

# Working with Data in a Project

2.1 Understanding SAS Data Structure

2.2 Accessing Data

2.3 Importing Data Files

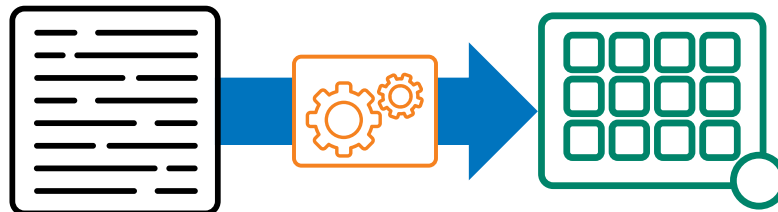
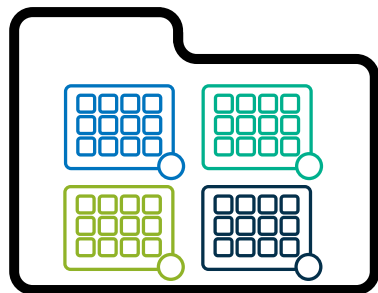
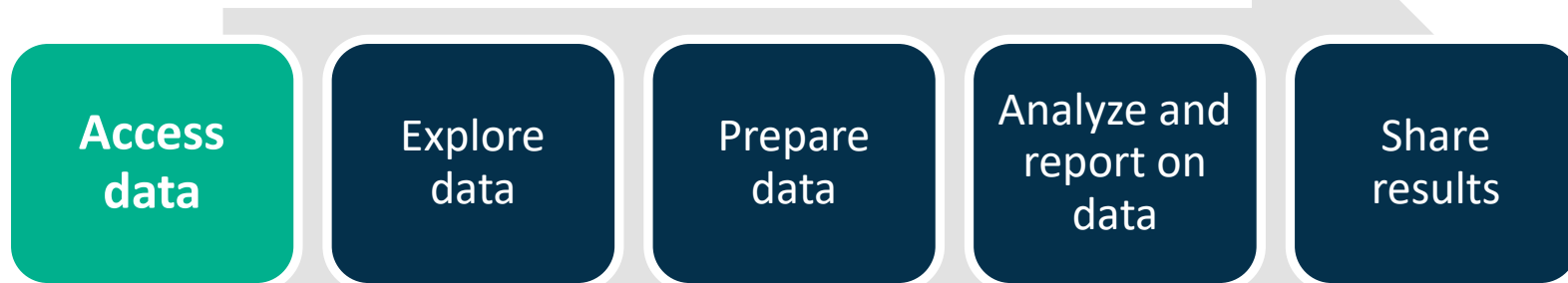
# Working with Data in a Project

## 2.1 Understanding SAS Data Structure

## 2.2 Accessing Data

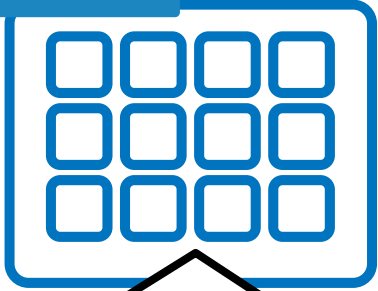
## 2.3 Importing Data Files

# Developing a Project



# Types of Data

Structured data



Unstructured data



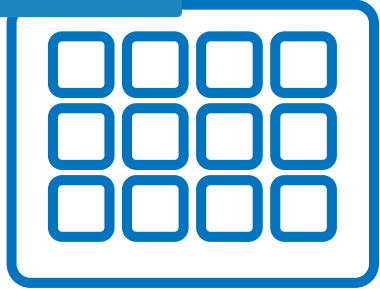
includes defined rows and columns

many types able to be read by SAS

SAS, Oracle, Teradata, Microsoft Excel,  
Hadoop, Versa tables, and others

# Types of Data

Structured data



Unstructured data

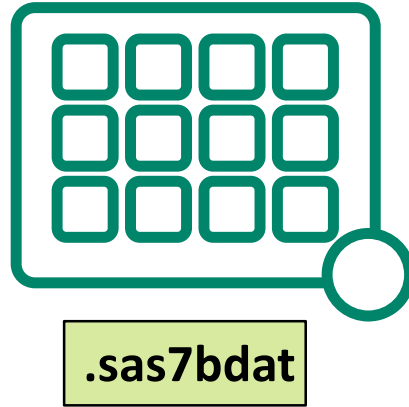


includes data, but not defined columns

must be imported into SAS

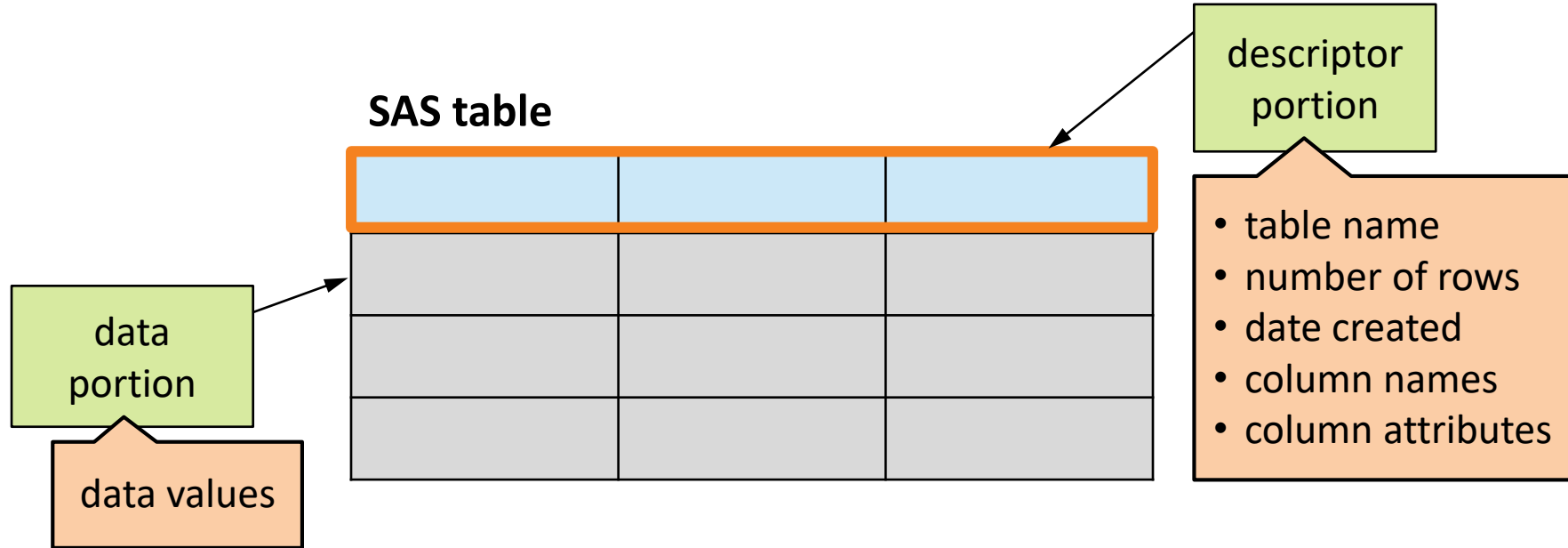
text, delimited, JSON, weblogs, and other files

# What Is a SAS Table?



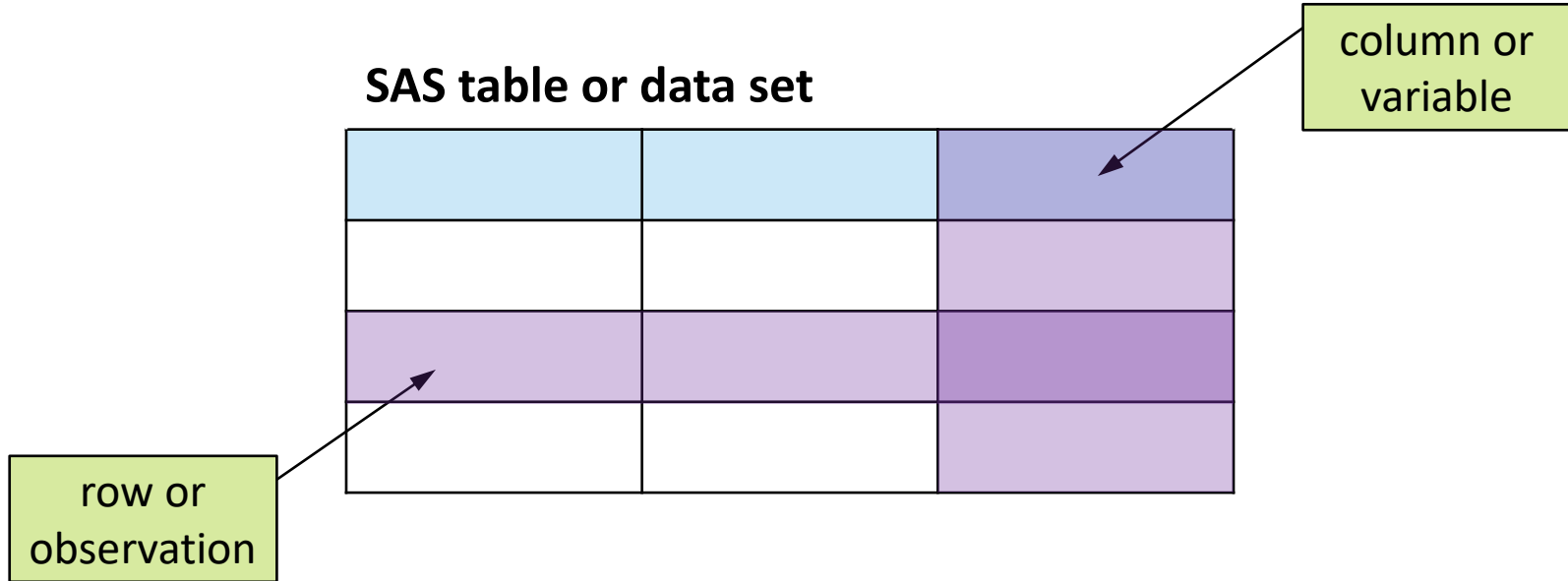
Structured data

# What Is a SAS Table?



# SAS Terminology

**SAS table or data set**





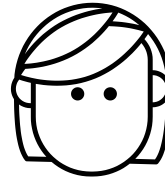
# Required Column Attributes for SAS Tables

Name

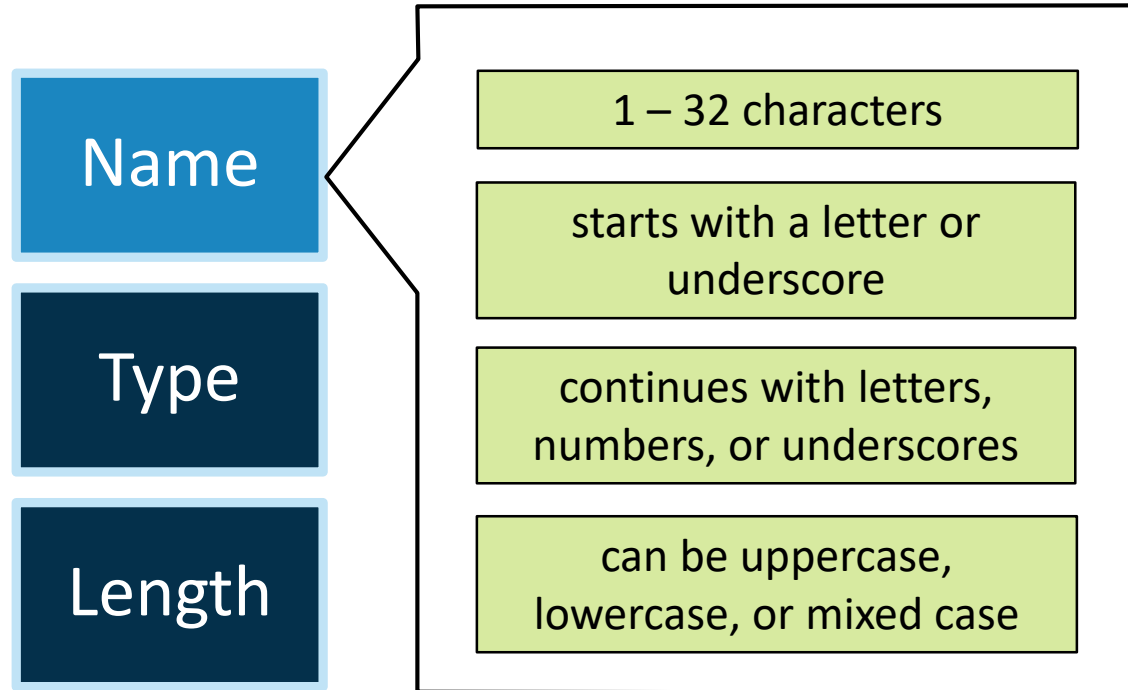
Type

Length

In SAS, all columns must have a name, type, and length.



# Required Column Attributes: Name



## 2.01 Multiple Answer Question

Which column names are valid? (Select all that apply.)

- a. **month6**
- b. **6month**
- c. **month#6**
- d. **month 6**
- e. **month\_6**
- f. **Month6**

## 2.01 Multiple Answer Question – Correct Answers

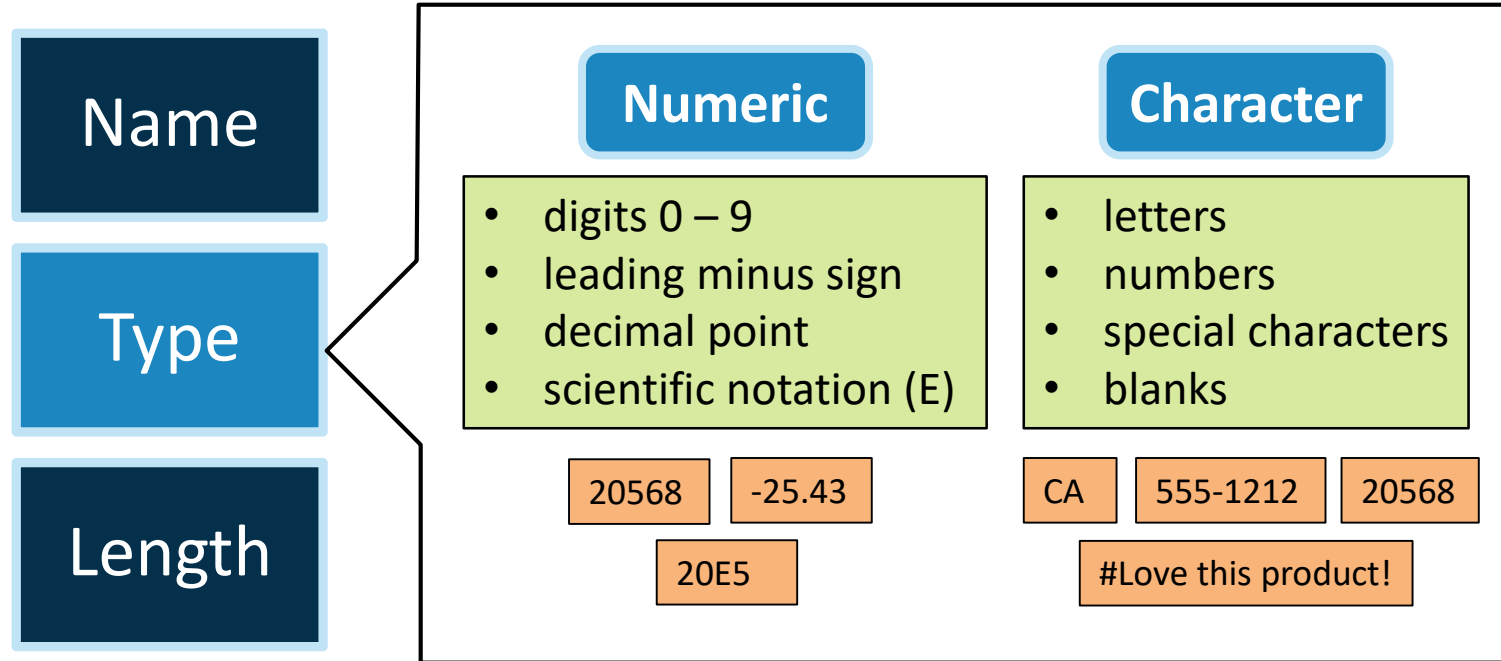
Which column names are valid? (Select all that apply.)

- ☒ a. **month6**
- ☐ b. **6month**
- ☐ c. **month#6**
- ☐ d. **month 6**
- ☒ e. **month\_6**
- ☒ f. **Month6**

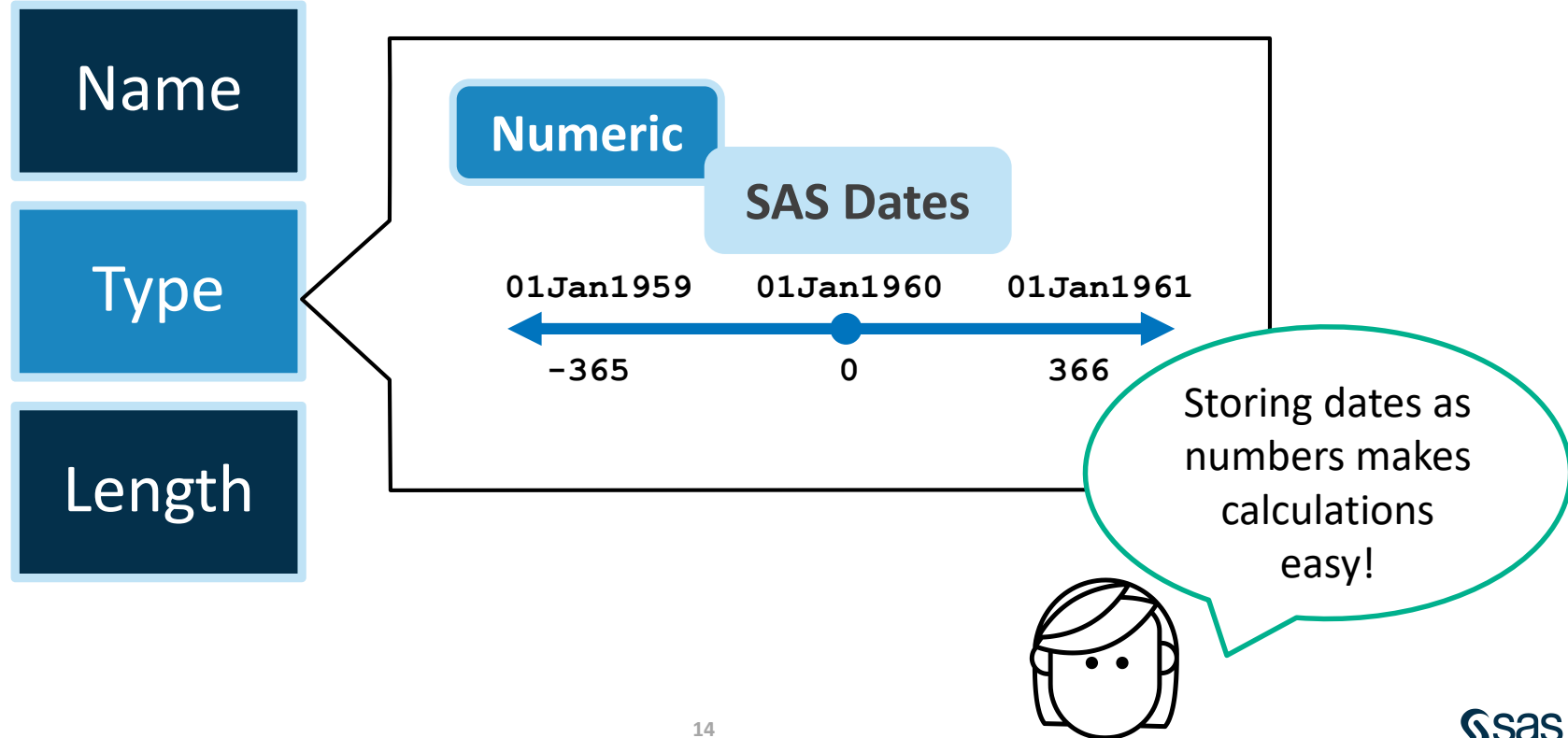
**Month6** and **month6** are actually the same column name.



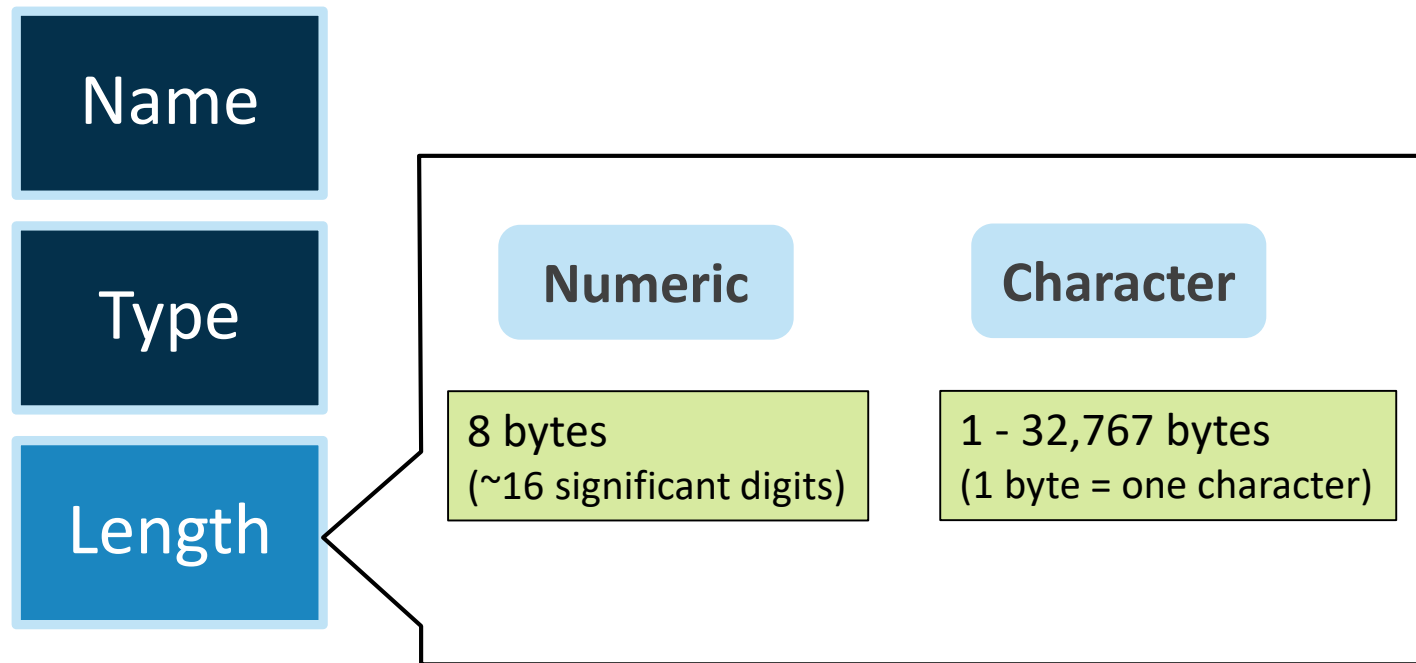
# Required Column Attributes: Type



# Required Column Attributes: Type



# Required Column Attributes: Length



## 2.02 Activity

1. Use the Servers pane to navigate to the location of your course files and open the **data** folder.
2. Double-click the **employee\_donations.sas7bdat** and **employee\_addresses.sas7bdat** SAS tables to view them.

How are missing character and numeric values represented in the data?



## 2.02 Activity – Correct Answer

How are missing character and numeric values represented in the data?


	# Employee_ID	# Qtr1	# Qtr2	# Qtr3	# Qtr4	▲	Rec
1	120265	.	.	.	25	Mitleid International 90%, Save	
2	120267	15	15	15	15	Disaster Assist, Inc. 80%, Can	
3	120269	20	20	20	20	Cancer Cures, Inc. 10%, Cuida	
4	120270	20	10	5	.	AquaMissions International 10%	
5	120271	20	20	20	20	Cuidadores Ltd. 80%, Mitleid In	
6	120272	10	10	10	10	AquaMissions International 10%	

period for  
numeric

	# Employee_ID	▲ Employee_Name	# Street_ID	# Street_Number	▲ Street_Name	▲ City	▲ State	▲ Postal_Code	▲ Country
1	121044	Abbott, Ray	9260116912	2267	Edwards Mill Rd	Miami-Dade	FL	33135	US
2	120145	Aisbitt, Sandy	1600101803	30	Bingera Street	Melbourne		2001	AU
3	120761	Akinfolarin, Tameaka	9260121030	5	Donnybrook Rd	Philadelphia	PA	19145	US
4	120656	Amos, Salley	9260123736	3524	Calico Ct	San Diego	CA	92116	US
5	121107	Anger, Rose	9260120989			Philadelphia	PA	19142	US
6	121038	Anstey, David	9260116991			Miami-Dade	FL	33157	US
7	120273	Antonini, Doris	9260116925			Miami-Dade	FL	33141	US
8	120759	Apr, Nishan	9260123711			San Diego	CA	92071	US
9	120798	Ardskin, Elizabeth	9260116954			Miami-Dade	FL	33177	US


blank for  
character

## 2.04 Multiple Choice Question

Click  (**View properties**) above the **customers** data and view the column attributes. What is the length of the variable **Customer\_ID**?

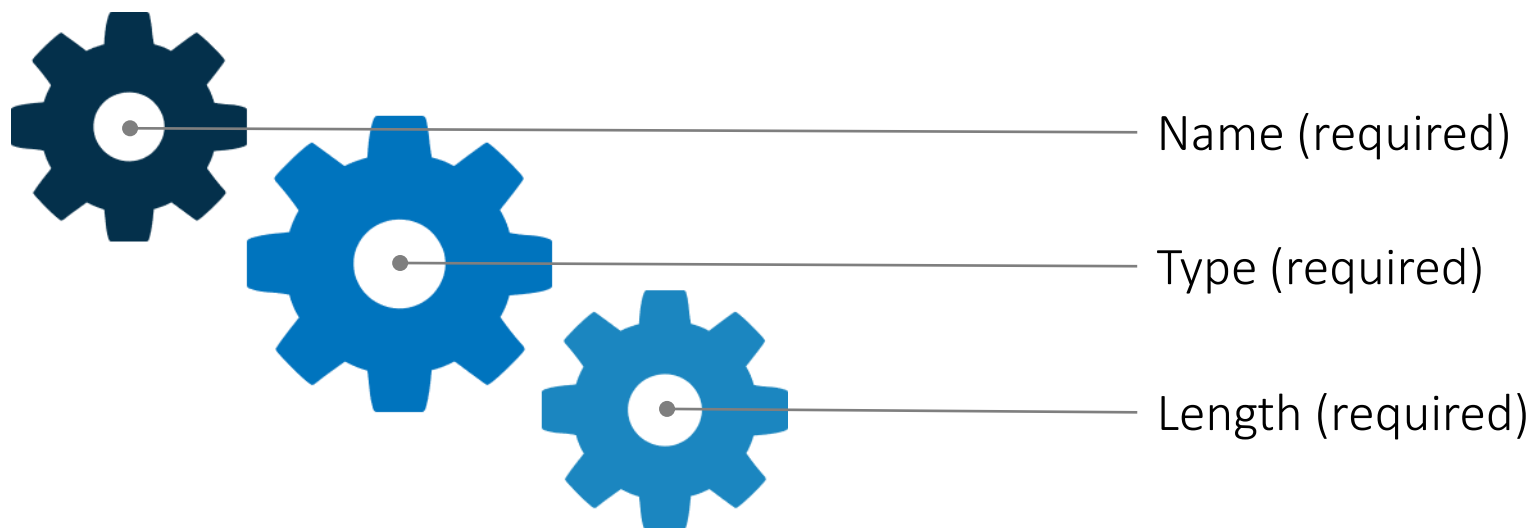
- a. 8
- b. 9
- c. 25
- d. 40

## 2.04 Multiple Choice Question – Correct Answer

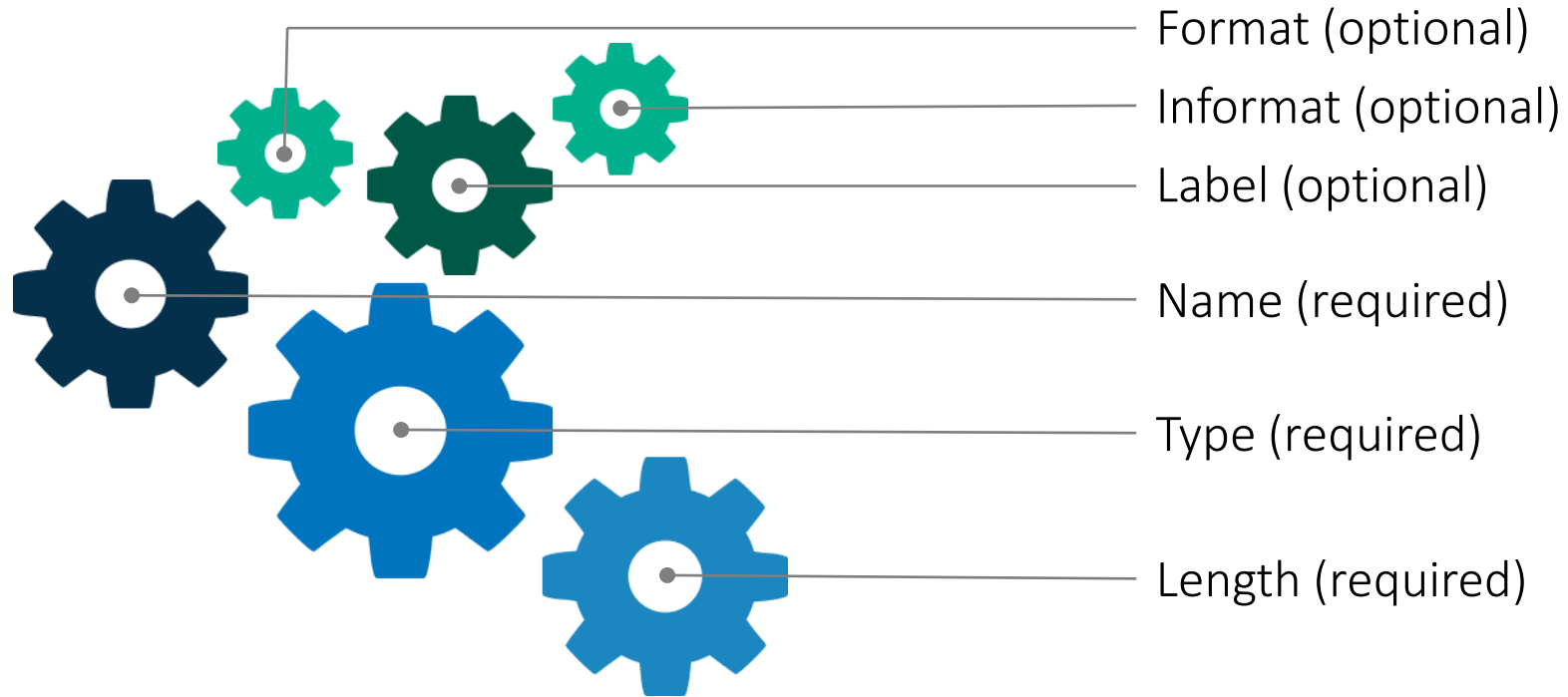
Click  (**View properties**) above the **customers** data and view the column attributes. What is the length of the variable **Customer\_ID**?

- a. 8
- b. 9
- c. 25
- d. 40

# Column Attributes



# Column Attributes



# Using Formats and Labels

**orion\_profit**

Name: Order\_Date





Order ID	Customer Name	Order Placement Date	Quantity Ordered	Profit
1235183478	Lee Neppel	15Mar2017	1	\$54.20
1230950247	Eulla Ivery	23Jun2015	2	\$67.00
1241447239	Julia Yeo	15Feb2019	1	\$4.75
1235156347	Reinhard Duisberg	13Mar2017	1	\$56.80

Format: DATE  
Width: 9  
Stored value: 20891

Format: DOLLAR  
Width: 10  
Decimal places: 2  
Stored value: 56.8

# Different Numeric Formats

Different ways to represent dates in the data

	 Salary	 Birth_Date	 Hire_Date	 Termination
22	\$34,344	27JUL1969	07/01/89	
23	\$35,357	28SEP1979	10/01/96	20484
24	\$35,748	13MAY1974	03/01/90	.
25	\$40,050	06DEC1969	03/01/90	

**Birth\_Date** is in a day, month, year format.

**Hire\_Date** is in a month/day/year format.

**Termination** is a number.

# Multiple Choice Poll – Correct Answer

Which of the following variable attributes is not required?

- a. **Name**
- b. **Type**
- c. **Length**
- ☒ d. **Format**



# Multiple Choice Poll

Which of the following variable attributes is not required?

- a. **Name**
- b. **Type**
- c. **Length**
- d. **Format**

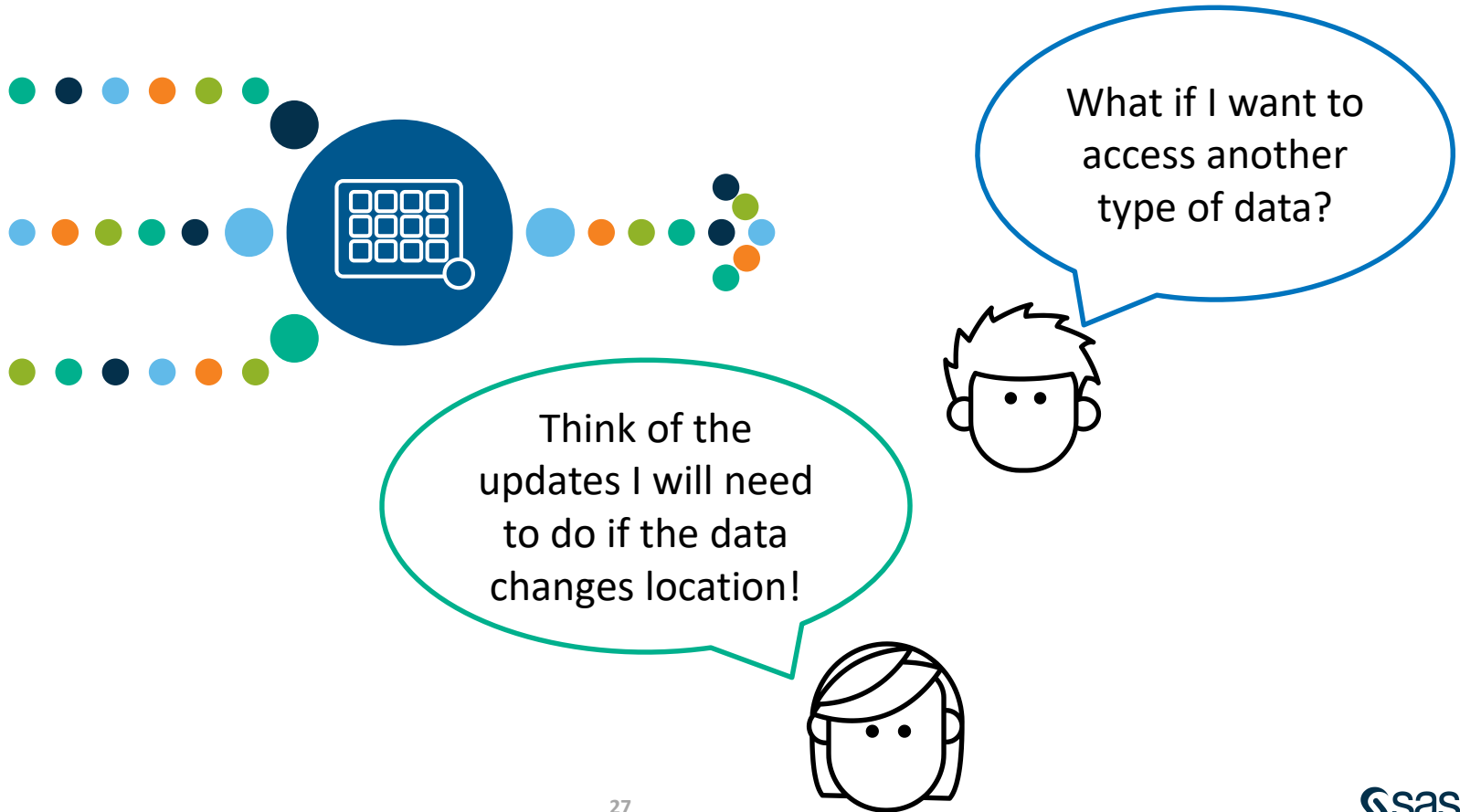
# Working with Data in a Project

2.1 Understanding SAS Data Structure

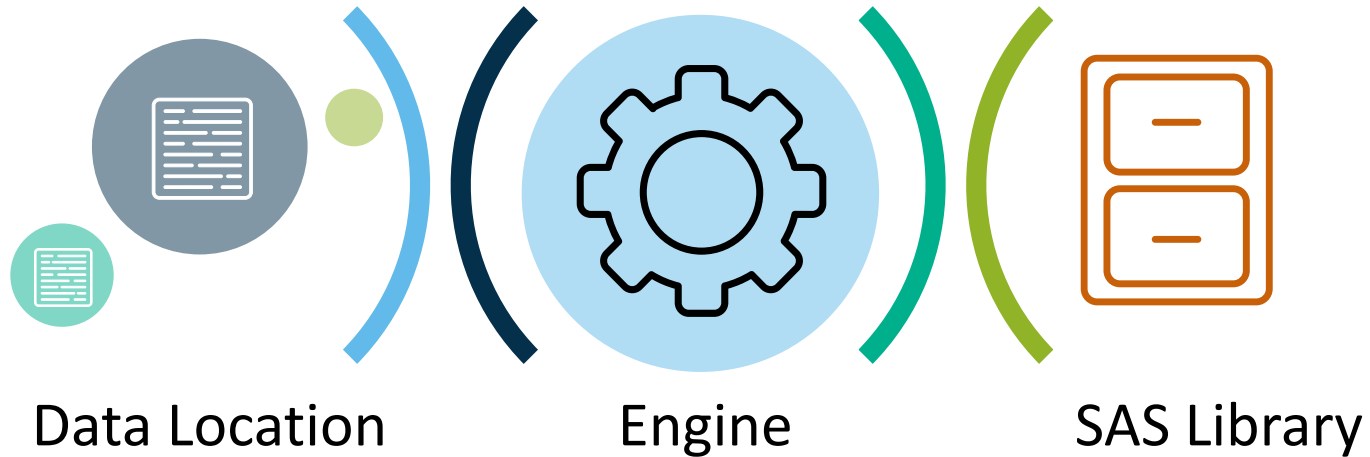
**2.2 Accessing Data**

2.3 Importing Data Files

# Using a Library to Access Data



# Using a Library to Access Data



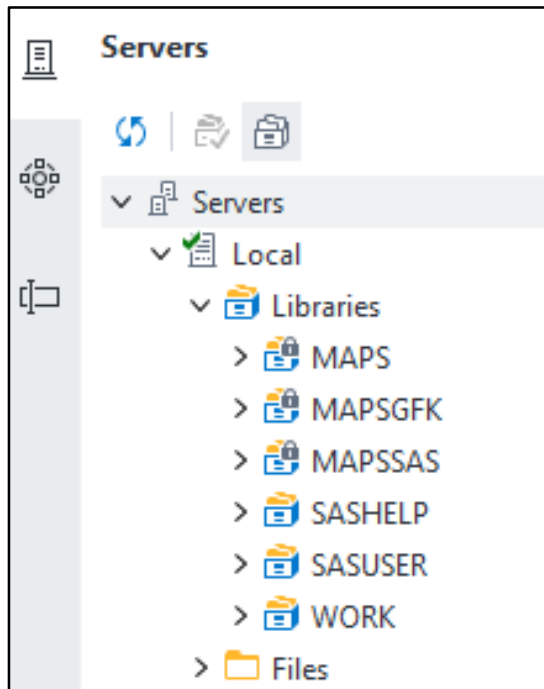
## 2.05 Activity

1. In the Servers pane, expand **Servers** ⇒ **Local** ⇒ **Libraries**.
2. Review the assigned libraries.

What libraries are listed?

## 2.05 Activity – Correct Answer

What libraries are listed?



Assigned libraries  
can include Maps,  
Work, Sashelp, and  
Sasuser.



# Automatic SAS Libraries

## Work

- temporary
- contents deleted when you close SAS
- default if no library is specified

## Sashelp

- permanent, read-only
- includes sample data that you can use
- content cannot be saved to this library

# Custom Libraries

Custom SAS libraries are typically set up by your SAS administrator. However, the Assign Project Library Wizard or a SAS code can be used to define libraries to SAS.

**IMPORTANT**: A library name cannot have more than **eight** characters.



# Custom Libraries

There are multiple ways of assigning libraries in SAS.

1. Point-and-click method (Assign Project Library Wizard)
2. Use **LIBNAME** statement (Write a SAS Code)

# Creating Libraries – Assign Project Library Task

- To create a library, begin by navigating to **Servers > Local > Libraries > Right click > New Library**.
- OR go to **Tasks > Browse - Select Tools > Assign Project Library**.
- Give a name to the library and follow the steps.
- Remember that the library name cannot exceed eight characters.

# Creating Libraries – SAS Code

- The general syntax for a LIBNAME statement is

`LIBNAME` nickname *"name-of-directory"*;

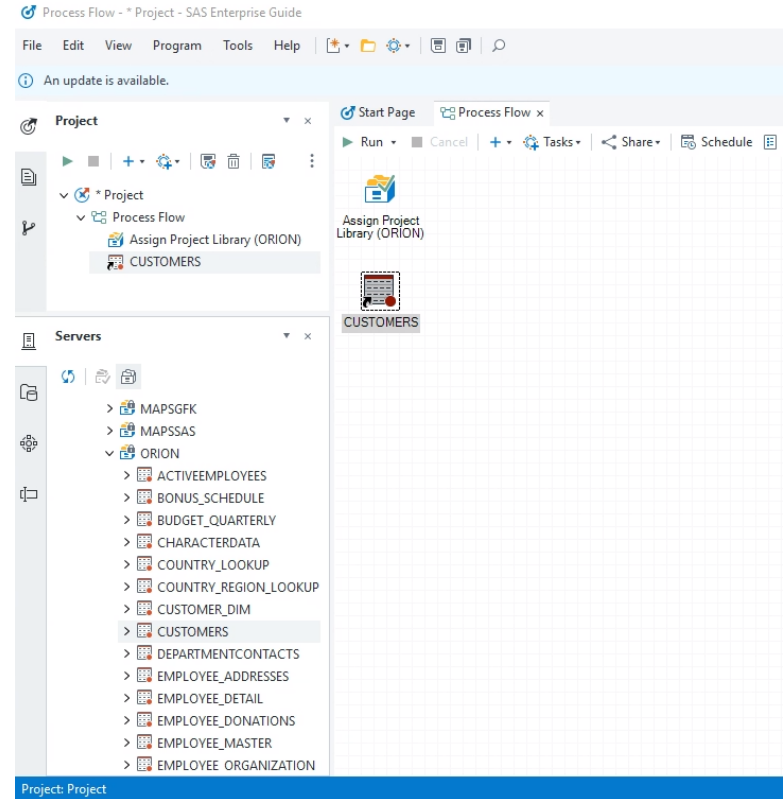
where

*nickname* = a valid SAS beginning with either a letter or an underscore and having no more than 8 characters.

*name-of-directory* = the path and name of the directory enclosed in quotes.

# Adding Data to a Project

- After a library is assigned, double-click or drag a data source from the Server List pane to the Project Tree or Process Flow window.
- This enables you to add a shortcut to the data in the project.



# Multiple Choice Poll

Which of the following is not a valid SAS library name?

- a. **ORION**
- b. **ADMISSIONS**
- c. **EMS\_2**
- d. **TITANIC**

# Multiple Choice Poll – Correct Answer

Which of the following is not a valid SAS library name?

- a. **ORION**
- ☒ b. **ADMISSIONS**
- c. **EMS\_2**
- d. **TITANIC**

A user-defined SAS library name cannot have more than eight characters.





# Assigning a SAS Library

This demonstration illustrates how to assign a library and add a table to a project from that library.

# Working with Data in a Project

2.1 Understanding SAS Data Structure





2.2 Accessing Data

**2.3 Importing Data Files**



# Opening Other Data



-  Microsoft Access
-  Microsoft Excel
-  HTML
-  Text (delimited or fixed column)

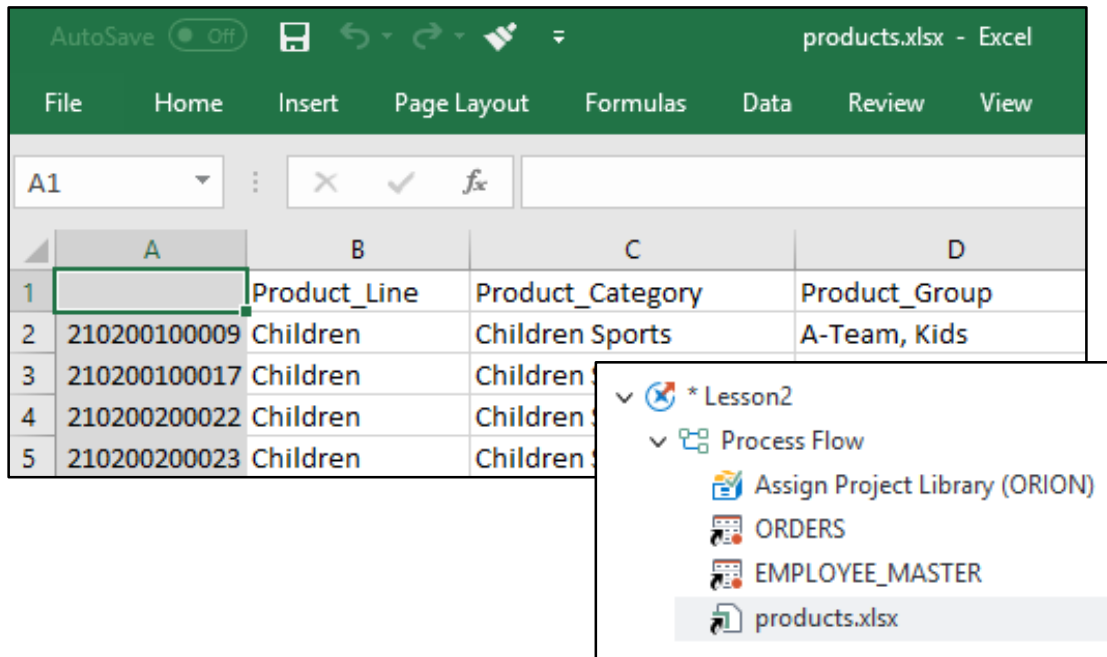
## 2.06 Activity

Select **File** ⇒ **Open** and navigate to the location of the course data.

What happens when you open the Excel **products** file?

## 2.06 Activity – Correct Answer

What happens when you open the Excel **products** file?

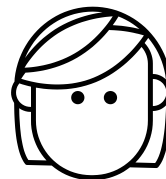


The screenshot shows the Microsoft Excel interface with the file 'products.xlsx' open. The ribbon is set to 'File'. The worksheet contains data with columns A, B, C, and D. A context menu is open over the data, showing a list of files including 'products.xlsx'.

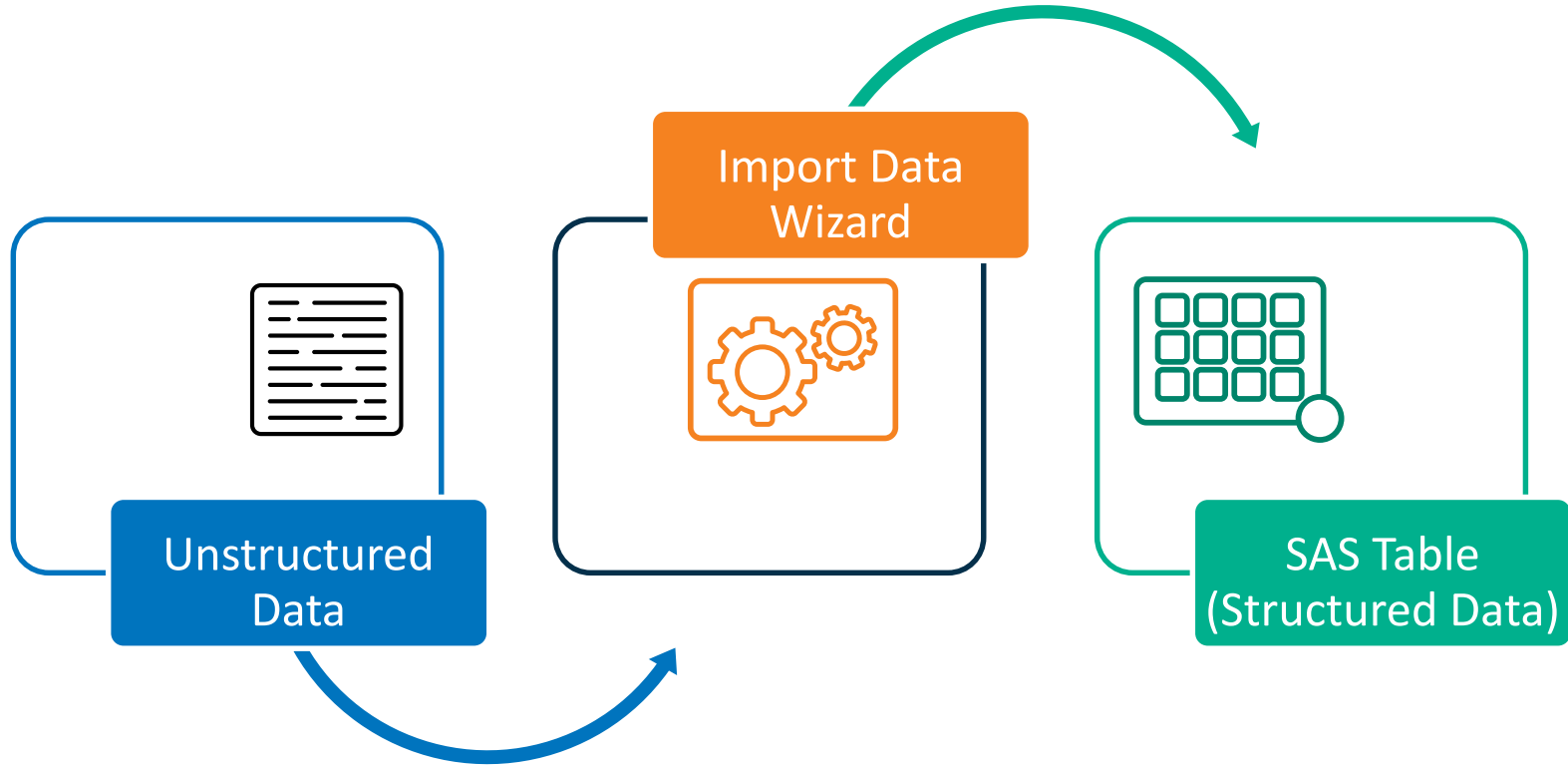
	A	B	C	D
1		Product_Line	Product_Category	Product_Group
2	210200100009	Children	Children Sports	A-Team, Kids
3	210200100017	Children	Children	
4	210200200022	Children	Children	
5	210200200023	Children	Children	

- \* Lesson2
  - Process Flow
    - Assign Project Library (ORION)
    - ORDERS
    - EMPLOYEE\_MASTER
    - products.xlsx

Microsoft Excel opens the workbook. When I close Excel, I see that a shortcut to the file was added to the open project.



# Importing Unstructured Data



# Import Data Wizard



Name

Type

Format

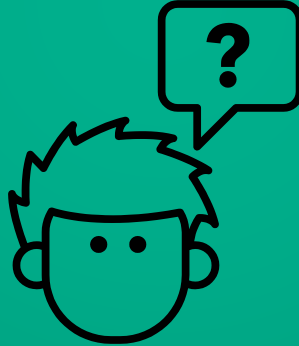
Label



# Using the Import Data Wizard

This demonstration illustrates how to create a SAS table by importing a Microsoft Excel worksheet.

Questions?





# Practice Exercise 1

This exercise reinforces the concepts discussed previously.