Image & Text Automation

Image & Text Automation - Agenda

- How to automate virtualized applications
- Automation Techniques
  - Image
  - Text
  - Keyboard automation
- Insert data
- Retrieve data

Best Practices
Q&A
Test
Online Resources

UiPath
Robotic Process Automation

How to Automate Virtualized Apps

Things you should know

- UI Elements are not available in Citrix.
- Everything appears like an image.
- App must always be visible on screen.
- Only working with the main window/element.

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Image Automation

Input

Activities

- **Click Image** used to identify elements based on its image
- **Find Image** used to verify the active window

Output

Activities

Not Applicable

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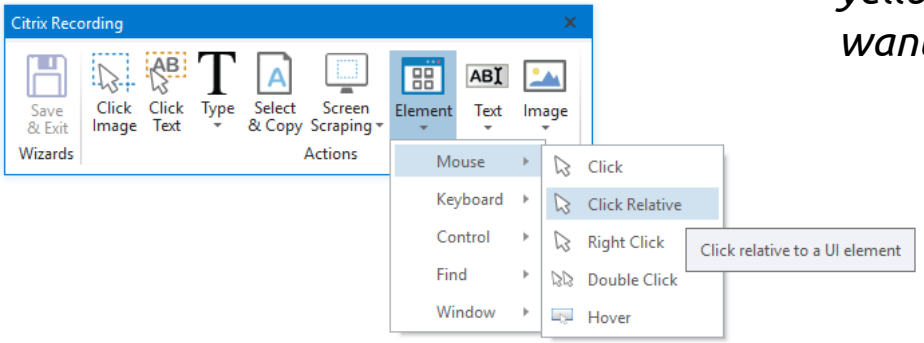
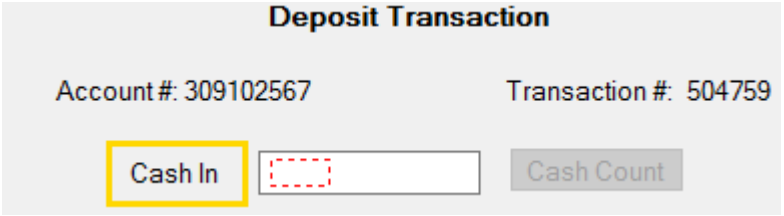
Insert data in Citrix

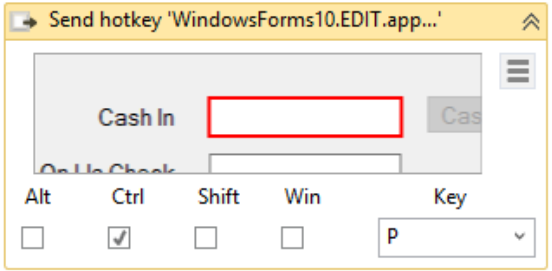
- Click relative to image or text



For instance in this application we indicate with yellow the text and with red the area which we want to be clicked.



- Keyboard hotkeys, tab, enter



- Paste text via shared clipboard

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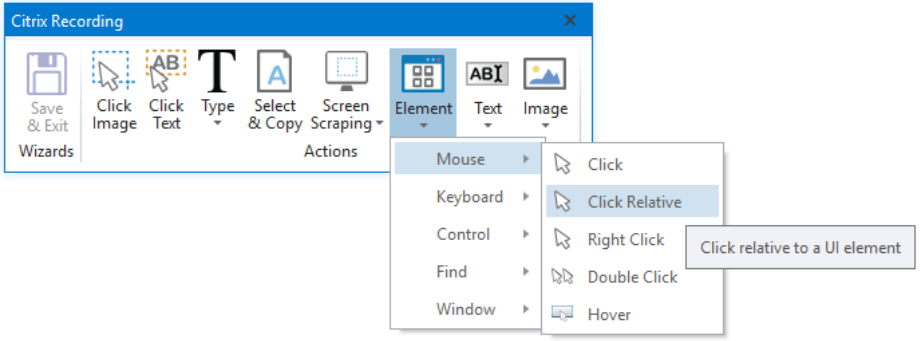
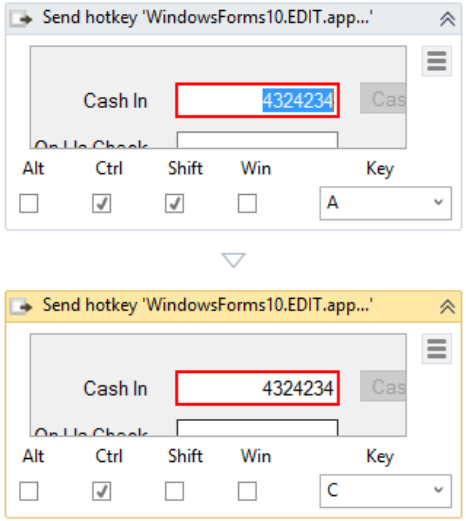
Retrieve data

- Copy selected text from text areas, tables and so on.





- Click relative to a static text and then get the data in clipboard

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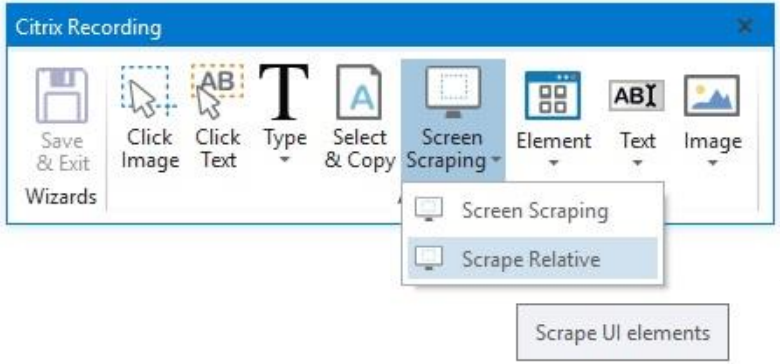
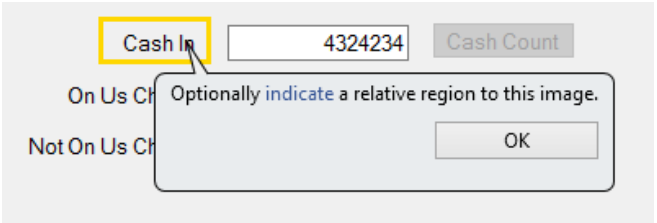
Retrieve data

- Scrape - relative to image or text



Example: Scrape relative to “Cash In”.



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Text Automation

Input

Activities

- **Click Text** used to identify elements based on its image
- **Find Image** used to verify the active window

Output

Activities

- **Get Text** used to identify elements based on its image

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OCR Engines

	More languages	*Preffered area size*	*Can invert colors*	*Set expected text format*	*Filter allowed characters*	*Better on Microsoft Fonts*
Google Tesseract	**can add**	**small**	✓	✓	✓	
Microsoft Modi	**default**	**large**				✓

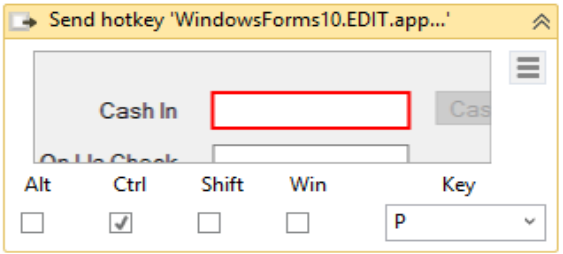
Robotic Process Automation

Keyboard Automation

Input

Activities

- **Send Hotkey**
- **Type** - send keyboard commands



Output

Activities

- **Select Text**

Type: "[k(end)d(shift)d(home)u(shift)u(home)]"

- **Copy Selected Text**

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Review

	Input	*Output*
Image	**Yes**	**No**
Text	**Yes**	**Yes**
Keyboard	**Yes**	**Yes**

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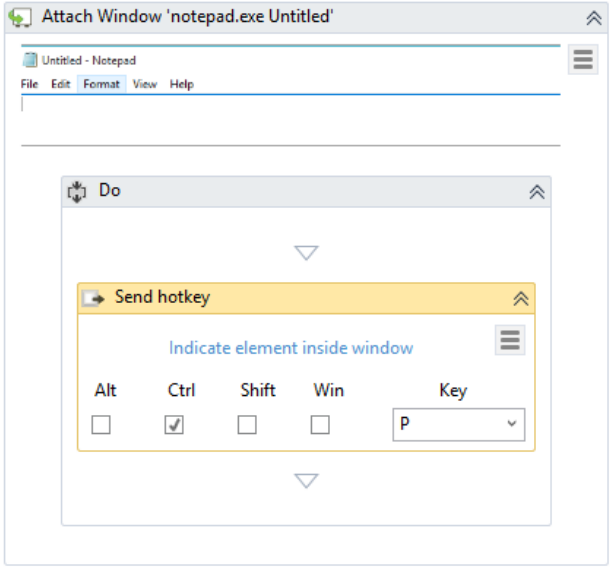
Identify elements

Keyboard automation

Sometimes could be very difficult to do a good text/image automation so you can use the keyboard.

- Attach to the window.
- Use “Send Hotkeys” activity.



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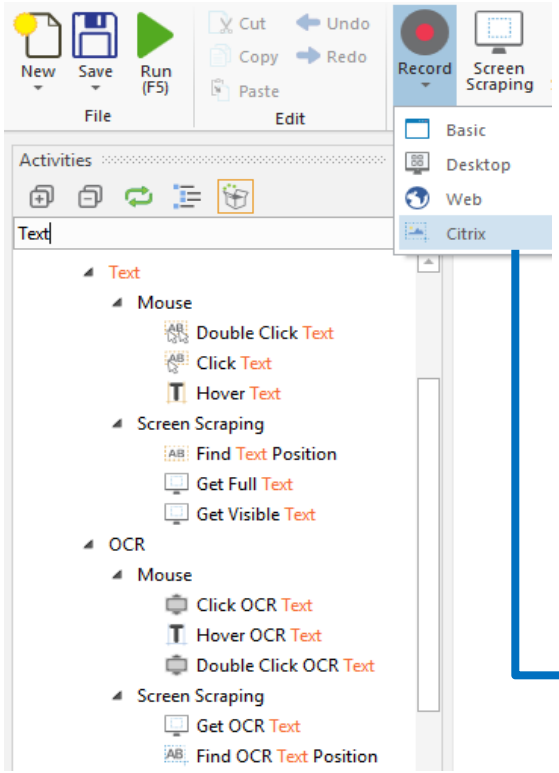
Identify Elements

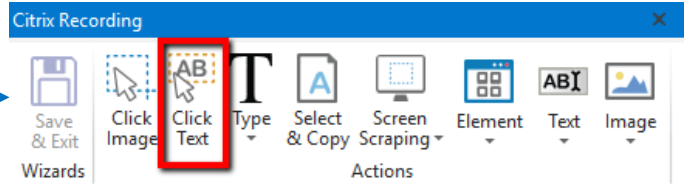


Text - identified by specific text/word regions

1) OCR - 98% accurate

- Google OCR Engine
- Microsoft OCR Engine

2) Native - 100% accurate



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Best practices

- Be careful when you try to click on a text to be unique. For instance if you want to click on a “Cancel” button and the text “cancel” is somewhere else then you better use click image and indicate that button.

- The text/image always should be visible. In Citrix automation if the user is not able to see an image or a text neither the robot.

- Feel free to use .NET methods like “Split()” , “Substring()”, “ StartsWith() ” and so on when you scrape a text.

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Exercise 1: add new expense

Download Expenseit application and add a new expense in the application using only image/text and hotkeys.

1. Download the application from **here**: https://drive.google.com/file/d/0BxVAKI3l9Pc5d0JqY2E2RGYtZDA/view?usp=sharing

2. Add expenses rows just by using text or image techniques

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Q&A

Test

Online Resources

- Data entry automation in Citrix
  http://www.uipath.com/tutorials/citrix-automation-data-entry

- Retrieve data using clipboard
  http://www.uipath.com/tutorials/citrix-automation-keyboard-hotkeys

- Retrieve data using OCR
  http://www.uipath.com/tutorials/citrix-automation-ocr-data-extraction

- Automation using text scraping
  http://www.uipath.com/tutorials/sap-gui-automation-data-entry-scraping