

Lab 8. Exception Handling, Debugging, and Logging



Sometimes, automation program may fail to execute. To deal with such cases, we use exception handling activities. In this lab, we start with the various types of exception handling method available in UiPath, the exceptions that you may encounter, and how to deal with them. We will also learn about logging. An important topic covered in this lab is debugging to check whether workflows are working properly or not and to rectify any errors.

Before we begin, let us look at the topics that will be covered in this lab:

- Exception handling
- Common exceptions and ways to handle them
- Logging and taking screenshots
- Debugging techniques
- Collecting crash dumps
- Error reporting

Exception handling

Exception handling is a way to handle exceptions for a process that the program or the procedure has failed to execute.

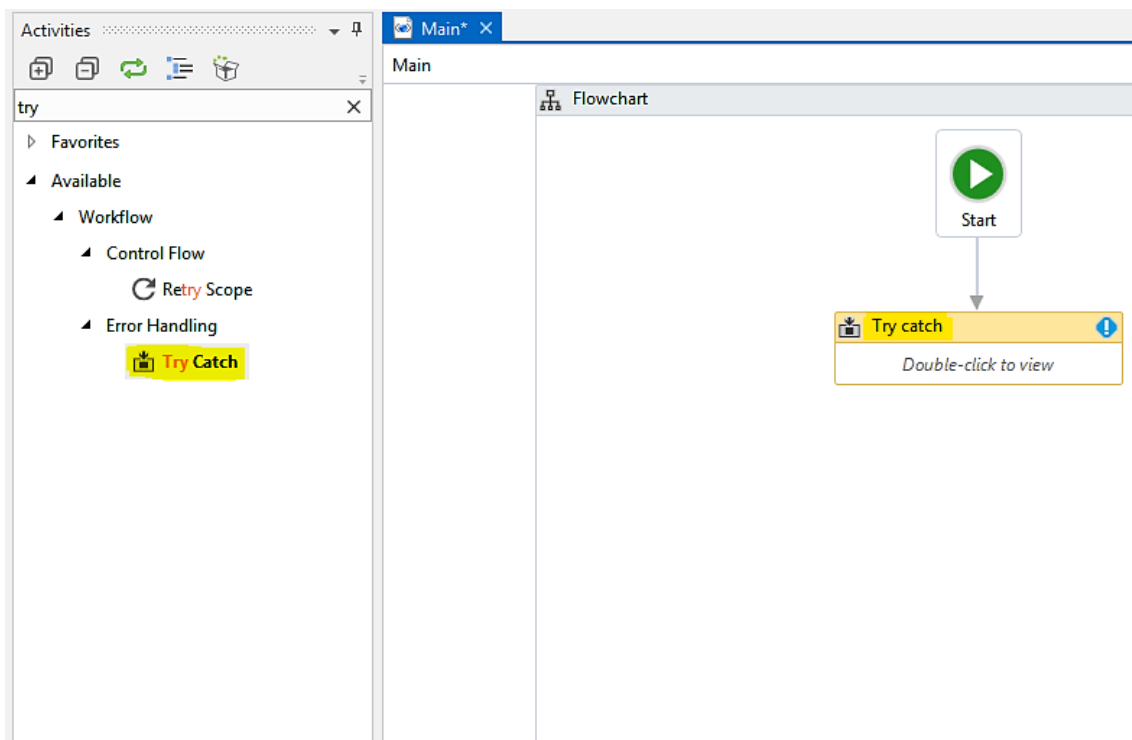
For handling exceptions in a program, the best practice considered is to use the **Try catch** activity.

The **Try catch** activity can be found in the Activities panel. By dragging and dropping the **Try catch** activity into the workspace, we can handle exceptions. For handling errors in the **Try catch** block, we can divide the whole process into four parts just to make it simpler:

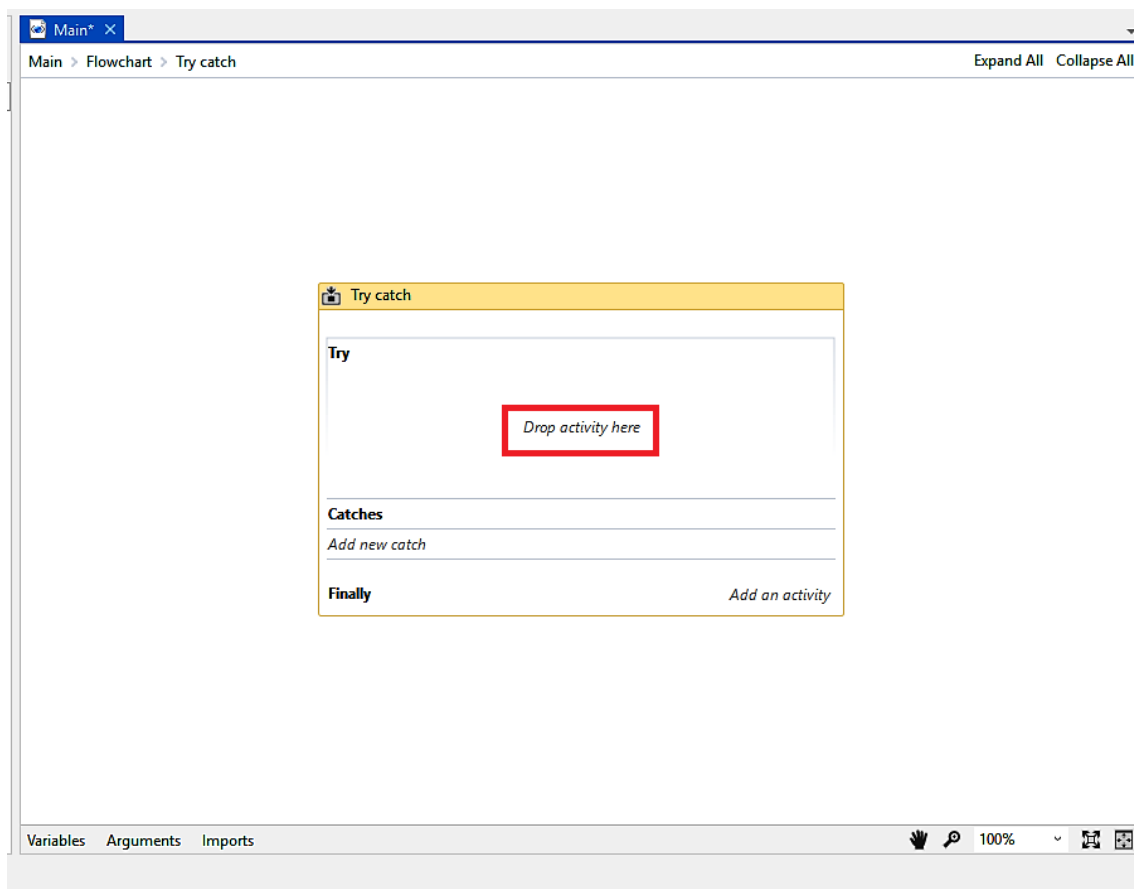
- Drag and drop the **Try catch** activity
- Try block
- Catch block
- Finally block

Let's build a Try catch block to handle exceptions, in following steps:

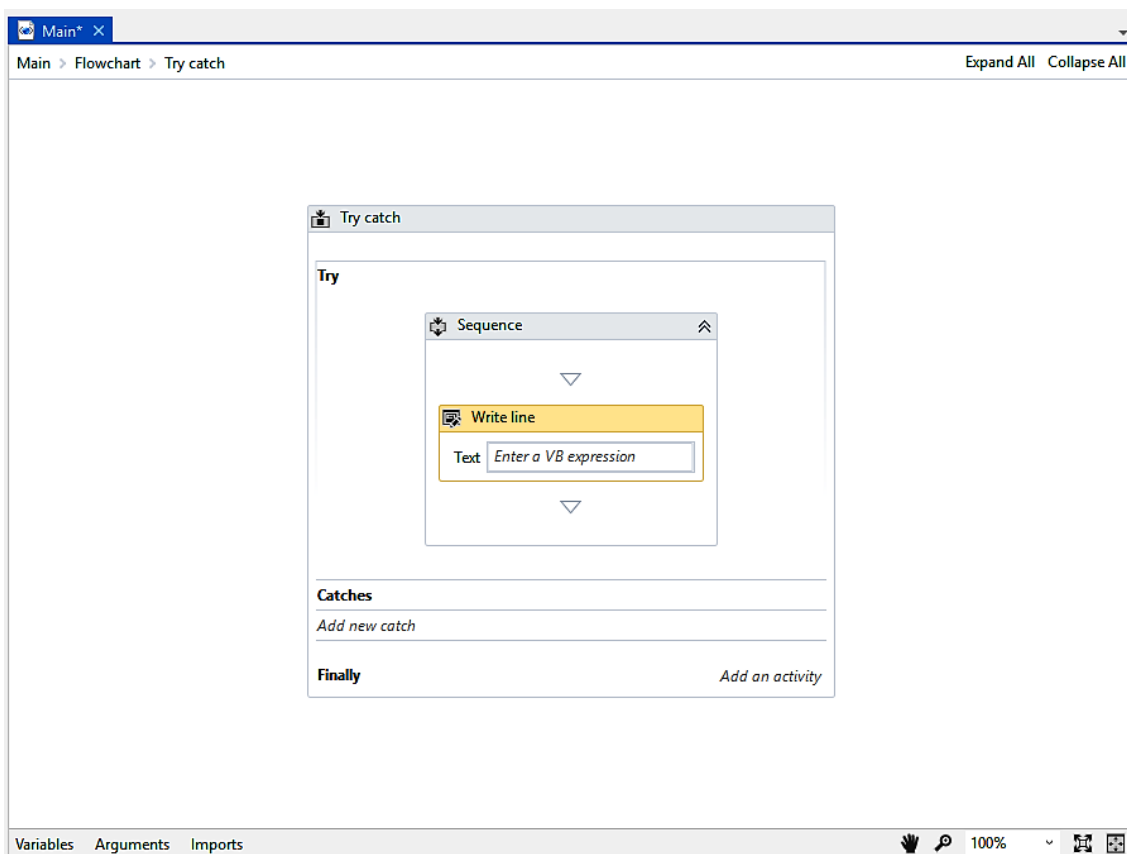
1. Drag and drop the **Try catch** activity: Create a blank project. Drag and drop the **Flowchart activity** into the Designer panel. Search for the **Try catch** activity in the **Activities** panel and drag it into the **Flowchart**. Set it as the **Start** node:



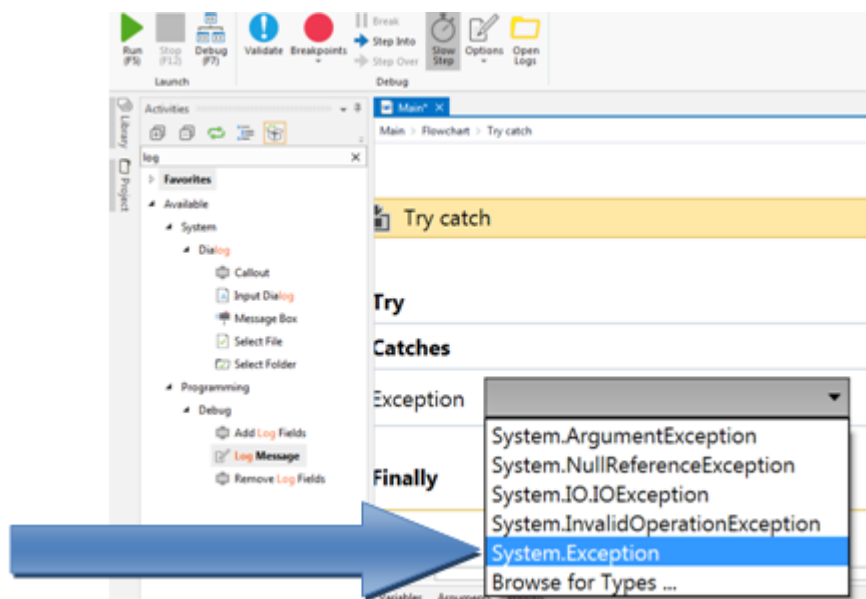
2. **Try** : When we double-click on the **** Try catch ** activity, dragged and dropped inside the workspace, space for the Try **activity appears, as shown in the following screenshot:



Inside the **Try** block, we have to drop the activity we want to perform. Drop a **Write line** activity to test the working of **Try Catch** block, as shown in the following screenshot:

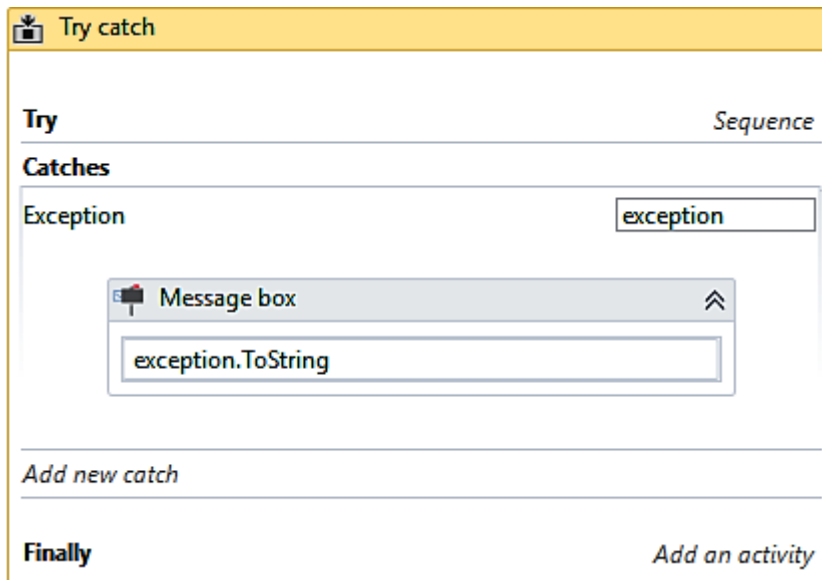


3. **Catches** : Inside the **Catches** activity, first we have to click on **Add new Catch** and then click on **Add Exception** option, from which we have to select the type of exception. In most cases, **System.Exception** is preferred. The following screenshot shows the types of exception. There are many more exceptions which can be viewed by clicking on the **Browse for Types** option:



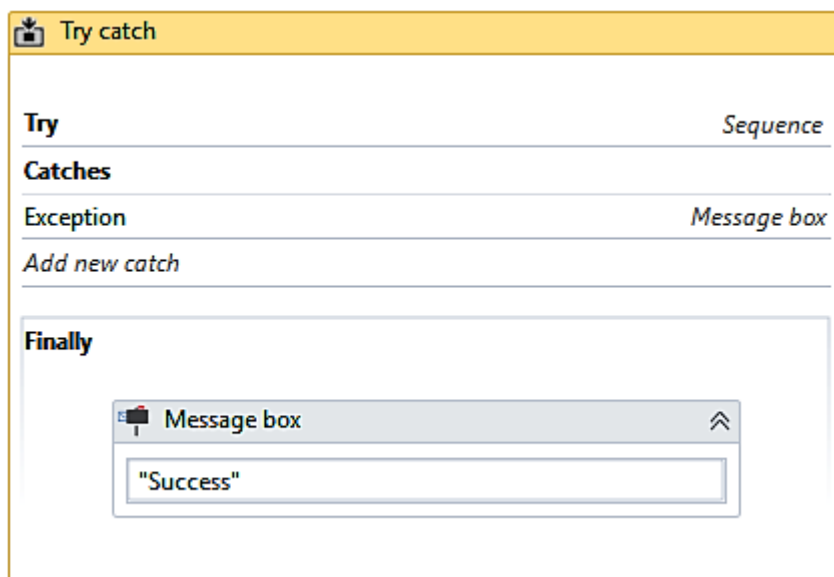
Exceptions that can be viewed when clicked on the **Browse for Types** option

Say the execution fails: for example, the **Click** activity is unable to be executed because of the unavailability of a UI element. In such a case, we can use the **Catches** block in order to either view the error that has occurred or for an alternative method to be used if that particular error occurs. As shown in the following screenshot, we will drop the activity in the **Catches** block. To print a message, we use a **Message box** :



When we click on **Add new catch** , we are asked to select the type of exception. We have selected **System.Exception** . Now inside the exception block, we have dropped a **Message box** activity. Entering `exception.ToString` will display the error that occurred during execution.

4. **Finally** : When we have defined the exception for our sequence, the **Finally** **block will always work, regardless of whether the execution was successful or not. Suppose we want to display a message to the user notifying that the process is complete. To make sure that the whole Try catch activity is executed, we will just drop a Message box activity in the area provided in the Finally** block, as shown in the following screenshot:

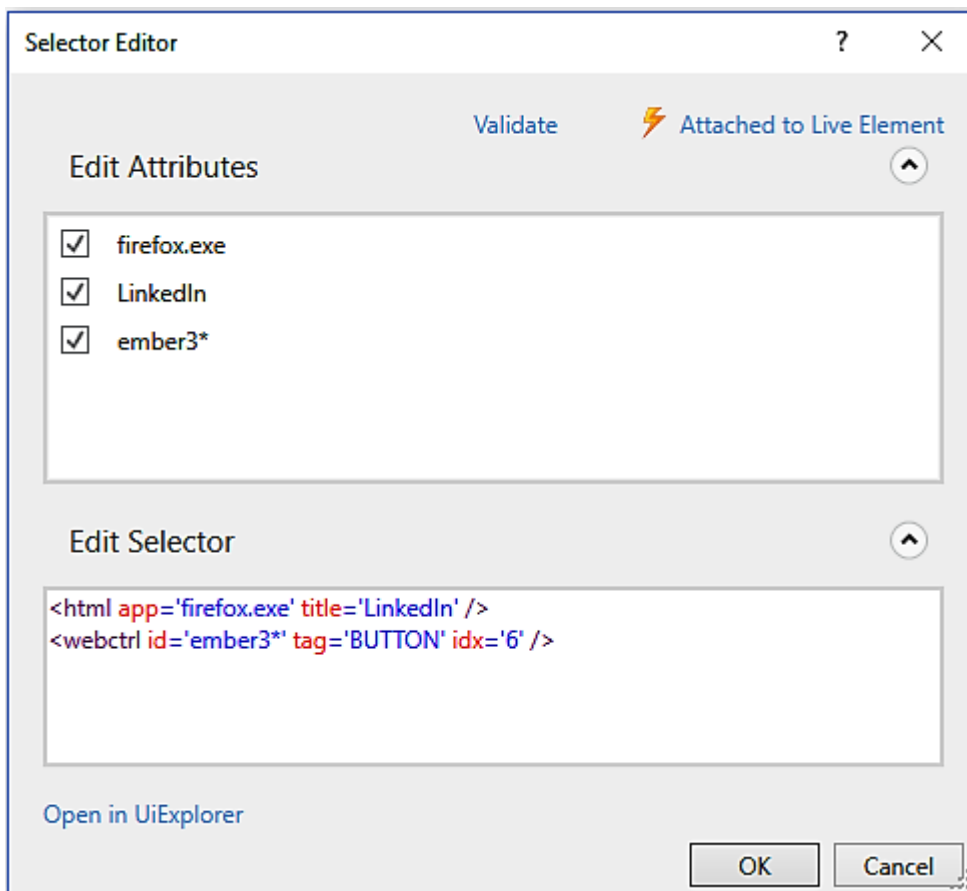


Common exceptions and ways to handle them

Implementing exception handling enables the robot to work in every possible situation and tackle any exception that may arise. There are some common exceptions that we usually face while working on UiPath.

Unavailability of UI element

When working on UiPath, especially on the web, we may encounter this type of error. This is because the UI element was not found due to the dynamic behavior of the web page. To handle this exception, we have to make changes in the selector attributes or we have to add new attributes to the selector so that the UI element can be easily found. For example, if we have a variable which is dynamically changing, we can use a wildcard so that it can be easily found by the robot. As shown in the following screenshot, we can edit the dynamic attribute of the selector using wildcard characters (in our case, *). Another way is to attach it to the live element:



Handling runtime exceptions

We may encounter runtime errors while working in UiPath. To rectify these errors, one of the best practices is to use the Try catch activity, which can be used to handle exceptions at runtime. By keeping an alternative inside the catch block, we can also overcome the error which we encountered before.

So placing your sequence or workflow inside the Try catch activity will help you handle runtime exceptions.

Orbit reference not set to the instant of an object

This type of error usually occurs when the default value required for some variable is not provided. In that case, we are required to give a default value to the required variable, as shown in the following screenshot.

In the empty area indicated in the following screenshot, just type the default value of the variable in order to overcome this error:

Name	Variable type	Scope	Default
UserName	String	Flowchart	

Create Variable

Variables Arguments Imports

100%

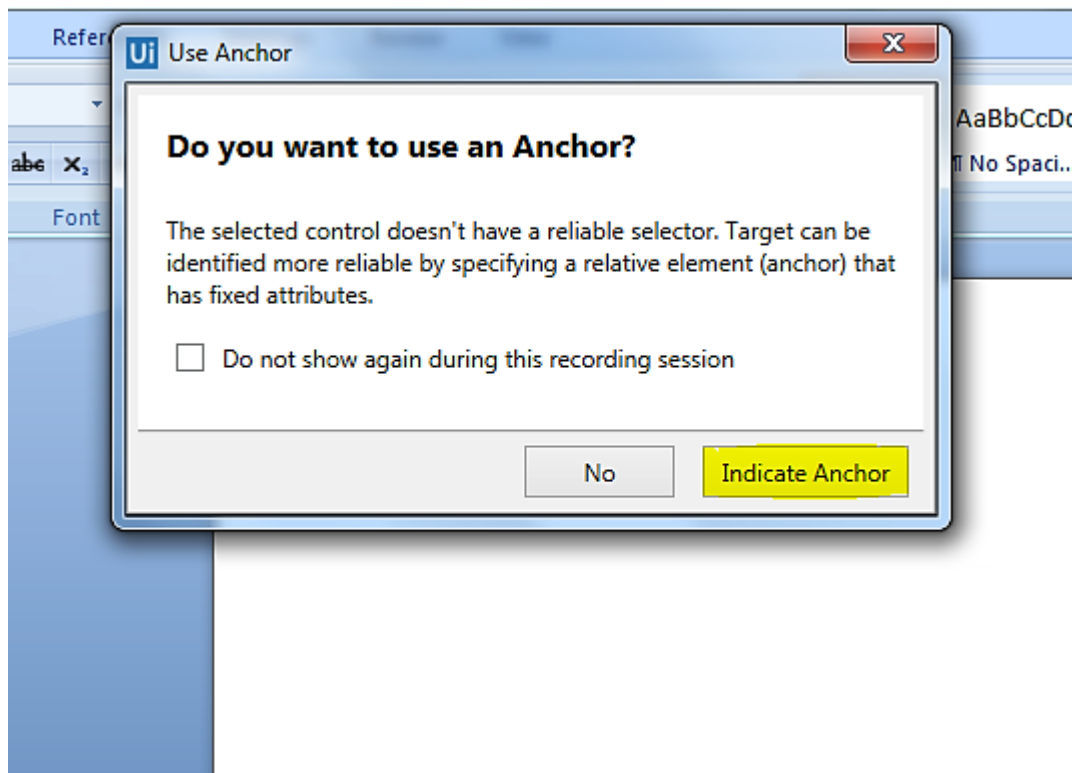
Index was outside the bounds of an array. Index out of the range

This error occurs when we try to iterate array elements by an index which is out of range. This happens when we are not aware of the size of the array and we just randomly type the index to access the element.

To resolve this, we must check the size of the indexes of the array or the collective list.

Image not found in the provided timeout

This type of exception is thrown because the image was not found. This may be due to a change of environment, such as resolution or theme settings. In this case, using some a selector attribute or indicating an anchor will work well:



As shown in the preceding screenshot, when we cannot identify the image properly, **Indicate Anchor** will help us indicate the UI element nearby so that the recorder can identify the correct image.

Click Generic error - cannot use UI CONTROL API on this UI node please use UI Hardware ELEMENTS method

This type of error occurs when the environment in which we are trying to use the Click activity does not support Simulate or Send message activity (used by us to click the UI element).

Sometimes, either `SimulateClick` or the `SendWindowMessages` may be checked. In both cases, when an exception is thrown we just have to uncheck the appropriate box.

Logging and taking screenshots

UiPath has a multi-process architecture that offers to execute each workflow separately in the executor. Executors are managed by UI robots. So, if any executor stops working, then the entire process will not be affected.

Client logging

Client logs basically enable a server to record connections. These logs can be used by content providers in various scenarios, such as to generate billing, to trace media server usage, or to deliver suitable quality content depending on the speed of the client's server.

For client logging in UiPath, we have an NLog configuration file which makes it easy and flexible to integrate with databases, servers, or any other NLog targets. Logging can be configured with this `NLog.config` file. UiPath Studio, Robot, and workflow execution generate log messages on the client side:

- Messages which are produced by the workflow execution are logged with the execution logging source. Messages produced by UiPath Studio are logged as Studio Source and those produced by UiPath Robot are logged as Robot logging Source.
- We can also access these logs from UiPath Studio.

We can access the stored logs by clicking on **Open Logs** in the **EXECUTE** option.

By default, these Logs are saved in `%Local App %\Uipath\Logs :`

- The automatic logging mechanism for all errors generated, including values of variables and arguments, may be enabled in the `UiRobot.exe` config file, which is present in `C:\Users\Username\AppData\Local\UiPath\app-17.1.6435`, by setting the Log parameter from `0` to `1` inside the `<Switches>` section.
- We have two activities that can be used for logging and these are the Log message and **WriteLine** activities.

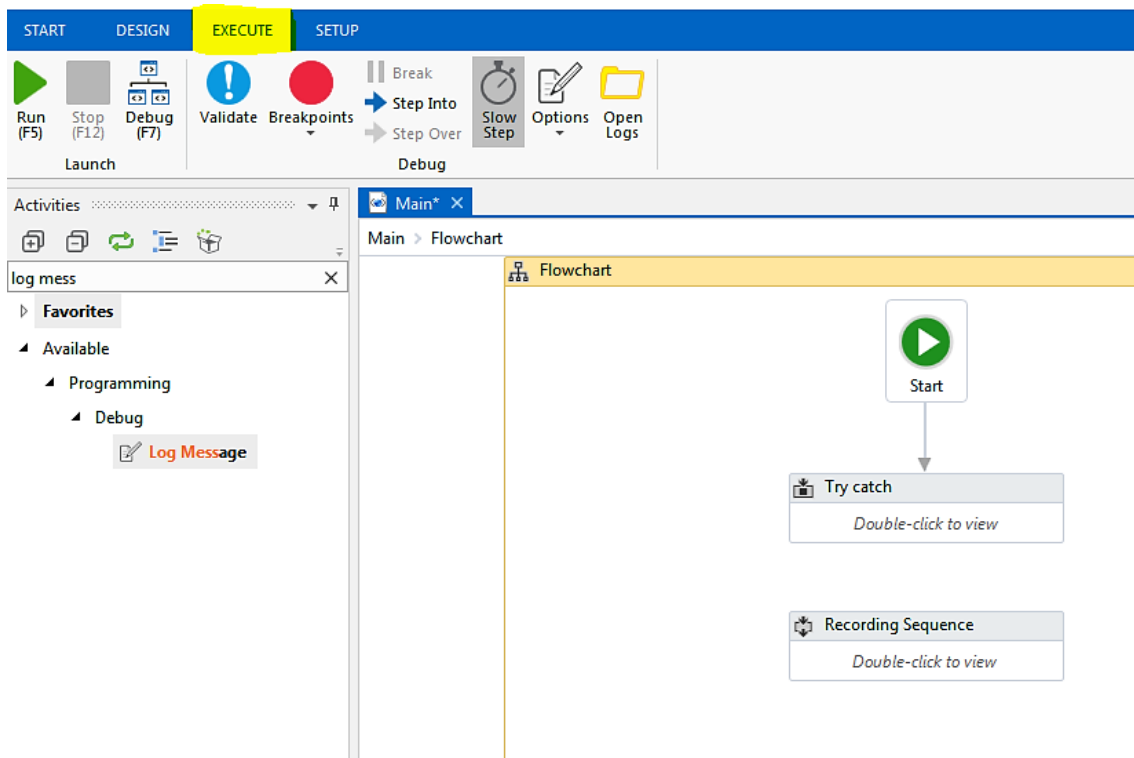
Server logging

If you have configured the UiPath server, then all logs generated by the execution are also sent to the server.

You can take a screenshot anytime by pressing `[Ctrl] + [PrtScrn]`.

Debugging techniques

There are various techniques provided by UiPath Studio for debugging in order to check whether the workflow is running successfully or to find out errors in order to rectify them. At the top of the UiPath window, we can see various available methods of debugging inside the **EXECUTE** block, as shown in the following screenshot:

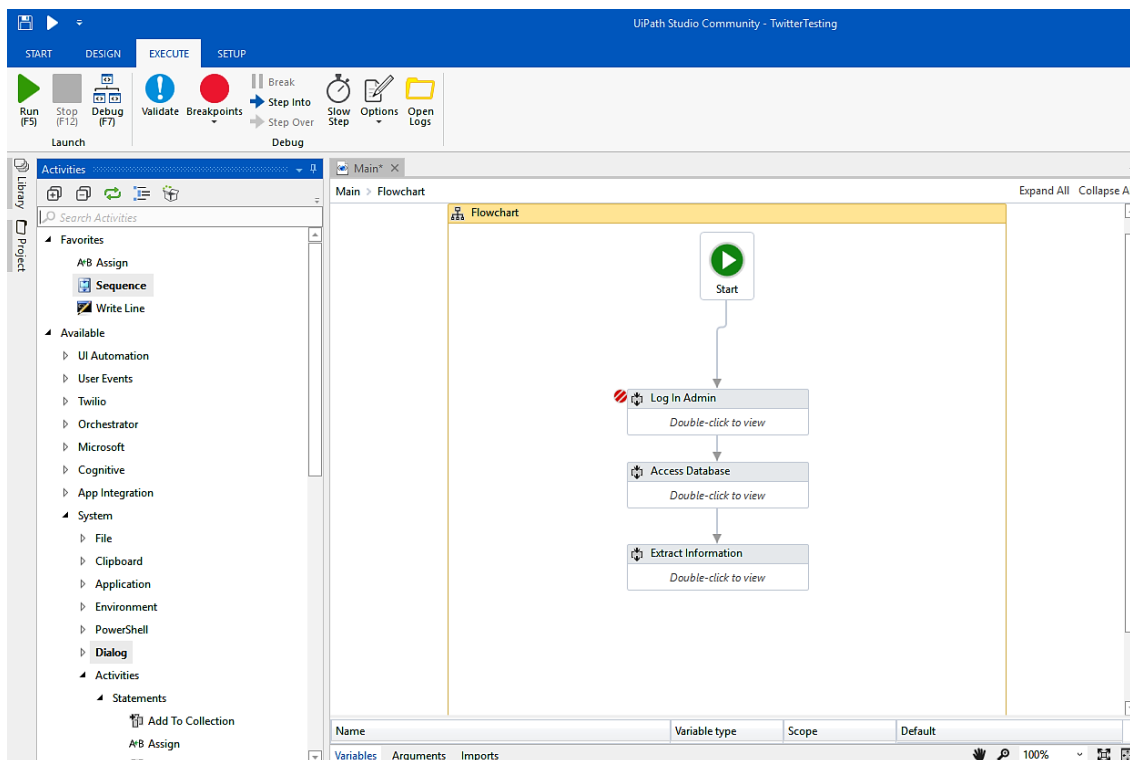


As shown in the preceding screenshot, there are various techniques for debugging. They are:

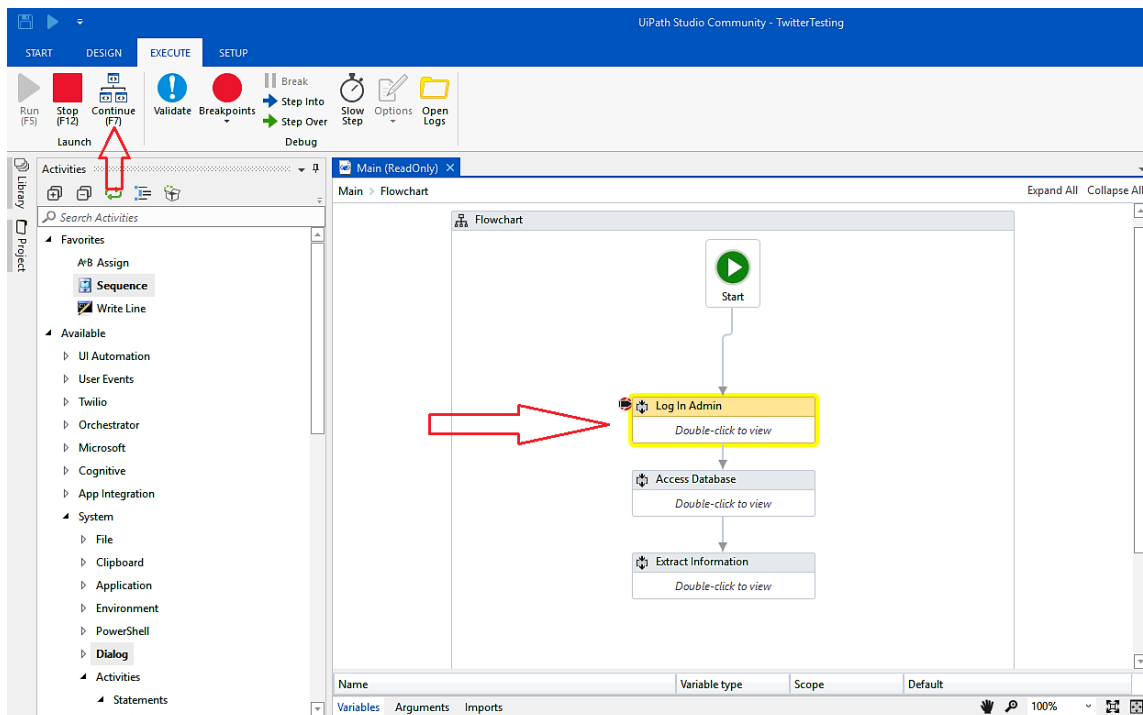
- Setting breakpoints
- Slow step
- Highlighting
- Break

Setting breakpoints

While debugging a workflow, we can set breakpoints in between if we want to run the program up to a specific location. This is useful when we have to stop before an activity ends completely. In such a case, we should use a breakpoint on the previous activity, as shown in the following screenshot:



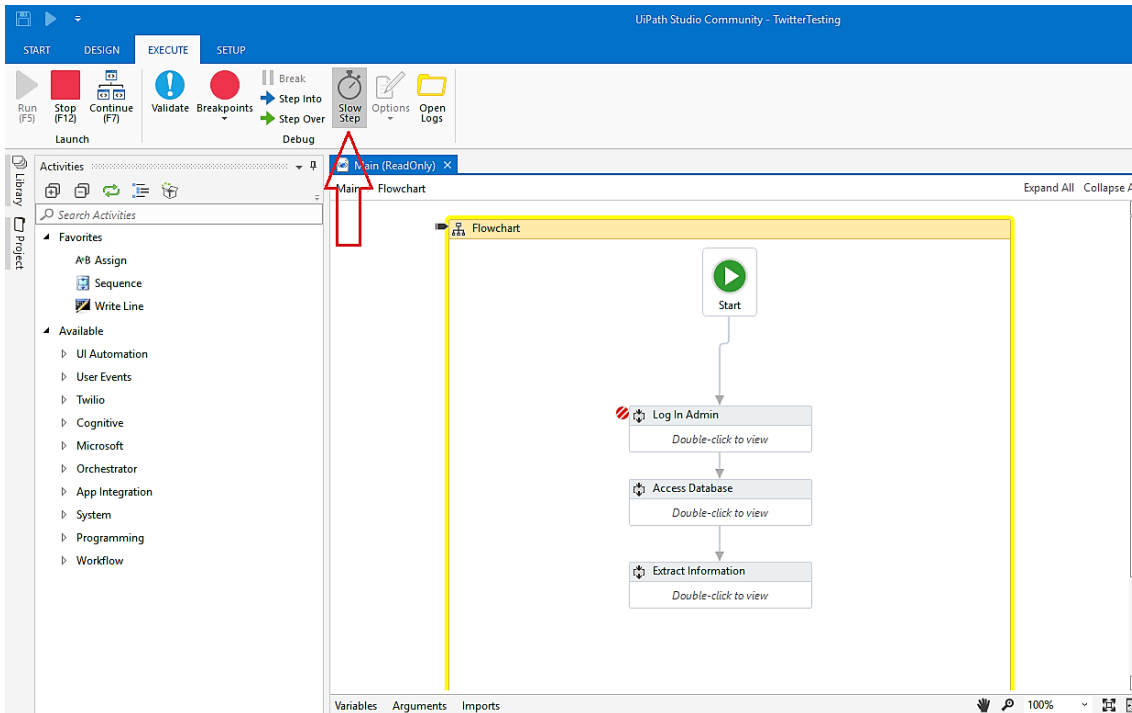
The highlighted region indicates the breakpoint since the execution stops just after the breakpoint. In order to continue any further, we have to click on the **Continue** button on the top corner indicated by the arrow:



When we click on **Step into**, the relevant part will start to execute; after we click on **Step over**, execution will jump to the next part, and so on.

Slow step

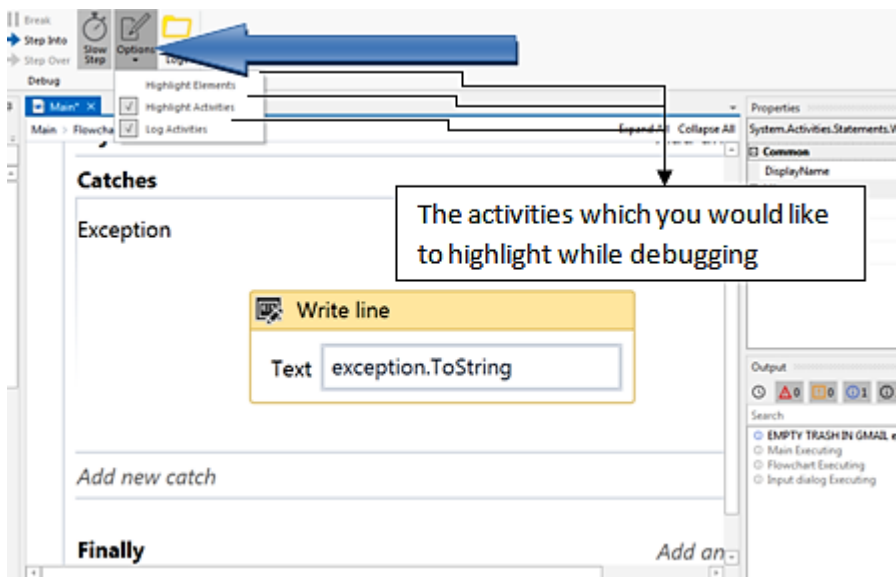
This is an activity in the **EXECUTE** block through which we can reduce the execution speed of a particular process or activity. This way, we can identify each and every process and keep an eye on where to find the error. In the Output panel, all activities or steps can be viewed. The following screenshot shows how to use the **Slow step** activity:



As indicated by the arrow in the preceding screenshot, when we click on **Slow step** the execution time for this particular step increases.

Highlighting

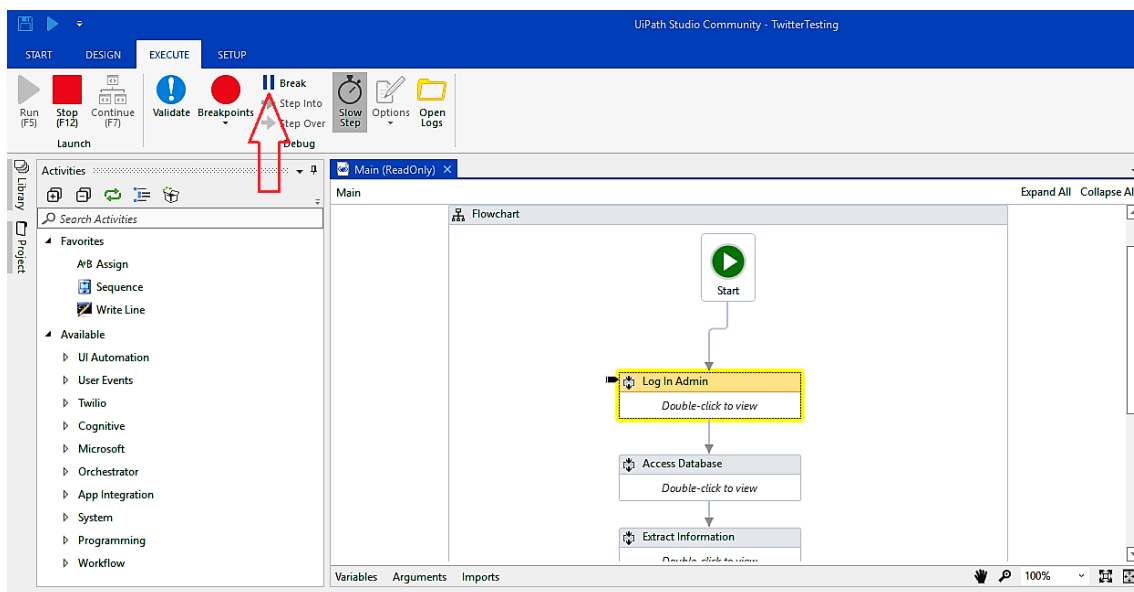
Highlighting is used to highlight the steps we have taken during automation and to identify each and every step in the workflow. It is very useful while debugging and its panel can be found in the **Options** menu of the **Execute** section in the Ribbon:



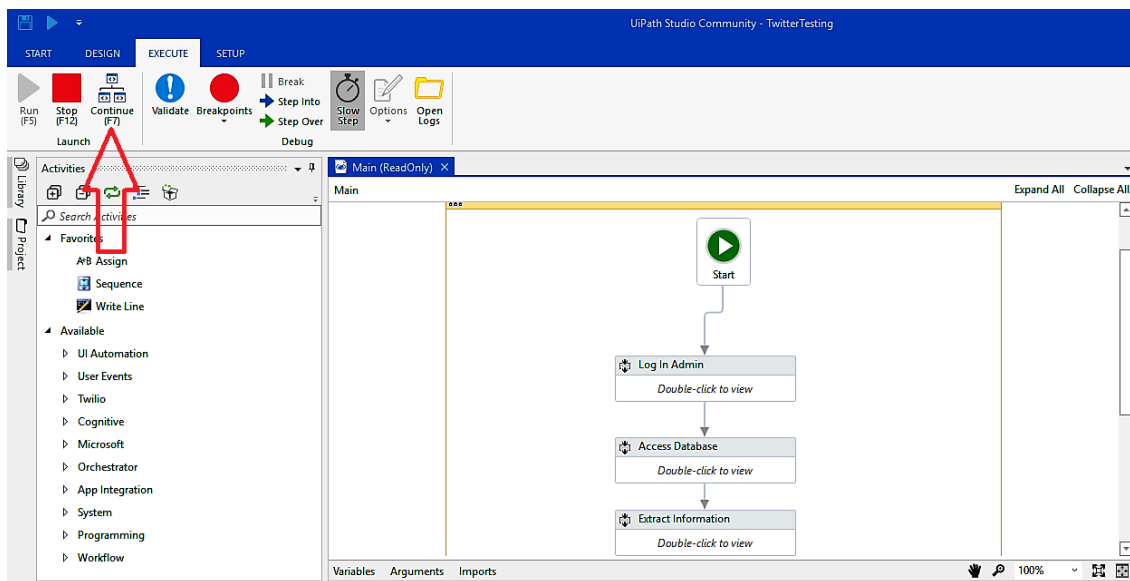
Various activities for highlight.

Break

The Break activity is used to break a process at a certain point. Suppose we have a sequence performing seven activities together and we want to break the execution at a certain activity. For this, we can use the **Break** activity, as shown in the following screenshot:



While debugging, an option for **Break** is available (indicated by the arrow in the preceding screenshot). We can break at any point we want to. If we want to continue any further, we just have to click on **Continue**, as indicated by the arrow in the following screenshot:



Or we can stop the execution at that point by clicking on the **Stop** option.

Collecting crash dumps

Collecting crash dumps basically refers to collecting information when your UiPath Studio crashes. We can enable and disable crash dumps. These dumps provide us with information regarding the UiPath crash.

Memory dumps are of two types---**full dumps** and **minidumps**. Full dumps provide us with complete information about the encountered crash while minidumps provide us with just the main information regarding the crash.

When a crash is encountered, we first have to identify the process which has crashed. Usually, a dialog will appear on the screen indicating the nature of the crash and the application involved. A UiPath process could crash, such as `UiStudio.exe`, `Uiexplorer.exe`, or `Uilauncher.exe`, or the target application you want to automate may crash.

Enabling crash dumps

The following are the steps to enable crash dumps:

1. To enable crash dumps, we first have to download the `EnableFullDump.erg` file for full dumps from <https://cdn2.hubspot.net/hubfs/416323/QuickAnswers/EnableFullDump.reg?t=1513326308120> or the `EnableMiniDump.erg` file from <https://cdn2.hubspot.net/hubfs/416323/QuickAnswers/EnableMinDump.reg?t=1513326308120>
2. Double-click the file and click Yes. Administrator rights are needed to access the registry settings
3. The dumps folder is `%TEMP%` whose complete path is like `C:\users\2;username\AppData\Local\TEMP`
4. When the application crashes, you will find the `.dmp` file in the `TEMP` folder. For example, if `UiExplorer` crashes then a file such as `UiExplorer.exe.7429.dmp` will be found in the `TEMP` folder

Disabling crash dumps

To disable crash dumps, perform the following steps:

1. Download the `DisableDump.reg` file from <https://cdn2.hubspot.net/hubfs/416323/QuickAnswers/DisableDump.reg?t=1513326308120>.

2. Double-click the file and click Yes to disable crash dumps, Administration rights are needed for this action.

Error reporting

A user may encounter an error in UiPath and want to report it. As mentioned before, there are two types of customer for UiPath:

- Enterprise Edition customers
- Community Edition customers

Enterprise Edition customers

If you are an Enterprise customer, then you can report the error to the UiPath community in a very simple way:

1. Just go to this link: <https://www.UiPath.com/contact-technical-and-activations>.
2. You will be re-directed to a page where you have to fill out a simple form containing some basic details and then upload the file in which the error is encountered, as shown in the following screenshot.
3. After uploading, just click on the **Submit** button. UiPath will respond to you with the proper solution:

The screenshot shows a web form for reporting an error. Annotations with blue arrows point to specific fields:

- A box labeled "name" points to the "Name*" text input field.
- A box labeled "Email" points to the "Email*" text input field.
- A box labeled "Choose file" points to the "Choose File" button in the attachment section.

The form includes the following elements:


- Text input fields for "Name*" and "Email*".
- A question: "Do you want to report an incident or submit a Service Request?".
- Explanatory text: "Incidents may refer to an error or malfunction of a UiPath component, leading to an unplanned interruption or degradation of a service. Service requests may refer to a request for information or advice, software activation and licensing.*"
- A dropdown menu with the text "- Please Select -".
- A red error message: "Please select an option from the dropdown."
- An "Attachment" section with the text: "Please add an archive with the relevant workflows, logs, error message screenshot etc."
- A "Choose File" button and the text "No file chosen".
- A checkbox labeled "I'm not a robot" with a reCAPTCHA logo.

Details that need to be filled while uploading the encountered error file

Community Edition users

Since the Community Edition is free, UiPath does not provide support to Community Edition users. However, all solutions to errors encountered can be found by going to the UiPath forum. All types of errors and their solutions are properly discussed in the forum. You can also go to the resources page and find the solution to your problem.

For this, visit <https://forum.UiPath.com/{ulink}>:



[Sign Up](#)
[Log In](#)

Orchestrator CE

A new beast is out... **Orchestrator CE** - <https://platform.upath.com>.

CE users will have their own free Orchestrator and two free CE robots can be connected to it. As is, without guarantee 😊

- Docs [here](#)
- Release Notes [here](#)
- Academy Training for 2016.2 is out in preview

Docs

Orchestrator - <https://orchestrator.upath.com>

Studio - <https://studio.upath.com>

Robot - <https://robot.upath.com>

Activities - <https://activities.upath.com>

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Resource page

Summary

In this lab, you have learned how to use exception handling techniques and log error screenshots, and other useful information to be used for debugging or reporting. You have also learned how to debug code.

You have learned how to make an automation project, as well as how to use exception handling. Your learning, however, does not end here. In the next lab, we will refine your learning by teaching you best practices for managing and maintaining your code.