

Active Reports Training

Database Objects



Agenda

- Definition of Database System
- Relational Database Characteristics
- Tables, Rows, Column, & Constraints
- One to One Relationship
- One to Many Relationship
- Many to Many Relationship



Database Objects

Definition



Database Definition

A database is a collection of information organized such that computer programs can quickly select desired pieces of data.

You can think of a database as an electronic filing system.



Database Objects

Relational Database Characteristics



Characteristics

- The relational model allows for the linking of different data tables using 'keys'.
- Using the Structured Query Language (SQL) linked data from multiple tables can be selected at once.
- Efficient storage of data
- A design that adheres to the rules of the relational model



Characteristics, Cont'd.

- A design that adheres to the rules of the relational model
 - Each data item is stored only once, that is, in one location.
- You can specify what sort of data a database column is allowed to contain.
- You can set data fields, numeric fields, text fields, etc.
- Data Integrity



Characteristics, Cont'd.

- Operations to change data SELECT, INSERT, DELETE, ALTER, CREATE
- Permissions to allowed or disallowed to a user DML operations



Database Objects

Tables, Rows, Fields, and Constraints



Table Definition

A set of data elements (values) that are organized using a model of vertical columns (identified by their name) and horizontal rows.

CustomerID	FirstName	LastName	EmailAddress	CellPhone
1	John	Smith	Jsmith@bob.com	801.555.1111
2	Jane	Smith	Jane.Smith@bob.com	801.555.1234
3	Bo	Smith	Bsmith@bob.com	801.555.0987



Column Definition

- A set of data values of a particular simple type, one for each row of the table. The columns provide the structure according to which the rows are composed.
- The term "field" is often used interchangeably with column, although many consider it more correct to use field (or field value) to refer specifically to the single item that exists at the intersection between one row and one column.



Row Definition

- Can be called
 - A Record
 - Tuple – Represents a single, implicitly structured data item.
- Each row in a table represents a set of related data, and every row in the table has the same structure



Table Constraint – Primary Key

- Used to uniquely identify each record.
- Key value can only exist once in the table.
- In most cases is a number combination, but a text value can be used.
- It may consist of a single attribute or multiple attributes in combination.

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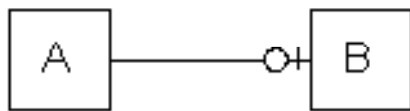
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One to One Relationships

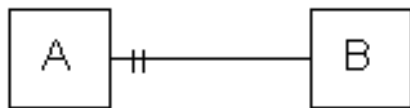


One to One Relationship Definition

- Each item of entity A can be associated with 0 or 1 item of entity B.



Each instance of A is related to a minimum of zero and a maximum of one instance of B



Each instance of B is related to a minimum of one and a maximum of one instance of A

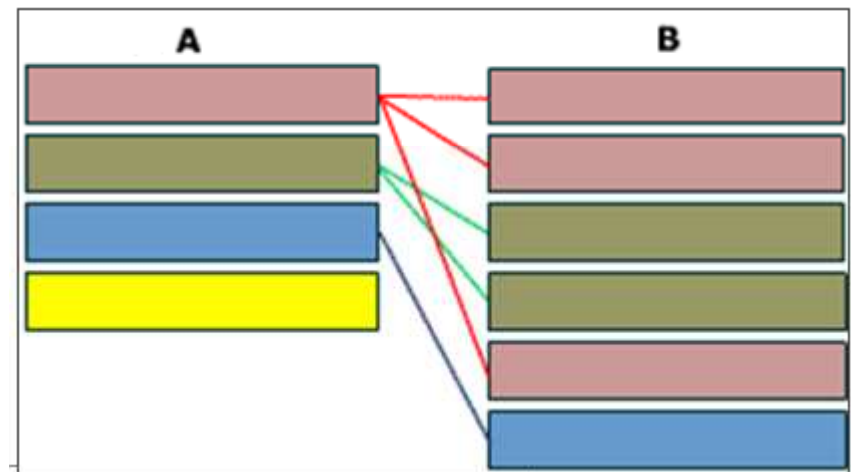
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One to Many Relationships

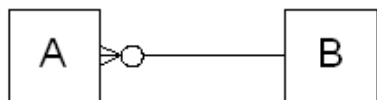


One to Many Relationship Definition

- When one data item can be linked to 0, 1 or many other data items, you are dealing with a one-to-many relationship.



Each instance of A is related to a minimum of one and a maximum of many instances of B



Each instance of B is related to a minimum of zero and a maximum of many instances of A

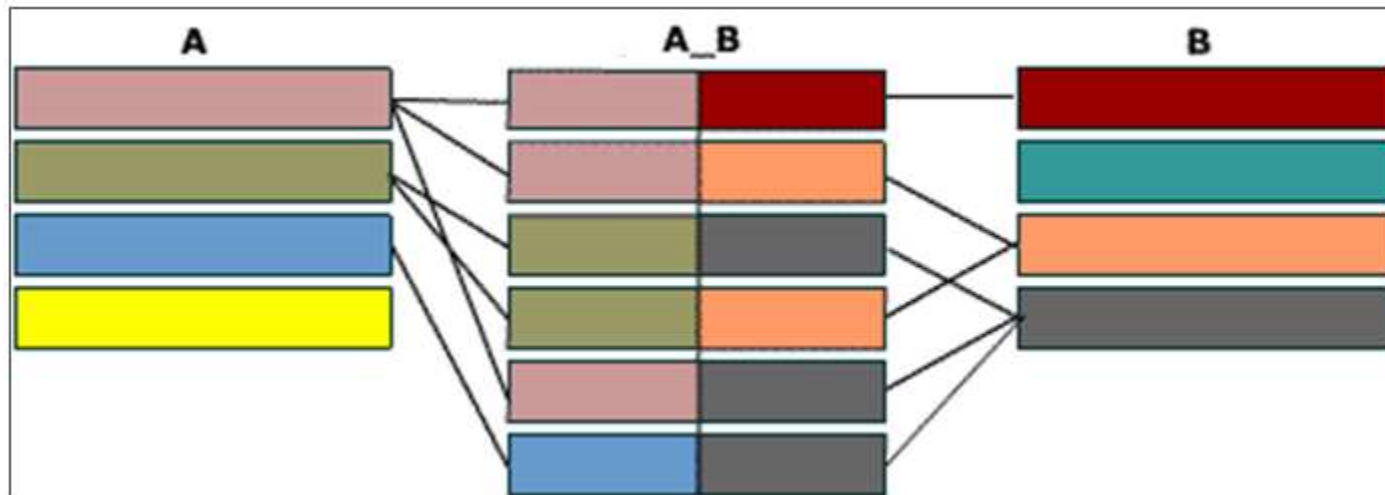
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Many to Many Relationships



Many to Many Relationship Definition

- multiple rows from table A can correspond to multiple rows in table B.
- Is Modeled with 3 tables. 2 source tables and 1 association table.



Next Section

Database Modeling >>

