



Global Academy of Technology, Bengaluru-98

(An Autonomous Institution Approved by UGC/AICTE/GOK, Affiliated to VTU, Belagavi, Karnataka)

Department of Computer Science & Engineering

ROBOTIC PROCESS AUTOMATION DESIGN & DEVELOPMENT LABORATORY MANUAL

SEVENTH Semester, B.E

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USN: 1GA21CS018

Section: 7 C

Signature: _____



GLOBAL ACADEMY OF TECHNOLOGY

(An Autonomous Institute under VTU)

Affiliated to VTU, Accredited by NAAC with 'A' grade

RR Nagar, Bengaluru – 560 098



Department of Computer Science & Engineering

(Accredited by NBA 2022-2025)

This is to certify that Mr. AMAN KUMAR PANDEY
bearing USN 1GA21CS018 of the department has satisfactorily completed the
experiments in **ROBOTIC PROCESS AUTOMATION DESIGN & DEVELOPMENT**
(21CSE73) & it is prescribed by the Global Academy of Technology (An Autonomous Institute
under VTU), in the laboratory of this college in the year 2024-25.

	MAX. MARKS	SCORED MARKS
Average of weekly record entries	10	
Internal Assessment	10	
TOTAL	20	

Signature of faculty in charge

Signature of HOD

Evaluation Sheet

Sl. No	Date	Particulars	Page No.	Marks			Total (10M)	Sign
				W (3)	E (4)	V (3)		
1								
2								
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4								
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7								
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10								
Average (Max. 10)								

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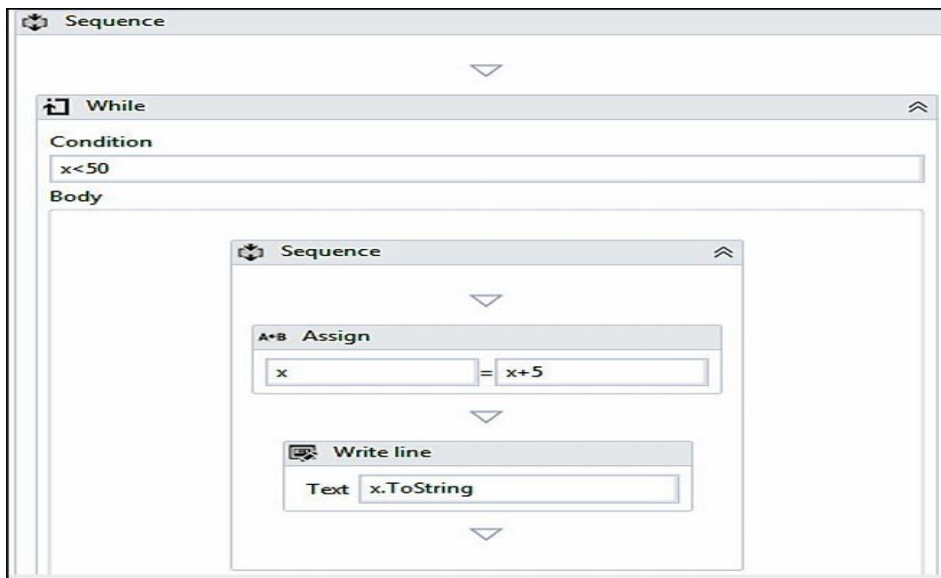
Particulars	
LAB SYLLABUS PROGRAMS	
Program 1	Develop a bot to see how an integer variable will increase from 5 to 50 in increments of 5.
Program 2	Develop a bot by considering an array of names. Say we must find out how many starts with the letter a. We will then create automation where the number of names starting with a is counted and the result is displayed.
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LAB PROGRAMS

Program 1: Develop a bot to see how an integer variable will increase from 5 to 50 in increments of 5.

Steps for Execution

1. On a Blank project, add a Sequence activity.
2. Now, create an integer-type variable. Set its default value to 5.
3. Next, add a While activity to the Sequence.
4. In the condition field, set $x < 50$.
5. Add an Assign activity to the body section of the While loop.
6. Now, go to the Properties panel of the Assign activity and type in the text field integer variable for value field integer $x+5$.
7. Drag and drop a Write line activity, specify the variable name, and apply the ToString method on this variable.



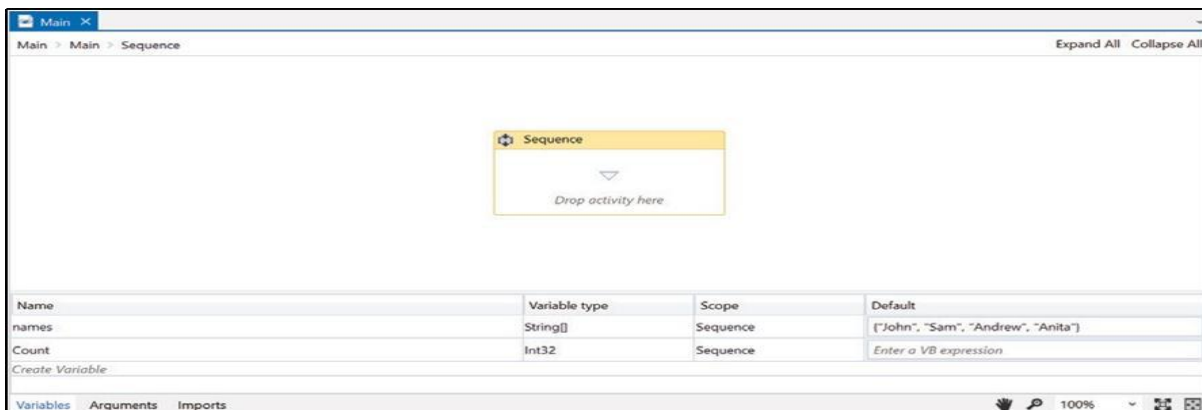
8. Now, click the Run button. The output will display in the Output panel, as shown in the following screenshot:



Program 2: Develop a bot by considering an array of names. Say we must find out how many starts with the letter a. We will then create automation where the number of names starting with a is counted and the result is displayed.

Steps for Execution

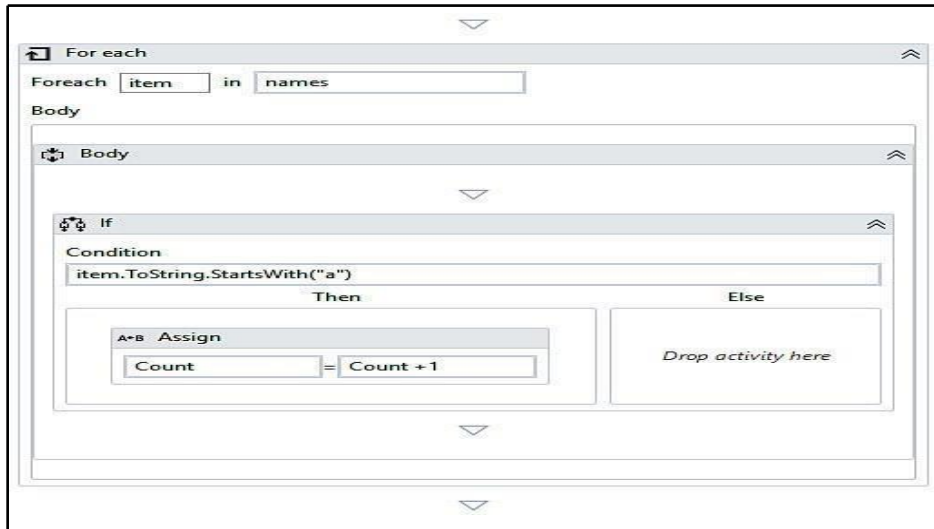
1. Drag and drop a **Flowchart** activity from the **Activities** panel.
2. Drag and drop a **Sequence** activity inside the **Flowchart**. Connect the **Sequence** to the **Start** node by right-clicking on the **Sequence** activity and selecting the **Set as Start node** option.
3. Double-click on the **Sequence** activity. Create a variable. Give it a name (in our case, we will create an array of type string and name the variable as names). Set the variable type to **Array of [T]**. When asked for the type of array, select **String**. Also, initialize the array in the **Default** section of the variable by giving it a default values. For example, {"John", "Sam", "Andrew", "Anita"}.
4. Create a variable of type integer Count for storing the result. Set the variable type to Int32:



5. Drag and drop a **For each** activity inside the **Sequence**. Also, specify the array name in the expression box of the **For each** activity. The **For each** activity is used to iterate over

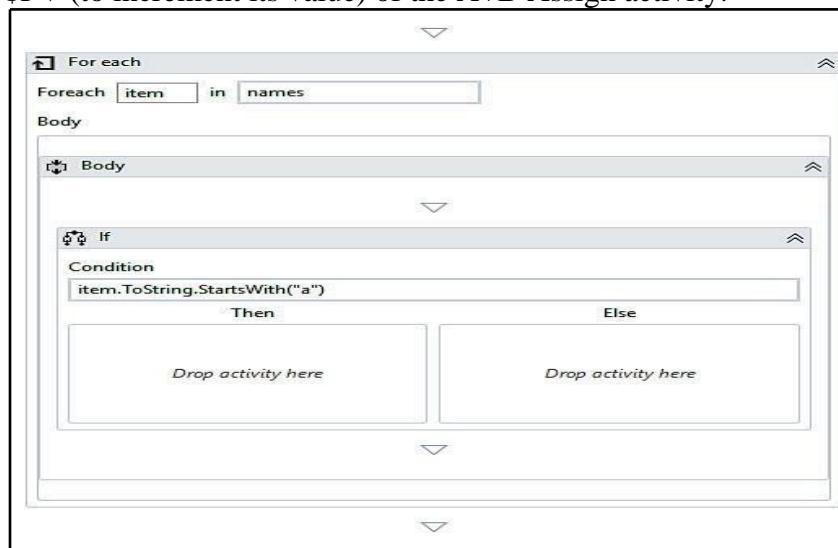


6. Drag and drop the If activity from the Activities panel and place it inside the For each activity at the location where Drop activity here is mentioned. Specify the condition in the expression box of



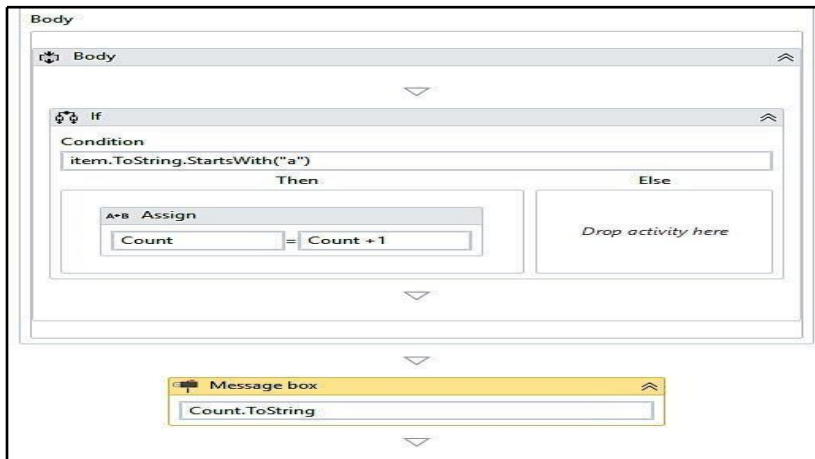
the If activity. The If activity is used to check for a particular condition/expression. If that expression is satisfied, the Then block will be executed. Otherwise, the Else block will be executed. We have specified the expression as `item.ToString.StartsWith("a")`. This expression specifies the name present in the item variable starts with the letter. The For each activity iterates over the array, picks up one name at a time, and stores it as a variable.

7. Now, we are going to use the \$P variable and increment it each time a name starts with the letter 'a'. For this, we must use the A+B Assign activity. Drag and drop the A+B Assign activity inside the If activity. Set the To property to \$P (variable name) and the Value property to \$PV (to increment its value) of the A+B Assign activity:



8. Just drag and drop a **Message box** activity inside the **Sequence** activity. Specify the count variable in the expression box of the **Message box** activity. But remember, the variable that we have created is of type **Int32**, so, it cannot be used with the **Message box** activity without converting it to a string. To convert it to a string, we have the `.toString` method available in

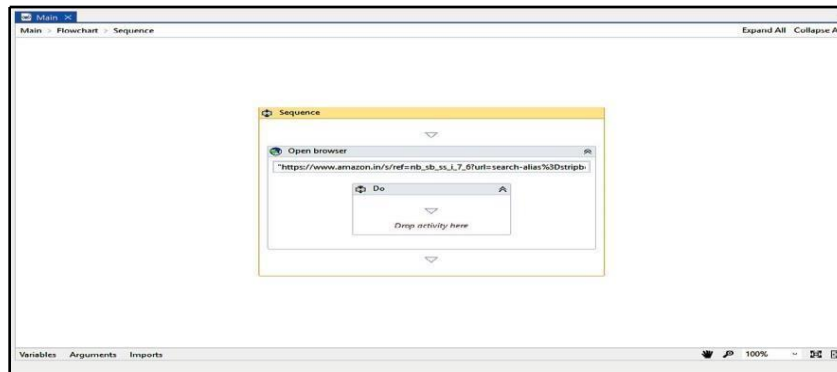
UiPath Studio. Just apply it to the variable and select '.toString':



9. Hit the **Run** button or press *F5* and see the result.

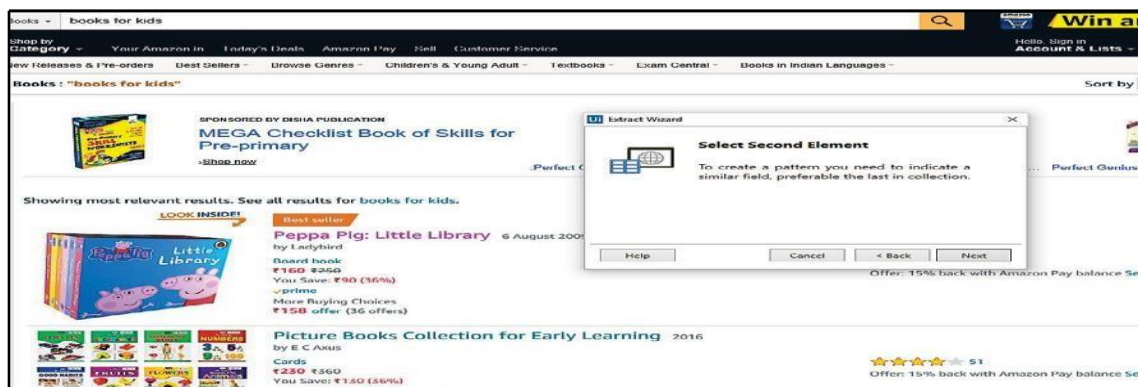
Program 3: Develop a bot that extracts data from Amazon's website using Data scraping.

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:

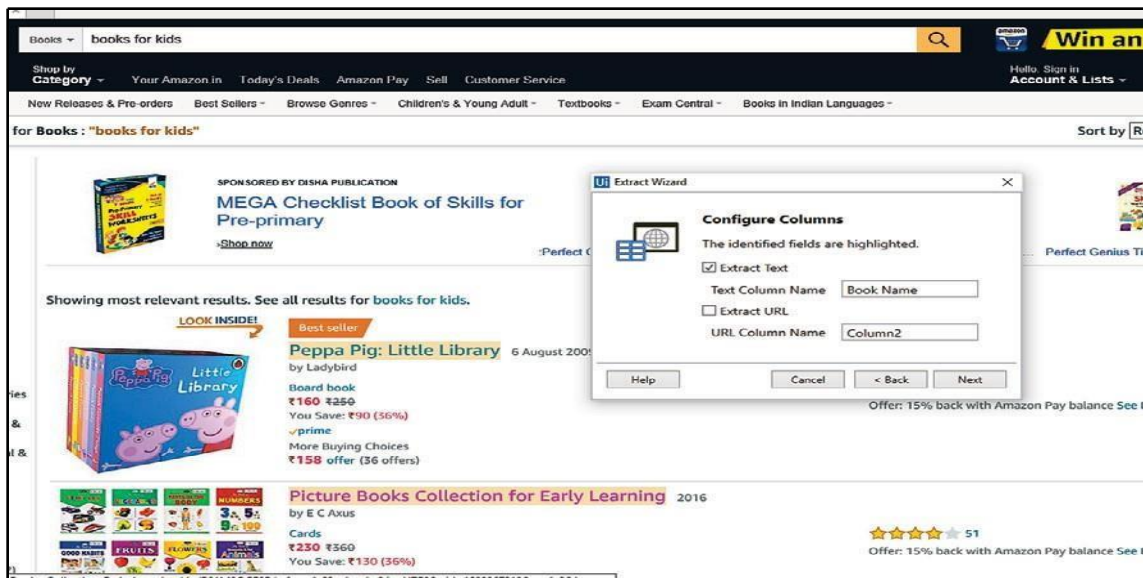


(URL: https://www.amazon.in/s/ref=nb_sb_ss_i_7_6?url=search-alias%3Dstripbooksfield-keywords=books+for+kidssprefix=books+%2Cstripbooks%2C322crd=2OWJE9AMZYS06)

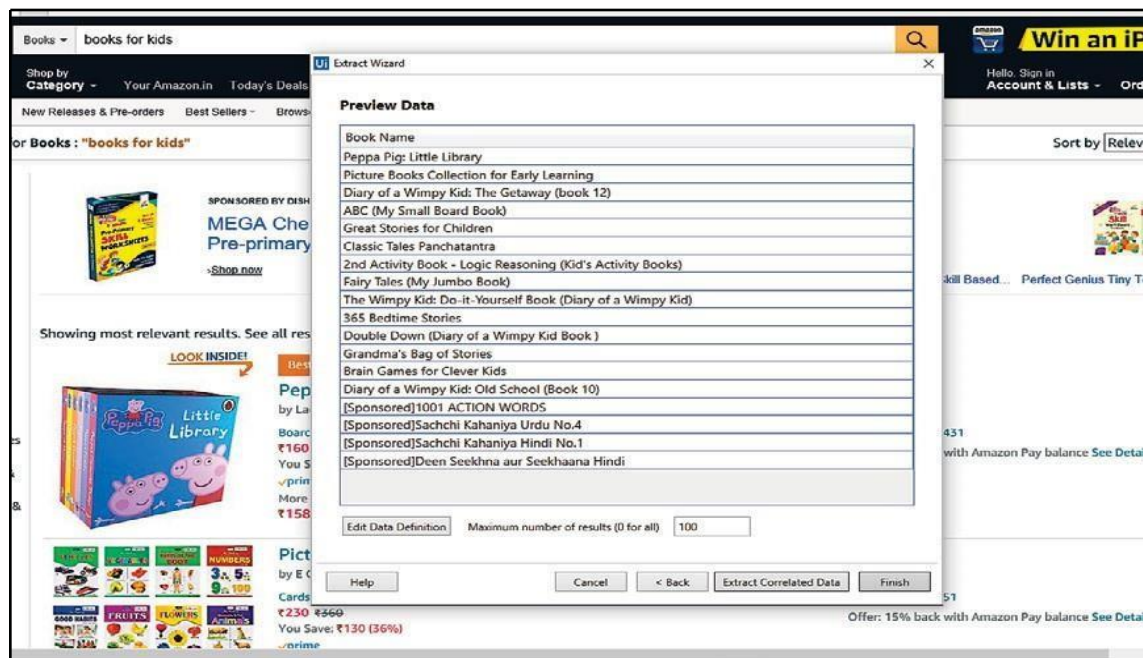
4. Click on the **Data Scraping** icon on the top left corner of UiPath Studio. A window will pop up. Click on the **Next** button.
5. Now, there will be a pointer pointing to the UI elements of the web page. Click on the name of the book:



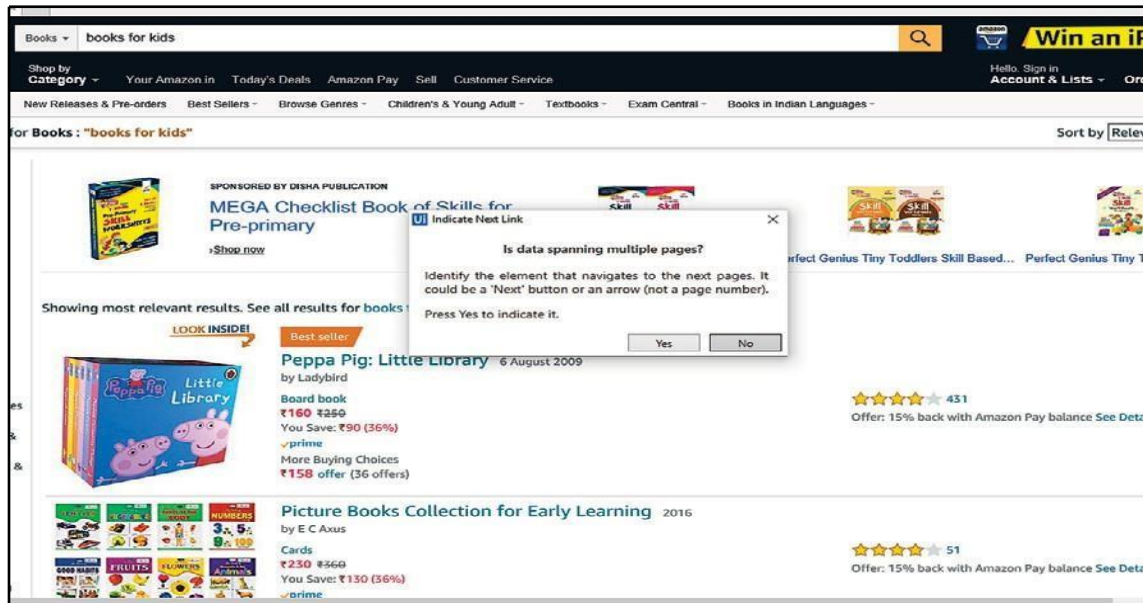
It will ask you to point to a second similar element on the web page:



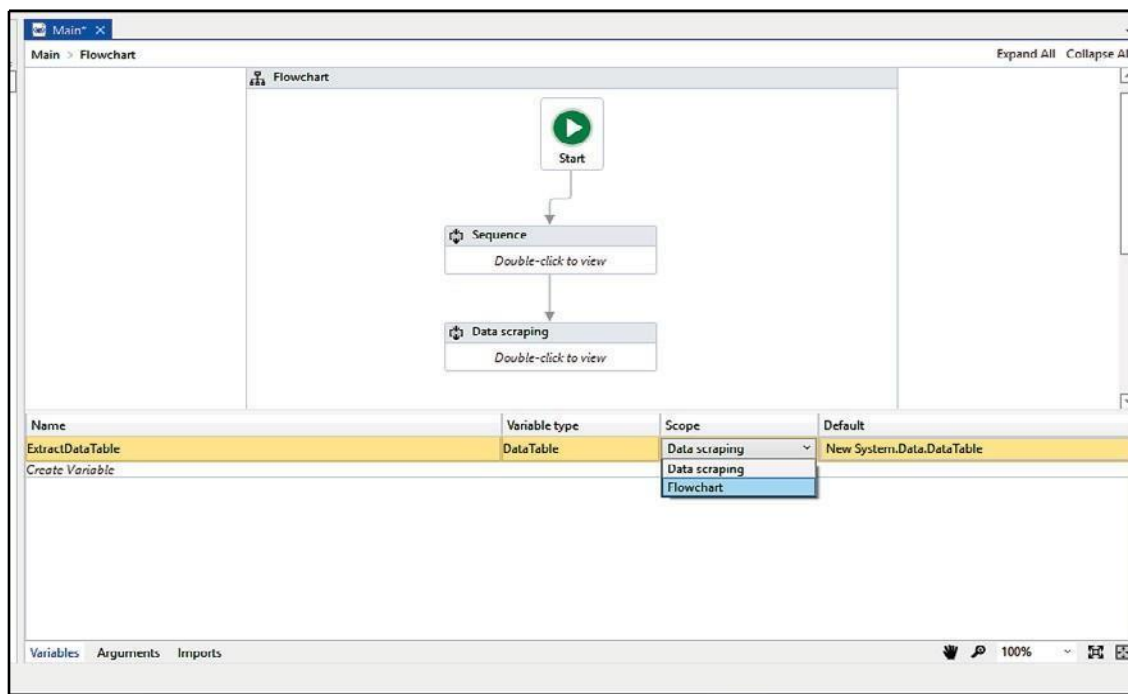
6. Point to a second similar element on that web page. Specify the name that you want to give for that extracted data column. (It will become the column name of the extracted data). Click on the **Next** button.
7. A list of names will appear in a separate window. If you want to extract more information, 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:



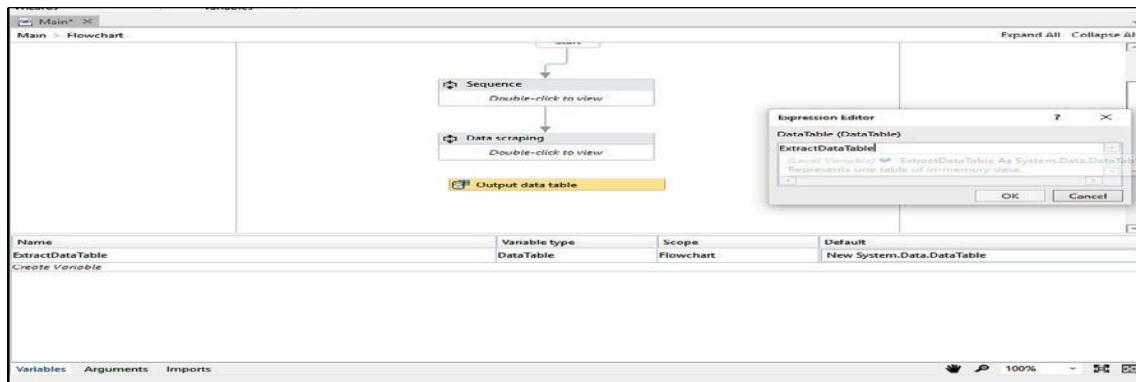
8. It will ask you to locate the next page's button/link. If you want to extract more information about the product and it spans across multiple pages, then click on the **Yes** button and point to the next page's button/link. Then, click on it. If you want to extract only the current page's data, click 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, ExtractedDataTable is generated.) Change the scope of ExtractedDataTable 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: ExtractedDataTable:



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 resultvariable 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 the resultvariable (the variable that you created to receive the text from the **Output data table** activity).
13. Hit the **Run** button and see the result

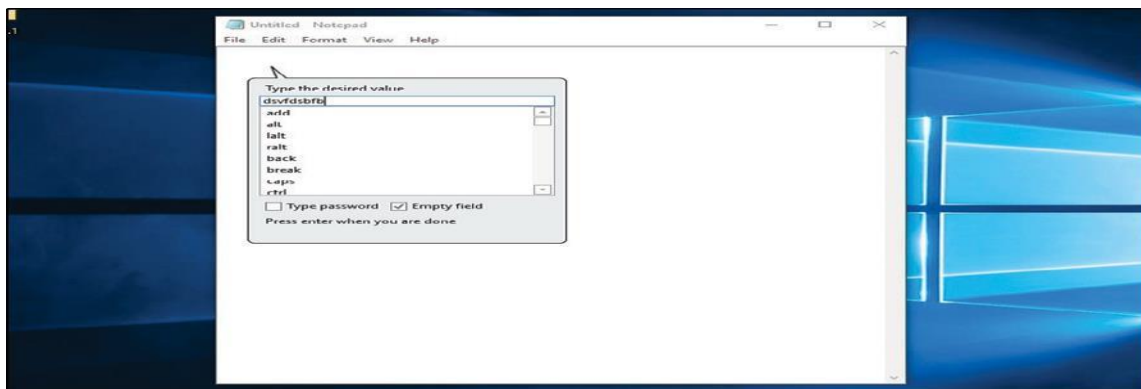
Program 4: Develop a bot for managing the activities of the clipboard, such as getting text from the clipboard, and copying selected text from the clipboard.

1. Drag and drop a **Flowchart** activity from the **Activities** panel.
2. Click on the **Recording** icon on the top of UiPath Studio. A drop-down menu will appear with the options, **Basic**, **Desktop**, **Web**, and **Citrix**, indicating the different types of recording. Select **Desktop** and click on **Record**.
3. Click on **Notepad** to open it. A Notepad window will pop up:

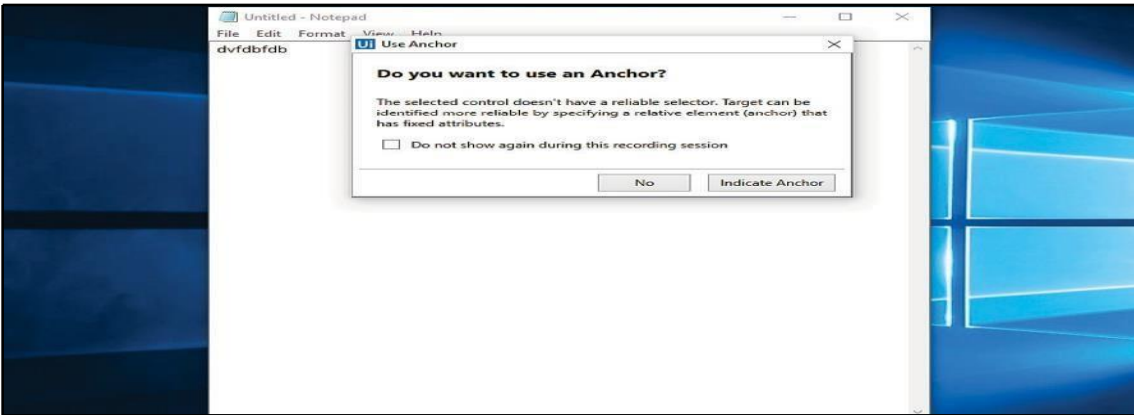


4. Click on the text area of Notepad. Type into the dialog box and check the empty field. (Checking the empty field will erase all existing data in Notepad before writing any new data.) Press *Enter*.

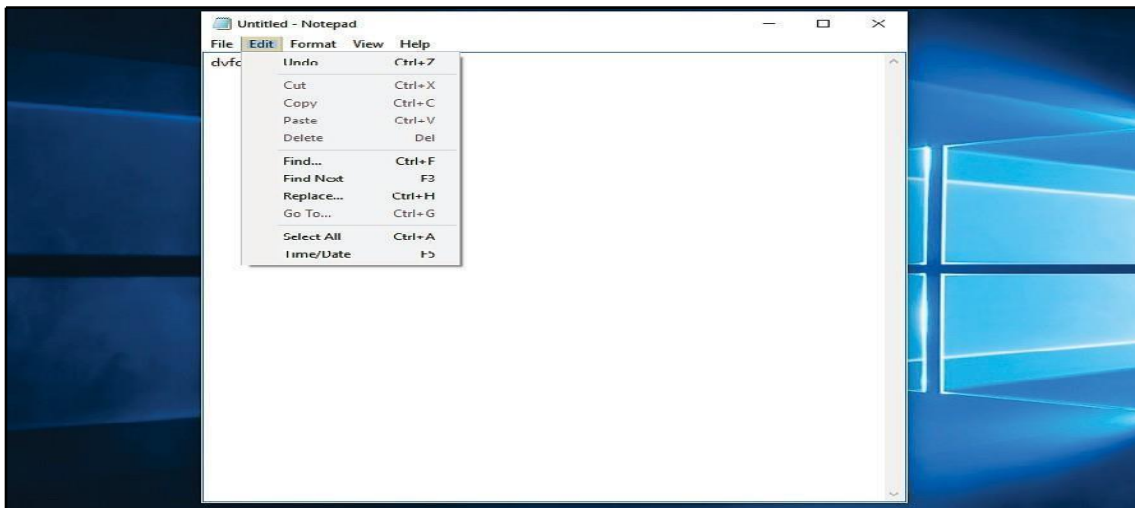
Data will be written on the Notepad text area:



5. Click on the Edit button. A pop-up window will appear asking you whether you want to use an anchor. (An anchor is a relative element of the current {focused} element.) As you can see clearly, the anchor element of the Edit button can be the File or Format button. In this case, we have chosen the Format button:

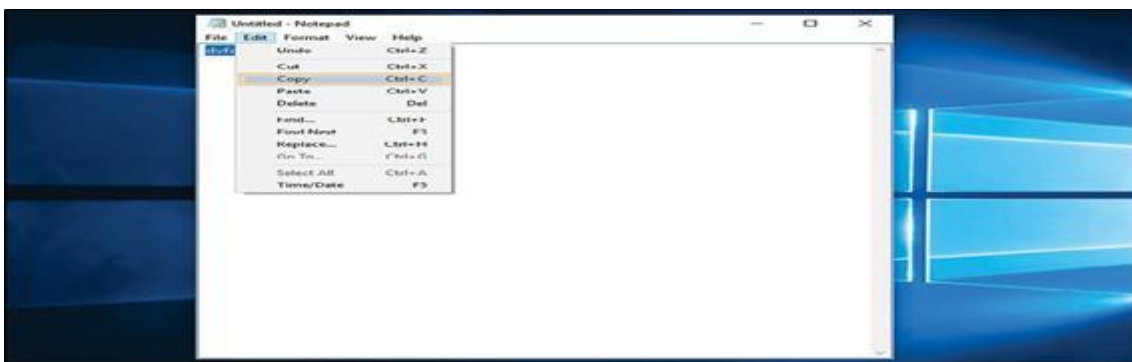


6. Then, it will automatically start recognizing the **Edit** button. Choose the **Select all** option from the drop- down list:

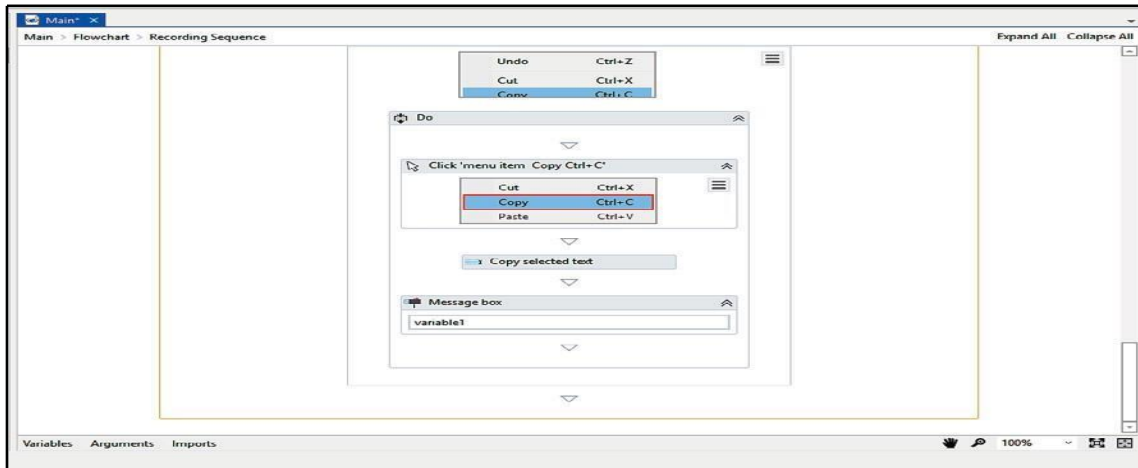


7. Once again, click on the **Edit** button. It will again ask you to indicate the anchor element. Indicate the anchor button.

8. **Edit** button will be highlighted, giving you a drop-down box. Select the **Copy** option:



9. This copied text is now stored in the clipboard. We can use the **Get from clipboard**, and **Copy selected text** activities to copy the text that is stored in the clipboard. We will use the **Copy selected text** activity.
10. Double-click on the **Recording sequence** that is generated by the recording. Scroll down and drag and drop the **Copy selected text** and **Message box** activities inside the **Recording sequence**:
11. Create a variable of type **String** to store the output value of **Copy selected text**. This variable will

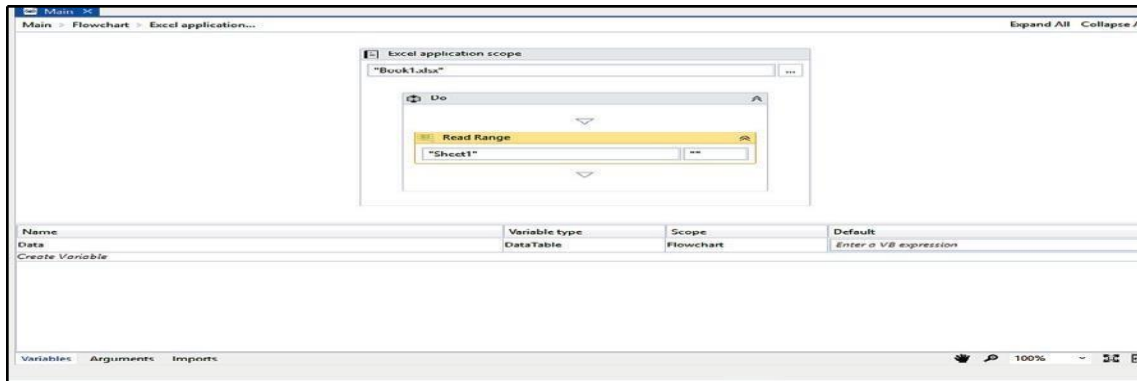


receive the required text from the clipboard with the **Copy selected text** activity. Now, specify the newly created variable in the **Output** property of the **Copy selected text** activity. This will be the required selected text that we have copied into the clipboard.

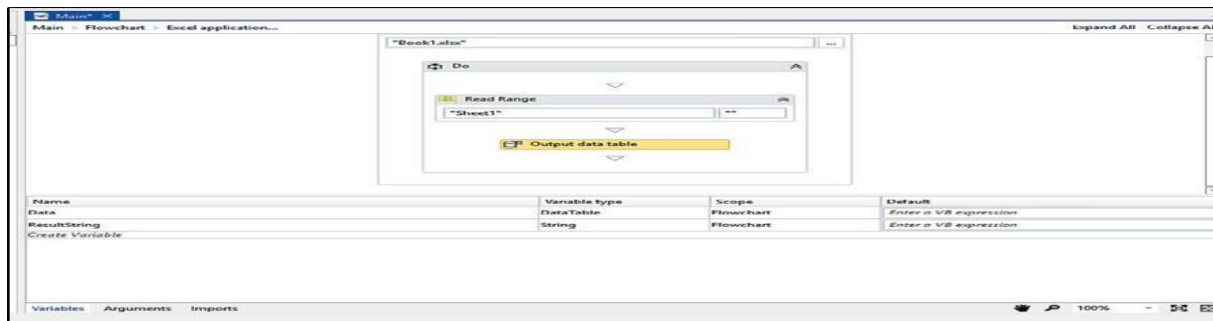
12. Specify the string variable in the text property of the **Message box** activity.
13. Hit the **Run** button to see the result.

Program 5: Develop a bot to extract data from an Excel file into a data table and vice versa.

1. Drag and drop the **Flowchart** activity on the main Designer window. Also, drag and drop the **Excel application scope** inside the **Flowchart**.
2. Double-click on the **Excel application scope**. You have to specify the path of your workbook/Excel file. Drag and drop the **Read Range** activity from the **Activities** panel inside the **Excel application scope**. The **Read Range** activity will read the entire Excel sheet. We also have the option of specifying our range.



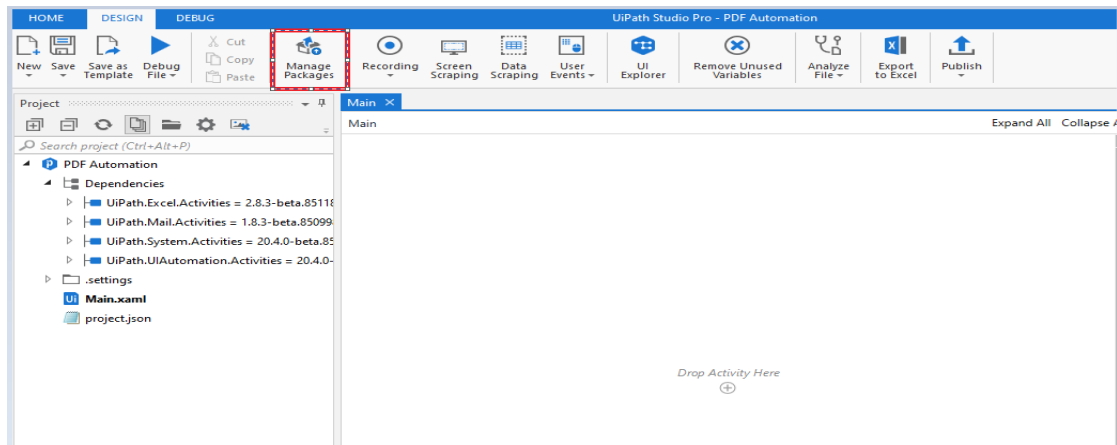
3. Create a variable of type data table and specify it in the **Output** property of the **Read Range** activity. This variable will receive the data table produced by the **Read Range** activity:
4. Drag and drop the **Output Data Table** activity inside the **Excel application scope** activity. Now, we must specify two properties of the **Output Data Table** activity: the **Data Table** property and the text property. The **Data Table** property of the **Output Data Table** activity is used to convert the **Data Table** into string format. The text property is used to supply its value in a string format. We have to receive this value in order to consume it. For this, let us create a variable of type string. Give it a meaningful name:



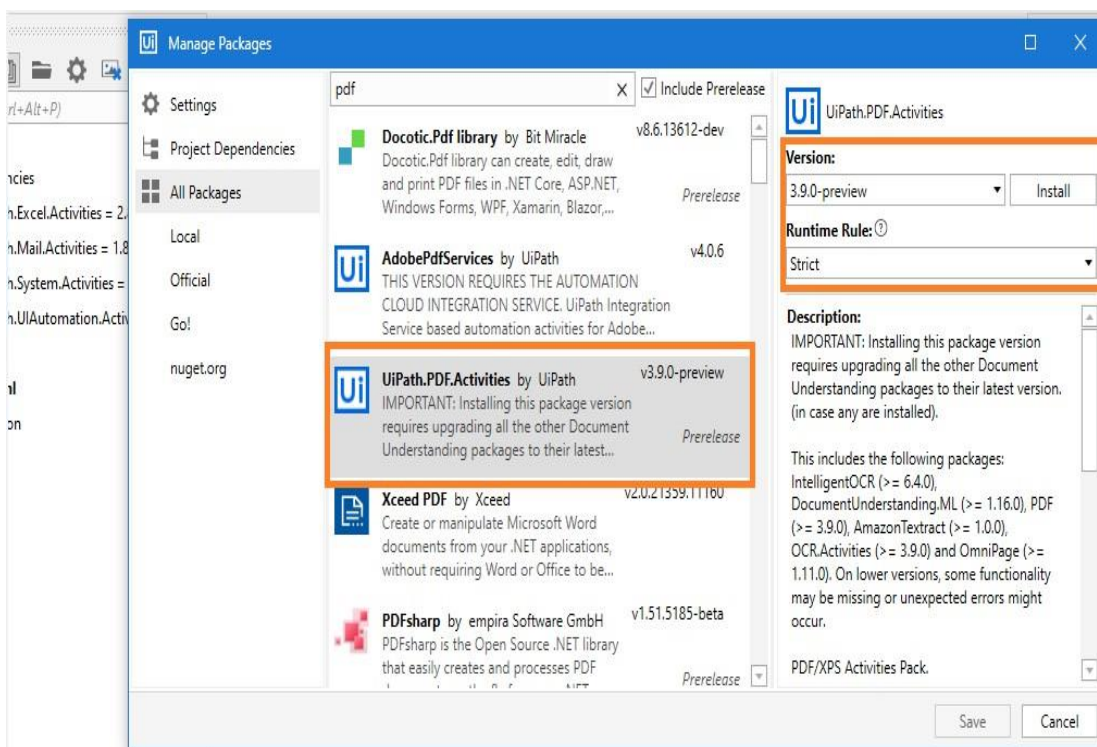
5. Drag and drop a **Message box** activity inside the **Excel application scope** activity. Also, specify the string variable's name that we created earlier inside the **Message box** activity. That's it. Press **F5** to see the result. A window displaying the Excel file data will pop up.

Program 6: Develop a bot to Automate PDF automation.

1. Go to **Manage Packages** and select **All Packages**



2. Type **PDF** and select **UiPath. PDF. Activities**.



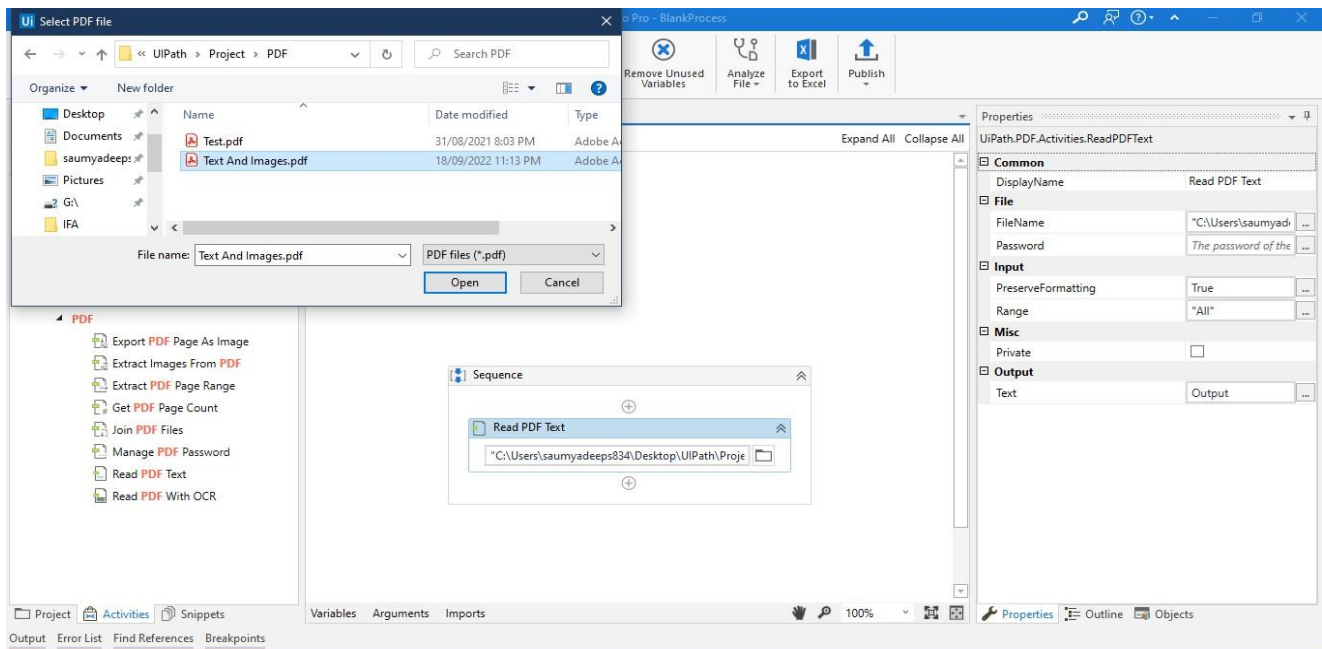
3. Install Package **UiPath. PDF. Activities**.

4. The different options for PDF Automation will be available in **UiTool** once the installation is completed.

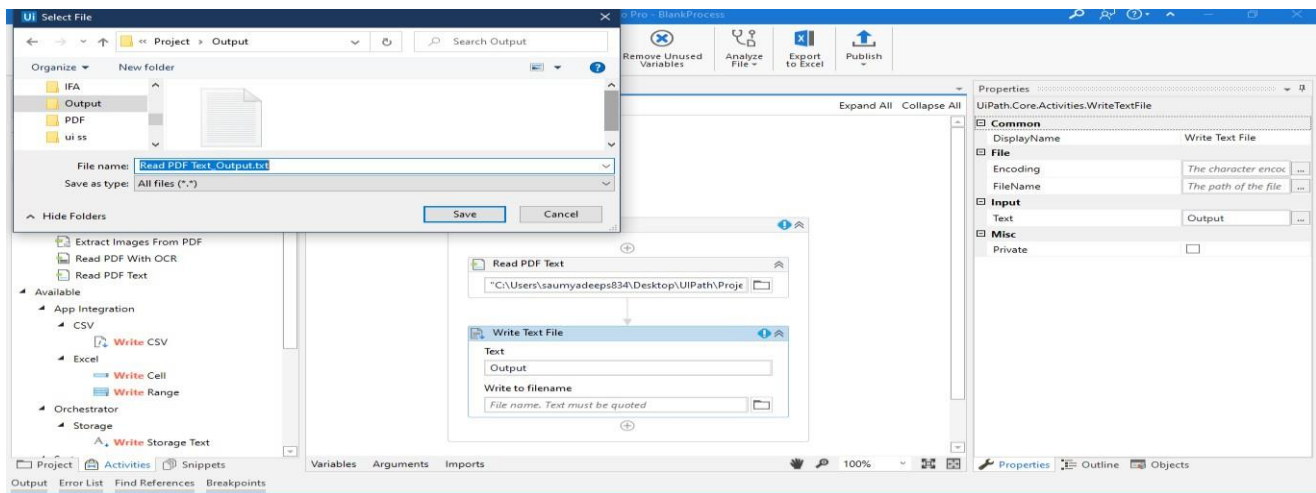


Read PDF Text: Reading and extracting data from PDF to another Text file.

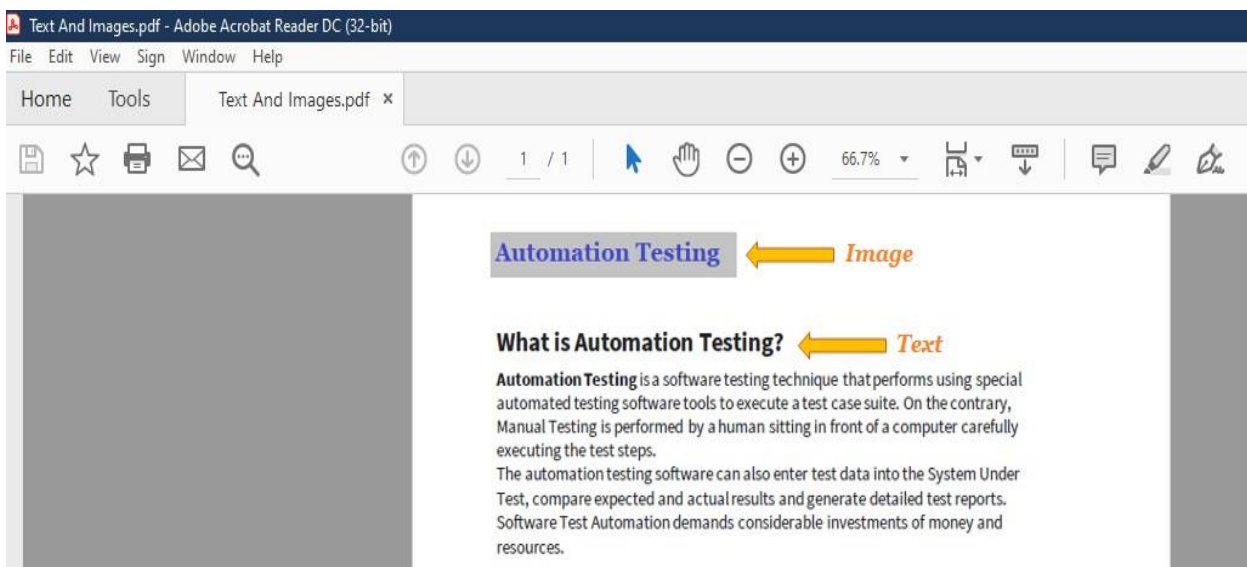
1. Under Activities, we start with a sequence. Then write PDF to view all its functions present and Drag and Drop “Read PDF Text”
2. We have to give the Input file Path for the PDF to be read. We can store the Output Text into a String Variable.



3. Now we are writing the Output to a Text file using the Write Text File Activity.

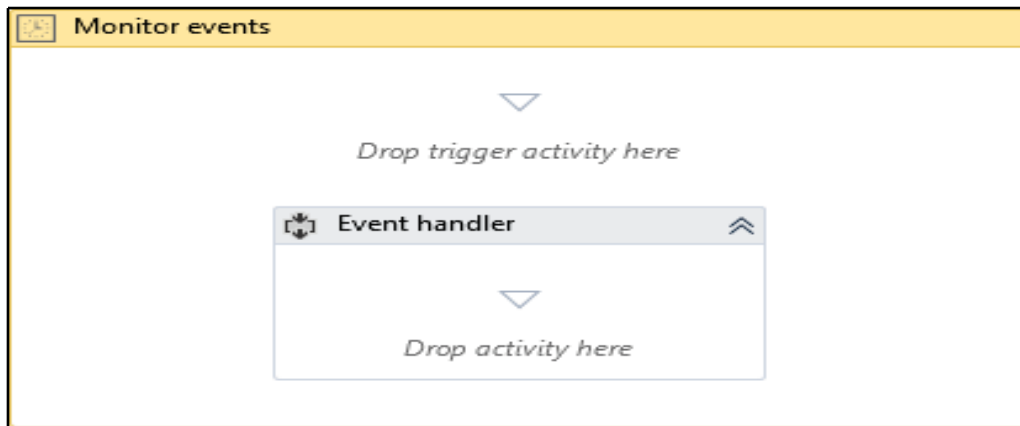


4. Under Write Text File we have to give the Input Text as the Variable Name in which we have stored the output in earlier steps. Also, we have to provide the File path where our Output Text File to be created.
5. Once we run our Process, we can see the Result as follows

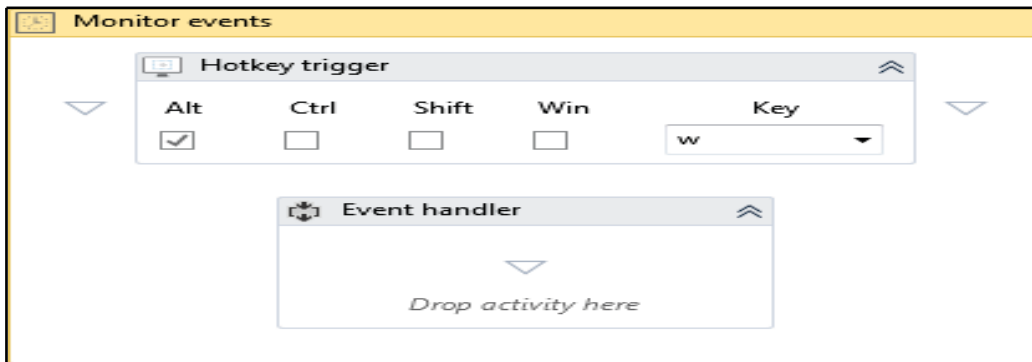


Program 7: Develop a bot for Launching an assistant bot on a keyboard event

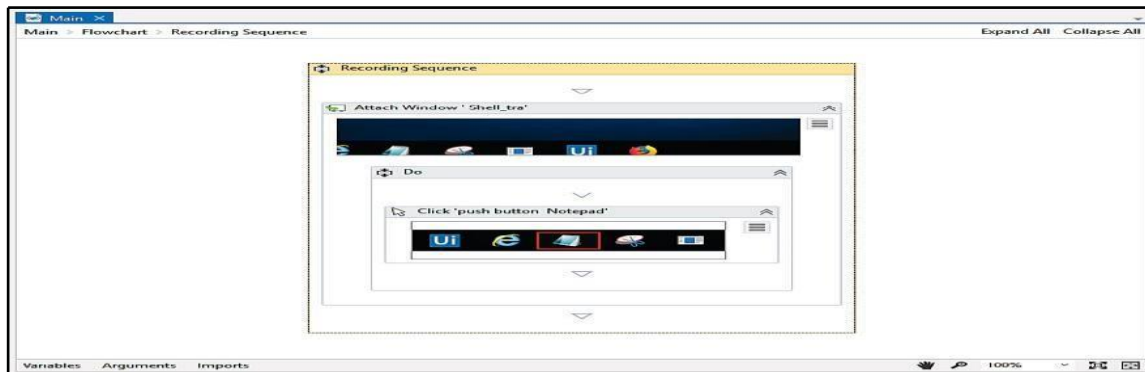
1. **Drag and drop the Monitor events activity:** In this step, we will just drag and drop the **Monitor events** activity into the workflow. When we double-click on it, it will look like this:



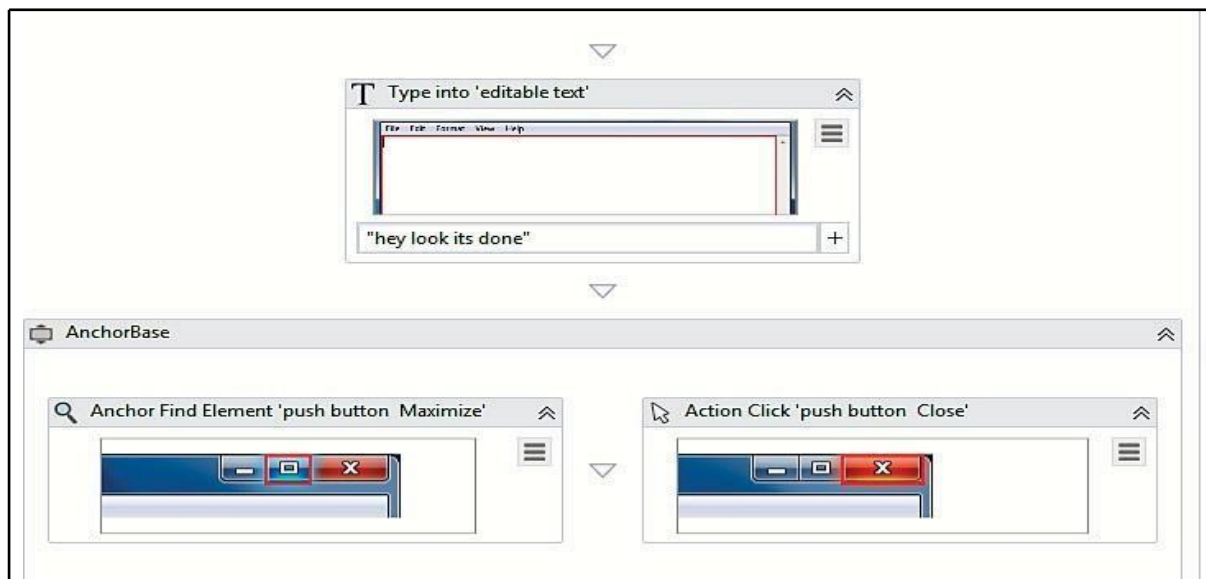
2. **Drag the Hotkey trigger activity:** In the next step, we will use the **Hotkey trigger** activity for the user to start the automation process. Assign *Alt + W* to the hotkey so that, when the user presses this hotkey, the event will be executed:



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.

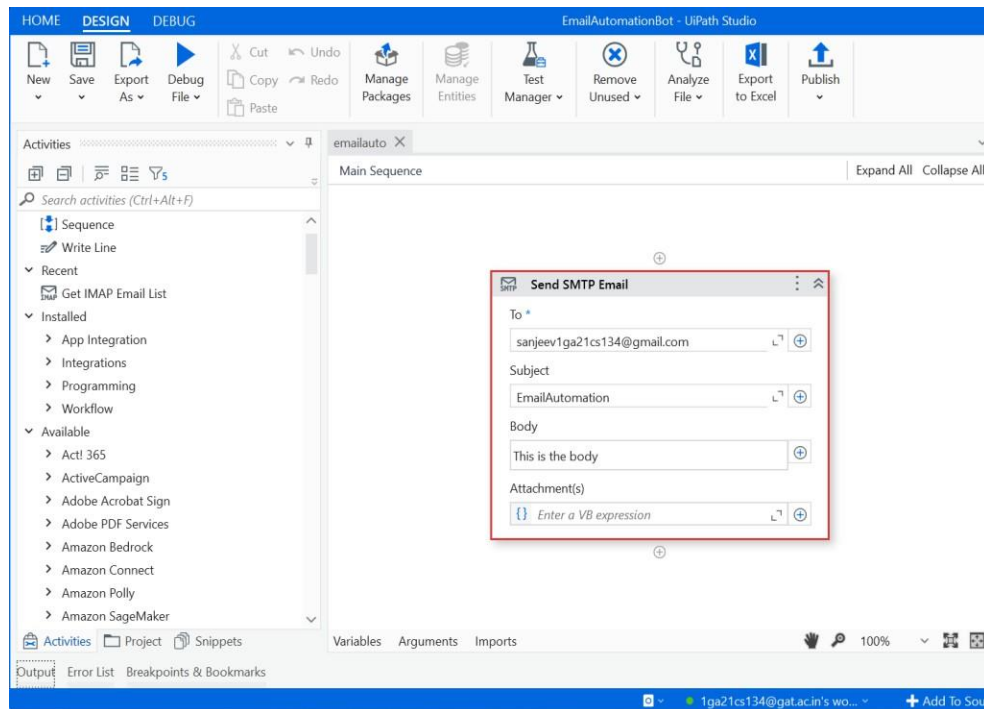


4. **Desktop** recorder. First, we double-click on the Notepad application in the window as shown in the screenshot. Select the **ClickType** as **CLICK_DOUBLE** from the **Properties** panel:
5. After that, we record the typing action and close the Notepad window. Then click on **Do not Save** because you do not want to save your file. The sequence is shown in the following screenshot:

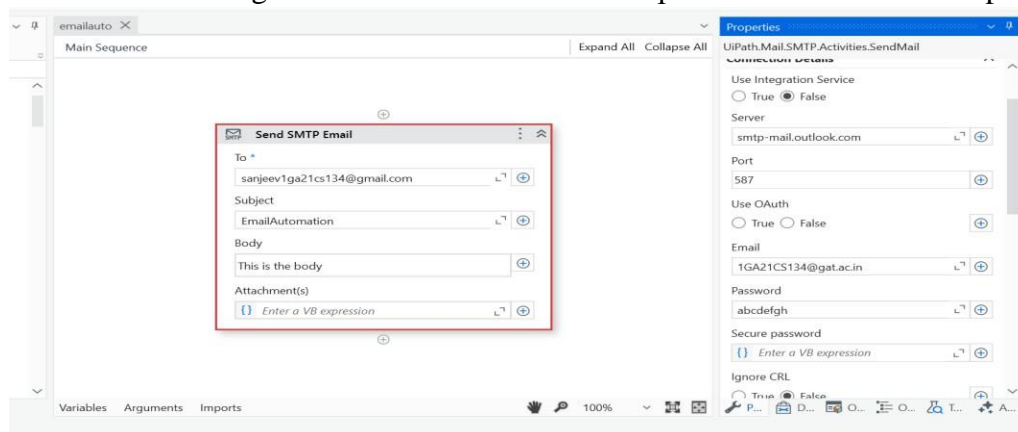


Program 8: Develop an email automation bot.

1. Open UiPath Studio.
2. Create a new project by selecting **Process** and give it an appropriate name, like "EmailAutomationBot."
3. Go to the **Manage Packages** tab and install the required email activity package (e.g., **UiPath.Mail.Activities**).
4. Drag and drop the **Send SMTP Email** activity from the activity panel.
5. Fill in the required details such as **To, Subject, Body** fields.



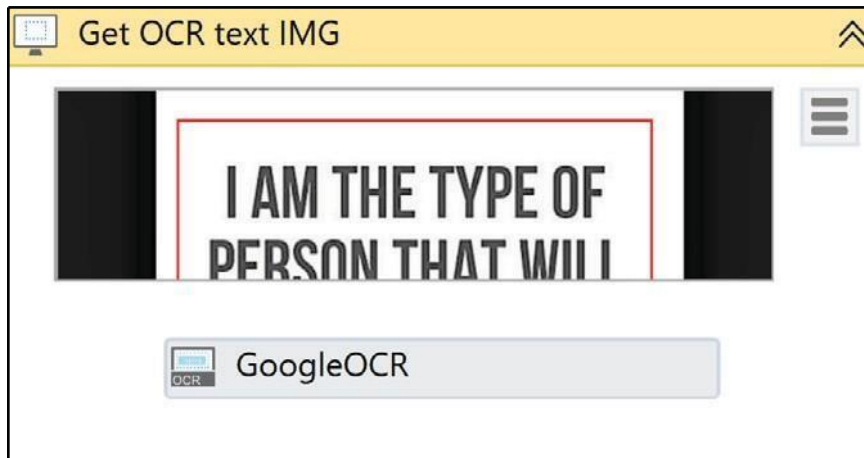
6. Fill in the **Sender's email, password, server name and port number** in the **properties**. (To get the server's name and port number, go to the email website and note it. For our reference we are using outlook email for sending for which server name is "smtp-mail.outlook.com" and port number is 587.



7. Save it and Run the process.

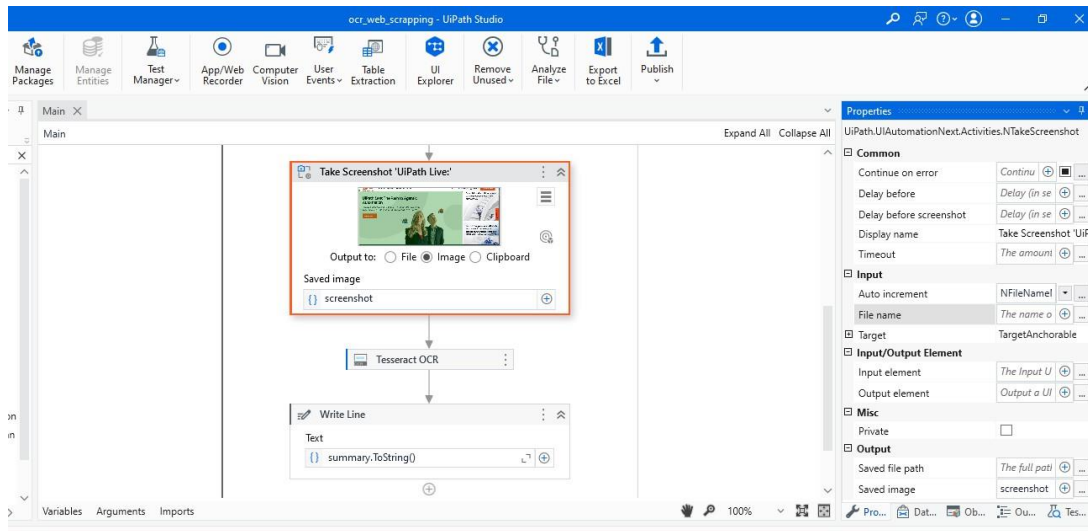
Program 9: Develop a bot to extract the text from the given image using OCR.

1. Open UiPath Studio and click on Blank project. Give it a meaningful name. On the Designer panel, drag and drop a **Flowchart** activity.
2. Next, drag and drop a **Get OCR Text** activity from the **Activities** panel and set it as the start node. Double-click on it and click on the **Indicate on screen** option. Choose the specific area from which you want to extract the text from the image. In our case, we are using an image that we have searched for on Google.
3. Now, click on the **Text** property of the **Get OCR Text** activity. A window will pop up as shown in the following screenshot. Right-click inside the window and choose **Create Variable**. Give it a meaningful name, press *Enter*, and click on the **OK** button. A variable will be created with that name:
4. Drag and drop the **Message box** activity. Connect it to the Get OCR with text activity. Double-click on the **Message box** activity and specify the variable name that you have created earlier in the expression box (In our case, it is the result variable).
5. Press *F5* to see the result.

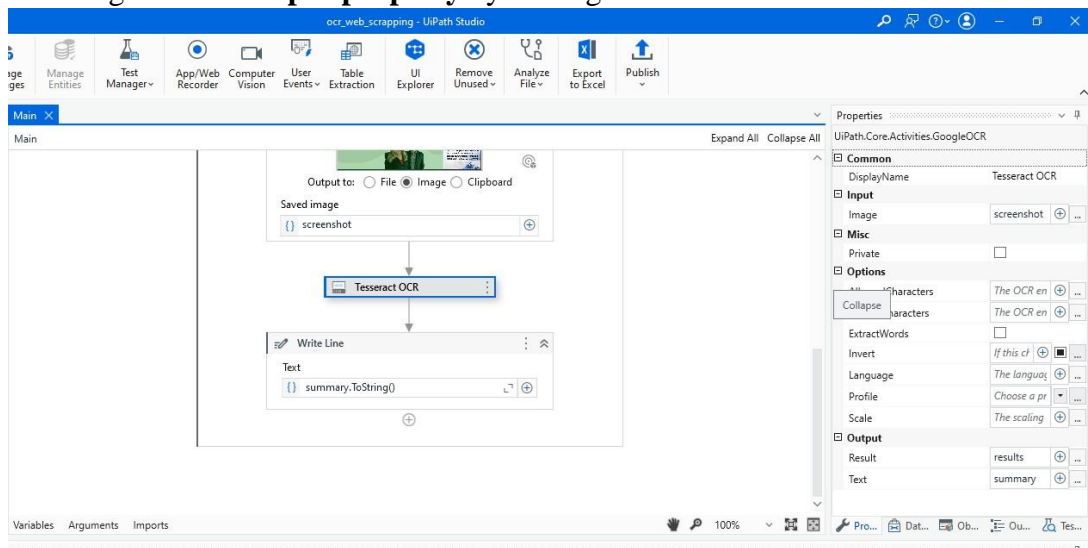


Program 10: Develop a bot to extract text from the UiPath website's main page using the OCR Scrapping method.

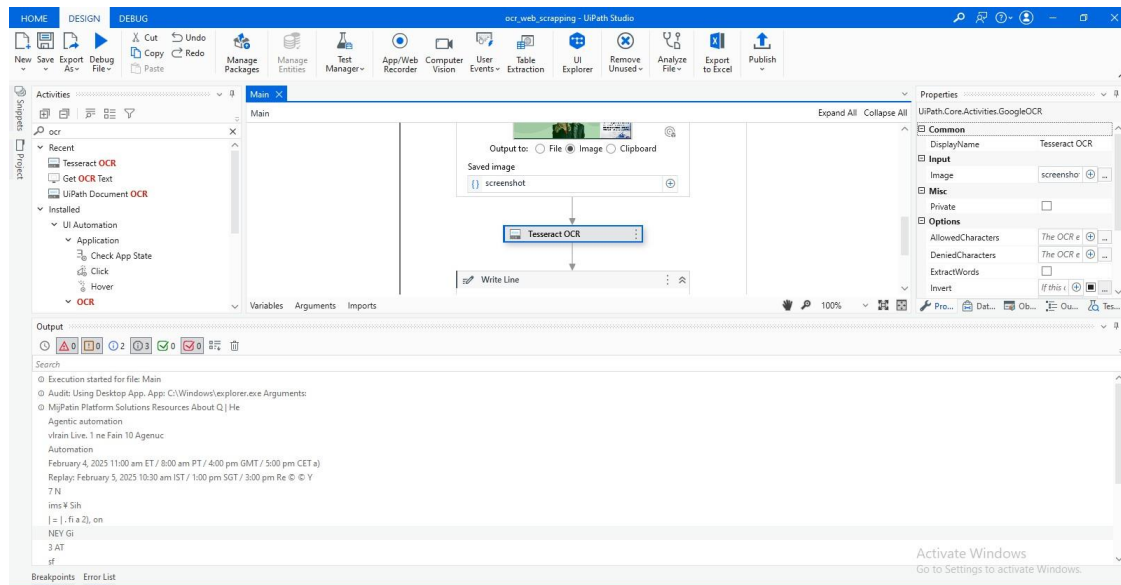
1. Drag and drop the sequence activity from the activity panel.
2. Drag and drop the **Use Application/Browser** activity.
3. Navigate to “https://www.uipath.com” on your browser.
4. Indicate the application/browser after navigating to the path in the background.
5. Add the **Take Screenshot** activity after the Use application/browser activity.



6. Indicate the UI element on the web page to take the screenshot.
7. Save the screenshot in a new variable, “screenshot”, by mentioning it in the **Output** property of Take Screenshot activity.
8. Add an **OCR engine (here Tesseract OCR)** of your choice to the Take Screenshot activity.
9. Fill image filled of **Input** property by writing the variable name.



10. Fill in the **Output property** to save the string generated from the OCR.
11. Add a **Write Line** activity after the OCR activity and display the text using the variable where you stored the result of Tesseract OCR.



12. Save it and run it to see the result.