

By Becky Roberts

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Column

A collection of data values of the same type in a table. For example, in a person database, all the social security numbers form a single column.

Database

A collection of related information stored in structured format, organized to facilitate searching, analysis, and reporting. The type of information—or data—that can be stored in a database depends upon the particular software used to implement the database. It can include such items as images, text files, sound files, movie files, spreadsheets, text, and numbers.

Data entry

The process of getting information into a database, frequently by typing information into data entry forms designed to optimize the process.

DBMS (database management system)

An application that facilitates the organization, retrieval, security, and integrity of a database.

Field

The smallest single, discrete piece of information in a database. It is a space that's been allocated for holding a particular piece of information, the characteristics of which are usually defined by **properties**. Examples of fields could include Date of Birth, Photo, and Last Name.

Field properties

A list of characteristics that restrict and format the data contained within the **field**. Examples of field properties are length and type.

Foreign key

A key field in a relational database table that matches a key, usually a primary key, typically in another table in the same database. For example, in a database of movies, the field Writer Last Name in the Movie table could be a foreign key matching the primary key field of the same name in the Screen Writers table. Unlike primary keys, foreign keys have no uniqueness requirement.

Index

Database tables are indexed to allow the data to be sorted and accessed more quickly. An index is a summary table consisting of one or more database **columns** and is smaller and faster to sort than the database itself. Entries in the index point to records in the indexed table.

Key field

A field in a database that either alone or combined with other key fields is used as a unique identifier for a **record**. Key fields are also used for sorting and indexing. For example, in a database of movies, the key fields could be Movie Name, Release Date, and Director.

Normal forms

The normal forms describe the rules for normalized database design. A database can be said to conform to different normal forms. The normal forms were devised to ensure internal database consistency. The application of normal forms to a database design is known as normalization.

Normalization

A normalized relational database is internally consistent and stores non-primary key data in only one location. In a movie database, for example, if the field containing a director's current address is not part of the primary key in the Director table, a field containing the same information should not appear in any other table in the database. Otherwise, when the address is updated in the Director table there is nothing to ensure that the address is updated in any other table in which it appears and the data can become inconsistent.

Primary key

One or more key fields in a database that when combined, uniquely identifies a single record or row in the table. Primary keys should consist of data that does not change, as by definition, if a value in the primary key changes, so does the identity of the particular record.

Query

A request for information from a database written in a language the database can understand. Queries are used as the basis of reports and interfaces to extract specific information matching the parameters specified in the query, sorted in a specific order. Queries can be written against one or more tables.

RDBMS (relational database management system)

The same as a DBMS but for relational databases.

Record

A collection of **fields** is known as a **row**, or **record**. For example, a person record might consist of the following fields: SSN, Last Name, First Name, Middle Initial, and DOB. These fields effectively form a row in the table.

Referential integrity

A concept used in relational databases to describe consistent relationships between tables. A database enforces referential integrity if it is not possible to add a record to a table containing a foreign key unless there is a matching primary key in the linked table. For example, in a movie database, suppose the primary key of the Director table consists of First Name, Last Name, Birth Date, and Nationality, and a foreign key in the Movie table is Director Last Name, First Name, Birth Date, and Nationality. If referential integrity is being enforced, it will not be possible to add the movie *Event Horizon* to the Movie table if Paul Anderson does not exist in the Director database. Referential integrity also requires the enforcement of cascading deletion. So in the movie database example, if a record is deleted from the Director table, all records in the Movie table that refer to the deleted record are also deleted.

Relational database

The term “relational” is used to distinguish this type of database from another type known as a “flat file.” In a flat file database, each table is a distinct database, whereas in a relational database, multiple tables are joined dynamically by comparing **key fields**. In a relational database, data is maintained in separate but matched tables and **queries** and **reports** are written to combine data elements from these tables.

Report

A report presents information gleaned from a database by a query. The report is formatted for ease of reading.

SQL (Structured Query Language)

A language developed in the 1970s for simplifying the process of querying relational databases.

Table

A set of values or pieces of data, organized into a variable number of **rows** and a fixed number of **columns**. The columns have names to indicate the type of value they accept, such as DOB and SSN. The rows have unique identifiers known as **primary keys**.

Tuple

A term used in relational databases to describe a single **row** or **record**.

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