CLOUD RELATIONAL DATABASES IN ISLAMIC EDUCATION INSTITUTIONS

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ABSTRACT

Database Management Systems are observed to operate in distinct environments within organisations. These environments are classified as 'Corporate' and 'Devolved', and different types of database management systems are considered as more appropriate to each. When designing any information system, there are problems of ensuring information security and data protection from unauthorized access to confidential data. The dominant components of information security for cloud information systems (the core of which is a cloud database) are confidentiality, structural stability, and secure access control. The database administrator regulates confidentiality issues and secures access control. However, the problem of ensuring the data structural stability is solved in advance, at the stage of database design. Structural stability is ensured by maintaining the database integrity. Data integrity in cloud information systems guarantees the correct operation of the entire system. The application of an abstract mathematical tool through categories creates a theoretical basis to study data integrity. Data integrity of cloud systems is achieved by solving a variety of problems, among which the dominant ones are to ensure the integrity of domains, the integrity of tables, and referential integrity. The applicability of the methods of category theory, namely, the argumentation of the categorical description of the tasks of maintaining the integrity of domains, the integrity of tables, and referential integrity is presented in the article. The categorical description allows us to represent the cloud information system as a dynamic system. The corporate database is closely associated with an evolutionary model of the entire organisation, whereas each devolved database is a tool used by an individual or group to analyse information necessary to that person's function within the organisation. The requirements for a Restructuring Mechanism to allow a corporate database to be altered in structure to reflect alterations in the organisation and enchancements to the model are identified. Conclusions are drawn that a Restructuring Mechanism is an essential ingredient for a Database Management System, to allow the database to reflect the ever-changing structure of an organisational data model. Areas where future research is likely to be fruitful are identified, and it is suggested that the classification of corporate and devolved will be useful in this respect.

KEYWORDS: *Table Integrity, Morphism, Cloud Information System, Categorical Description, Structural Stability, Data Integrity, Mechanism.*

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