Fundamentals of RDBMS and Database Designs

Pinal Dave

@pinaldave
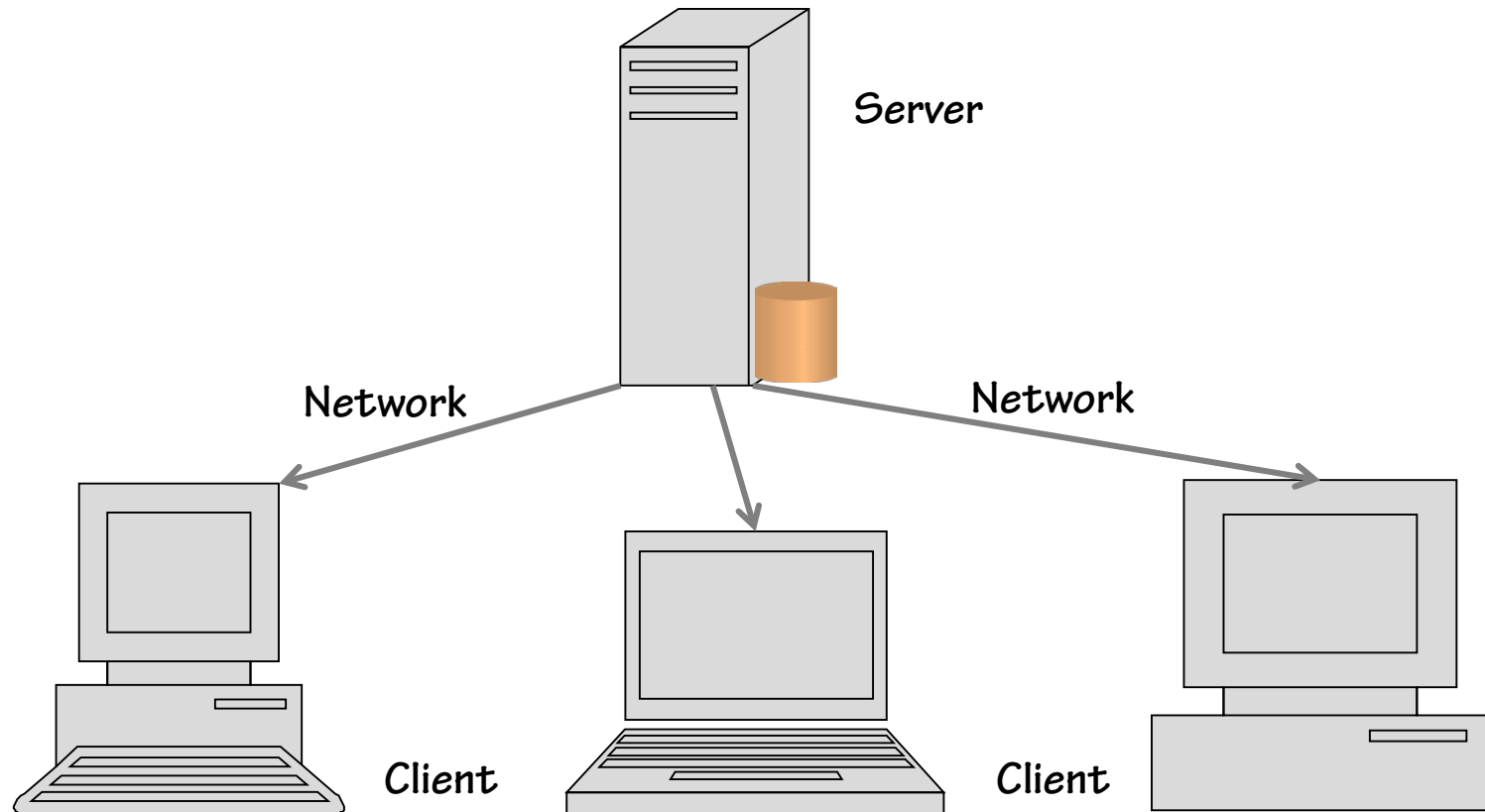
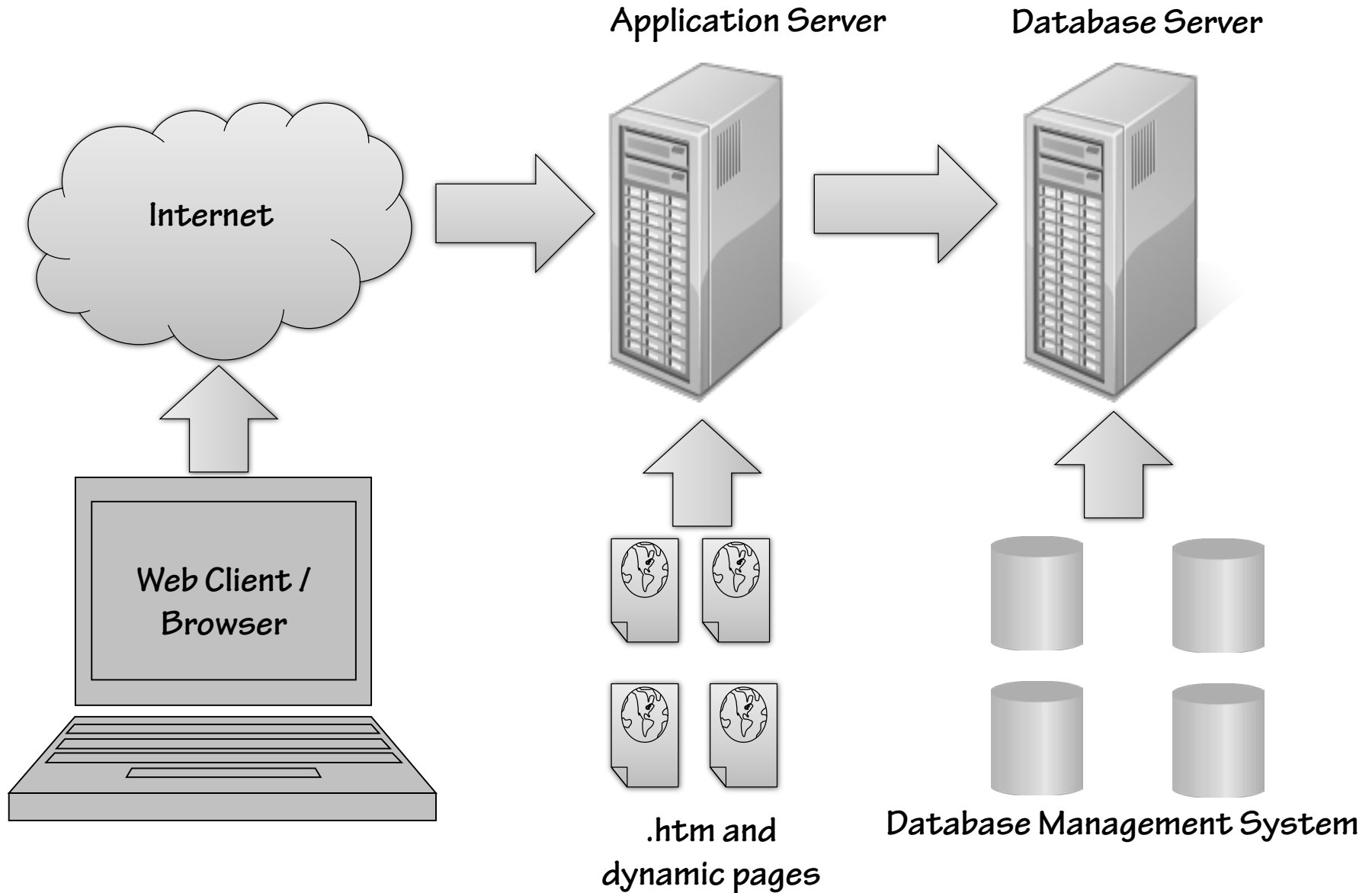**pluralsight**
hardcore developer training

Outline

- **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**

Server

Network

Network

Client

Client

Web Application Server

Application Server

Database Server

Internet

Web Client / Browser

.htm and dynamic pages

Database Management System

History Relational Database Model

- 1970 Dr. E. F. Codd developed relational database
- Reduce redundancy
- Efficient data retrieval
- Intuitive data modification

Relational Database Model Concepts

- **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
- **Cells**
  - Intersection of a row and a column

Relational Database Model Concepts - Table

- **Tables**
    - A real world entity e.g. Address

Relational Database Model Concepts - Columns

- **Columns (Fields)**
    - Attribute of the entity e.g. Street #, City, Zipcode

Relational Database Model Concepts - Rows

- **Rows (Records)**
  - Set of values for a single instance of entity e.g. A single address

Relational Database Model Concepts - Cell

- **Cells**
  - Intersection of a row and a column

Relational Database Model Keys

- **Primary Key**
  - Unique identifier of row
  - One per table
  - Does not allow NULL
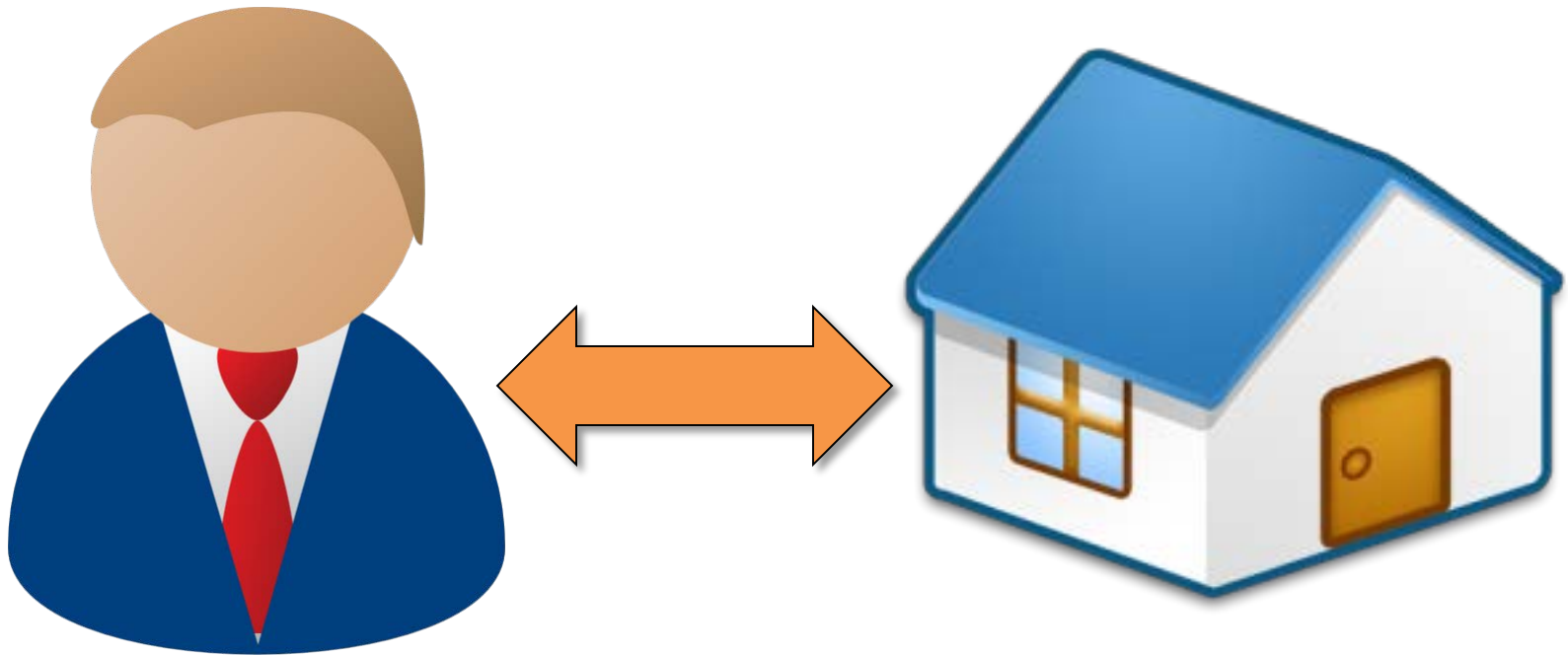 - Single or multiple columns (composite columns)
- **Unique Key**
  - Ensures data is not duplicate
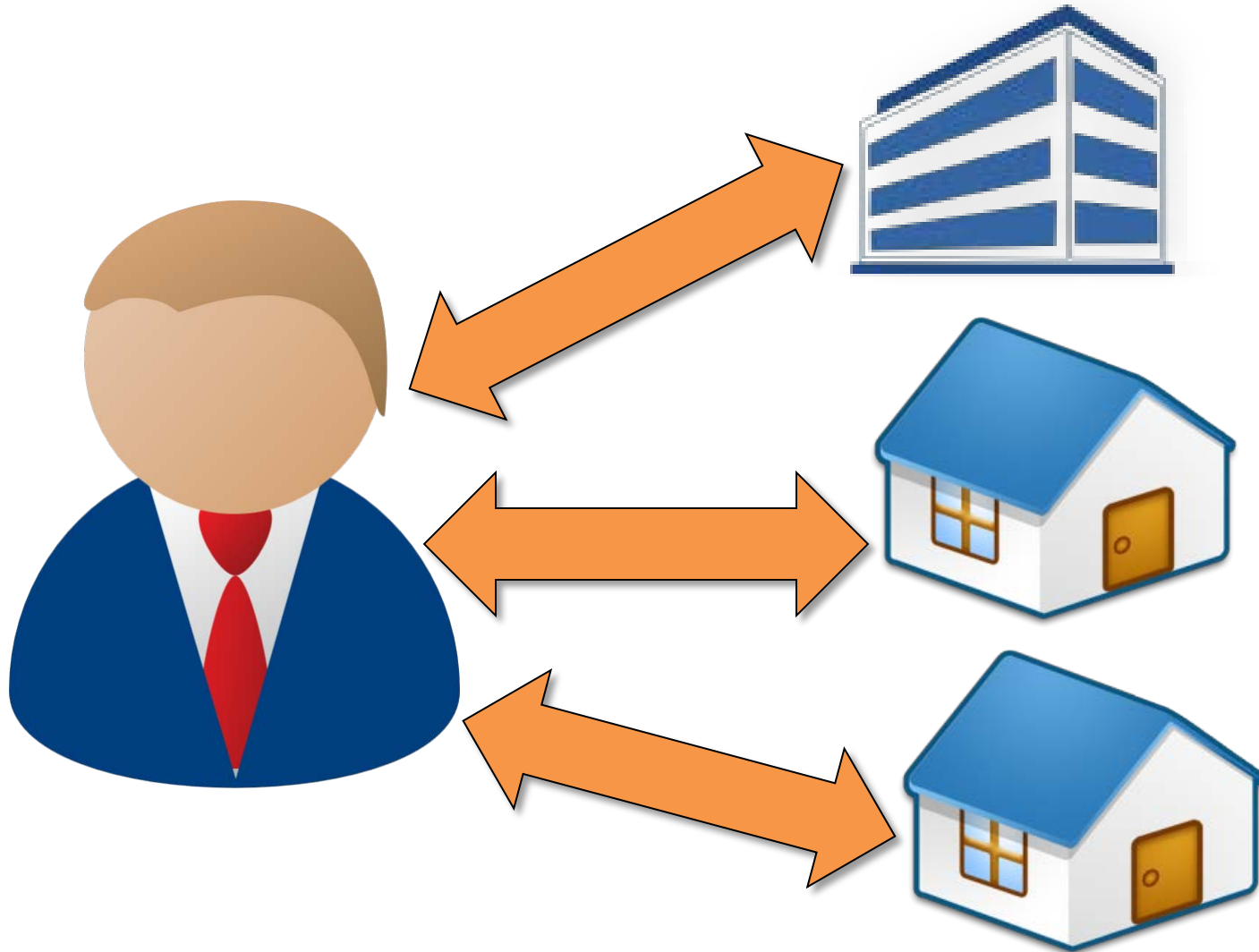 - More than one per table
  - Allows one NULL
- **Foreign Key**
  - Columns in a table that refer to a Primary Key of another table
  - Enforces referential integrity
  - One-to-one
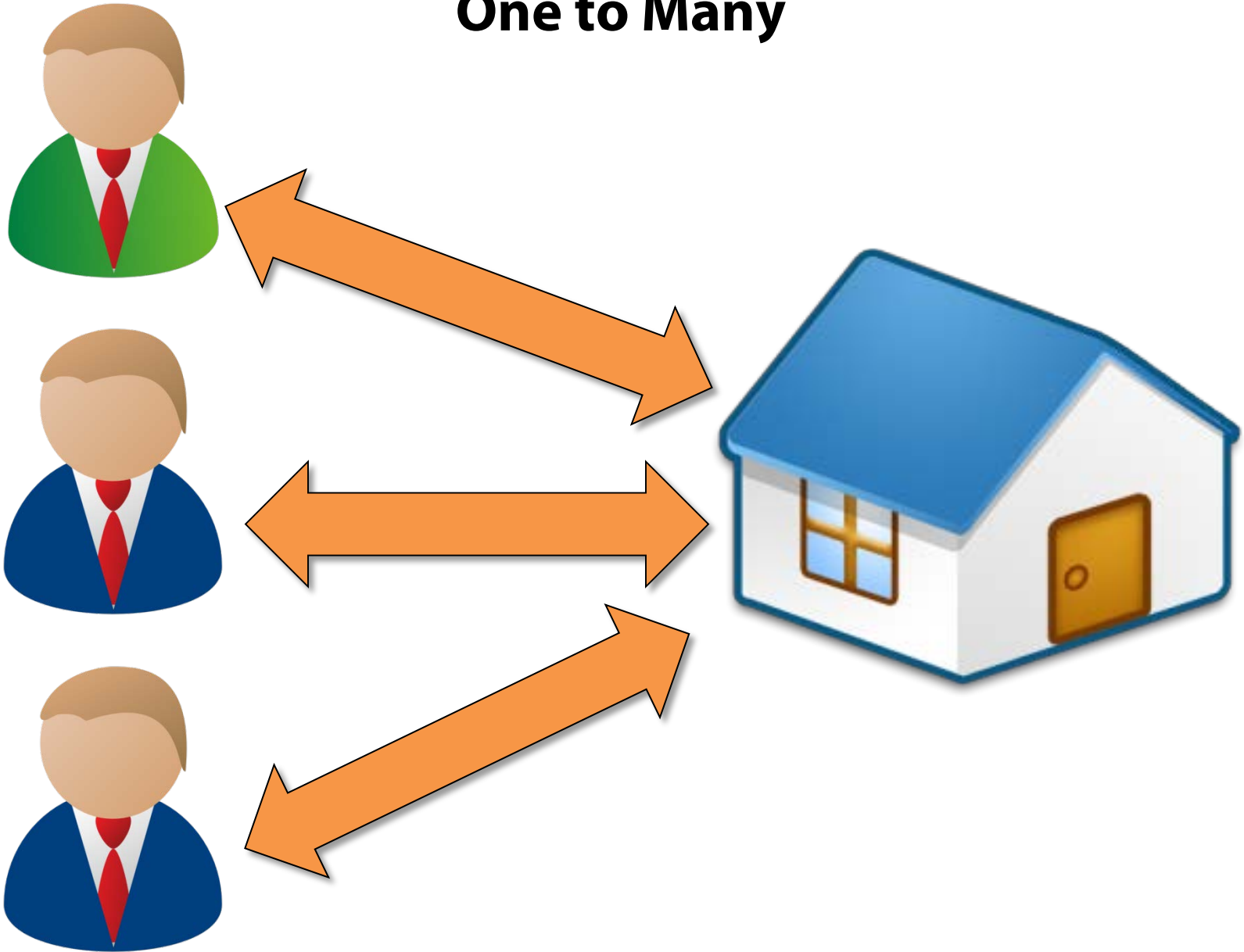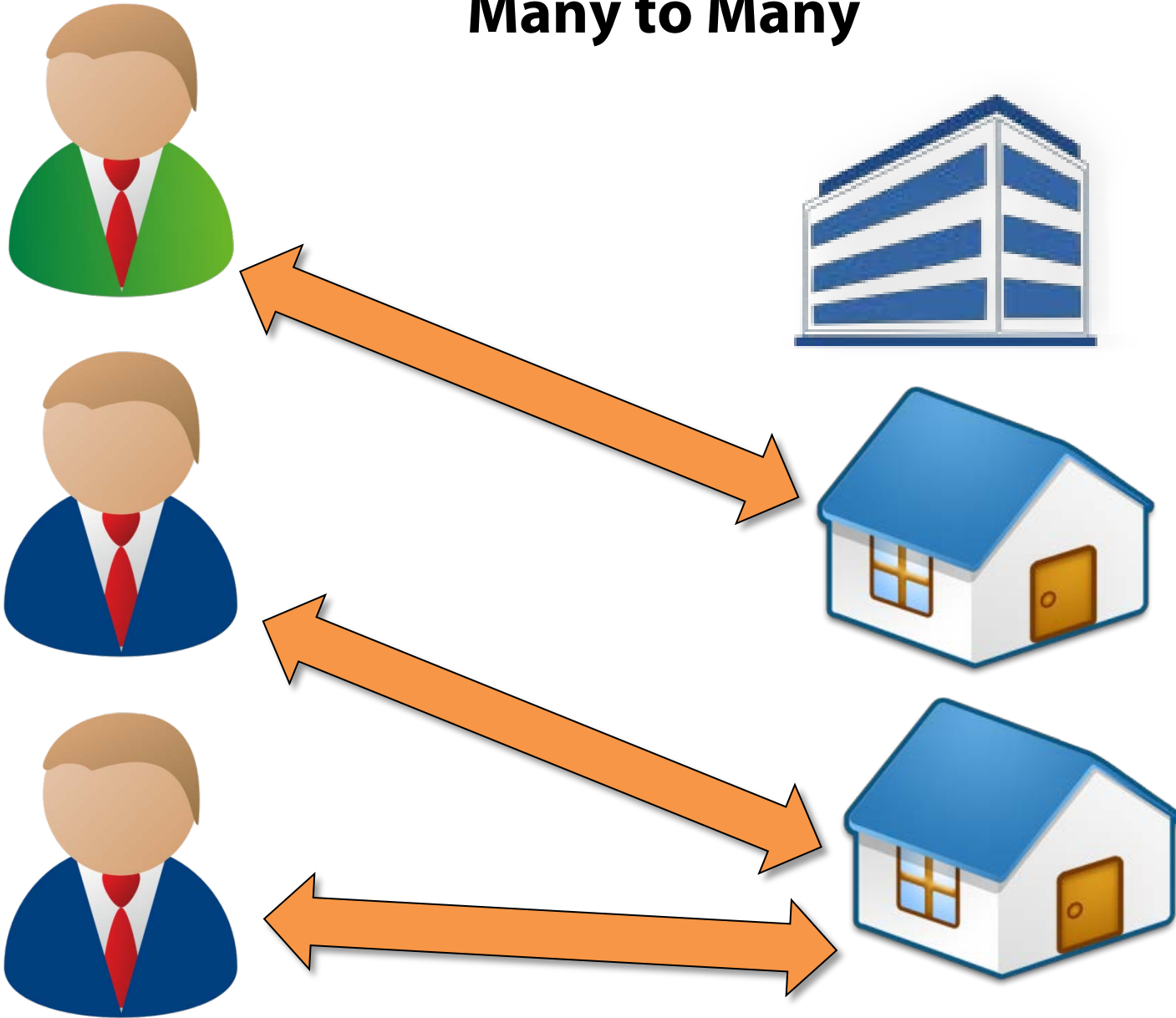 - One-to-many
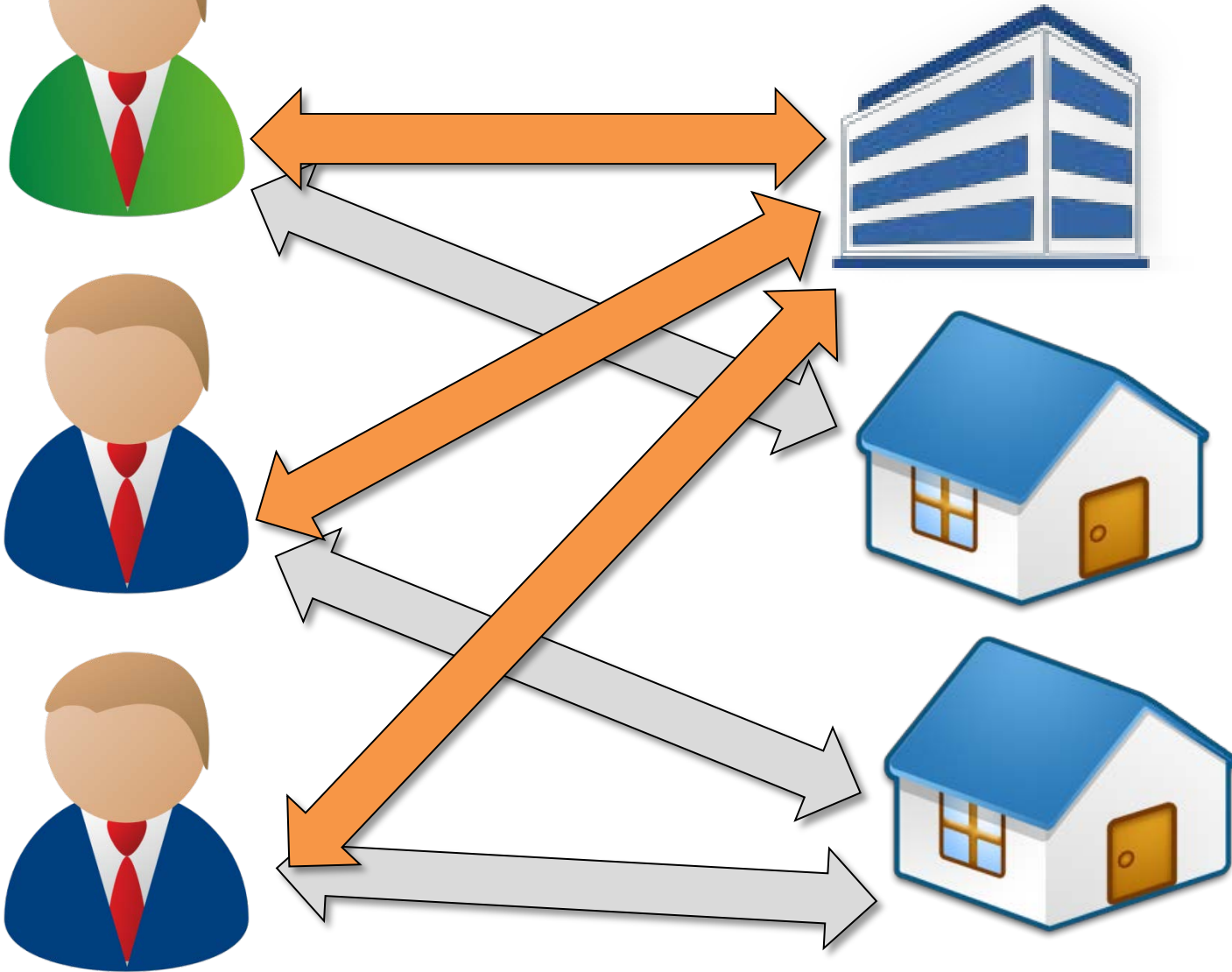 - Many-to-many

One to One

One to Many

One to Many

Many 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**

Summary in Sixty Seconds

#1 A relational database consists of tables.

#2 A table consists of Rows and Columns.

#3 The intersection of Rows and Columns is called cell.

#4 Primary Keys uniquely identifies each row of the table.

#5 Foreign Keys Enforces referential integrity

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

#7 Checkout other database designing courses on Pluralsight