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CS403 Short Notes

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CS403 - Database Management Systems
SHORT NOTES (Glossary) (Edited by SHOAIB)

Atomicity:

Atomicity states that database modifications must follow an "all or nothing" rule. Each transaction is said to be "atomic". If one part of the transaction fails, the entire transaction fails. It is critical that the database management system maintain the atomic nature of transactions in spite of any DBMS, operating system or hardware failure.

Attribute:

An attribute is a named column of a relation.

Business Logic:

The sequence of events that take place behind any business process

Candidate Key:

A candidate key is a combination of attributes that can be uniquely used to identify a database record without any extraneous data. Each table may have one or more candidate keys. One of these candidate keys is selected as the table primary key.

Cardinality:

The cardinality of a relation is the number of tuples it contains.

Conceptual Level:

The community view of the database. This level describes what data is stored in the database and the relationship among the data.

Consistency:

Consistency states that only valid data will be written to the database. If, for some reason, a transaction is executed that violates the database's consistency rules, the entire transaction will be rolled back and the database will be restored to a state consistent with those rules. On the other hand, if a transaction successfully executes, it will take the database from one state that is consistent with the rules to another state that is also consistent with the rules.

Cursor:

Cursors are database objects used to traverse the results of an SQL query. They point to a certain location within a recordset and allow the operator to move forward (and sometimes backward, depending upon the cursor type) through the results one record at a time.

Data:

Data can be described as "Collection of raw facts and figures".

Data Manipulation Language (DML):

A language that provide a set of operations that support the basic data manipulation operations on the data held in the database.

Data Definition Language (DDL):

A descriptive language that allows the DBA or user to describe and name the entities required for the application and the relationships that may exist between the different entities.

Data dictionary:

The description of data is known as data dictionary."Centralized repository of information about data such as meaning, relationships to other data, origin, usage, and format"

Data Independence:

Data Independence means that upper levels are unaffected by changes to lower levels.

Data Model:

An integrated collection of concepts for describing data, relationships between data and constraints on the data in an organization

Data warehouse:

A repository where data from multiple databases is brought together for more complex analysis

Database:

A shared collection of logically related data (and a description of this data), designed to meet the information needs of an organization

Database Schema:

The overall description of the database is called database schema.

DBMS:

A software system that enables users to define, create and maintain the database and provides controlled access to this database.

Degree:

The Degree of a relation is the number of attributes it contains.

Domain:

A domain is the set of allowable values for one or more attributes.

Durability:

Durability ensures that any transaction committed to the database will not be lost. Durability is ensured through the use of database backups and transaction logs that facilitate the restoration of committed transactions in spite of any subsequent software or hardware failures

Enterprise:

An enterprise is an organization that utilizes computers and applications. In general use, enterprises refer to businesses/organizations that operate on a large scale. Applications that are designed for these organizations are often referred to as enterprise applications.

Enterprise constraints:

Additional rules specified by the the users or database administrators of a database.

Entity:

An entity is a single object about which data can be stored. It is the "subject" of a table. Entities and their interrelationships are modeled through the use of entity-relationship diagrams.

Entity integrity:

in base relation, no attribute of a primary key can be null.

Entity-Relationship Diagram:

An entity-relationship diagram is a specialized graphic that illustrates the interrelationships between entities in a database.

External View:

The User's view of the database. This level describes that part of the database that is relevant to particular user.

File-based System:

A collection of application programs that perform services for the end users such as the production of reports. Each program defines and manages its own data.

Foreign Key:

An attribute or set of attributes within one relation that matches the candidate key of some (possibly the same) relation.

Functional Dependency:

A functional dependency occurs when one attribute in a relation uniquely determines another attribute. This can be written A -> B which would be the same as stating "B is functionally dependent upon A."

Internal View:

The physical representation of the database on the computer. This level describes how the data is stored in the database.

Logical Data Independence:

Logical Data Independence refers to immunity of external schema to changes in the conceptual schema.

Metadata:

The description of data is known as Metadata.

Non-procedural DML:

A language that allows the user to state what data is needed rather than how it is to be retrieved.

Null:

Represents a value for an attribute that is currently unknown or is not applicable for this tuple

ODBC:

A standard that allows a database to be exchanged and opened by other compliant database software, independent of the database's file format or what program was originally used to create it.

Physical Data Independence:

Physical Data Independence refers to immunity of the conceptual schema to changes in the internal schema.

Primary Key:

The candidate key that is selected to identify tuples uniquely within the relation

Procedural DML:

A language that allows the user to tell the system exactly how to manipulate the data

Query:

Deep analysis is carried out by performing multilayer queries. Because all the databases are linked, you can search for what products a store has too much of. You can then determine which of these products commonly sell with popular items, based on previous sales. After planning a promotion to move stock, you can dig deeper to see where this promotion would be most popular (and most profitable).

Referential integrity:

If foreign key exists in a relation, either the foreign key value must match a candidate key value of some tuplein its home relation or the foreign key value must be wholly null.

Relation:

A relation is a table with columns and rows.

Relational database:

A collection of normalized relations.

Relational Schema:

A relation name followed by a set of attributes and domain name pairs.

Super key:

An attribute or set of attributes that unquely identifies a tuple within a relation.

System Catalog:

The description of data is known as system catalog.

Tuple:

A tuple is a row of a relation.

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