Fundamentals of RDBMS and Database Designs



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Module Overview



Client/Server System

Web Application Server

History of Relational Database Model (RDBMS)

RDBMS Concepts

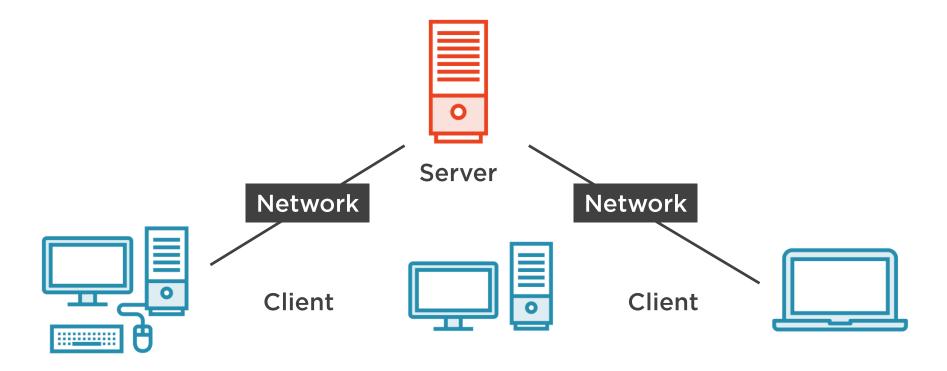
RDBMS Keys

Column Definition

Summary



Client/Server System



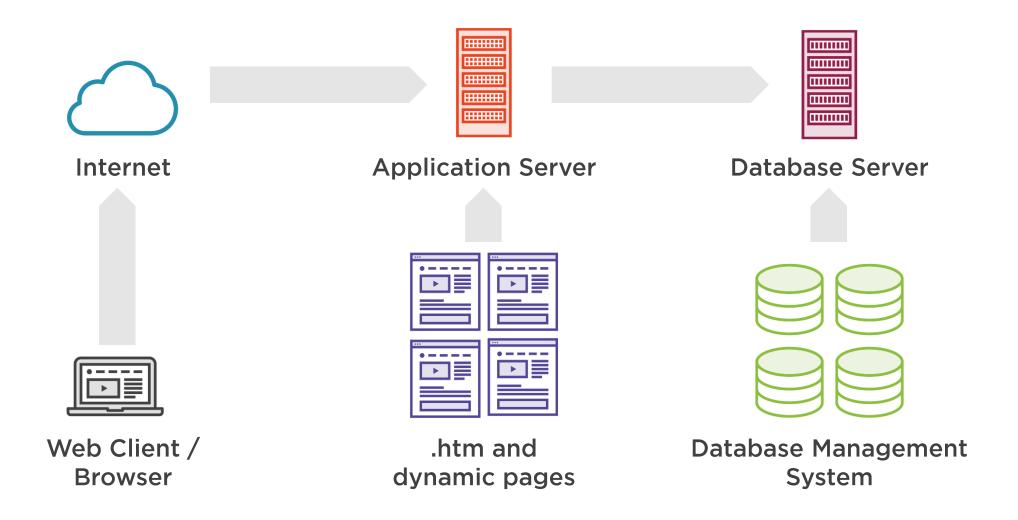
Clients are like PCs, Macs, laptops, tablets, smartphones, etc.

Server stores files and database – database server

Networks are communications links between



Web Application Server





History Relational Database Model



1970 Dr. E. F. Codd developed relational database

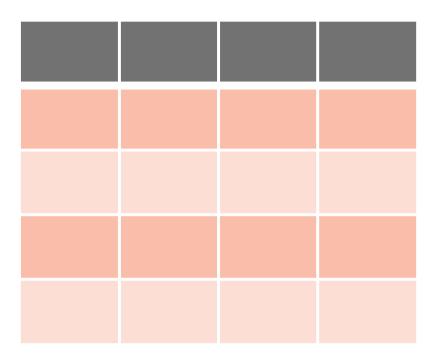
Reduce redundancy

Efficient data retrieval

Intuitive data modification

Tables

A real world entity e.g. Address



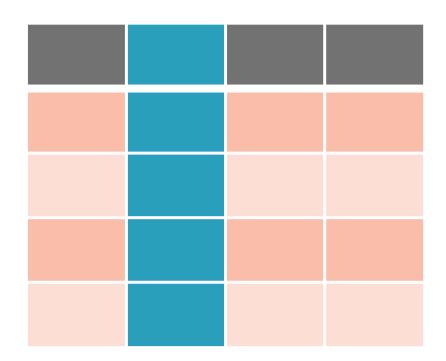


Tables

A real world entity e.g. Address

Columns (Fields)

Attribute of the entity e.g. Street #, City, Zipcode





Tables

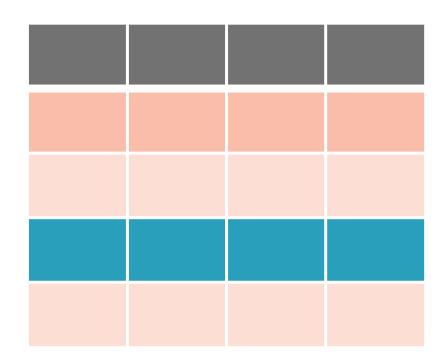
A real world entity e.g. Address

Columns (Fields)

- Attribute of the entity e.g. Street #, City, Zipcode

Rows (Records)

 Set of values for a single instance of entity e.g. A single address





Tables

- A real world entity e.g. Address

Columns (Fields)

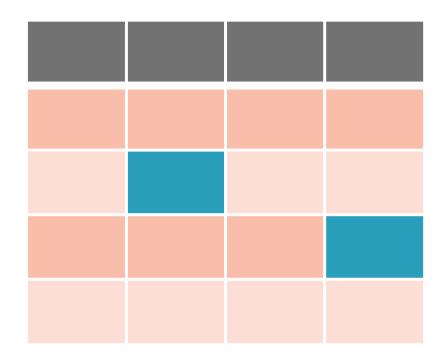
- Attribute of the entity e.g. Street #, City, Zipcode

Rows (Records)

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Cells

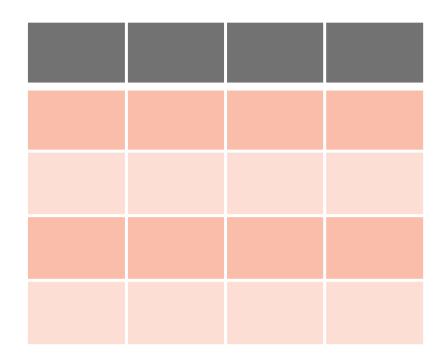
- Intersection of a row and a column





Tables

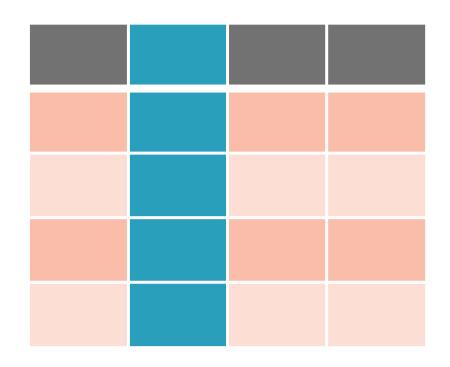
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Columns (Fields)

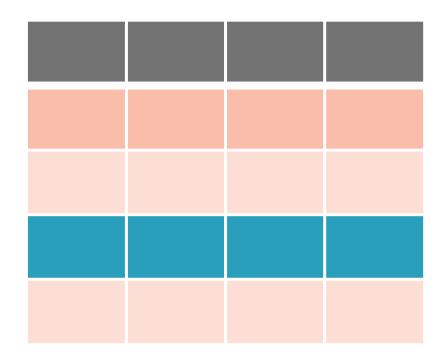
Attribute of the entity e.g. Street #, City, Zipcode





Rows (Records)

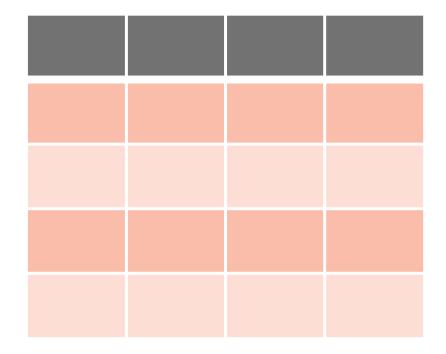
Set of values for a single instance of entity e.g. A single address





Cells

Intersection of a row and a column





Relational Database Model Keys



- Unique identifier of row
- One per table
- Does not allow NULL
- Single or multiple columns (composite columns)

Relational Database Model Keys



- Ensures data is not duplicate
- More than one per table
- Allows one NULL

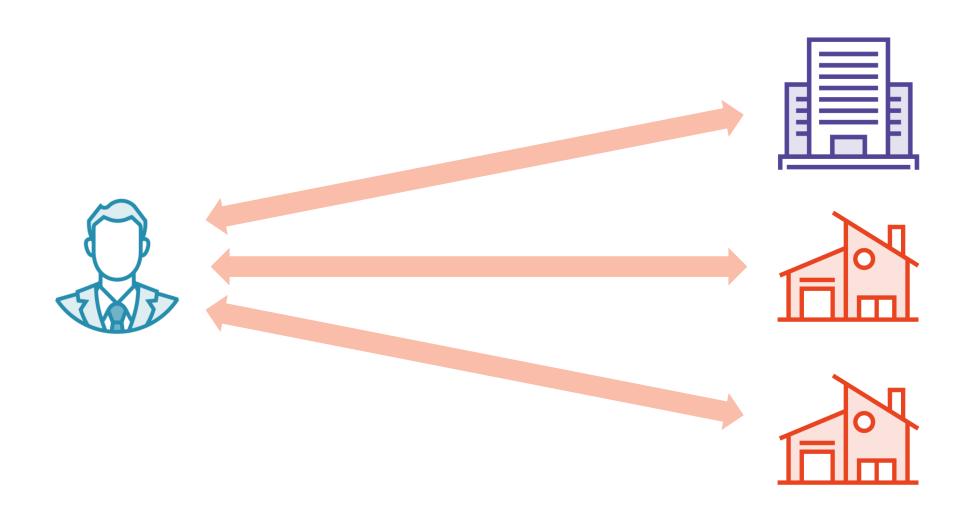
Relational Database Model Keys

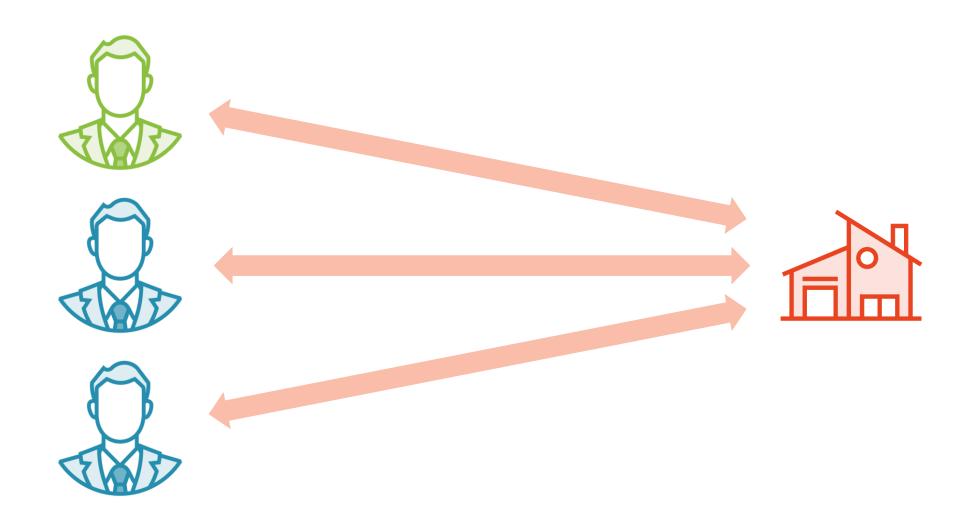


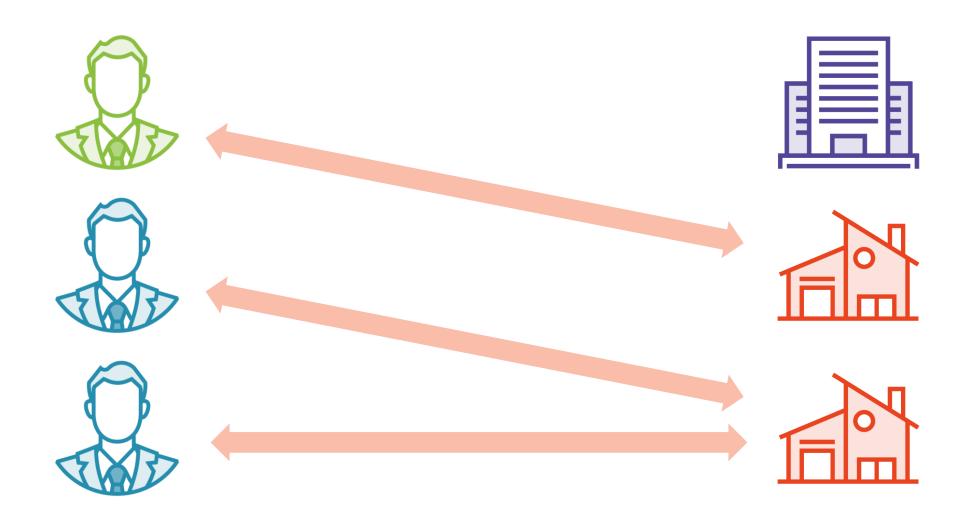
Foreign Key

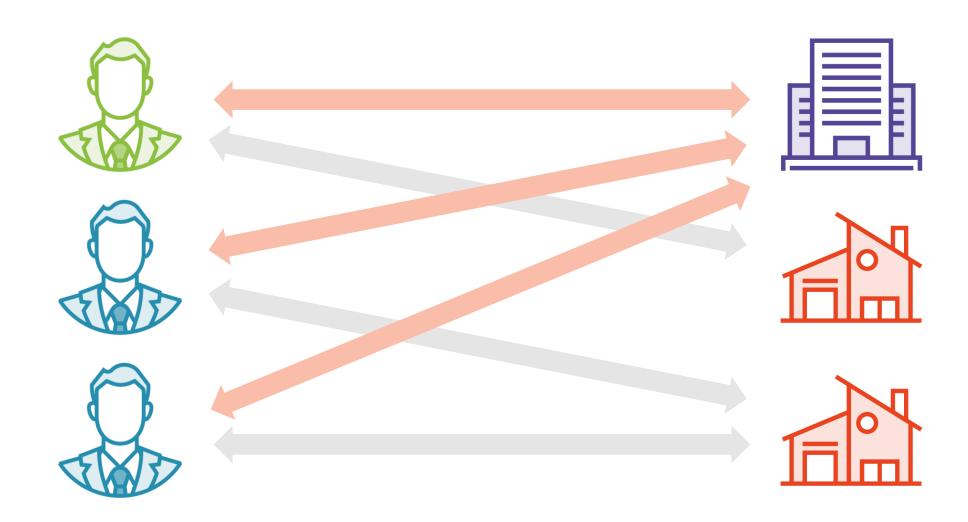
- Columns in a table that refer to a Primary Key of another table
- Enforces referential integrity
- One-to-one
- One-to-many
- Many-to-many



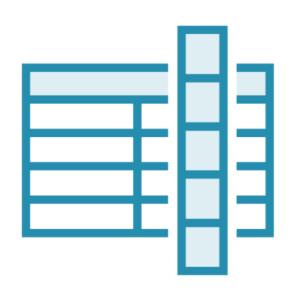








Column Definition



Data type determines the type of information

- String CHAR, VARCHAR
- Integer INT
- Float FLOAT
- Date and time DATE

Default Value

Column containing NULL value

Auto increment column

Module Summary



A relational database consists of tables.

A table consists of Rows and Columns.

The intersection of Rows and Columns is called cell.

Primary Keys uniquely identifies each row of the table.

Foreign Keys Enforces referential integrity

Defining datatype of the column is one of the most crucial task of database modeling

Checkout other database designing courses on Pluralsight

