

Relation Data Model

Relational data model is the primary data model, which is used widely around the world for data storage and processing. This model is simple and have all the properties and capabilities required to process data with storage efficiency.

Concepts

Tables: In relation data model, relations are saved in the format of Tables. This format stores the relation among entities. A table has rows and columns, where rows represent records and columns represents the attributes.

Tuple: A single row of a table, which contains a single record for that relation is called a tuple.

Relation instance: A finite set of tuples in the relational database system represents relation instance. Relation instances do not have duplicate tuples.

Relation schema: This describes the relation name (table name), attributes and their names.

Relation key: Each row has one or more attributes which can identify the row in the relation (table) uniquely, is called the relation key.

Attribute domain: Every attribute has some pre-defined value scope, known as attribute domain.

Constraints

Every relation has some conditions that must hold for it to be a valid relation. These conditions are called Relational Integrity Constraints. There are three main integrity constraints.

- Key Constraints
- Domain constraints
- Referential integrity constraints

KEY CONSTRAINTS:

There must be at least one minimal subset of attributes in the relation, which can identify a tuple uniquely. This minimal subset of attributes is called **key** for that relation. If there are more than one such minimal subsets, these are called ***candidate keys***.

Key constraints forces that:

- in a relation with a key attribute, no two tuples can have identical value for key attributes.
- key attribute can not have NULL values.

Key constraints are also referred to as Entity Constraints.

DOMAIN CONSTRAINTS

Attributes have specific values in real-world scenario. For example, age can only be positive integer. The same constraints has been tried to employ on the attributes of a relation. Every attribute is bound to have a specific range of values. For example, age can not be less than zero and telephone number can not be a outside 0-9.

REFERENTIAL INTEGRITY CONSTRAINTS

This integrity constraints works on the concept of Foreign Key. A key attribute of a relation can be referred in other relation, where it is called ***foreign key***.

Referential integrity constraint states that if a relation refers to an key attribute of a different or same relation, that key element must exists.

Source:

http://www.tutorialspoint.com/dbms/relational_data_model.htm