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## History of Data Base Management Systems

Progressive advancement in technology has led to improvements in Data Base Management Systems. Database management systems are soft wares performing the function of coming up with databases and managing them. Users of these systems can handle, recover, create, delete and update data. DBMSs help to keep the data arranged in order thus allowing easy access. Database Management Systems manage data, data schema and database engine as they are helpful in providing data security and integrity (Batra & Rahul, 180). Data refers to all information stored in the database. Data schema gives the database a coherent structure while database engine permits all data functions which include accessing, modifying, updating, locking and unlocking information among others. DBMSs also enable Restarts, backups, and rollbacks. This paper focuses on the history of DBMS and how far we have come.

## Evolution of Data Base Management Systems

In the 1890s, for computers to receive an input, store and give an output, punch cards were used. Punch cards were considered as the fastest method of inputting data and regaining it. These punch cards were used as memory cards for tabulating machines way before databases were discovered. In the 1950s, programs for computers which focused on algorithms and coding were found. The

computers were large in size and data processing was slow. Data storage was not considered important until when business owners started realizing the importance of using computers and data storage and retrieval became necessary. Later in the early 1960s, the first database system was designed by Charles W. Bachman, and it was referred to as the Integrated Database System. During the same period, IBM came up with their database which they named as Integrated Management System (IMS). Integrated Database System and IMS formed the basis for the evolution of DBMSs.

Mid-way 1960s, computers increased their popularity, and consequently, more database systems were discovered, and standards were developed. Database Task Group was created with the primary purpose of ensuring the quality of Common Business Oriented Language (COBOL), and in 1971, the group had finalized on the required standard where they used the CODASYL approach. CODASYL approach was sophisticated, and enough training was needed for all users, and therefore, a manual was always made available. Retrieving data was done using CALC key or by use of sets or by searching through the entire bunch of records serially. Lack of search tools in both IMS and CODASYL approach made them unpopular with time as more reliable systems were finding their way to the market. In 1973, research on relational database systems was conducted, and in 1974 IBM developed SQL (Structured Query Language) which was a more developed probe language. SQL later advanced, and by 1987, it had been replaced by OSI.

Relational Database Management Systems (RDBM) were found to be more efficient regarding data processing and storage (Colombo, Pietro & Ferrari, 2140). The need to accommodate unstructured data which include music, photographs, and art, led to NoSQL (Not only Structured Query Language). NoSQL responded well to the much-required data speed, and it accommodated unstructured data.  NoSQL has an added advantage of increased flexibility and ability to process

vast amounts of varying data. It uses database systems that are distributed, and ad-hoc strategy is used in arranging data. Due to its ability to handle unstructured data, Twitter, Google, Facebook, LinkedIn and Google have benefited and have been able to offer better services to their users. NoSQL is preferred over RDBM and SQL as it has a distributed system, a schema that is flexible, it operates at low costs, has high scalability, simple relationship and can process semi-structured and unstructured data. However, NoSQL databases may demand a memory with ample space, that is, a higher RAM and an enormous CPU apportionment.

NoSQL, SQL, and RDBMS are operational currently, and applicability of each has varied depending on the need. NoSQL is the most advanced and proper use guarantees high performance. Four types of NoSQL have been identified as Document Stores, Column Stores, Key-value Stores and Graph Data Stores (Mao & Rui, 45). Document Stores which include Amazon Dynamo DB and Mongo DB are generally used to handle document-oriented data. Column Stores, as the name suggests, store data in columns rather than in rows. They include HBase, Cassandra, and Cloudera. Key-value Stores are mostly used in user profile storage. The primary key is used to access the database. Key-value Stores have no definite data model or schema. They include Riak, Aerospike and Berkeley DB. Graph Data Stores are used in cases where there is need to display data in graphical form. Titan, Neo4j, and GraphBase are some examples of Graph Datastores.

From the above discussion, it can be concluded that database management systems have evolved from ancient days and are still advancing each day. Databases used in the past had many limitations which include storage of less amount of data, slow processing of data, lack of flexibility and low reliability among others. These challenges created the need for advancements and improvements so that to achieve better performance. Currently, high processing speeds, huge storage volumes,

flexibility, and other tremendous advances have been noted. Database management systems have helped improve different sectors of the economy thus leading to overall global growth.

Works Cited

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