DATABASE APPLICATION EQUIPMENT AND OBSERVATIONS DATA ON DATA BANK AEROSPACE SCIENCE SITE FOR SERVING SPACE WEATHER DATA

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ABSTRACT

Center for Space Science (Pussainsa) LAPAN have workshops and aerospace hall observers to make observations, recording, processing and reporting of space weather data. Each hall has observed space weather observation tools that generate daily observation data. Observation data is collected and maintained on site aerospace science data bank. To present data on aerospace science data bank sites is required database applications, this database consists of database tools and data, the database is useful for collecting, managing, and storing the type of data that has been generated by each piece of equipment, this is written to inform the description technical as well as the use of equipment, and presents data that can be downloaded, viewed and read by researchers LAPAN Bandung supported by policies in downloading data observations. The methodology used is to collect the types of equipment and observation data at each observation hall, inventory data by observation, make the database design and data equipment, and manufacturing equipment information content management applications and data, design data downloads, and the implementation of the look of the site database aerospace science using the programming language PHP and MySQL with FTP and HTTP protocols.

Keywords: Databases- Equipment Observation-PHP-MySQL

1   INTRODUCTION

LAPAN is a non-ministerial government institution which is located under the president and responsible to the president through the minister in charge of the affairs of science and technology. LAPAN fundamental duty is to carry out government duties in the field of research, development and utilization of aerospace. Research and development of space weather held on space science center. Where the center is divided into three areas, namely the field of solar and space, and magnetic field geomagnet space, ionosphere and telecommunications fields, and field observation technology. The task of field observation technology is to conduct research and development of instrumentation observations, data bases and space utilization. Space science has a central observation hall which has the task of implementing aerospace observation, recording, processing, and reporting data and disseminate atmospheric and space utilization data generated from each hall. This data is to be collated, stored, and managed, using a database system that can be viewed, read, and served in various packages and formats in accordance with the development of electronic information technology that can be utilized by researchers LAPAN.

A database is an organized collection of data for one or more purposes, usually in digital form. The data are typically organized to model relevant aspects of reality (for example, the availability of rooms in hotels), in a way that supports processes requiring this information (for example, finding a hotel with vacancies). The term "database" refers both to the way its users view it, and to the logical and physical materialization of its data, content, in files, computer memory, and computer data storage. This definition is very general, and is independent of the technology used. However, not every collection of data is a database, the term database implies that the data is managed to some level of quality (measured in terms of accuracy, availability, usability, and resilience) and this in

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turn often implies the use of a general-purpose Database management system (DBMS).

FTP.BDG.LAPAN.GO.ID is a web-based FTP that contains the observation data from observatories LAPAN placed in various regions in Indonesia.This database is expected to establish a centralized data storage system. FTP LAPAN sites have some services that are intended to facilitate all parties to manage the data.

At the FTP menu has been created lists of equipment on each of the observation of aerospace equipment using the database. Any equipment containing detailed information tools such as a description of equipment, usability and functionality of equipment, aknowledgement, quotations, and citations. At this site the data presented are the result of an FTP upload done from observation aerospace, where the database is in the form list directory of the FTP system. List directory can be downloaded directly by parent directory without having to browse a sub directory such as the FTP system.

2   LITERATURE REVIEW

Data is the information in raw or unorganized form (such as alphabets, numbers, or symbols) that refer to, or represent, conditions, ideas, or objects. Data is limitless and present everywhere in the universe. Data called also Symbols or signals that are input, stored, and processed by a computer, for output as usable information.

Information is description, statements, ideas, and signs that contain the values, meanings, and messages, both data, facts, and explanation, which can be seen, and read, presented in various packages and formats in accordance with the development of information and communication technology electronic or non electronic.

Information Technology is a technology used to process the data, including processing, obtain, compile, store, manipulate data in various ways to produce quality information, ie information that is relevant, accurate and timely, which is used for personal, business, and government and is a strategic information for decision making. This technology uses a computer to process data, the network system to connect one computer to another computer as needed, and telecommunications technology is used so that data can be distributed and accessed globally.

Information Technology is developing at a rapid pace, opening up new possibilities for automating tasks and enriching the lives of people worldwide. From computer hardware to software applications, information technology is part of our world - converting, storing, protecting, processing, transmitting and securely retrieving information for example is website and FTP.

A website, also written as Web site,web site, or simply site, is a collection of related web pages containing images, videos or other digital assets. A website is hosted on at least one web server, accessible via a network such as the internet or a private local area network through an Internet address known as a Uniform Resource Locator. All publicly accessible websites collectively constitute the World Wide Web.

A web page is a document, typically written in plain text interspersed with formatting instructions of Hypertext Markup Language (HTML, XHTML). A web page may incorporate elements from other websites with suitable markup anchors.

Web pages are accessed and transported with the Hypertext Transfer Protocol (HTTP), which may optionally employ encryption (HTTP Secure, HTTPS) to provide security and privacy for the user of the web page content. The user's application, often a web browser, renders the page content according to its HTML markup instructions onto a display terminal.

The pages of a website can usually be accessed from a simple Uniform Resource Locator (URL) called the homepage. The URLs of the pages organize them into a hierarchy, although hyperlinking between them conveys the reader's perceived site structure and guides the reader's navigation of the site.

Some websites require a subscription to access some or all of their content. Examples of subscription websites include many business sites, parts of news websites, academic journal websites, gaming websites, file-sharing websites, message boards, web-based email, social networking websites, websites providing real-time stock market data, and websites providing various other services (e.g., websites offering storing and/or sharing of images, files and so forth).

File Transfer Protocol (FTP) is a standard network protocol used to transfer files from one host to another host over a TCP-based network, such as the Internet. FTP is built on a client-server architecture and utilizes separate control and data connections between the client and server. FTP users may authenticate themselves using a clear-text sign-in protocol but can connect anonymously if the server is configured to allow it.

HTTP functions as a request-response protocol in the client-server computing model. In HTTP, a web browser, for example, acts as a *client*, while an application running on a computer hosting a web site functions as a *server*. The client submits an HTTP *request* message to the server. The server, which stores content, or provides *resources*, such as HTML files, or performs other functions on behalf of the client, returns a response message to the client. A response contains completion status information about the request and may contain any content requested by the client in its message body.

The term database is correctly applied to the data and their containing data structures, and not to the DBMS which is a software system used to manage the database. The structure of a database is generally too complex to be handled without its DBMS, and any attempt to do otherwise is very likely to result in database corruption. DBMSs are packaged as computer software products: Well known and highly utilized DBMSs (ranked by highest sales) include Oracle, Microsoft SQL Server, IBM DB2, and the open source DBMSs (ranked by licenses issued) MySQL and PostgreSQL. Each such DBMS product currently supports many thousands of databases all over the world; the open source embedded DBMS SQLite supports many millions of copies (see Adoption there). A database is not generally portable across different DBMS, but different DBMSs can inter-operate to some degree (while each DBMS type controls a database of its own database type) by using standards like SQL and ODBC to support together a single application. A successful general-purpose DBMS is designed in such a way that it can satisfy as many different applications and application designers and builders as possible. A DBMS also needs to provide effective run-time execution to properly support (e.g., in terms of performance, availability, and security) as many end-users (the database's application users) as needed. Sometimes the combination of a database

and its respective DBMS is referred to as a Database system (DBS).

MySQL is a relational database management system (RDBMS) that runs as a server providing multi-user access to a number of databases. The SQL phrase stands for Structured Query Language.

Free-software-open source projects that require a full-featured database management system often use MySQL. For commercial use, several paid editions are available, and offer additional functionality. Applications which use MySQL databases include: TYPO3, Joomla, WordPress, MyBB, phpBB, Drupal and other software built on the Linux, Apache, MySQL, and PHP software. MySQL is also used in many high-profile, large-scale World Wide Web products, including Wikipedia, (though not for searches), Facebook and Twitter.

Linux is a Unix-like computer operating system assembled under the model of free and open source software development and distribution. The defining component of any Linux system is the Linux kernel, an operating system kernel first released October 5, 1991 by Linus Torvalds. Linux system distributions may vary in many details of system operation, configuration, and software package selections.

The Apache HTTP Server, commonly referred to as Apache is web server software notable for playing a key role in the initial growth of the World Wide Web. In 2009 it became the first web server software to surpass the 100 million website milestone. Apache was the first viable alternative to the Netscape Communications Corporation web server (currently named Oracle iPlanet Web Server), and since has evolved to rival other web servers in terms of functionality and performance. Typically Apache is run on a Unix-like operating system.

PHP is a general-purpose server-side scripting language originally designed for web development to produce dynamic web pages. For this purpose, PHP code is embedded into the HTML source document and interpreted by a web server with a PHP processor module, which generates the web page document. It also has evolved to include a command-line interface capability and can be used in standalone graphical

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applications. PHP can be deployed on most web servers and as a standalone interpreter, on almost every operating system and platform free of charge. A competitor to Microsoft's Active Server Pages (ASP) server-side script engine and similar languages. PHP is installed on more than 20 million websites and 1 million web servers.

3 RESULT AND DESCRIPTION

Application design is more than just writing efficient database requests in application programs. Of course, application design includes database concerns such as interfacing SQL with traditional programming languages and the type of SQL to use. But every aspect of the way the program is coded will affect the usability and effectiveness of the application. Furthermore, each application program must be designed to ensure the integrity of the data it modifies. And, of course, performance must be treated as a design issue.
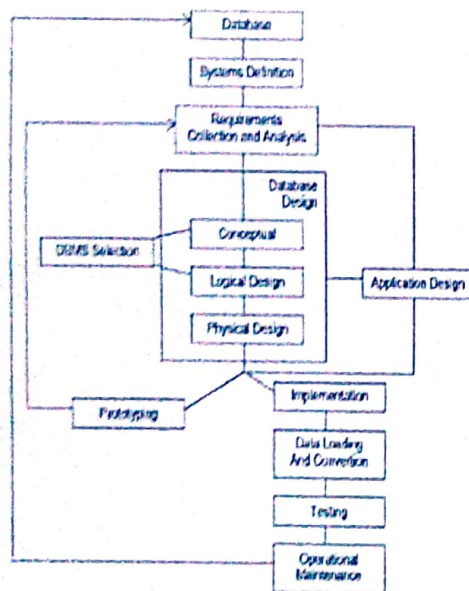
Figure 1. Database Design

Database design is the process of producing a detailed data model of a database. This logical data model contains all the needed logical and physical design choices and physical storage parameters needed to generate a design in a Data Definition Language, which can then be used to create a database. A fully attributed data model contains detailed attributes for each entity.

The term database design can be used to describe many different parts of the design of an overall database system. Principally, and most correctly, it can be thought of as the logical design of the base data structures used to store the data. In the relational model these are the tables and views. In an object database the entities and relationships map directly to object classes and named relationships. However, the term database design could also be used to apply to the overall process of designing, not just the base data structures, but also the forms and queries used as part of the overall database application within the database management system (DBMS).

3.1 Conceptual Design

Diagram Context

A System Context Diagram (SCD) in software engineering and systems engineering is a diagram that represents the actors outside a system that could interact with that system. This diagram is the highest level view of a system. It is similar to a Block diagram. SCDs show a system, often software-based, as a whole and its inputs and outputs from/to external factors.
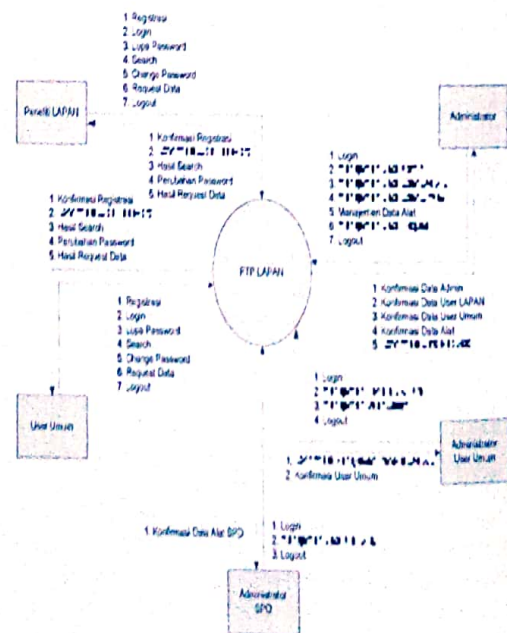

Figure 2. Diagram Context

Description :

- Administrator
  Entities that perform management control of all processes and data used in the FTP system LAPAN.
-      User Administrator General
  An entity that does control the management of common user data (users other than researchers LAPAN) who want to use the facilities at LAPAN FTP system. General User Administrators have limited ability to granting and revocation of access rights at the general user.
- Administrator SPD
  An entity that can be used to add data equipment and the SPD on each SPD.
-      Researchers LAPAN
  FTP is a user entity LAPAN system that also are researchers from LAPAN.
- General Users
  FTPLAPAN is a system user entity other than the researcher LAPAN.

3.2 Logical Design

Data Flow Diagram (DFD)

A data flow diagram (DFD) is a graphical representation of the "flow" of data through an information system, modelling its *process* aspects. Often they are a preliminary step used to create an overview of the system which can later be elaborated. DFDs can also be used for the visualization of data processing (structured design).
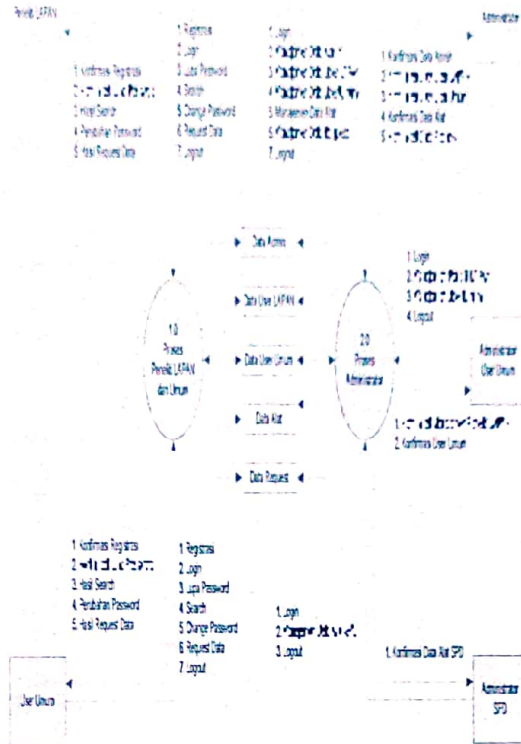
Figure 3. Data Flow Diagram

Description:

-      Process and Public Researchers LAPAN
  a process used by researchers LAPAN and General Users interact with the system LAPAN FTP. This process will send the funds or obtain data from the data in the database dblapan.
-      Process Administrator
  a process used by :

  1.Administrator (main)
  2.Administrator General Users
  3.SPD administrator

  In interacting with the system LAPAN FTP.This process will transmit data or get data from existing data dblapan database.

3.3. Physical Design

Database

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Figure 4. Database and Table

Description :

Database Name: dblapan
List of Tables:
1. Field : Used to store the data field.
2. Dalaalat : Equipment used to store data.
3. Datanews : Used to store the news data.
4. Suggestion : Used to store data from user suggestions.
5. Spd : SPD is used to store data.
6. spd_alat : The tool is used to store data per SPD.
7. Tbladm : Used to store the data administrator.
8. Tbluser : Used to store user data which is a researcher LAPAN.
9. Tbluserlain : Used to store user data public.
10. Trequest : Used to store data from the user's data request tool.
11. upload_bidang : Used to store data uploaded from their respective fields.
12. upload_spd : Used to store data uploaded from each of the SPD.

3.4   Application Design

Implementation of Database
LAPAN have five Station Observer. One of Station Consist of Many Equipment. One of equipment can be available at Many stations, One of Equipment produces a lot of data, One of Equipment has detail information, acknowledgement, citation, and disclaimer.

Figure 5. Equiptment of Menu
List of Equipment
To create a list of tools used data synchronization program to view flash animation tools on the list of equipment.
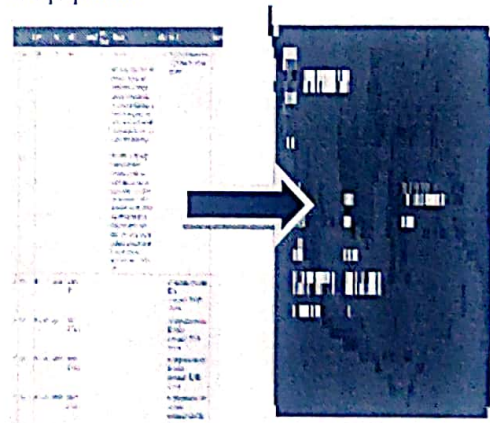

Figure 6. List of Equiptment
Detail Information, Citation, Disclaimer and Data Last Update Syncronization Menu
Any equipment containing detailed information tools such as a description of equipment, usability and functionality of equipment, aknowledgement, quotations, and citations

Figure 7. Detailed Information
Bank Data Syncronization

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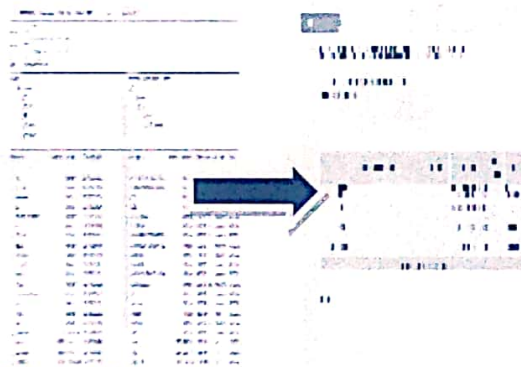

Figure 8. List of Data

4 CONCLUSION

1. Database applications on this site is based on the FTP site.
2. Database applications on this site is the synchronization of FTP sites
3. Database application was developed using programming languages PHP and Mysql, As for the menu display using a synchronized flash programming.
4. Update the observation data is done using an FTP client facilities by data monitoring stations, while for the information content by IT LAPAN Bandung.

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