Learning Objectives

Data persistence   Selectors   **Robots for basic automation workflows**

Read/Write to Excel   **UI Explorer**
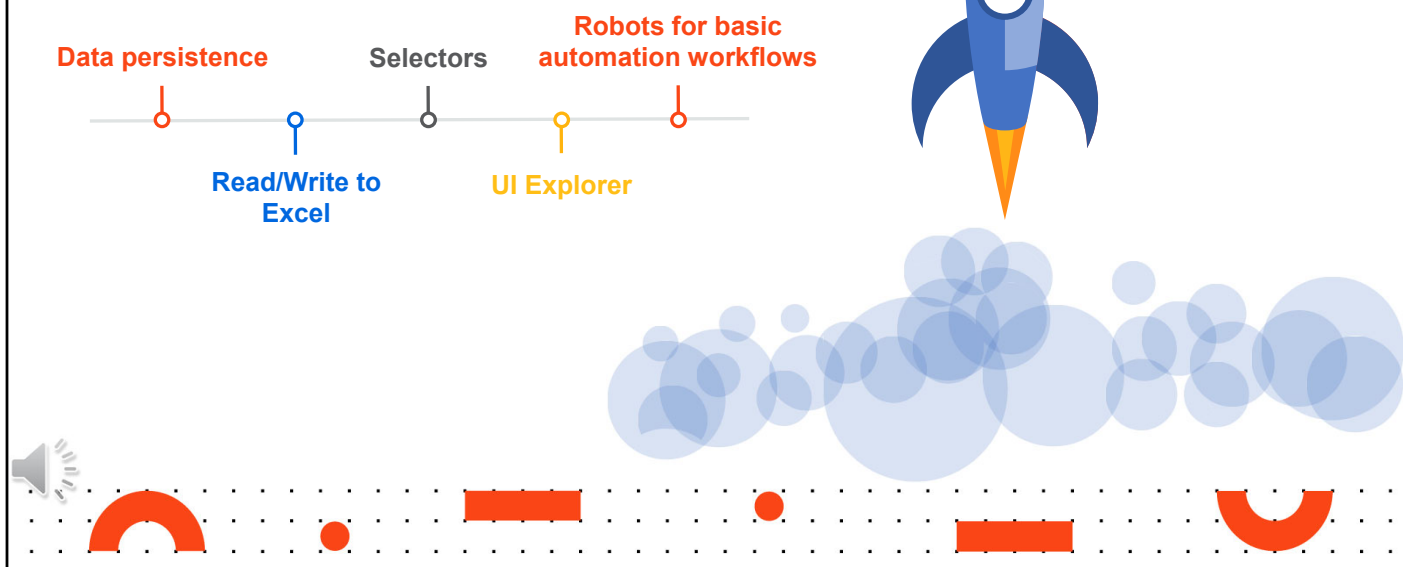
Hello, and Welcome back to Step into RPA course.

By the end of this section, you should be able to:
Understand Data persistence and its use in UiPath
Read and write to excel
Describe Selectors in UiPath
Understand the UI Explorer and when to use it
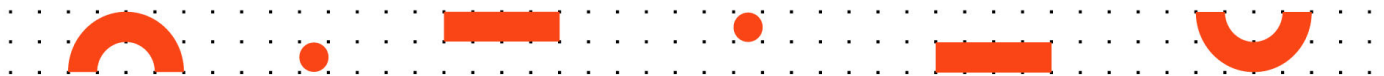Create Robots for basic automation workflows

Data Persistence

Data persistence is the property of data to survive in the same form after the process or application which has created it has ended. For data to persist it needs to be stored in a non-volatile memory

01 Data is temporarily saved in Random Access Memory (RAM)

Data is saved on hard drive **02**

Data persistence is the property of data to survive in the same form after the process or application which has created it has ended. For data to persist it needs to be stored in a non-volatile memory. Your computer has two ways to store data. The first is the temporary one called Random Access Memory popularly known as RAM. Its temporary in nature and works only as long as the computer is on. The moment you restart the computer data in RAM is lost. E.g. the data copied to the clipboard is lost on computer restart.

The other way is to save the data on hard drive for example saving a word file on your computer. This file will remain available after you close word or even after your restart the computer. This is data persistence. This helps in using the data in future and also sharing it with others. In this module we will see some examples where UiPath will help save data on disk and read it later.

Read from an Excel file
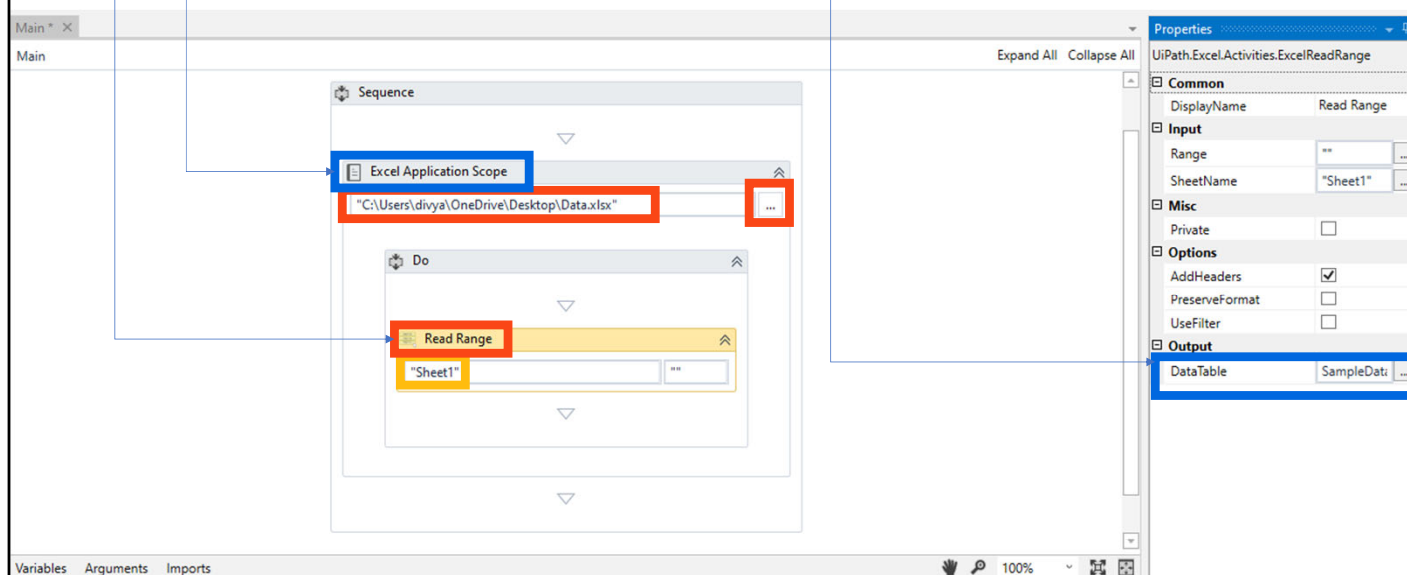
Now lets learn how to make a robot read data from an excel file and also make it available for other applications to read it. We will accomplish this in 5 steps.

Step 1 You need to open UiPath Studio. Now search for "Excel Application Scope" activity and drag-drop it in designer panel

The next step is to search for Read Range activity. Now drag-drop this activity within the Excel Application Scope activity. Make sure you drop the activity within the excel application scope and not below it.

In Step 3 you need to specify the location from where the robot will read the excel file. Click on the button with three dots on the top right side of the Read Range activity. This will allow you to chose the file and its location on the computer

In step 4 you need to provide the name of the sheet within the excel file. By default the name is "Sheet1". You can keep the next box blank so that everything on the sheet is read. Here we will quickly learn how we can create a robot within a work flow to read an excel file. In order to do that you open your UiPath Studio and then designer panel you drag and drop excel application scope activity that activity is available in the activities panel, you can also search for a excel application scope and drag drop that . The second step is that you drag drop read range activity

The last step is to go to properties panel. Click on output box and type "Ctrl + K". It will prompt you to give the name to the variable. Lets name it "SampleDataTable:. You can give it a name of your choice and this will create a data table. All the data that you read from the sheet will now be saved in this data table. You can use it later or create other applications which can use it or perform operations on it.

Write to an Excel file

The write range "Extivily" is plaised to brite the already read data in the excel file
Drag and drop "Excel Application Scope" activity
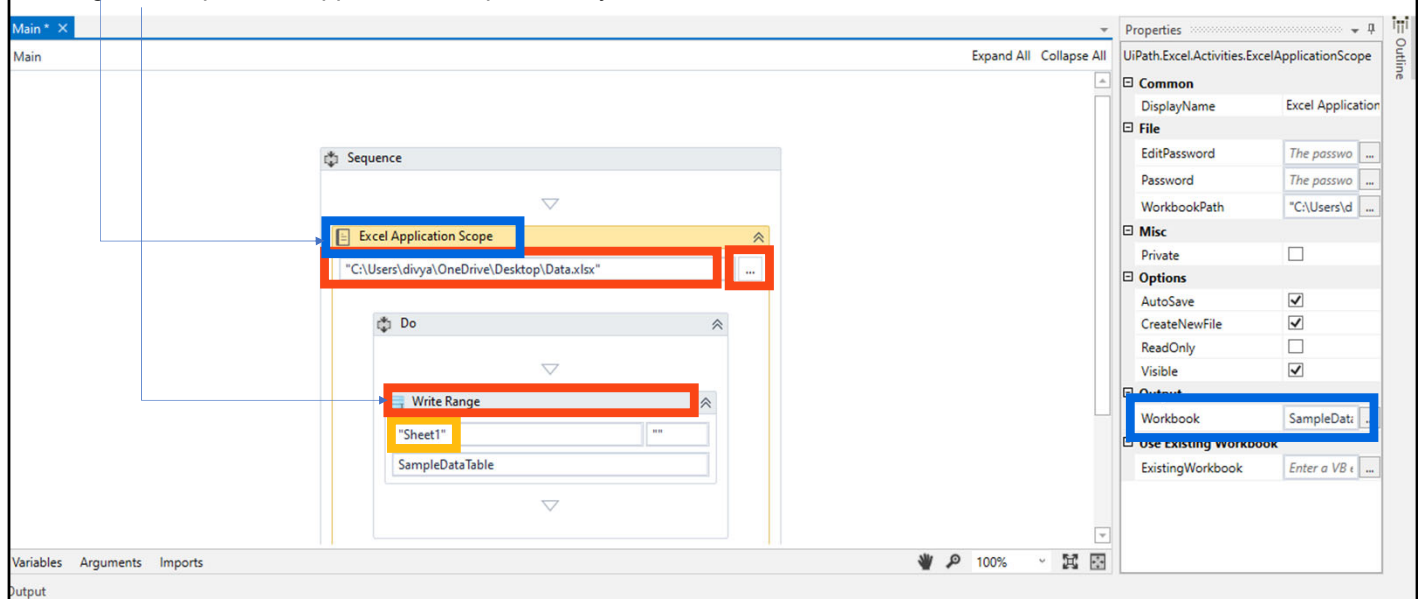
Now lets learn how to write to an excel file. This is also a 5 step process. Some of the steps are similar to reading from an excel file

The first step is to drag-drop Excel Application Scope activity to designer panel. You don't need to do this if you continue on the robot created in the "Reading from excel" section.

Step 2 is to drag-drop the "Write Range" activity within the excel application scope activity. You can drop this right below the read range activity.

Step 3 is to specify the path of the new excel file on which you are going to write the data. You can store it at the same location like in the Read Range activity but with a different name.

In Step 4 you can leave the default value "Sheet1" and leave the adjacent box blank.

The last step is to provide the name of the memory space where you have kept the previously read data, that is SampleDataTable.

Once you execute this robot, it will read from the excel file, copy it to SampleDataTable and then copy from SampleDataTable to a new excel file.

Selectors

Selectors are a fundamental part of UiPath for identifying individual UI elements on the screen
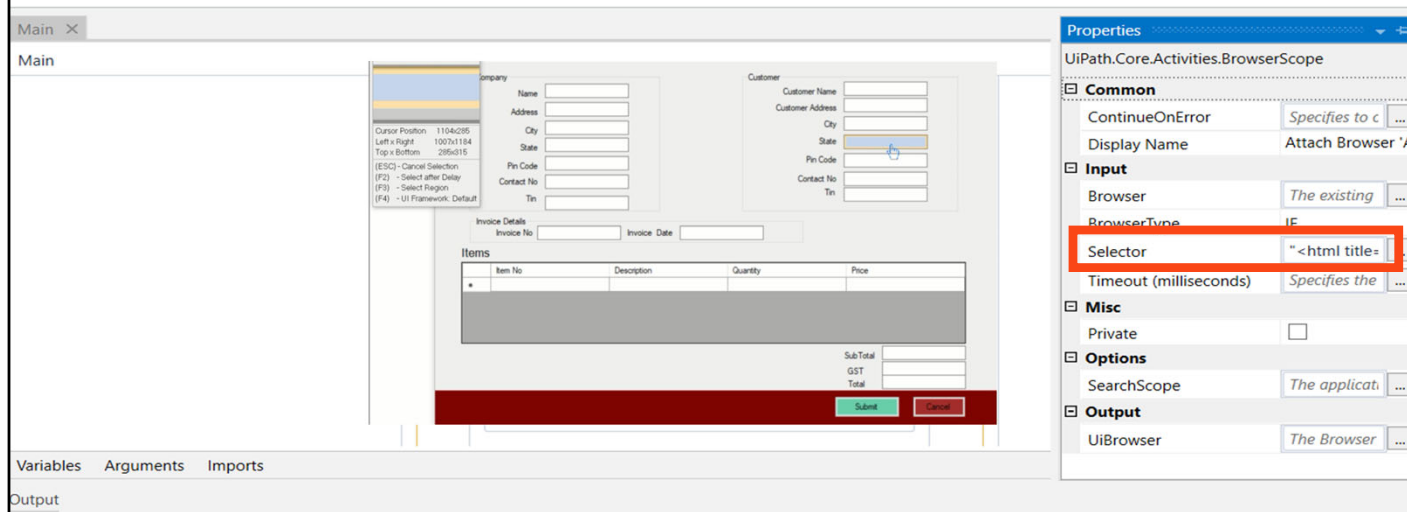
The next big skill you are going to learn on UiPath is Selectors. Selectors are fundamental part of UiPath and they help in recognizing Ui elements on screen.
Human users can intuitively identify graphical elements or objects on the screen. The software robots need to be "trained" to recognize the same elements that a human would see. For this there are a few different techniques depending on the type of automation. Usually the objects identified with the UiPath recorder will be accurate and you can directly work with the generated activities. There are a few special cases in which you will need to go deeper into an object's properties and manually select the attributes that uniquely identify an object. This is where the selectors come into play.

Let me explain this with an analogy. Think of number plates in a city. The cars can move around, their colour can change, but we can still identify each car by its number plate. While using Uber, we rely on the plate number to jump on the right car. Similarly, the position of a checkbox can change, a button can look slightly different, but with the help of selectors, a UiPath robot can interact with the UI elements.
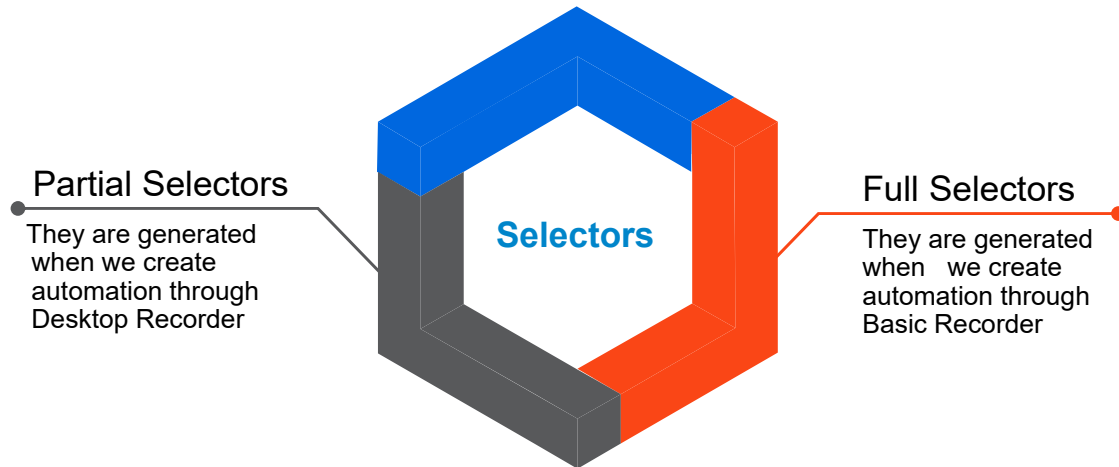
In UiPath studio, you will find the selector activities inside the UI automation activity.

HTML webpages and user interfaces are built by using a series of containers where one is nested in another which might be further nested in another container. Selectors store these attributes so that a specific UI element can be identified.
You can think of Selectors as address of a UI element. A Robot needs to communicate with many UI elements and Selectors help in identifying the elements.

Types of Selectors

Selectors are of two types: Partial and Full Selectors.

Partial Selectors
They are generated when we create automation through Desktop Recorder

Selectors

Full Selectors
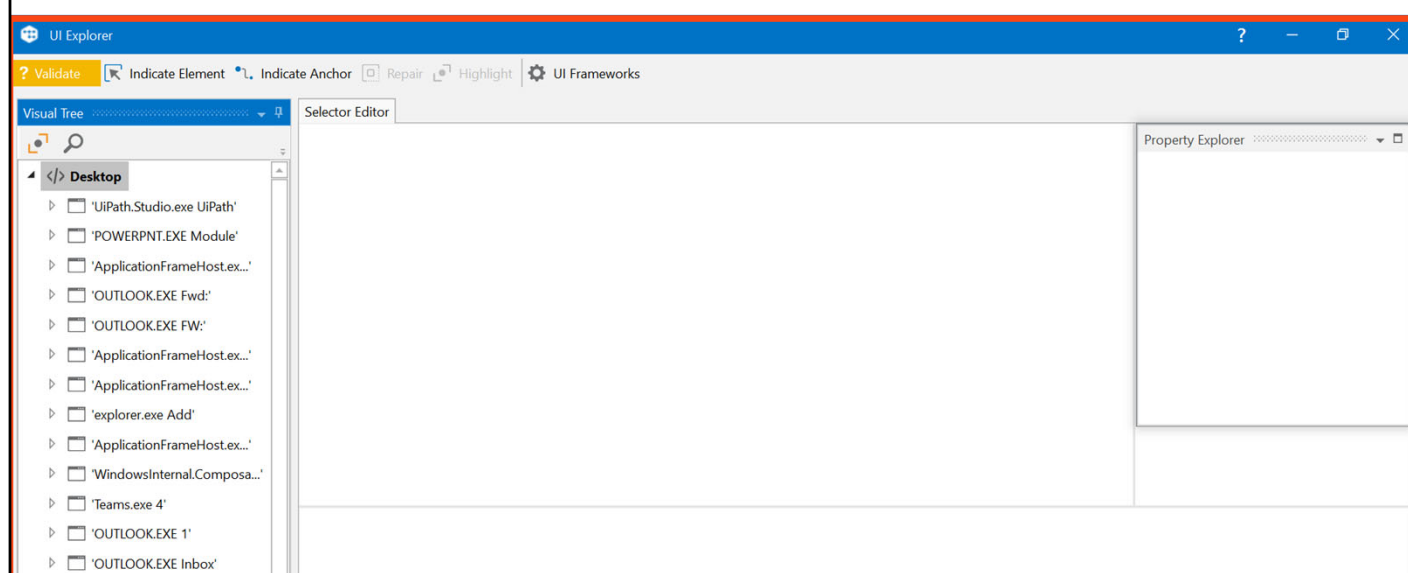They are generated when we create automation through Basic Recorder

Selectors are of two types: Partial and Full Selectors.

When we create automation through Desktop Recorder, **partial selectors** are generated. They do not contain the top-level window information. They are more suitable when the robot has to perform multiple actions in the same window or application. In these cases, the activities will be placed inside a container, such as Open Browser or Open Application.

When we create automation through Basic Recorder, **Full Selectors** are generated. They contain all the information of the UI element. They are suitable when the Robot has to switch through multiple windows and the use of containers would add unnecessary complexity.

UI Explorer

Now that you understand what Selectors are, let dig a little deeper. What if you want to create a custom selector to identify a UI element? You can do this through UI explorer. To open the **UI Explorer** window, click the **UI Explorer** button in the **Design** tab. Alternatively, the **UI Explorer** can be launched from the **Tools** page in the Studio backstage view.

When UI Explorer opens, you can see Validate, Indicate Element, Indicate Anchor and Highlight tabs. You can also see Visual Tree which has a list of containers. Now lets understand each one in detail.

Visual Tree is defined as a "list of containers from the parent container to the target UI element." It displays a tree of the user interface hierarchy and enables the user to navigate through various options. You can see the applications in an alphabetical order. When you double click a UI Element from the visual tree you can access Selector Editor, Selector Attributes and Property Explorer.

The Selector Editor Panel
Displays the selector for the specified UI object and enables you to customize it.

The Selector Attributes Panel
Displays all the available attributes of a selected node(from the **Selector Editor** panel).

The Property Explorer Panel
Displays all the attributes that a specified UI object can have, including the ones that do not appear in the selector.

Indicate Element
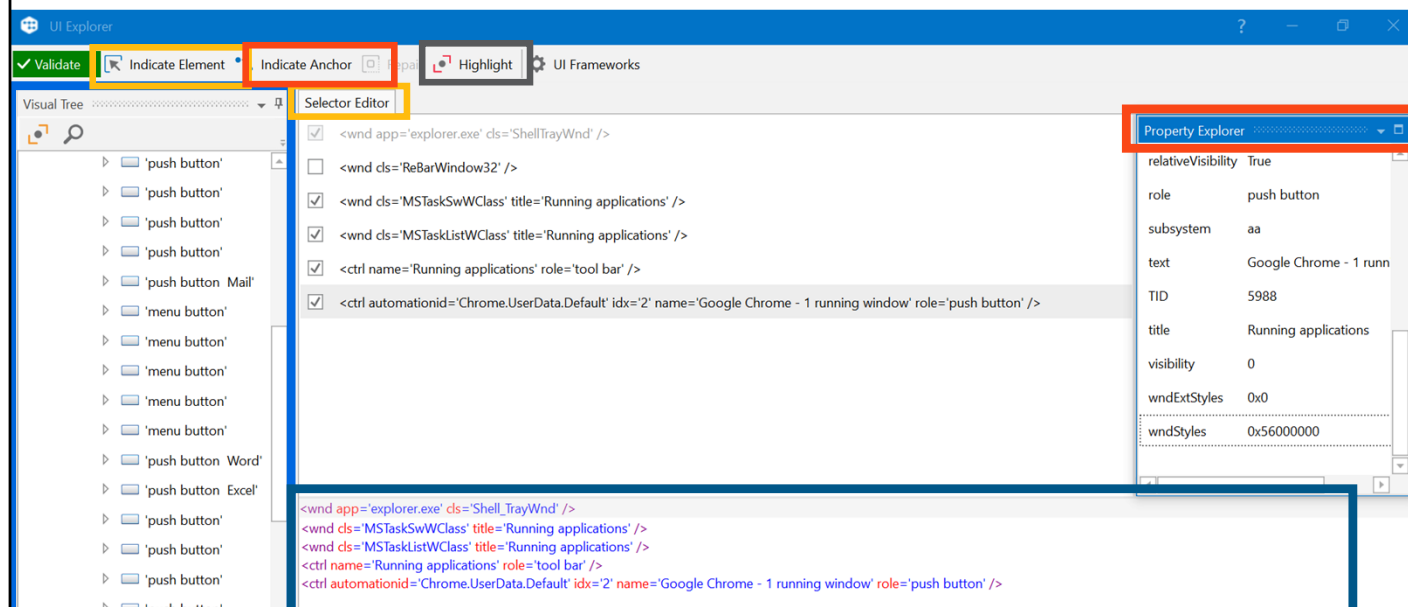Indicates a new UI element to replace the previous one.

Indicate Anchor
Enables you to choose an anchor relative to the target UI element.

Highlight
Brings the target element in the foreground. The highlight stays on until it's switched off. The button is enabled only if the selector is valid.

Properties of UI Explorer

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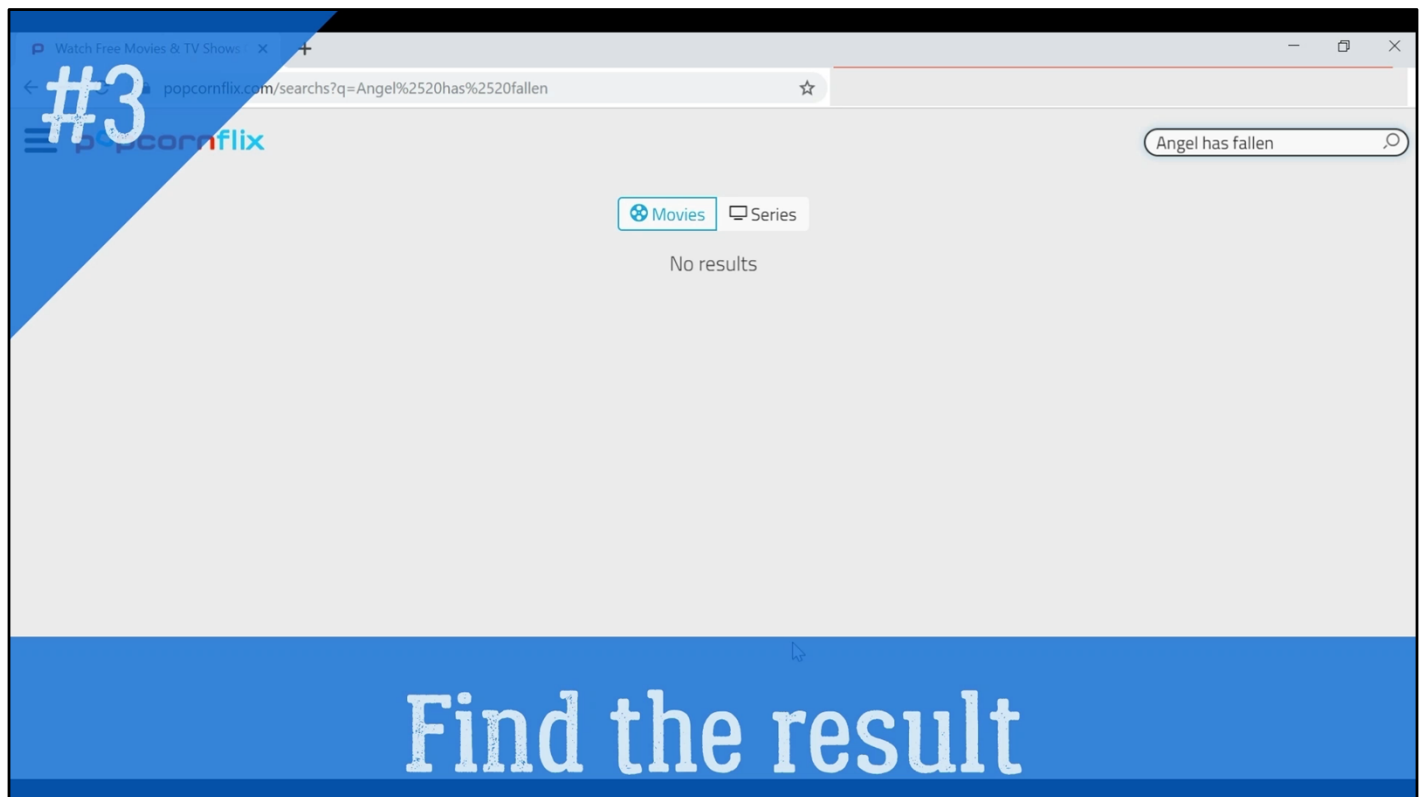
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Find the result

Now in step 3We have to figured out that whether movie has been found on the website or not. Here we have to use some intelligence that how to do figured out that whether a movie exists on that website or not. in this particular case, it is simply straightforward that if no results is written that mean movie is not found. We instruct the robot to find no results on this website and if no result is found that mean the movie is not found. Let's find an activity which can help us to finding no results. Here we place it and create as an image, and it will check whether this image exists or not okay. SO we found that activity from that activities panel which is image exists and will click on "Indicate screenshot inside the browser". So we'll say this particular image which is equivalent to no results, exists on website or not. Be careful when you select the borders of "No results" and in the properties where the properties is found will do "CTRL+K" and create a memory space where it will store whether no results has been found or not. Okay! So this is done. So after creating that notepad which we use later, we will drag-drop here IF and ELSE statement. So, IF /ELSE will help us in figuring out if movie is found do something else if movie is not found we do nothing. So, if movie is found, we have to save the results that is step 4 if the movie is found save the results. You not saving any result movie is not found. So, How you to do figure out. In the previous step, In the properties there is "noresults" memory space which is true if "noresults" is found and if "noresults" is true that mean movie is not found. So if it is true, go on left-hand side if it is false then go on the right-hand side if "noresults" is true don't have to do anything. If "noresults" is not true, that means something is found and what we have to do. We have to open the notepad. How do we open that notepad? Let's go in recording use basic recording and click start app, click on that it will automatically figure it out and generated the code then we will type the movie has been found before that anything. We say, and type lets see how it works. So we will drag and drop this in the else part type movie has been found. Now we have to save this again. We will take help of basic rewarding now how to do we save it? We can press CTRL+S to save it and if this particular window comes up. You will manually press CTRL+S on the notepad, and then you type here found.txt and then you have to click on save. We are done so their steps will also go here. Now save it and test it. Now it have open the browser and searching for the movie for the last step is sending an email if the movie has been found. It is very easy if you have outlook in your system. We'll go to activity panel, find mail and send outlook message. Just drag-drop the same sequence when the movie has been found. Type the two address, subject and body, and we are done. If we run it, It will send the mail to mine email address, It is highly recommended that you try out yourself, if you are not able to do something comeback watch the video and do it again. ALL THE BEST.

Check Your Knowledge
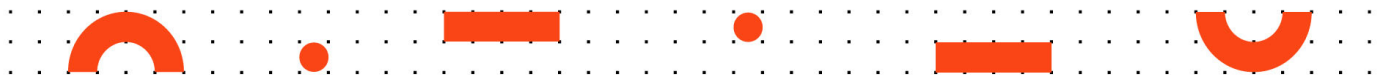
Now it's your turn to test what you have learned so far. I will challenge you with 5 questions. You need to answer at least 4 to successfully complete the quiz. Each question will have multiple answers. Its possible that more than one answer may be correct. All the best

How many types of selectors are there in UiPath?

a) 2 ✔

b) 3

c) 4

d) 5

The correct answer to this question is option **A**.

Which of these tabs can be found in the UiExplorer?

a) Error List

b) Activities

c) Visual Tree ✔

d) Debug

The correct answer to this question is option **C**,

Is data persistence required in UiPath?

a) True ✔

b) False

Is data persistence required in UiPath?

a)   True

b)   False

The correct answer to this question is option **A**

Is data persistence required in UiPath?

a) True ✓

b) False

Selectors can be generate automatically?

a)   True

b)   False

The correct answer to this question is option is option **A**.

Which activity is used to read the excel file?

Which activity is used to read the excel file?

a)   Read Range

b)   Write Range

c)   Excel Application

d)   None of the above

The correct answer to this question is option **A**.

Other examples that you should try automating

Searching for a job on job portals

Searching 'deals of the day' on food websites
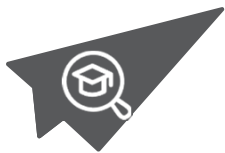
Conducting academic research

So far, we have discussed…

- Reading and writing to excel

- Selectors

- UI Explorer

- Coding of the Robot

This concludes the module 3 of this course, let's have a look at what we have learnt in this lesson. We started with screen scraping and the different types of recording in the UiPath studio. After that we have discussed Flowchart and Sequences. Then we moved to Control flow statements. And towards the end I showed you how to code the Robot.
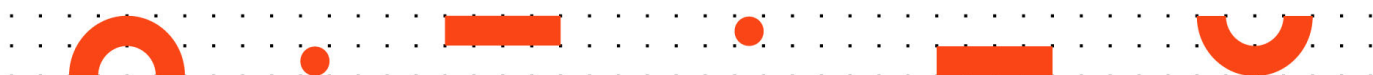
What next ...?
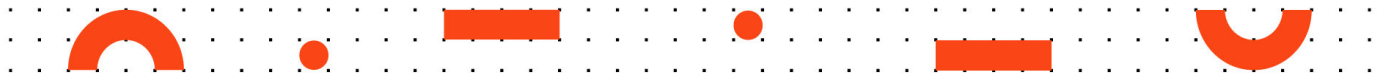
Explore and Learn

- Scheduling a Robot
- Publish and Run to reuse a Robot
- Data Extraction from Word, Excel, PDF, etc...
- Data Scraping from a website
- Manipulating data in Excel
- Dynamic Selectors
- Various Email integration techniques
- Delay techniques
- Debugging and Exception handling
- Triggering a robot on a user event
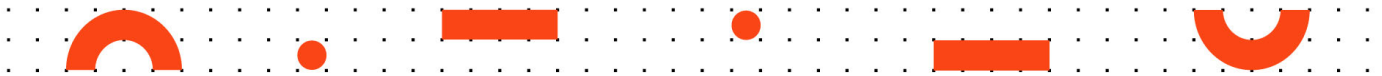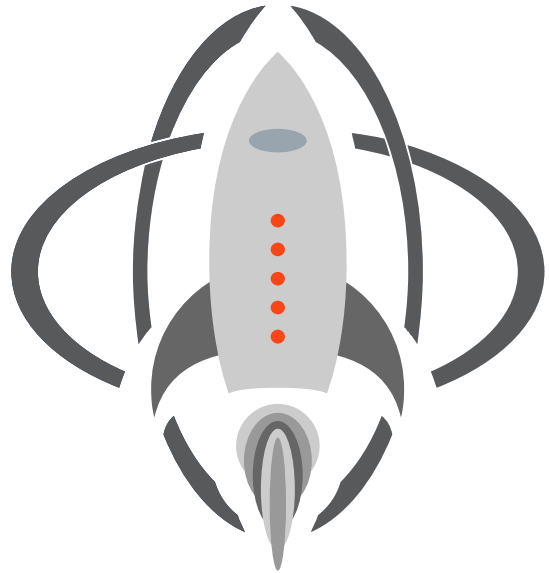
In the next module we will be discussing about:
- UiPath Academy
- UiPath Go!
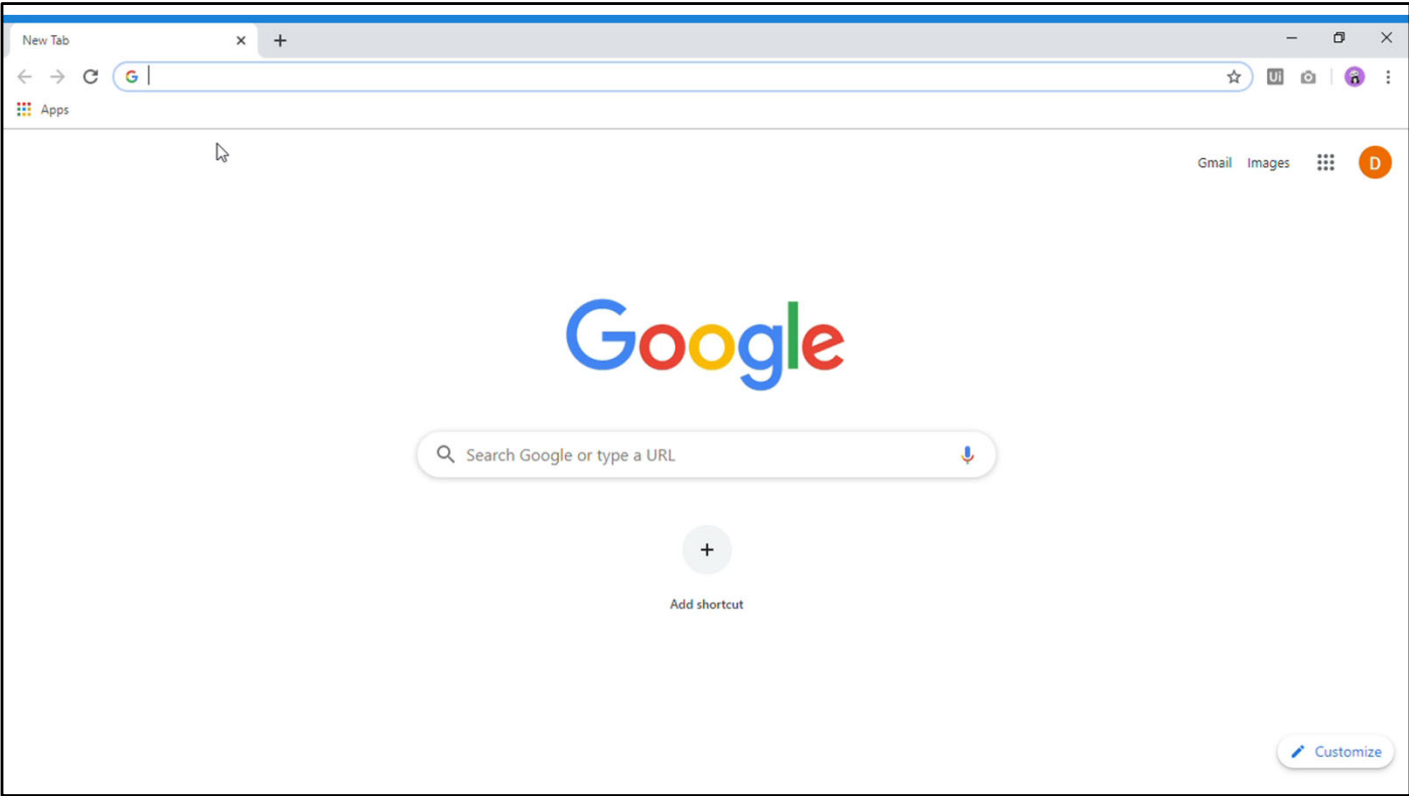- UiPath Community
- UiPath Connect

UiPath Academy

- World's first open online platform offering free RPA training and certification
- Helps you to progressively build your automation skills with the help of a variety of courses
- The courses are available for Students, RPA Developers, Solution Architects, Project Managers, Business Analysts, and various other professionals

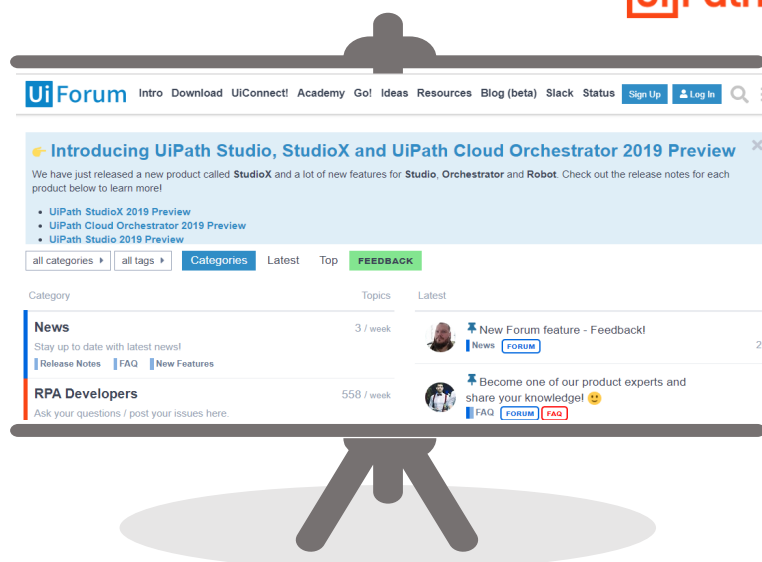To Know more visit...
https://academy.uipath.com/
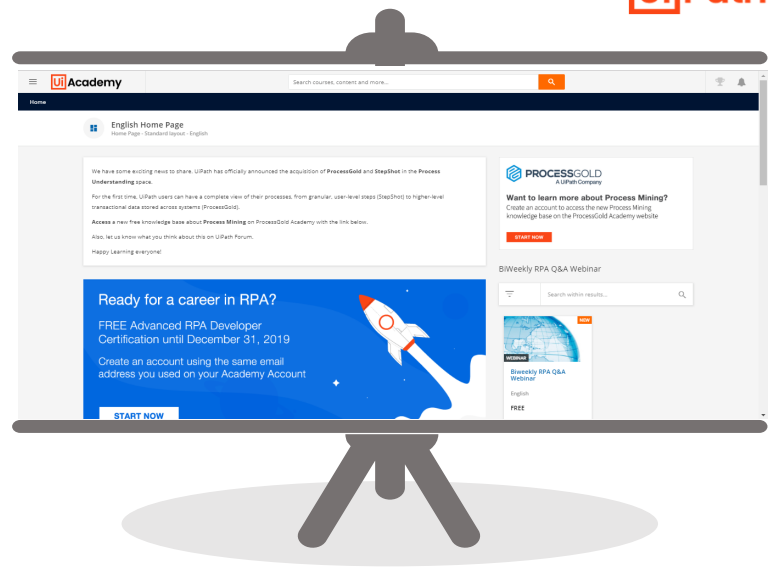
UiPath Community forum

- It is a very vibrant and rapidly growing community of RPA enthusiasts.

- Here you can learn about the latest product news, development best practices, improvement ideas, and ask technical and non-technical questions.

- Here the users of different skills actively help each other.

To know more visit… https://forum.uipath.com/

A series of programs created for developers and community members to connect, grow their skills, and develop projects in automation. From local meetups to hackathons, RPA users enhance their journey and get recognized for their contribution in the UiPath Community ecosystem.
Based on your professional needs and level of expertise, you can join the relevant programs that suit your needs:
- Hackathons
- RPA League
- Meet-UPS
- MVP

Hackathons - are hands-on, in-person or virtual competitions where you are tasked with creating new projects and reusable components that help solve business cases or develop automation for a great cause. Winners are rewarded for their contributions.

RPA League - a two-month self-paced eLearning program for college students and recent graduates. The program accommodates a 36-hour hour hackathon and job fair, with potential hiring opportunities from UiPath Global partners.
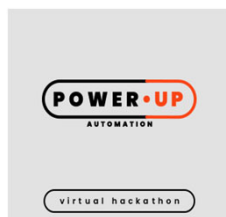
UiPath Local Meetups - created for RPA users from beginner to expert to meet, engage, share, and exchange ideas, skills, and challenges they encounter, all while building a strong network and community of support.

"Most Valuable Professional" Program - created to recognize the most highly contributing and engaged UiPath experienced users. MVP's are often given invitations to UiPath events, first look at partnerships and access to our global network of technology and automation.
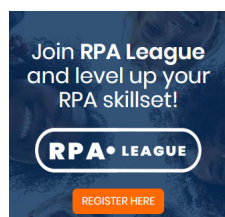
UiPath Community Programs

The ecosystem provides a series of programs created for developers and community members to connect, grow their skills, and develop projects in automation.

Hackathons	RPA League	Meet-ups	MVP

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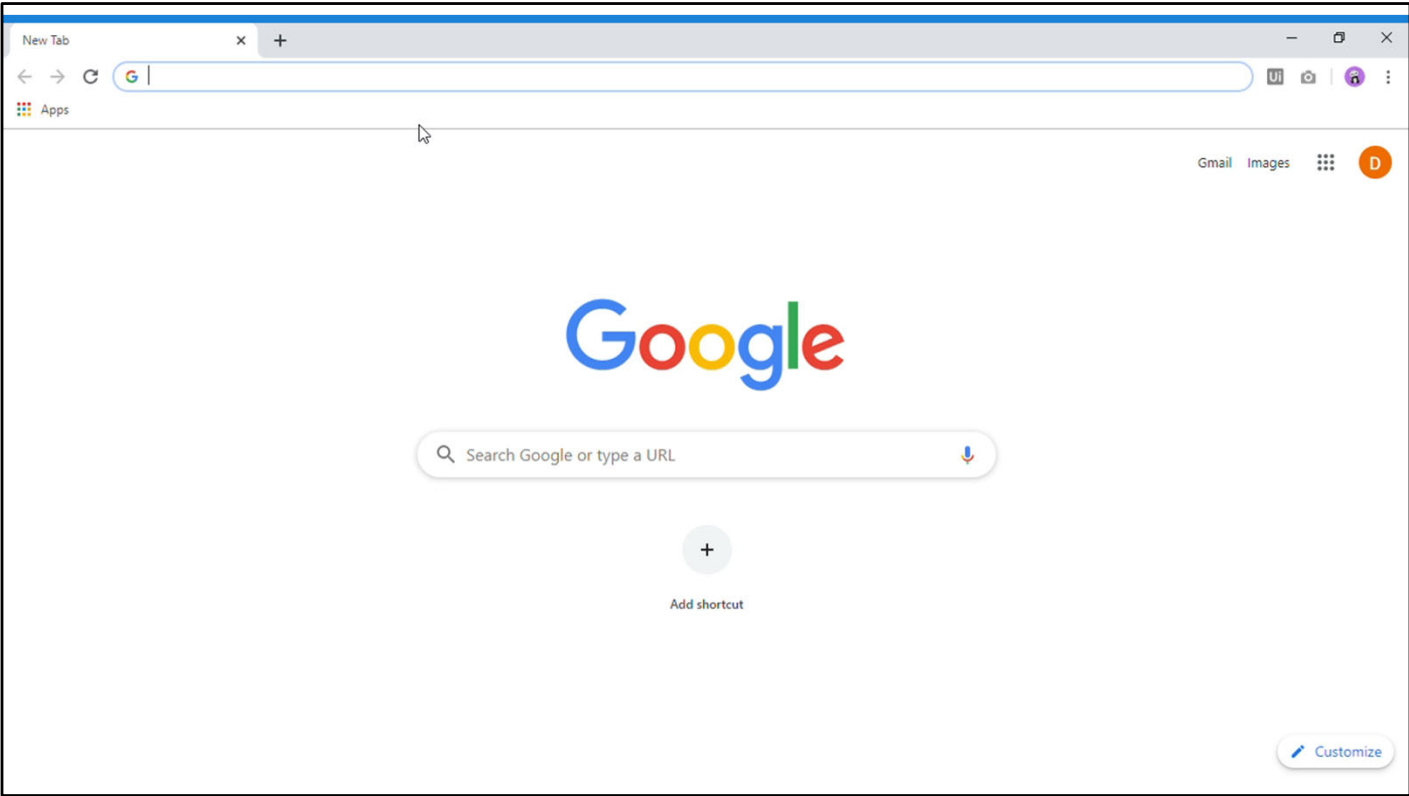- Hackathons
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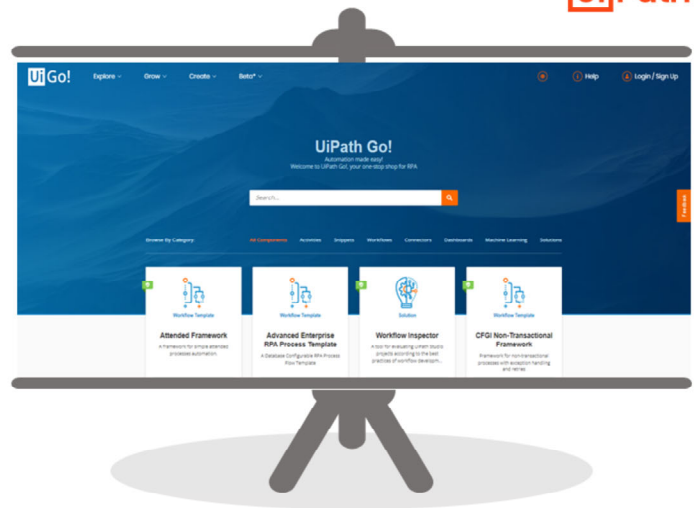
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The purpose of UiPath Go! is to share knowledge and ready-made solutions, increase re-usage in order to continuously accelerate implementation and reduce RPA deployment effort.

This is the store where all the Uipath information regarding the code and reusable component are uploaded for easy access for anyone.

Whether you are an RPA newbie or expert, a Channel or Technology Partner, a System Integrator or a freelancing RPA developer, you can make use of UiPath Go!
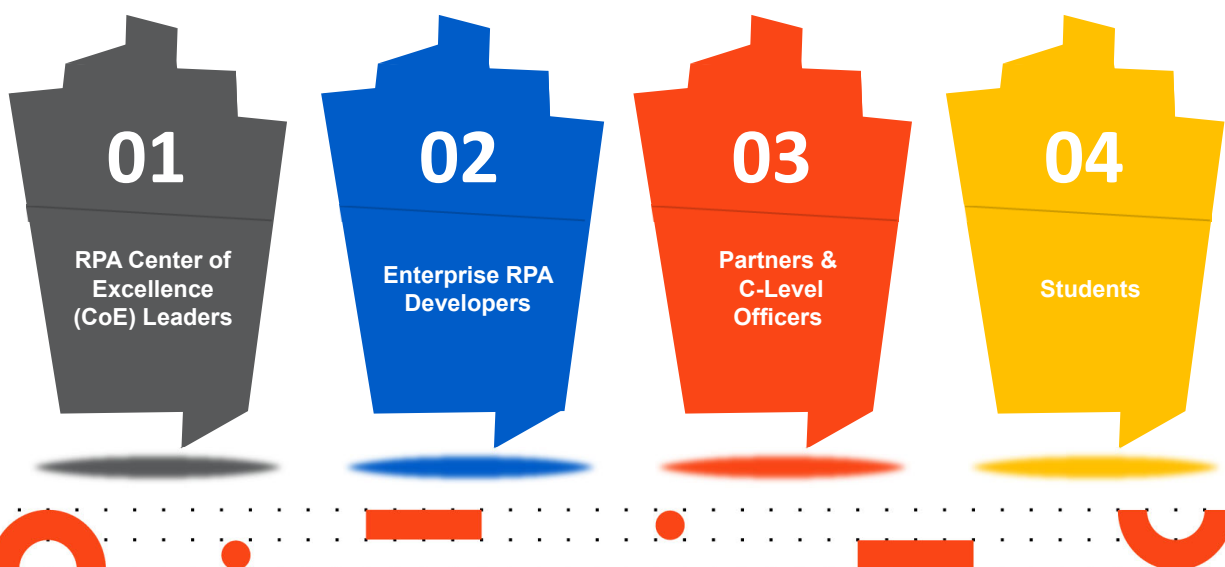
The importance of UiPath Go is that it keep everyone updated on the product features and benefits.
This keep upgrading and new features are added. once the new features are added it get uploaded on UiPath go which act as central repository for all best way and technique.

UiPath Go! is not just another RPA marketplace. Although it performs transactionally, the principles that animate it are purely collaborative and transparent. Go! features open and

extensible solutions, instantly downloadable—forget about having to fill in a form for everything!—secure automations, benefiting from a large, dedicated community of contributors.

UiPath Go! is for…

01	02	03	04
RPA Center of Excellence (CoE) Leaders	Enterprise RPA Developers	Partners & C-Level Officers	Students

RPA Center of Excellence (CoE) Leaders
Propel your Center of Excellence, and shorten your RPA time to value with components and complete workflows. Don't reinvent the wheel, learn from best practices.
*RPA COE Leaders could "FIND OUT" the best practices and other require stuffs easily.

Enterprise RPA Developers
Completed your Academy certification? Take the next step and learn from pre-built solutions.
Add your own solutions to Go! and share them with the RPA Community. Build a solid reputation in the RPA space through your contributions.
*RPA Developers could "Add Component" for their best ideas, projects, snippets etc.

Partners & C-Level Officers
Win more business by showcasing your solutions on UiPath Go!. Build comprehensive automation solutions for your vertical.
*Partners & C level Officers can "Add Solutions" to their master vertical.
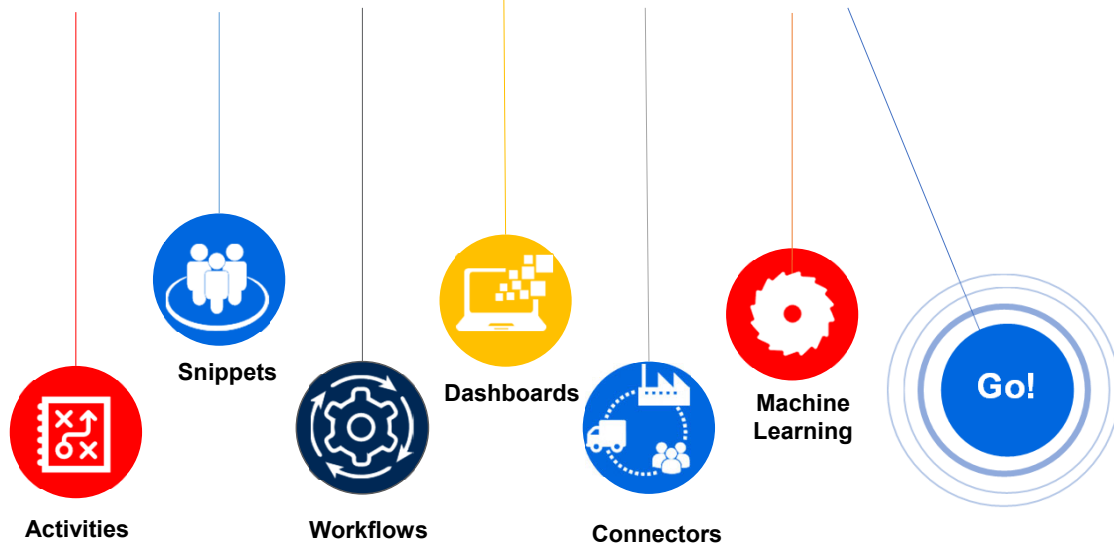
Students
Find pre-built RPA components to help you unlock your creativity.
Augment your Academy journey, and discover automation through practical solutions
*Students could "Add Component" for their best ideas, projects, snippets etc.
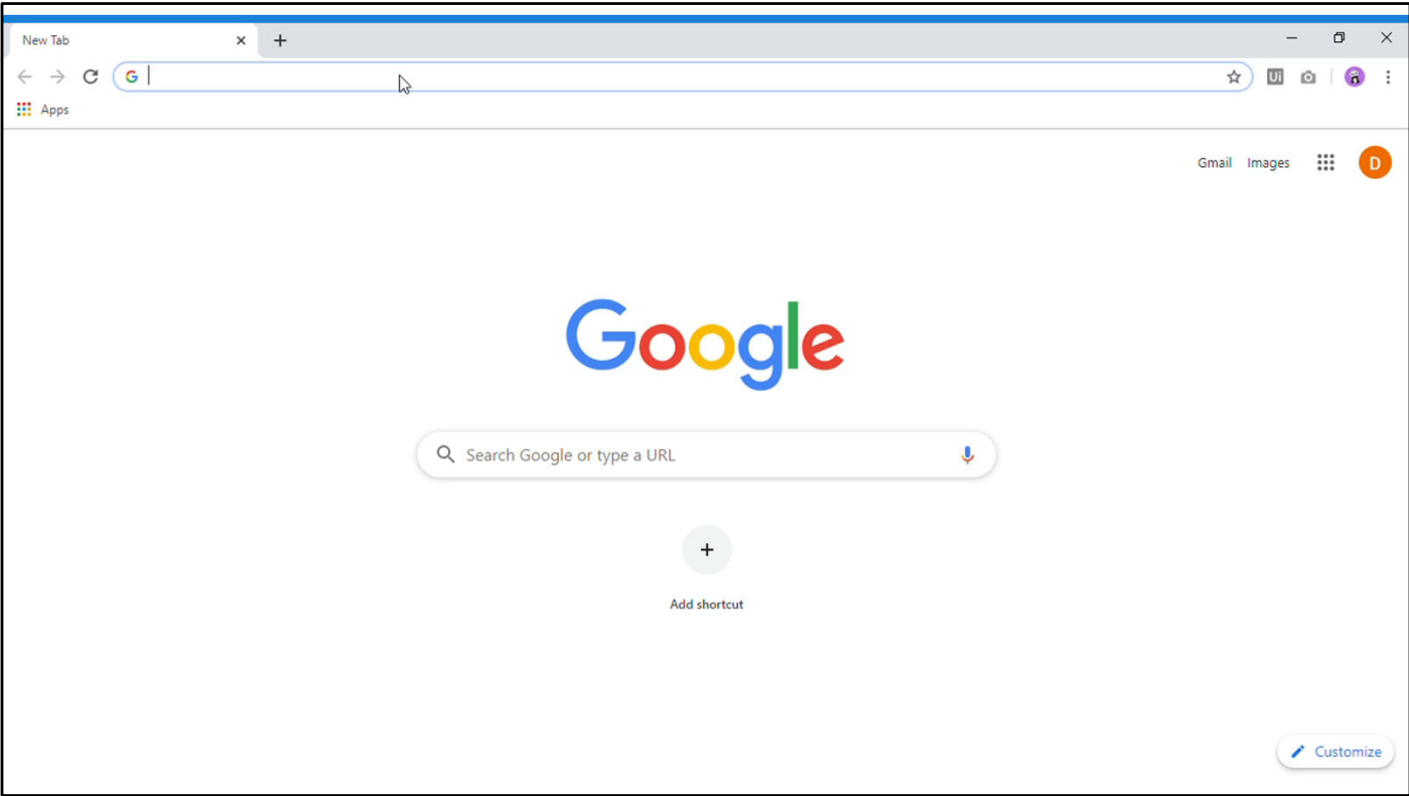
Components of UiPath Go!

Snippets

Dashboards

Machine Learning

Activities

Workflows

Connectors

Go!

Core Components:
- Activities
- Snippets
- Workflows
- Connectors
- Dashboards
- Machine Learning

For more detailed information visit : https://go.uipath.com/

UiPath Connect

01

An open network of passionate people, accelerating human efficiency through automation

02

Technical and non-technical users connect and collaborate on projects related to RPA

03

A central resource to develop and expand your skills in automation, from beginner to expert.