DBMS Functions'

There are several functions that a DBMS performs to ensure data integrity and consistency of data in the database. The ten functions in the DBMS are: data dictionary management, data storage management, data transformation and presentation, security management, multiuser access control, backup and recovery management, data integrity management, database access languages and application programming interfaces, database communication interfaces, and transaction management.

1. Data Dictionary Management

Data Dictionary is where the DBMS stores definitions of the data elements and their relationships (metadata). The DBMS uses this function to look up the required data component structures and relationships. When programs access data in a database they are basically going through the DBMS. This function removes structural and data dependency and provides the user with data abstraction. In turn, this makes things a lot easier on the end user. The Data Dictionary is often hidden from the user and is used by Database Administrators and Programmers.

2. Data Storage Management

This particular function is used for the storage of data and any related data entry forms or screen definitions, report definitions, data validation rules, procedural code, and structures that can handle video and picture formats. Users do not need to know how data is stored or manipulated. Also

involved with this structure is a term called performance tuning that relates to a database's efficiency in relation to storage and access speed.

3. Data Transformation and Presentation

[This function exists to transform any data entered into required data structures. By using the data transformation and presentation function the DBMS can determine the difference between logical and physical data formats.

4. Security Management

This is one of the most important functions in the DBMS. Security management sets rules that determine specific users that are allowed to access the database. Users are given a username and password or sometimes through biometric authentication (such as a fingerprint or retina scan) but these types of authentication tend to be more costly. This function also sets restraints on what specific data any user can see or manage.

5. Multiuser Access Control

Data integrity and data consistency are the basis of this function. Multiuser access control is a very useful tool in a DBMS, it enables multiple users to access the database simultaneously without affecting the integrity of the database.

6. Backup and Recovery Management

Backup and recovery is brought to mind whenever there is potential outside threats to a database. For example if there is a power outage, recovery management is how long it takes to recover the database after the outage. Backup management refers to the data safety and integrity; for example backing up all your mp3 files on a disk.

7. Data Integrity Management

The DBMS enforces these rules to reduce things such as data redundancy, which is when data is stored in more than one place unnecessarily, and maximizing data consistency, making sure database is returning correct/same answer each time for same question asked.

8. Database Access Languages and Application Programming Interfaces

A query language is a nonprocedural language. An example of this is SQL (structured query language). SQL is the most common query language supported by the majority of DBMS vendors. The use of this language makes it easy for user to specify what they want done without the headache of explaining how to specifically do it.

9. Database Communication Interfaces

This refers to how a DBMS can accept different end user requests through different network environments. An example of this can be easily related to the internet. A DBMS can provide access to the database using the Internet through Web Browsers (Mozilla Firefox, Internet Explorer, Netscape).

'10. Transaction Management

This refers to how a DBMS must supply a method that will guarantee that all the updates in a given transaction are made or not made.All transactions must follow what is called the ACID properties.

A – Atomicity: states a transaction is an indivisible unit that is either performed as a whole and not by its parts, or not performed at all.It is the responsibility of recovery management to make sure this takes place.

C – Consistency:A transaction must alter the database from one constant state to another constant state. I – Isolation:Transactions must be executed independently of one another.Part of a transaction in progress should not be able to be seen by another transaction. D – Durability:A successfully completed transaction is recorded permanently in the database and must not be lost due to failures.