Intro to Data Modeling

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Module Goals

What is data modeling?

Why use data modeling?

Key concepts

Where to find more

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What Is Data Modeling?

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Data modeling is the process of structuring data inside a database to fit a specific purpose.

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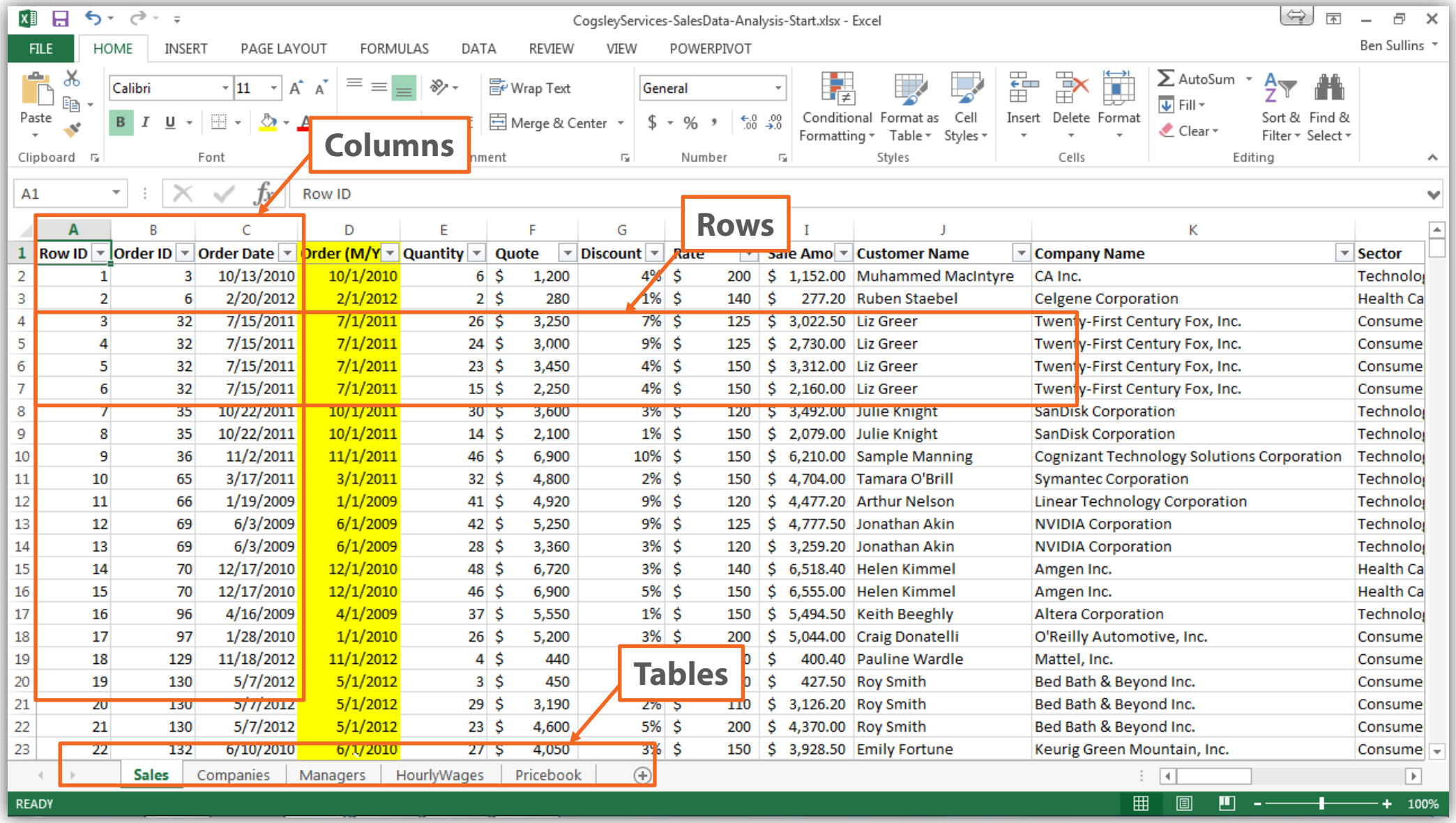

Row ID	Order ID	Order Date	Order (M/Y	Quantity	Quote	Discount	Rate	Sale Amo	Customer Name	Company Name	Sector
1	3	10/13/2010	10/1/2010	6	$ 1,200	4%	$ 200	$ 1,152.00	Muhammed MacIntyre	CA Inc.	Technolo
2	6	2/20/2012	2/1/2012	2	$ 280	1%	$ 140	$ 277.20	Ruben Staebel	Celgene Corporation	Health Ca
3	32	7/15/2011	7/1/2011	26	$ 3,250	7%	$ 125	$ 3,022.50	Liz Greer	Twenty-First Century Fox, Inc.	Consume
4	32	7/15/2011	7/1/2011	24	$ 3,000	9%	$ 125	$ 2,730.00	Liz Greer	Twenty-First Century Fox, Inc.	Consume
5	32	7/15/2011	7/1/2011	23	$ 3,450	4%	$ 150	$ 3,312.00	Liz Greer	Twenty-First Century Fox, Inc.	Consume
6	32	7/15/2011	7/1/2011	15	$ 2,250	4%	$ 150	$ 2,160.00	Liz Greer	Twenty-First Century Fox, Inc.	Consume
7	35	10/22/2011	10/1/2011	30	$ 3,600	3%	$ 120	$ 3,492.00	Julie Knight	SanDisk Corporation	Technolo
8	35	10/22/2011	10/1/2011	14	$ 2,100	1%	$ 150	$ 2,079.00	Julie Knight	SanDisk Corporation	Technolo
9	36	11/2/2011	11/1/2011	46	$ 6,900	10%	$ 150	$ 6,210.00	Sample Manning	Cognizant Technology Solutions Corporation	Technolo
10	65	3/17/2011	3/1/2011	32	$ 4,800	2%	$ 150	$ 4,704.00	Tamara O'Brill	Symantec Corporation	Technolo
11	66	1/19/2009	1/1/2009	41	$ 4,920	9%	$ 120	$ 4,477.20	Arthur Nelson	Linear Technology Corporation	Technolo
12	69	6/3/2009	6/1/2009	42	$ 5,250	9%	$ 125	$ 4,777.50	Jonathan Akin	NVIDIA Corporation	Technolo
13	69	6/3/2009	6/1/2009	28	$ 3,360	3%	$ 120	$ 3,259.20	Jonathan Akin	NVIDIA Corporation	Technolo
14	70	12/17/2010	12/1/2010	48	$ 6,720	3%	$ 140	$ 6,518.40	Helen Kimmel	Amgen Inc.	Health Ca
15	70	12/17/2010	12/1/2010	46	$ 6,900	5%	$ 150	$ 6,555.00	Helen Kimmel	Amgen Inc.	Health Ca
16	96	4/16/2009	4/1/2009	37	$ 5,550	1%	$ 150	$ 5,494.50	Keith Beeghly	Altera Corporation	Technolo
17	97	1/28/2010	1/1/2010	26	$ 5,200	3%	$ 200	$ 5,044.00	Craig Donatelli	O'Reilly Automotive, Inc.	Consume
18	129	11/18/2012	11/1/2012	4	$ 440	0	$ 400.40	Pauline Wardle	Mattel, Inc.	Consume
19	130	5/7/2012	5/1/2012	3	$ 450	0	$ 427.50	Roy Smith	Bed Bath & Beyond Inc.	Consume
20	130	5/7/2012	5/1/2012	29	$ 3,190	2%	$ 110	$ 3,126.20	Roy Smith	Bed Bath & Beyond Inc.	Consume
21	130	5/7/2012	5/1/2012	23	$ 4,600	5%	$ 200	$ 4,370.00	Roy Smith	Bed Bath & Beyond Inc.	Consume
22	132	6/10/2010	6/1/2010	27	$ 4,050	3%	$ 150	$ 3,928.50	Emily Fortune	Keurig Green Mountain, Inc.	Consume

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Why Use Data Modeling?

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By modeling your data in a database you enable the perfect system for handling your data workloads.

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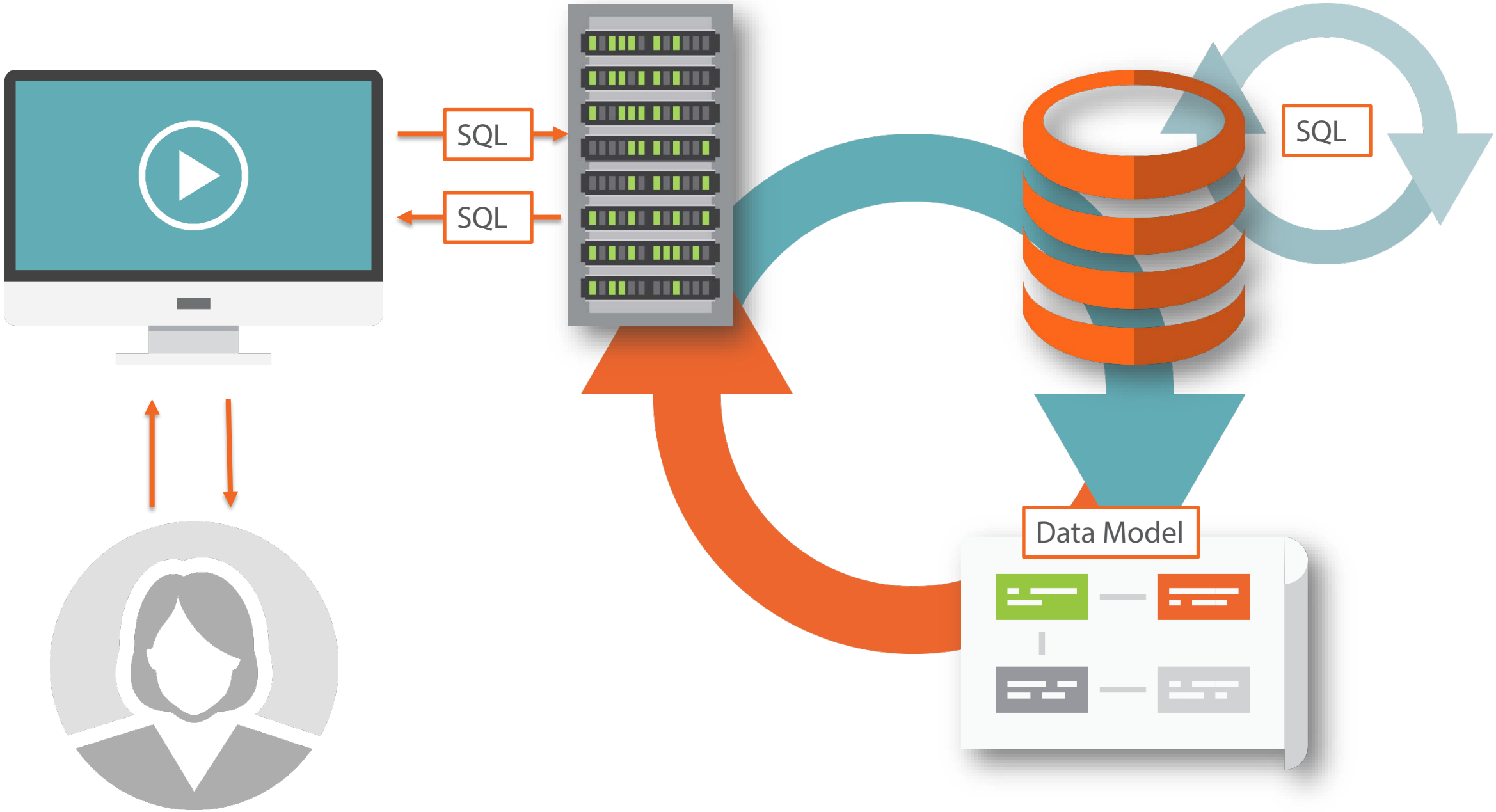
SQL
SQL
SQL
Data Model

Key Concept: Relationships

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Relationship Types

One to one

One to many

--

Many to one

Many to many

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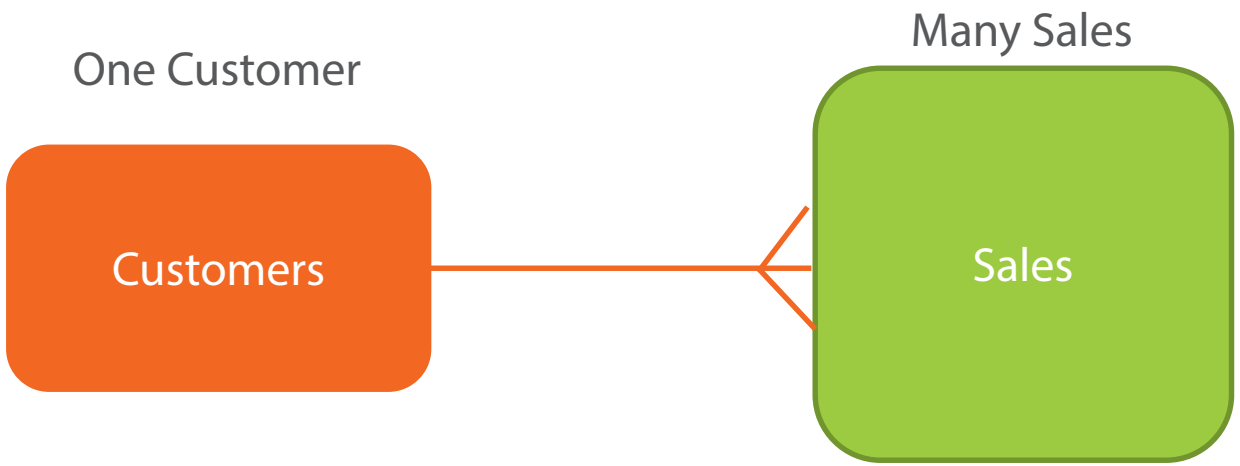

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```
Select *
From Customers

--results--
..1 row per customer
```

```
Select *
From Sales
Join Customer ...

--results--
..1 row per order
..duplicate customer info
```

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Key Concept: Normalization

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Normalization

- Eliminates redundancy
- Processing efficiency
- Logical vs. physical
- Multiple levels (eg. 3NF)

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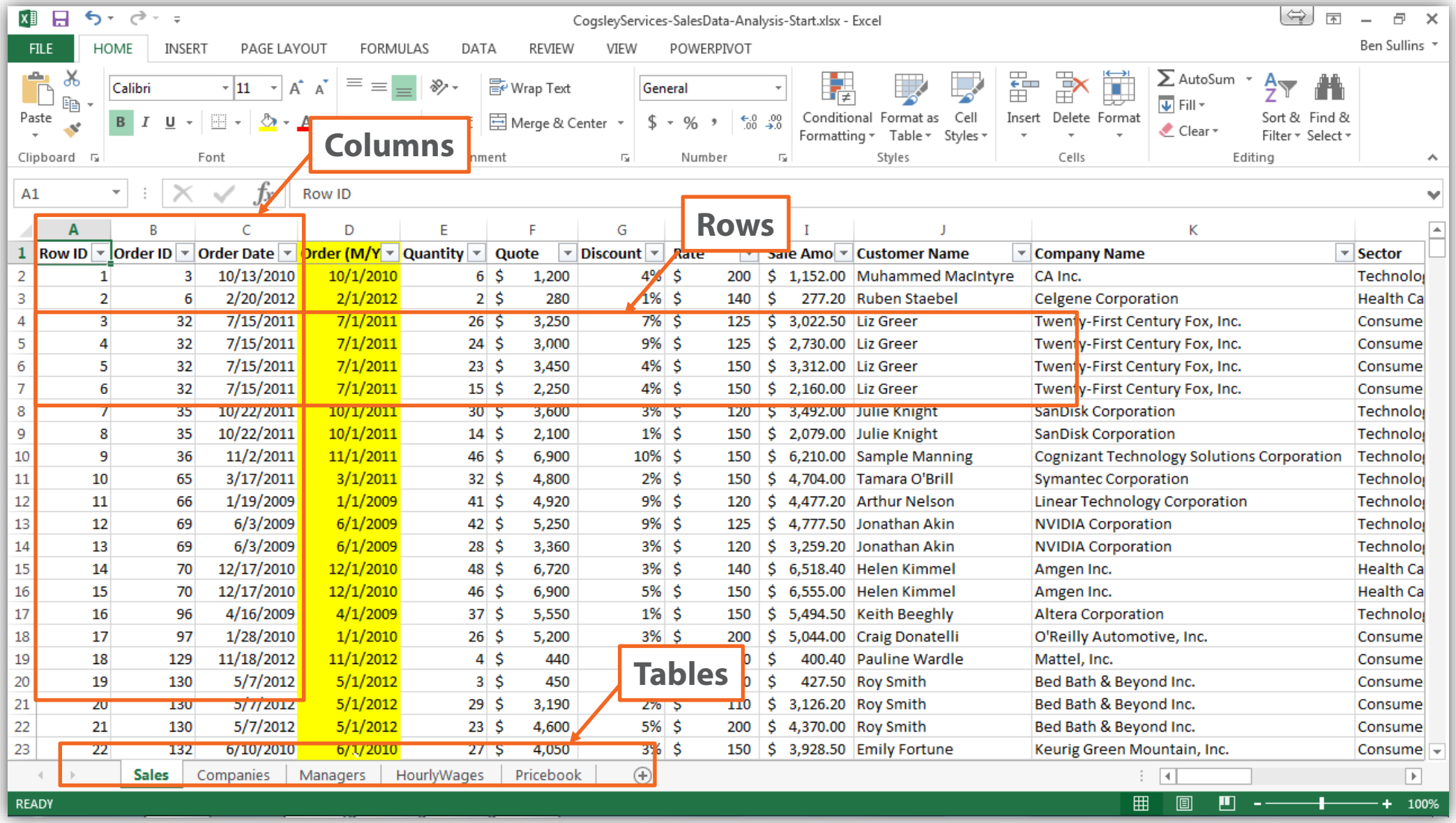

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RowID
OrderID
OrderDate
OrderMonthYear
Quantity
Quote
Discount
Rate
SaleAmount
CustomerName
CompanyName
Sector
Industry
City
ZipCode
State
Region
ProjectCompleteDate
DaysToComplete
ProductKey
ProductCategory
ProductSubCategory
Consultant
Manager
HourlyWage
WageMargin
RowCount

Sales

Customers

Products

Employees

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Demo: Creating a Data Model in SQL Server

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Demo: Creating Relationships in SQL Server

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Where to Find More

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Additional Resources

Pluralsight Courses:

- **Practical Data Modeling With C# and SQL Server**
- **Logical and Physical Modeling for Analytical Applications**
- **Introduction to Data Warehousing and Business Intelligence**

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