

FIT1013 Digital Futures: IT for Business

Week 2: Excel Tables, Pivot Tables and Pivot Charts

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**On completion of your study this week, you should aim to:**

- Create and modify an Excel Table
- Create and modify a PivotTable
- Apply PivotTable styles and formatting
- Filter a PivotTable
- Create a PivotChart
- Explore data visualization in Tableau



## How do you want to view this data?

D10	Restaurant									
	A	B	C	D	E	F	G	H	I	J
1	Sale Date	Day	Sales ID	Business	Amount					
2	1/6/17	Thursday	3	Restaurant	507.52					
3	1/6/17	Thursday	3	Residential Care	295.01					
4	1/6/17	Thursday	3	Group Home	202.87					
5	1/6/17	Thursday	3	Individual	76.23					
6	2/6/17	Friday	1	Individual	275.09					
7	2/6/17	Friday	1	Restaurant	244.79					
8	2/6/17	Friday	1	Group Home	168.12					
9	2/6/17	Friday	1	Residential Care	123.16					
10	3/6/17	Saturday	2	Restaurant	412.88					
11	3/6/17	Saturday	2	Residential Care	279					
12	3/6/17	Saturday	2	Group Home	187.72					
13	3/6/17	Saturday	2	Individual	182.55					
14	5/6/17	Monday	4	Residential Care	349.39					
15	5/6/17	Monday	4	Restaurant	336.81					
16	5/6/17	Monday	4	Group Home	295.05					
17	5/6/17	Monday	4	Individual	197.19					
18	6/6/17	Tuesday	1	Restaurant	380.65					
19	6/6/17	Tuesday	1	Residential Care	308.04					
20	6/6/17	Tuesday	1	Group Home	221.11					
21	6/6/17	Tuesday	1	Individual	192.05					
22	7/6/17	Wednesday	5	Restaurant	346.84					
23	7/6/17	Wednesday	5	Group Home	170.24					
24	7/6/17	Wednesday	5	Individual	158.33					
25	7/6/17	Wednesday	5	Residential Care	158.25					
26	8/6/17	Thursday	2	Restaurant	459.72					
27	8/6/17	Thursday	2	Individual	238.89					
28	8/6/17	Thursday	2	Group Home	217.6					
29	8/6/17	Thursday	2	Residential Care	168.59					
30	9/6/17	Friday	1	Individual	499					
31	9/6/17	Friday	1	Restaurant	330.87					
32	9/6/17	Friday	1	Group Home	207.79					
33	9/6/17	Friday	1	Residential Care	196.15					
34	10/6/17	Saturday	3	Individual	323.49					
35	10/6/17	Saturday	3	Restaurant	281.68					
36	10/6/17	Saturday	3	Group Home	194.68					

# Planning a Structured Range of Data

- A collection of similar data can be structured in a range of columns and rows, representing fields and records, respectively
  - Each column represents a field, which is a single piece of data
  - Each row represents a record, which is a group of related fields
- A structured range of data is commonly referred to as a list or table

# Planning a Structured Range of Data

each column is a field

each row is a record

	A	B	C	D	E	F	G	H	I
1	Sale Date	Day	Sales ID	Business	Amount				
2	6/1/2017	Thursday	3	Restaurant	507.52				
3	6/1/2017	Thursday	3	Residential Care	295.01				
4	6/1/2017	Thursday	3	Group Home	202.87				
5	6/1/2017	Thursday	3	Individual	76.23				
6	6/2/2017	Friday	1	Individual	275.09				
7	6/2/2017	Friday	1	Restaurant	244.79				
8	6/2/2017	Friday	1	Group Home	168.12				
9	6/2/2017	Friday	1	Residential Care	123.16				
10	6/3/2017	Saturday	2	Restaurant	412.88				
11	6/3/2017	Saturday	2	Residential Care	279				
12	6/3/2017	Saturday	2	Group Home	187.72				
13	6/3/2017	Saturday	2	Individual	182.55				
14	6/5/2017	Monday	4	Residential Care	349.39				
15	6/5/2017	Monday	4	Restaurant	336.81				
16	6/5/2017	Monday	4	Group Home	295.05				
17	6/5/2017	Monday	4	Individual	197.19				
18	6/6/2017	Tuesday	1	Restaurant	380.65				
19	6/6/2017	Tuesday	1	Residential Care	308.04				

Ready Documentation Sales Data

# Planning a Structured Range of Data

- Common operations for working with data:
  - Add, edit, and delete data in the range
  - Sort the data range
  - Filter to display only rows that meet specified criteria
  - Insert formulas to calculate subtotals
  - Create summary tables based on the data in the range (usually with PivotTables)

# Planning a Structured Range of Data

- Creating an Effective Structured Range of Data
  - Enter field names in top row of range
  - Use short, descriptive field names
  - Format field names to distinguish header row from data
  - Enter the same kind of data in a field
  - Separate data (including header row) from other information in the worksheet by *at least* one blank row and one blank column

# Freezing Rows and Columns

- **Freezing** a row or column keeps headings visible as you work with data in a large worksheet

The screenshot shows the Microsoft Excel interface with the 'View' tab selected. The 'Freeze Panes' button is highlighted in the 'Window' group. A green callout box points to the 'Freeze Panes' button with the text 'Freeze Panes button'. Another green callout box points to the first row of the worksheet with the text 'header row remains visible as you scroll the worksheet'. A third green callout box points to the rows above the first row with the text 'rows above the line are frozen'.

	A	B	C	D	E	F	G	H	I
1	Sale Date	Day	Sales ID	Business	Amount				
95	6/28/2017	Wednesday	2	Restaurant	407.23				
96	6/28/2017	Wednesday	2	Group Home	304.16				
97	6/28/2017	Wednesday	2	Residential Care	192.8				
98	6/28/2017	Wednesday	2	Individual	54.73				
99	6/29/2017	Thursday	3	Individual	368.59				
100	6/29/2017	Thursday	3	Restaurant	366.91				
101	6/29/2017	Thursday	3	Group Home	165.87				
102	6/29/2017	Thursday	3	Residential Care	157.19				
103									

# Creating an Excel Table

- Excel tables make it easier to identify, manage, and analyze the groups of related data
- When a structured range of data is converted into an Excel table, you see the following:
  - A filter button in each cell of the header row
  - The range formatted with a table style
  - A sizing handle (a small triangle) in the lower-right corner of the last cell of the table
  - The TABLE TOOLS DESIGN tab on the ribbon



# Creating an Excel Table

header row replaces  
column headings

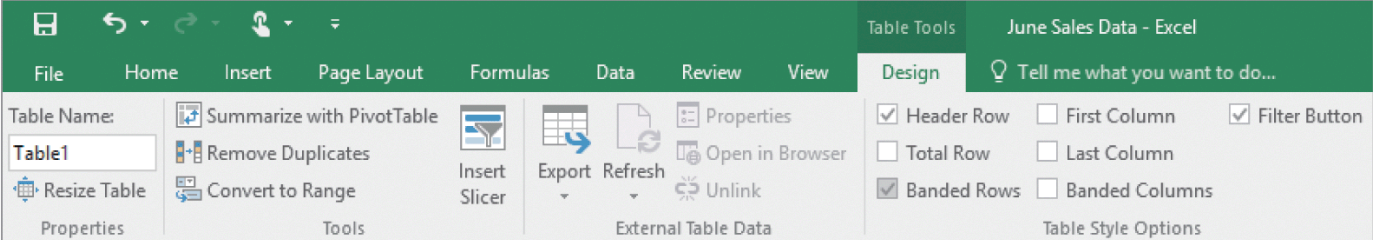


Table Name: **Table1**

Properties: Summarize with PivotTable, Remove Duplicates, Convert to Range, Resize Table

Tools: Insert Slicer, Export, Refresh, Unlink

External Table Data: Properties, Open in Browser

Table Style Options: ☒ Header Row, ☐ First Column, ☒ Filter Button, ☐ Total Row, ☐ Last Column, ☒ Banded Rows, ☐ Banded Columns

	Sale Date	Day	Sales ID	Business	Amount	F	G	H	I
16	6/5/2017	Monday	4	Group Home	295.05				
17	6/5/2017	Monday	4	Individual	197.19				
18	6/6/2017	Tuesday	1	Restaurant	380.65				
19	6/6/2017	Tuesday	1	Residential Care	308.04				
20	6/6/2017	Tuesday	1	Group Home	221.11				
21	6/6/2017	Tuesday	1	Individual	192.05				
22	6/7/2017	Wednesday	5	Restaurant	346.84				

# Creating an Excel Table

- Saving Time with Excel Tables
  - Format quickly using a table style
  - Add new rows and columns that automatically expand the range
  - Add a Total row to calculate a summary function (SUM, AVERAGE, COUNT, MIN, MAX)
  - Enter a formula in a cell that is automatically copied to all other cells in the column
  - Create formulas that reference cells in a table by using table and column names

# Creating an Excel Table

- Renaming an Excel Table
  - Each Excel table in a workbook must have a unique name
  - Descriptive names make it easier to identify a table by its content
  - Table names must start with a letter or an underscore but can use any combination of letters, numbers, and underscores for the rest of the name
  - Table names cannot include spaces

# Modifying an Excel Table

- Can modify an Excel table by adding or removing table elements or by changing the table's formatting
- Can display or hide the following:
  - Header row
  - Total row
  - First column
  - Last column
  - Banded rows
  - Banded columns
  - Filter buttons

# Maintaining Data in an Excel Table

- As you develop a worksheet with an Excel table, you may need to:
  - Add new records to the table
  - Find and edit existing records in the table
  - Delete records from the table
- Adding Records
  - Add a record in the first blank row
  - Add a record in a specific location by inserting a row within the table for the new record

# Maintaining Data in an Excel Table

- Finding and Editing Records
  - You can manually scroll through the table to find a specific record
  - Quicker way to locate a record is to use the Find command
  - When using the Find or Replace command, it is best to start at the top of a worksheet to ensure that all cells in the table are searched

# Maintaining Data in an Excel Table

- Deleting a Record
  - Three ways to delete records:
    - Select a cell in each record you want to delete, click the Delete button arrow in the Cells group on the HOME tab, and then click Delete Table Rows
    - Delete a field by selecting a cell in the field you want to delete, clicking the Delete button arrow, and then clicking Delete Table Columns
    - Use the Remove Duplicates dialog box to locate and remove records that have the same data in selected columns

# Sorting Data

- The records in an Excel table initially appear in the order they were entered; you can view the same records in a different order
- **Ascending order** arranges text alphabetically from A to Z, numbers from smallest to largest, and dates from oldest to newest
- **Descending order** arranges text in reverse alphabetical order from Z to A, numbers from largest to smallest, and dates from newest to oldest



# Sorting Data



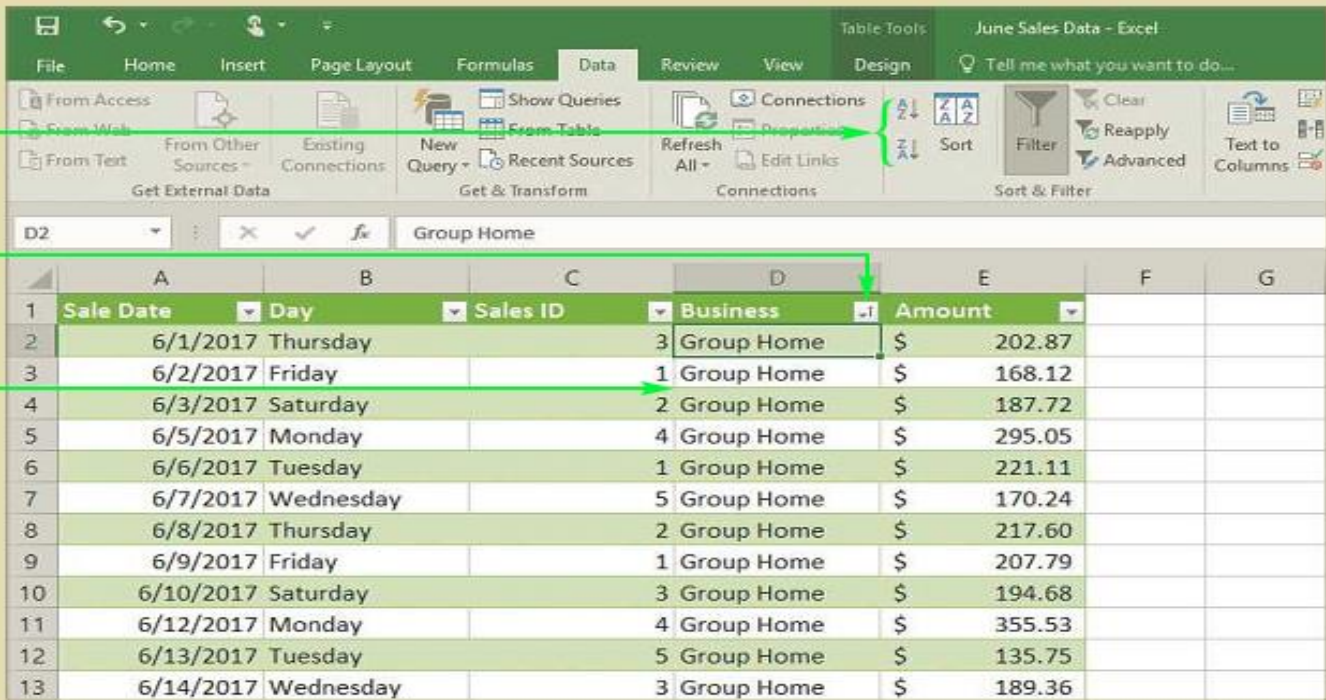
- Sorting One Column Using the Sort Buttons
  - Use the Sort A to Z button  or the Sort Z to A button  to sort data quickly with one sort field

Figure 5-11

JuneTbl table sorted by the Business field



Sort buttons

sort icon appears on the filter button

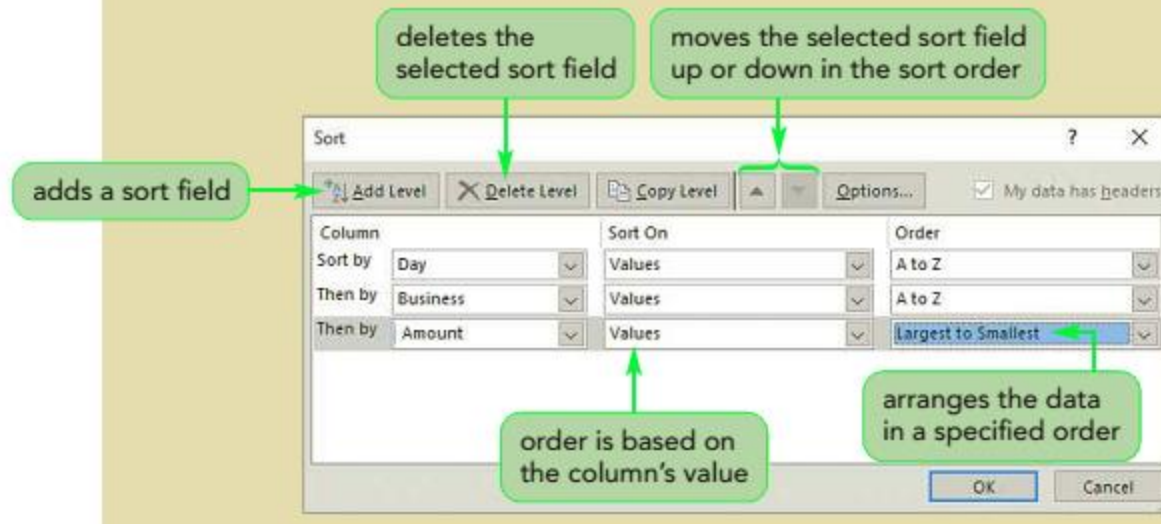
records appear in alphabetical order by Business

	A	B	C	D	E	F	G
	Sale Date	Day	Sales ID	Business	Amount		
2	6/1/2017	Thursday		3 Group Home	\$ 202.87		
3	6/2/2017	Friday		1 Group Home	\$ 168.12		
4	6/3/2017	Saturday		2 Group Home	\$ 187.72		
5	6/5/2017	Monday		4 Group Home	\$ 295.05		
6	6/6/2017	Tuesday		1 Group Home	\$ 221.11		
7	6/7/2017	Wednesday		5 Group Home	\$ 170.24		
8	6/8/2017	Thursday		2 Group Home	\$ 217.60		
9	6/9/2017	Friday		1 Group Home	\$ 207.79		
10	6/10/2017	Saturday		3 Group Home	\$ 194.68		
11	6/12/2017	Monday		4 Group Home	\$ 355.53		
12	6/13/2017	Tuesday		5 Group Home	\$ 135.75		
13	6/14/2017	Wednesday		3 Group Home	\$ 189.36		

# Sorting Data

- Sorting Multiple Columns Using the Sort Dialog Box
  - The first sort field is called the **primary sort field**
  - The second sort is called the **secondary sort field**
  - Up to 64 sort fields possible

Figure 5-12 Sort dialog box with three sorted fields



# Sorting Data

Figure 5-13

Sales sorted by Day, then by Business, and then by Amount

secondary sort field

primary sort field

tertiary sort field

up arrow indicates ascending sort order

down arrow indicates a descending sort order

	A	B	C	D	E	F	G
1	Sale Date	Day	Sales ID	Business	Amount		
2	6/22/2017	Friday	1	Group Home	\$ 228.71		
3	6/8/2017	Friday	2	Group Home	\$ 217.60		
4	6/1/2017	Friday	3	Group Home	\$ 202.87		
5	6/29/2017	Friday	3	Group Home	\$ 165.87		
6	6/15/2017	Friday	1	Group Home	\$ 142.60		
7	6/29/2017	Friday	3	Individual	\$ 368.59		
8	6/15/2017	Friday	1	Individual	\$ 357.16		
9	6/22/2017	Friday	1	Individual	\$ 241.21		
10	6/8/2017	Friday	2	Individual	\$ 238.89		
11	6/1/2017	Friday	3	Individual	\$ 76.23		
12	6/1/2017	Friday	3	Residential Care	\$ 295.01		

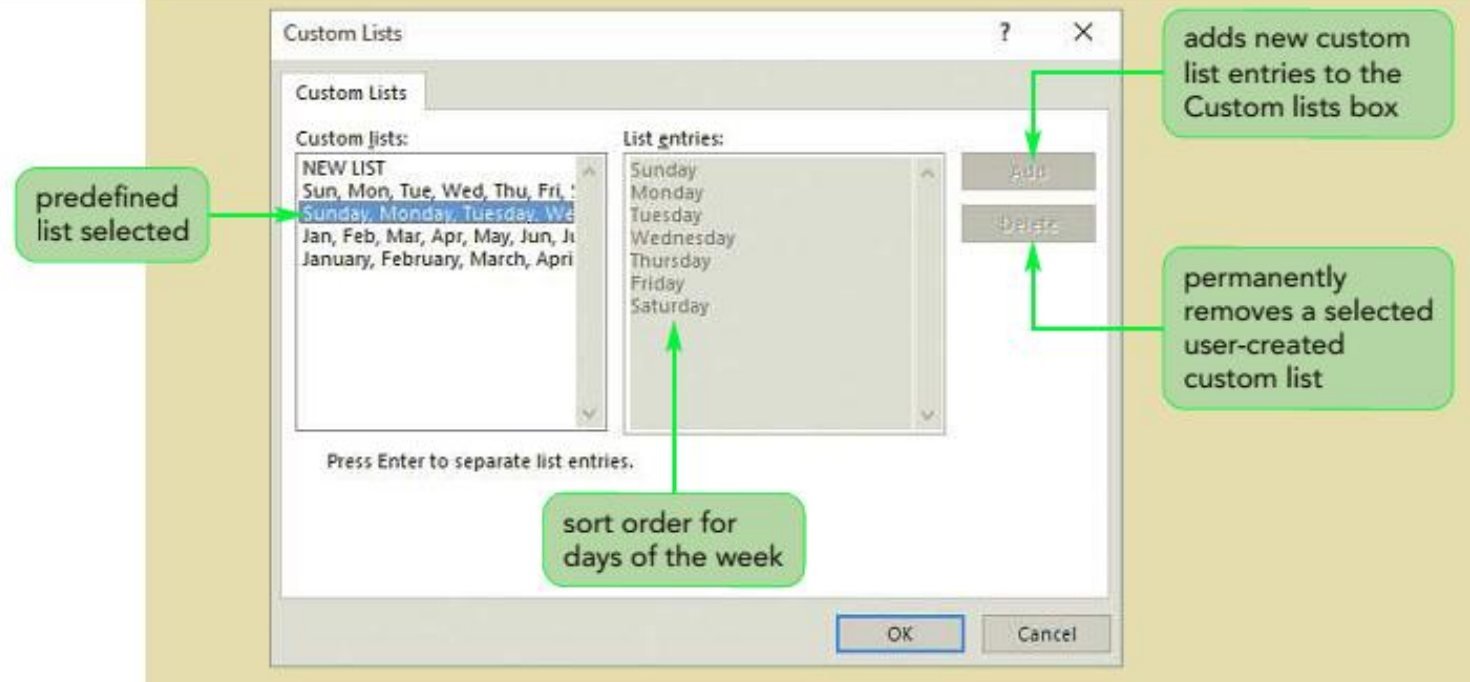
# Sorting Data

- Sorting Using a Custom List
  - A **custom list** indicates sequence to order data
  - Two predefined custom sort lists
    - Day-of-the-week custom list
    - Month-of-the-year custom lists
  - Can create a custom list to sort records in a sequence you define

# Sorting Data

Figure 5-14

Custom Lists dialog box



# Tutorial Activities

- Filtering Data
  - Filtering temporarily hides any records that do not meet specified criteria
  - Filtering Using One Column
  - Filtering Using Multiple Columns
  - Clearing Filters
  - Selecting Multiple Filter Items
  - Creating Criteria Filters to Specify More Complex Criteria
  - Creating a Slicer to Filter Data in an Excel Table
- Using the Total Row to Calculate
- Splitting the Worksheet Window into Panes
- Inserting Subtotals

# Analyzing Data with PivotTables

- When a table contains large amounts of data, it often becomes difficult to obtain a clear view of that information
- PivotTables help organize data by summarizing data into categories using Functions (COUNT, SUM, AVERAGE, MAX, MIN)
- Provide ability to “pivot” the table (rearrange, hide, and display different category fields to provide alternative views of the data)



# Visual Overview: PivotTable and PivotChart

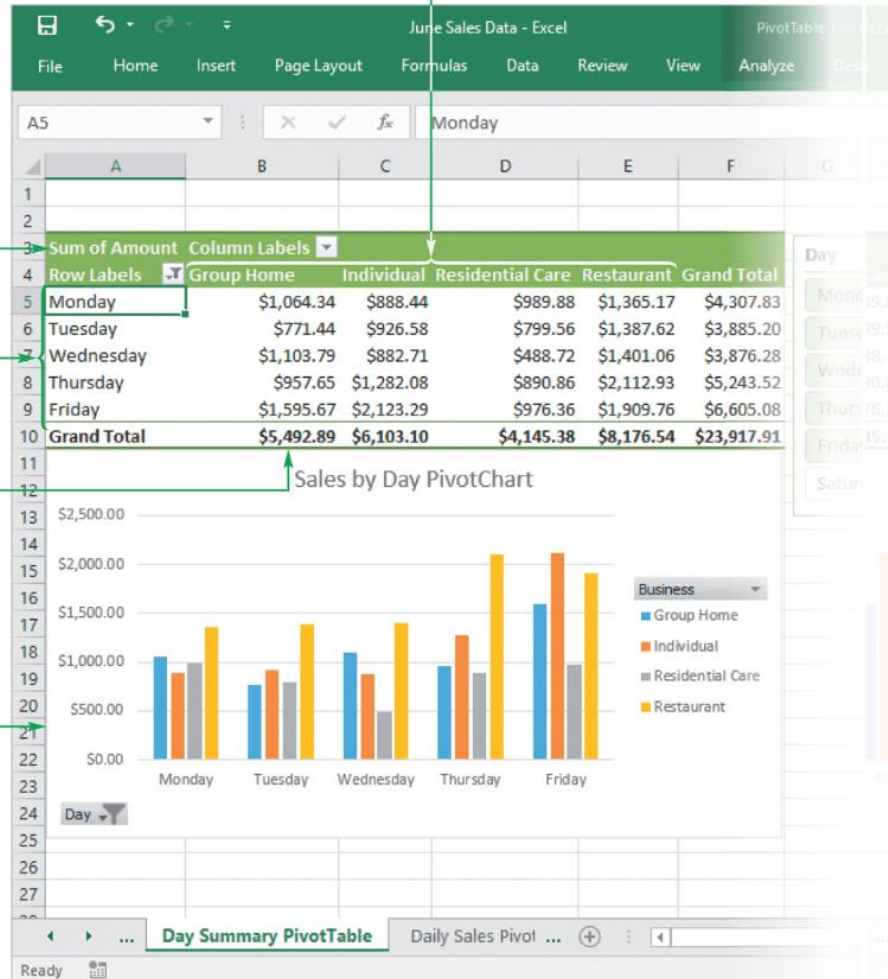
This PivotTable uses the data from the Business field as column labels.

A PivotTable is an interactive table used to group and summarize either a range of data or an Excel table into a concise tabular format for reporting and analysis.

This PivotTable uses the data from the Day field as row labels.

Value fields are the fields that contain summary data in a PivotTable. This PivotTable uses the total of Amount as the values field.

A PivotChart is a graphical representation of the data in the PivotTable.





# Visual Overview: PivotTable and PivotChart

The screenshot displays the Microsoft Excel interface with a PivotTable and a PivotChart. The PivotTable is located in the center, showing sales data categorized by Day, Business, and Restaurant. The PivotChart is located at the bottom left, showing a bar chart of the same data. The PivotTable Fields task pane is on the right, showing the fields available for the report. Annotations explain the different areas of the task pane and how they relate to the PivotTable and PivotChart.

**PivotTable Fields**

Choose fields to add to report:

- ☐ Sale Date
- ☒ Day
- ☐ Sales ID
- ☒ Business
- ☒ Amount

MORE TABLES...

Drag fields between areas below:

- FILTERS**: Fields in the FILTERS area create a filtered view of the PivotTable, showing summarized data in the report.
- COLUMNS**: Fields in the COLUMNS area are displayed as columns at the top of the PivotTable.
- ROWS**: Fields in the ROWS area are displayed as rows in the PivotTable.
- VALUES**: Fields in the VALUES area are summarized in the PivotTable.

**Category fields** are the fields that group the values in a PivotTable. Category fields appear in PivotTables as row labels, column labels, and report filters.

You create a PivotTable using the PivotTable Fields pane. The upper section displays names of each field in the Excel table, and the lower section displays four areas in which you place fields to define the PivotTable.

You can add a slicer to a PivotTable or PivotChart to filter data. You click one or more slicer buttons to filter the PivotTable or PivotChart.

Day	Restaurant	Grand Total
Monday	Group Home	\$1,365.17
Monday	Individual	\$1,387.62
Monday	Residential Care	\$4,307.83
Monday	Restaurant	\$3,885.20
Tuesday	Group Home	\$1,401.06
Tuesday	Individual	\$2,112.93
Tuesday	Residential Care	\$5,243.52
Tuesday	Restaurant	\$6,605.08
Wednesday	Group Home	\$1,909.76
Wednesday	Individual	\$8,176.54
Wednesday	Residential Care	\$23,917.91
Wednesday	Restaurant	

# Tutorial Activities

- Creating a PivotTable
- Filtering a PivotTable
- Refreshing a PivotTable
- Creating a PivotChart

# Summary

- Excel tables
- Pivot Tables and Pivot Charts
- Homework
  - Go through Module 5 of Excel textbook
  - Check out Tableau software
- Next week
  - Advanced Functions (Excel Module 8)