

Java Desktop UI Automation

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Introduction

In this document we are going to see how java-based desktop UI (or web triggered UI) can be automated using **Nested Flow** which in turn uses Java Access Bridge. As per Oracle official documentation Java Access Bridge is a means of communicating from Windows OS to Java applications.

[Java SE Desktop Accessibility - Java Access Bridge For Windows OS \(oracle.com\)](https://docs.oracle.com/javase/7/technotes/guides/accessible/javaaccessbridge.html)

Java Access Bridge is a technology that exposes the Java Accessibility API in a Microsoft Windows DLL, enabling Java applications and applets that implement the Java Accessibility API to be visible to assistive technologies on Microsoft Windows systems. Java Accessibility API is part of Java Accessibility Utilities, which is a set of utility classes that help assistive technologies provide access to GUI toolkits that implement the Java Accessibility API.

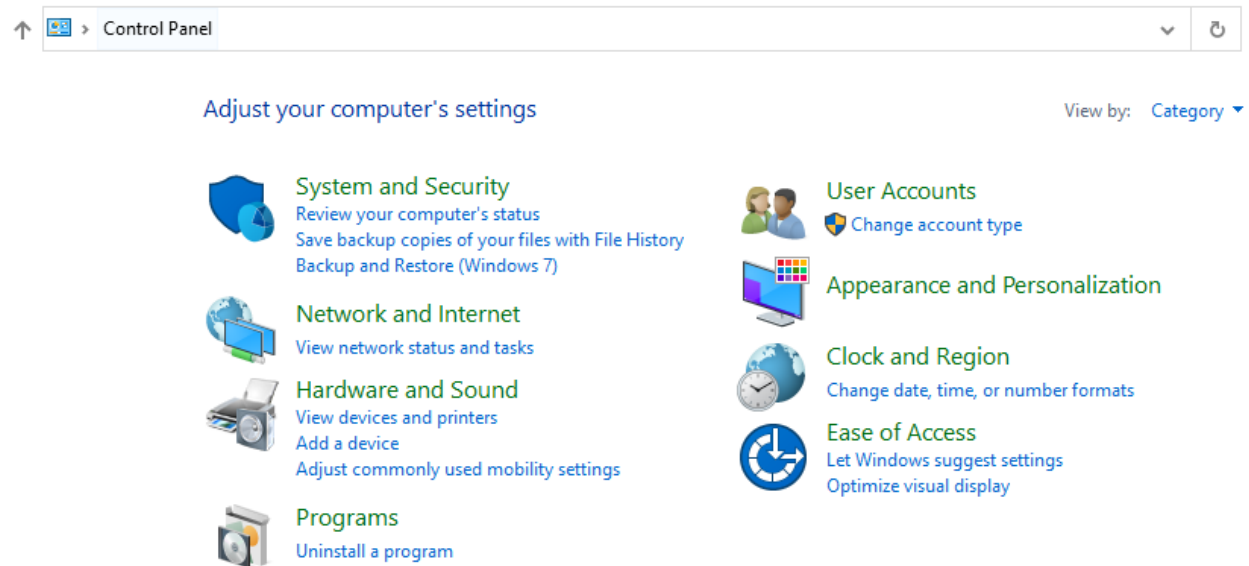
In order for existing assistive technologies available on Microsoft Windows systems to provide access to Java applications, they need some way to communicate with Java Accessibility Utilities. Java Access Bridge supports this communication.

An assistive technology application running on Microsoft Windows (for example a screen reader) communicates with Java Access Bridge DLLs, which in turn communicates with the Java Virtual Machine through Java Access Bridge Java libraries. These Java libraries communicate with Java Accessibility Utilities. Java Accessibility Utilities collects information about what is happening in the Java application, which it forwards to the screen reader through Java Access Bridge.

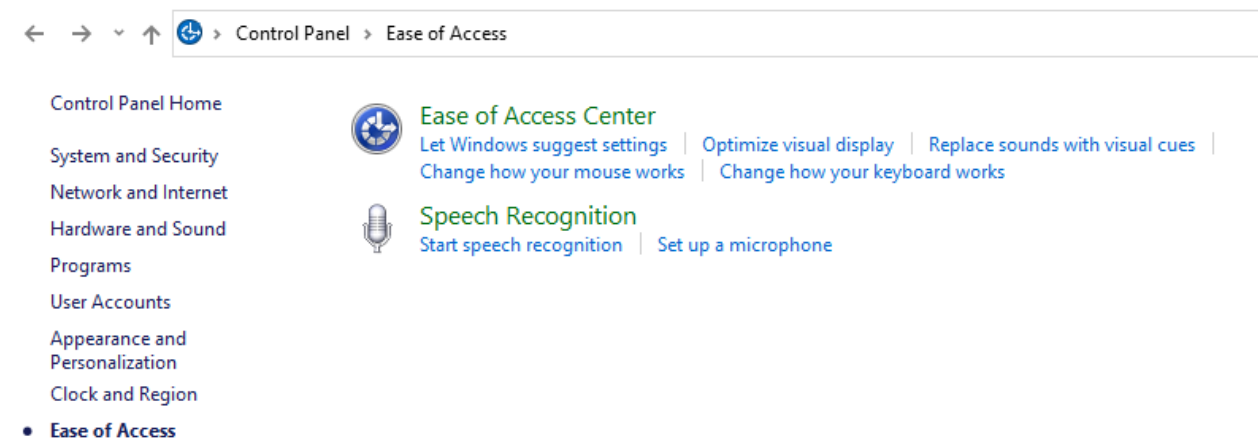
Enabling Java Access Bridge

In order for the tool to use Java Access Bridge, one time activity of enabling the Java Access Bridge needs to be performed on the Windows machine.

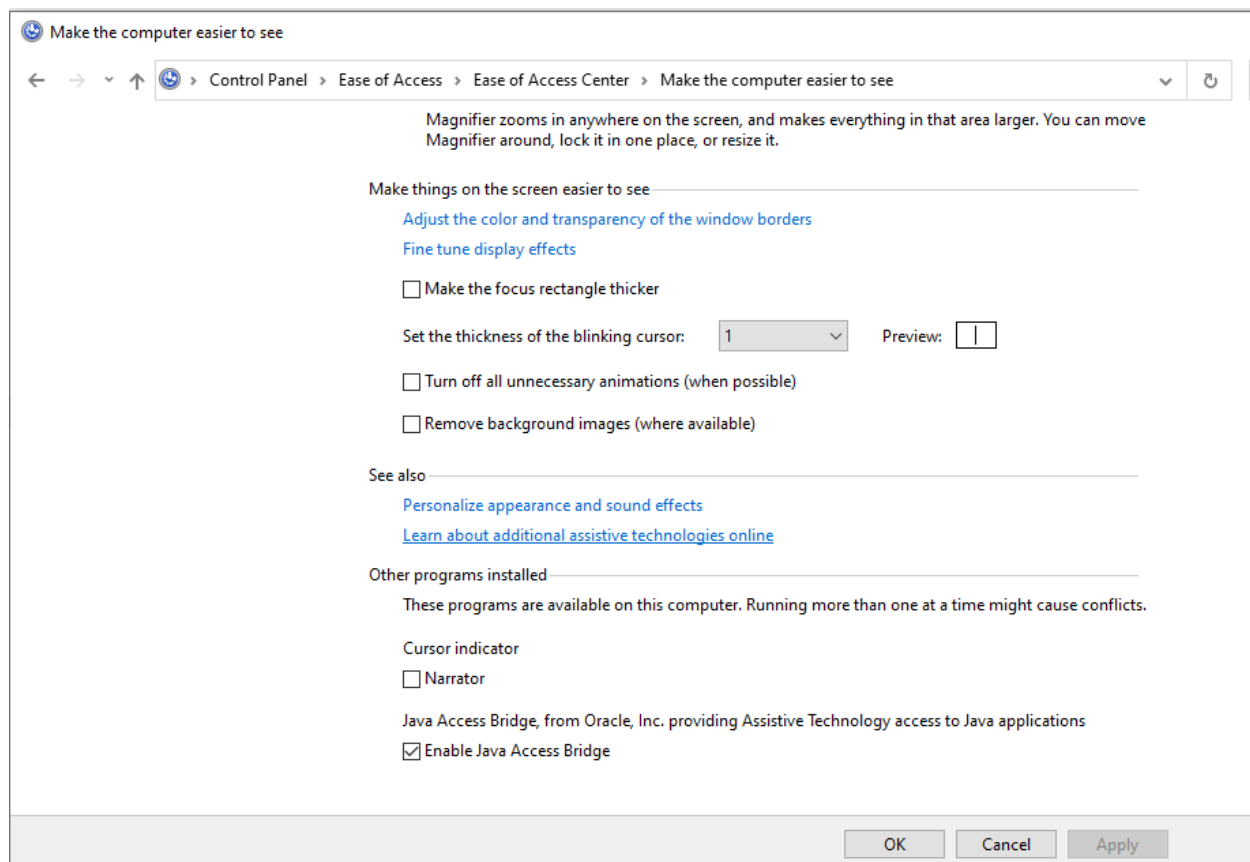
Open Control Panel.



Click On **Ease of Access**



Click on **Optimize visual display**



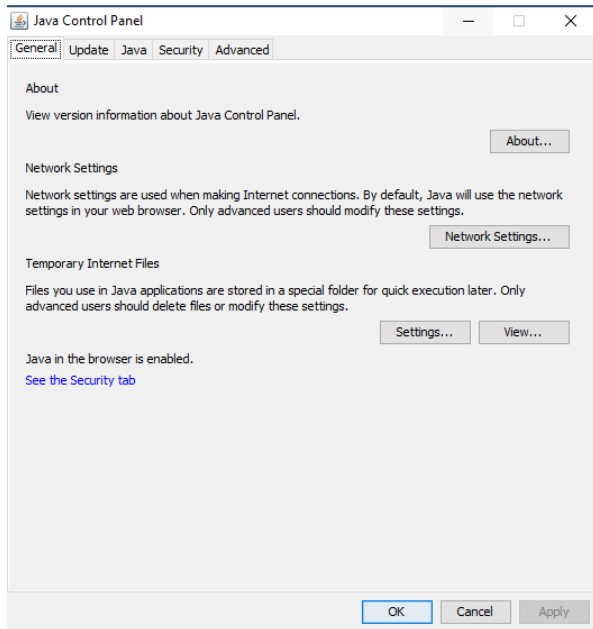
Scroll down to the bottom. Check the box **Enable Java Access Bridge**

Click on **Apply** button. Click On **OK** button.

Restart the machine.

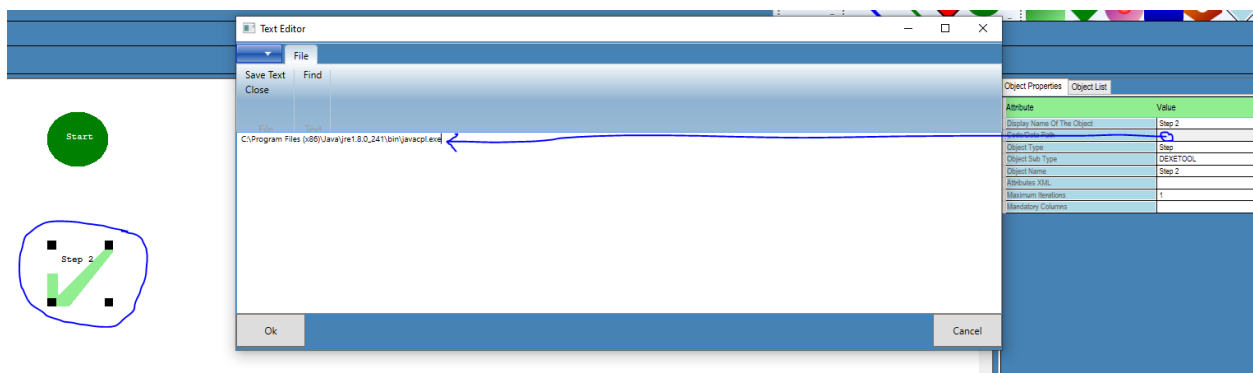
Example:

We will be automating java control panel for the purpose of this document.



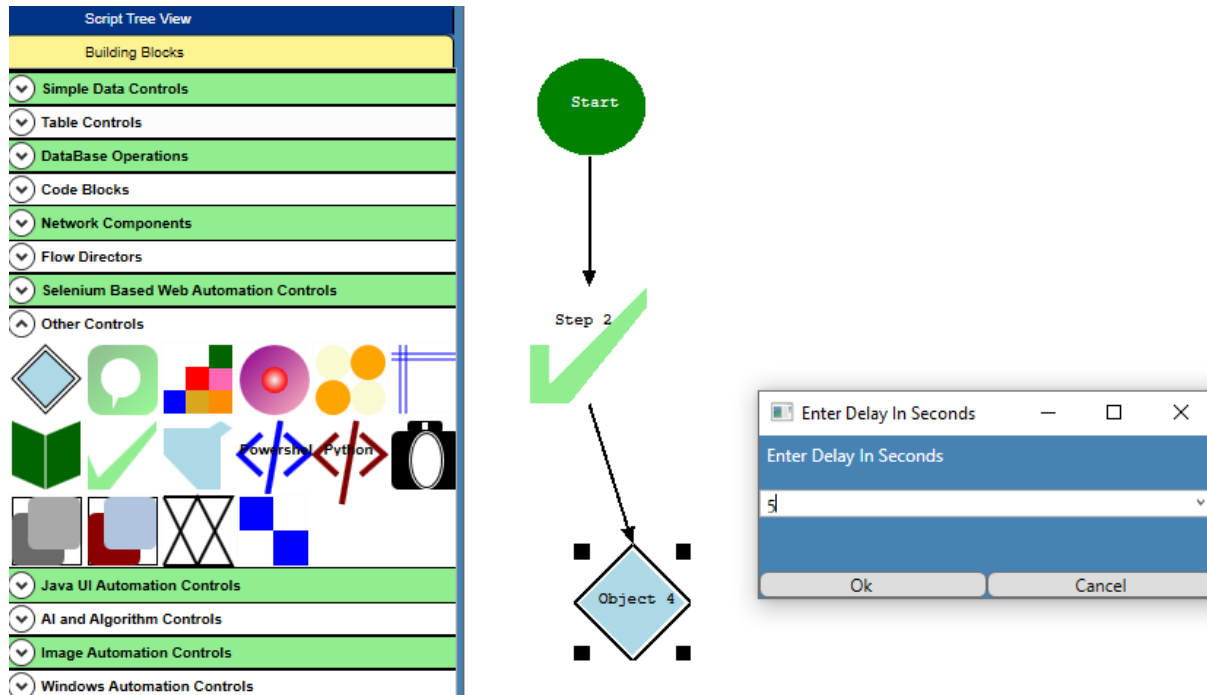
Steps:

- Open Java Control Panel
- Wait for some time
- Switch to Java Control Panel Window
- Click On Security Tab
- Click On Restore Security Prompts
- Switch to Resulting Window
- Click On Restore All button
- Switch back to Java Control Panel
- Close Window



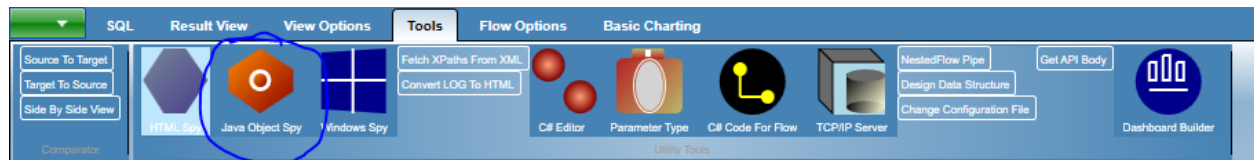
From the **Other Controls** List in the **Building Blocks**, please choose the External Exe execute control as shown above. Enter Code/Data Path = <Java Control Panel exe path>.

Once the tool opens, use wait block to introduce 5 seconds delay as it might take some time to open the tool (Right click on the Block and choose light green **Add Delay In Seconds** option)

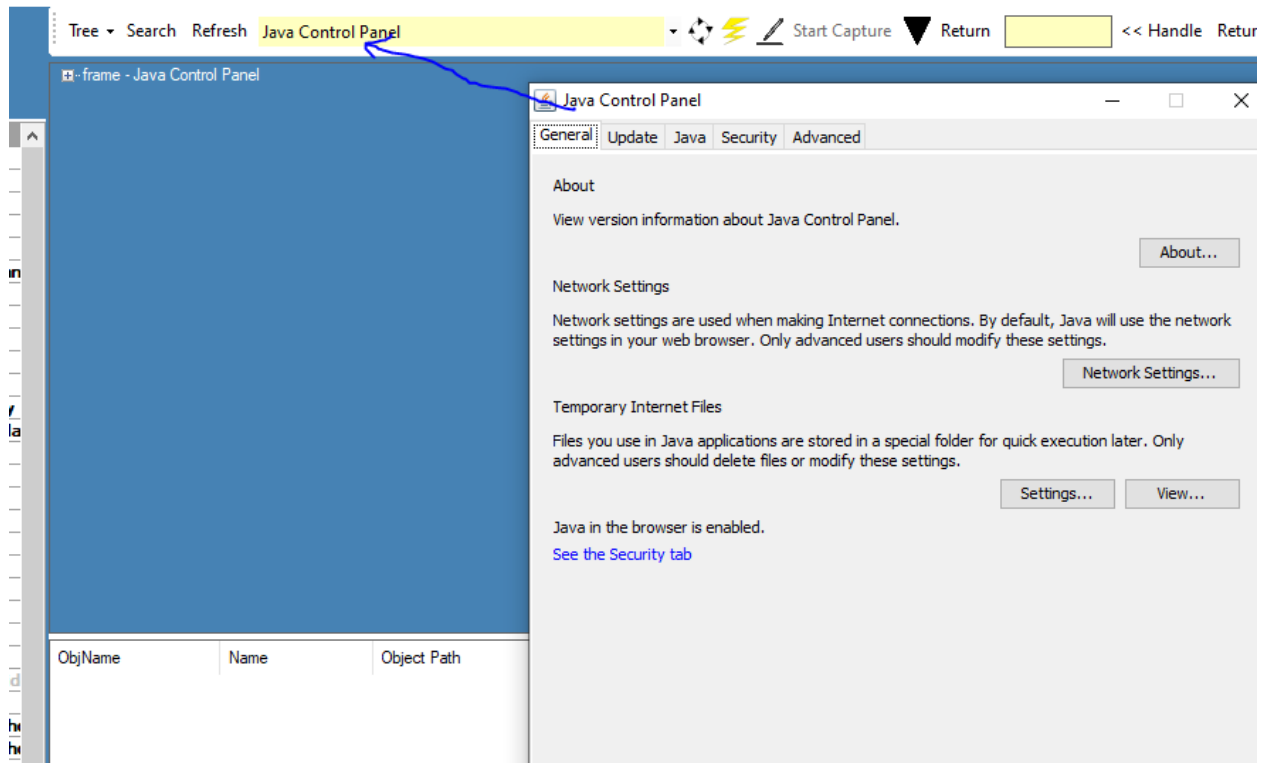


Java Control Panel will be opened

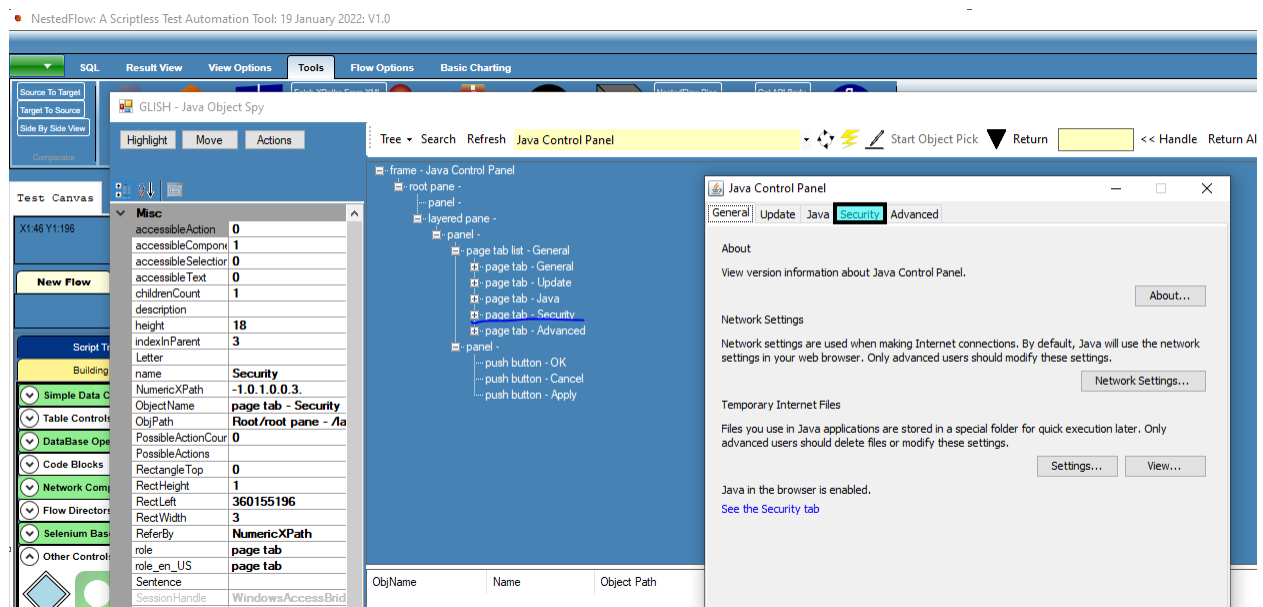
Open **Java Object Spy** from **Tools** ribbon menu.



It should recognize the existing Java windows

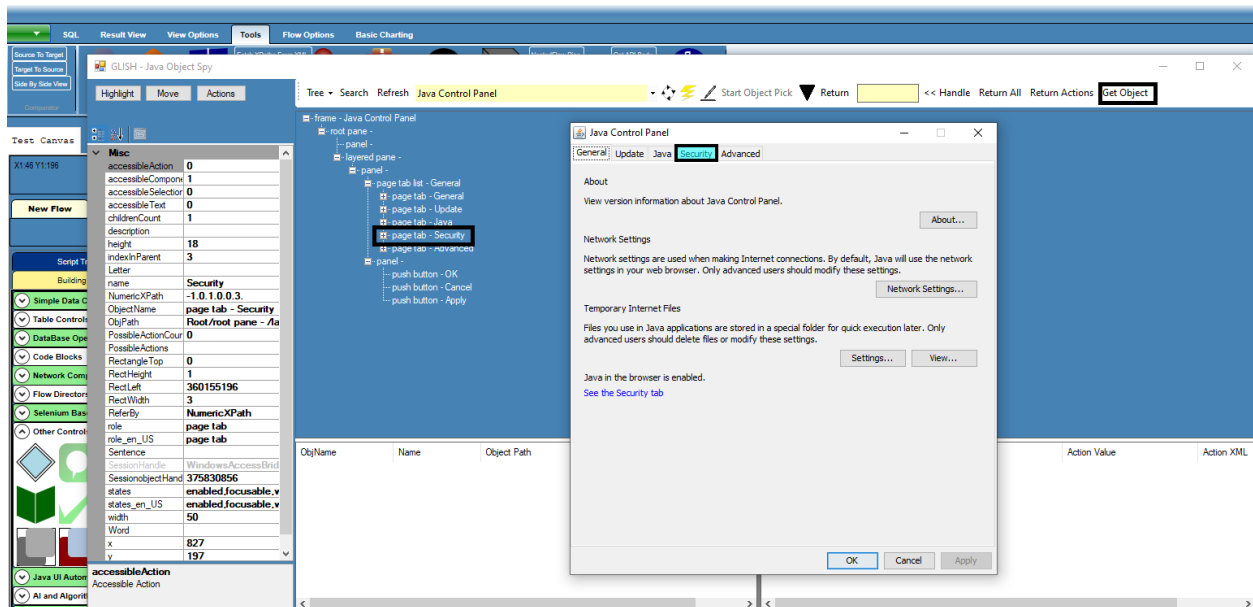


It will choose one of the Java windows and show its object tree. In this case Java Control Panel is the only window open and hence it opens that.



Click and hold **Get Object** button the chosen application opens. Leave the mouse on the object you want to capture (in this case Security Tab). The tree will expand and chooses that field automatically.


Right Click on Object in the tree and choose **Highlight Object**. It will highlight the object as shown below.

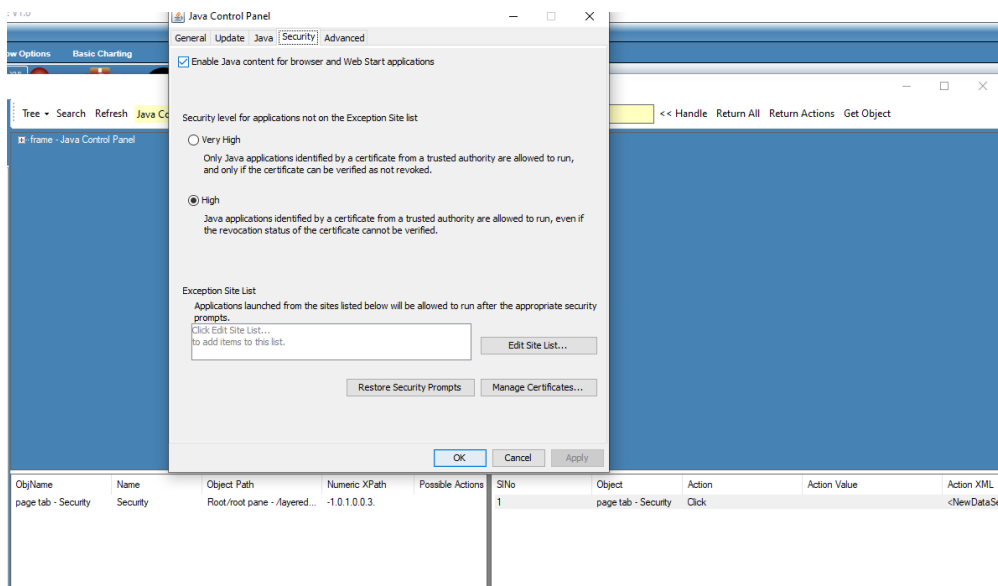


There are multiple ways we can proceed:

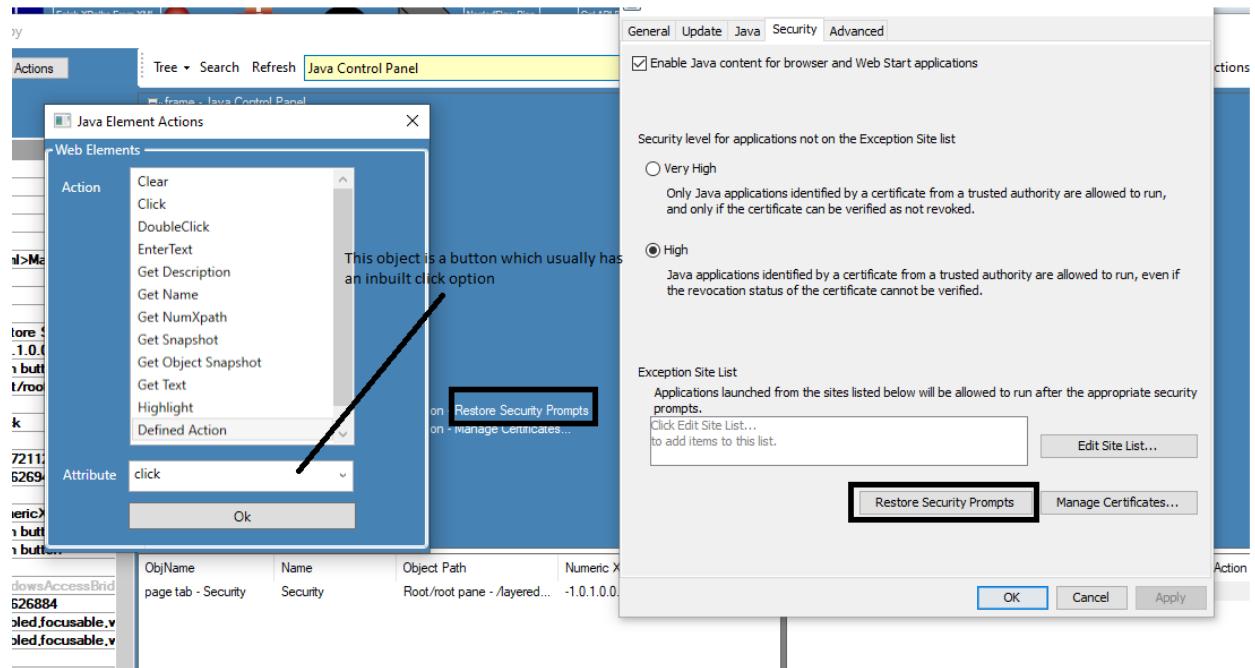
1. Simulate actions on the object and capture objects with actions
2. Select objects only and assign actions later

Object Actions (with Object information) will be stored on Right hand side of the bottom pane

Object Information will be stored on Left hand side if only object is chosen with  option



Let use choose all the objects needed with actions.



It Opens separate window.

Confirmation - Restore Security Prompts?

Are you sure you want to restore all security prompts?

Click Restore All to maintain the security of your computer by restoring all security prompts that have been hidden.

Restore All

Cancel

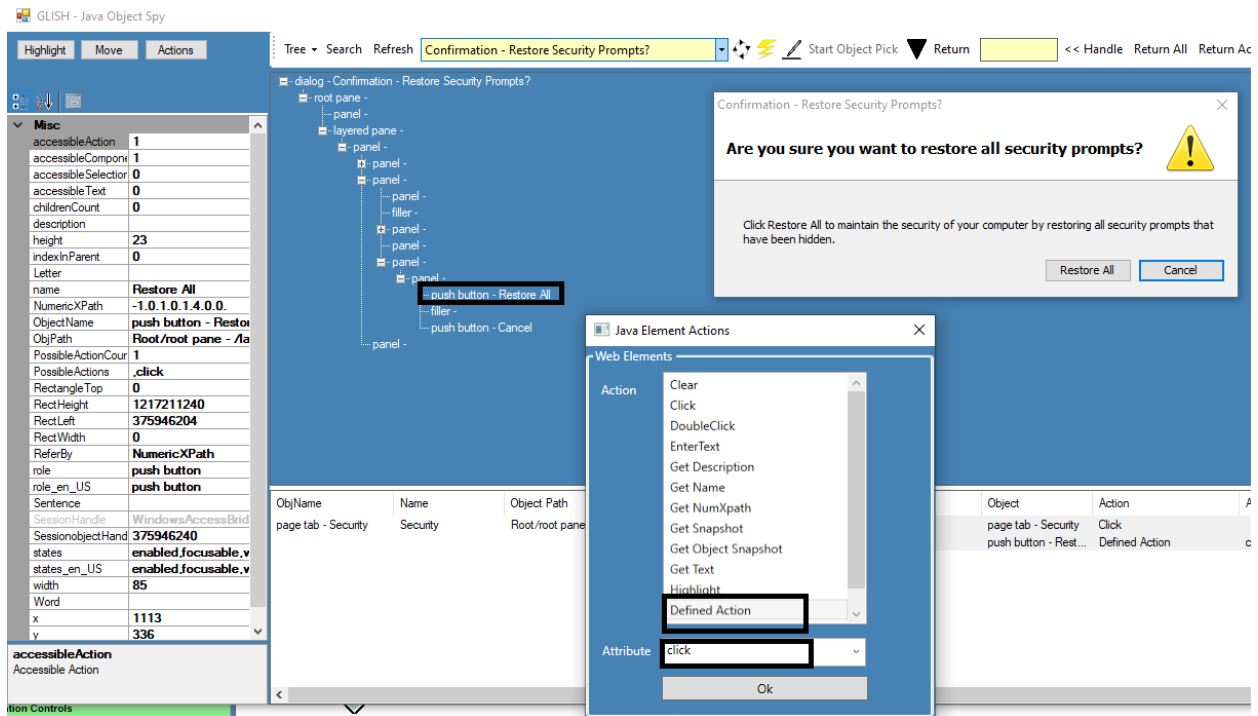
| Path | Possible Actions | SINo | Object | Action | Action Value |
|------|------------------|------|-----------------------|----------------|--------------|
| . | | 1 | page tab - Security | Click | |
| | | 2 | push button - Rest... | Defined Action | click |

Which might cause properties window to freeze if simulate action is performed. Close **Confirmation** window and it will unfreeze. Once it unfreezes click the button again to open **Confirmation** window.

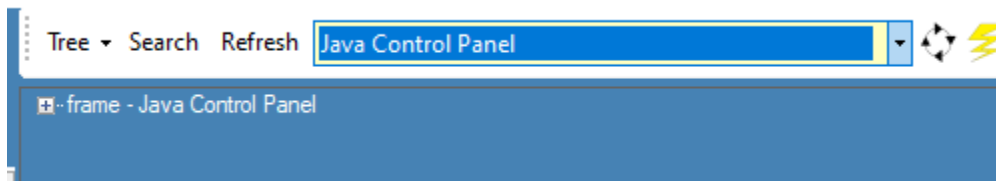
In such cases for better results → **Choose Click function instead of Defined Action click.**

Click Refresh Window List option as shown above, and this time choose **Confirmation** window.

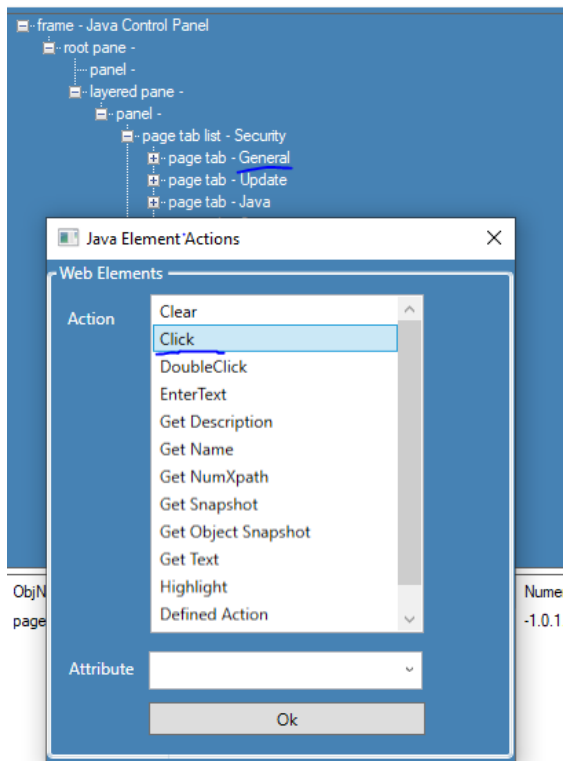
Choose **Restore All** button properties and simulate click Action.



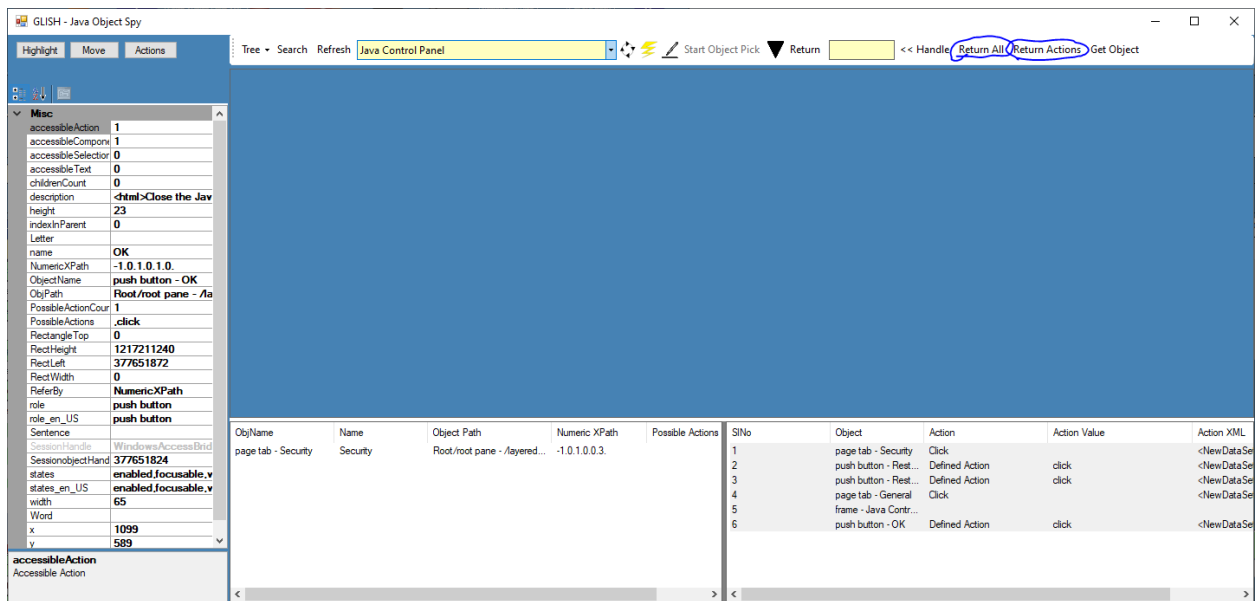
Choose **Java Control Panel** again as focused window



Navigate back to **General Tab**



Choose **OK** button properties and choose defined action click



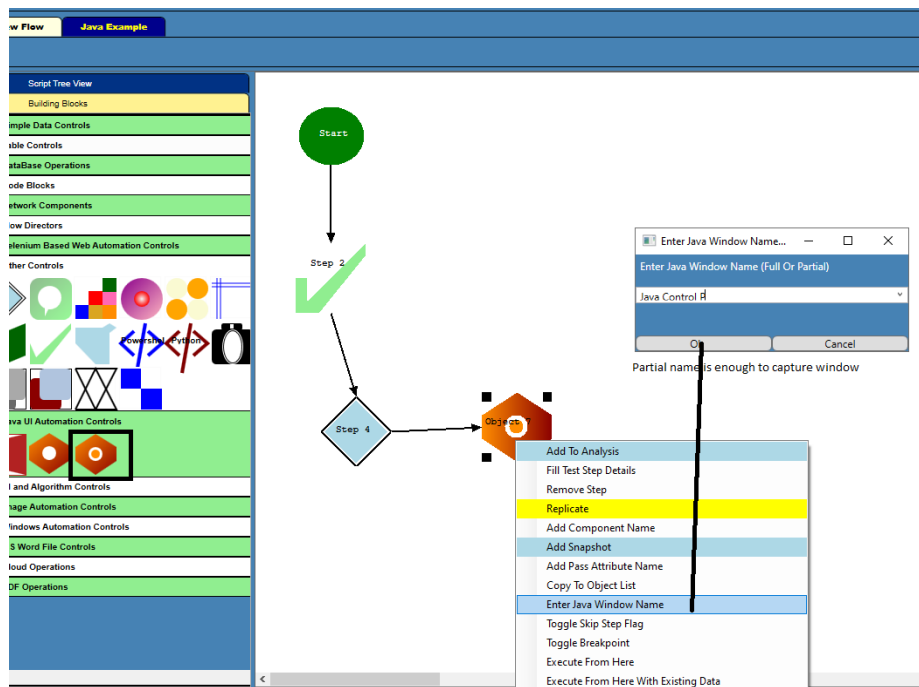
Return All option will only return selected objects

Return Actions option will return all actions with object properties

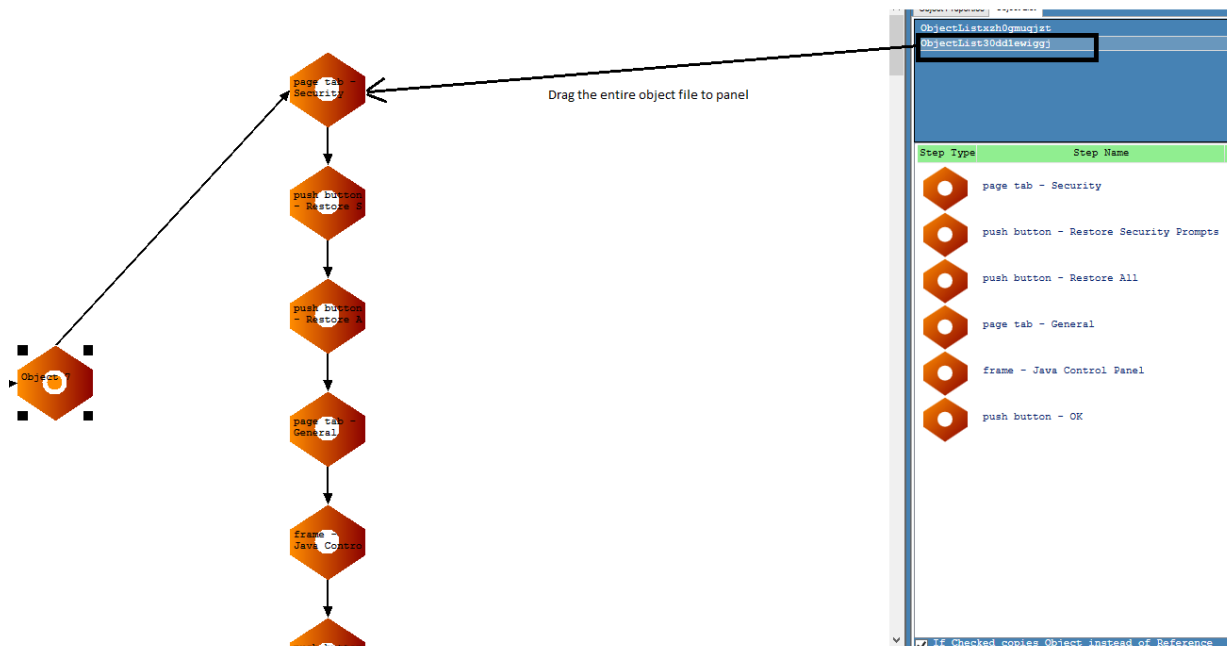
In this case second option is to be chosen



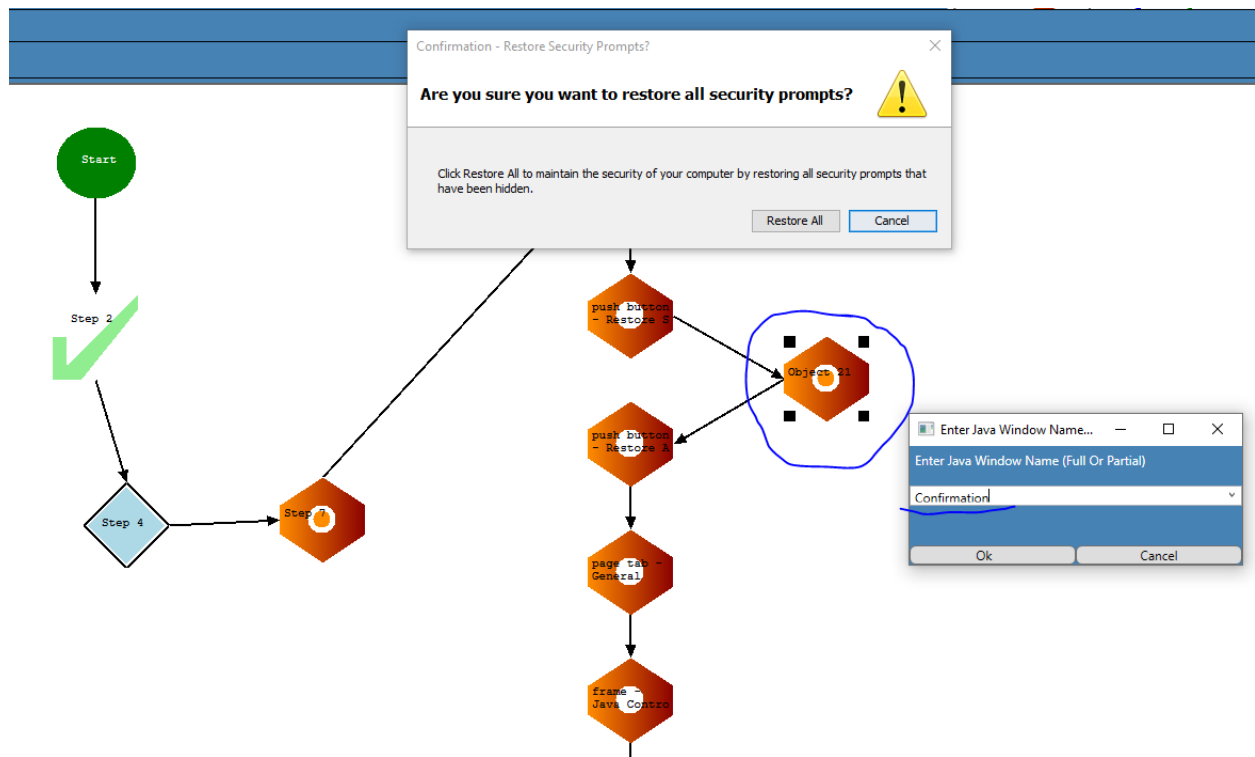
In the already created flow add a Java window control



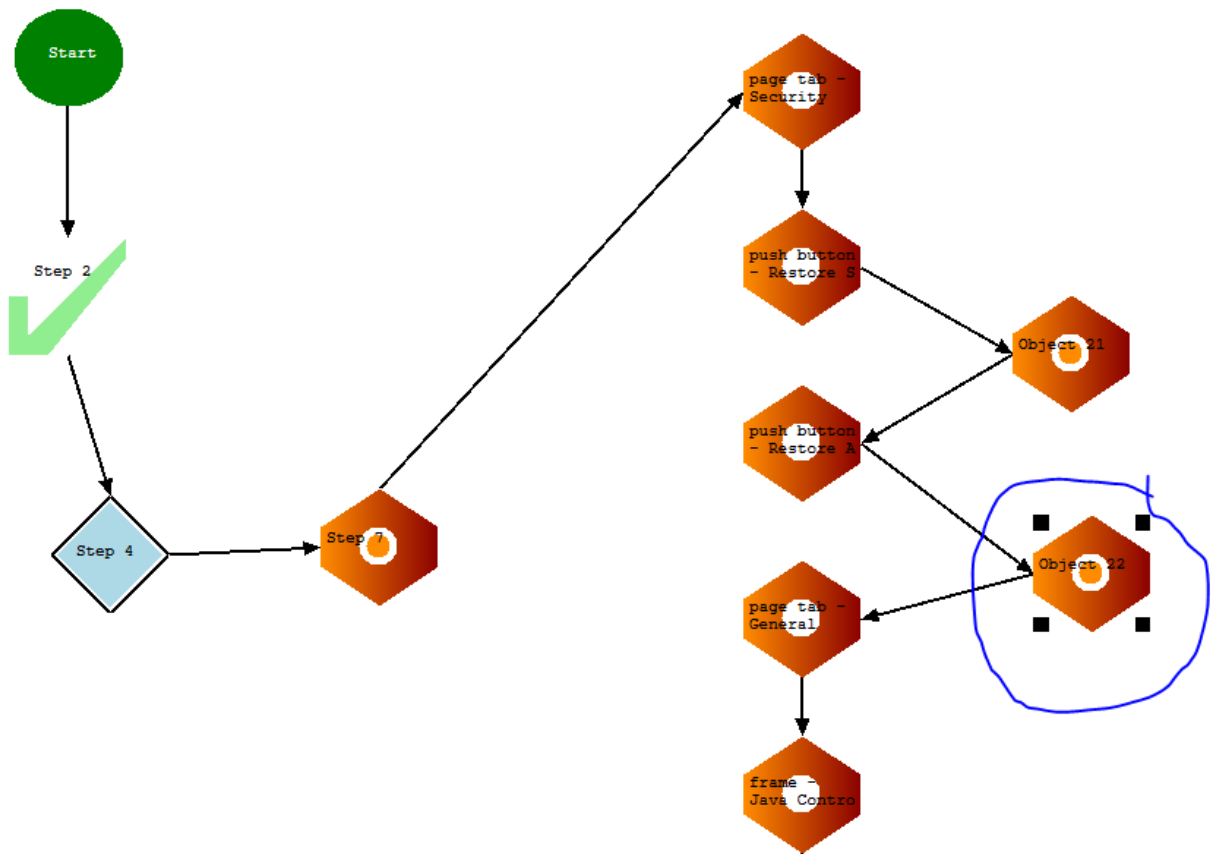
Drag the object page to



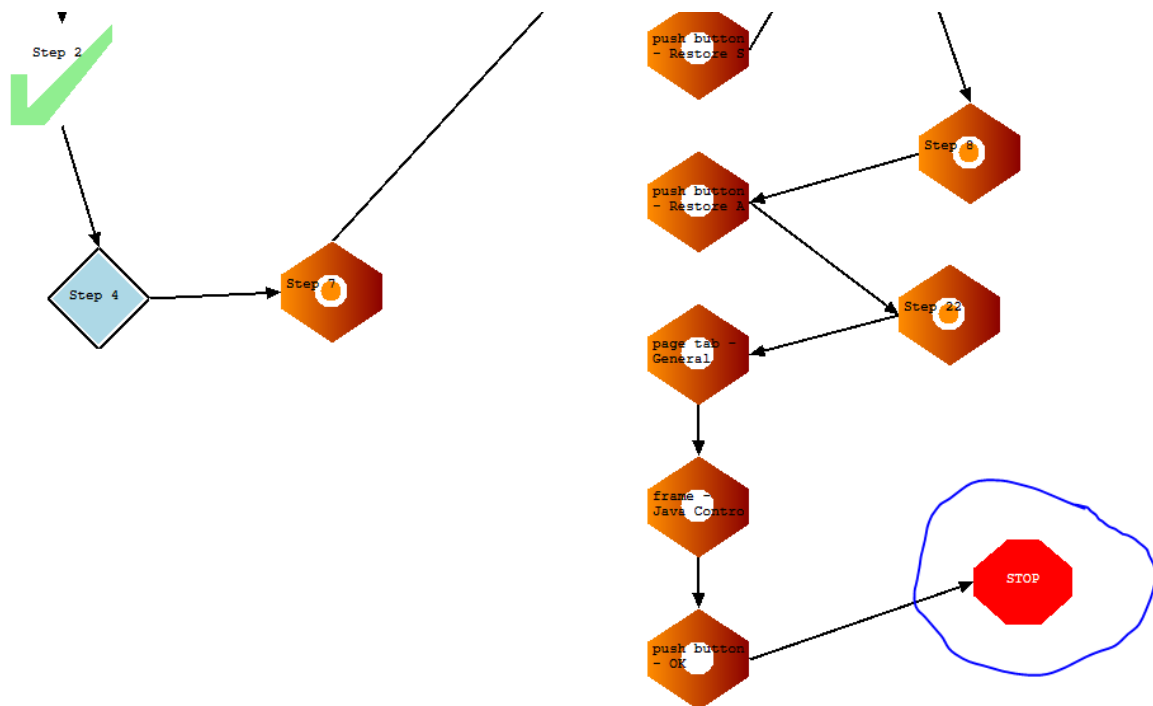
Add Confirmation window in between



Add Java Control panel again



Add an End Block

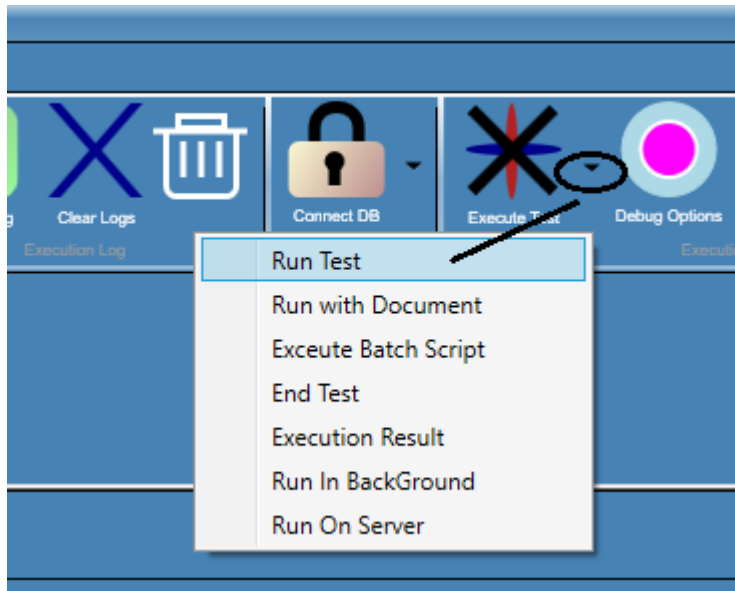


Execution



Click on

Or



Available Objects for Java Automation



This is a java element



This is a Java Window

Clear → Clear Text Contents

Click → Click on the object (not system Defined)

DoubleClick → Click on the object

EnterText → Enter Text

Get Description → Gets Object Description

Get Name → Gets Object Name

Get NumXpath → Gets Object Numeric XPath

Get Snapshot → Get Application Screen shot

Get Object Snapshot → Get Object Screenshot

Get Text → Get Object Text

Highlight --? Highlight Object

Defined Action → Perform one of the available system defined actions for the object

Right Click → Right click on the object

Validate Text → Validate Text of the object