UiPath™ Community

RPA Robotic Process Automation

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Session # 02

Variables, Arguments, and Control Flow in Studio

What are variables?

Variables are containers that can hold multiple data entries (values) of the same data type.

For example, **Email Address** can be a variable that holds the value "rpadeveloper@uipath.com".

Why are they important?

Variables help us pass data from one activity to another. Advancing with any automation process would be hardly possible without using variables.

Workflows

A workflow represents a small piece of automation that you can take and re-use in your projects.

The workflow layouts are:

- Sequences
- Flowcharts
- State Machines
- Global Exception Handler

Why is it important?

The fastest, most reliable, and useful way of automating a process is to break it down into smaller bits.

Workflow Layouts

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Flowchart

A flowchart is a graphical representation of a process in which each step is represented by different symbols connected with arrows.

Sequence

Sequences are the smallest type of project. They are suitable to linear processes as they enable you to go from one activity to another seamlessly, and act as a single block activity.

State Machine

State machine is a complex structure that stores the status of something at a given point of time

What is an argument?

Arguments are very similar to variables:

- They store data dynamically
- They have the same data types
- They support the same methods and properties

The difference is that they pass data between workflows, and they have an additional property for this – the direction. Arguments have specific directions: In, Out, and In/Out.

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Data Types

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String: Used to store text.

Numeric: Used to store numbers.

Boolean: Used to store one of two values – True or False.

Collection: This category reunites all the collections of objects. Collections are largely used for handling and processing complex data. Some of the most encountered collections are:

Array: Used to store multiple values of the same data type.

List: Used to store multiple values of the same data type, just like Arrays.

Data Types

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DataTable: DataTable variables represent a type of variable that can store big pieces of information, and act as a database or a simple spreadsheet with rows and columns.

Date and Time: Used to store specific time coordinates (mm/dd/yyyy hh:mm:ss).

GenericValue: This is a UiPath proprietary variable type that can store any kind of data, including text, numbers, dates, and arrays. This type is mainly used in activities in which we are not sure what type of data we will receive, yet in general the use of this is temporary.

Generic Value

The GenericValue (UiPath.Core.GenericValue) data type is particular to UiPath and can store any kind of data, including text, numbers, dates, and arrays.

Please note that the first element in your expression is used as a guideline for what operation Studio performs.

For example, when you try to add two Generic Value variables, if the first one in the expression is defined as a String, the result is the concatenation of the two.
If it is defined as an Integer, the result is their sum.

What is control flow?

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There are two concepts through which the control flow is enacted:

The workflow layouts: There are 4 predefined workflow layouts – Sequence, Flowchart, State Machine and Global Exception Handler.

The control flow statements: The activities and methods used to define the decisions to be made during the execution of a workflow.

The most common control flow statements are If, While, Do While, For Each, Switch, and Parallel. We will focus on them one by one.

The If Statement

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The If statement is comprised from the elements you would expect it to be:

- The **Condition** that is verified (with 2 potential outcomes – true or false).
- The **Then** branch - the set of actions to be executed when the condition is true.
- The **Else** branch - the set of actions to be executed when the condition is false.

Loops

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Loops are repetitions of a set of operations based on a given condition. In UiPath, the most important loops are: Do While, While and For Each.

For Each: It performs an activity or a series of activities on each element of an input collection.

Do While: It executes a specific sequence while a condition is met. The condition is evaluated after each execution of the statements.

While: It executes a specific sequence while a condition is met. The condition is evaluated before each execution of the statements.

How do I exit a loop?

The **Break** activity enables you to exit the current loop activity (e.g. For Each, While, or Do While) at a chosen point and continues the workflow with the activity that follows it

Switch

It is a type of control flow statement that executes a set of activities out of multiple, based on the value of a specific expression.

In other words, we use it instead of an If statement when we need at least 3 potential courses of action.

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Goodbye & Glad to meet YOU!

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