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Importance of Heterogeneous databases in Information system

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Abstract:

Heterogeneous databases are the promising new concept in information systems. It aims to (i) increased reliability (ii) increase in autonomy and performance by enabling system to adopt changing circumstances. Providing integrated access to multiple, distributed heterogeneous databases has become very important. In many organizations, there are a number of computerized databases scattered across various sites. Efficient access and sharing to the information contained in thes databases is the main need of most of the computerized systems. As a result, need of heterogeneous databases comes in information system. In this paper, we provide an overview of information system with application of heterogeneous databases in information system.

Keywords: Hetrogeneous databases, sub- system, decision making, resources

1.Introduction

Hetrogeneous databases are defined as separate autonomous databases, independently created for unique purposes , with substantial differences in abstract data models (e.g. , relational, object oriented) database schema (the developer's design of the data fields and their inter relationships), or both.[1] Information means meaningful data. The rapid growth of networks has had major impact on the information processing requirements of organization. Information has become the most important resource of the organizations which also helps in decision making. Hence, the efficient access to information of multiple heterogeneous databases has become an urgent need. No task in our life is done without taking decisions. For every assignment we take, we have a list of choices out of which we need to choose the optimal one. Any task can be performed in several ways and to choose the correct option, we must have information that's what from where the need of information comes from. Without information, we can't take decisions. The presence of sufficient information helps in making a reasonable choice from all available options. So, we need a system which is responsible for managing information i.e. information system In other words, Information System is defined as a socio- technical system comprised of two sub-systems: a technical sub-system and a social sub-system. The technical sub-system includes the technology and process components, while the social sub-system comprises of the people and structure components. [2]

2.Information Sources

Sources of information are generally classified as primary, secondary or tertiary depending on their originality and their proximity to the source or origin.

2.1.Primary Source

Primary sources are defined as the original materials on which other research is based. They are usually the first formal appearance of results in the print or electronic literature. They present information in its original form, neither interpreted nor condensed nor evaluated by other writers. Some examples of primary sources include scientific journal articles reporting experimental research results, Autobiographies, Technical reports and so on.

2.2. Secondary Source

Secondary sources are description, interpretation, analysis and evaluation of the primary sources For example, A newspaper article is a primary source if it reports events, but a secondary source if it analyses and comments on those events. It adds more value to the information contained in the primary source. Some examples of secondary sources are bibliographies (may also be tertiary), biographical works, history and so on.

2.3.Tertiary Source

These includes sources which list primary and secondary resources in a specific subject area. It includes materials in which the information from secondary sources has been reformatted and interpreted, to put it into a simple, convenient, easy-to-understand form. Some examples of tertiary sources are Chronologies, Dictionaries and encyclopedias (may also be secondary), Directories, Guidebooks, manuals etc.[3]

3.Changing Needs Of Information

When needs of the user changes, requirements for information also changes. Information needs of users are changing as a result of changes in the availability of information content in a database . Changing needs of the users determine form in which information content is currently being made available for users' access. Each user has a different type of information need depending on what he's trying to find and why he's trying to find it. For example, if a user is designing a staff directory, we can assume that most users are searching for items they already have information about. The user already knows exactly what he's looking for, he has the terms necessary to articulate that need, and he knows that the staff directory exists and that it's the right place to look. This type of information need would be best served by employing a search system. So resources should be invested in developing and maintaining a comprehensive search system. [4,5]

4. Problems In Heterogeneous Database Integration

4.1.Technical Heterogeneity

Different file formats, access protocols, query languages are often called syntactic heterogeneity from the point of view of databases.

4.2.Data Model Heterogeneity

This heterogeneity means different ways of representing and storing the same data. Table decompositions may also vary, column names (data labels) may be different (but have the same semantics), data encoding schemes may vary (i.e., should a measurement scale be explicitly included in a field or should it be implied elsewhere). This is also called as schematic heterogeneity.

4.3.Semantic Heterogeneity

Data across constituent databases may be related but different. Perhaps a database system must be able to integrate genomic and proteomic data. There may be many ways of looking at semantically similar, but distinct, datasets. The system may also be required to present "new" knowledge to the user. Relationships may be inferred between data according to rules specified in domain.[6,7]

5.Conclusion

Using heterogeneous databases in information system to take strategic decisions of an organization is an emerging holistic approach to computer system development that aims to bring information from various sources under one head. We need various database connecting tools to connect various heterogeneous databases.

6.Reference

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