General Article

Role of Relational Database Management System in Management Information System

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Abstract

Most of the problems faced at the time of implementation of any system are outcome of a poor database design. In many cases it happens that system has to be continuously modified in multiple respects due to changing requirements of users. It is very important that a proper planning has to be done. A relation in a relational database is based on a relational schema, which consists of number of attributes. A relational database is made up of a number of relations and corresponding relational database schema. The goal of a relational database design is to generate a set of relation schema that allows us to store information without unnecessary redundancy and also to retrieve information easily.

Keywords: Database, software, information, MIS etc.

Introduction

The process of cataloging files in a database management system (DBMS) is extremely important. There are various file types, which range from actual computer code and query programs (which extract information) to system utility and record maintenance programs. All of these programs have a unique file structure, which is identified by a system schematic or "schema." Without the process of a file structure, files would be hard to access and operate. A file structure within a (DBMS) provides an orderly structure for file access and management.

RDBMS stands for Relational Database Management System. RDBMS data is structured in database tables, fields and records. Each RDBMS table consists of database table rows. Each database table row consists of one or more database table fields. RDBMS store the data into collection of tables, which might be related by common fields (database table columns). RDBMS also provide relational operators to manipulate the data stored into the database tables. Most RDBMS use SQL as database query language. The most popular RDBMS are MS SQL Server, DB2, Oracle and MySQL

A DBMS system can consist of various database types. A database holds the record structure of information. Databases within a DBMS can be an indexed, sequential or relational database. An index database is based on a primary key and can be indexed on any unique field within the database structure. A

sequential database is accessed by starting at the very first record in the database and a relational database consists of records, which can be joined to other existing records in another database based on unique identifiers. The DBMS allows for partitioning, cataloging and access for these database types.

The relational model is an example of record-based model. Record based models are so named because the database is structured in fixed format records of several types. Each table contains records of a particular type. Each record type defines a fixed number of fields, or attributes. The columns of the table correspond to the attributes of the record types. The relational data model is the most widely used data model, and a vast majority of current database systems are based on the relational model.

Data security is an important feature for any information system. A DBMS provides security tables, which are records designated for user information, identification and passwords. The security system is constructed from relational database tables and each condition (user access codes) must be met in each table for a user to access the system. DBMS systems can have built-in security applications, which assign user rights and privileges by using a table of authorities in the system utility applications.

The goal of a relational database design is to generate a set of relation schema that allows us to store information without unnecessary redundancy and also to retrieve information easily. A database system is an integrated collection of related files, along with details of interpretation of the data contained

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therein. DBMS is a s/w system that allows access to data contained in a database. The objective of the DBMS is to provide a convenient and effective method of defining, storing and retrieving the information contained in the database.

Within a DBMS, all databases have assigned records. Records are classified as item or detail records. Item records are general information records and detail records focus on a field identifier within the item record and provide extra "detailed" information on the field and generated its record from the item record. Tables are structures on which item and detail records exist. An example of an item and detail record is a description of furniture on a database consisting of general data fields for shipping, payment, etc., and a corresponding detail record, which further breaks down the furniture into various colors.

If an information system is a transaction based processing system, data sets are created to catalog changes in data initiated by users to the system with all changes reporting on a transaction exception report. Data is collected, distributed and processed using batch or real-time methods. If it is a batch routine, most organizations will update their systems once a day while, with a real-time system, updates can be added immediately.

In relevance to MIS Design and Implementation, RDBMS and 4GL tools are considered inevitable for long term maintenance of good MIS base. Therefore, a quick reference material is provided for some of the proven and popular data bases in a comparative manner. Even the major features are also elaborated to make the reference material exhaustive and complete as far as possible.

Management Information System

Management information system (MIS) provides information that organizations require to manage themselves efficiently and effectively. Management information systems are typically computer systems used for managing the organizations. The five primary components of MIS are: 1) Hardware 2) Software 3) Data (information for decision making), 4) Procedures (design, development and documentation), and 5) People (individuals, groups, or organizations).

Management information systems are distinct from other information systems because they are used to analyze and facilitate strategic and operational activities. Academically, the term is commonly used to refer to the study of how individuals, groups, and organizations evaluate, design, implement, manage, and utilize systems to generate information to improve efficiency and effectiveness of decision making, including systems termed decision support systems, expert systems, and executive information systems.

The concept of MIS gives high regard to the individual and his ability to use information. MIS gives information through data analysis. While analyzing the data, it relies on many academic disciplines. These include the theories, principles and concepts from the Management Science, Psychology and Human Behavior, making the MIS more effective and useful. These academic disciplines are used in designing the MIS, evolving the decision support tools for modeling and decision making.

The foundation of MIS is the principles of management and its practices. The concept of management Information System can be evolved for a specific objective if it is evolved after systematic planning and design. It calls for an analysis of a business, management views & policies, organization culture and the management style. Information should be generated in this setting and must be useful in managing the business. This is possible only when it is conceptualized as a system with an appropriate design. MIS, therefore, relies heavily on the systems theory and offers solutions to handle the complex situations of the input and output flows. It uses theories of communication which helps to evolve a system design capable of handling data inputs, process, and outputs with the least possible noise or distortion in transmitting the information form a source to a destination. It uses the principles of system Design, Viz., an ability of continuous adjustment or correction in the system in line with the environmental change in which the MIS operates. Such a design help to keep the MIS tuned with the business managements needs of the organization.

Security Features

Unauthorized access is of prime concern in today's GLOBAL ON-LINE systems and no RDBMS vendor will survive until its software ensures complete access to critical information by means of authorization. This technically called Role Based Security. ANSI-SQL (draft standard SQL3) has prescribed security at both the users authorization level (connect, DBA etc.) as well as the operations on a table/ view level (insert, update, delete etc.).

In today's era of hi-tech applications computers are as common as a remote controlled color television. From a vendor controlled market it has become a customer controlled market in a very short span. Standardization is being enforced by several international standards organization to protect the investment of the customer against multi-vendor technologies and products thereof.

Vendors, as a result therefore, are forced to develop products in compliance with the standards set to fit into the global market of a host of other products with similar functionality. Another very important aspect of global customer driver market is that vendors have to develop standard compliant and easy to use quality products to survive in this world of immense competition. As a result we today get "plug and play" kind hi-tech products at a reasonable cost from multiple vendors.

Conclusion

Today's applications are mostly on-line in nature and deploys RDBMS for flexible and robust implementation. For On-Line applications however it is extremely important that how insert, update and delete operations are handled in a multi-user environment, for example, if a record is allowed to be retrieved during an update, which can lead to a possible update, then it may render an inconsistent database generating wrong information, as in the case of on-line reservation systems.

The same scenario is in the case of commercial RDBMS software from multiple sources. There is a continuous competition among the major RDBMS vendors to provide additional functionality/ additional easy to use productivity tools at a competitive price.

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