

Database Management System

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Abstract: A database is a system used to manage data on a computer system. There are several database work systems that have their own laws and ways of working. Data are arranged in various levels. In computer data are classified in a hierarchy. A higher level consists of one or more data at a lower level. Example: a folder has several sub folders, some subfolders have several files. Management of database management requires a tool / tool to be able to manage it, so that database management can continue to be managed and continue to improve its performance. With the existence of an information system, an organization will strive to be more competitive and efficient, which in turn adds value to obtaining, changing and distributing information with the aim of increasing decision making, increasing organizational performance in achieving its organizational goals. An effective Information System provides accurate, timely and relevant information to users so that it can be used for decision making. In making decisions, both in daily operations, as well as in strategic planning into the future. The decision-making process must be based on timely and appropriate data and information so that the decisions taken are on target. Information is obtained from data processing, and data processing is carried out by information systems with the support of information technology.

Index Terms: Database, Management, System, Mangement System, Mangement Information Sytems.

1 INTRODUCTION

In the current Global Era Management Information Systems are an inseparable part of an organization where information systems that produce output (output) using input (input) and various processes needed to meet certain objectives in a management activity. Database management system is software that can be used to define, create, manage and control database access. An effective Information System provides accurate, timely and relevant information to users so that it can be used for decision making. In making decisions, both in daily operations, as well as in strategic planning into the future. The decision-making process must be based on timely and appropriate data and information so that the decisions taken are on target. Information is obtained from data processing, and data processing is carried out by information systems with the support of information technology. Data is raw material information and is collected in a database (database) so that collection, storage, maintenance, processing, and security can be carried out effectively and efficiently data management is needed, so that such information can be the right information, on time, accurate and relevant. For example, an academic institution must build an academic database, at least containing student data, lecturer data, course data, room data, schedules, so that appropriate information can be obtained about the academic organization of the institution. Thus, so that an effective database can be built, basic knowledge of databases and Database Management Systems is needed. Database management systems organize the volume of large amounts of data used by companies in their daily transactions. Data must be organized so that managers can find certain data easily and quickly to make decisions. The company breaks down the entire collection of data into a set of interconnected data tables, these small collections of interconnected data will reduce repetition of data so that the consistency and accuracy of feeding data ultimately increases. Today most companies use databases that follow a relational structure. Two important reasons behind the use of this structure are that the structure of the relational database is easy to use and the relationships between tables in the structure are implicit. The ease of use has encouraged many managers to become direct users and database resources. Increasing the importance of database as a resource that supports decision making has required managers to learn more about the design of database use. In this paper the author will try to explain how the database management system.

2 LITERATURE REVIEW

2.1 Database Management System

Database management system (database management system-DBMS) is software that makes it easy for organizations to centralize data, manage data efficiently, and provide data access for application programs. DBMS acts as an interface between application programs and physical data files. When an application program calls a data file, such as gross salary, the DBMS searches this data in the database and gives it to the application program. If using traditional data files, a programmer must determine the size and format of each data element used in the program and then tell the computer where the file is located. DBMS relieves the task of the programmer or end user to understand where and how the data is actually stored, by separating logically and physically from the data. Logical display presents data as seen by end users or business specialists, while physical displays show how data is actually organized and structured in physical storage media.

2.2 The Function of Data Base Management System

The function of the DBMS or Database Management System in the development of important applications and systems in the world is very much. At present various large companies, both National and International, are utilizing databases to support their application systems. There are many very popular DBMS such as Oracle, Microsoft SQL Server, MySQL, PostgreSQL, Microsoft Access, IBM DB2, and many more. This computer software is for data processing and as an interface to make it easy for someone to manipulate the database. But many people are still confused between the database and the DBMS itself, even though both are different. There are at least 10 DBMS functions in helping to maintain and maintain data integrity in a system.

1. Maintaining Data Integrity

DBMS serves to reduce and eliminate data redundancy and maximize data consistency so that every time you display data, according to the original data.

2. Data Storage (Data Storage Management)

DBMS has the main function as a data storage, the sophistication of the current DBMS can store data in various types such as videos and images. Users don't need to know how data is stored or manipulated. The DBMS has procedures in this process and ensures the data stored is in accordance

with the data entered.

3. Data Dictionary

The DBMS has the function of managing elements in the database and how they are linked to other data. When the system requires data in a database, the DBMS will provide convenience through SQL to access and search for the data. So that users can easily handle this.

4. Data Transformation and Presentation

The role of the DBMS as a transformation and presentation of data includes converting each data entered into a predetermined structure and format. Thus the DBMS can distinguish between the logical data format and its physical form.

5. Data Security

DBMS has an important role in how the level of security in the database. The DBMS has a role in how to give access rights to the appropriate person. In addition, the DBMS is also responsible for managing what the user can do on a database.

6. Enables Access to Multiple Users

DBMS allows several users to interact in a database, this will be more efficient and can place certain users according to their roles and functions.

7. Providing Backup and Recovery Procedures

DBMS allows existing databases to be backed up and recovered according to their needs by utilizing the techniques and wizards that each DBMS has. This will make it easier for interested parties when something happens to the database such as damage and natural disasters.

8. Provide language access and programming

The DBMS provides SQL to manipulate and schema the database known as DML and DDL. With this language, a DBA can easily enter, retrieve, delete, and change data in the database by using the interface provided.

9. Provides an interface for communication

DBMS provides an interface for communicating between databases with one another. Besides that, it can also facilitate communication between databases and other tools such as browsers.

10. Transaction Management

The DBMS provides a mechanism for managing transactions and orders that are delivered to ensure data consistency. For example, when a DBA accesses and deletes data, at the same time if a user accesses the data it will be pending until the data has been deleted. Equipment for making decisions / ensuring the database approach referred to as a DBMS. The Data Base Management System (DBMS) is a special software (and hardware) designed to make protection and manage the database. By using a Data Base Management System (DBMS), you can:

- Describe data and relationships.
- Documenting the structure and understanding of data
- Describe, organize and put data for selective / taken and effective access.
- Interwoven as with users with data resources.
- Protection of data resources will be guaranteed,

reliable, sustainable and correct.

- Separating Logical and physical issues to changing database implementations in a physical way does not want the user to change data intentions (Logical).
- Ensure data sharing in several users to be connected concurrently to data resources.

2.3 Types of Data Base Management System

Some software or DBMS software that is often used in program applications include:

1. MySQL

MySQL is a database management system software (English: data management system) or DNMS that is multithreaded, multi-user, with around 6 million installations worldwide. MySQL AB makes MySQL available as free software under the GNU General Public Licenci (GPL) license, but they also sell under a commercial license for cases where its use does not match the use of GPL. Unlike Apache which is a software developed by the general community, and copyright for source code is owned by the respective authors, MySQL is owned and sponsored by a Swedish commercial company, MySQL AB. MySQL AB holds full copyright almost all of its source code. The two Swedes and one Finnish who founded MySQL AB are: David Axmark, Alan Larsson, and Michael "Monthly Widenius.

The advantages of MySQL include:

- a. free (free to download)
- b. stable and tough
- c. flexible with various programming
- d. Good security
- e. support from many communities
- f. ease of management databases support transactions
- g. software development is quite fast.

2. Oracle

Oracle is a relational database management system (RDBMS) to manage information in an open, comprehensive and integrated manner. Oracle Server provides an efficient and effective solution because of its capabilities in the following cases:

- Can work in a client / server environment (spread processing)
- Handle large space and database management
- Supports simultaneous data access
- High transaction processing performance
- Ensure controlled availability
- Replicated environment

Database is one component in information technology that is absolutely necessary by all organizations that want to have an integrated information system to support organizational activities in order to achieve its goals. Because of the importance of the role of databases in information systems, it is not surprising that there are many choices of Database Management System (DBMS) software from various vendors both free and commercial. Some examples of popular DBMS are MySQL, MS SQL Server, Oracle, IBM DB/2, and Postgre SQL. Oracle is the most complicated and most expensive DBMS in the world, but many people have a negative impression on Oracle. The complaints they made about Oracle included being too difficult to use, too slow, too expensive, and

even Oracle was dubbed the term "ora kelar-kelar" which means "unfinished" in Javanese. When compared to MySQL which is free, Oracle looks less competitive because it runs slower than MySQL even though the price is very expensive. But what they don't take into account is that Oracle is a DBMS designed specifically for large organizations, not for small and medium size. The needs of large-sized organizations are not the same as small or medium-sized organizations that will not develop into large ones. Large organizations need flexibility and scalability in order to meet the demands of large volumes of data and information and continue to grow.

3. Visual Foxpro

In 1984, Fox Software introduced FoxBase to rival dBase II Ashton-Tate. At that time FoxBase was only small software that contained programming languages and data processing machines. FoxPro introduced the GUI (Graphical Unit Interface) in 1989. FoxPro developed into Visual FoxPro in 1995. The procedural programming capability is maintained and equipped with object oriented programming. Visual FoxPro is equipped with the ability to interact with other desktop and client / server products and can also build Web-based applications. With Visual Studio, FoxPro is a member. The main target of Visual Studio is to provide programming and database tools to develop software that meets the demands of the times. The data model used by Visual FoxPro is the relational model. The Relational Model is the simplest model so that it is easily understood by the user, and is the most popular today. This model uses a set of two dimensional tables (called relations or tables), with each relation composed of tuples or rows and attributes. Relationships are designed in such a way as to eliminate the deluge of data and use guest keys to connect with other relations.

4. Paradox Desktop Database

Desktop database is a program "Add-Ins", which is a separate program that is directly contained in Borland Delphi. In desktop databases there are several integrated DBMSs including Paradox 7, Paradox 4, Visual dBase, Foxpro, Ms. SQL, Oracle, Ms. Access, db2 and interbase. From some of these DBMS we will choose one, namely Paradox which will be discussed further, especially Paradox 7. In Paradox 7, in 1 database file only allows 1 table, different from other DBMS that allow multiple tables in 1 database file as in Ms . Access.

3 CONCLUSION

The database is a collection of data that are interconnected with one another which is organized according to a certain structure and stored properly. There are at least 10 DBMS functions in helping maintain and maintain data integrity in a system are: Maintaining Data Integrity, Data Storage, Data Dictionary, Data Transformation and Presentation, Data Security, Enabling Access to Multiple Users, Providing Backup and Recovery Procedures , Provides language access and programming, Provides interfaces for communication, and Transaction Management The DBMS (Data Base Management System) component generally has some functional components (modules) such as: File Manager, Database Manager, Query Processor, DML Precompiler, DDL Compiler. The advantages of DBMS are reducing data duplication, maintaining data consistency and integrity, increasing data security, efficiency and effectiveness of data usage, increasing the productivity of data users. The

weakness of DBMS is that it requires a certain skill to be able to do database administration and management so that the optimal structure and data relations can be obtained, requiring both external disc and internal memory storage capacity so that the DBMS can work quickly and efficiently. The need for resource resources is usually quite high. if the DBMS fails to carry out its mission, the failure rate will be higher because many users depend on this system. The price of a reliable DBMS is usually very expensive.

DBMS Benefits:

- The practicality of the DBMS provides small, permanent storage media
- Speed.
- Retrieve data quickly, practically
- Increase data security
- Reducing boredom
- Update to date
- Makes it easy for users to gather information from data sets
- Reducing data duplication or data redundancy
- Improve data security
- Makes it easy for users to gather information from data sets
- Increasing data maintenance through data independence

Weaknesses of DBMS include:

- Costs The need to get the right software and hardware is quite expensive
- Employ and maintain a DBA
- Very complex.
- Requires a certain skill to be able to do database administration and management so that optimal structure and data relations can be obtained.
- Requires storage capacity both external disc and internal memory so that the DBMS can work fast and efficiently.
- The need for resource resources is usually quite high.

ACKNOWLEDGMENT

The authors wish to thank to Padjadjaran University, Bandung Indonesia and Binus University, Jakarta, Indonesia.

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