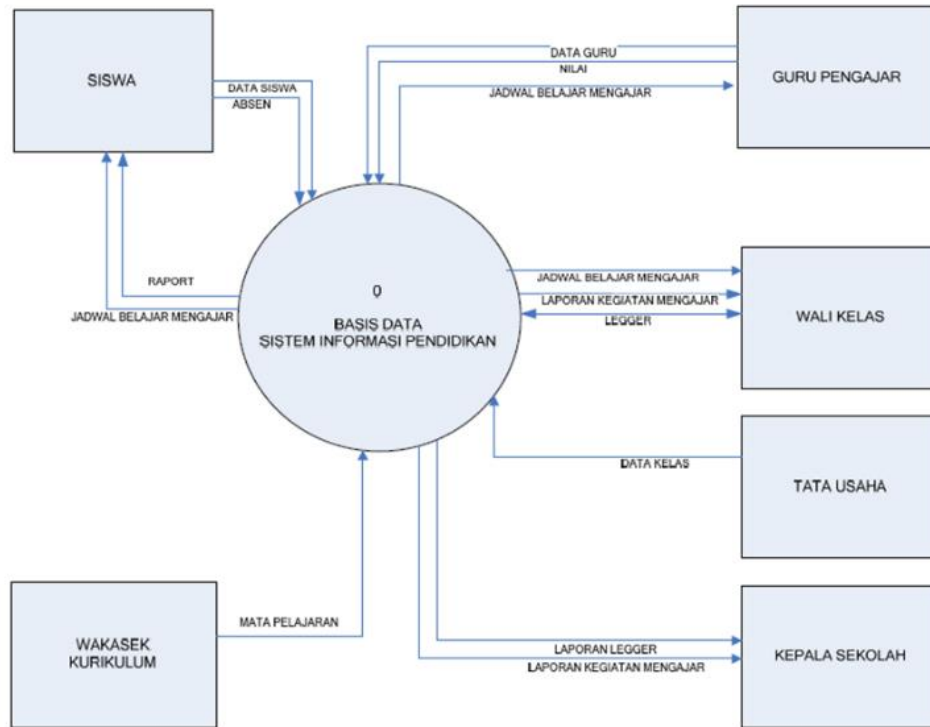

Fig 2.1: Context Diagram

3. Methods
This research uses literature study method to find out similar research that has been done. Each study will be discussed briefly to find out the differences between each of the studies that have been carried out. In this study, the method of data collection used, namely the library method. The method of collecting library data is done by collecting data from sources or books relevant to research.

4. Result and Discussion
4.1. Result
DBMS is a software that allows users to define, create, retrieve data, and control access to databases. DBMS is a software that integrates databases with program applications on users.

Advantages of using database management systems
a. Reduce data repeatability: The amount of data will be reduced, compared to When computer files are stored separately for each computer application. The same data between files, in a relational database management system, is used to form implicit relationships between data.
1. Achieve data independence. The data specification is stored in the database itself rather than in each application program
2. Retrieve data and information quickly. Logical relationships and structured query languages allow users to pull data in seconds or minutes compared to hours or days of retrieving data using traditional programming languages such as COBOL or Java.
3. Better security. DBMS mainframes and micro-

computers can have layered levels of security security such as passwords, user directories, and encryption.

4.1.2 DBMS Constituents
In general DBMS has several functional components or modules (Raharja University, 2020). Some components of DBMS are as follows:

4.1.2.1 File Manager
Components that manage space on the disk as well as the data structure used to represent information stored on the disk.

4.1.2.2 Database Manager
Components that provide interfaces between low-level data contained in the database with application programs and queries provided to a system.

4.1.2.3 Query Processor
The component that serves to translate commands in the query language to low-level instructions that the database manager can understand.

4.1.2.4 DML Precompiler
The component converts the DML command, which is added in an application program to the normal procedure player in the parent language. Data manipulation in DML includes:
a. Retrieval of information stored on a basis.
b. Placement of new information on a basis.
c. Removal of information from the base.
d. Modify the information stored in the database.

4.1.2.4 DDL Compiler
Components that convert various DDL commands into a set of tables containing meta data.

4.1.3 DBMS Types
In its application, there are several types of DBMS software that are often applied to manage school databases, including:

4.1.3.1 MySQL
The first DBMS software is a widely used MySQL because it is available for free. So this app is suitable for school. MySQL can be used quickly in query performance, and is sufficient for small mid-sized enterprise database needs. (Fingerprint, 2005)
As DBMS software, MySQL has a number of features as described in this bawh:
a. Multiplatform
MySQL is available on several platforms (Windows, Linux, Unix, etc.).
b. Reliable, fast, and easy to use
MySQL is classified as a reliable database server that can handle large databases athigh speed, supports many functions to access databases, and is at the same time easy to use.
c. Guaranteed access security
MySQL supports database security with various access criteria. As an illustration, it is possible to set certain users in order to access confidential data (e.g. employee salaries), while other users should not.
d. QL support
As implied in its name, MySQL supports SQL commands (Structured Query Language). As is known, SQL is standard in accessing relational databases. Knowledge of SQL will make it easier for anyone to use MySQL.

4.1.3.2 Web application
Web applications can be divided into 2 categories, namely static web and dynamic web (Abdul Kadir in Arif Mustafa, 2011)
a. Static Web
Static web is a web application that contains or displays information that is static (fixed). It's called static because visitors can't interact with the web. On static web visitors can only view the contents of the dokuman on the webpage. Static web typically uses HTML 2web programming and does not have a database.
b. Dynamic Web
Dynamic web is a web application that displays information and can interact with visitors by using a form so that it can process the information displayed. Dynamic web usually uses PHP web programming and has databases for storing information, such as MySQL.

4.1.3.3 Web Server Usage
A web server is a software or program (as well as a machine that runs programs) that understands HTTP protocols and can respond to requests from web browsers that use the protocol (Dwi Widodo, 2005). Well-known web servers include Apache and Microsoft Internet Information Service (IIS). Apache is aninter-platform web server, while IIS can only operate on Microsoft Windows operating systems.

4.1.3.4 Web Browser
Web browser is a useful software to access information on the web or to make transactions via the web (Abdul Kadir, 2003). Popular web browsers today are Internet Explorer, Mozilla Firefox, Netscape Navigator, Safari, and Opera.

4.1.3.5 Oracle
The device has a variety of features that can meet the demands of educational data flexibility. Even this device also has transaction and data processing with a very high performance.
With such powerful capabilities so it is not surprising that this software is sold at a very expensive price with its complicated computerized system. But to meet the criteria as in the understanding of DBMS / Database Management System, this device is not in doubt in terms of security.

4.2. Discussion
In achieving educational objectives, the headmaster is a leader who is required to direct all components of the school in order to achieve goals that have been set. The principal as a leader has a decision-making function.
The principal as the leader is required to be able to make decisions related to school affairs. There are at least three decisions taken in order to carry out the leadership function of the principal, namely to make decisions with the education staff in the school, make decisions for the internal school and decisions for the external interests of the school. Every decision taken certainly requires relevant information and this relevant information is obtained from the utilization of a good data base system.
The principal also uses the role of the education database system in determining what the next steps should be taken. This is done in order to find a solution to every problem in the school that must be found a way out. Often the headmaster monitors information through the facilities available in the school. The existing database information system provides convenience for the principal to accelerate the access of information so that various stages that must be taken in decision making can be passed in a fast way.

5. Conclusion
From the research that has been done, Schools are educational institutions that have a variety of activities related to the implementation of education. School management applications are defined as a program aimed at the advancement of school institutions, to effectively solve problems with resource feeding through an integrated file system designed to minimize data repetition. The results of this study Database management system / DBMS is software that integrates databases with user application programs. This device has a variety of features that can meet the demands of educational data flexibility. This device is not in doubt in terms of security.

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