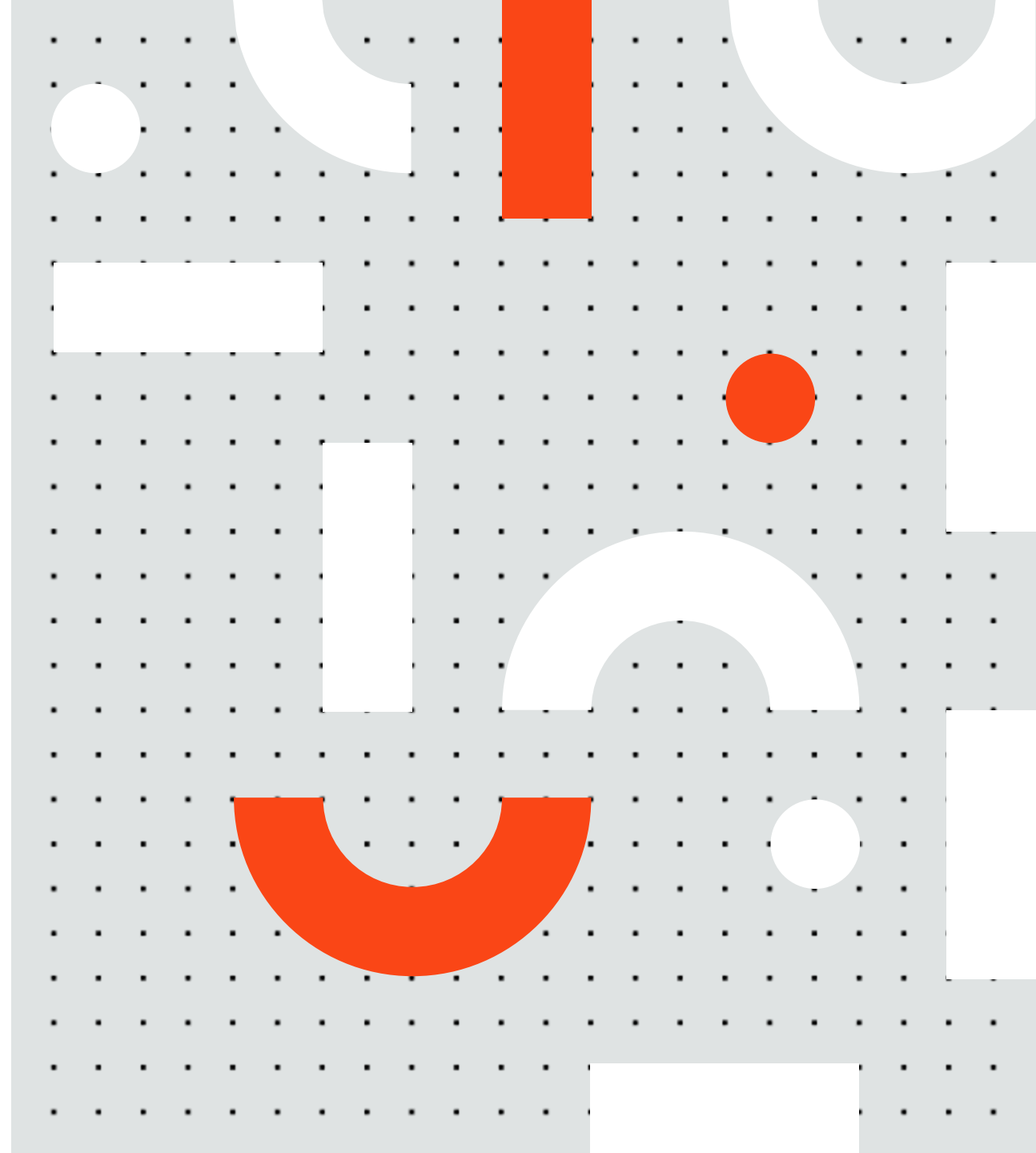
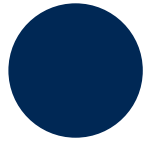


# RPA Design & Development v1.1

## Lesson 6 Variables

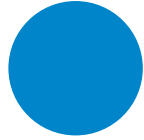


# Agenda



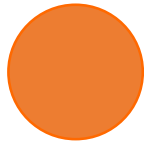
## Variables

- Definition
- Usage in programming
- Actions
- Structure
- Properties
- Naming Best Practices



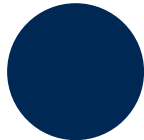
## Types of Variables

- Number
- Array
- String



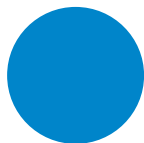
## Variables in UiPath

- Generic Value
- Variable



## Arguments

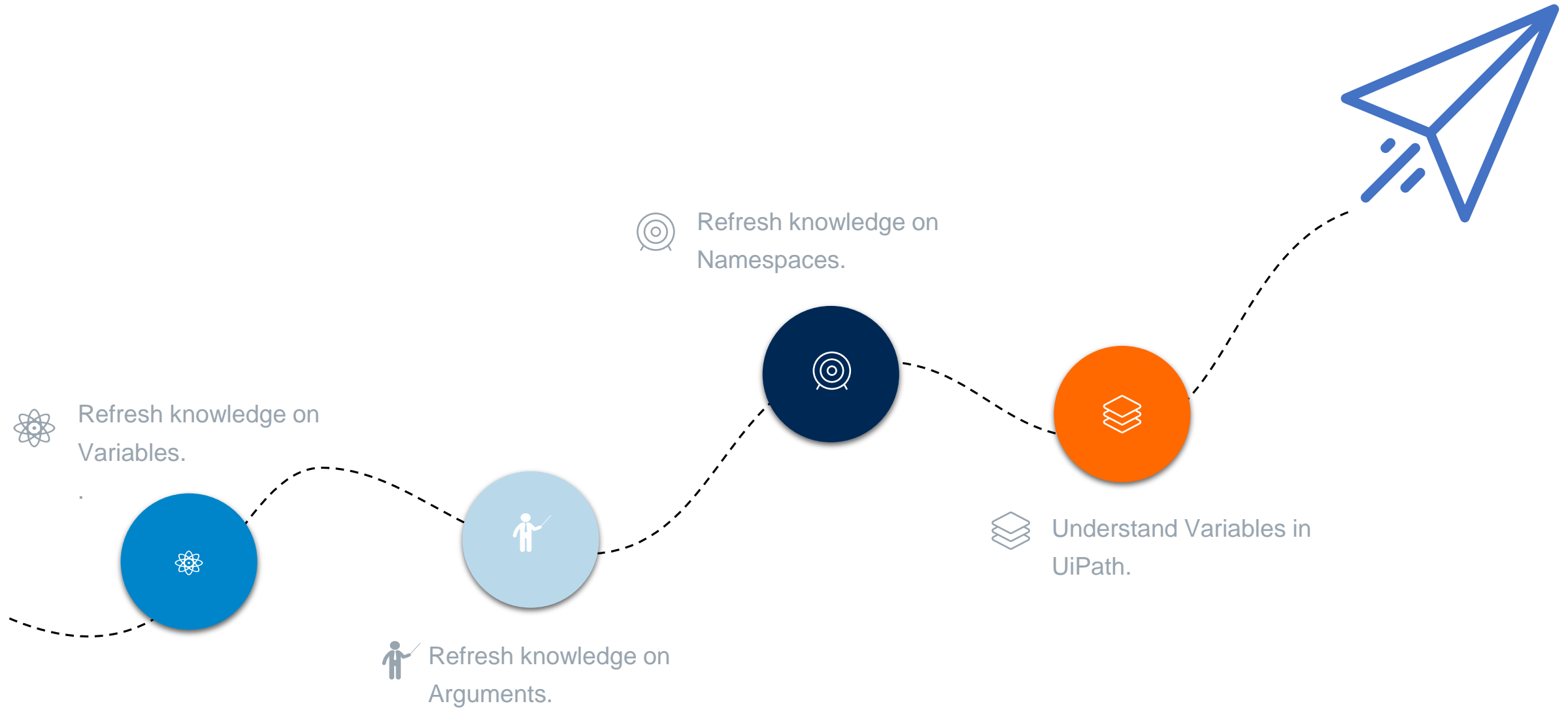
- Variable VS Argument

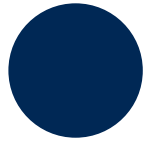


## Namespaces

- What are Namespaces
- Scenario
- Namespaces in UiPath

# Learning Objectives





## Variables

- Definition
- Usage in programming
- Actions
- Structure
- Properties
- Naming Best Practices



## Types of Variables

- Number
- Array
- String



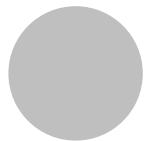
## Variables in UiPath

- Generic Value
- Variable



## Arguments

- Variable VS Argument



## Namespaces

- What are Namespaces
- Scenario
- Namespaces in UiPath

# Variables

**Variables** are storage containers for data that can be later used throughout the program.



1, 2,  
3

## Counter

Keep track of a certain repetitive action, like clicking on an item

Hello!

## Comments

Store the comments for each action item



## Organized Items

Store organized items of interest to the users that clicked on them

# Actions associated with Variables

Some of the actions associated with variables are:

Create it



Add content  
in it



Reuse it



Get info out  
of it



# Properties of Variables



## **Name**

Title of the information stored by the variable



## **Value**

The expression value assigned to the variable



## **Lifetime**

Lifetime of a variable ends when program leaves its scope



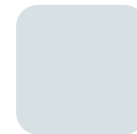
## **Type**

Type is classification of variable based on the type of data it is intended to store.



## **Scope**

Designate which parts of the program can see it or use it (local, global)



## **Location (Memory)**

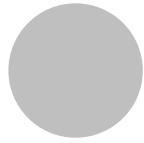
The place where variable is stored in the computer hardware

# Naming Best Practices

Anything wrong with the naming in this piece of code?

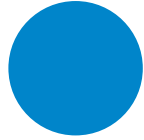
```
const convertObj = (x, y, z) => {  
  const k = Object.keys(x);  
  return k.map((key) => {  
    return {  
      [y]: key,  
      [z]: x[key],  
    }  
  });  
}
```





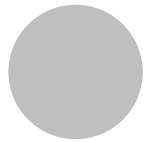
## Variables

- Definition
- Usage in programming
- Actions
- Structure
- Properties
- Naming Best Practices



## Types of Variables

- Number
- Array
- String



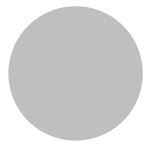
## Variables in UiPath

- Generic Value
- Variable



## Arguments

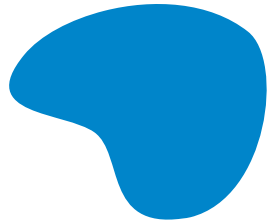
- Variable VS Argument



## Namespaces

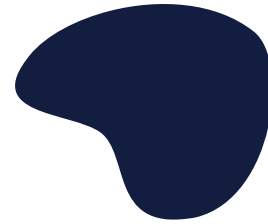
- What are Namespaces
- Scenario
- Namespaces in UiPath

# Types of **Variables**



## **Number**

Stores Numerical  
Data



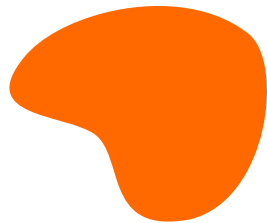
## **Array**

Stores multiple  
values



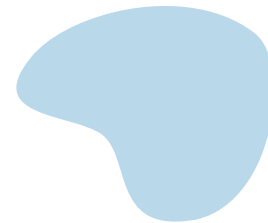
## **String**

Stores Text



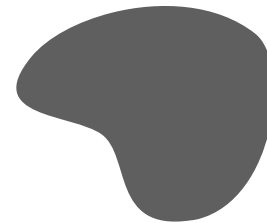
## **Date & Time**

Stores Date and  
Time



## **Boolean**

Stores True or False



## **DataTable**

It store the  
information

Number

# Number

Array

String

Date & Time

Boolean

DataTable

## Definition

- Number variables can store numerical values.;

## Example

- An example of number variable can be the age of a person.
- `Int age = 34;`

## Usage

- Used to store a certain numerical value inside them and reuse it whenever needed in the program.

Number

Array

String

Date &amp; Time

Boolean

DataTable

# Array

## Definition

- An array is a data structure that contains a group of elements of the same data type, such as an integer or string.

## Example

- `arrayname[0] = "This";`
- `arrayname[1] = "is ";`
- `arrayname[2] = "pretty simple.";`
- `print arrayname[0];`
- `print arrayname[1];`
- `print arrayname[2];`
- `;`

## Usage

- Used to organize data so that a related set of values can be easily sorted or searched.

Number

Array

String

Date &amp; Time

Boolean

DataTable

# String

## Definition

- String Variables help us store any kind of text on which arithmetical operations will not be applied.

## Example

- **arrayname[0] =**  
String firstName = Alex;
- String lastName = Jackobsen;

## Usage

- The main usage of string variables is to store text and reuse it in our code for specific actions.

Number

Array

String

Date &amp; Time

Boolean

DataTable

# Date & Time

## Definition

- Enables you to store information about any date and time.

## Example

- `DateTime value = new DateTime(2017, 1, 18);`

## Usage

- Used to store a specific date and time

Number

Array

String

Date &amp; Time

Boolean

DataTable

# Boolean

## Definition

- The Boolean variable has true or false values.

## Example

- `Boolean user = true;`

## Usage

- Boolean variables are used with control statements to help determine the flow of a program.

Number

Array

String

Date & Time

Boolean

DataTable

# DataTable

## Definition

- Variable that can store large pieces of data.

## Example

- A database table
- A simple spreadsheet
- Structured data ;

## Usage

- They are used to store big pieces of information and do certain operations on it, such as, filtering, searching, copying, etc.



# String vs Array Variables

Number

Array

String

Date & Time

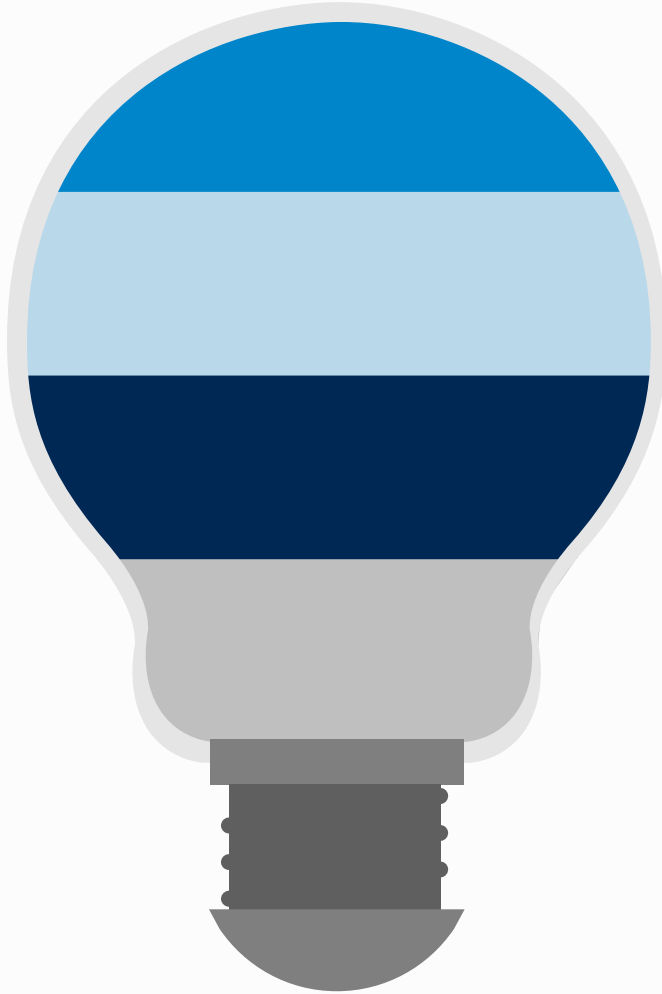
Boolean

DataTable

Array	String
Array is a sequential collection of elements of similar data types.	String refer to a sequence of single characters represented as a single data type.
Elements of arrays are stored contiguously in increasing memory locations.	Strings can be stored in any manner in memory locations.
An array is a special variable that can hold more than one value at a time.	Strings can hold only char data.
Arrays are mutable, the fields can be modified.	Strings are immutable, the value cannot be changed in memory once created.
The length of an array is predefined.	The size of a string is not predefined.

# Webform Exercise

Think about the variables you need in a webform



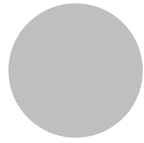
Your client is a company that collects recycled oil.

They need to have a webform created for them with the purpose of scheduling the time for collecting the oil from the customers.

They would need to collect data about customers:

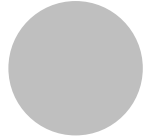
- First and last name
- Age
- Address
- Date when the oil can be collected
- Time range in which the oil can be collected
- Phone number
- Comments

What variable types would be used?



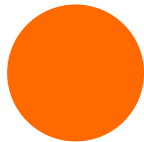
## What are Variables?

- Definition
- Usage in programming
- Actions
- Structure
- Properties
- Naming best practices



## Types of Variables

- Number
- Array
- String



## Variables in UiPath

- Generic Value
- Variable



## Arguments

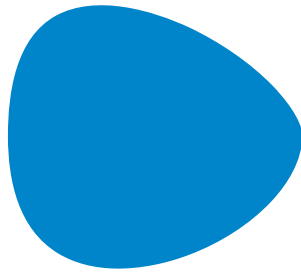
- Variable VS Argument



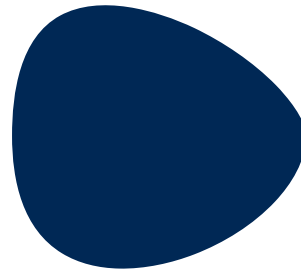
## Namespaces

- What are Namespaces
- Scenario
- Namespaces in UiPath

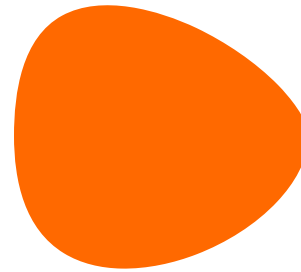
# Types of **Variables** in UiPath



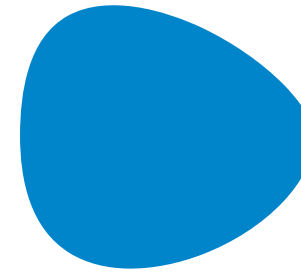
● Integer



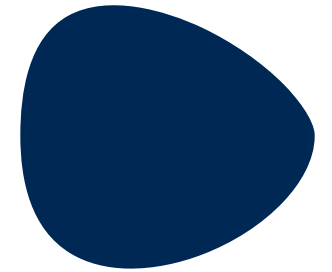
● String



● Boolean

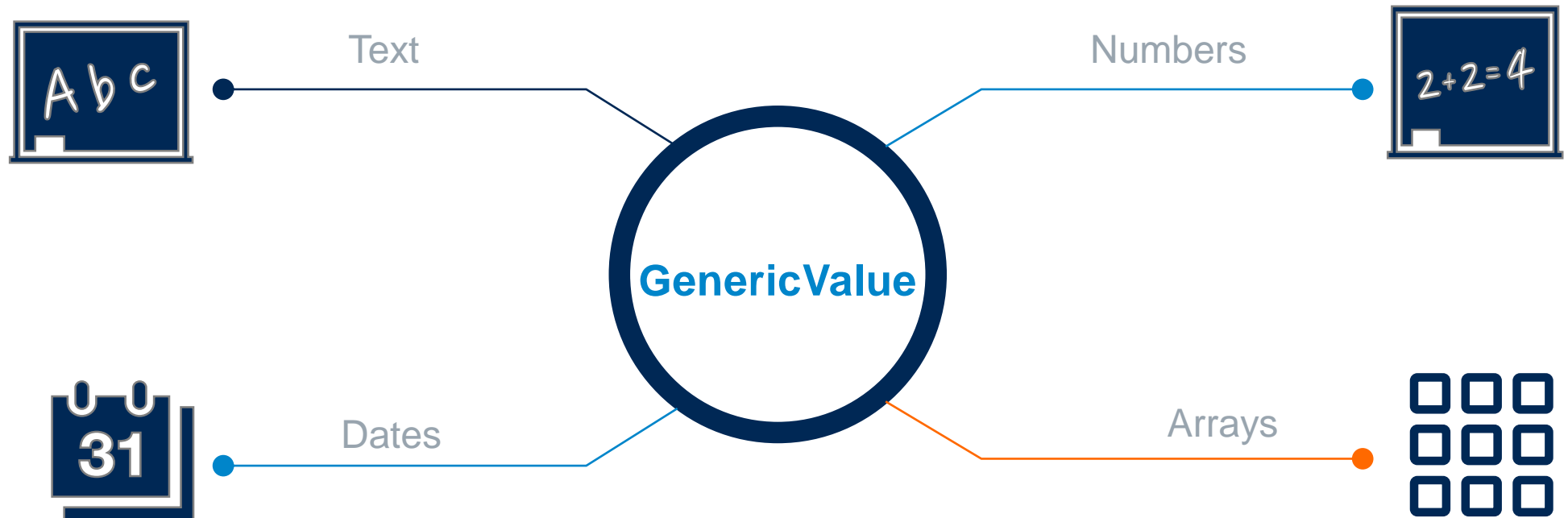


● Array



● Generic

# UiPath Specific Variable - GenericValue



# Variables Panel in UiPath Studio

The screenshot displays the UiPath Studio interface with a blue header bar. The main workspace shows a 'Main' sequence with a 'Sequence' activity containing an 'Is Match' activity. The 'Variables' panel is highlighted at the bottom, showing a table of variables.

**Variables Panel Table:**

Name	Variable type	Scope	Default
firstName	String	Sequence	Enter a VB expression
lastName	String	Sequence	Enter a VB expression
Create Variable			

The interface also includes a ribbon with tabs like START, DESIGN, and EXECUTE, and various toolbars for file operations, editing, and development. The right sidebar shows the Properties panel for the selected 'Is Match' activity.

# Variables Panel in UiPath Studio (Contd.)



## Name

Give a proper name to your variables



## Variable Type

Specify the data type for your variable



## Scope

Specify the scope of your variable



## Default

Specify if your variable should have a default value or not.



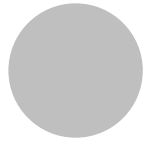
Name	Variable type	Scope	Default
firstName	String	Sequence	<i>Enter a VB expression</i>
lastName	String	Sequence	<i>Enter a VB expression</i>
<i>Create Variable</i>			

Variables

Arguments

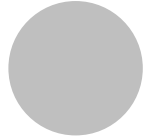
Imports

100%



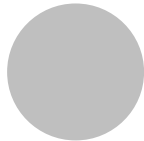
## What are Variables?

- Definition
- Usage in programming
- Actions
- Structure
- Properties
- Naming best practices



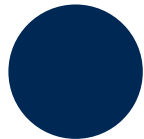
## Types of Variables

- Number
- Array
- String



## Variables in UiPath

- Generic Value
- Variable



## Arguments

- Variable VS Argument



## Namespaces

- What are Namespaces
- Scenario
- Namespaces in UiPath



# Variables vs. Arguments

## Variables

- only used inside a single workflow file(.xaml) in your project
- Types of Variable: Boolean, Array, Integer, text., Datatable
- It is used to pass it other activities.
- You can change the variable name multiple times

## Arguments

- used to pass data from one workflow file to another
- have a specific direction – In, Out, In/Out
- Type of Argument: Argument, Property, Direction, Default etc.



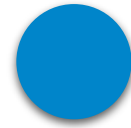
Variable

Name	Variable type	Scope	Default
ABC	Int32	Sequence	Enter a VB expression

Arguments

Name	Direction	Argument type	Default value
XYZ	In	String	Enter a VB expression
ABC	Out	String	Default value not supported

# Practice makes perfect...



We have two workflow files, ReadValues.xaml and SumValues.xaml

The first workflow file reads some data, and the second one does the addition of the values.

What directions should the two arguments have?



In



Out



In/Out

# Arguments Panel in UiPath Studio



## Name

Give a proper name to your arguments



## Direction

Set up the **direction** of your argument



## Type

Specify the **data type** for your argument



## Default

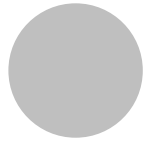
Specify if your argument should have a default value or not.



Name	Direction	Argument type	Default value
In_Values	In	Int32	<i>Enter a VB expression</i>
Out_Total	Out	String	<i>Default value not supported</i>
<i>Create Argument</i>			

Variables Arguments Imports

100%



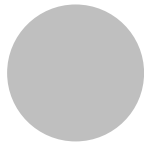
## What are Variables?

- Definition
- Usage in programming
- Actions
- Structure
- Properties
- Naming best practices



## Types of Variables

- Number
- Array
- String



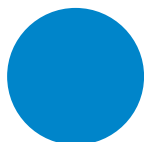
## Variables in UiPath

- Generic Value
- Variable



## Arguments

- Variable VS Argument

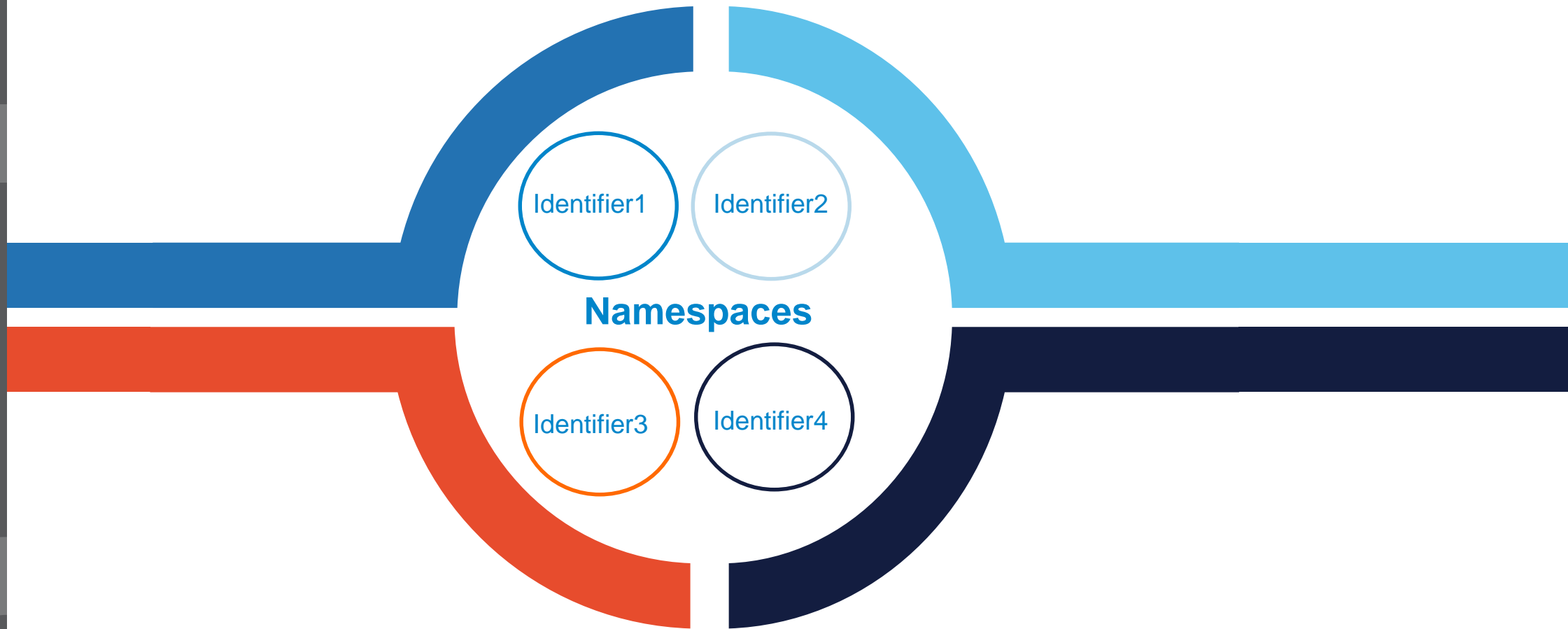


## Namespaces

- What are Namespaces
- Scenario
- Namespaces in UiPath

# What are **Namespaces**?

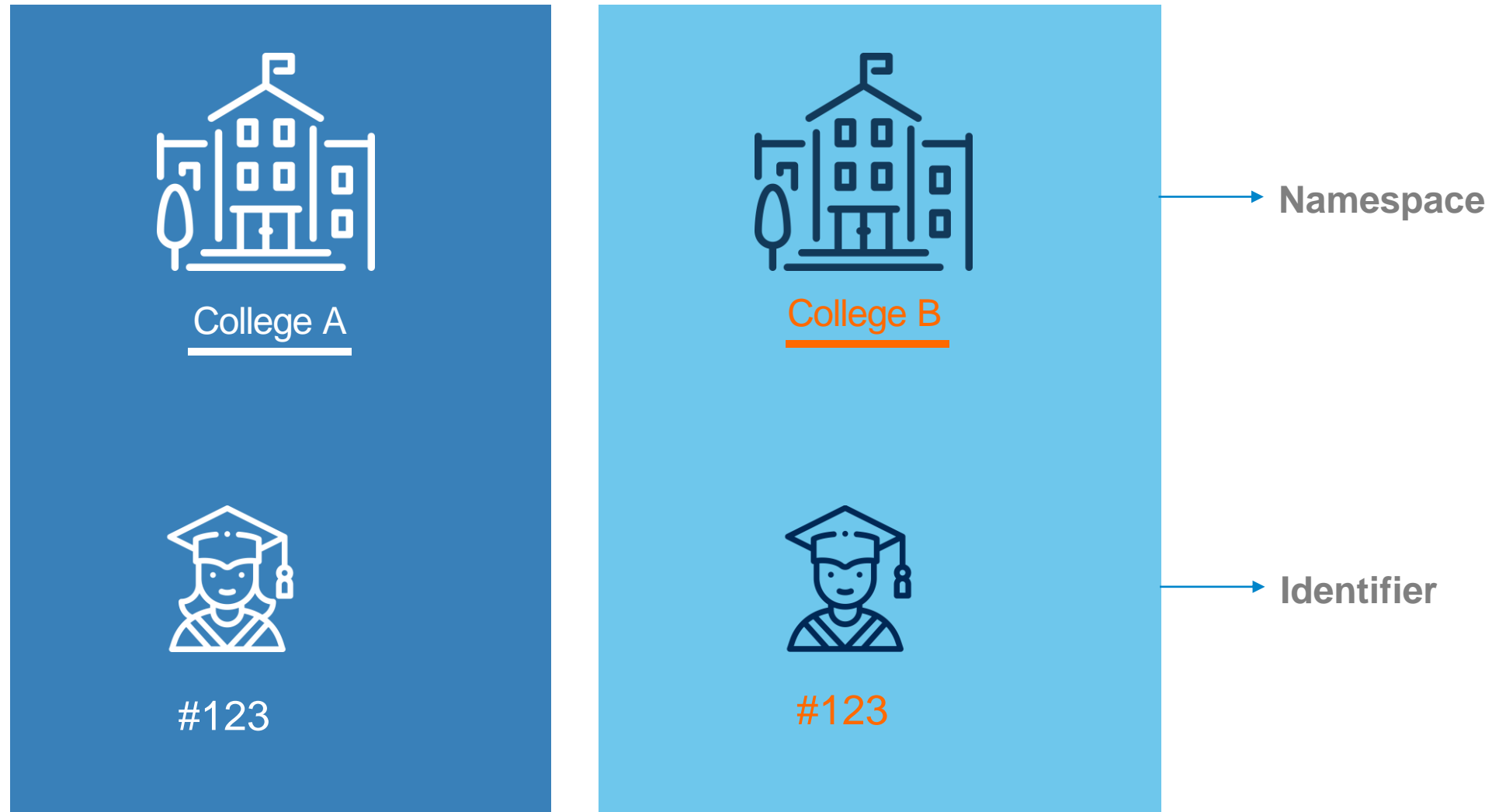
**Namespaces** are containers created to hold a logical grouping of unique names (identifier).



# Namespaces - Scenario

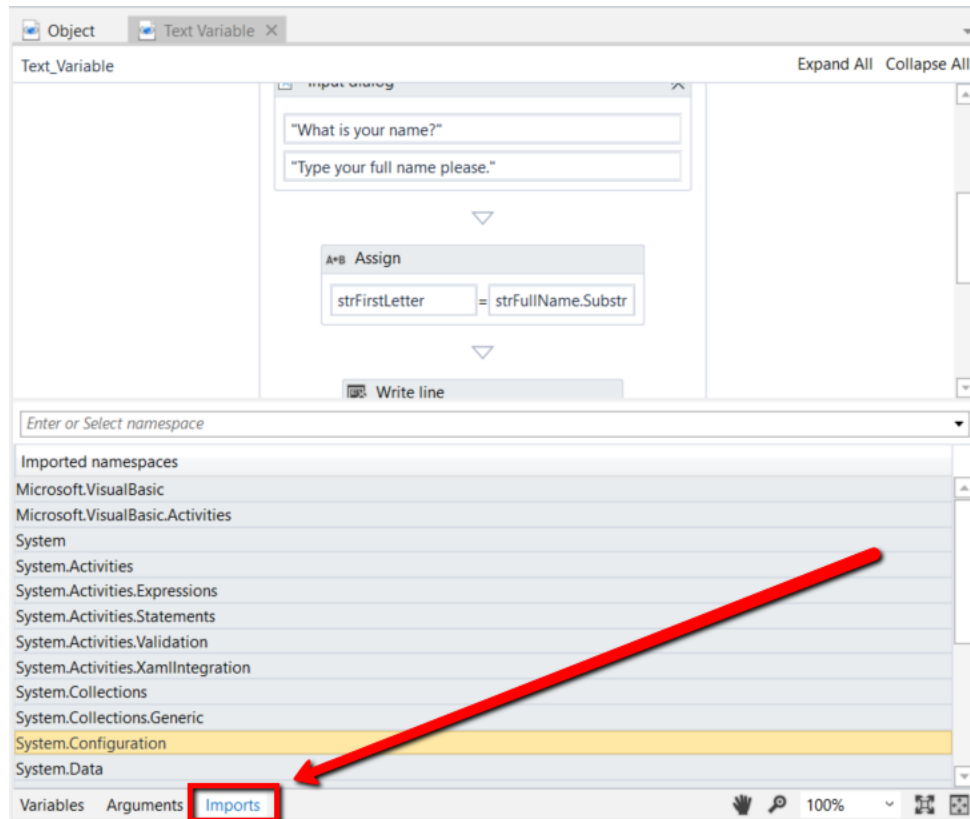
Think of it this way...

There are two colleges, A and B and they both need to assign a unique ID to their students.



# Namespaces in UiPath

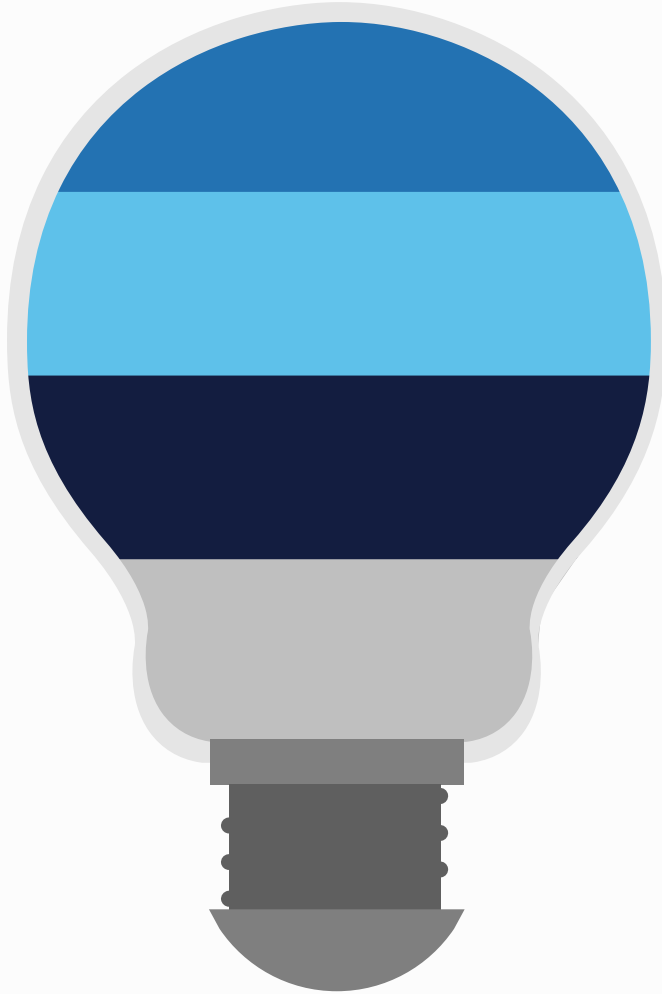
VB.NET namespaces in UiPath Studio represent containers that store different types of data.



All imported namespaces are displayed in the Imports panel.

# Back to our **Exercise**

Think about the variables you need in a excel sheet

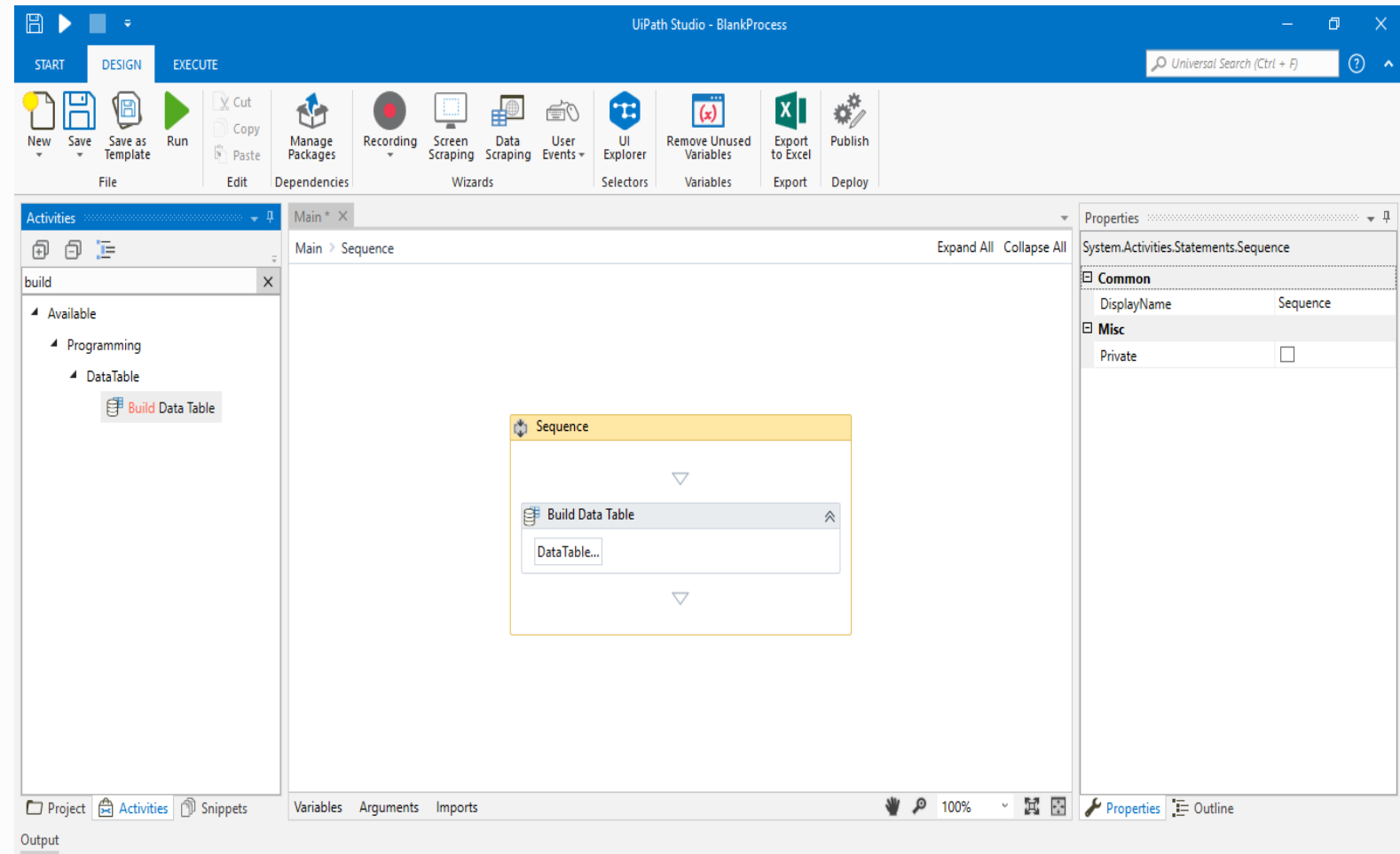


Now that you are familiar with Variables, Arguments and Namespaces in UiPath, can you define the project task into UiPath Studio?



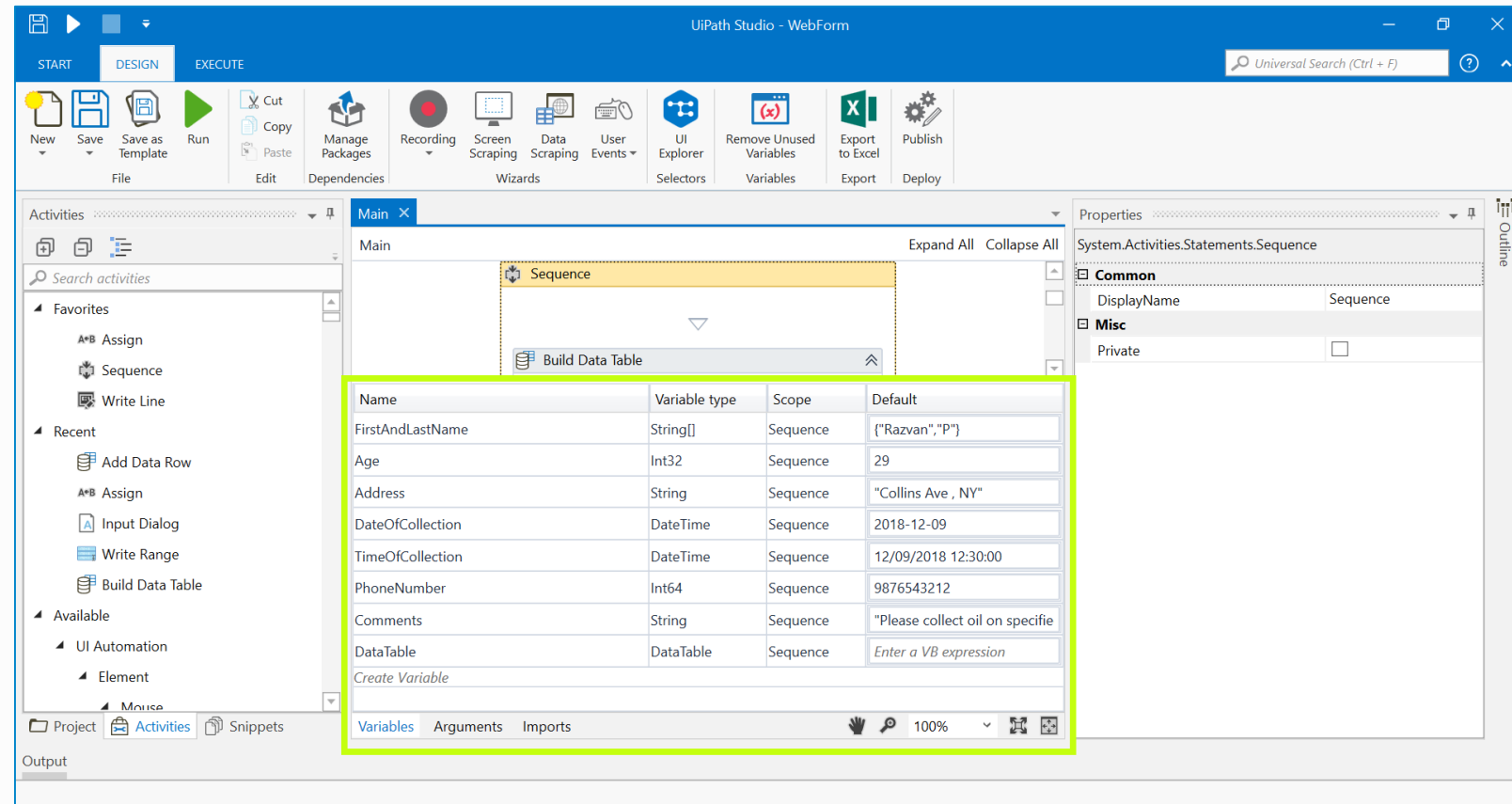
# Exporting Variables in a Excel Sheet

**Step 1:** Drag and Drop The Sequence Workflow



# Exporting Variables in a Excel Sheet

**Step 2:** Open the Variables Panel to create variables of different data types and assign them values.



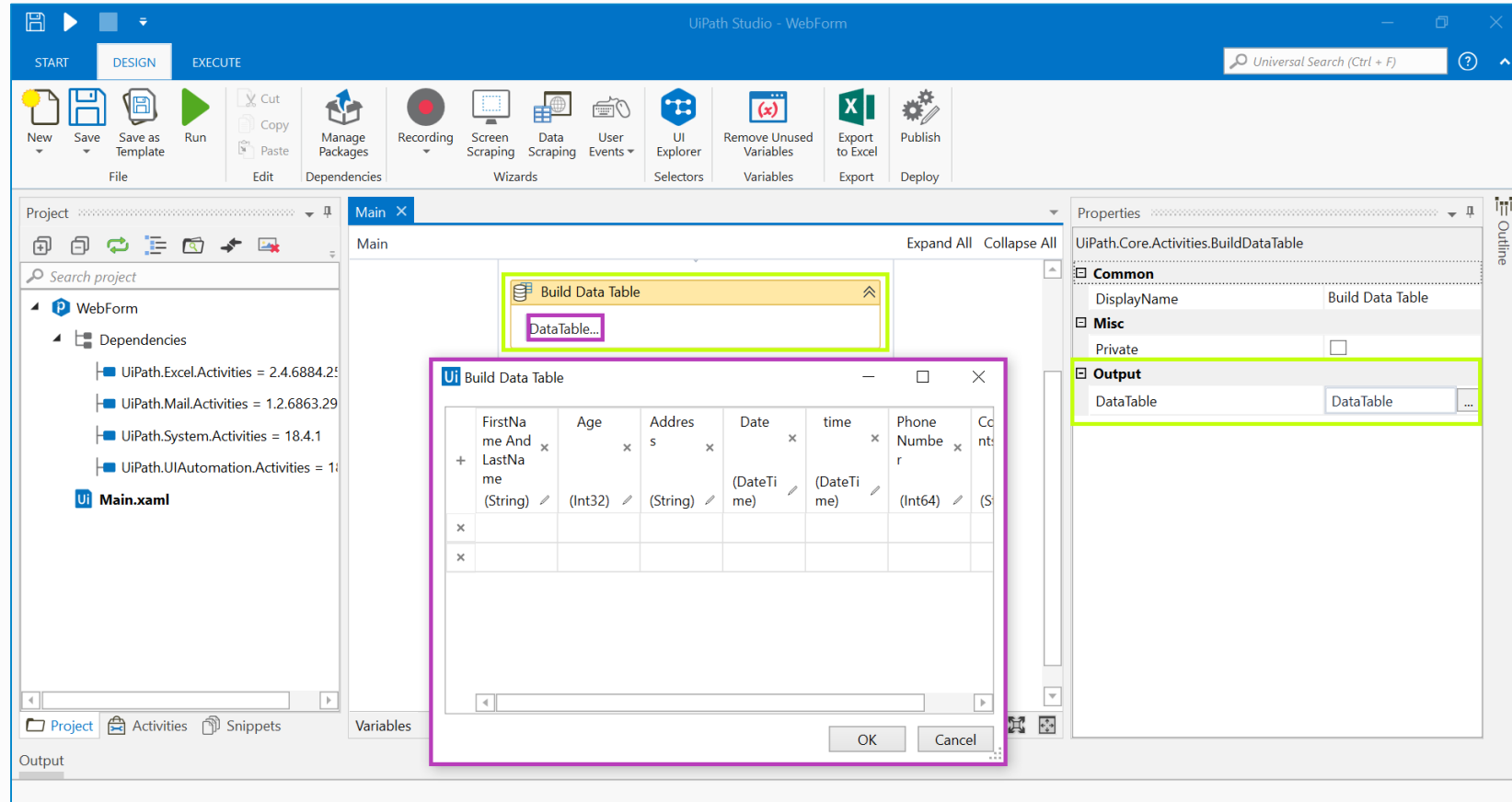
The screenshot shows the UiPath Studio - WebForm interface. The main workspace displays a 'Main' sequence with a 'Build Data Table' activity. The 'Variables' panel is open, showing a table of variables. The table has four columns: Name, Variable type, Scope, and Default. The variables listed are: FirstAndLastName (String[], Sequence, {"Razvan", "P"}), Age (Int32, Sequence, 29), Address (String, Sequence, "Collins Ave , NY"), DateOfCollection (DateTime, Sequence, 2018-12-09), TimeOfCollection (DateTime, Sequence, 12/09/2018 12:30:00), PhoneNumber (Int64, Sequence, 9876543212), Comments (String, Sequence, "Please collect oil on specifie), and DataTable (DataTable, Sequence, Enter a VB expression). Below the table is a 'Create Variable' button. The 'Properties' panel on the right shows the 'System.Activities.Statements.Sequence' properties, including 'DisplayName' (Sequence) and 'Private' (unchecked).

Name	Variable type	Scope	Default
FirstAndLastName	String[]	Sequence	{"Razvan", "P"}
Age	Int32	Sequence	29
Address	String	Sequence	"Collins Ave , NY"
DateOfCollection	DateTime	Sequence	2018-12-09
TimeOfCollection	DateTime	Sequence	12/09/2018 12:30:00
PhoneNumber	Int64	Sequence	9876543212
Comments	String	Sequence	"Please collect oil on specifie
DataTable	DataTable	Sequence	Enter a VB expression

# Exporting Variables in a Excel Sheet (Contd)

## Step 3:

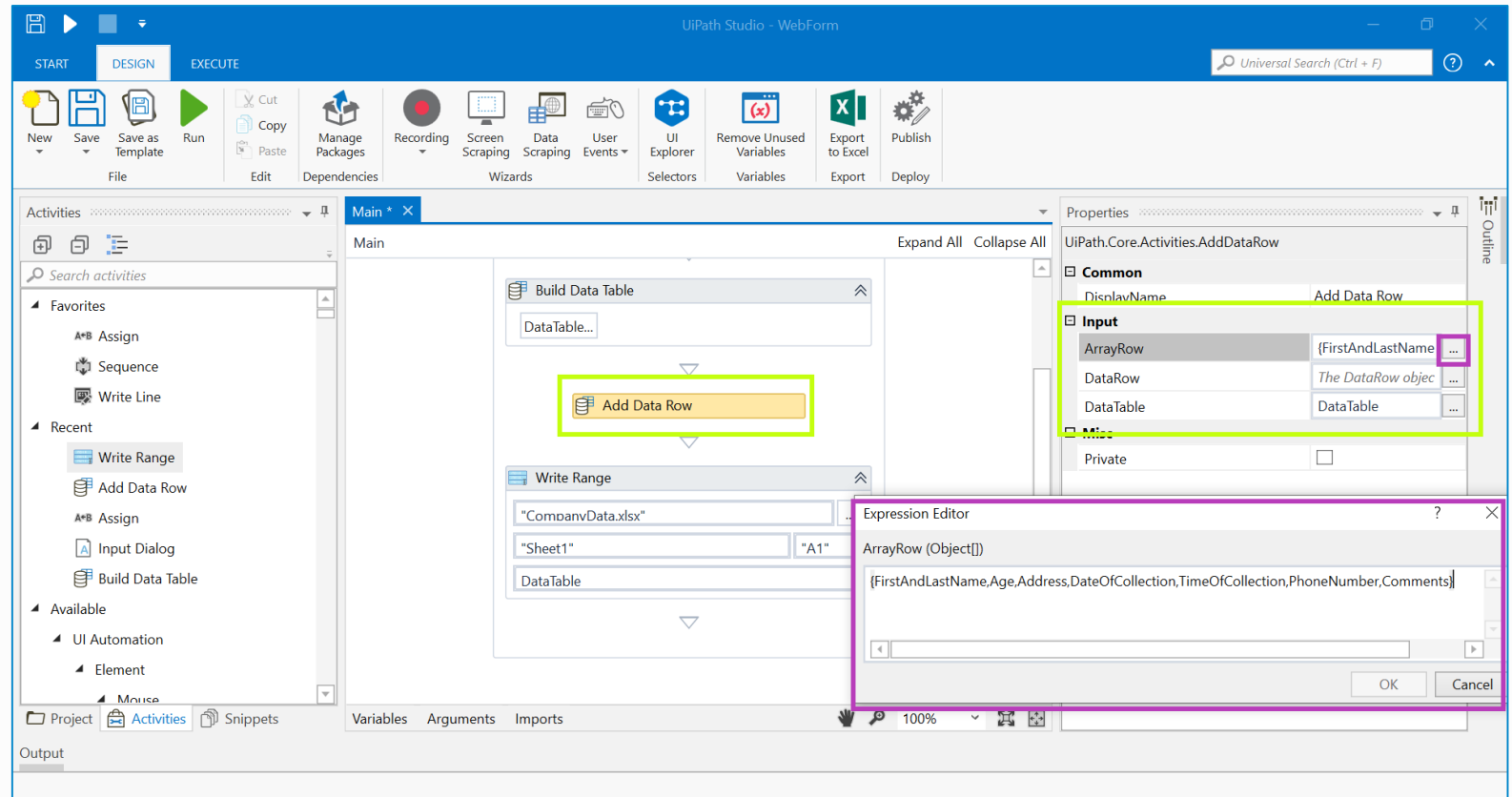
1. Navigate to the Activities Panel.
2. Drag and drop the DataTable activity in workflow.
3. Open Build DataTable wizard.
4. Create column names.
5. Output variable in the properties panel.



# Exporting Variables in a Excel Sheet (Contd.)

## Step 4:

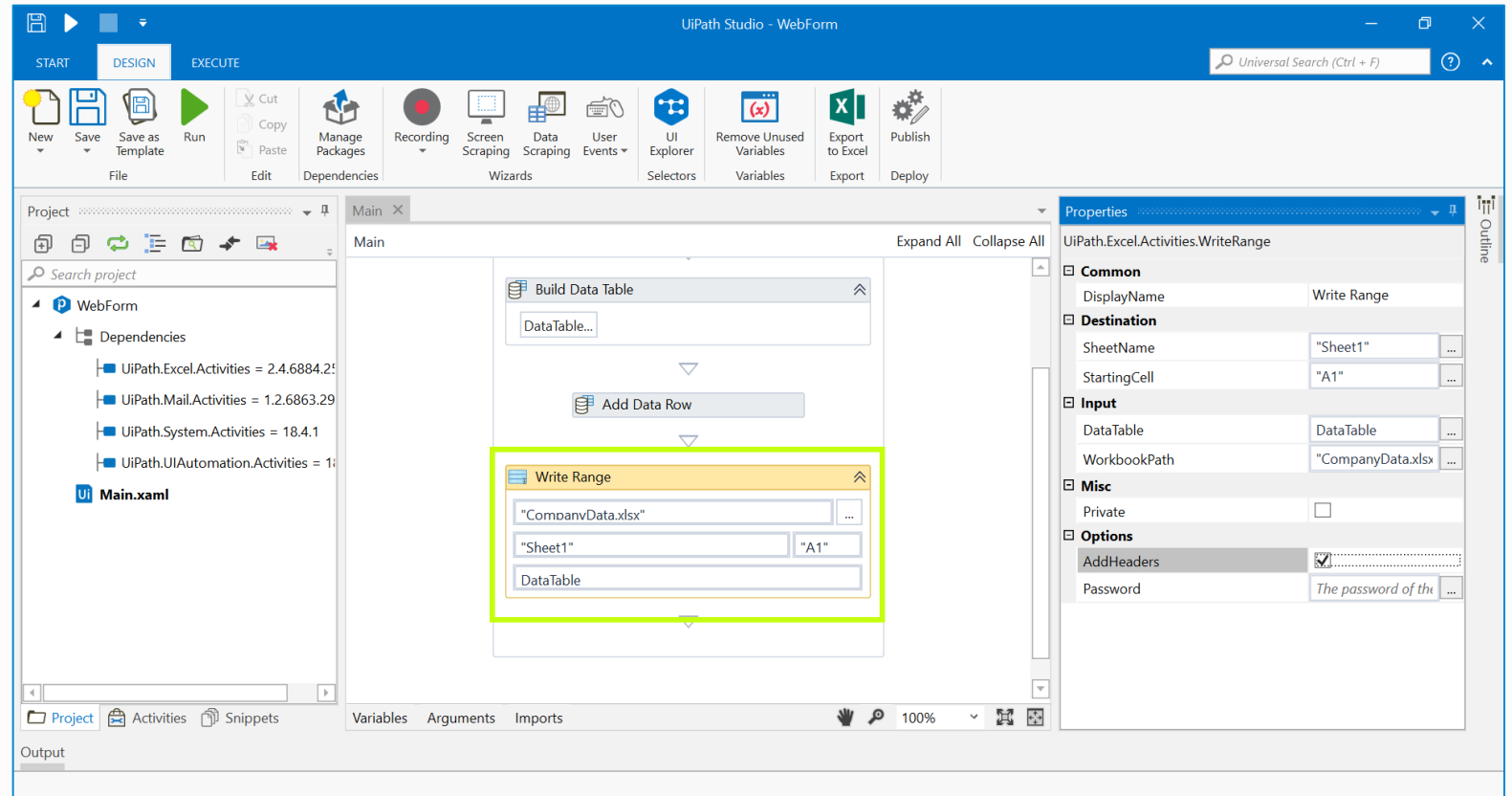
1. Navigate to the Activities Panel.
2. Drag and drop the Data Row activity in workflow.
3. Add the variable names in the Properties panel.
4. Pass the name of the datatable created in the previous step.



# Exporting Variables in a Excel Sheet (Contd.)

## Step 5:

1. Navigate to the Activities Panel.
2. Drag and drop the Write Range activity in workflow.
3. Write "CompanyData.xlsx" in workbook path.
4. Pass the datatable output variable name created in the previous step.



# Exporting Variables in a Excel Sheet (Contd.)

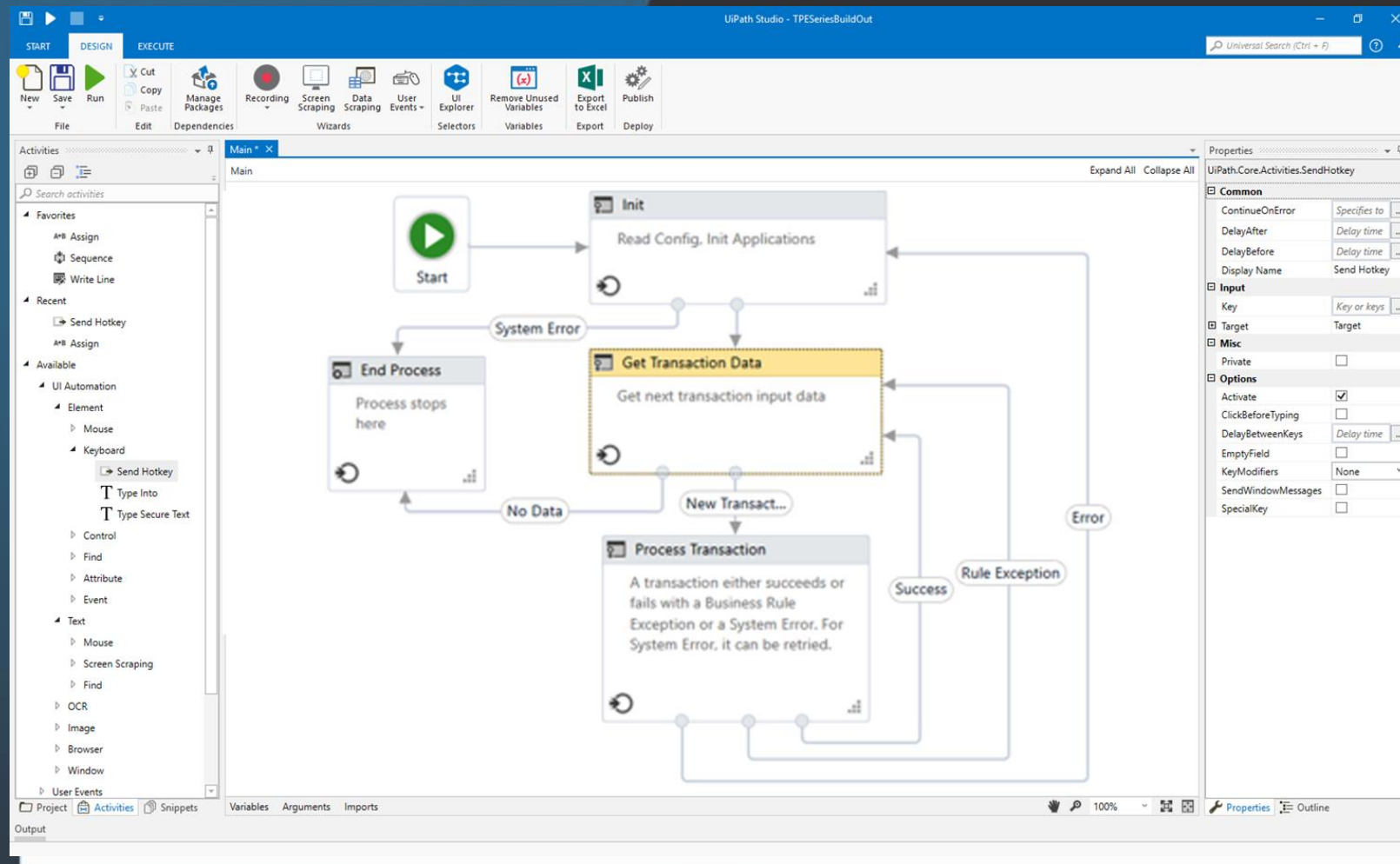
## Step 6:

1. Run the program.
2. An Excel sheet with the name CompanyName will be created in the project folder.

.local	21-12-2018 12:03	File folder	
CompanyData.xlsx	21-12-2018 13:15	Microsoft Excel Work...	8 KB
Main.xaml	21-12-2018 13:15	Windows.XamlDocu...	9 KB
project.json	21-12-2018 12:03	JSON File	1 KB

CompanyData.xlsx - Excel							
File Home Insert Page Layout Formulas Data Review View Tell me what you want to do							
Clipboard Font Alignment Number Styles							
A1 X ✓ fx FirstName And LastName							
A	B	C	D	E	F	G	H
1	FirstName And LastName	Age	Address	Date	time	PhoneNumber	Comments
2							
3	RazvanP	29	Collins Ave , NY	09-12-2018	09-12-2018 12:30	9876543212	Please collect oil on specified date
4							

# Demo



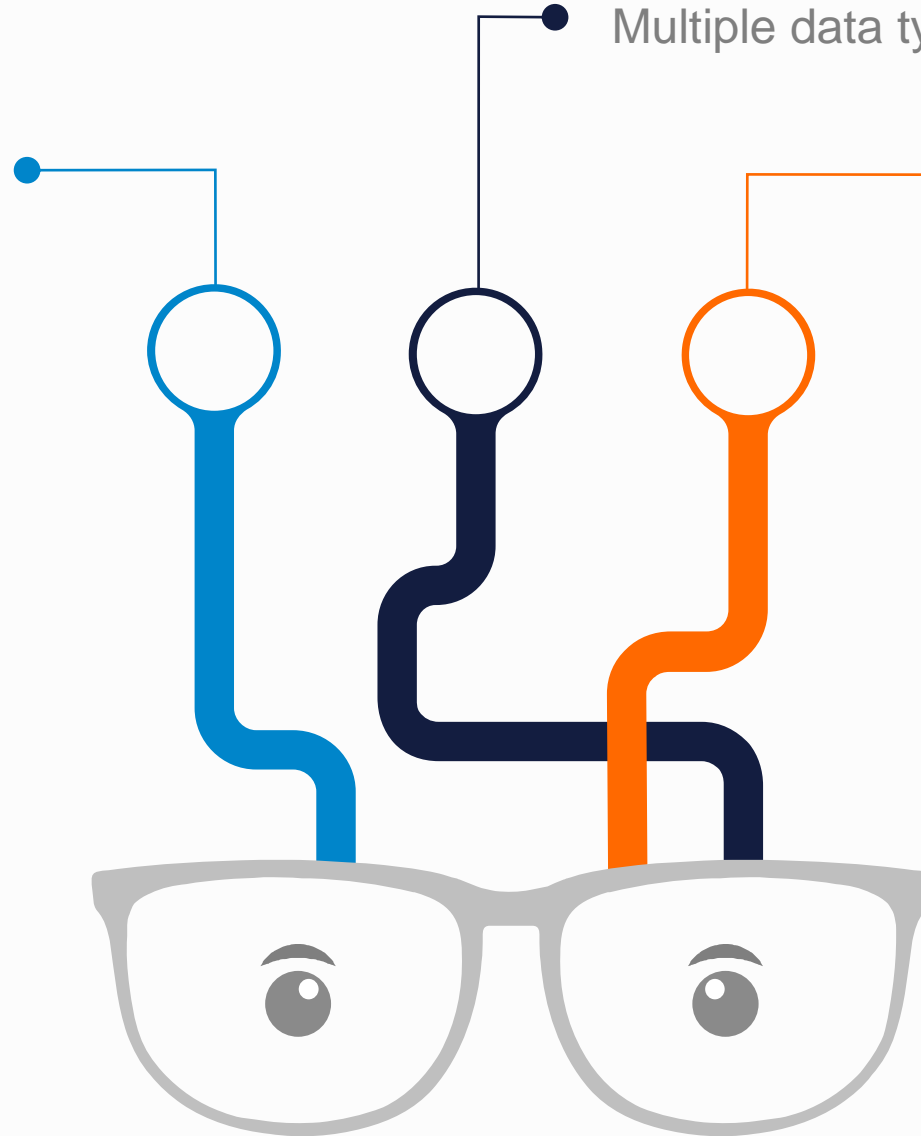
# Takeaways

## Variables in UiPath

Used to store data

Multiple data types (String, DataTable, etc.)

Reusable in code





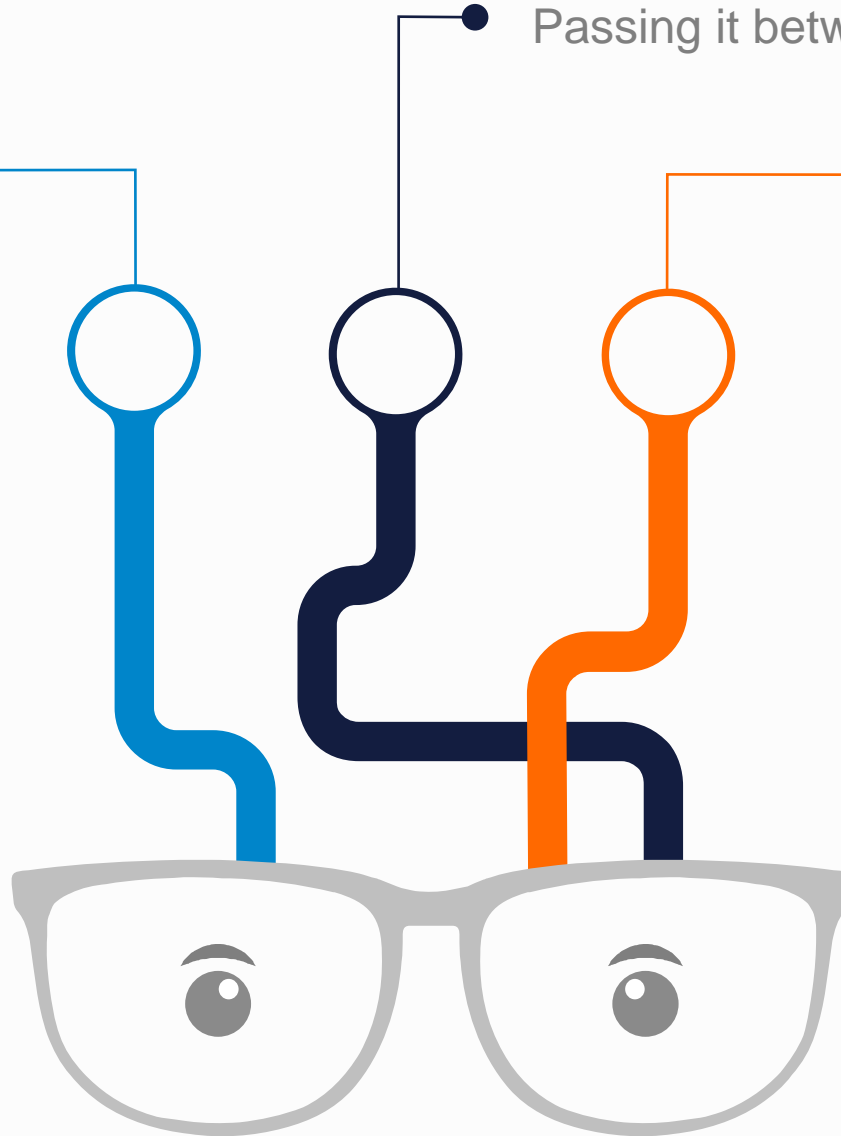
# Takeaways

## Arguments in UiPath

Easily manageable

Passing it between activities is simple

Does what a variable should do



# Questions & Answers



# Which of the following is a UiPath specific Variable?

a) GenericArray

b) GenericValue

c) GenericDates

**Which of the following is used to pass data from one workflow file to another in UiPath Studio?**

a) Namespaces

b) Variables

c) Arguments

# Next Steps

Module 3 Lesson 3: Control Flow

