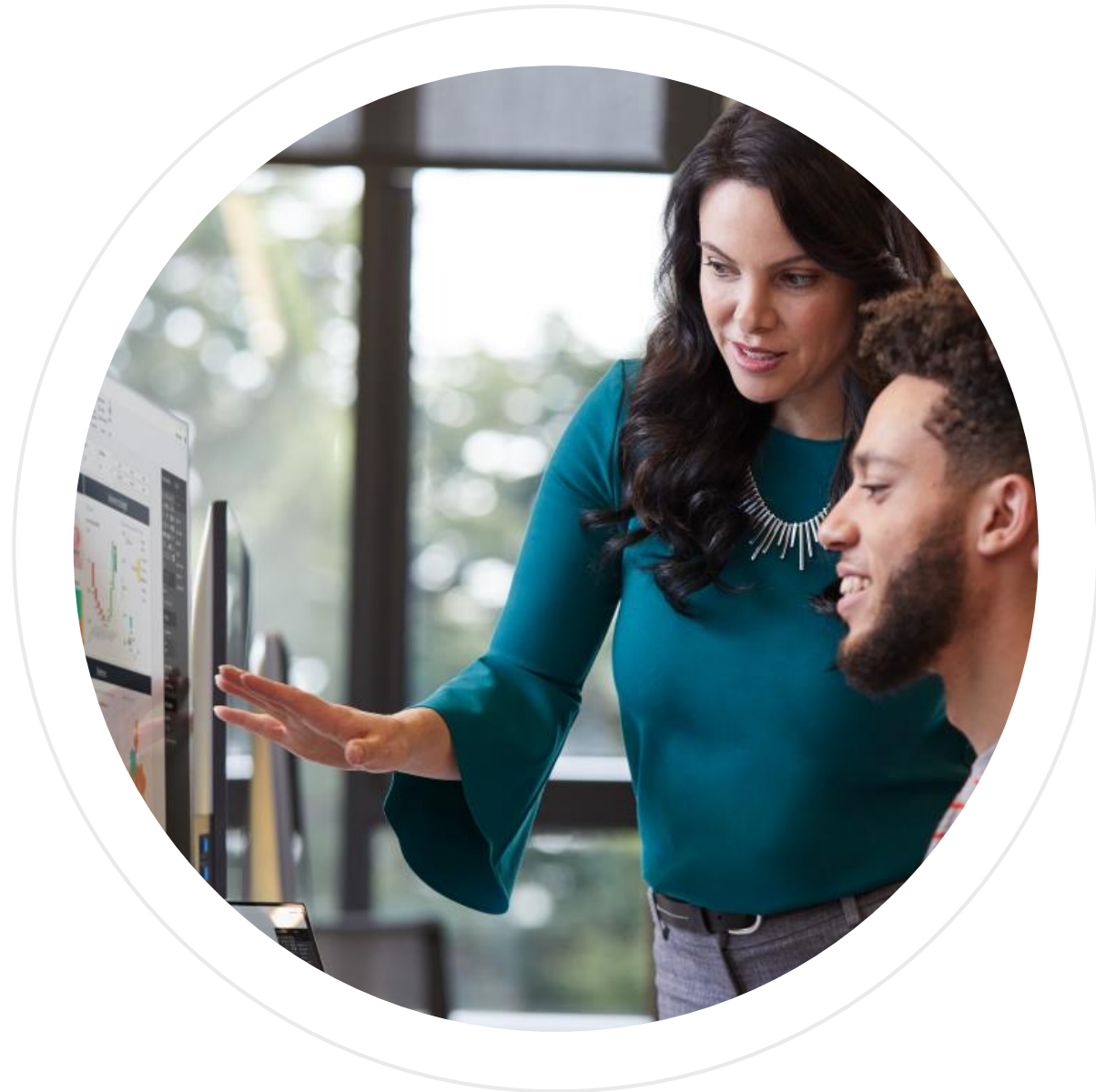


# Module 4: Design a Data Model In Power BI

Mohammed Arif



# Learning Objectives

**You will learn the following concepts:**

- Data Modeling
- Working with Tables
- Dimensions and Hierarchies

# Module Agenda



Introduction to Data Modeling



Working with Tables



Dimensions and Hierarchies

# Lesson 1: Introduction to Data Modeling



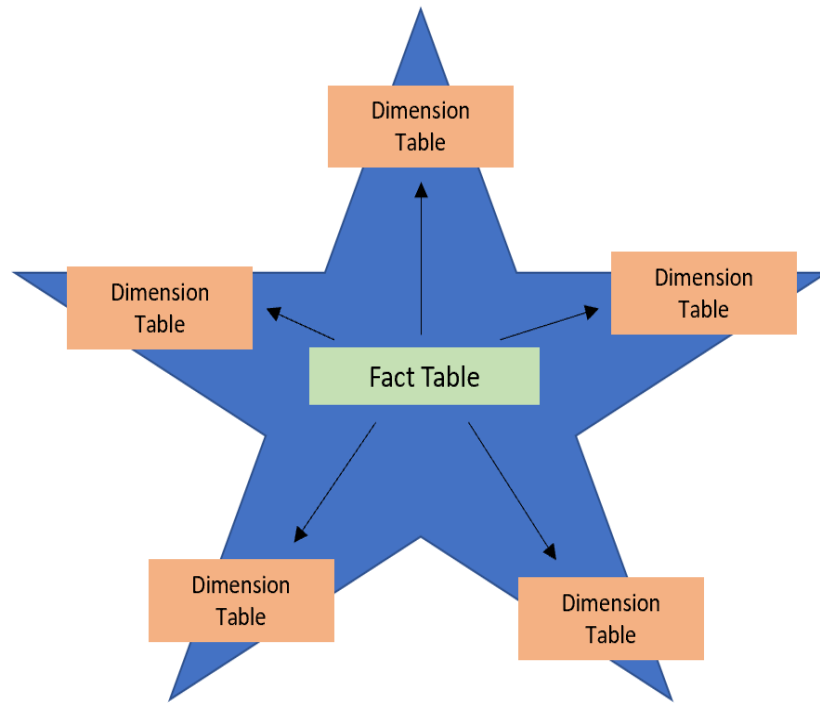
# Introduction to Dashboards



## Benefits of a good data model:

- Accurate reports.
- Faster data exploration.
- Simpler aggregations.
- Easier to maintain.

# Star Schemas



**Tables are classified as dimension or fact tables:**

Dimension: Describes business entities.

Fact: Store observations or events.

# Review Questions

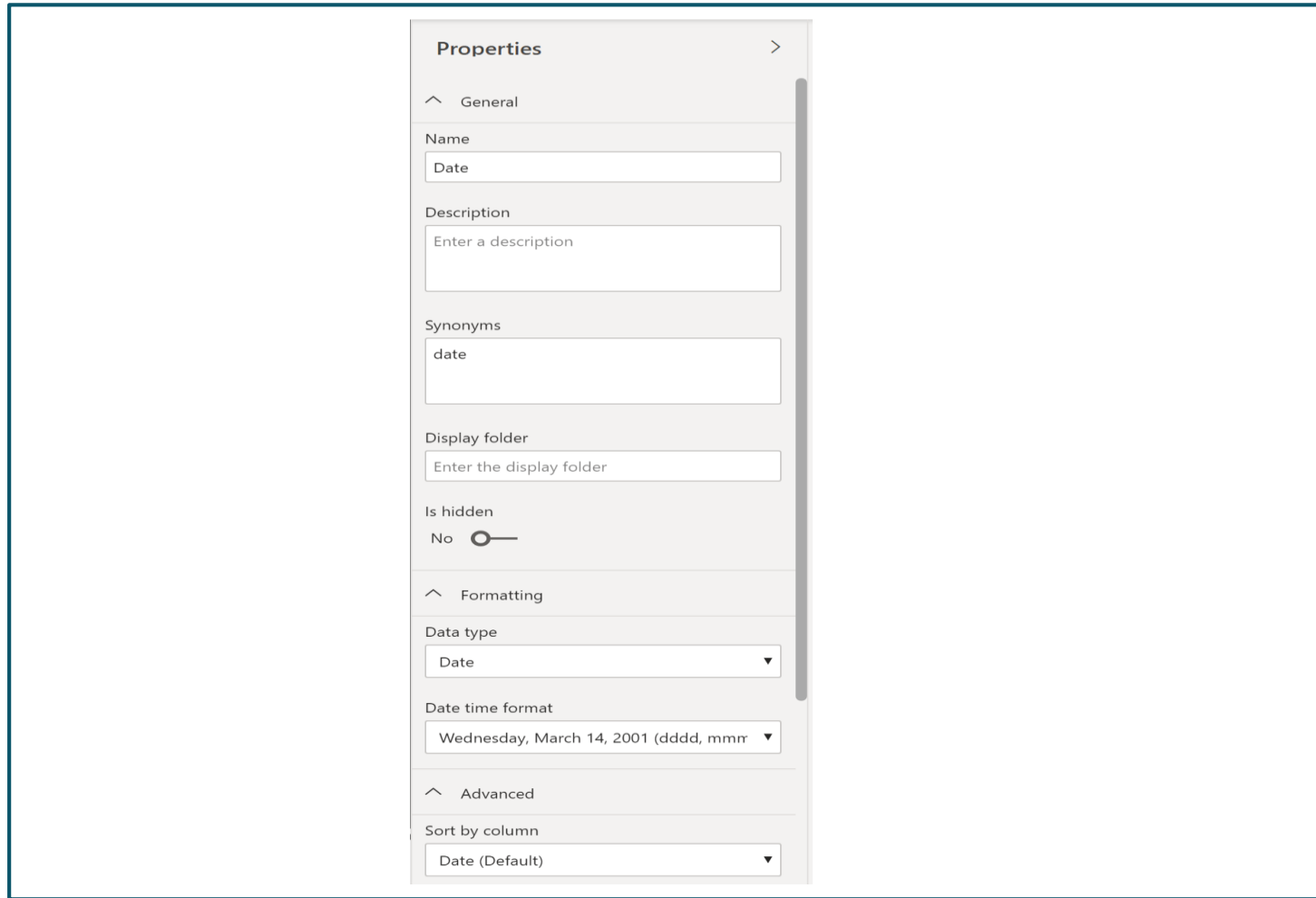
- **Q01 – The two types of tables in a star schema are what?**
  - A01 – Dimension and Fact tables.
- **Q02 – What is the difference between a fact table and a dimension table?**
  - A02 – Fact tables store observations or events while dimension tables contain information about specific entities within the data.

# Lesson 2: Working with Tables





# Configure Table and Column Properties



The screenshot shows a 'Properties' dialog box with three sections: General, Formatting, and Advanced. The General section includes fields for Name (Date), Description (Enter a description), Synonyms (date), Display folder (Enter the display folder), and Is hidden (No, with a toggle switch). The Formatting section includes Data type (Date) and Date time format (Wednesday, March 14, 2001 (dddd, mmm)). The Advanced section includes Sort by column (Date (Default)).

**Properties**

General

Name  
Date

Description  
Enter a description

Synonyms  
date

Display folder  
Enter the display folder

Is hidden  
No

Formatting

Data type  
Date

Date time format  
Wednesday, March 14, 2001 (dddd, mmm)

Advanced

Sort by column  
Date (Default)

Before working on reports, ensure your model and table structure are simplified.

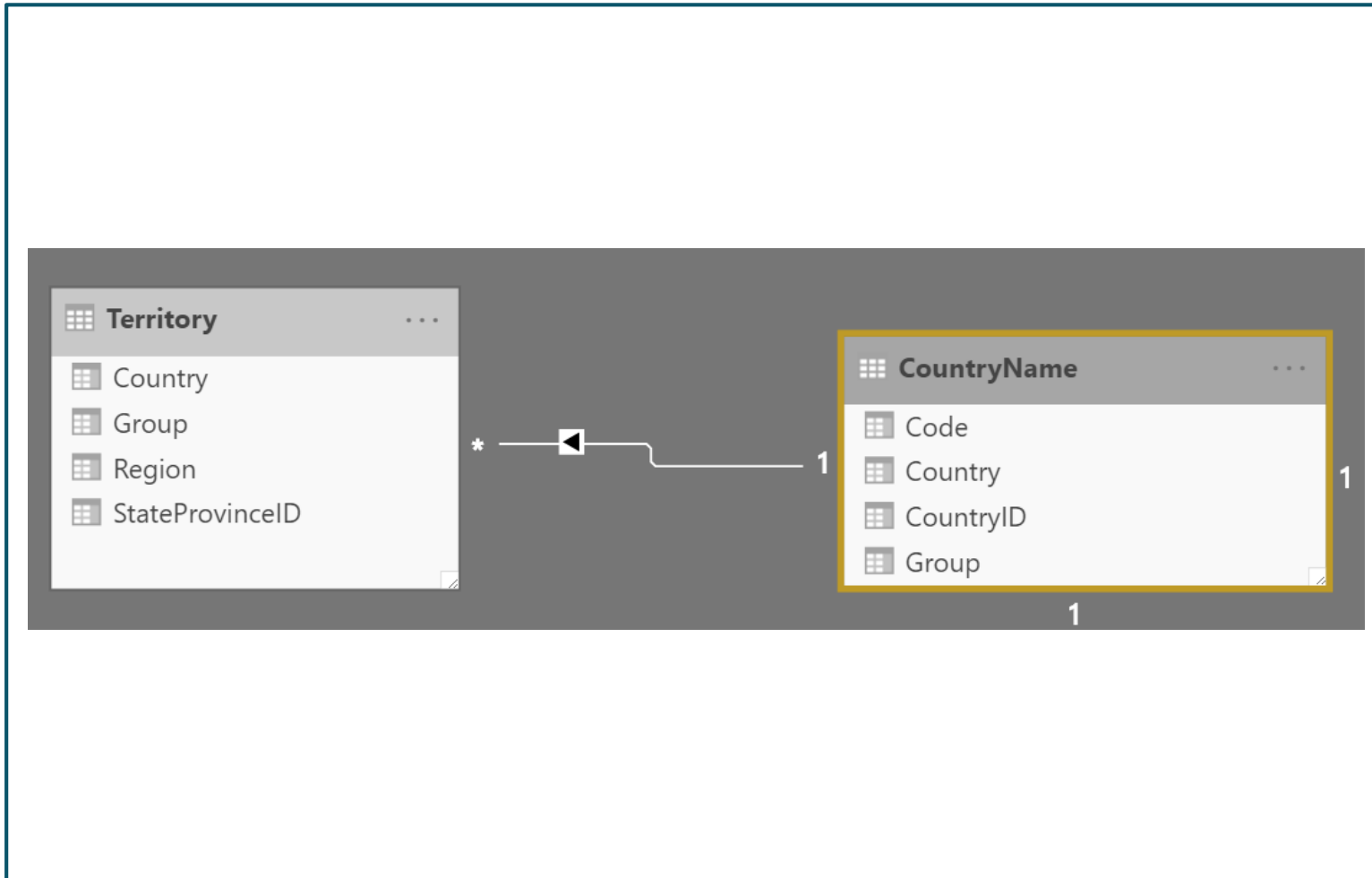
A simple table structure will be easy to navigate.

# Create a Dates Table

Standardize on date formats and ranges that meet company requirements.

Date	Year	MonthNum	WeekNum	DayoftheWeek
<i>Tuesday, May 31, 2011</i>	2011	5	23	Tuesday
<i>Wednesday, June 1, 2011</i>	2011	6	23	Sunday
<i>Thursday, June 2, 2011</i>	2011	6	23	Monday
<i>Friday, June 3, 2011</i>	2011	6	23	Tuesday

# Relationships and Cardinality

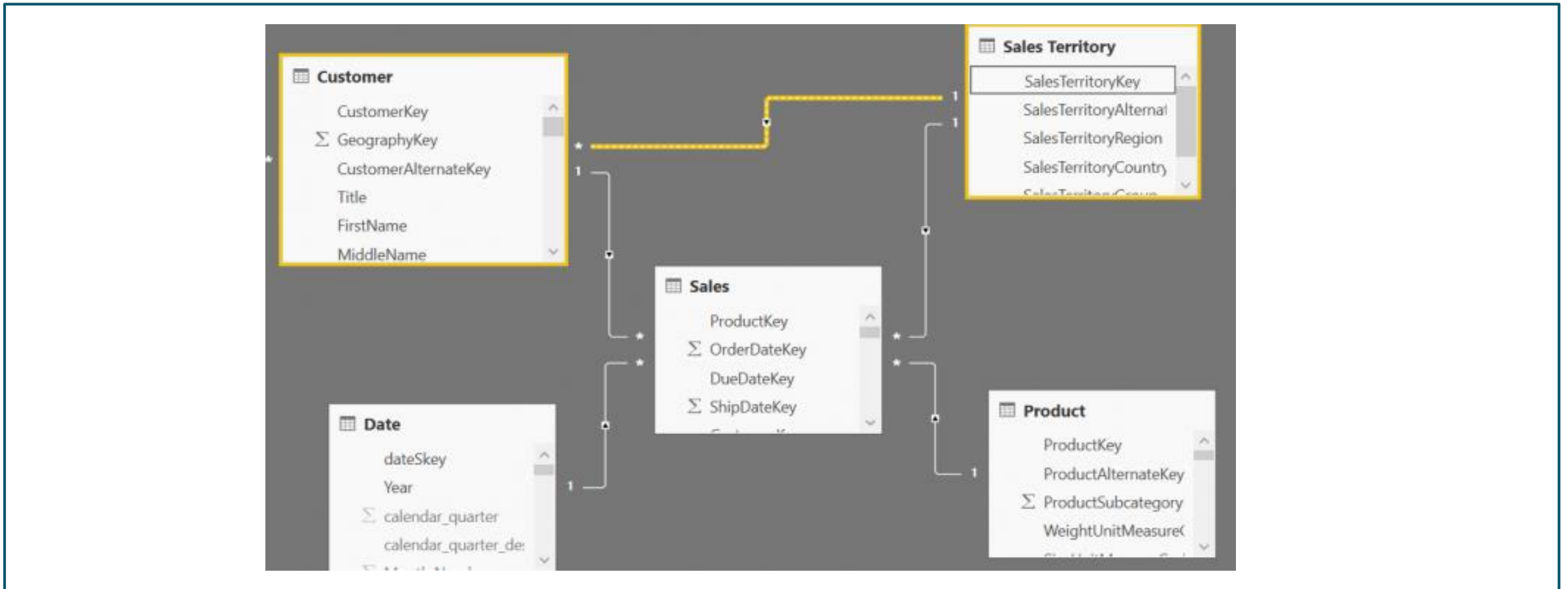


**Relationship:** Formed by correlating rows belonging to different tables.

**Cardinality:** Uniqueness of data values in a column.

# Modeling Challenges

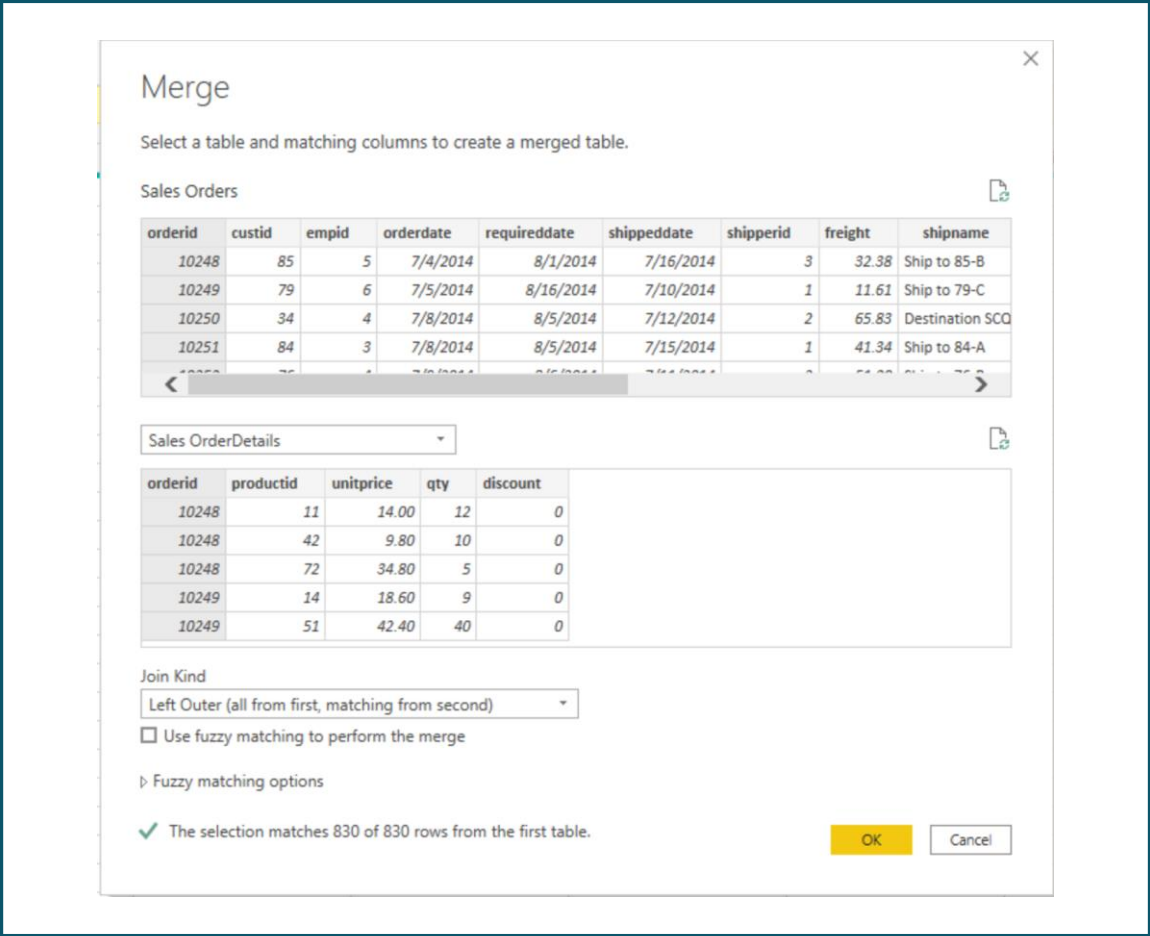
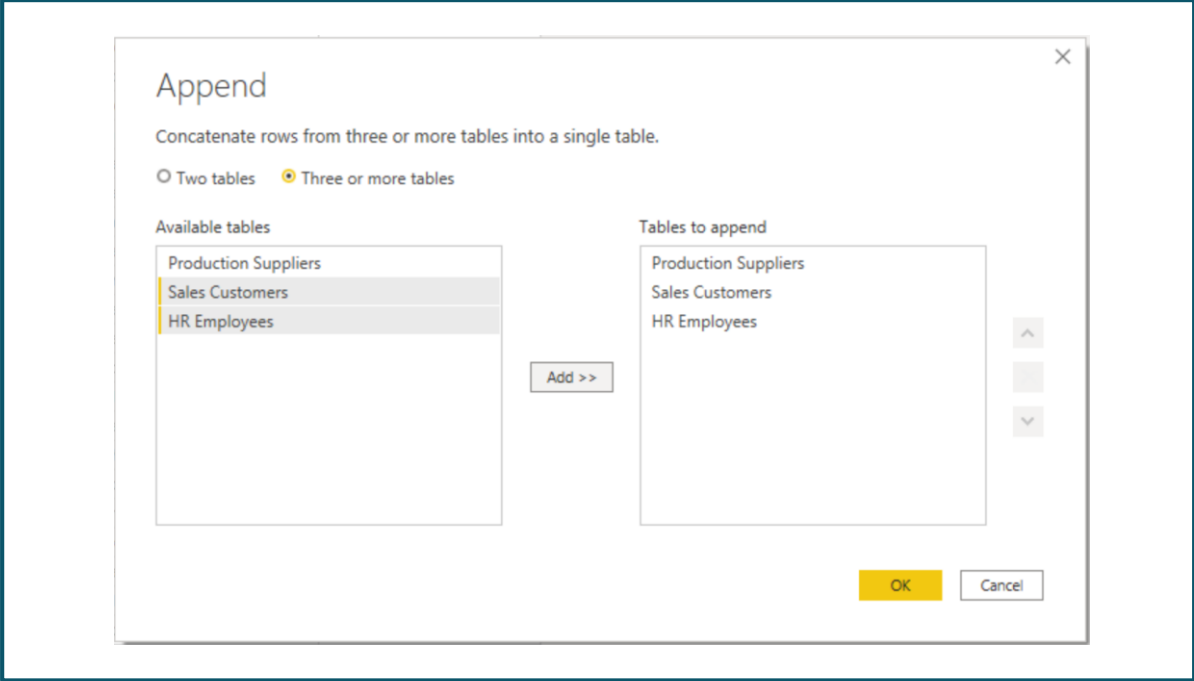
Circular relationships and relational dependencies.



# Combine Queries

Two methods for combining queries:

- Append
- Merge

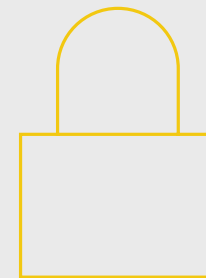


# Review Questions

- **Q01 – What is Cardinality?**

- A01 – Cardinality is a term that is used to describe the uniqueness of the values in a column. Relationship cardinality refers to the number of rows from one table that are related to another (one to one, one to many, many to many).

# Lesson 3: Dimensions and Hierarchies



# Introduction to Dimensions and Hierarchies

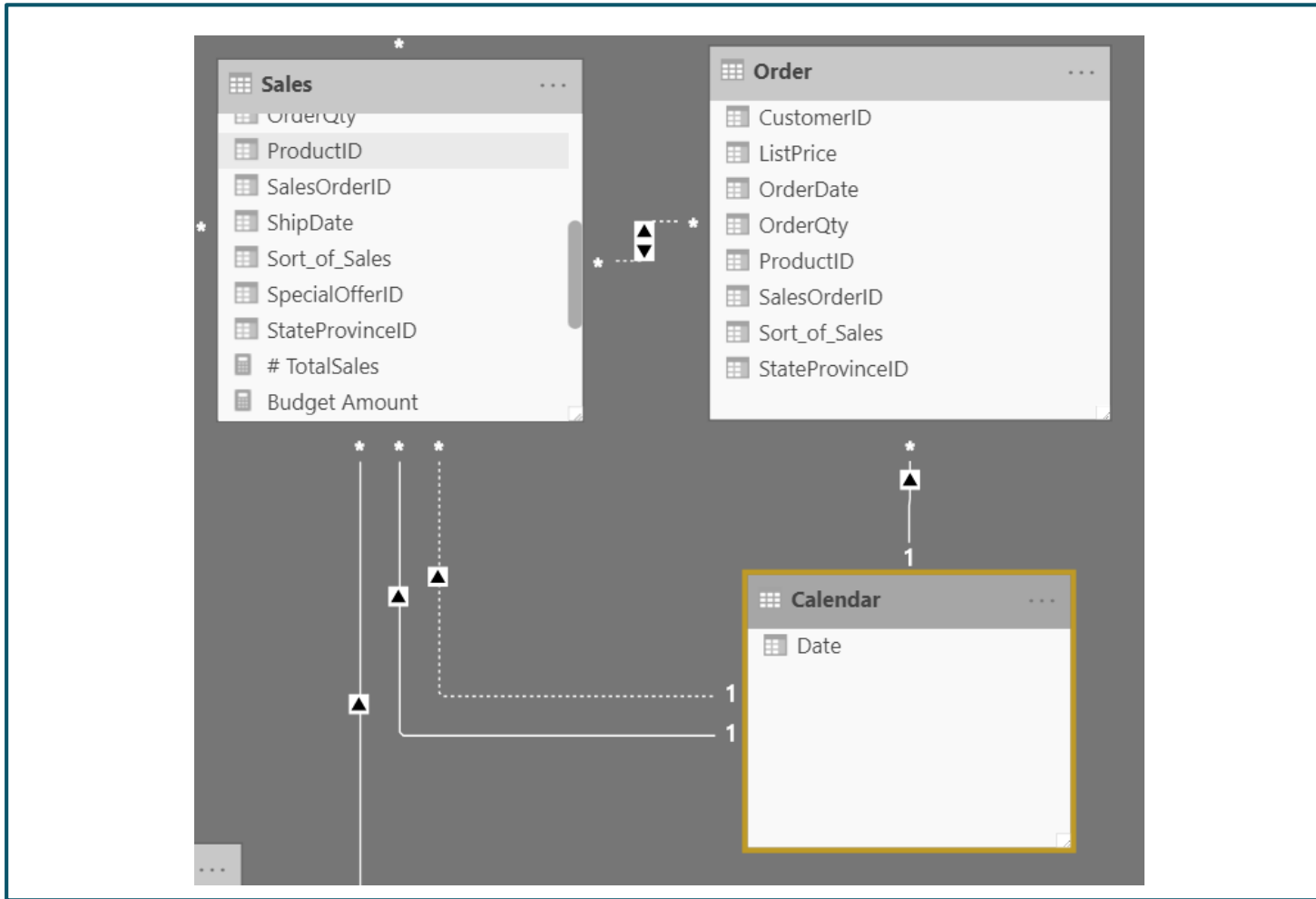
	1 <sup>2</sup> <sub>3</sub> Employee ID	A <sup>B</sup> <sub>C</sub> Employee	1 <sup>2</sup> <sub>3</sub> Manager ID	A <sup>B</sup> <sub>C</sub> Manager
1	1010	Roy F	<i>null</i>	
2	1011	Pam H	1010	Roy F
3	1012	Guy L	1010	Roy F
4	1013	Roger M	1011	Pam H
5	1014	Kaylie S	1011	Pam H
6	1015	Mike O	1012	Guy L
7	1016	Rudy Q	1012	Guy L

**Dimension:** Store details about business entities.

**Hierarchy:** Organize data such that one element is ranged over other data.



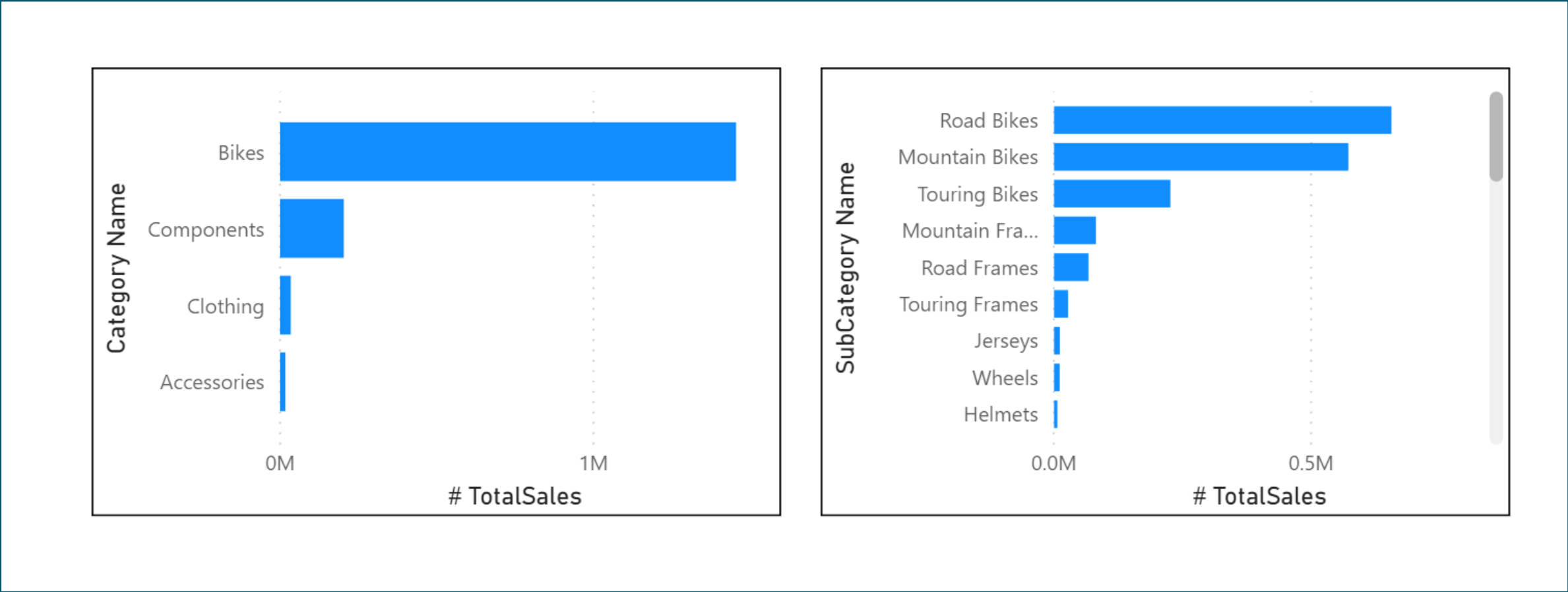
# Role-playing Dimensions



A dimension that can filter related facts differently.

# Creating new Hierarchies

Causes:



# Review Questions

- **Q01 – A dimension that can filter related facts differently is called what?**
  - A01 – A role-playing dimension.
- **Q02 – What type of table stores details about business entities?**
  - A02 – Dimension table.

# Lab: Model Data in Power BI Desktop

Lab: Model Data in Power BI  
Desktop



# Module Overview

We covered the following concepts:

- Data Modeling
- Working with Tables
- Dimensions and Hierarchies

# References

PL-300 Design a data model in Power BI

<https://docs.microsoft.com/en-us/learn/modules/design-model-power-bi/>

