**ST. XAVIER’S COLLEGE**

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**Database Management System**

**Lab Assignment #3**

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**ADDITIONAL ADVANTAGES OF DATABASE APPROACH:**

* **EXPANDIBILTY/ FLEXIBILITY**
* **REDUCE APPLICATION DEVELOPMENT TIME**
* **ECONOMY OF SCALE**
* **CENTRALIZED CONTROL BY THE DBA**

**DATABASE SYSTEM COMPONENTS:**

* **DATA**

It is a very important component of the database system. Most of the organizations generate, store and process 1arge amount of data. The data acts a bridge between the machine parts i.e. hardware and software and the users which directly access it or access it through some application programs.

The types of data are:

**User Data** - It consists of a table(s) of data called Relation(s) where Column(s) are called fields of attributes and rows are called Records for tables. A Relation must be structured properly.

**Metadata** - A description of the structure of the database is known as Metadata. It basically means "data about data". System Tables store the Metadata which includes.

- Number of Tables and Table Names

- Number of fields and field Names

- Primary Key Fields

**Application Metadata** - It stores the structure and format of Queries, reports and other applications components.

* **HARDWARE**

The hardware consists of the secondary storage devices such as magnetic disks (hard disk, zip disk, floppy disks), optical disks (CD-ROM), magnetic tapes etc. on which data is stored together with the Input/output devices (mouse, keyboard, printers), processors, main memory etc. which are used for storing and retrieving the data in a fast and efficient manner. Since database can range from those of a single user with a desktop computer to those on mainframe computers with thousands of users, therefore proper care should be taken for choosing appropriate hardware devices for a required database.

* **SOFTWARE**

The Software part consists of DBMS which acts as a bridge between the user and the database or in other words, software that interacts with the users, application programs, and database and files system of a particular storage media (hard disk, magnetic tapes etc.) to insert, update, delete and retrieve data. For performing these operations such as insertion, deletion and updating we can either use the Query Languages like SQL, QUEL, Gupta SQL or application software’s such as Visual 3asic, Developer etc.

* **USERS**

Users are those persons who need the information from the database to carry out their primary business responsibilities i.e. Personnel, Staff, Clerical, Managers, Executives etc. On the basis of the job and requirements made by them they are provided access to the database totally or partially. [3]

**DATA COMMUNICATION MANAGER:**

**DATABASE SYSTEM UTILITIES:**

* **Loading:**
* A loading utility is used to load existing data files-such as text files or sequential files-into the database. Usually, the current (source) format of the data file and the desired (target) database file structure are specified to the utility, which then automatically reformats the data and stores it in the database. With the proliferation of DBMSs, transferring data from one DBMS to another is becoming common in many organizations. Some vendors are offering products that generate the appropriate loading programs, given the existing source and target database storage descriptions (internal schemas). Such tools are also called conversion tools.
* **Backup:** A backup utility creates a backup copy of the database, usually by dumping the entire database onto tape. The backup copy can be used to restore the database in case of catastrophic failure. Incremental backups are also often used, where only changes since the previous backup are recorded. Incremental backup is more complex but saves space.
* **File Reorganization:** This utility can be used to reorganize a database file into a different file organization to improve performance.
* **Performance Monitoring:** Such a utility monitors database usage and provides statistics to the DBA. The DBA uses the statistics in making decisions such as whether or not to reorganize files to improve performance.

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**CLASSIFICATION OF DBMS**

-General or special – purpose

-Data Model

Relational

Object

Object-relational

Hierarchical and network legacy

Native XML

-Number of users

Single –user

Multiple users

-Number of sites

Centralized

Distributed

-Licensing

Open Source

Proprietary

**VARIATION OF DISTRIBUTED ENVIRONMENT**

**DATABASE SYSTEM LIFE CYCLE**

**REFERENCES:**

[1]

[2]

[3] <http://dbmsbasics.blogspot.com/2008/02/database-system-and-its-components.html>

[4]

[5] <http://database-management-systems.blogspot.com/2009/09/database-system-utilities.html>

[6] <https://cs.uwaterloo.ca/~david/cs338/14%20DB%20System.pdf>