

RPA Design and Development (CSE552)

CONTROL FLOW ACTIVITIES

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CONTROL FLOW ACTIVITIES



Outline

➤ Control Flow and its types

- Decision control-IF
- Switch
- IF vs Switch
- Loops-Do While
- While

➤ Other control flow activities

- - Delay,
- Break,
- Assign,
- Continue and Parallel

CONTROL FLOW ACTIVITIES



Basic Control Statements

- Control Flow
 - **Continuing** at a different statement.
 - Executing and **returning**
 - **Preventing** any further execution
 - Executing **only if** some condition is met
 - Executing until some condition is met

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Basic Control Statements

- Control Flow Statements in UiPath

- Assign
- If
- Switch
- Do While
- While
- Delay
- Break
- For Each

CONTROL FLOW ACTIVITIES



Basic Control Statements

- There are four basic control statements that are the foundation of the control flow
 - **If:** the decision point with 2 branches
 - **Switch:** the decision point with more than 2 branches
 - **Loop:** the repetition of a set of instructions, based on a condition
 - **Break:** the interruption of a loop, also based on a condition

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Decision control-IF

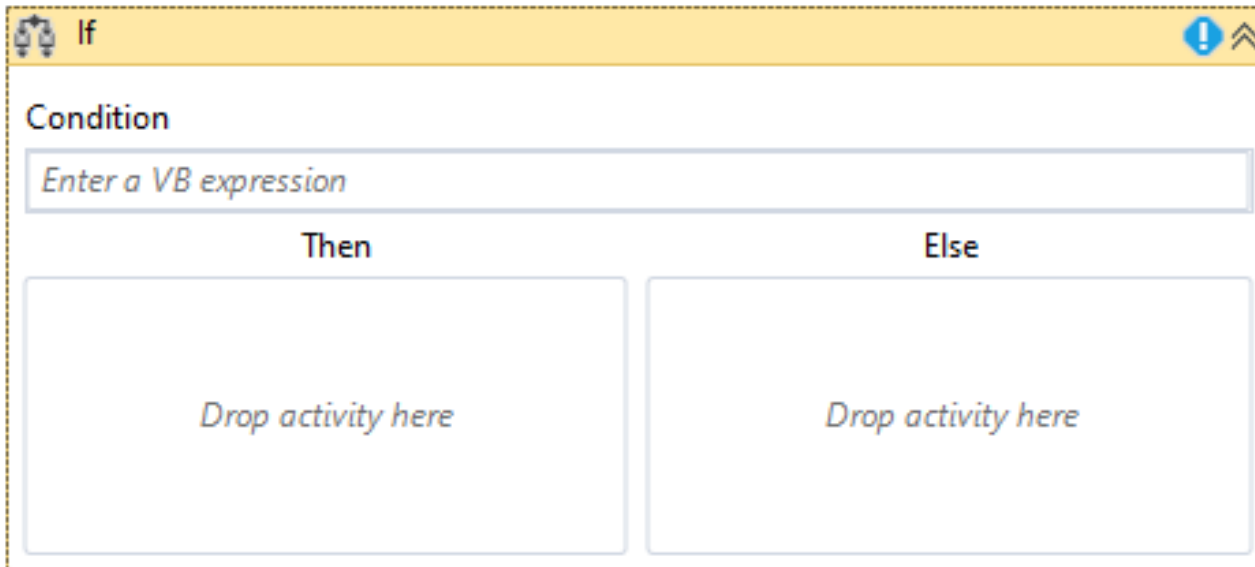
- The basic concept of If statement is a method of two activity (Then and Else) which contain two condition and one statement.
 - The first condition is "Then" and it executes the process when the condition is "True."
 - The second is "Else" and it is executed when the condition is "false"
 - Condition statement takes the expression or variable declaration process executed
- If statements are controlled by conditions.
 - **Condition:** It contains Boolean and argument expression that is executed in the "Then and Else" Statement.
 - **Then:** If the condition is true then it comprises the data or activities.
 - **Else:** If the condition is False then it comprises the data or activities

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Decision control-IF

- Nested If statements.
 - if a then (if b then s else s2) – if we want the s2 to be executed only if a is met
 - If a then (if b then s) else s2 – if we want the s2 to be executed only if a is not met



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Decision control-IF

Objective: To code a Robot in UiPath Studio to check largest of two numbers.

Algorithm:

Step 1: START

Step 2: Declare the variables as A and B

Step 3: Read input A and B from the user

Step 4: Use if activity to check (A>B)

Step 5: if (A>B) then output A

else

output B;

Step 6: STOP

ACTIVITIES

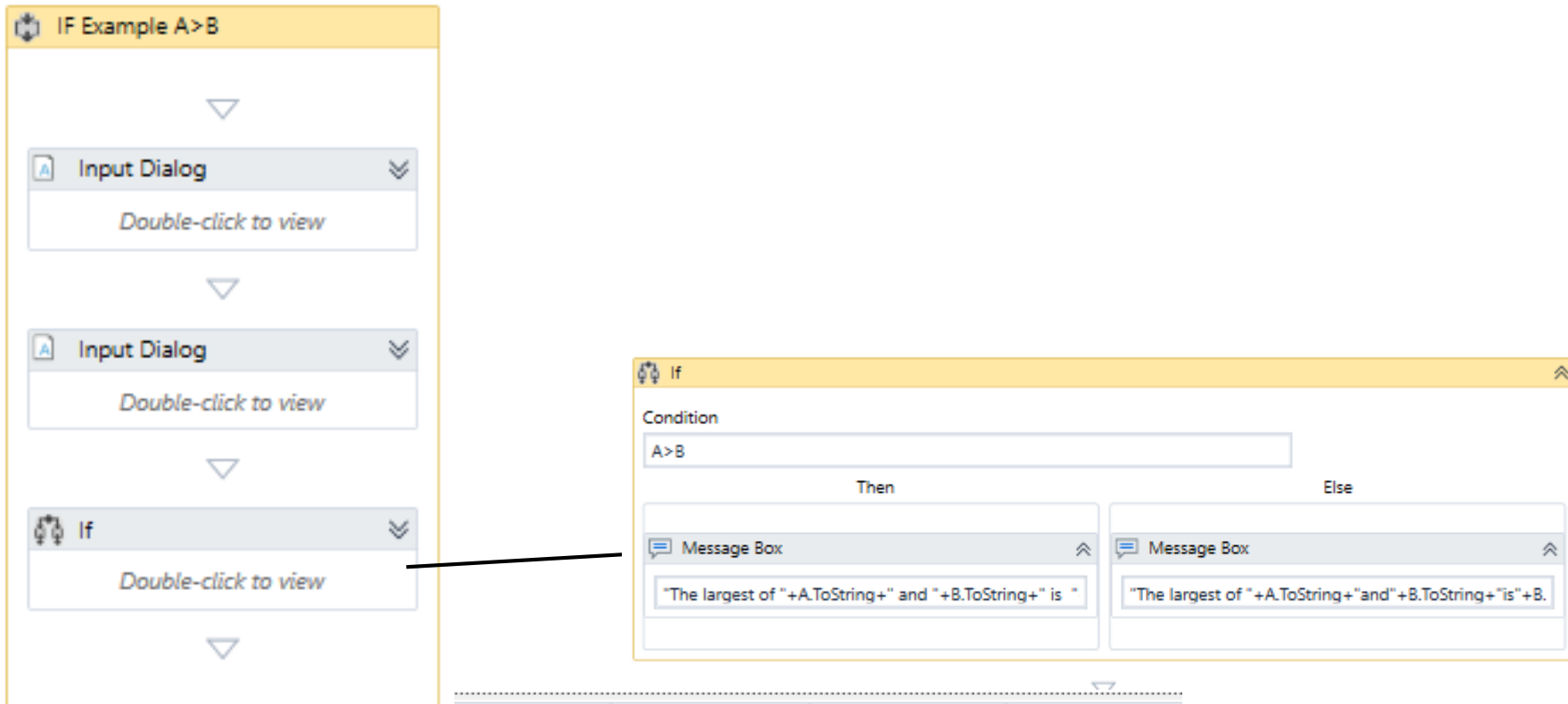
- “Sequence” and
- “Assign” activity.
- ✓ “if” activity and how to set conditions.
- ✓ Display output in “Output” panel

CONTROL FLOW ACTIVITIES



Decision control-IF

Objective: To code a Robot in UiPath Studio to check largest of two numbers.



The screenshot displays the UiPath Studio interface for a workflow titled "IF Example A > B". The workflow contains three activities: two "Input Dialog" activities and one "If" activity. The "If" activity is expanded, showing the condition "A > B". The "Then" branch contains a "Message Box" activity with the message "The largest of "+A.ToString+" and "+B.ToString+" is ". The "Else" branch contains a "Message Box" activity with the message "The largest of "+A.ToString+" and "+B.ToString+" is "+B."

| | Variable type | Scope | Default |
|---|---------------|------------------|-------------------|
| A | Int32 | IF Example A > B | Enter a VB expres |
| B | Int32 | IF Example A > B | Enter a VB expres |

10/8/2020

Create Variable

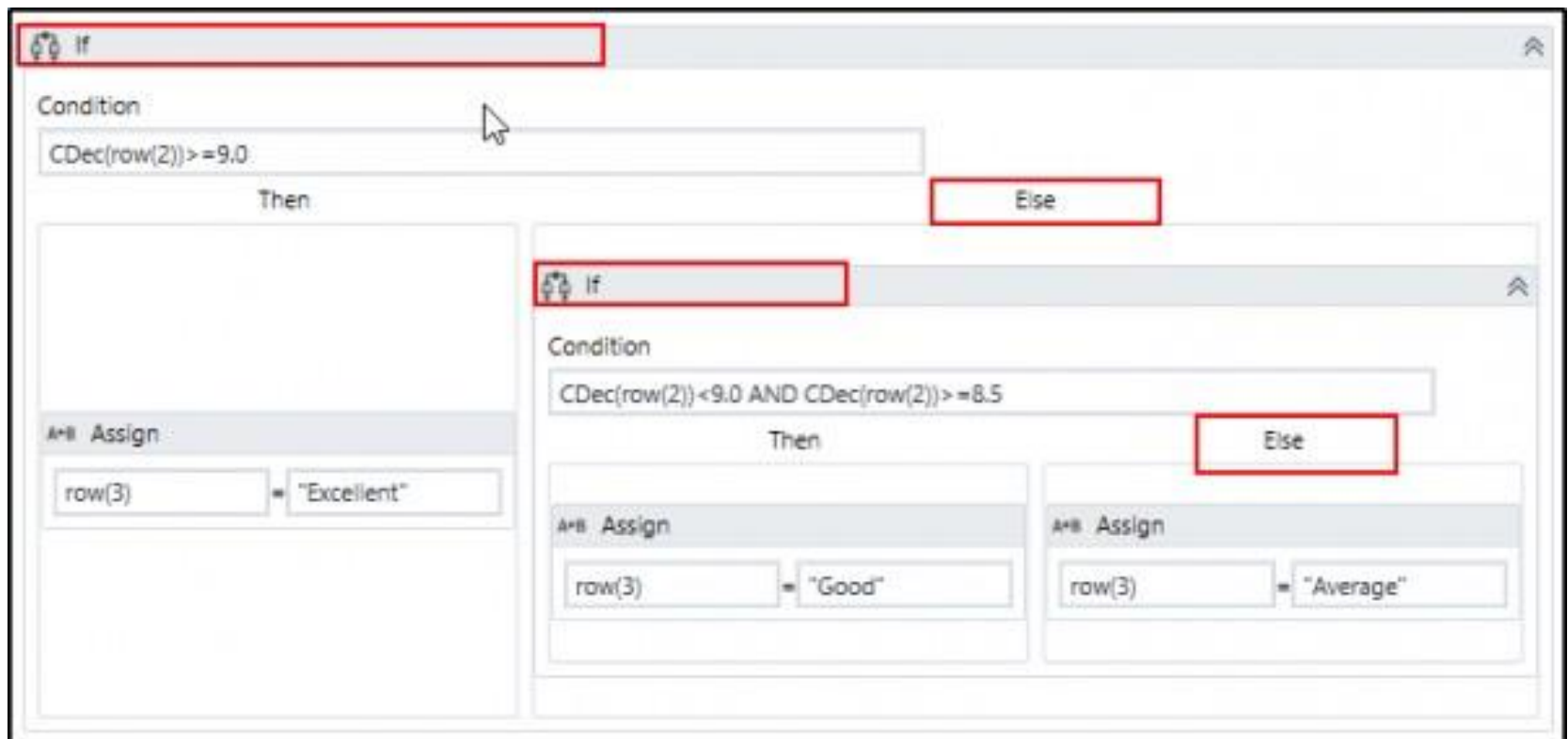
<http://tiny.cc/cs552>
CSE552-RPA

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Decision control-IF

Objective:



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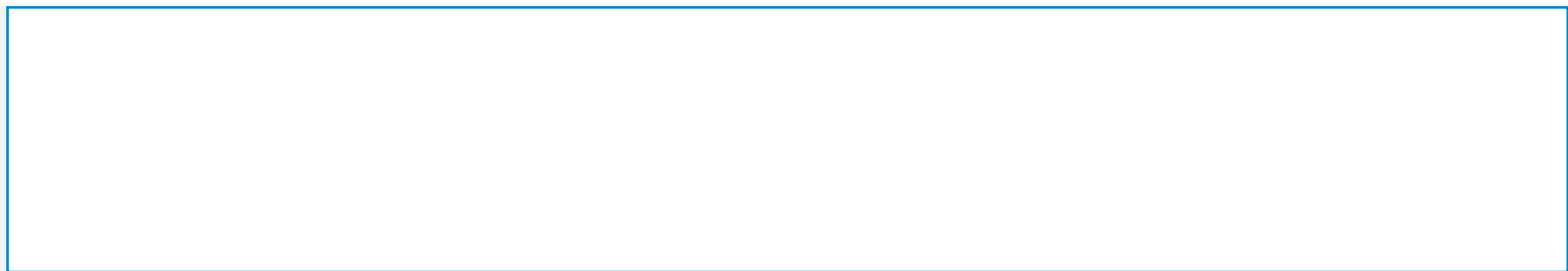
Switch Statement

The **Switch statement** is allowing the **one value out of multiple** values by specified expression

- It processes **only integer argument** values.

These are the types of Switch statement which you can allow in the project development

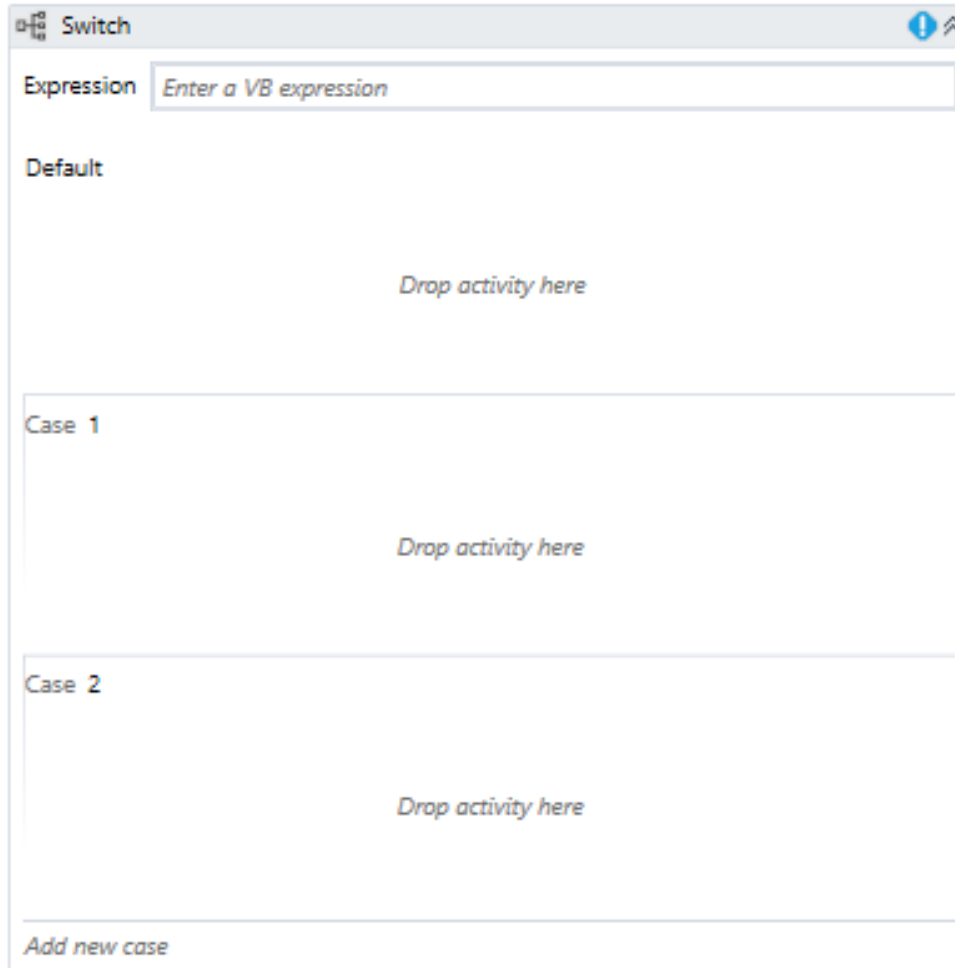
- **Structured** – Only one branch is taken, then the execution continues at the end of the statement;
- **Unstructured** – Cases are treated as well as labels, so all of them can be executed



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Switch Statement



Switch

Expression

Default

Drop activity here

Case 1

Drop activity here

Case 2

Drop activity here

[Add new case](#)

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Switch Statement



If

```
IF V = 'Blue' THEN print 'You must be very  
brave'  
    ELSE (IF V = 'Green' THEN print 'You must  
be very generous'  
        ELSE (IF V= 'Gray' THEN print  
'You must be very wise'  
            ELSE print 'You must be a  
god, because you don't have human eyes'))
```



Switch

SWITCH

```
Case V = 'Blue' print 'You must be very  
brave'  
Case V = 'Green' print 'You must be very  
generous'  
Case V = 'Gray' print 'You must be very wise'  
Default Case print 'You must be a god,  
because you don't have human eyes'
```

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Practice Examples

Objective: To code a Robot in UiPath Studio to automation that asks the user for a number, **checks if is odd or even**, and depending on that, a different **message is written to the Output panel**

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Practice Examples

Objective: To code a Robot in UiPath Studio to "swap two numbers" by using a third variable.

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The Loop Statement

- Loop is a structure that is used to automates repetitive
 - **Count-controlled:** The number of execution of the loop is predefined.
 - **Indefinite Case:** Such a Loop executes for an unlimited number of times.
 - **Conditional:** It contains a validation mechanism and executes when / until a certain condition is met.

The Loop Statement is of two types:

- **Do While:** In the Execution process, this activity runs when the condition is true.
- **While:** In the Execution process, this activity runs when the condition is False.

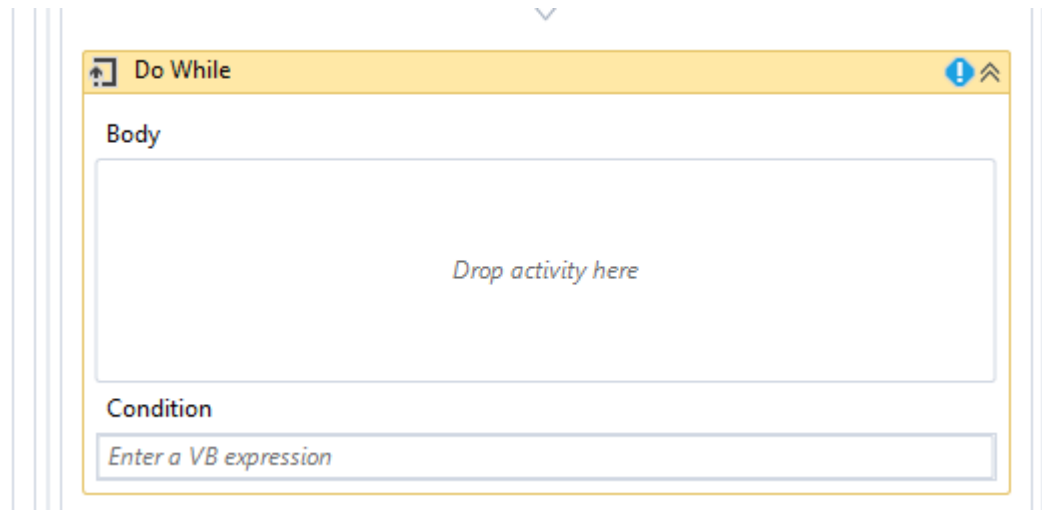
CONTROL FLOW ACTIVITIES



Do While Statement

The Loop Statement is of two types:

- **Do While:** In the Execution process, this activity runs when the condition is true.



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The Do While Example

Objective: Code a Robot in UiPath Studio to display the **sum of two numbers by taking them** as input and display the output in a message box, until one of the input is 0.

Step 1: START

Step 2: Declare a variable 'FirstNumber', 'Sum', 'SecondNumber'

Step 3: Sum = FirstNumber + SecondNumber

Step 4: Do While FirstNumber > 0 OR SecondNumber > 0

Step 5: STOP

ACTIVITIES

- Sequence" and "Assign" activity.
- ✓ "Comment" and "Annotation".
- ✓ "Do While" activity and how to set conditions.
- ✓ "Input Dialog" activity and how to set variables in a code using "Variable" panel.
- ✓ Display output in "Message Box".

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The While Example

Objective: To code a Robot in UiPath Studio to generate a series of natural numbers from 1 to 100

Step 1: START

Step 2: Declare a variable 'Number' and set Default Value as 0

Step 3: While 'Number' < 100

Step 4: Number = Number + 1

Step 5: STOP

ACTIVITIES

- “Sequence” and “Assign” activity.
- ✓ “Comment” and “Annotation”.
- ✓ “While” activity and how to set conditions.
- ✓ “Input Dialog” activity and how to set variables in a code using “Variable” panel.
- ✓ Display output in “Message Box”.

CONTROL FLOW ACTIVITIES



The Loop Example

Objective: Code a Robot in UiPath Studio for creating a 'Guessing Game' with the following conditions

1. Generate a random number and prompt the user to input a number.
2. In case of a wrong input a message is displayed to the user stating 'Please enter a lesser/greater number'
3. The loop keeps on running until the input number equals the entered number.

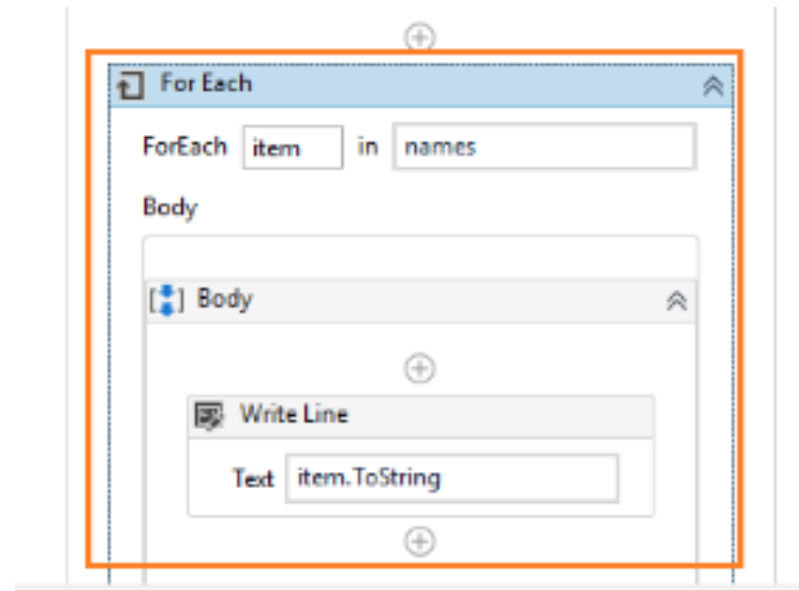
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For Each Activity

The **For Each** statement performs an activity or a series of activities on each element of a collection.

- The **Break** statement is used mandatorily to interrupt the **For Each** statement
- **Use:** This may come in useful when the same actions need to be performed on the elements from a list – user-generated data or from other sources



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The For Example

Objective: To code a Robot in UiPath Studio to print sum of array elements

Step 1: START

Step 2: Declare a array variable 'Number' and

Step 3: for each elements

sum=sum+row;

Step 4: display sum

Step 5: STOP

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The Break Statement

The Break statement allows you to break an activity on the chosen or starting point and enables the process to continue in the next activity.

- **Condition:** It exits each activity and continues the workflow process activity.
- **Switch or Loop statement:** Break statement used for loop **termination and transfer the statement** in the "Switch or Loop statement".
- **Use:** It is used in relation with a Loop, to interrupt it and continue the execution outside it

CONTROL FLOW ACTIVITIES



The Delay ACTIVITIE

Delay

The Delay statement pauses an automation for a period of time.

What it can be used for?

- **Machine Latency:** Delay is used to solve this issue which lead to error.

What are its types?

- **Static Delay:** A pause which is fixed and has a tendency of failure.
- **Dynamic Delay:** Advanced form of static delay in which the conditions regulate the wait or pause time.

