PRACTICAL JOURNAL

in

ROBOTIC PROCESS AUTOMATION

Submitted to

Laxman Devram Sonawane College, Kalyan (W) 421301

in partial fulfilment for the award of the degree of

Master of Science in Information Technology

(Affiliated to Mumbai University)

Submitted by

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The Kalyan Wholesale Merchants Education Society's

Laxman Devram Sonawane College,

Kalyan (W) 421301

Department of Information Technology
Masters of Science – Part II

Certificate

This is to certify that **Mr. Karan Mahesh Katudiya**, Seat number_____, studying in Masters of Science in Information Technology Part II, Semester IV has satisfactorily completed the practical of "**ROBOTIC PROCESS AUTOMATION**" as prescribed by University of Mumbai, during the academic year 2024-25.

Subject In-charge	Coordinator In-charge	ExternalExaminer

College Seal

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Practical : 1 Sequences and Flowcharts :

a. Create a simple sequence-based project.

Code :

Print message hello

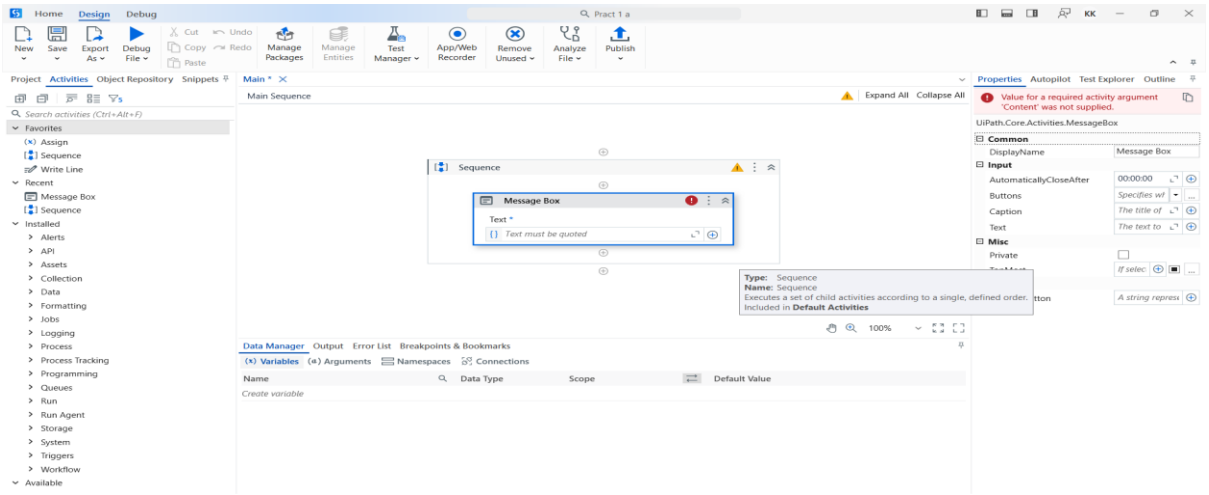
Step 1: Open a UiPath studio.

Step 2: Select blank process and give a name to create a project.

Step 3: Click on open main workflow.

Step 4: In activity panel search sequence and select sequence and drop in main workflow.

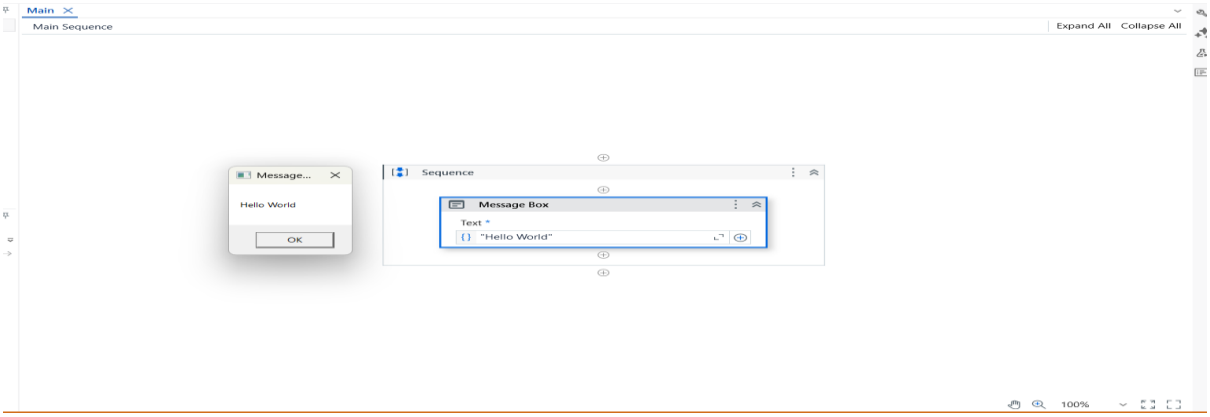
Step 5: Now search for message box and select message box and drop in main workflow.



Step 6: In message box type hello world.

Step 7: click on debug file and select run file.

Output :

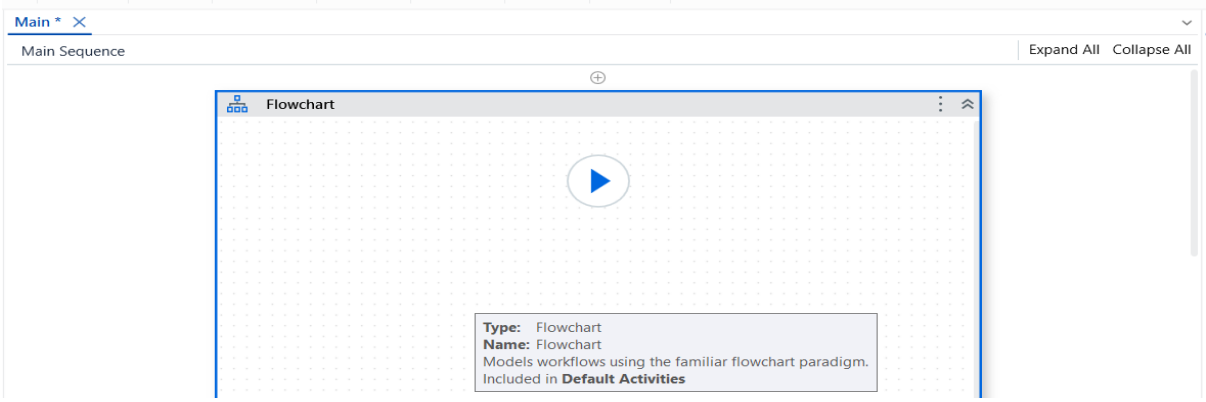


b. Create a flowchart-based project.

Code :

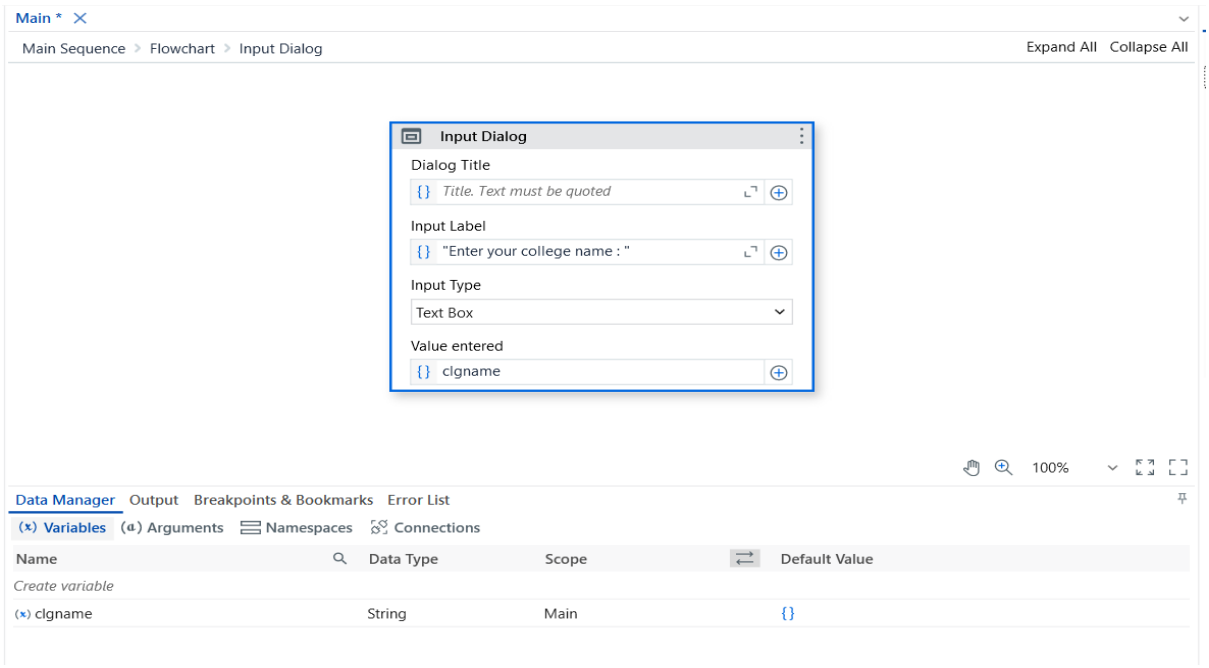
Step 1: Open UiPath studio and click on process give name to your project.

Step 2: Click on Open main workflow. Drag and drop flowchart from activities panel.

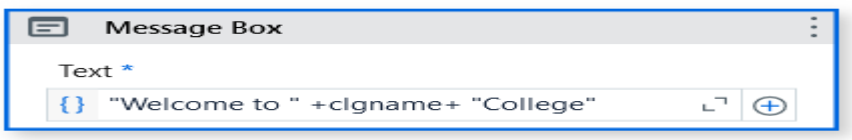


Step 3: Drag and drop input dailog box inside a flowchart.

Step 4: Create a variable “clgname” and give your input label

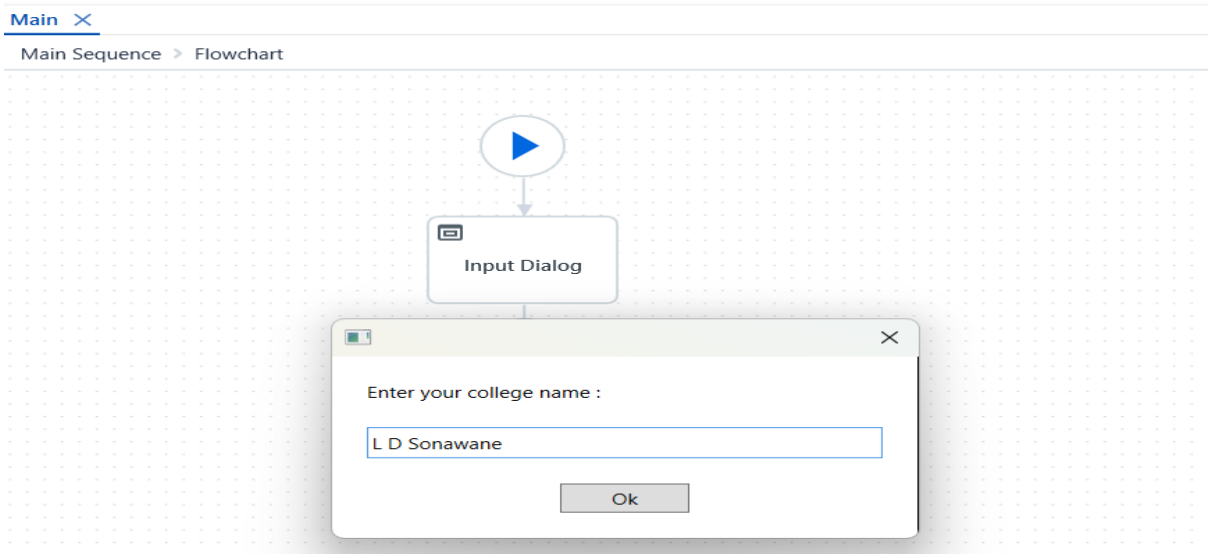


Step 5: Drag and drop a message box below input dialog box and enter your message inside message box.

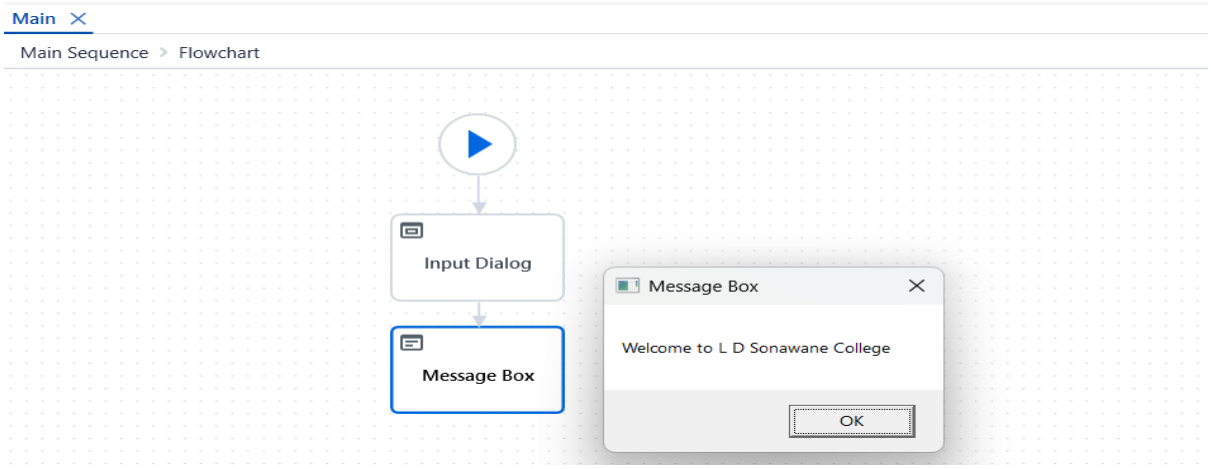


Step 6: Click on debug file and select run file.

Output :



Actual Output :



c. Automate UiPath Number Calculation (Addition,Subtraction, Multiplication, Division of numbers).

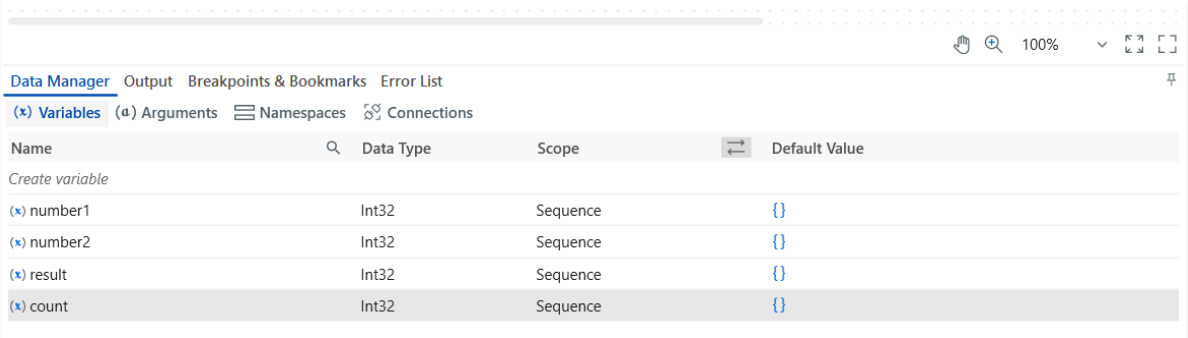
Code:

Step 1: Open UiPath studio select process and give name to your project and click on create.

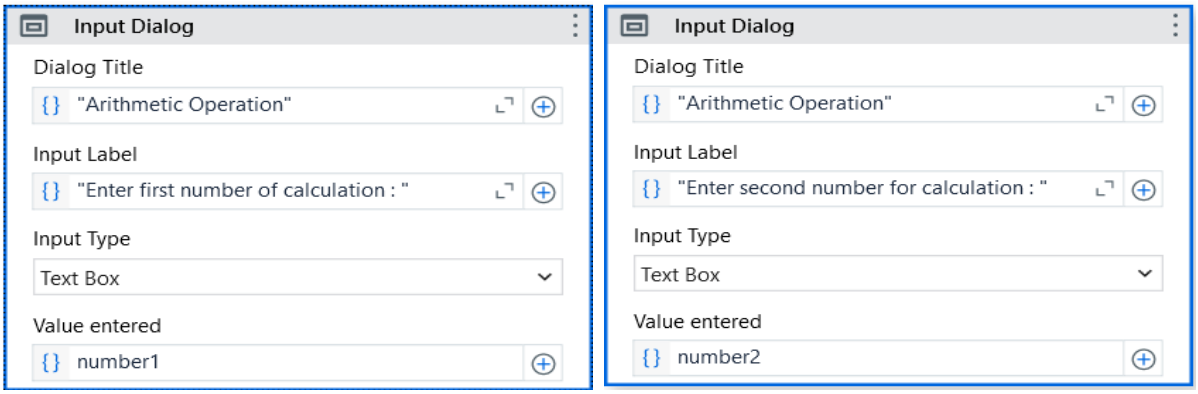
Step 2: Click on open main workflow

Step 3: go to activities and select sequence drag and drop.

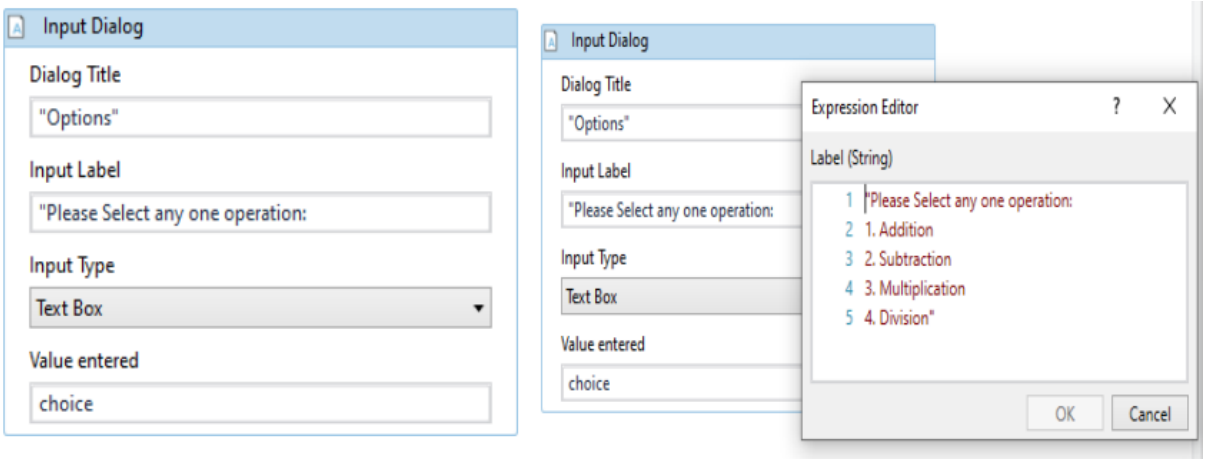
Step 4: Create 4 integer variable.



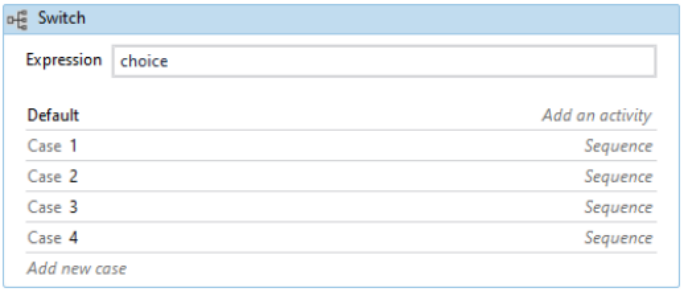
Step 5: Select 2 input dialogs from the activities drag and drop. Enter the values in dialog box.



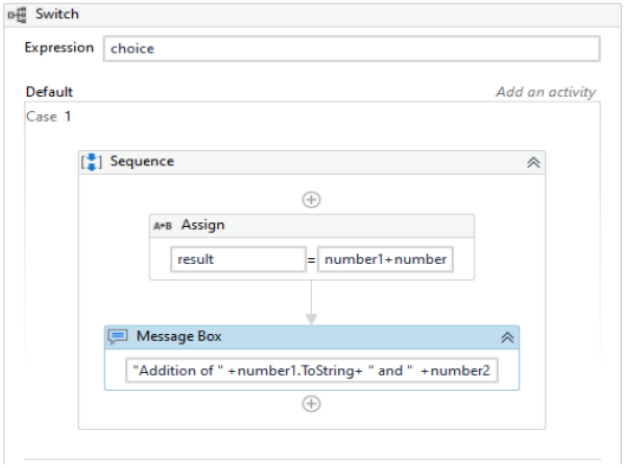
Step 6 : Select another dialog box for selecting options



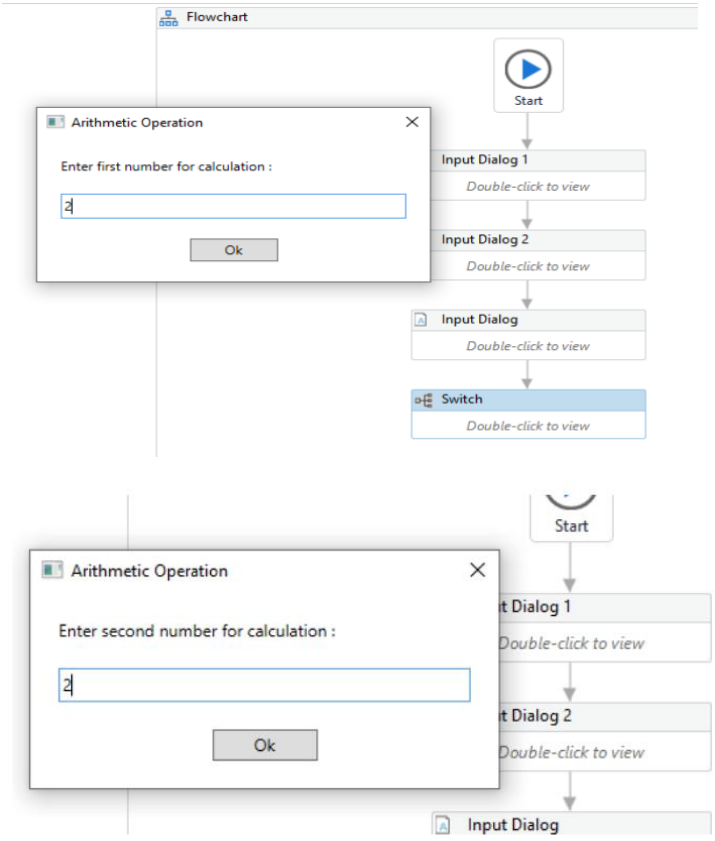
Step 7: Select switch activity and assign each case, required condition

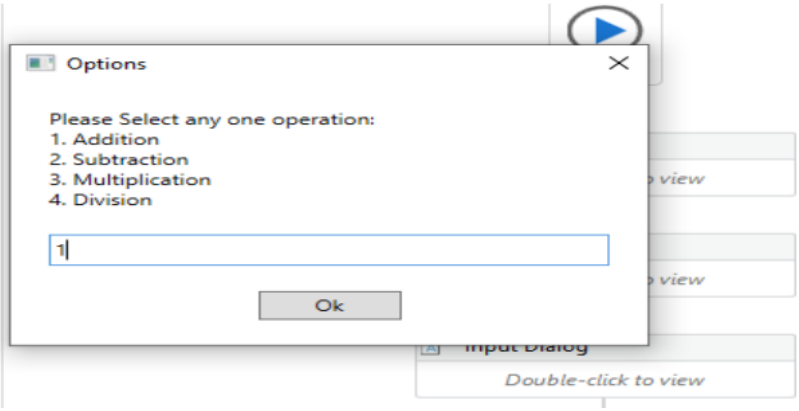


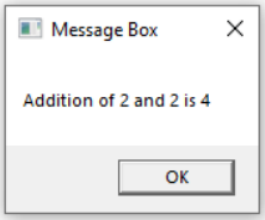
Step 8: Repeat the same step as below for all the case.



Step 9: Click on debug file and click on run file:




Options
Please Select any one operation:
1. Addition
2. Subtraction
3. Multiplication
4. Division
1
Ok
Double-click to view


Message Box
Addition of 2 and 2 is 4
OK

d. Create an automation UiPath project using different types of variables (number, datetime, Boolean, generic, array, data table)

Code :

Step 1: Create a blank project and give it a meaningful name.

Step 2: Drag and drop the Sequence activity and give it a name.

Step 3: Create two variables named variable1 and variable2 of int32.

Step 4: Create another variable named Result of int32.

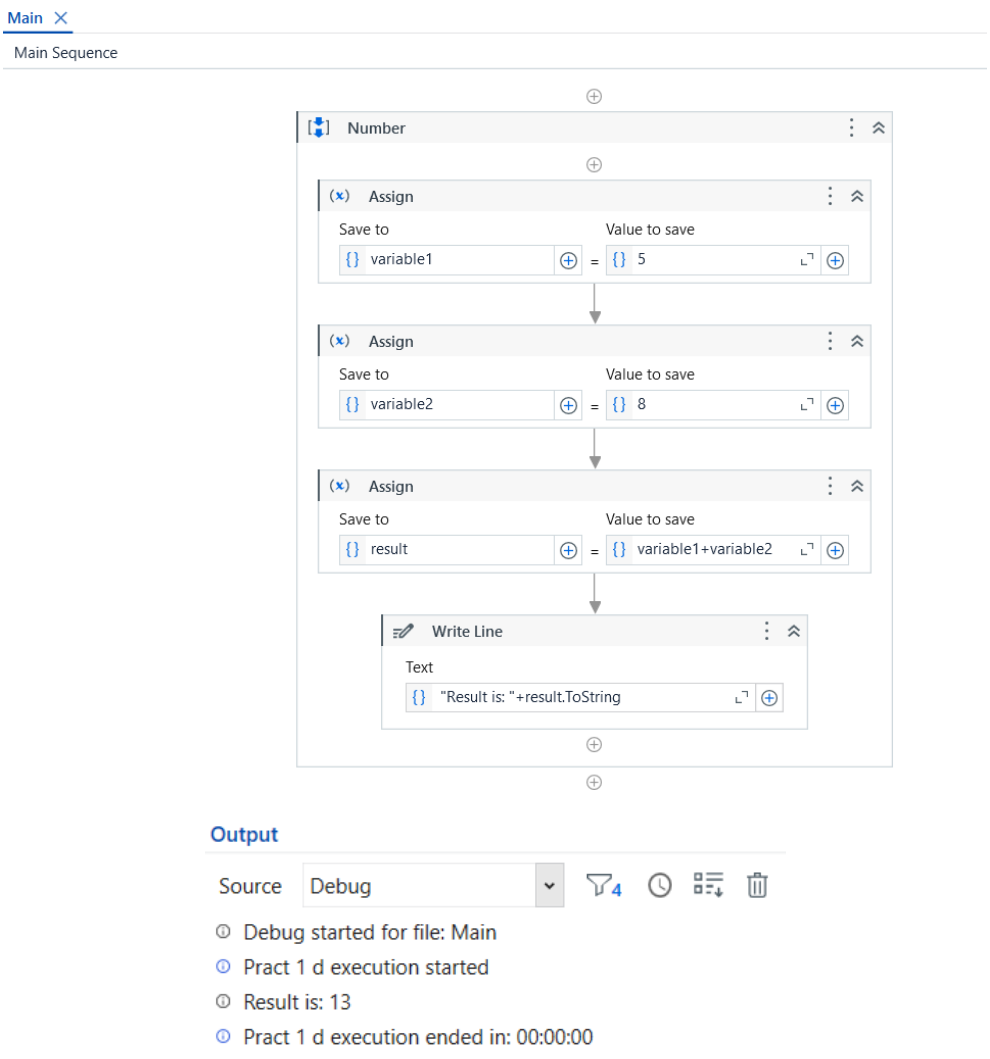
Step 5: Select the Assign activity and assign the variable1 as “5”.

Step 6: Select the Assign activity and assign the variable2 as “10”.

Step 7: Select the Assign activity and assign the Result as “variable1+variable2”.

Step 8: Select the Write Line activity and print the Result value.

Step 9: Run.



String:

Step 1: Create a blank project and give it a meaningful name.

Step 2: Drag and drop the Sequence activity and give it a name.

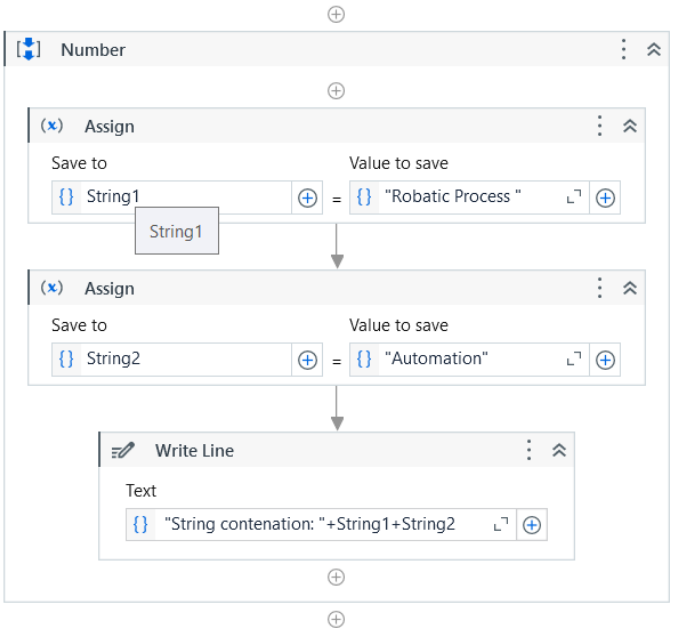
Step 3: Create two variables named String1 and String2 of String.

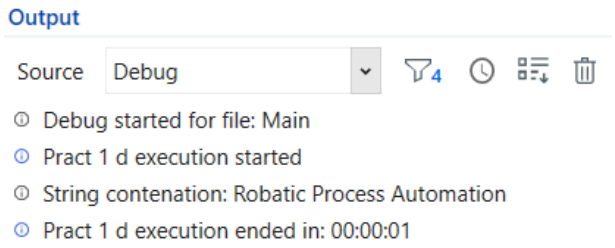
Step 4: Select the Assign activity and assign the String1 as “Robotic Process”.

Step 5: Select the Assign activity and assign the String2 as “Automation”.

Step 6: Select the Write Line activity and perform the concatenation method in it.

Step 7: Run.





DateTime:

Step 1: Create a blank project and give it a meaningful name.

Step 2: Drag and drop the Sequence activity and give it a name.

Step 3: Create a variables named Date1 of String.

Step 4: Select Assign activity and assign “Now.ToString” to the variable Date1.

Step 5: Select Write Line activity and Print the above.

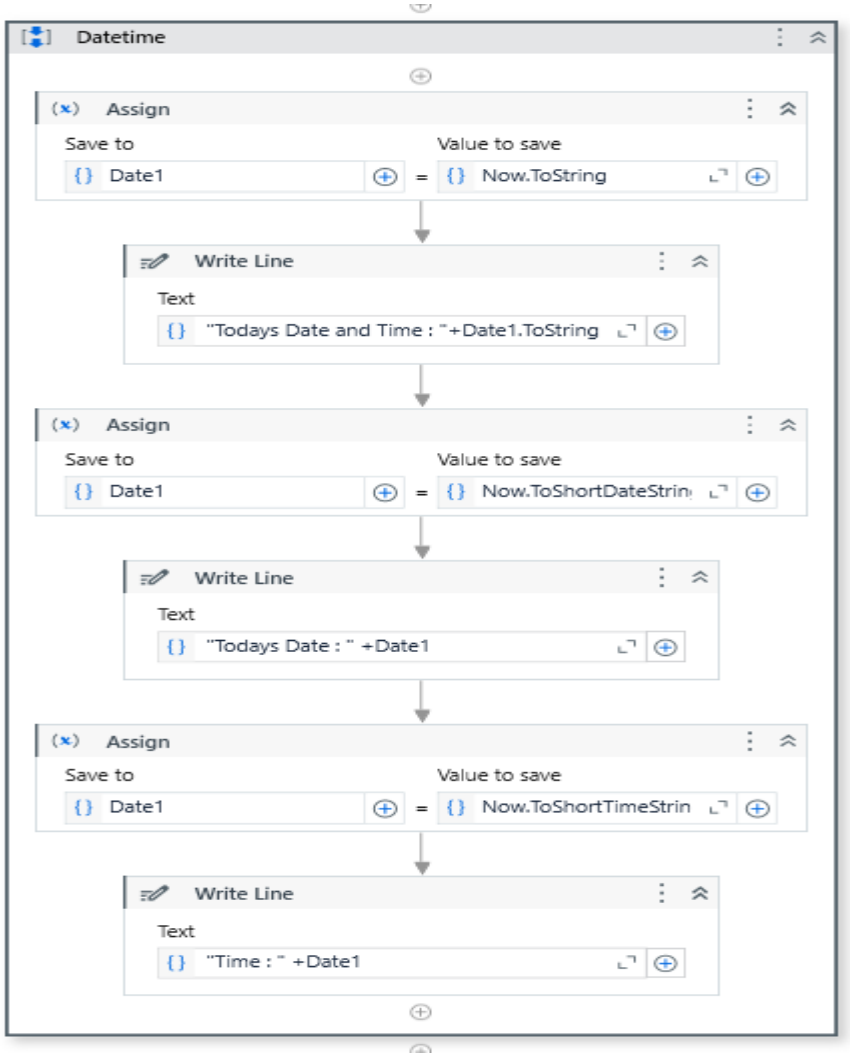
Step 6: Select Assign activity and assign “Now.ToShortDateString” to the variable Date1.

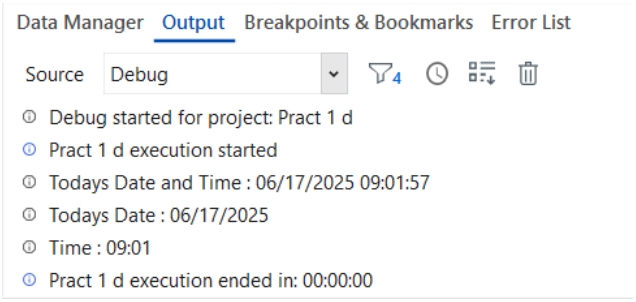
Step 7: Select Write Line activity and Print the above.

Step 8: Select Assign activity and assign “Now.ToShortTimeString” to the variable Date1.

Step 9: Select Write Line activity and Print the above.

Step 10: Run.





Practical 2 : Decision making and looping

a. **Consider an array of names. We have to find out how many of them start with the letter "a". Create an automation where the number of names starting with "a" is counted and the result is displayed.**

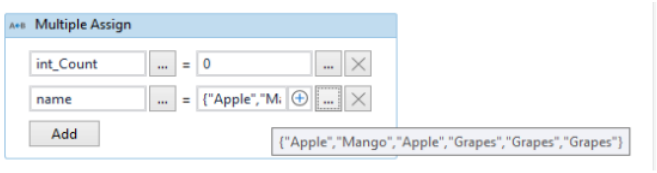
Code :

Step 1: Open uipath studio and give name to your project.

Step 2: Click on open main workflow. click on new and select sequence.

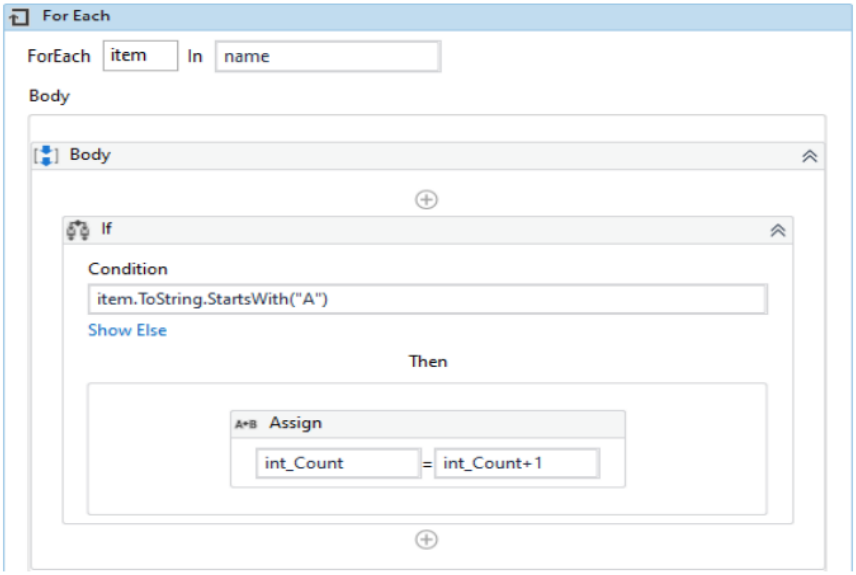
Step 3 : Select a flowchart and drag and drop multiple assign activity in it.

Step 4: Create 2 variables. One for storing the array of names and other for counting the number of names in array.



Step 5: Drag and drop for each activity

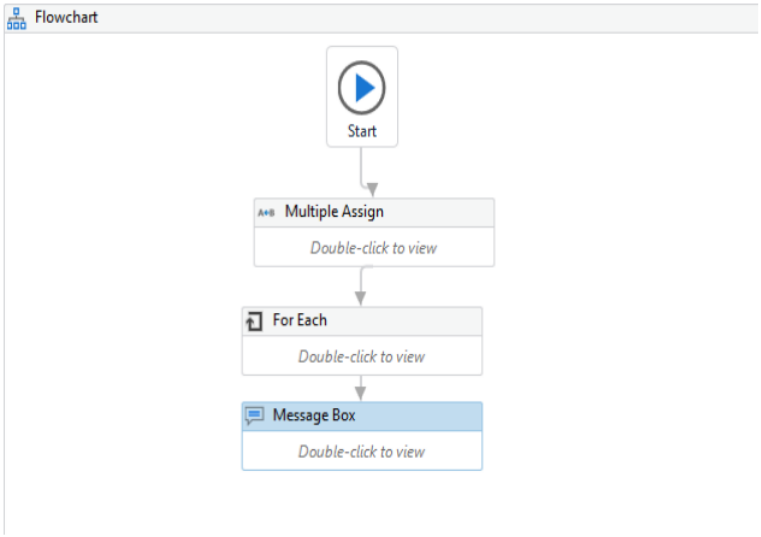
Step 6: Inside the body section of for each activity, drag and drop if activity and give the condition for counting the number of occurrence of character ‘a’.



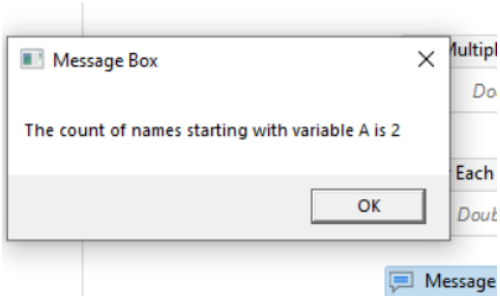
Step 7: Drag and drop a message box below for each activity. Enter the value to be displayed in the message box.

Output:

Flow of Activity



Result



b. Demonstrate switch statement with an example

The Switch activity The Switch activity can be used to make a choice. When we have various options available and want to execute one option, we frequently use the Switch activity. By default, the Switch activity takes an integer argument. If we want to take a desired argument, then we can change it from the Properties panel, from the TypeArgument list. The Switch activity is very useful in the categorization of data according to one's own choice.

Perform the following steps:

1. Add a Sequence activity.

2. Add an Input dialog activity inside the Sequence.

3. Now, create an integer type variable L.

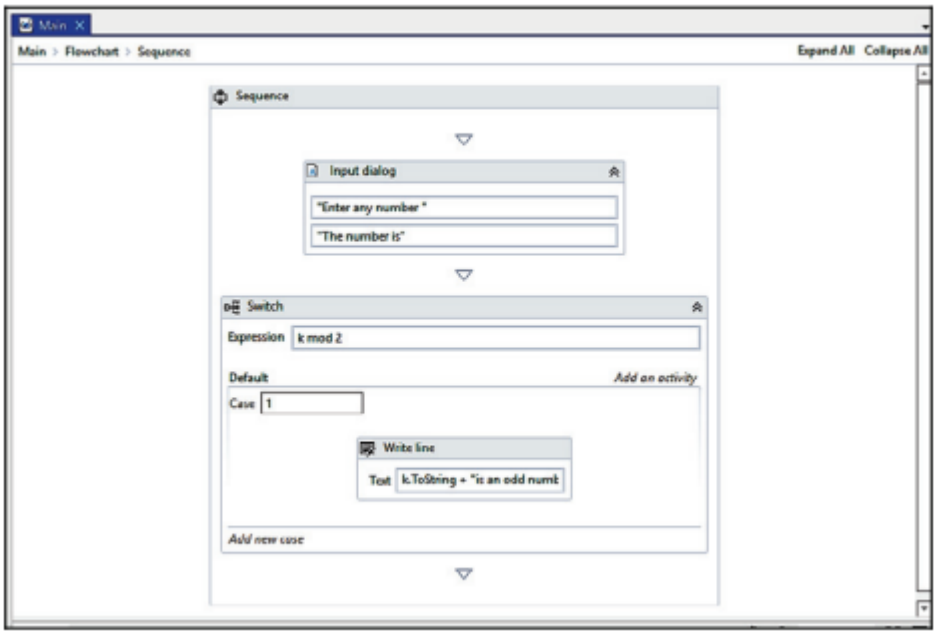
4. Specify the newly created variable's name in the Result property inside the Properties panel.

5. Add the Switch activity under the Input dialog activity.

6. In the Expression field, set LNPE to check whether the number is divisible by 2 or not.

7. Add a Write line activity to the Default section and type the L5P4USJOH JTBOFWFOOVNCFS in the text field.

8. Now, create Case 1, add the one other Write line activity to it, and type L5P4USJOH ——— JTBOPEEOVNCFS——————————————————————— in the text field:



e. Create an automation using Delay Activity between two writeline activities to separate their execution by 5 seconds

To better understand how the Delay activity works, let us see an example of an automation that writes two messages to the Output panel with a delay of 50 seconds.

Perform the following steps:

1. First, create a new Flowchart.

2. Add a Write line activity from the Activities panel and connect it to the Start node.

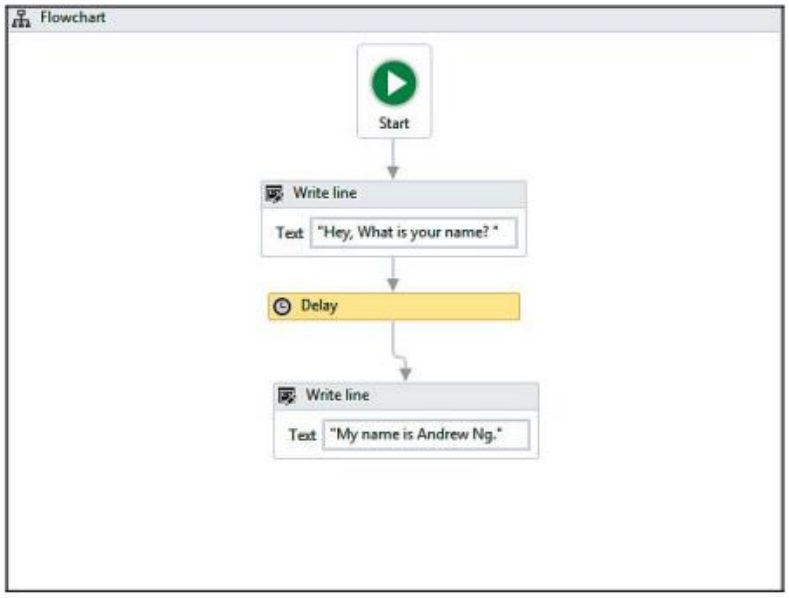
3. Select the Write line activity. Now, type the following text into the Text box:

“Hey, what is your name?”

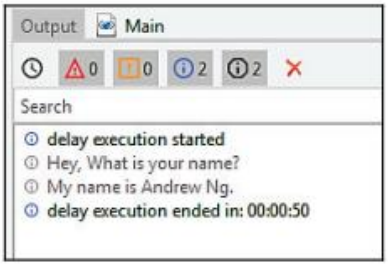
4. Next, add a Delay activity and connect it to the Write line activity.

5. Select the Delay activity and go to the Properties panel. In the Duration field, set 00:00:50. This is a 50-second delay between the two logged messages.

6. Take another Write line activity and connect it to the Delay activity. In the Text field, write “My name is Andrew Ng”:



7. After clicking on the Run button, the Output panel shows the message that delays it by 50 seconds:



f. Create an automation to demonstrate use of decision statements (if)

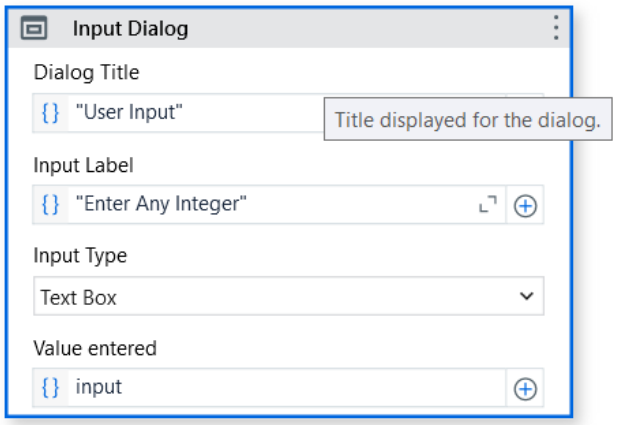
If-else Activity

Step 1: Create a blank project and give it a name.

Step 2: Drag and drop the Flowchart activity and give it a name.

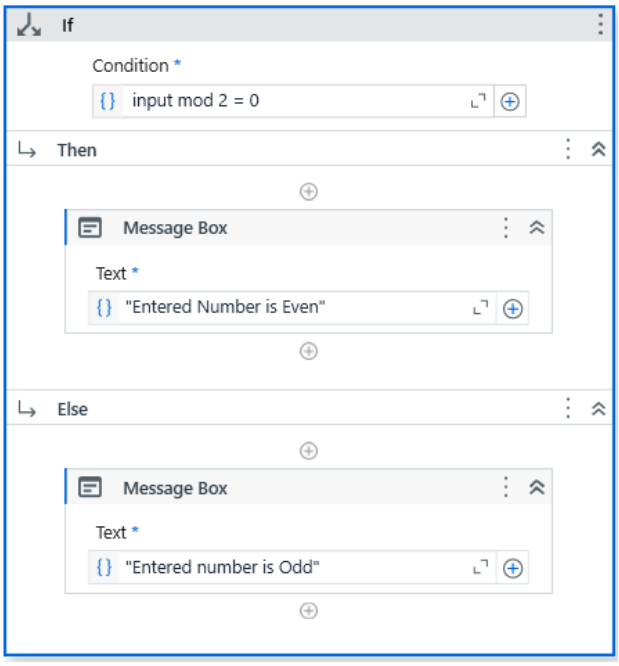
Step 3: Create a variable name for storing user input.

Step 4: Drag and drop input dialog box.



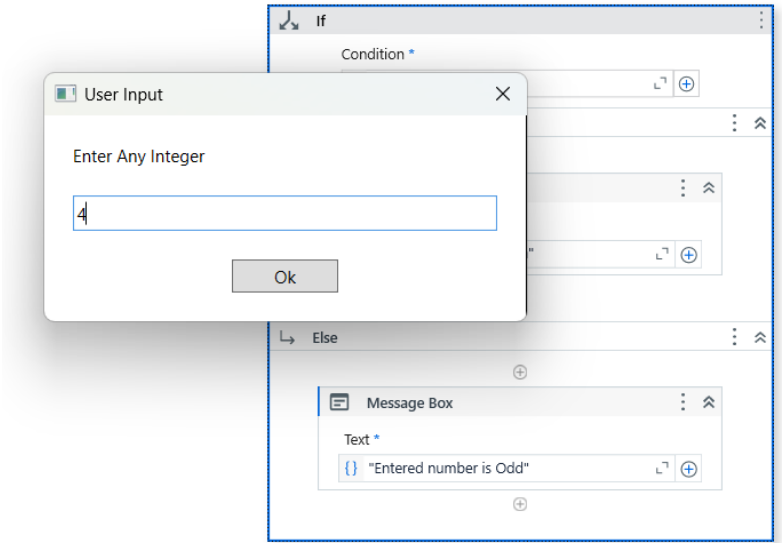
Step 5: Drag and drop if activity and give the condition.

Step 6: Drag and drop message box inside if activity for displaying the output.

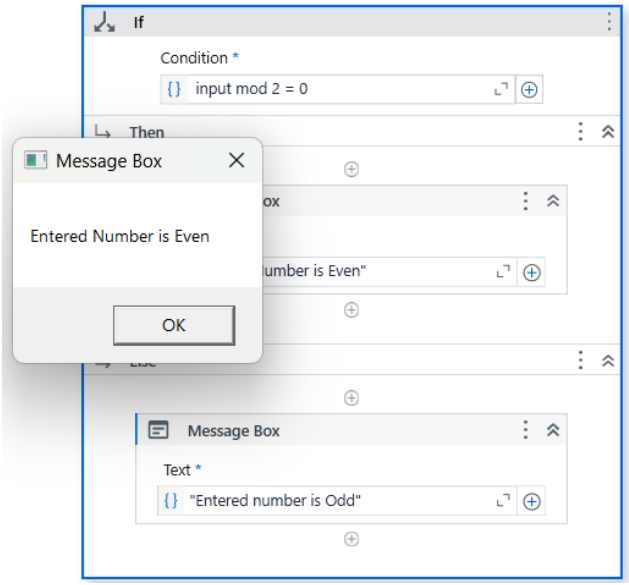


Step 8: Run.

Output:



Result of activity:

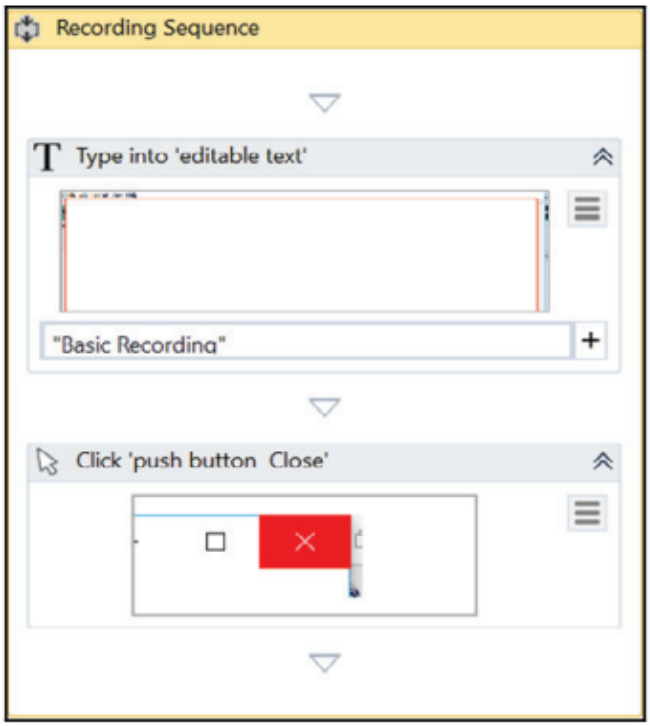


Practical 3 : Types of Recording:

a. Basic Recording using Toolbar

This is used to record the actions of applications that have a single window. Basic Recording uses a full Selector. It works better for applications performing a single action. It is not suitable for applications with multiple windows.

There are two types of selectors, partial selectors and full selectors. A Full selector has all the attribute to recognize a control or application. The Basic recording uses full selectors

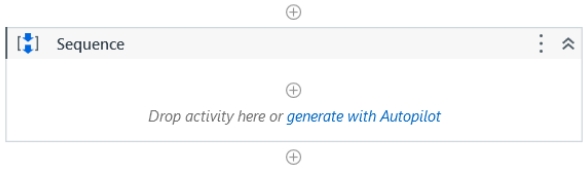


Please note that, in the preceding image that there are different activities but those activities are not wrapped inside containers, it is generated by Basic recorder. Basic recording generates different activities and places them directly in the sequence with full selector. You have already seen how to automate tasks using the Basic recorder; now, let us cover other recorders.

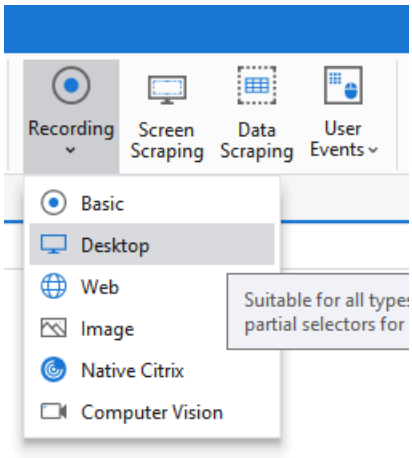
b. Basic Recording using Notepad

Steps:

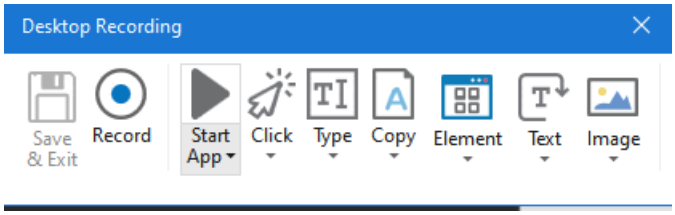
1. Create a new Blank Project and give it an appropriate name. Drag a Sequence activity from Activity tab.



2.Select Desktop Recording under Recording.



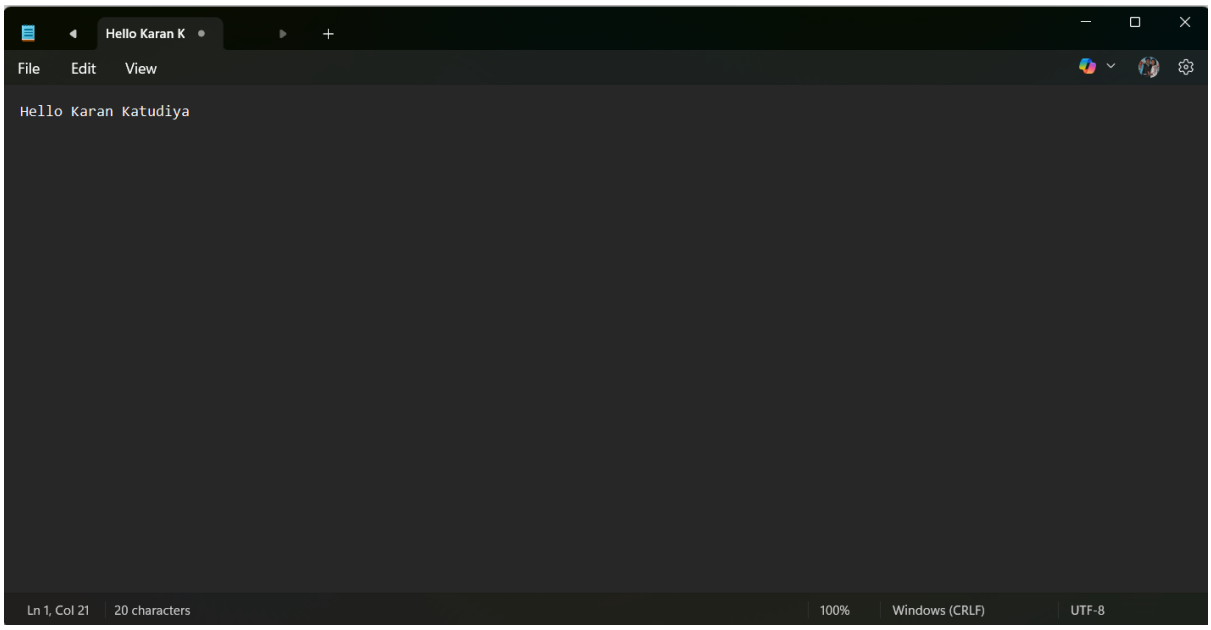
3. Open a new notepad, then on desktop recording click on open application and select notepad then click ok on the prompt that appears



4. Start recording by clicking on record button in recording panel, then click in the text area of notepad.

5. In the type into prompt enter the text you want to be typed.

Output:

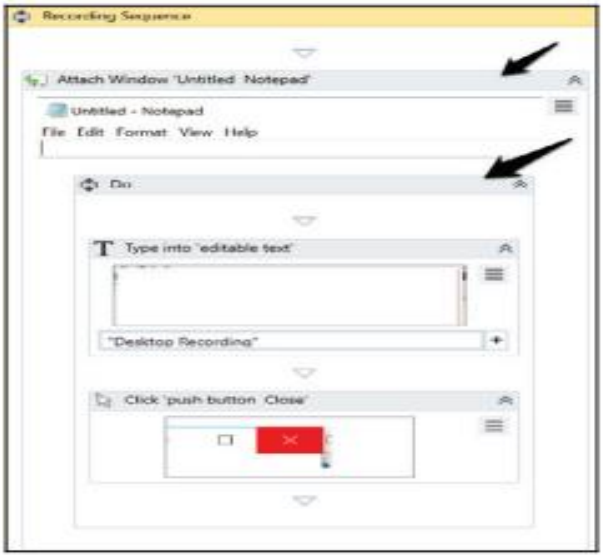


c. Desktop Recording using Tool bar

This is similar to Basic recording with the added advantage of working with multiple actions. It is most suitable for automating Desktop applications. Desktop recorder generates Partial selectors. The Partial selectors, have a hierarchical structure. They are split into parent child views for recognizing the UI element properly.

Please note in the preceding image there is a Attach Window activities and other activities are nested under it. This flow is generated Desktop recorder:

Output:



d. Desktop Recording by creating a workflow

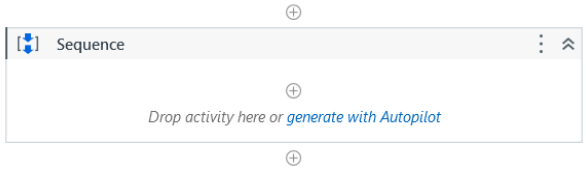
Use "double Ui" and automate stuff (Scrape Text, Input Text, Click Button)

Insert the data from the following excel file.

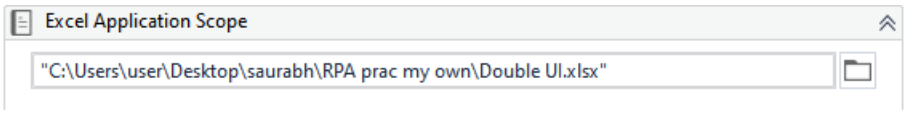
A	B	C	D	E	F	G
Sr no.	Cash In	Check_1	Check_2	Total	Transactic	Status
1	100	200	400			
2	200	300	600			
3	300	400	800			
4	400	500	1000			
5	500	600	1200			
6	600	700	1400			
7	700	800	1600			
8	800	900	1800			

Steps:

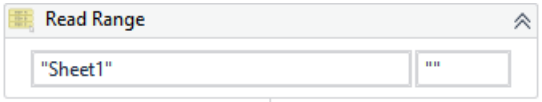
1.Create a new Blank Project and give it an appropriate name. Drag a Sequence activity from Activity tab.

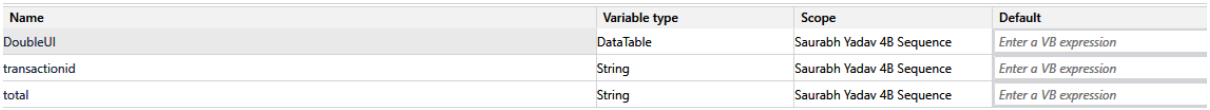


2.Add Excel Application Scope Activity and enter the path of the excel file.



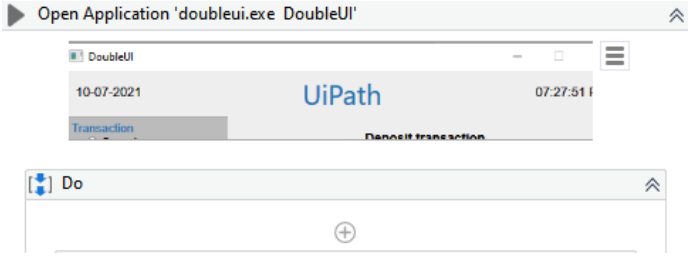
3. Add Read Range and create a DataTable to store the data that will be read by read range.



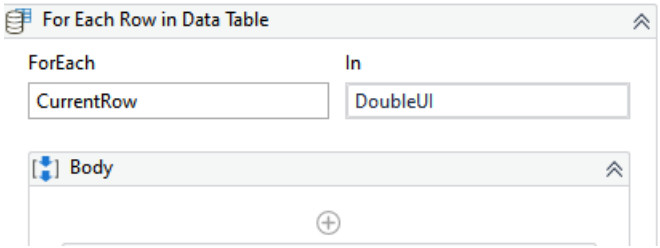


Name	Variable type	Scope	Default
DoubleUI	DataTable	Saurabh Yadav 4B Sequence	Enter a VB expression
transactionid	String	Saurabh Yadav 4B Sequence	Enter a VB expression
total	String	Saurabh Yadav 4B Sequence	Enter a VB expression

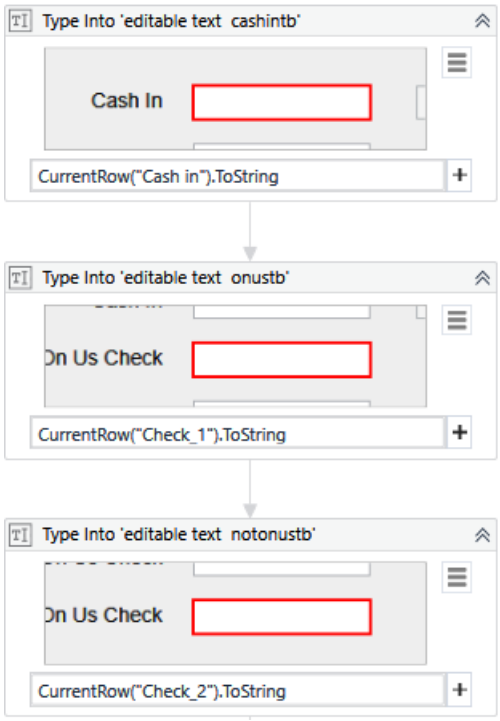
4. Add Open Application activity, start Double UI then click on “Indicate window on screen” option and select Double UI.



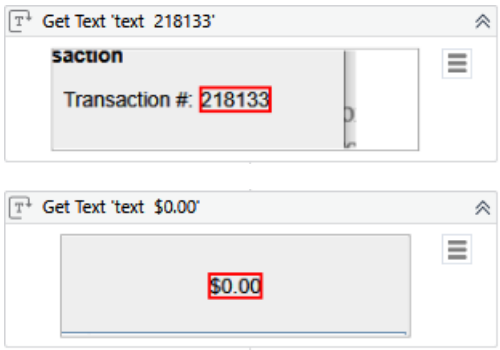
5. Add For each row in DataTable activity and iterate over DoubleUI datatable.



6. Add three type into activity in the for each activity. Indicate to the three textboxes in the Double UI app. Enter the DataTable element you wan to enter in the Text attribute.

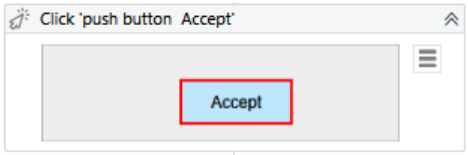


7. Add two get text activities and create two variables to store the transaction is andtotal. Indicate these elements to the Get text activities.

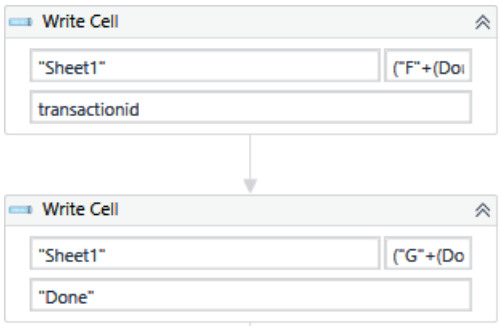


In case of Total remove the name attribute from the Edit Selector.

8. Add Click activity and indicate to Accept Button in Double UI.

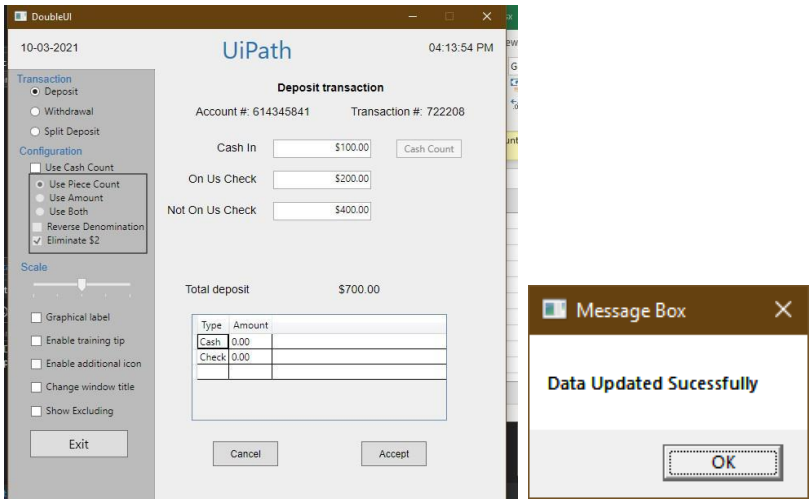


9. Add three Write Cell Activities to enter the transaction id and total and to Update the status column. ("E"+(DoubleUI.Rows.IndexOf(CurrentRow)+2).ToString)



10.Finally add a Message Box to print the success of the updation of Excel file.

Output:

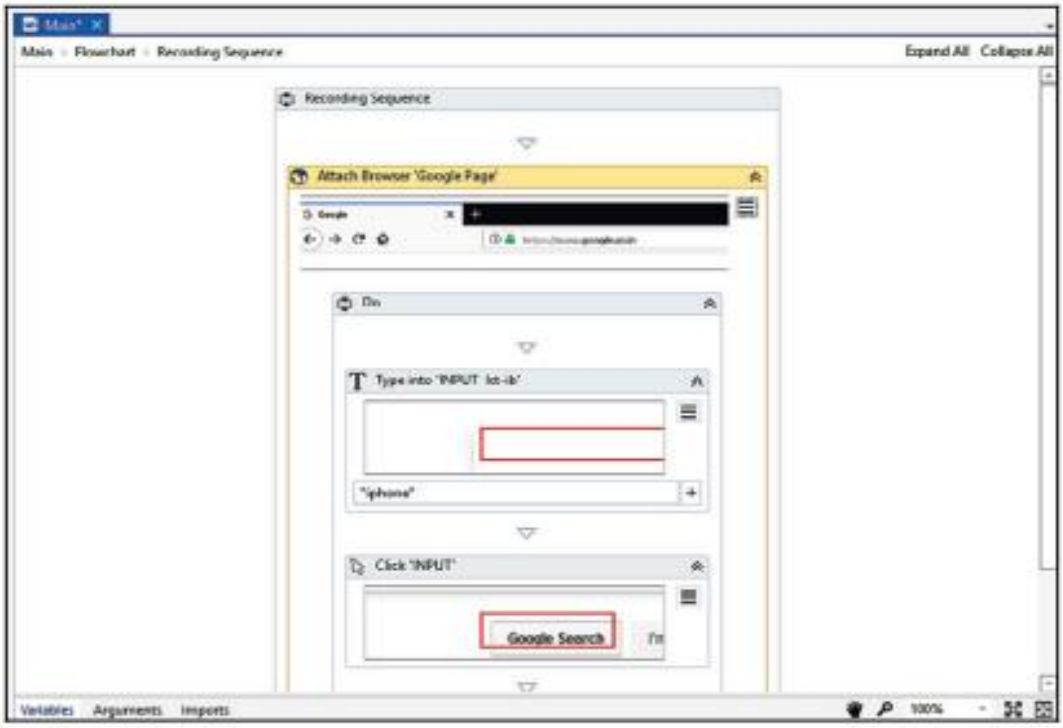


	A	B	C	D	E	F	G
1	Sr no.	Cash In	Check_1	Check_2	Total	Transactic	Status
2	1	100	200	400	700	722208	Done
3	2	200	300	600	1100	722209	Done
4	3	300	400	800	1500	722210	Done
5	4	400	500	1000	1900	722211	Done
6	5	500	600	1200	2300	722212	Done
7	6	600	700	1400	2700	722213	Done
8	7	700	800	1600	3100	722214	Done
9	8	800	900	1800	3500	722215	Done

e. Web Recording e.g. Find the rating of the movie from imdb web site

Web Recording can be done by using the Web recorder. For recording web actions, the UiPath extension for that browser should be installed. Otherwise, you will not able to automate tasks or actions using Web recording. You just have to click on the Setup icon and then click on Setup Extensions. Now, choose your browser and click on it. The UiPath extension will be added to your specified browser. Web Recording is similar to Desktop Recording. You just have to record the actions and save it.

Create a Blank project. Drag and drop a Flowchart activity. Now, click on the Recording icon and choose Web recording. You can record your actions on the web on your own and then save it. In our case, we have opened a web page using Google Chrome and logged in to www.google.com Then, we started the recording by clicking on the Record button of the web recorder. Next, we typed some text in the search bar of Google and performed the Click activity. Then, we pressed the Esc key to exit the recording and clicked on the Save and Exit button. Now, a recording sequence is generated in our Designer panel. Connect this sequence to the Start node. Hit the Run button to see the result. In the following screenshot, you can see the sequence generated by the Web recorder:



Before running the UiPath workflow, make sure you are on the Google homepage.

We have seen Web recording and it is very easy. There is also another option to extract information from websites.

We can easily extract information from websites using data scraping.

Suppose we want to extract data from Amazon's website. Say we want to search for books on Amazon and extract the search results. Extracting data from websites becomes very easy with data scraping:

1. Create a blank project and give it a meaningful name. Click Create.

2. Log on to Amazon's website and search for books. A detailed list of books is listed on your screen:

3. Drag and drop a Flowchart activity on the Designer panel. Now, click on the Data Scraping icon. A window will pop up.

4. Click on the Next button.

5. You have to indicate the first book's entities. Entities can be name, price, author, and so on. It is your choice.

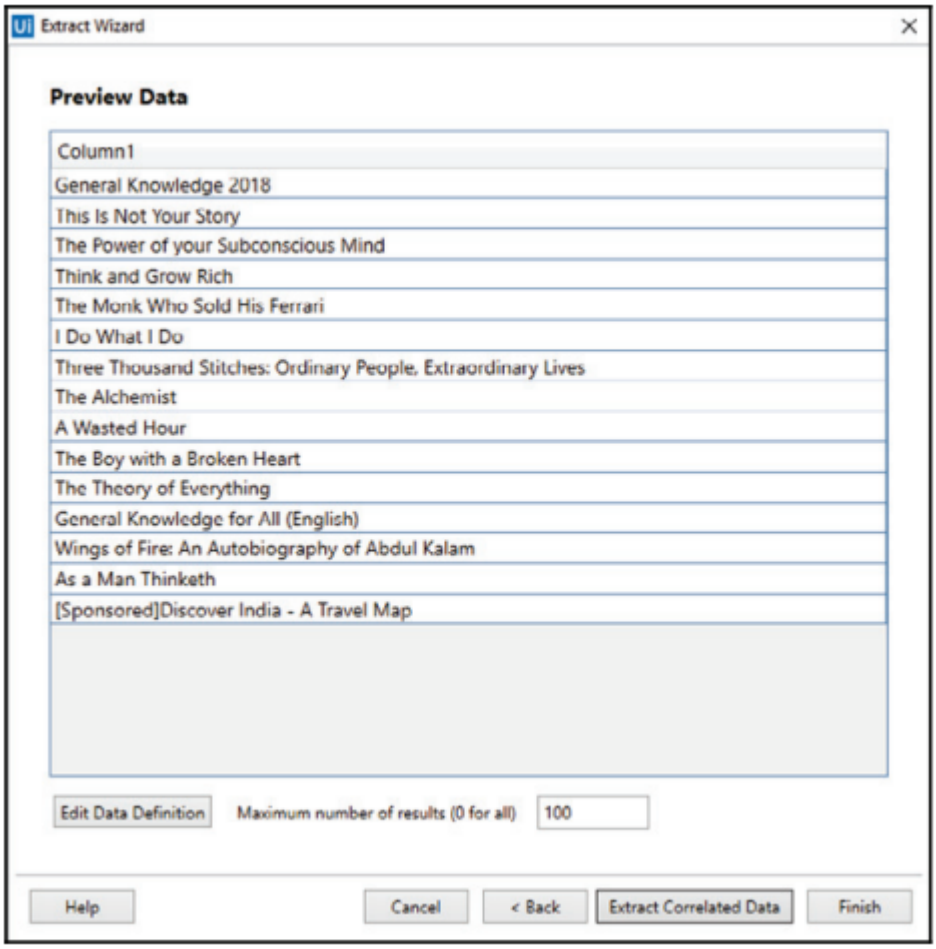
6. Lets's, indicate the book's name. After that, it will ask for the next book's entities. Indicate the second book entity as well. Click on Next.

7. This means you have to indicate the second book's entities: however, the entities will be the same. If you choose name as the first book's entity then you have to be specific and choose name as the second book's entity. You should not choose name as the first book's entity and then choose price as the second book's entity.

8. Again, a window will pop up asking you to configure the columns. You can also extract the URL. If you want to do this, check the Extract URL checkbox.

9. You can specify the column name as well. Click on the Next button.

10. As you can see, all the book names are extracted to a window. If you want to extract more columns or more entities, then click on Extract Correlated Data and you have to again indicate another entity of the book to extract more columns, as we have done previously. After that, all the data will be extracted and will be added to this table. Here, we have one column but if you extract more entities, then more columns will be added to this table:



11. Click on the Finish button. If the results of your query span multiple pages, it will ask you to indicate the page navigation link on the website (Next button of the website that we used to navigate to another/next page). If the results of your query span multiple pages, click on the Yes button and indicate the link, otherwise click on the No button.

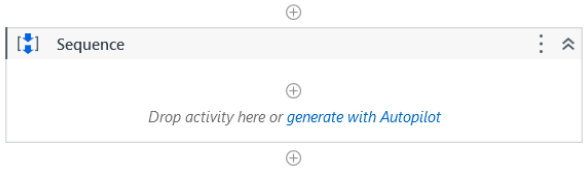
12. We have clicked on the No button. A data scraping sequence is generated in our Flowchart. It will also generate a data table. You can retrieve the information from the data table

f. Web Recording manually

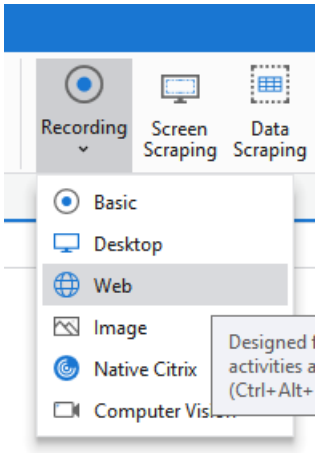
Use "google.com" and automate stuff (Scrape Text, Input Text, Click Button)

Steps:

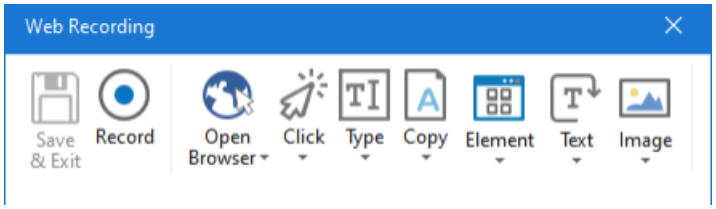
1.Create a new Blank Project and give it an appropriate name. Drag a Sequence activity from Activity tab.



2. Select web recording under the recording option.

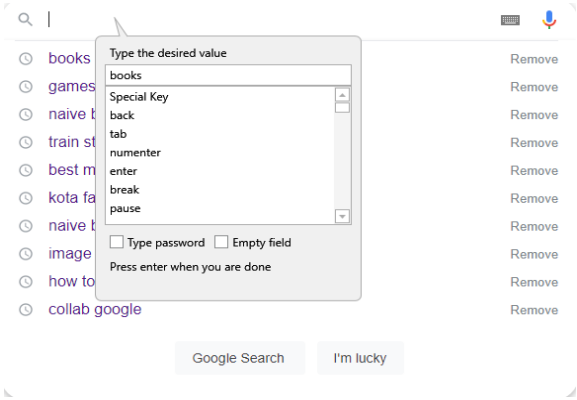


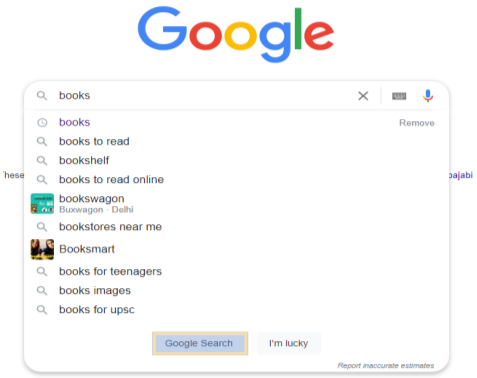
3.Open a Chrome window and from the web recording dialog select open browser and click on the Chrome window.



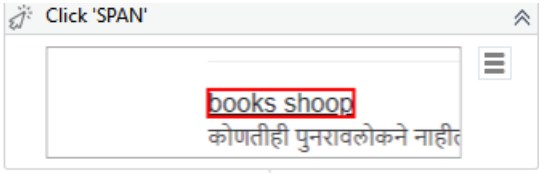
4.In the url dialog enter google.com and press enter.

5. Now start recording by clicking on Record and click on the search button. Type the desired search and click on the Google search button. The press Esc.

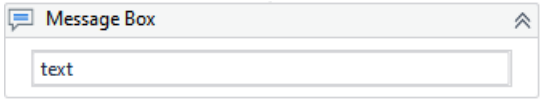


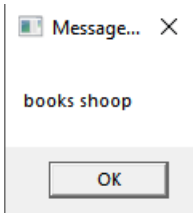


6. Now press save and exit. Add get text activity and select the text you want to scrape.



7.Add message box to print scrapped text.





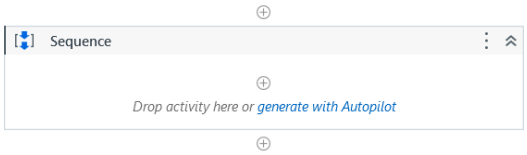
Practical 4 : Excel Automation

a. Automate the process to extract data from an excel file into a data table and vice versa

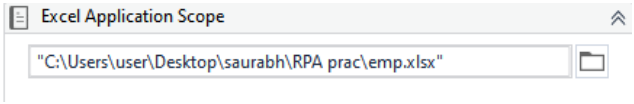
Emp_Id	F_name	L_name	Salary	Expenses	Saving
1001	Saurabh	Yadav	100000	10000	90000
1002	Pankaj	Gavali	200000	20000	180000
1003	Bharat	Bhagat	300000	30000	270000
1004	Virat	Kohli	400000	40000	360000
1005	Mahendra	Dhoni	500000	50000	450000
106	Raju	Pal	60000	1500	58500
107	Mihir	Gandhi	70000	9600	60400

Step:

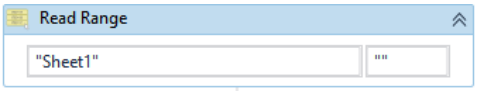
1.Start project with sequence.

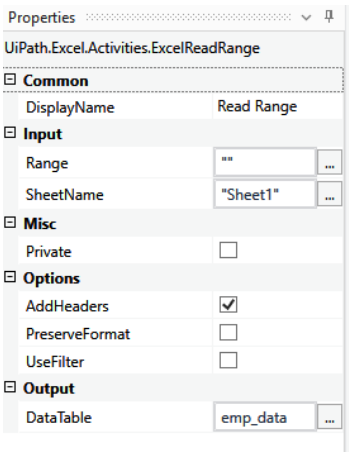


2. Add “Excel Application Scope” and enter the path of excel file

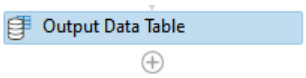


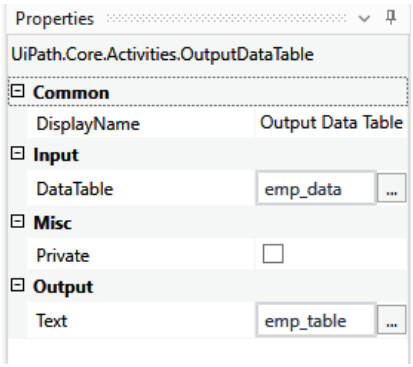
3. Inside body add “Read Range” variable name and datatype as datatable(emp_data) and range to extract data from excel (blank means entire sheet)





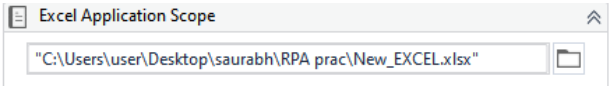
4. Add “Output Data Table” input as “emp_data” output as “emp_table”.



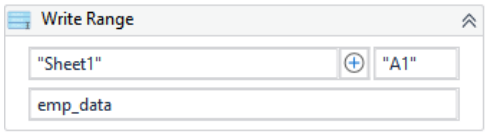


5. “Message Box” to print the result adding variable “emp_table” (here extracted data will be printed).

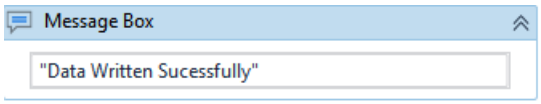
6. Insert “excel application scope” and new excel sheet path



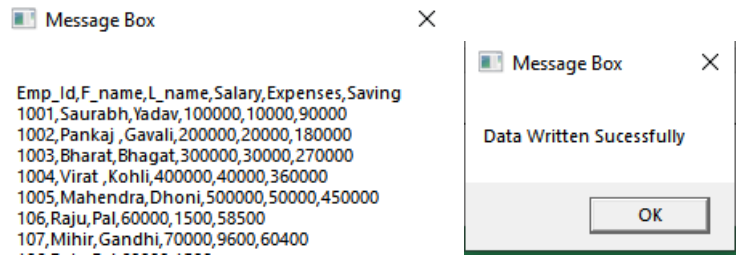
7. Insert “Write Range” range from where the data should be pasted and variable “emp_data”.



8.Message Box to print confirmation.



Output :



	A	B	C	D	E	F	G
1	1001	Saurabh	Yadav	100000	10000	90000	
2	1002	Pankaj	Gavali	200000	20000	180000	
3	1003	Bharat	Bhagat	300000	30000	270000	
4	1004	Virat	Kohli	400000	40000	360000	
5	1005	Mahendra	Dhoni	500000	50000	450000	
6	106	Raju	Pal	60000	1500	58500	
7	107	Mihir	Gandhi	70000	9600	60400	
8	106	Raju	Pal	60000	1500		
9	107	Mihir	Gandhi	70000	9600		
10							

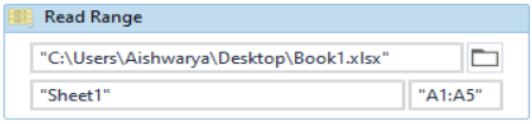
b,c,d . Create an application automating the read, write and append operation on excel file.

c. Read cell:

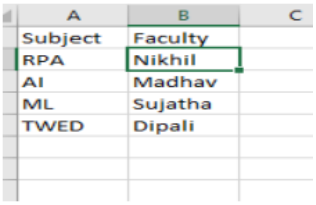
Step 1 : Drag and drop a flowchart activity.

Step 2: Drag and drop read range activity.

Step 3: Specify the path of excel sheet, sheet name as well as the range of cells to read.



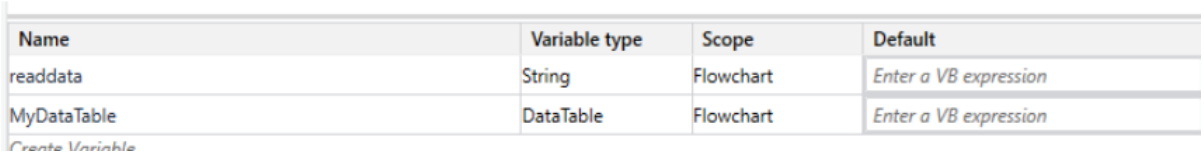
Value in excel:



	A	B	C
	Subject	Faculty	
	RPA	Nikhil	
	AI	Madhav	
	ML	Sujatha	
	TWED	Dipali	

Step 4: Create a variable of type “string” to hold the read data.

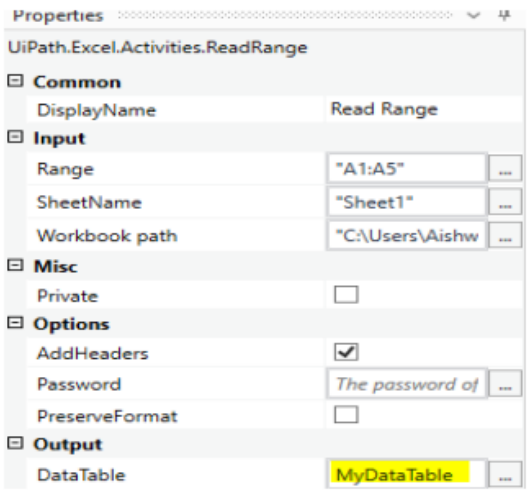
Step 5: Create a datatable variable “MyDataTable” of DataTable type.



Name	Variable type	Scope	Default
readdata	String	Flowchart	*Enter a VB expression*
MyDataTable	DataTable	Flowchart	*Enter a VB expression*

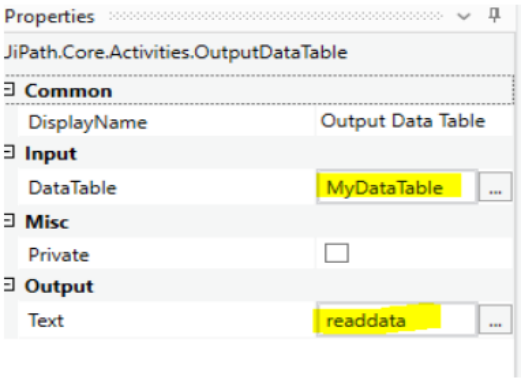
Create Variable

Step 6: Set the output of Read Range activity to MyDataTable



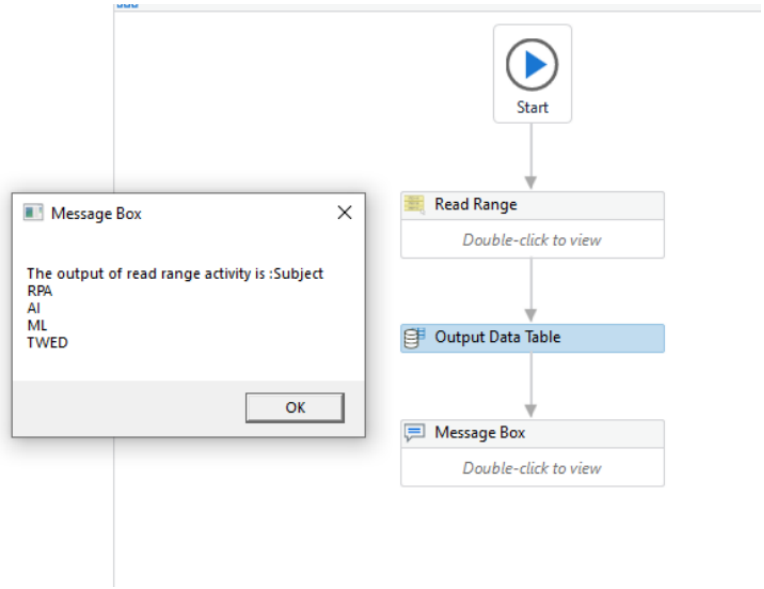
Step 7: Drag and drop Output Data table activity

Step 8: Select the Activity Output Data Table and set its input to “mydatatable” and output to “result”



Step 9: Select Message Box activity and configure it to display the “Result” variable contents.

Step 10: Run the file.



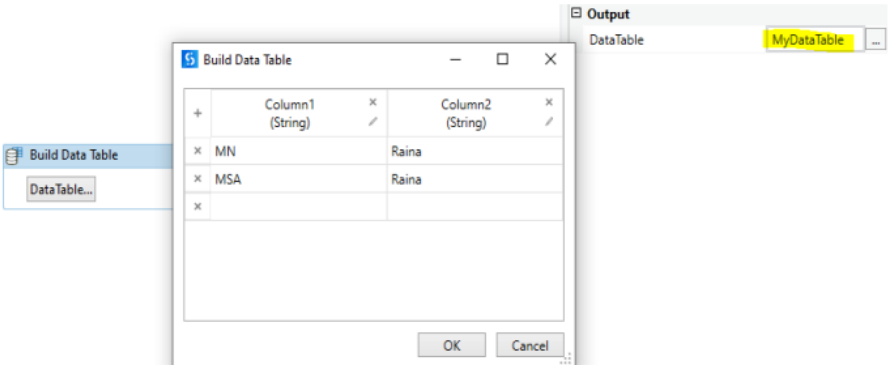
b. Write cell:

Step 1 : Drag and drop a flowchart activity.

Step 2: Select activity “Build Data Table” and enter some data into it

Step 3: Create a data table variable MyDataTable MyDataTable of DataTable type

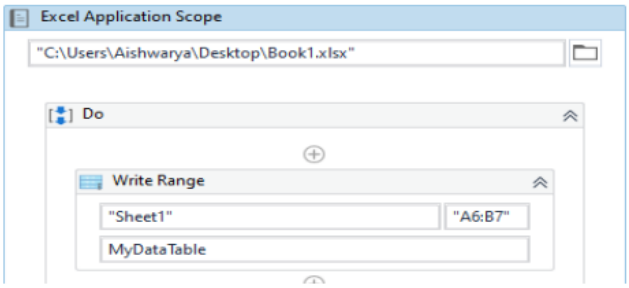
Step 4: Set the output of Build Data Table activity to MyDataTable



Step 5: Select Excel Application Scope .Specify the path of the excel sheet

Step 6: Select Write Range Activity.

Step 7: Specify the sheet name and range of cells to write Step 8: Set the data table value to MyDataTable



Step 9: Run

Output:

A	B
Subject	Faculty
RPA	Nikhil
AI	Madhav
ML	Sujatha
TWED	Dipali
MN	Raina
MSA	Raina

d. Append range:

Step 1 : Drag and drop a flowchart activity.

Step 2: Select activity “Build Data Table” and enter some data into it

Step 3: Create a data table variable MyDataTable MyDataTable of DataTable type

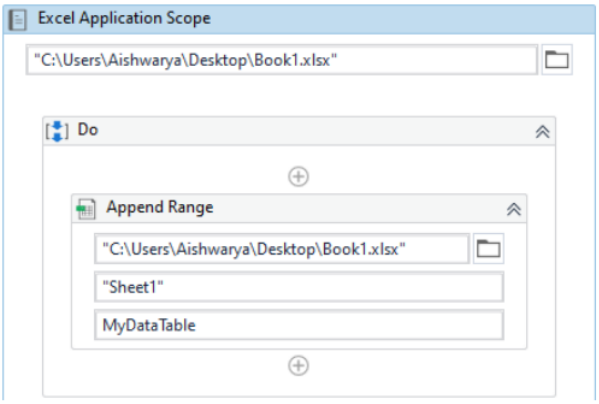
Step 4: Set the output of Build Data Table activity to MyDataTable

Step 5: Select Excel Application Scope .Specify the path of the excel sheet

Step 6: Select Append Range Activity.

Step 7: Specify the sheet name and range of cells to write

Step 8: Set the data table value to MyDataTable



Step 9: Run

Output:

A	B
Subject	Faculty
RPA	Nikhil
AI	Madhav
ML	Sujatha
TWED	Dipali
MN	Raina
MSA	Raina
MN	Raina
MSA	Raina

Practical 5 : Different controls in UiPath

a. Implement the attach window activity.

Step 1. Create a blank project and give it a meaningful name.

Step 2: Drag and drop a Sequence activity on the Designer panel. Also, drag and drop a Click activity inside the Designer panel.

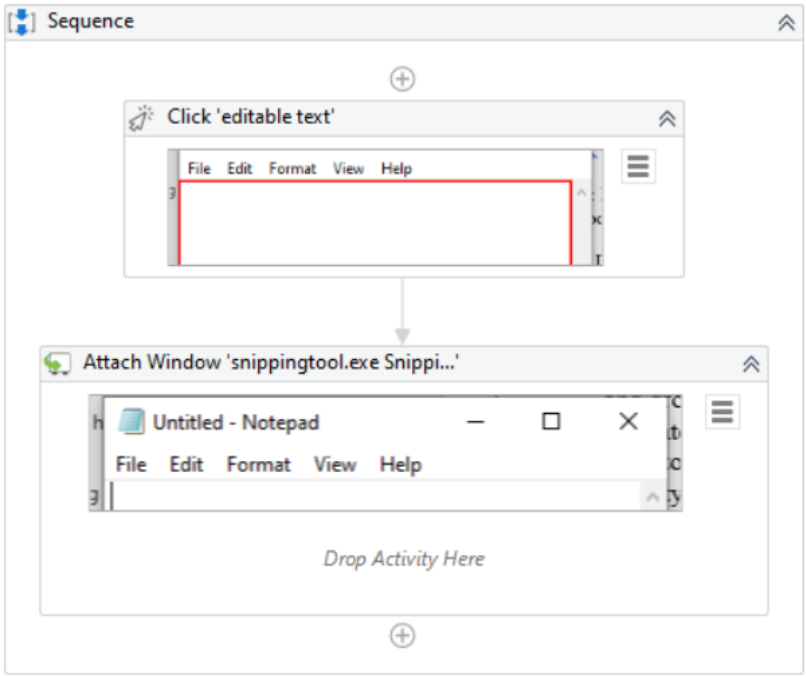
Step 3 : Open a notepad

Step 4: Double-click on the Click activity and then click on Indicate on screen. Locate the Notepad icon.

Step 5: Drag and drop the Attach Window activity on the main Designer panel.

Step 6: Double-click on the Attach Window activity. Click on Click Window on Screen and indicate the Notepad window

Output:



b. Automate using Anchor Base

This control is used for locating the UI element by looking at the UI element next to it. This activity is used when we have no control over the selector. That means when we do not have a reliable selector, then we should use the Anchor base control to locate the UI element.

We can use the Anchor base control as explained in the following section:

1. Drag and drop a Flowchart activity on the Designer panel of a blank project. Also, drag and drop an Anchor base control from the Activities panel. Connect the Anchor base control with Start.

2. Double-click on the Anchor base control:

3. There are two activities that we have to supply to the Anchor base control: Anchor and action activities.

4. Drag and drop the Anchor base activity (for example; Find Element activity) in the Anchor field and Action activity (for example; Type into) in the Drop Action Activity Here field of the Anchor base control.

The Anchor base activity will find the relative element nearby the element on which you want to perform the Action, and the Action activity will perform the appropriate action that you have specified

c. Automate using Element Exists.

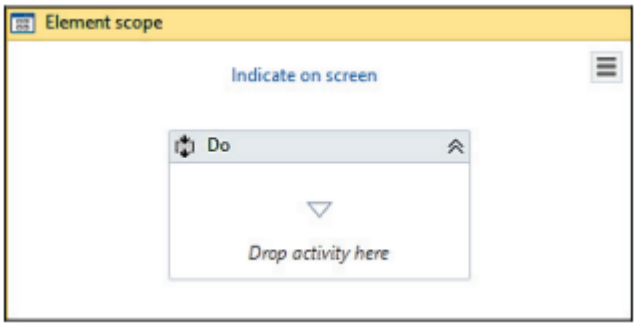
This control is used to check the availability of the UI element. It checks if the UI element Exists or not. It also returns a Boolean result if the UI Element Exists, then it returns true: otherwise, it returns false.

You can use this control to check for the UI element. In fact, it is good practice to use this control for UI elements whose availability is not confirmed or those that change frequently

Just drag and drop the Element Exists control from the Activities panel. Double-click on it. You can see there is an Indicate on screen option. Click on it to indicate the UI element. It returns a Boolean result, which you can retrieve later from the Exists property. You just have to supply a Boolean variable in the Exists property in the Properties panel.

Element scope

This control is used to attach a UI element and perform multiple actions on it. You can use a bunch of actions within a single UI element. Drag and drop the Element scope control and double-click on this control:

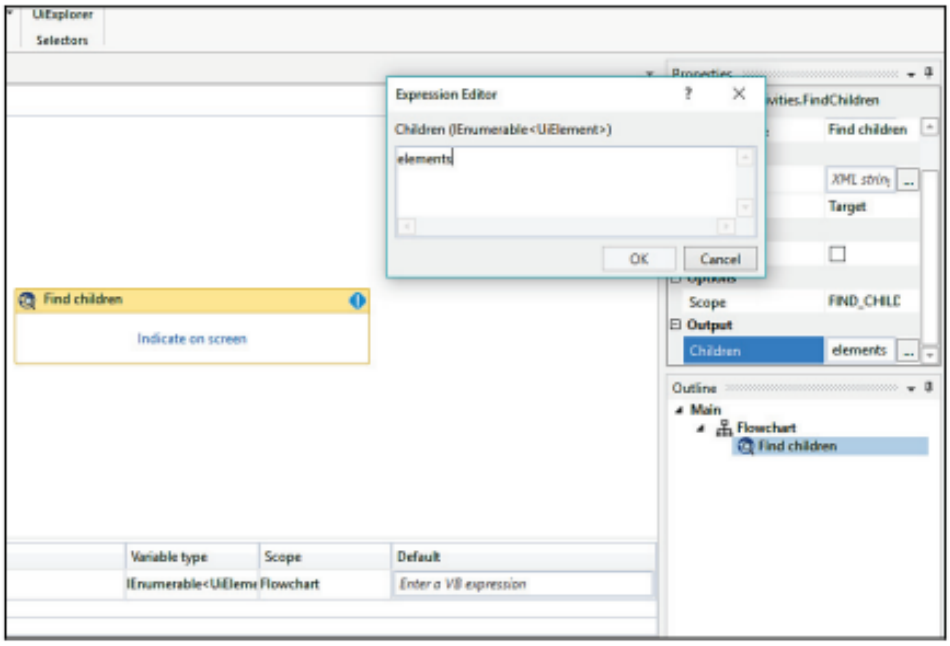


You can clearly see that you have to indicate the UI element by clicking on Indicate on screen and specifying all the actions that you want to perform in the Do sequence. You can add many activities inside the Do sequence.

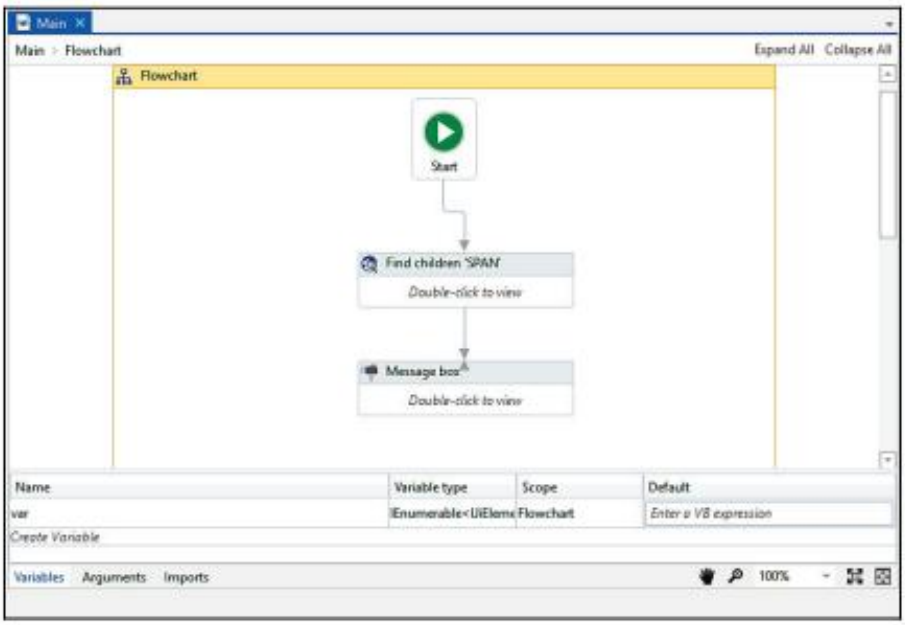
d. Automate using Find Children control

This control is used to find all the children UI elements of a specified UI element. It also retrieves a collection of children UI elements. You can use a loop to inspect all the children UI elements or set up some filter criteria to filter out the UI elements.

Drag and drop the Find children control from the Activities panel. Double-click on it to indicate the UI element that you want to specify. You can indicate it by clicking on Indicate on screen:



You have to supply a variable of type *&OVNFSBCMF-6*&MFNFOUT in the children property, as mentioned in the preceding screenshot. This variable is then used for retrieving the UI elements:



Find element

This control is used to find a particular UI element. It waits for that UI element to appear on the screen and returns it back.

You can use this control in the same way that you used the other controls. Just drag and drop this control, and indicate the UI element by clicking on Indicate on screen.

You can specify the variable of type UI element in the Found element property of the Find Element control to receive the UI element as output.

Find relative element

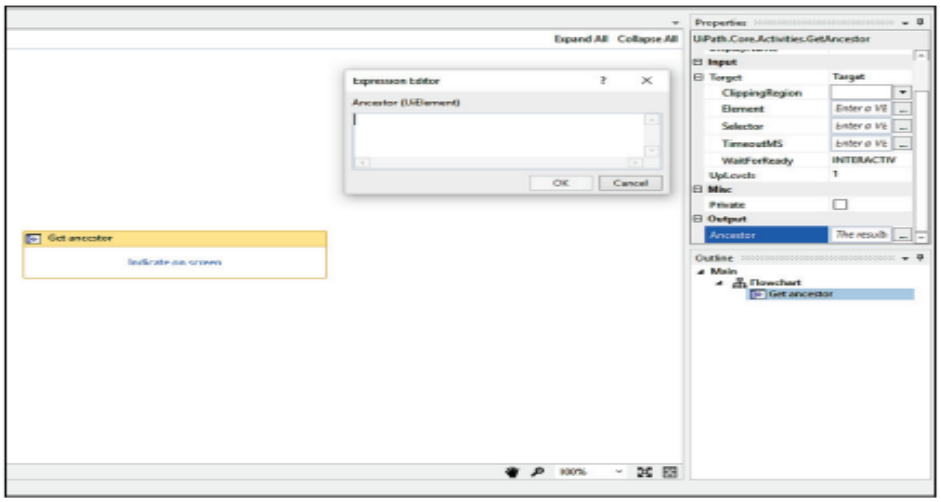
This control is similar to the Find element control. The only difference is that it uses the relative fixed UI element to recognize the UI element properly. This control can be used in scenarios where a reliable selector is not present. Just drag and drop this control, and indicate the UI element by clicking on Indicate on screen. You can also look for its selector property after indicating the UI element for better analysis.

e. Use Get Ancestor control

Get ancestor

This control is used to retrieve the ancestor of the specified UI element. You have to supply a variable to receive the ancestor element as output. You can specify the variable name in the Ancestor property of the Get ancestor control.

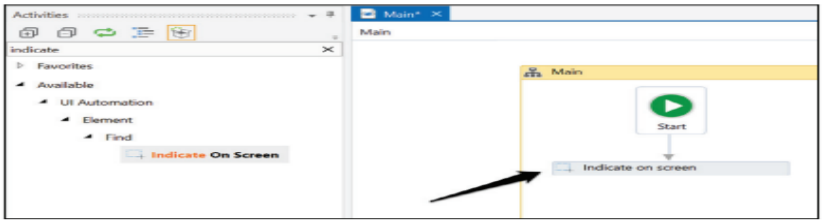
After receiving the ancestor element, you can retrieve its attributes, properties, and so on for further analysis.



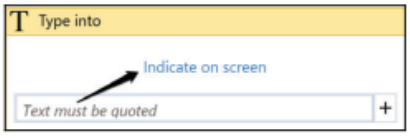
Just drag and drop this control and indicate the UI element by clicking on Indicate on screen.

Indicate on screen

This control is used to indicate and select the UI element or region at runtime. It gives flexibility to indicate and select the UI element or region while running the workflow. You just have to drag and drop this control in your project:



Do not confuse this with Indicate on screen written inside any activity like Type into. In previous examples, we have used Indicate on screen inside various controls (as shown in the following screenshot). This button is used to locate the region or UI element before the execution of the workflow, while the Indicate on screen control executes its process after the execution of the workflow:



Practical 6 : Keyboard and Mouse Events

a. Demonstrate the following activities in UiPath:

i. Mouse (click, double click and hover)

ii. Type into

iii. Type Secure text

.i. Mouse (click, double click and hover)

1. Click Activity

Step 1: Go to uipath studio

Step 2: Click on Workflow and Drag Flow Chart from Activities panal.

Step 3: Double Click on FlowChart.

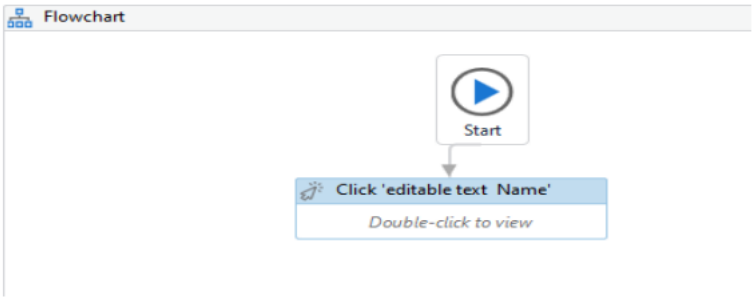
Step 4 : Drag and drop the Click activity

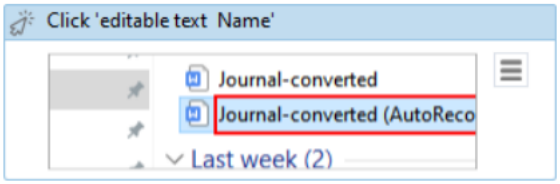
Step 5: Double click on click activity.

Step 6: Click on indicate on screen and indicate the UI element you want to click on.

Step 7: Now click on run.

Output:





2. Double Click Activity

Step 1: Go to uipath studio

Step 2: Click on Workflow and Drag Flow Chart from Activities panal.

Step 3: Double Click on FlowChart.

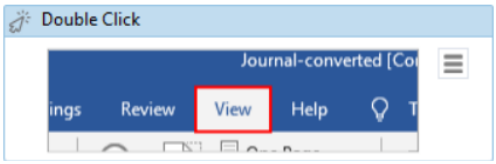
Step 4 : Drag and drop the Double Click activity

Step 5: Double click on double click activity.

Step 6: Click on indicate on screen and indicate the UI element you want to click on.

Step 7: Now click on run.

Output:



3. Hover Activity

Step 1: Go to uipath studio

Step 2: Click on Workflow and Drag Flow Chart from Activities panal.

Step 3: Double Click on FlowChart.

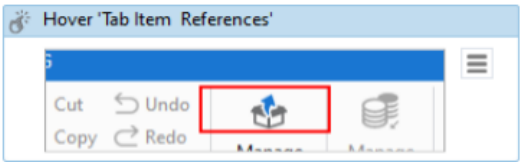
Step 4 : Drag and drop the Hover activity

Step 5: Double click on hover activity.

Step 6: Click on indicate on screen and indicate the UI element you want to click on.

Step 7: Now click on run.

Output:



ii Type into

Step1: Add a new sequence and name it as Type into Activity

Step2: Search for Type into Activity in the activity panel and drag it inside the sequence.

Step3: Click on Indicate on Screen and indicate the pointer towards notepad editor.

Step4: Type the message to be printed on the notepad in the editable text section

Step5: Hit the Run Button to see the results.

Output:

iii Type secure text

Step1: Add a new flowchart

Step2: Search for Type secure text Activity in the activity panel and drag it inside the sequence.

Step3: Click on Indicate on Screen and indicate the pointer towards notepad editor.

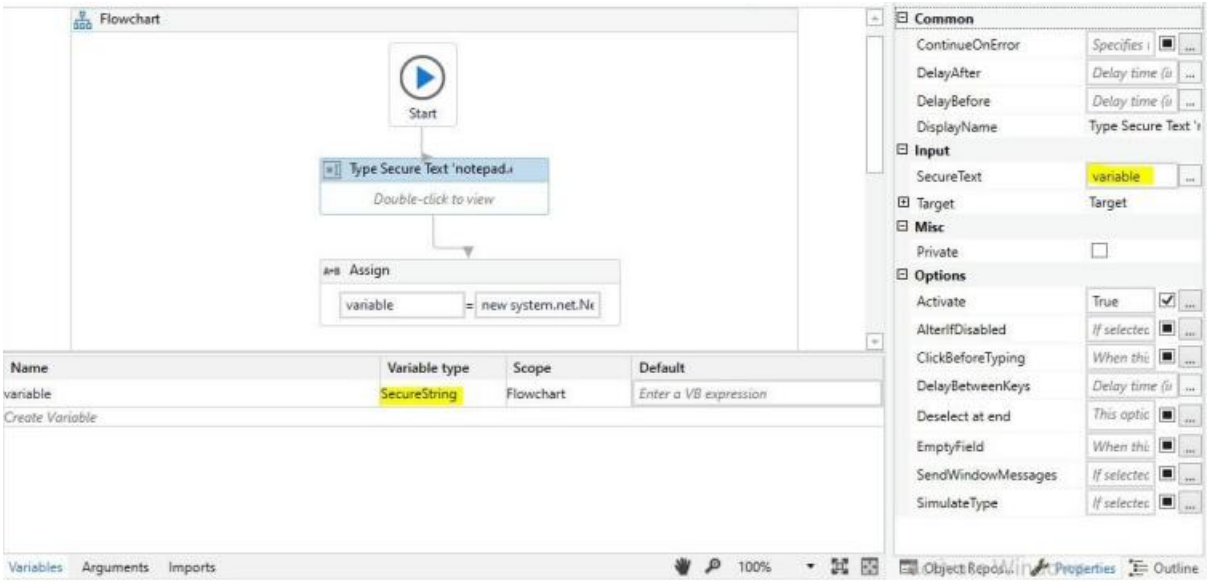
Step4: Create a variable of type “securestring” and assign it to SecureText property in the properties.

Step5:Drag and drop a assign activity.

Step6: Assign the variable created with this value “new system.net.NetworkCredential(String.Empty,"Test@123").SecurePassword”

Step7: Hit the Run Button to see the results.

Output:



b. Demonstrate the following events in UiPath:

i. Element Trigger

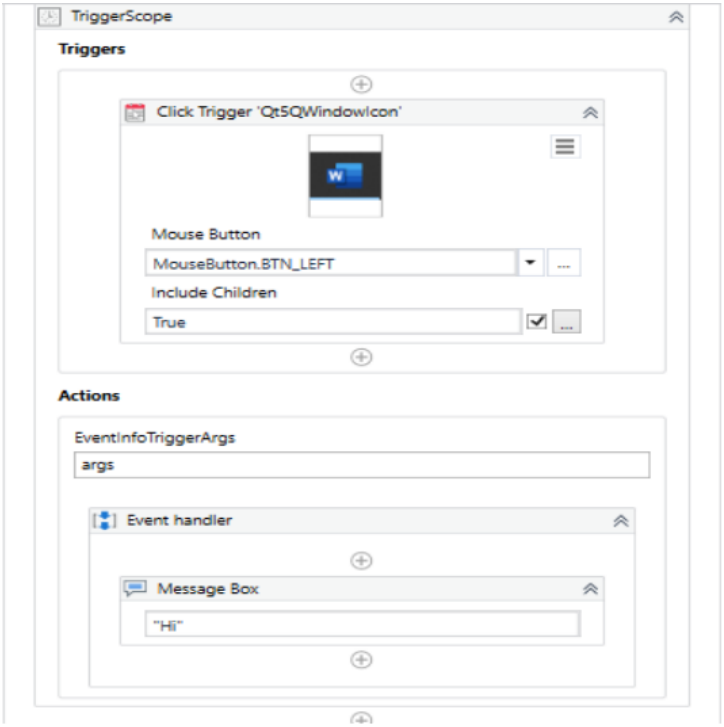
On click element

Steps1: Click on user events select on click element

Step 2: Single click on icon present in the toolbar.

Step 3: Drag and drop message box inside event handler.

Step 4: Write any message you want to display.



Step 5: Run the file.

Step 6: Click the icon which you selected in user event.

Output:

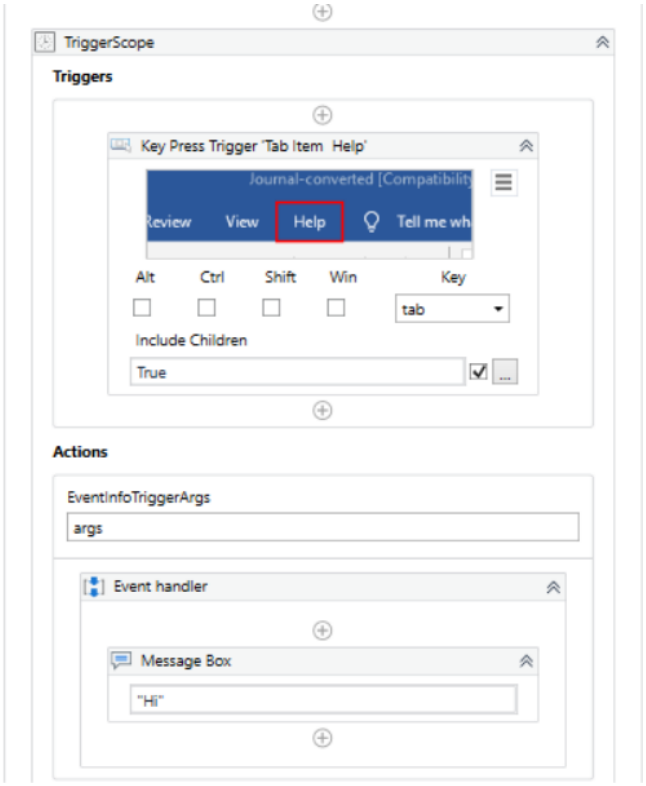
On keypress event

Step1: Click on user events select on key press element

Step 2: Indicate on screen and select the key.

Step 3: Drag and drop message box inside event handler.

Step 4: Write any message you want to display.



Step 5: Run the file.

Step 6: Click the key which you selected in user event.

Output:

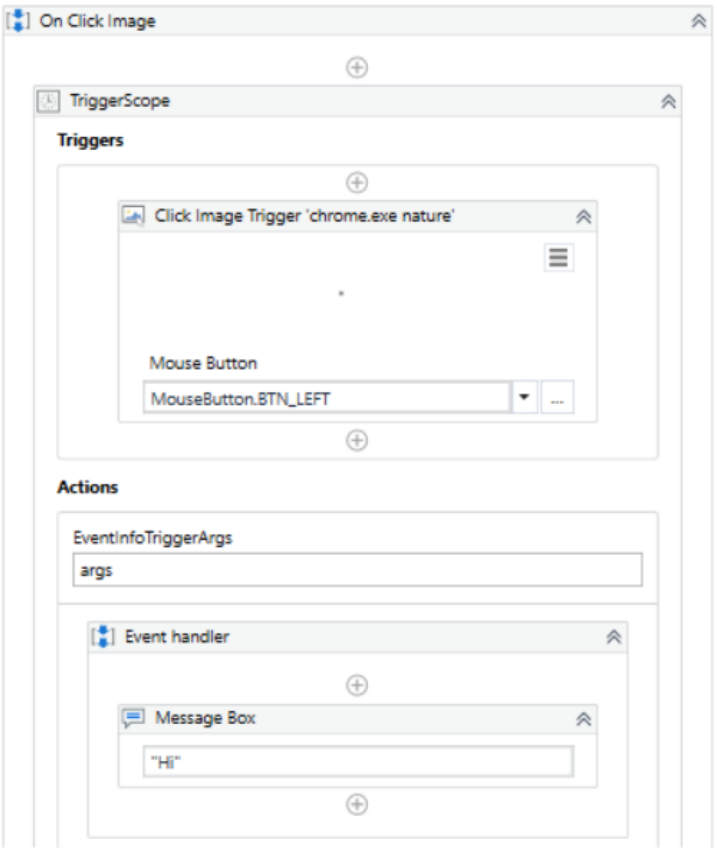
ii. Image trigger

Steps1: Click on user events select on click image element

Step 2: Single click on any image present in the screen.

Step 3: Drag and drop message box inside event handler.

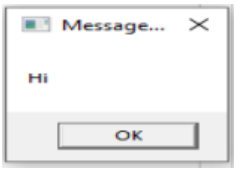
Step 4: Write any message you want to display.



Step 5: Run the file.

Step 6: Click the image which you selected in user event.

Output:



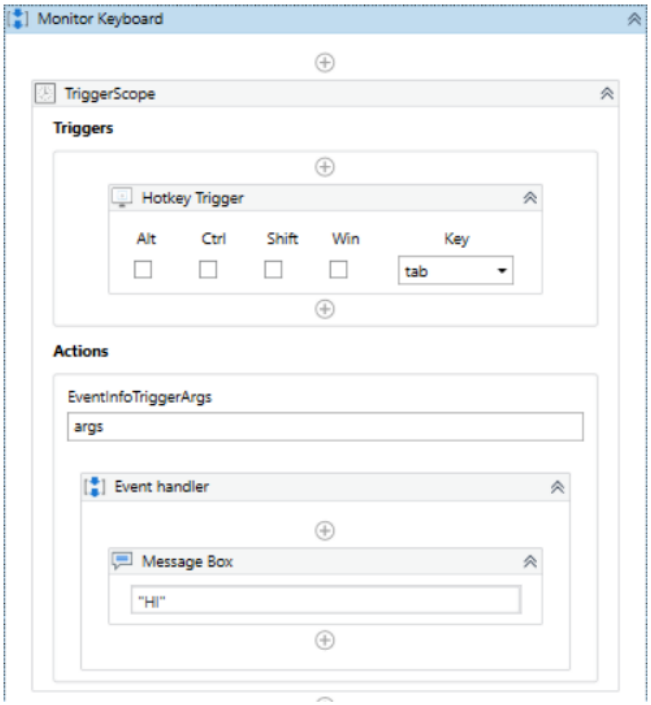
iii. System trigger

Step1: Click on user events select on monitor keyboard element

Step 2: Select any key.

Step 3: Drag and drop message box inside event handler.

Step 4: Write any message you want to display.



Step 5: Run the file.

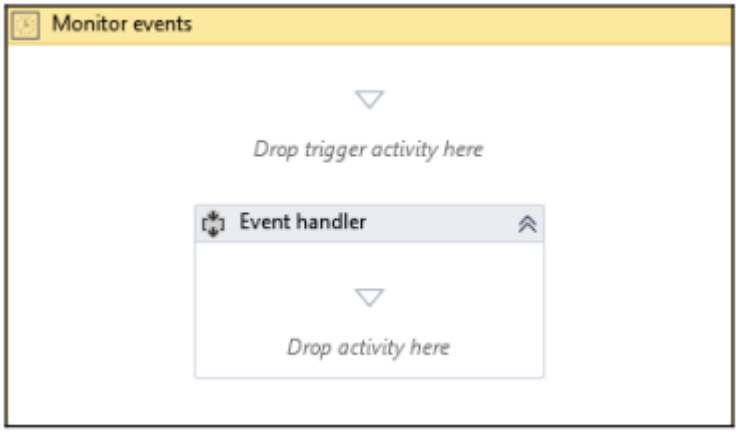
Step 6: Click the key which you selected in user event.

Output:

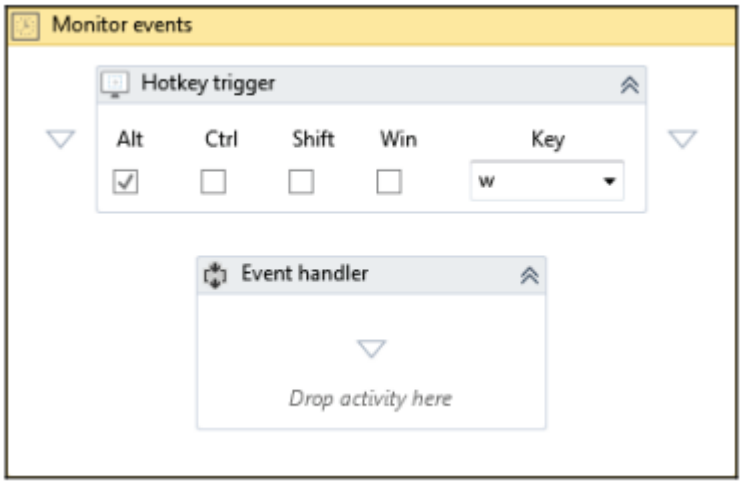
c. Automate the process of launching an assistant bot on a keyboard event.

Let us say we want our assistant bot to start automating only when we trigger an event. For example, the user wants his Robot to open and start typing in the Notepad window when he presses Alt + W. This can be achieved using the Hotkey trigger. Also, inside the Event handler, just create or record the sequence of steps to be followed. The detailed procedure has been explained in the following sections:

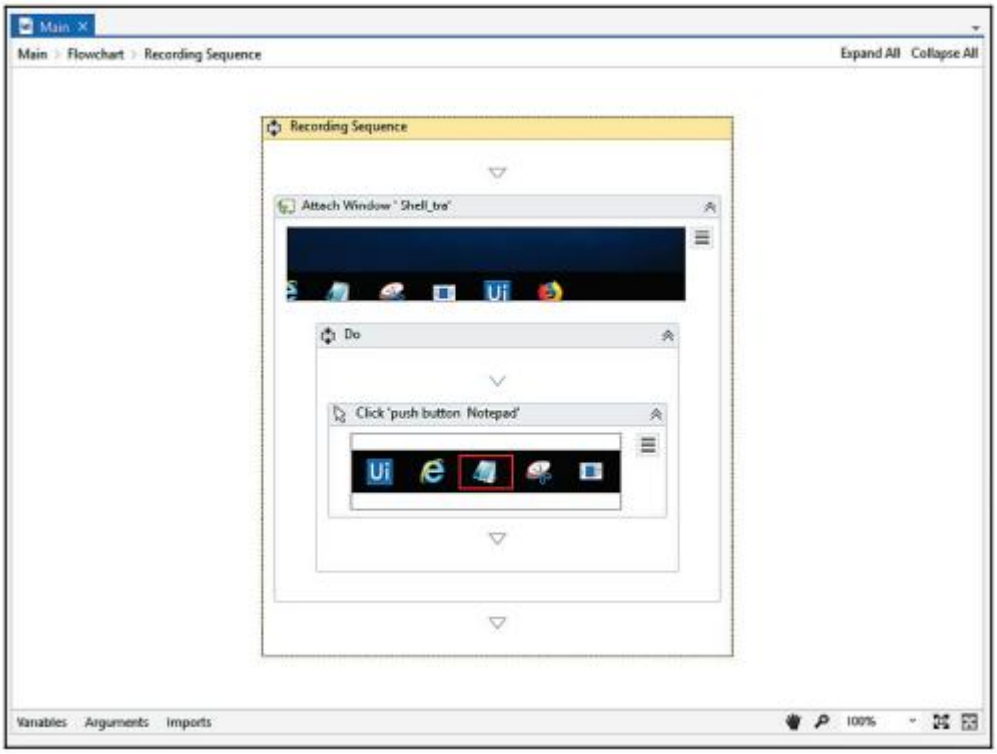
1. Drag and drop the Monitor events activity: In this step, we will just drag and drop the Monitor events activity into the workflow. When we double-click on it, it will look like this:



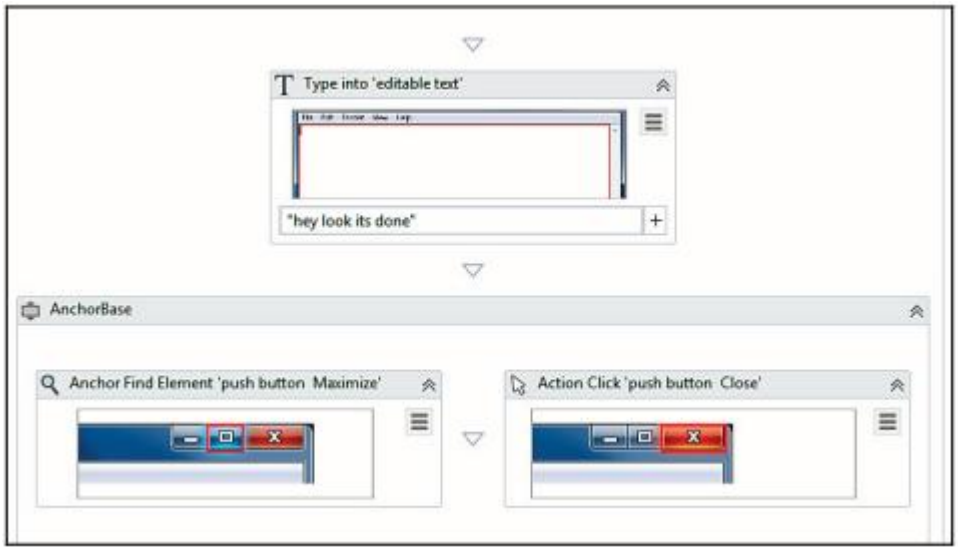
2.Drag the Hotkey trigger activity: In the next step, we will use the Hotkey trigger activity for the user to start the automation process. Assign Alt + W to the hotkey so that, when the user presses this hotkey, the event will be executed:



3.Open Notepad and type into it: Our final step is to record the sequence of the steps to be performed. In this case, this is to open Notepad and then type into it. For that just use the help of the Desktop recorder. First, we double-click on the Notepad application in the window as shown in the screenshot. Select the ClickType as CLICK_DOUBLE from the Properties panel:



After that, we record the typing action and close the Notepad window. Then click on Do not Save because you do not want to save your file. The sequence is shown in the following screenshot:



We have also indicated the anchor to recognize the correct button to be clicked (in this case, the close window button's anchor is the maximize button). This makes it easier for the Robot to find the UI element.

Now, on pressing Alt + W the Robot will start executing the sequence.

Practical 7 : Screen Scraping and Web Scraping methods

a. Automate the following screen scraping methods using UiPath:

A. Full Text
B. Native
C. OCR

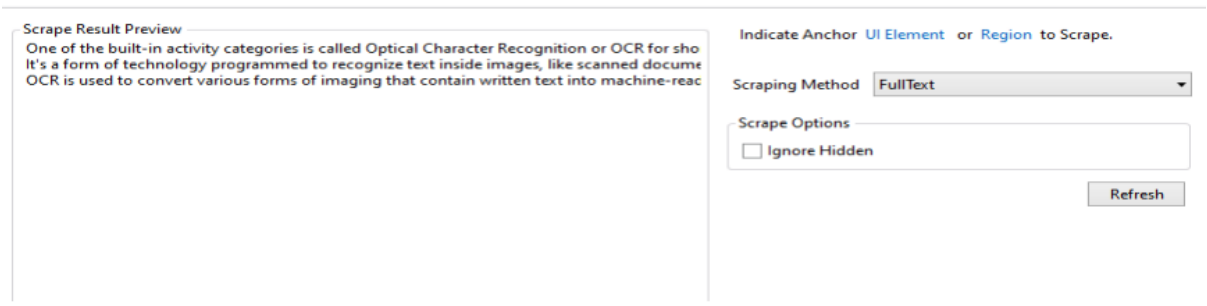
Full Test

Step1: First we select a new project and give it a name.

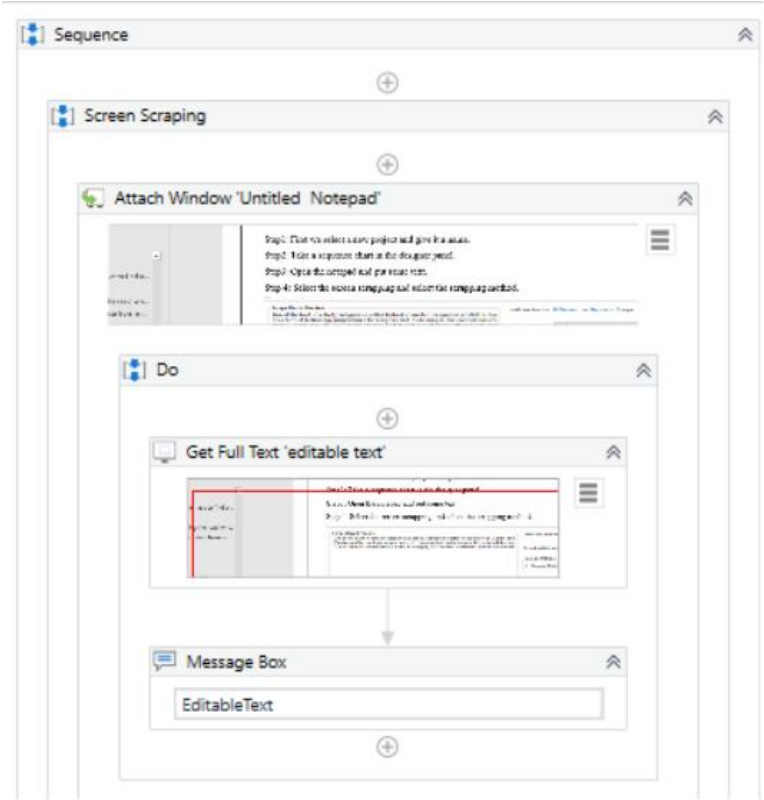
Step2: Take a sequence chart in the designer panel.

Step3: Open the notepad and put some text.

Step 4: Select the screen scrapping and select the scrapping method.

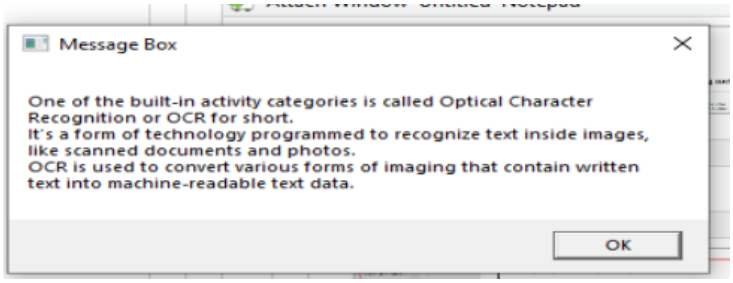


Step 5: Drag and drop a message box and give the variable name automatically created.



Step 6: Run the file.

Output:



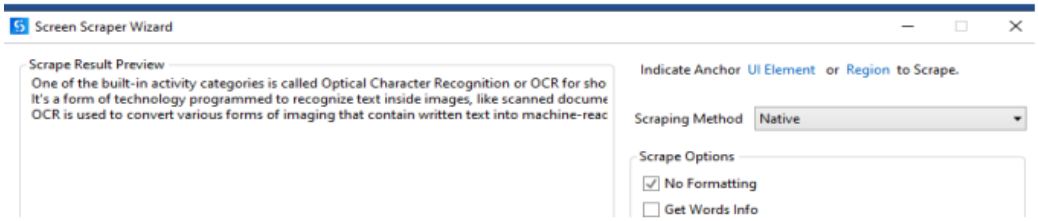
Native

Step1: First we select a new project and give it a name.

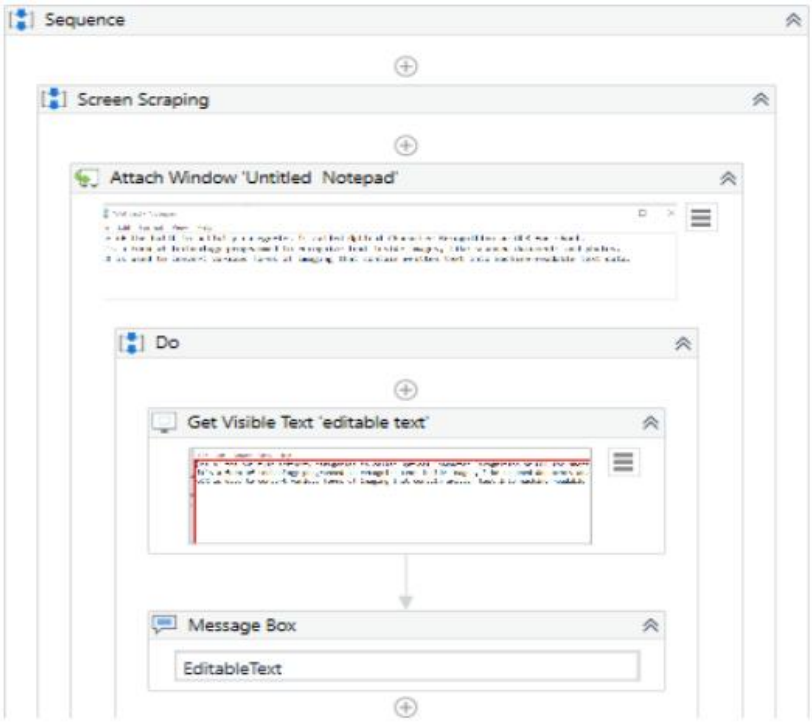
Step2: Take a sequence chart in the designer panel.

Step3: Open the notepad and put some text.

Step 4: Select the screen scrapping and select the scrapping method

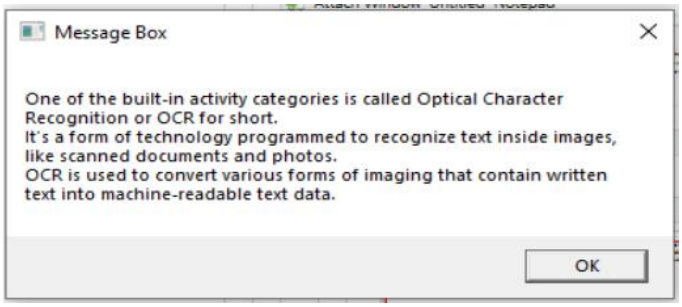


Step 5: Drag and drop a message box and give the variable name automatically created.



Step 6: Run the file.

Output:



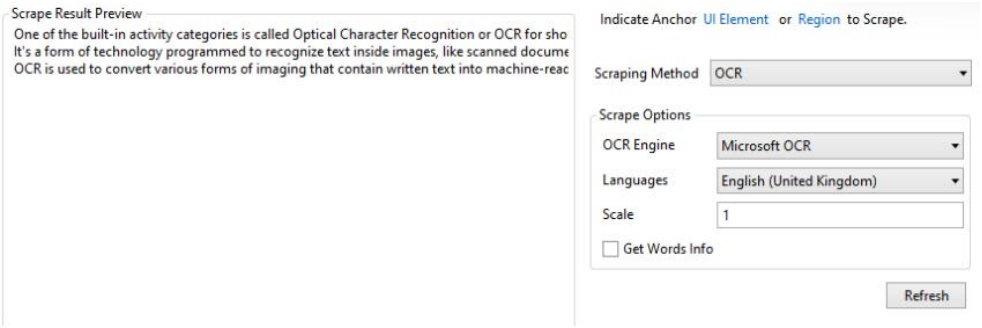
OCR

Step1: First we select a new project and give it a name.

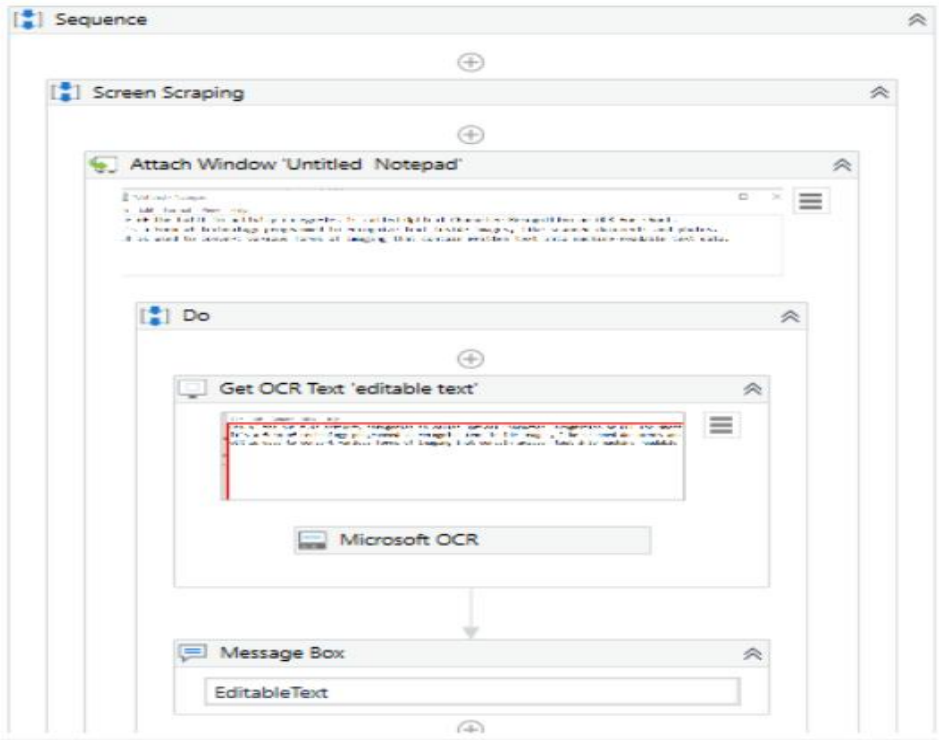
Step2: Take a sequence chart in the designer panel.

Step3: Open the notepad and put some text.

Step 4: Select the screen scrapping and select the scrapping method.

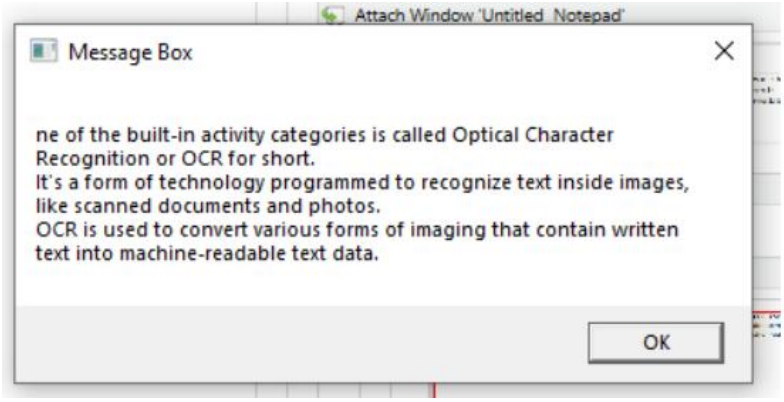


Step 5: Drag and drop a message box and give the variable name automatically created.



Step 6: Run the file.

Output:



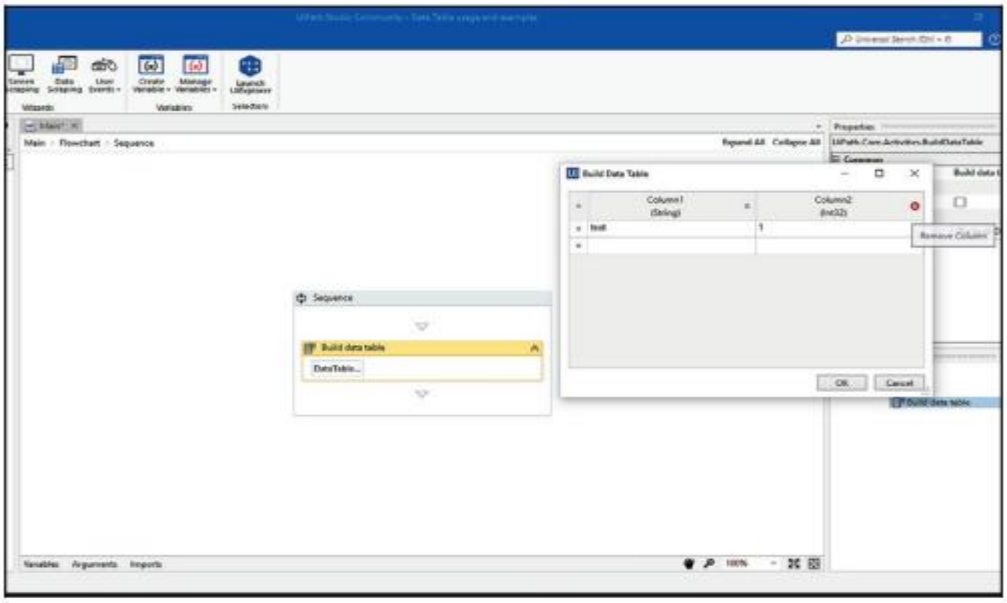
b. Demonstrate Data Scraping and display values in Message box.

Let us see, how to build a data table can be built. First, create an empty project. Give it a proper name:

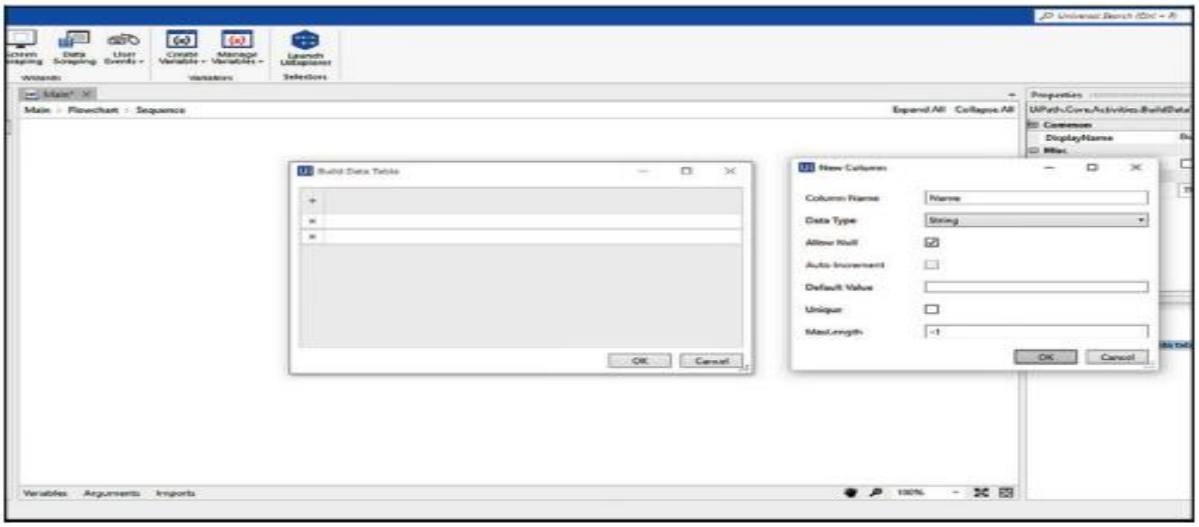
1. Drag and drop a Flowchart activity on the Designer panel. Also, drag and drop a Sequence activity and set it as the Start node.

2. Double click on the Sequence and drag and drop the Build Data Table activity inside the Sequence activity.

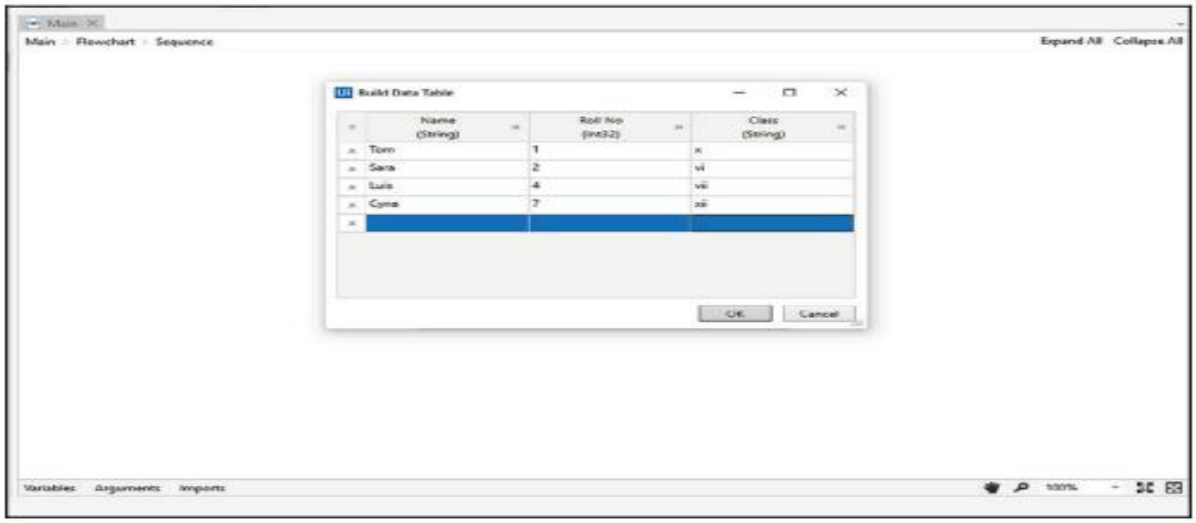
3. Click on the Data Table button. A pop-up window will appear on the screen. Remove both the columns (auto generated by the Build Data Table activity) by clicking on the Remove Column icon:



Now, we will add three columns by simply clicking on the + symbol. Specify the column names and select the appropriate data types from the drop-down list. Click on the OK button. We will add column /BNF of String Data Type, 3PMM@/P of Int32 type and finally Class of string type:



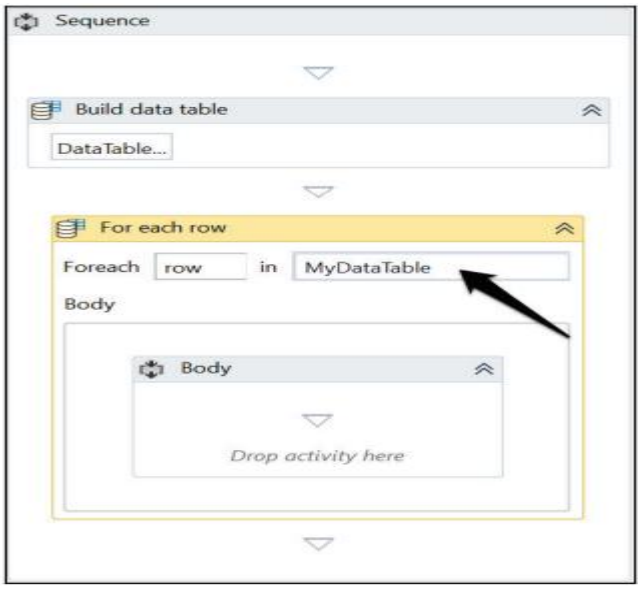
Now enter some random values just to insert the data into the rows:



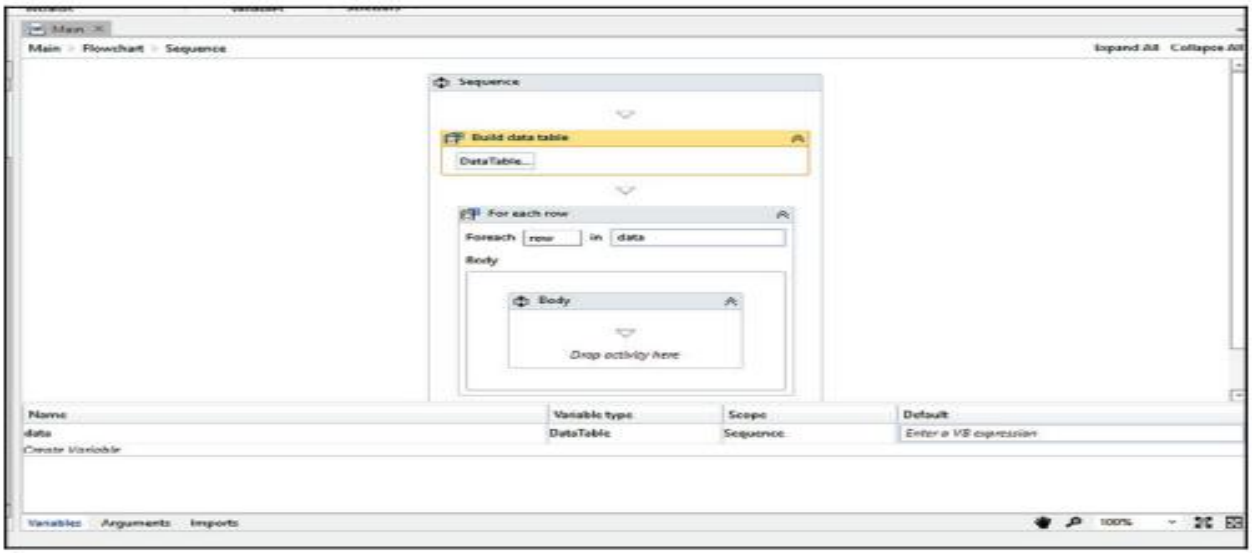
Click on the OK button and our data table is ready. We have to iterate over the data table's rows to make sure everything works correctly.

5. In order to store the Data Table created by Build Data Table activity, we have to create a data table variable Mydatatable of DataTable type and in order to store the result of the data table that we have dynamically built. Also, specify assign the Output property of the Build Data Table activity with this variable. Specify the data table variable's name there.

6. After our data table is ready, we will iterate the data table's rows to make sure everything works correctly. Drag and drop the For each row activity from the Activities panel inside the Sequence activity. Specify the data table variable's name (MyDataTable) in the expression text box of the For each row activity:

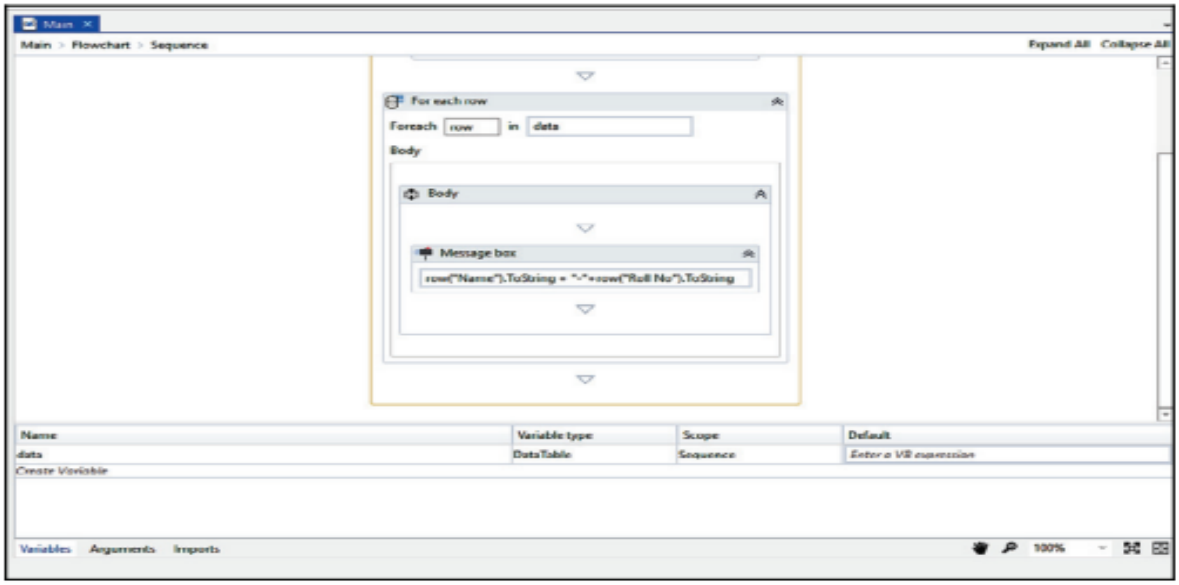


7.Drag and drop the For each row activity from the Activities panel inside the Sequence activity. Specify the data table variable's name in the expression text box of the For each row activity:



For each and For each row are two different activities. For each is used to iterate over the collections, while the For each row activity is used to iterate over the data table rows.

Drag and drop a Message box activity inside the For each row activity. In the Message box activity, Inside the message box we have to write following string:



This row variable contains all the columns of a particular row. Hence, we have to specify which column value we want to retrieve by specifying the column name. Instead of the column name, we can also specify the column index (the column index always starts from zero). Hit the Run button to see the result.

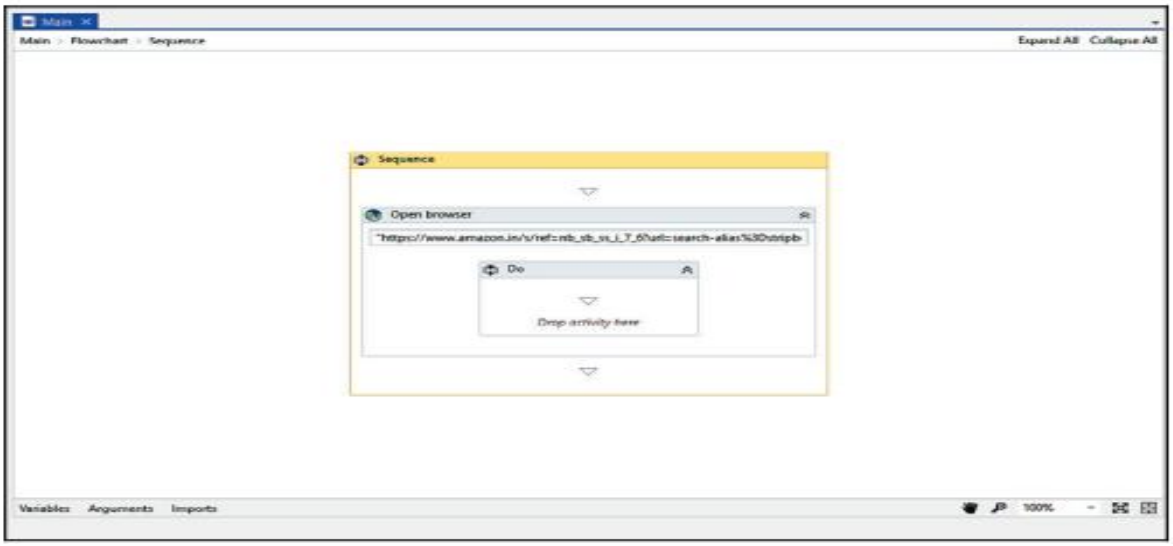
c. **Demonstrate Screen Scraping for a pdf, web page and image file**.

Using data scraping, we can build the data table at runtime. Let us consider an example of extracting data from Amazon's website. Perform the following steps:

1. Drag and drop the Flowchart activity from the Activities panel, and drag and drop the Sequence activity inside the Flowchart activity.

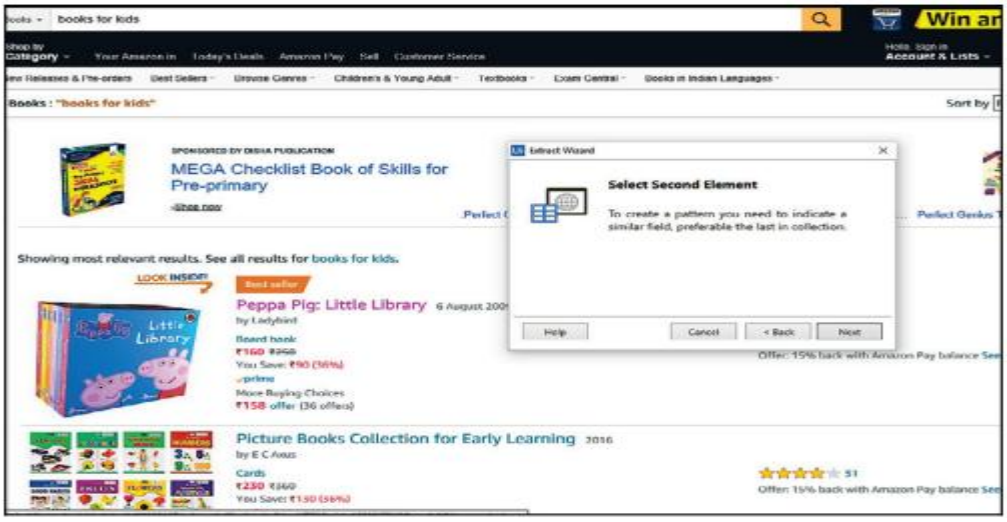
2. Double-click on the Sequence activity.

3. Drag and drop the Open Browser activity inside the Sequence activity. Specify the URL in the text box:

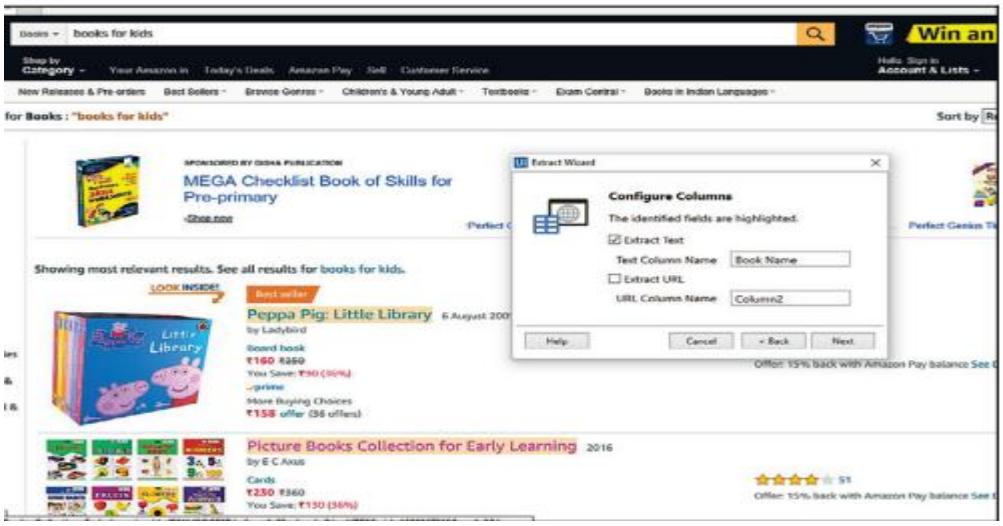


4. Click on the Data Scraping icon on the top left corner of UiPath Studio. A window will pop up. Click on the Next button.

5. Now, there will be a pointer pointing to the UI elements of the web page. Click on the name of the book:



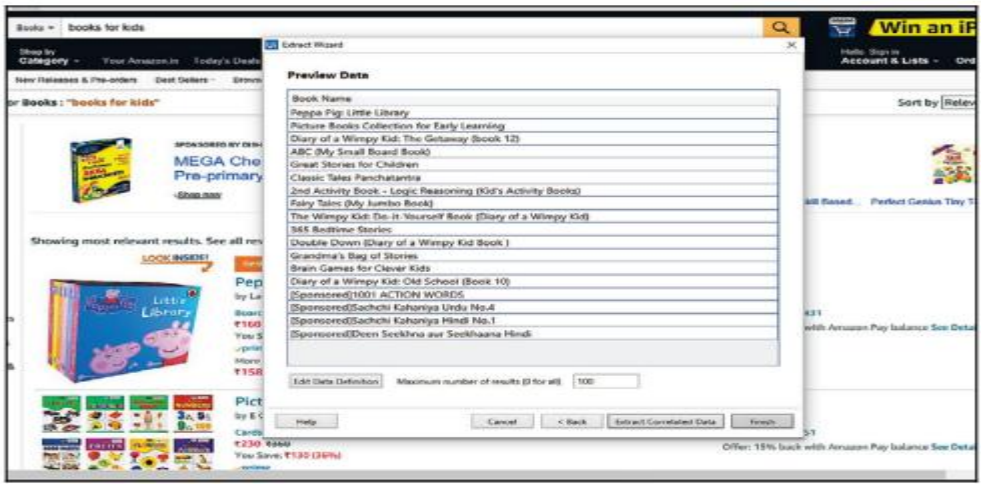
It will ask you to point to a second similar element on the web page:



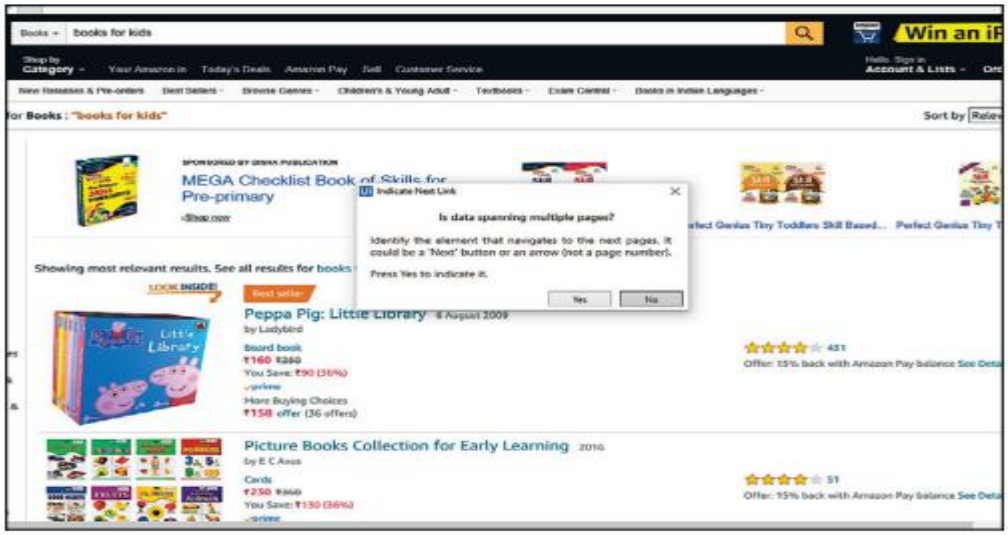
6. Point to a second similar element on that web page. Specify the name that you want to give for that extracted data column. (It will become the column name of the extracted data). Click on the Next button.

7. A list of names will appear in a separate window.

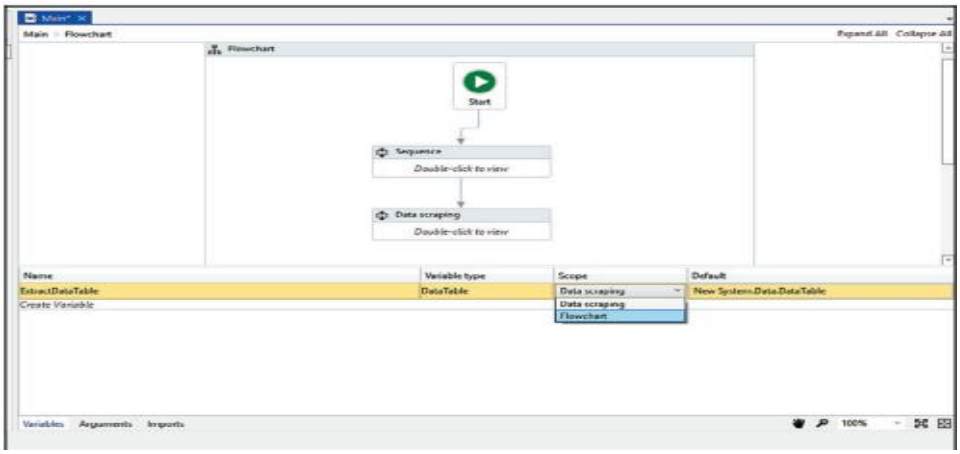
If you want to extract more information, then click on the Extract correlated data button and repeat the same process once again (just as we extracted the name of the book from Amazon's website). Otherwise, click on the Finish Button:



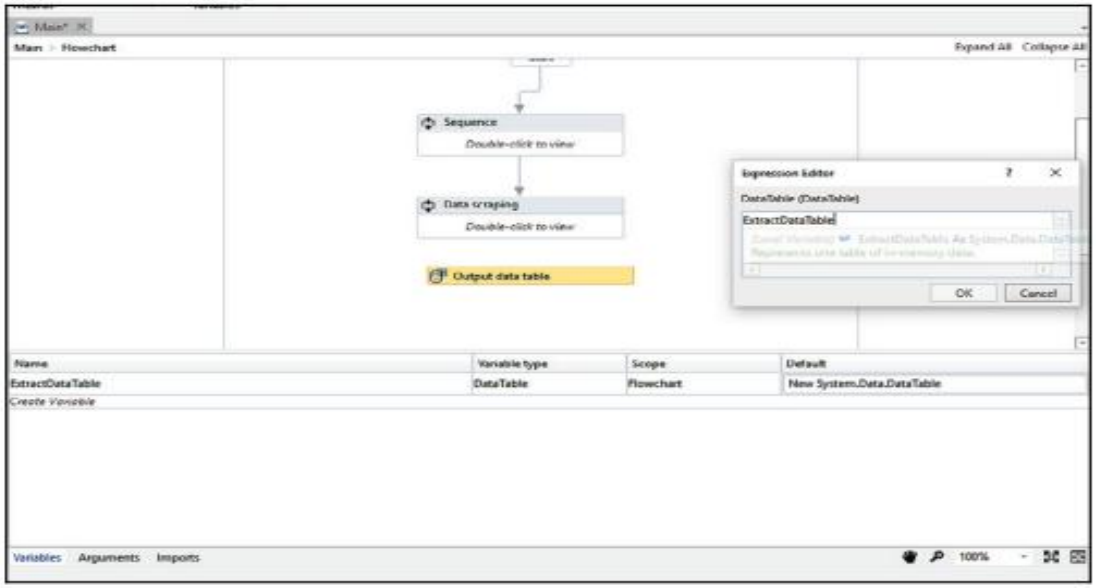
8.It will ask you to locate the next page's button/link. If you want to extract more information about the product and it spans across multiple pages, then click on the Yes button and point to the next page's button/link. Then, click on it. If you want to extract only the current page's data, click on the No button, (you can also specify the number of rows that you want to extract data from: By default it is 100):



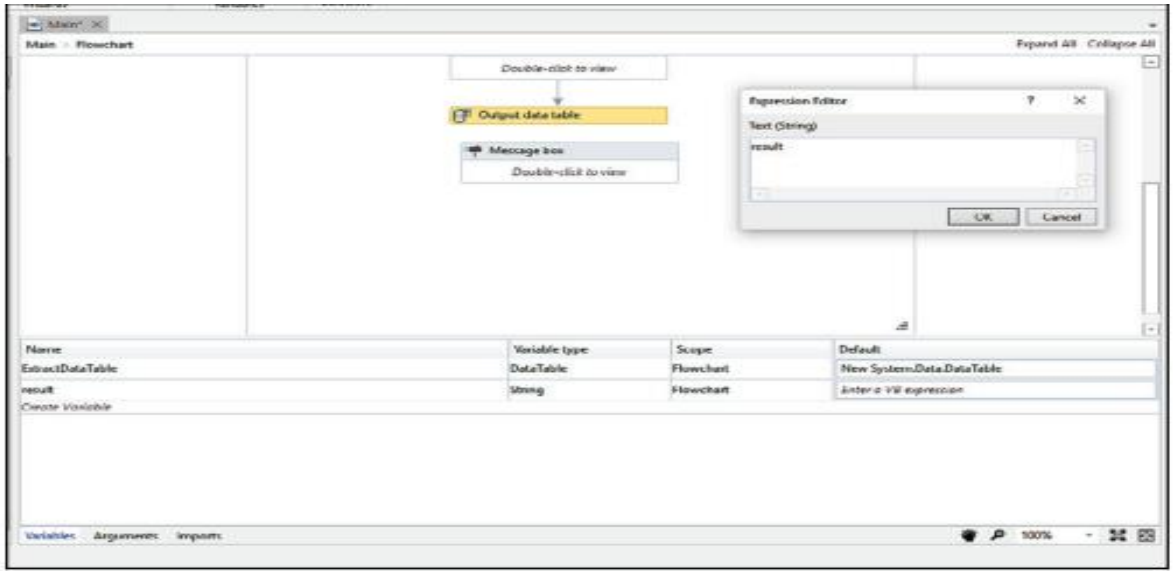
9.Data scraping generates a data table. (In this case, Extractiondatatable is generated.) Change the scope of Extractiondatatable to the Flowchart so that it is accessible within the Flowchart activity:



10.Drag and drop the Output data table activity on the Flowchart. Set the Output property of the Output data table activity as: Extractiondatatable:



11. Connect the Output data table activity to the Data Scraping activity. Drag and drop the Message box activity on the Designer window. Also create a string variable to receive the text from the Output data table activity (in our case, we have created a result variable). Specify the text property of the Output data table activity as the result variable to receive the text from the Output data table:



12. Connect the Message box activity to the Output data table activity. Double-click on the Message box and specify the text property as result variable (the variable that you created to receive the text from the Output data table activity).

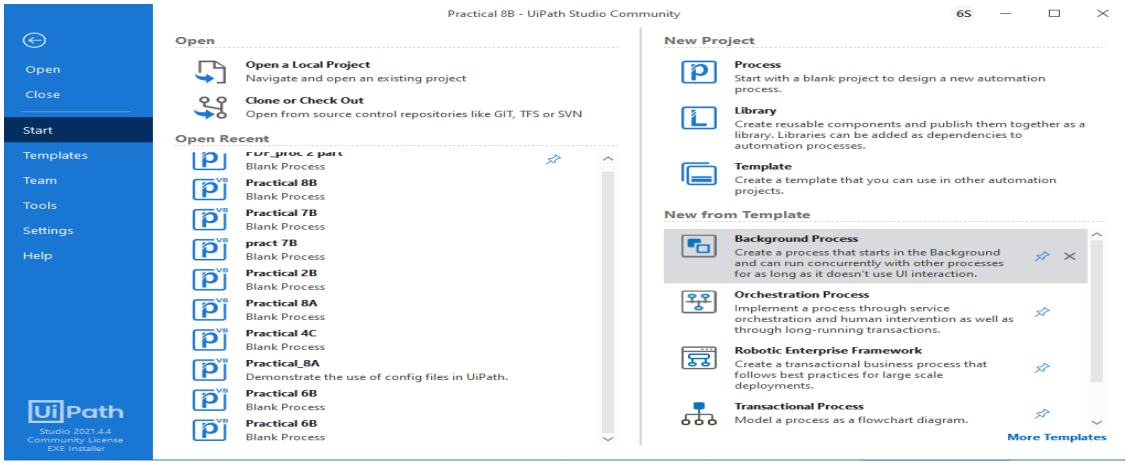
13. Hit the Run button and see the result.

Practical 8 : PDF Automation and Exception Handling

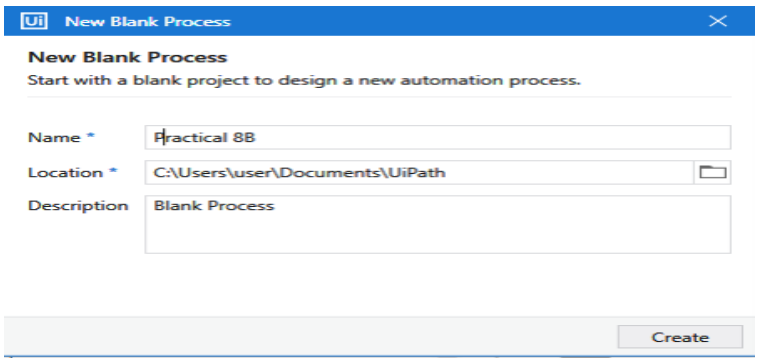
f. Demonstrate Exception Handling using UiPath

Steps:

1. Create new project: Open UiPath and create new project by clicking on “Process” option at the right side of the window.



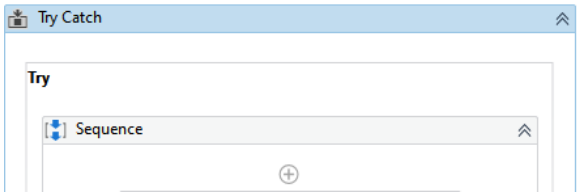
2. In “New Blank Process” window insert the project name you want in the “Name” textbox. In “Location” textbox insert the path in which folder you want to save the project (In normal case you will see the default location of project). In “Description” textbox insert the project description. Then click on “Create” button.



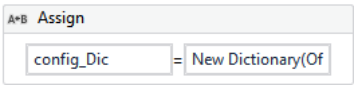
3.Create a Variable config_Dic of Variable types and Dictionary<String,Object>.

Name	Variable type	Scope	Default
config_DT	DataTable	Saurabh Yadav 8B Sequence	Enter a VB expression
config_Dic	Dictionary<String,Object>	Saurabh Yadav 8B Sequence	Enter a VB expression

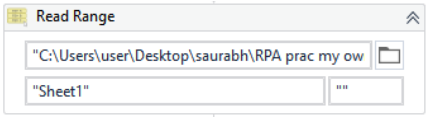
4.Select Activity Try Catch from Activities and Insert sequence in it.



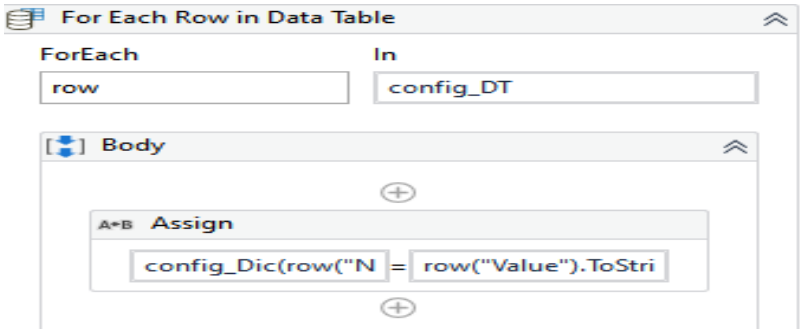
5.Select Activity Assign from Activities and initialize the dictionary.



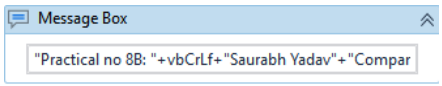
6.Select activity Read Range from activities to read Excel sheet.



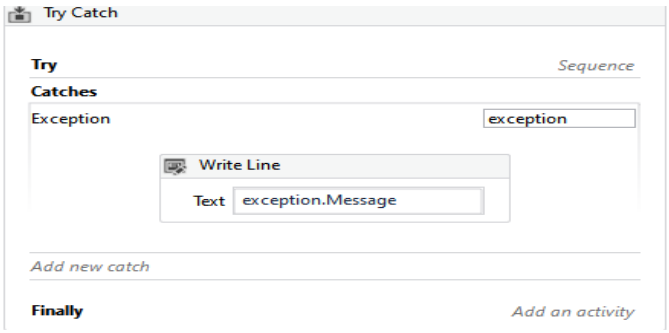
7.Select For Each Row from activities.



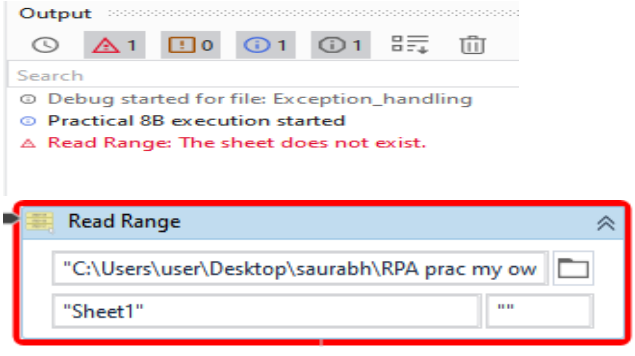
8.Select Message Box activity to print Output



9.Add a WriteLine Activity in the Catch Block.



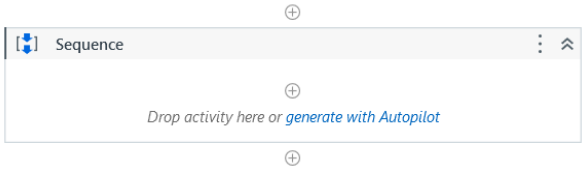
Output:



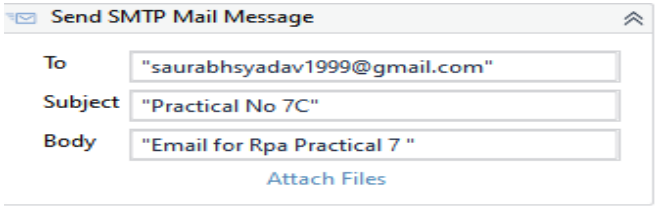
Practical 9 : Email Automation

c. Send Email with Attachment

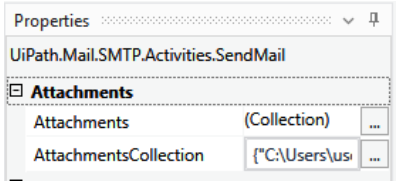
SMTP server address: smtp.gmail.com.
Gmail SMTP port (TLS): 587.
Add 3 different attachments as input.
Step:
1. Create a new Blank Project and give it an appropriate name. Drag a Sequence activity from Activity tab.

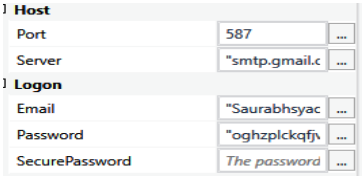


2. Add Send SMTP Mail Message Activity enter the recipient email, subject and body of the email to be sent.

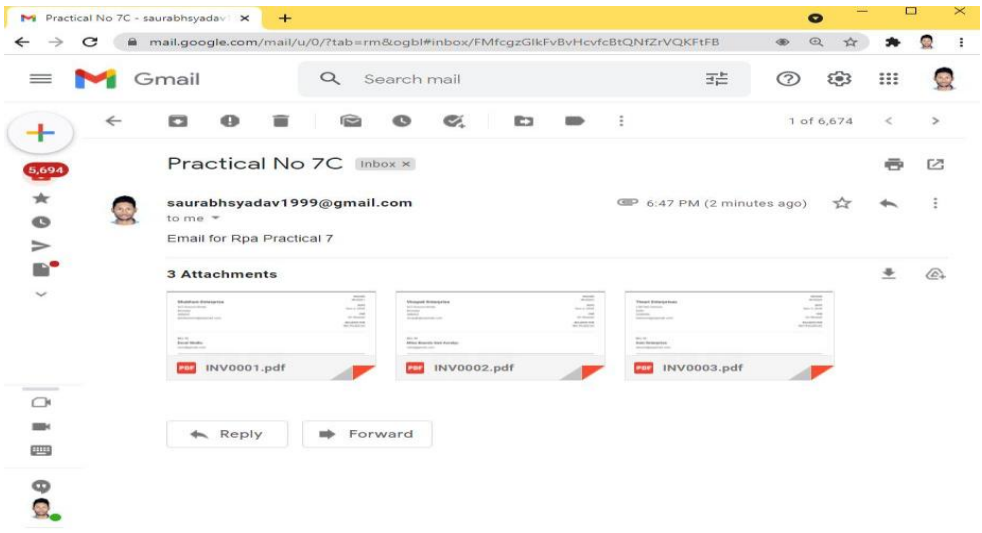


3. Enter the files variable in AttachmentsCollection Attribute. Enter smtp port number in port
attribute of Host and the hostname in server field. Enter the email and password of the sender in the Logon email and password.





Output:



Practical 10 : Orchestrator management and mini project

a. Deploy bots to Orchestrator

Deploy the Robot to Orchestrator To deploy our Robot, first of all, it must be connected to Orchestrator. Ensure that our bot is connected to Orchestrator then follow the given steps to deploy it:

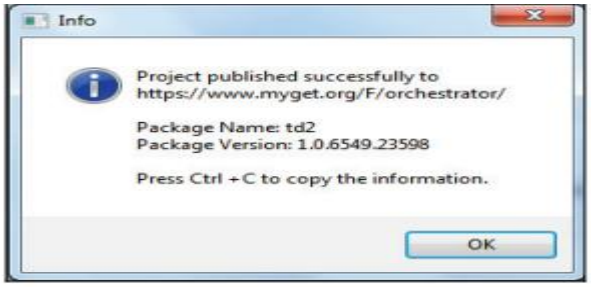
1. First of all, install UiPath on the machine.

2. Provision the Robot machine and take the Robot key from Orchestrator.

3. After receiving the key go to the Robot configuration panel and enter the key here.

4. Also, you need to enter the Robot key into the configuration URL, which can be found from the admin section of Orchestrator.

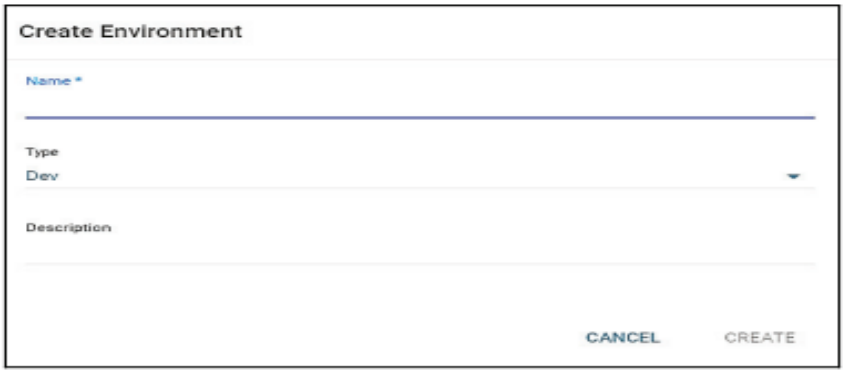
5. Publish the project with publish utility from UiPath. When it is published successfully, it will display the information shown in the following screenshot:



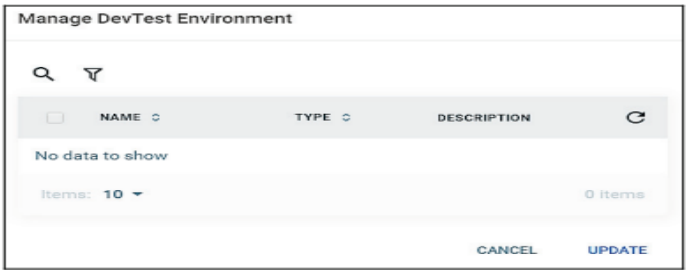
6.The project has been published in the Orchestrator.

7. To create the environment, go to the home page, click on the ROBOTS option, and click on the Environments Tab. Then click on the + button:

8.Once the details are filled in, click on Create:



9.After creating the environment, a small window will appear as shown in the following screenshot, where we can manage the Robot within the environment:



10.After clicking on the + button, a will window pop-up where we can choose the Published package, as shown in the following screenshot, and then click on the CREATE button:

11.After clicking the Deploy Process button, a window popup will appear where we can choose the published package, as shown in the following screenshot, and then click on the CREATE button or

12.Packages can be manually uploaded from the local directory after clicking the View Packages option and then clicking the Upload button as given in the following screenshot: PROCESS | View Packages | Upload Packages:

13. Now the package has been deployed to the Orchestrator and is ready to be executed through the web.

14. Next, click the JOBS option for execution and click on the Start icon as shown:

15. After clicking the Start Job button, the Robot will execute over Orchestrator.

c. Queue Introduction:

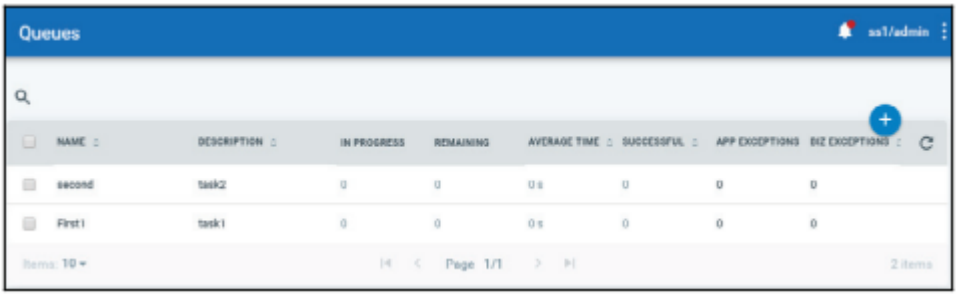
i. Add items to Queue.

ii. Get Queue item from Orchestrator

Queues work as a container that stores tasks that need to be implemented. Simply imagine a group of boys standing in a queue in front of a ticketing counter. The logic is that the person who goes in first gets out first. First In First Out (FIFO).

Similarly, in the case of Robots, when we have a number of operations that are to be performed and when the server is busy, then tasks are moved in a queue and they are implemented on the same logic First In First Out (FIFO).

To create a new queues, search for the Queue option in the Orchestrator Server listed on the left-hand side and then inside the Queue page, you can add one. It also allows you to access all those Queues that have already been created. It contains some information about the task such as the remaining time, progress time, average time, description, and so on, as listed in the following screenshot:



We can also add queue items from UiPath Studio and there are various activities that support this feature, which are listed as follows:

- Add Queue Item: This activity is used to add a new item to the queue in Orchestrator. The status of the item will be New.
- Add Transaction Item: This activity is used to add an item to the queue to begin transaction and set the status as In Progress. Here we can add custom reference for each respective transaction.
- Get Transaction Item: This activity is used to get an item from the queue to process it and set its status as In Progress.
- Postpone Transaction Item: This activity is used to define time parameters between which transaction should be processed. Here, basically, we will specify the time interval after which a process will start.
- Set Transaction Progress: Used to assist and create custom progress statuses for In Progress transactions. To notify its progress if the process crashes. This activity plays a significant role in tackling troubleshooting processes.
- Set Transaction Status: Used to modify the status of the transaction item; whether it fails or is successful.