CRITICAL STUDY ON DATABASE AND PROMINENT PROGRAMMES

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ABSTRACT

The people who work with computers, the programmers, analysts, and operators who seem to live by rules of their own and seldom leave their own environment, tend to be very cynical towards the stories of electronic brains. This attitude will appear hardly surprising when one eventually learns that the computer is a very simple device and is as far removed from an electronic brain as a bicycle from a spaceship. Programmers in particular are the people most aware that computers are no substitute for the human brain; in fact, the preparation of work to be run on a computer can be one of the most mind-bending exercises encountered in everyday life. Databases and database systems have become an essential component of everyday life in modern society. In the course of a day, most of us encounter several activities that involve some interaction with a database. So in this paper we will talk about how to manage the different type of data involved in any form in the database.

KEYWORDS

DBA, DATABASE, USERS

1.1 DATABASE- AN INTRODUCTION

Databases and database systems have become an essential component of everyday life in modern society. In the course of a day, most of us encounter several activities that involve some interaction with a database. For example, if we go the bank to deposit or withdraw funds, if we make a hotel or airline reservation, if we access a computerized library catalog to search for a bibliographic item, or if we buy some item such as a book, toy, or computer- form an internet vendor through it web page, chances that our activities will involve someone or some computer program accessing a database, even purchasing items from a supermarket nowadays in many cases involves an automatic update of the database that keeps the inventory of supermarket items.
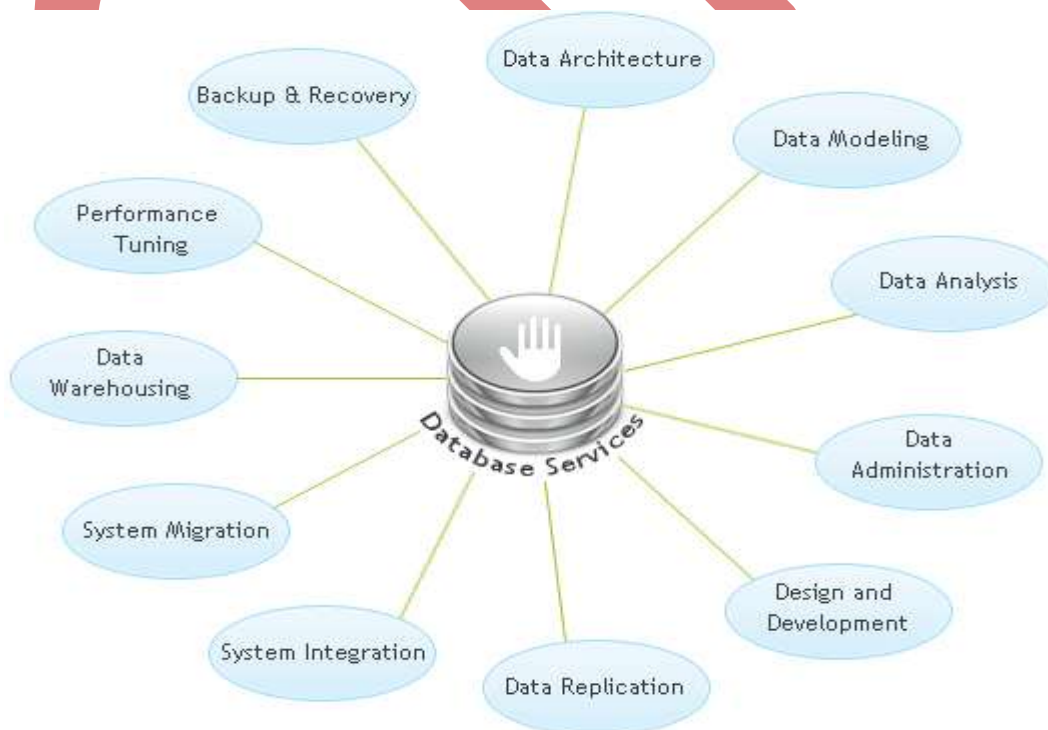
1.1 Services provided by the database to the users

A data management system (DBMS) is a collection of program that enables users to create and maintain a database.

The DBMS is hence a general-purpose software system that facilitates the process of defining, constructing, manipulating,

and sharing database among various users and application. Defining a database involves specifying the data types, structures, and constraints for the data to be stored in the database. Constructing the database is the process of storing the data itself on some storage medium that is controlled by the DBMS. Manipulating a database includes such functions as querying the database to retrieve specific data, updating the database to reflect changes in the miniworld, and generating reports from the data. Sharing a database allows multiple users and programs to access the database concurrently.

1.2   DEFINITION

1. "A database is a collection of interrelated data stored in a database server; these data's will be stored in the form of tables."

2. "A database is a structured collection of records that is stored in a computer system, related together, which can be accessed by different users but the data stores only once."

1.3   The Database Application System Life Cycle

Activities related to the database application System (micro) life cycle include the following:

1- System definition: The scope of the database system, its users, and its application are defined. The interfaces for various categories of users, the response time constraints, and storage and processing needs are identified.

2- Database design: At the end of this phase, a complete logical and physical design of the database system on the chosen DBMS is ready.

3- Database implementation: This comprises the process of specifying the conceptual, external, and internal database definitions, creating empty database files, and implementing the software application.

4- Loading or data conversion: The database is populated either by loading the data directly or by converting existing files into the database system format.

5- Application conversion: Any software application form a previous system is converted to the new system.

6- Testing and validation: The new system is tested and validated.

7- Operation: The database system and its application are put into operation. Usually, the old and the new systems are operated in parallel for some time.

8- Monitoring and maintenance: During the operational phase, the system is constantly monitored and maintained. Growth and expansion can occur in both data content and software applications. Major modifications and reorganizations may be needed from time to time.
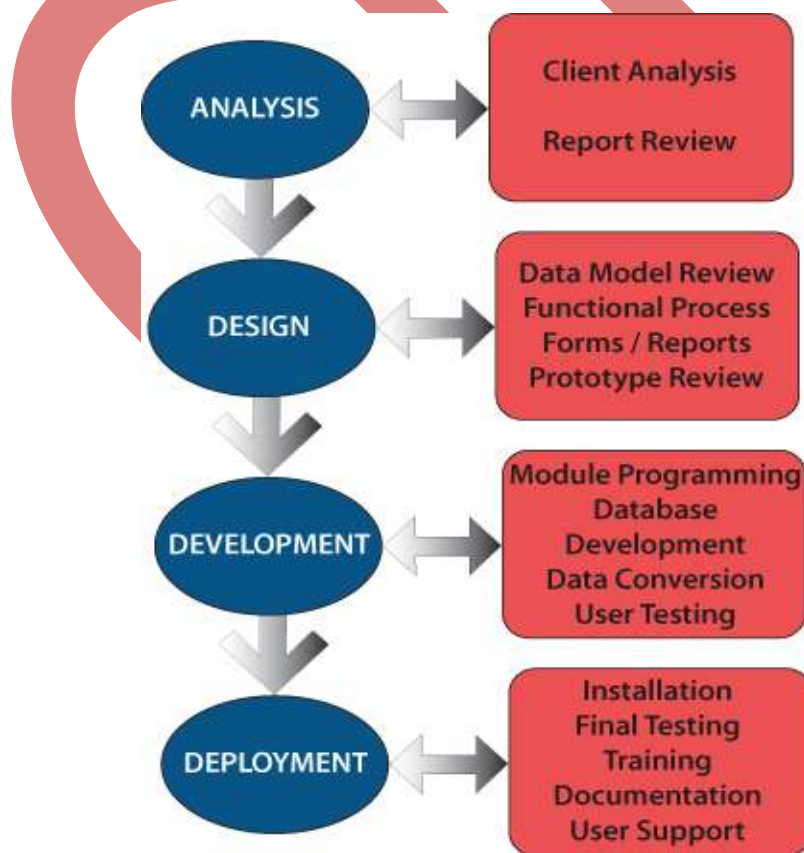

Figure 1.3   Life Cycle of the Database

1.4   Classification of Database Management Systems

Several criteria are normally used to classify DBMS. The first is the data model on which the DBMS is based. The main data model used in many current commercial DBMS is the relational data model. The object data model was implemented in some commercial systems but has not had widespread use. Many legacy (older) applications still run on database systems based on the hierarchical and network data models. The relational DBMS are evolving continuously, and, in particular, have been incorporating many of the concepts that were developed in object databases. This had led to a new class of DBMS called object- relational DBMS. We can hence categorize DBMS based on the data model relational, Object, Object relational, hierarchical, network, and other.

The second criterion used to classify DBMS is the number of users supported by the system. Single user systems support only one user at a time and are mostly used with personal computers. Multi-user systems, which include the majority of DBMS, support multiple users concurrently. A third criterion is the number of sites over which the database is distributed. A DBMS is centralized if the data is stored at a single computer site. A centralized DBMS can support multiple users, but the DBMS and the database themselves reside totally at a single computer site. A distributed DBMS can

1.5   COBOL LANGUAGE

COBOL is a high level programming language of the procedural type. That is, it is not a functional, logic-oriented or object-oriented language. It is used primarily in the implementation phase of software development, like most programming languages. In 1959, the U. S. Defense Department created a group called The Short-range Committee, which, over a period of a few months, defined the COBOL language. The committee was organized by the Conference on Data System Languages (CODASYL). A midrange committee was also organized and a long-range committee was defined but never created. The Short-range committee consisted of representatives from: National Bureau of Standards, US Air Force, RCA, Burroughs, the Navy, Sylvania and Sperry Rand.

COBOL was designed to be as much like ordinary english language as possible while containing those elements required by the computer system in use like english. Then COBOL has grammar, punctuation, a character set and words and names.

1.6   BASIC LANGUAGE

The word BASIC is an acronym of 'Beginners All-purpose Symbolic Instruction Code' and although less elegant and less powerful than other among languages does still fulfill its two main objectives. BASIC is for people who are not, and who do not wish to be, computer professionals, can use beginners-it quite quickly. BASIC is also all-purpose: it can be used for simple computational work, for problem solving, for small business applications and, increasingly, for home computing.

BASIC began life in 1964 at Dartmouth College, America, where it tilled a need for a simple computer language for

have the actual database and DBMS software distributed over many sites, connected by a computer network. Homogeneous DDBMS use the same DBMS software at multiple sites. A recent trend is to develop software to access several autonomous preexisting database stored under heterogeneous DBMS. This leads to a federated DBMS (or multidatabase system) in which the participating DBMS are loosely coupled and have a degree of local autonomy. Many DDBMS use client server architecture.

A fourth criterion is the cost of the DBMS. The majority of DBMS packages cost between $10,000 and $100,000. Single-user low-end systems that work with microcomputers cost between $100 and $3000. At the other end of the scale, a few elaborate packages cost more than $100,000.

We can also classify a DBMS based on the types of access path option for storing files; one well-known family of DBMS is based on inverted file structures. Finally, a DBMS can be general purpose or special purpose. When performance is primary consideration a special purpose, DBMS can be designed and built for a specific application; such a system cannot be used for other application without major changes. Many airline reservations and telephone directory systems developed in the past are special purpose DBMS. These fall into the category of online transaction processing (OLTP) systems, which must support a large number of concurrent transactions without imposing excessive delays.

beginners. BASIC has proved to be very popular since then. This is particularly so in the Case of time-sharing computer systems and personal, or home, computers where the language has been universally adopted. BASIC is also available on most mainframe computer systems. The most recent development of the language has been in home computing.

## 1.7   Java Database Connectivity

The Java Database Connectivity (JDBC) API is the industry standard for database-independent connectivity between the Java programming language and a wide range of databases – SQL databases and other tabular data sources, such as spreadsheets or flat files. The JDBC API provides a call-level API for SQL-based database access.

JDBC technology allows you to use the Java programming language to exploit "Write Once, Run Anywhere" capabilities for applications that require access to enterprise data. With a JDBC technology-enabled driver, you can connect all corporate data even in a heterogeneous environment.

1.7.1   JDBC API Overview

The JDBC API makes it possible to do three things:

- Establish a connection with a database or access any tabular data source

- Send SQL statements

- Process the results
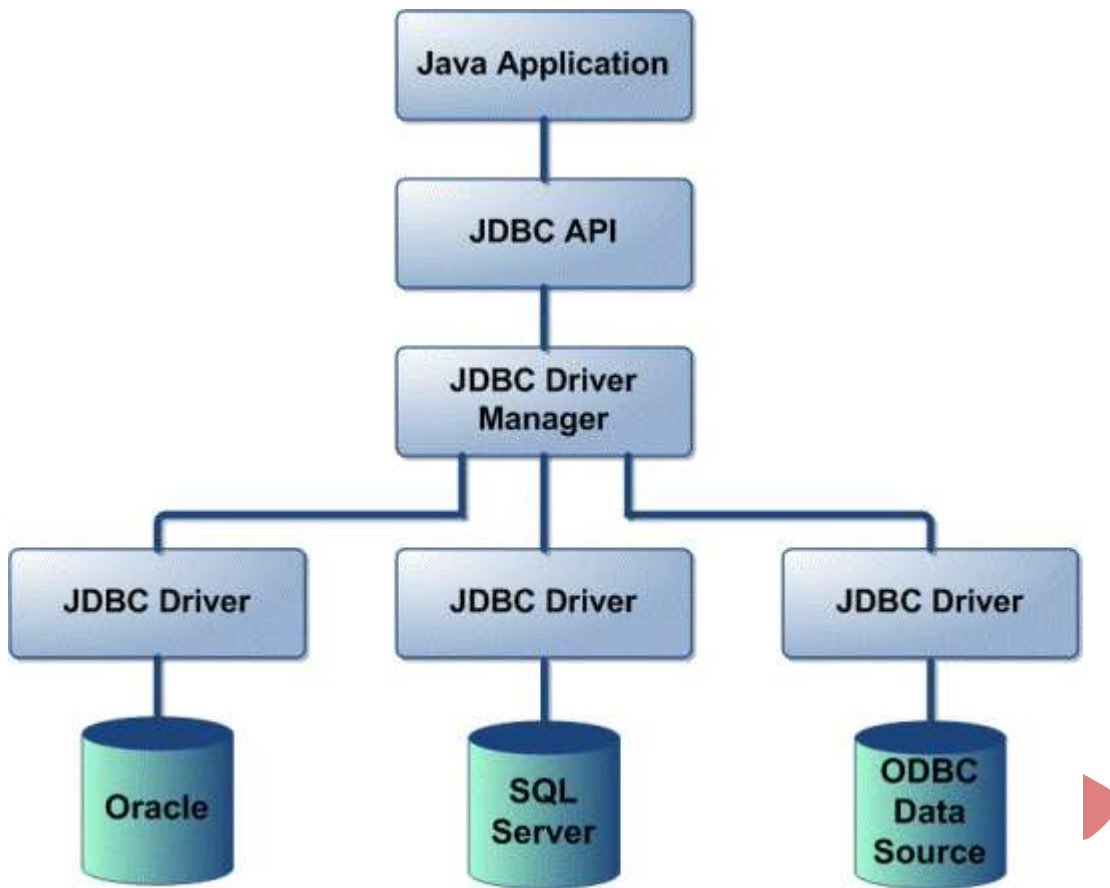
1.5   Components of JDBC

1.8   CONCLUSION

The study of databases is a battleground of ideas. The database community is one of the oldest in the computer world, and it is almost as famous as the application programming community for the diversity of its ideas and the sharpness of the debates between its gurus. Lately events have conspired to expose these concerns to a wider audience. For instance, the seemingly inexhaustible march of the web revolution has exposed more and more developers to database issues because of the desire for ever more dynamic web sites. And the crown prince of web technologies, XML, has had the effect of increasing awareness of data design in general. This means that more and more developers find themselves choosing between database management systems (DBMSes).

This can be a daunting choice considering the many available DBMSes, both open and closed source, and the broad spectrum of differences between them. This article provides some guidance through the maze of available DBMS features and methodologies, to help the developer quickly narrow the choices to the best candidate.

1.9   REFERENCES

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