

Shaping tables

DATA MODELING IN POWER BI

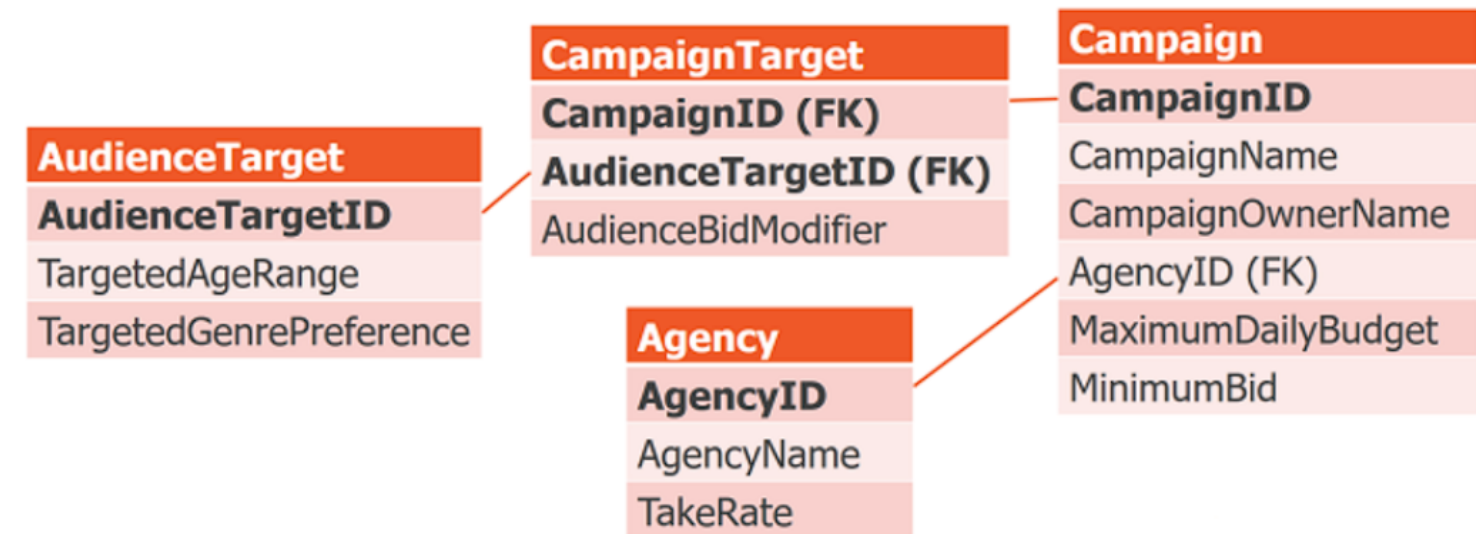


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Database normalization

- A set of logical rules and processes to follow for data modeling
- Organizing a database
- Goals of normalization
 - Remove redundant data
 - Achieve a design which is a good representation of the real world
- Tables are connected through relationships in Power BI



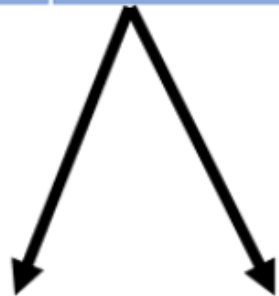
Data shaping in Power Query

- Power Query includes several data shaping operations to get closer to a normalized data model.
- Key techniques:
 1. Column splitting
 2. Column extraction
 3. Query merging
 4. Query appending
- There are additional techniques as well!

1. Column splitting

- Break out one column into multiple columns
- Split criteria
 - Delimiter
 - Number of characters
 - Position in string
 - Lower vs. upper casing
 - Digit vs. non-digit

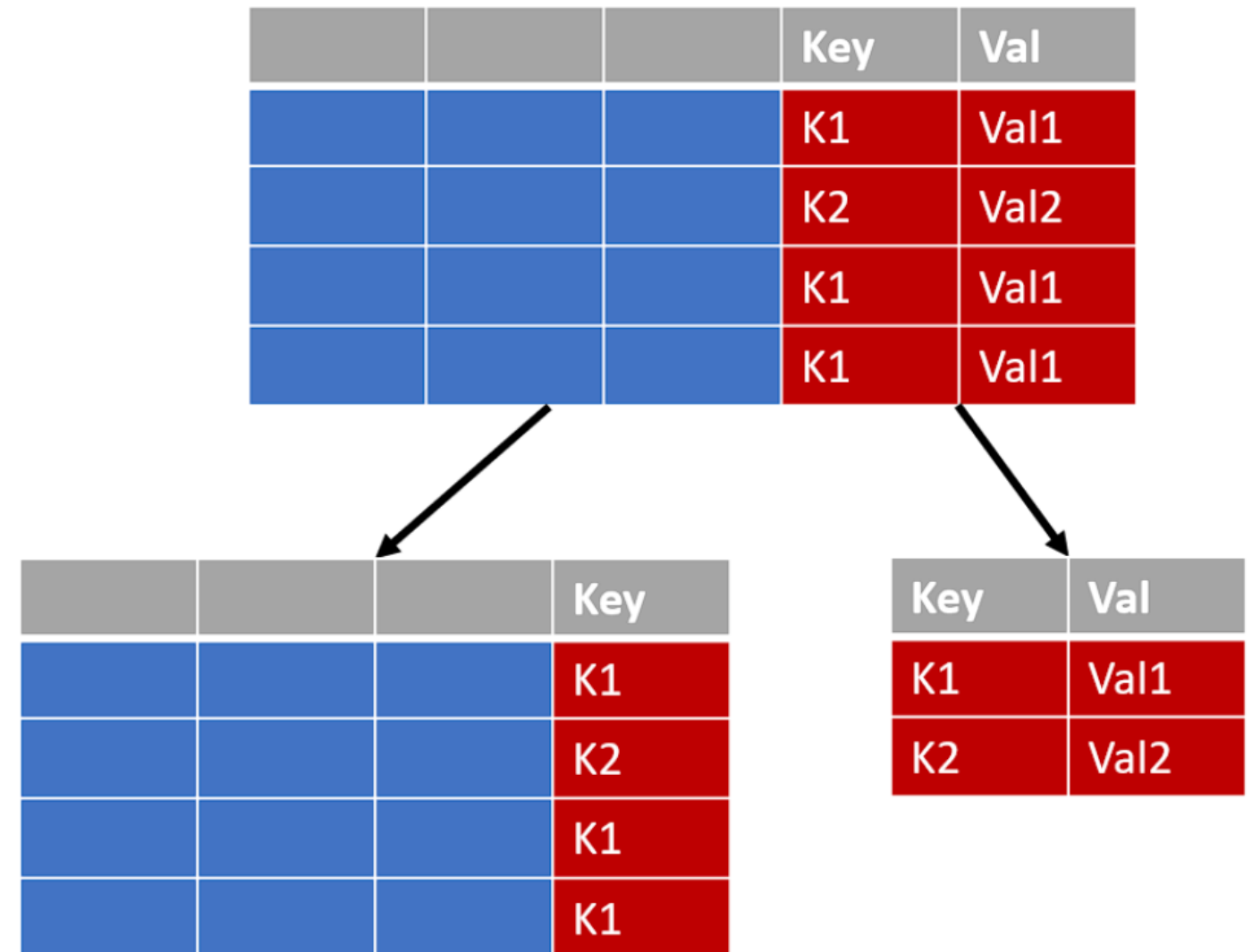
| C1 | C2 | C3 |
|----|----|----|
| 1 | 2 | 3A |
| 2 | 3 | 4B |
| 3 | 4 | 5C |



| C1 | C2 | C3 | C4 |
|----|----|----|----|
| 1 | 2 | 3 | A |
| 2 | 3 | 4 | B |
| 3 | 4 | 5 | C |

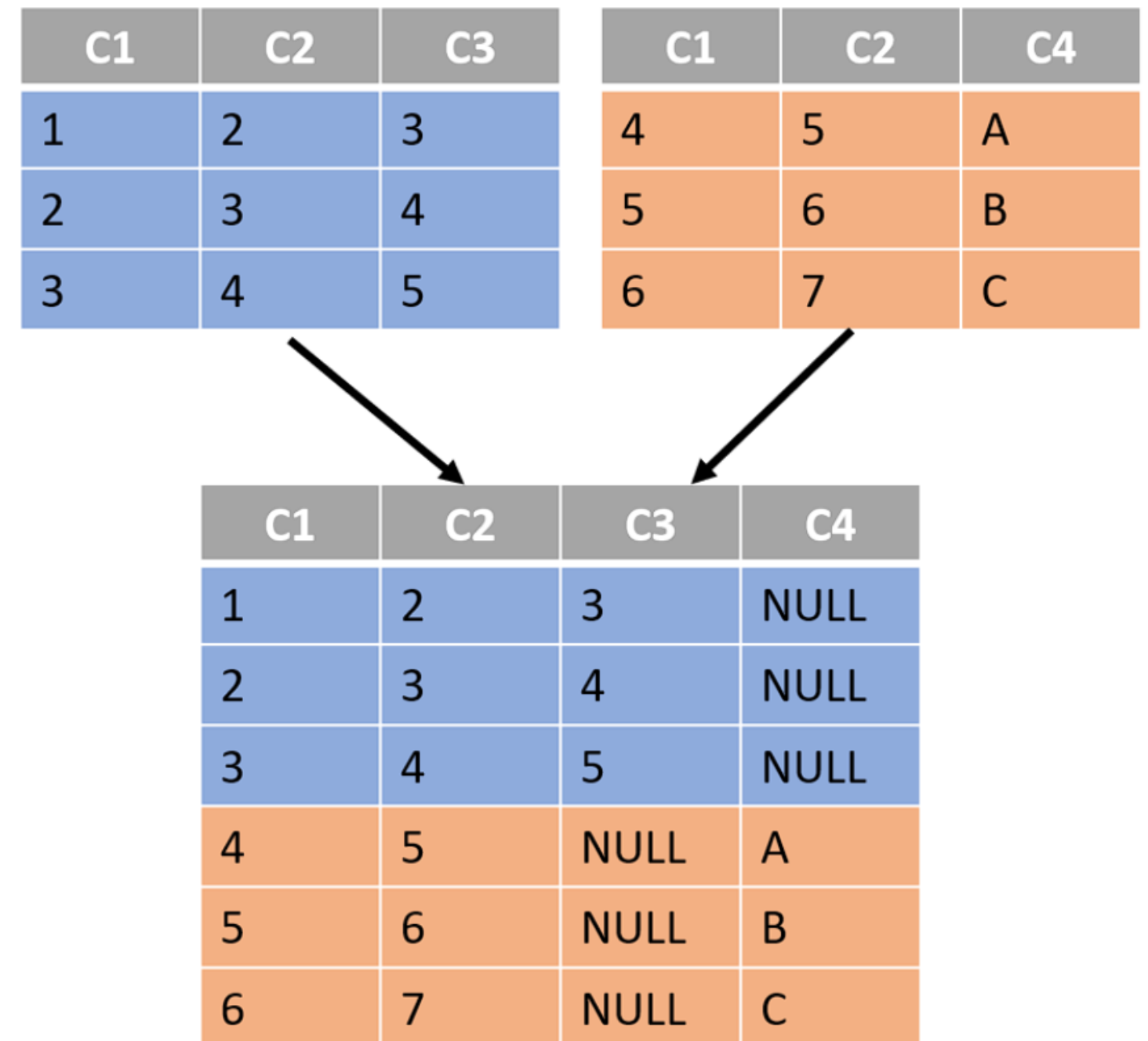
2. Column extraction

- Take columns from one table and break them out into another table
- Keep a **key** on the original table to know which values fit together
- Result: keep distinct rows, shrinking total data model size and reducing redundancy



3. Query appending

- Combine contents of two or more tables into a single table
- Match rows based on column names, adding *NULL* for missing columns
- Equivalent to a UNION ALL statement in SQL



4. Query merging

- Join together two existing tables based on values from one or more columns¹
- Types of joins:
 - Inner join
 - Left outer join
 - Right outer join
 - Full outer join

| ColA | ColB | ColC | Key |
|------|------|------|-----|
| | | | K1 |
| | | | K2 |
| | | | K1 |
| | | | K4 |

| Key | Val |
|-----|------|
| K1 | Val1 |
| K2 | Val2 |
| K3 | Val3 |

| Inner Join | | |
|-------------|-----|------|
| ColA...ColC | Key | Val |
| | K1 | Val1 |
| | K2 | Val2 |
| | K1 | Val1 |

| (Left) Outer Join | | |
|-------------------|-----|-------------|
| ColA...ColC | Key | Val |
| | K1 | Val1 |
| | K2 | Val2 |
| | K1 | Val1 |
| | K4 | <i>null</i> |

| Full Outer Join | | |
|-----------------|-----|-------------|
| ColA...ColC | Key | Val |
| | K1 | Val1 |
| | K2 | Val2 |
| | K1 | Val1 |
| | K4 | <i>null</i> |
| <i>null</i> | K3 | Val3 |

¹ This won't be covered in the exercises; check other DataCamp courses on joining tables for more detail

Let's practice!
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Merging and appending queries

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