LECTURE 04B.
UIPATH STUDIO RECORDING

Robotic Process Automation
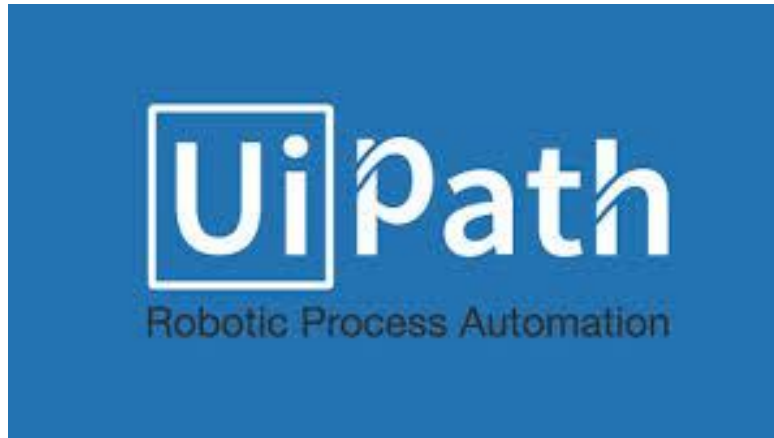**[22 October 2019]**

Elective Course, 2019-2020, Fall Semester

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Acknowledgements

This course is presented to our Faculty with the support of UiPath Romania.

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UiPath Studio Recording. Details

- **the Recording functionality**
  - allows **to capture the user's actions** on the screen and **translates them into sequences;**

- it is available from the **Design** tab in UiPath Studio;
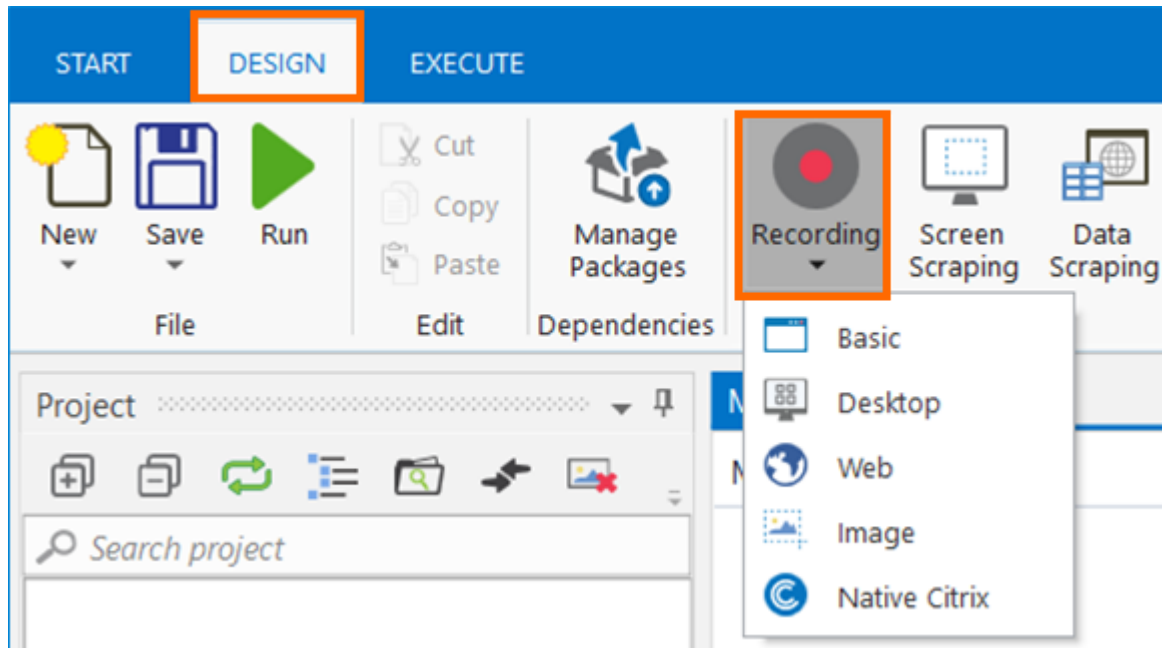
UiPath Studio Recording. Characteristics

- *while recording:*
  - all user interface elements are highlighted that allows to easily identify **buttons, fields, menus, or elements** the user interacts with;

- *when the recording ends:*
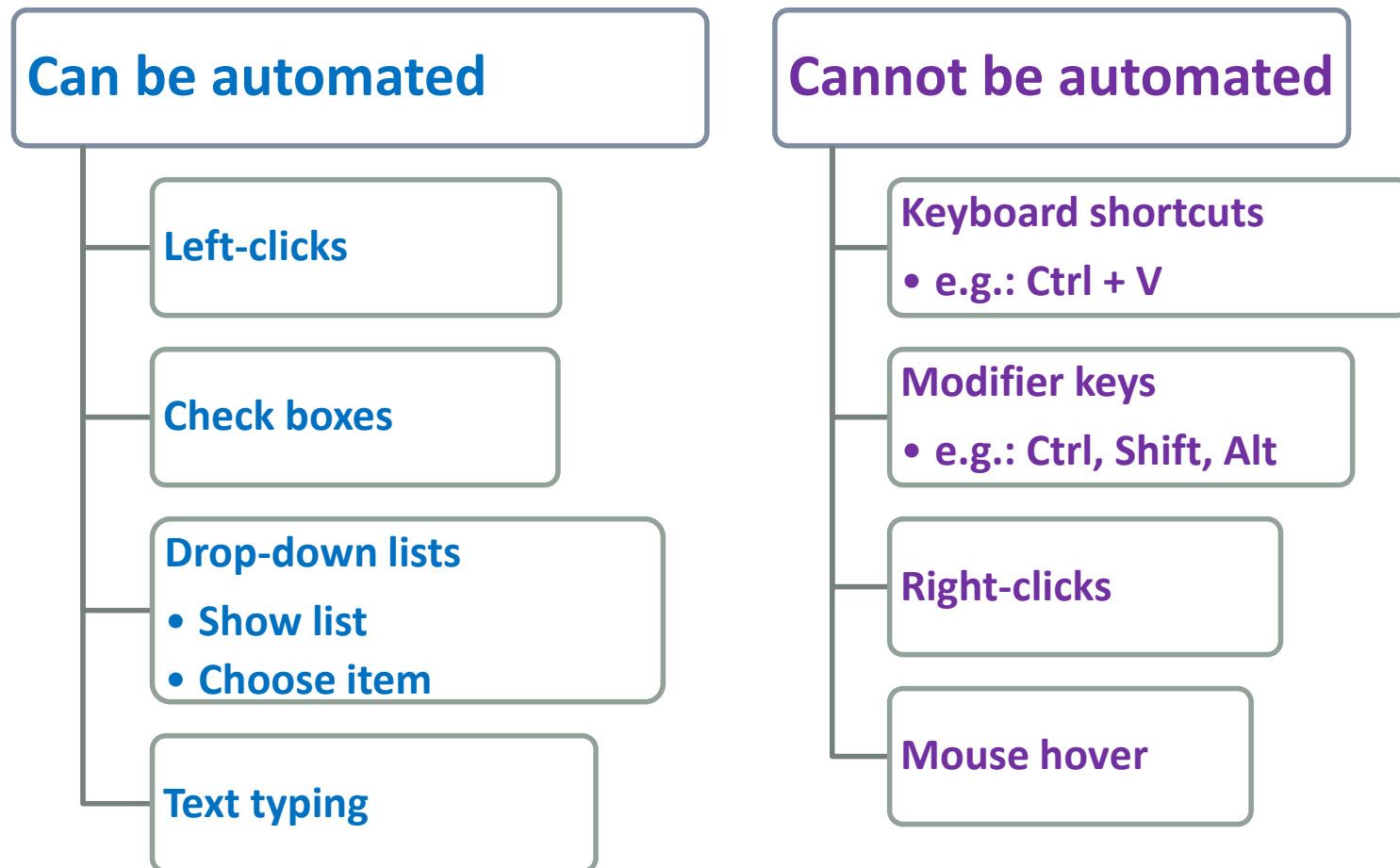 - a **sequence containing the activities** performed by the user is created.
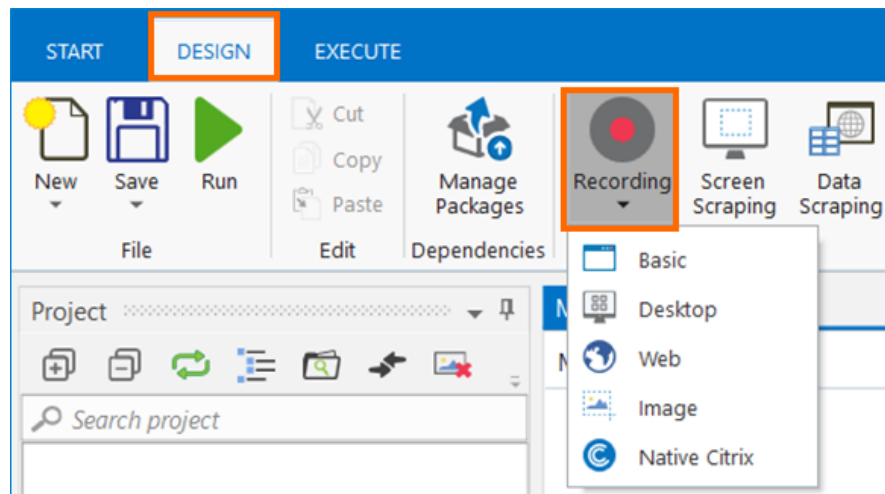
UiPath Studio Recording. Recording Types

- **the recorder can automate the recording for some actions** and others not;
- therefore, there are two recording types:
    - *automatic recording;*
    - *manual recording (step by step recording).*
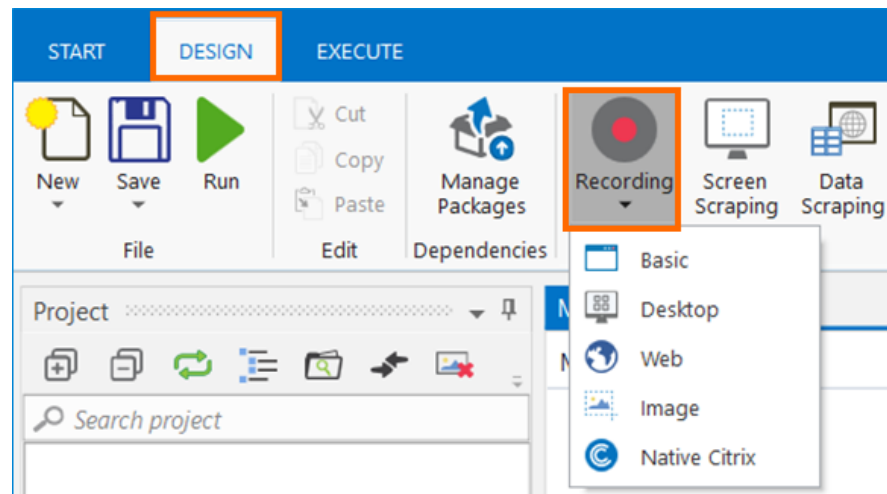
UiPath Studio Recording. Recorded Actions

- **the recorder can automate some actions** and others not;

Can be automated	Cannot be automated

Can be automated

- **Left-clicks**
- **Check boxes**
- **Drop-down lists**
  - **Show list**
  - **Choose item**
- **Text typing**

Cannot be automated

- **Keyboard shortcuts**
  - **e.g.: Ctrl + V**
- **Modifier keys**
  - **e.g.: Ctrl, Shift, Alt**
- **Right-clicks**
- **Mouse hover**

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UiPath Studio Recording. Special Keys

- **the recorder uses several keys:**

F2

- **to pause the recording** temporarily for 3 seconds;
- it gives a temporary pause when the user wants to select the short term element, like selecting the element from a drop down list;
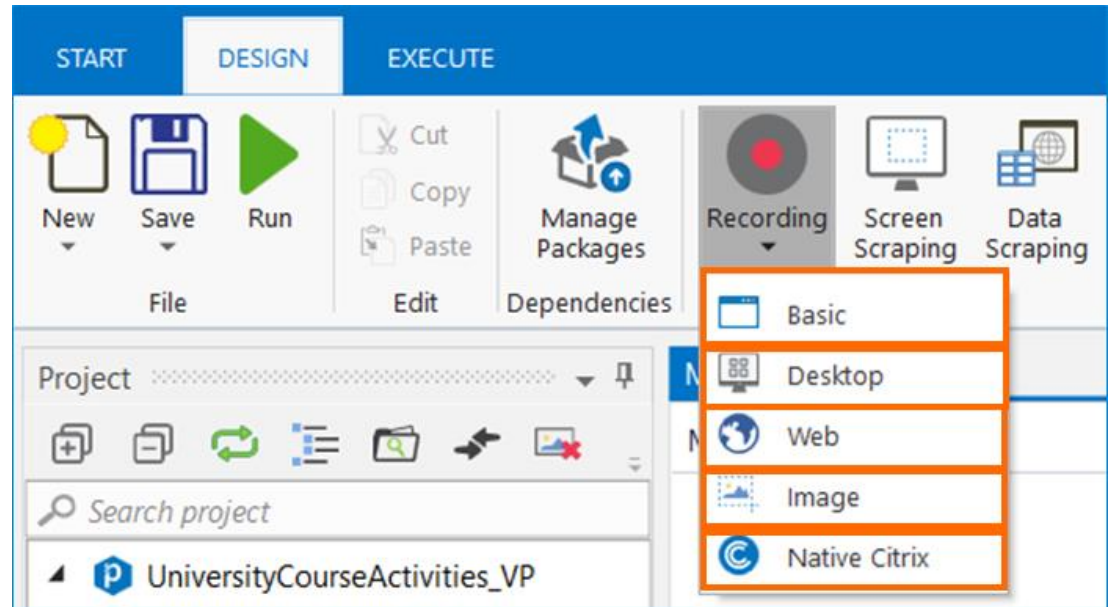
Esc or Right Click

- **to pause the automatic recording** and switch to the **manual recording**;

Esc (twice)

- **to save and exit the recording**.

UiPath Studio Recording. Types of Recorders (1)

- **there are five recorders:**
  - **Basic Recorder;**
  - **Desktop Recorder;**
  - **Web Recorder;**
  - **Image Recorder;**
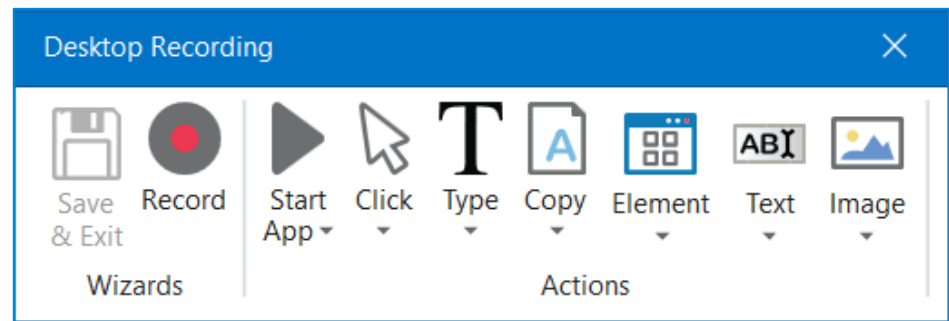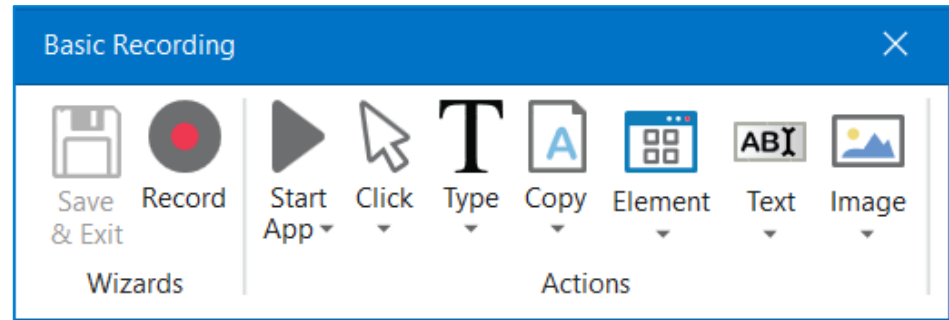 - **Native Citrix Recorder.**

- actions performed:
  - **common actions** to all environments;
  - **particular actions** to each environment.

UiPath Studio Recording. Types of Recorders (2)

- **recorders covered in Lecture 04:**
  - **Basic Recorder;**
  - **Desktop Recorder;**
  - **Web Recorder.**
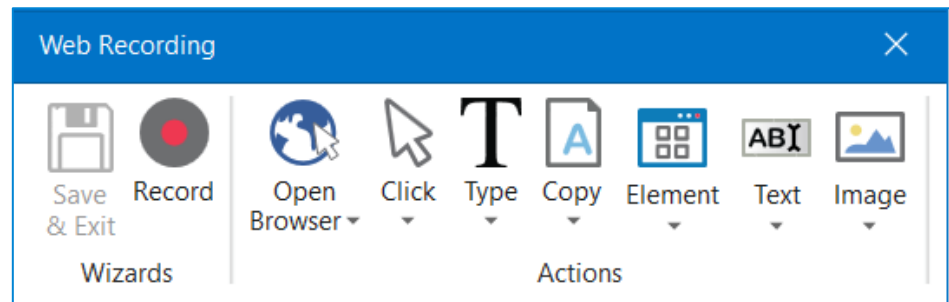
Recording Wizard. Components

- **the Recording Wizard consists of 3 types of components:**

Save & Exit:

- **closes the recorder** and displays the activities in Designer;

Record:

- **switches to automatic recording mode**, in which multiple input activities are generated; the user sees *blue screen* over the area where an action is captured and *yellow outlines* for selectors.

Manual Recording Actions:

- **actions that users can select to generate single activities** during their recording process.
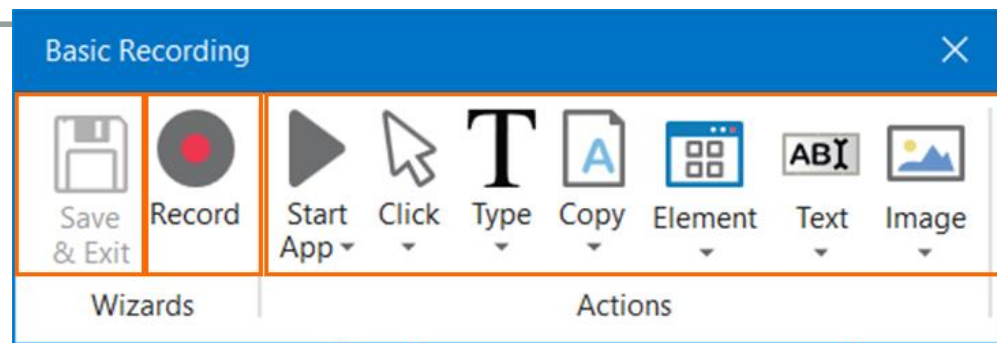
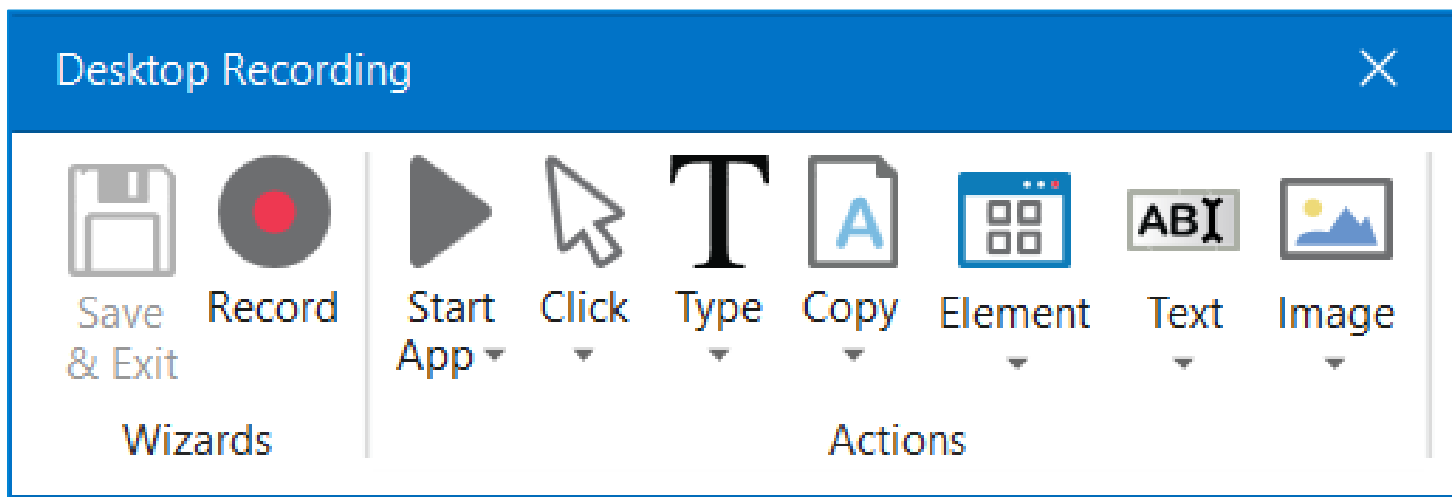# Basic Recorder. Details

- **Basic Recorder**
  - it is used to automate the desktop application;
  - **is used when we only want to work with a single window;**
  - **it generates a full selector for each activity** and **no container**;
  - **the resulted automation is slower** than one that uses containers;
  - it is suitable for single activities.
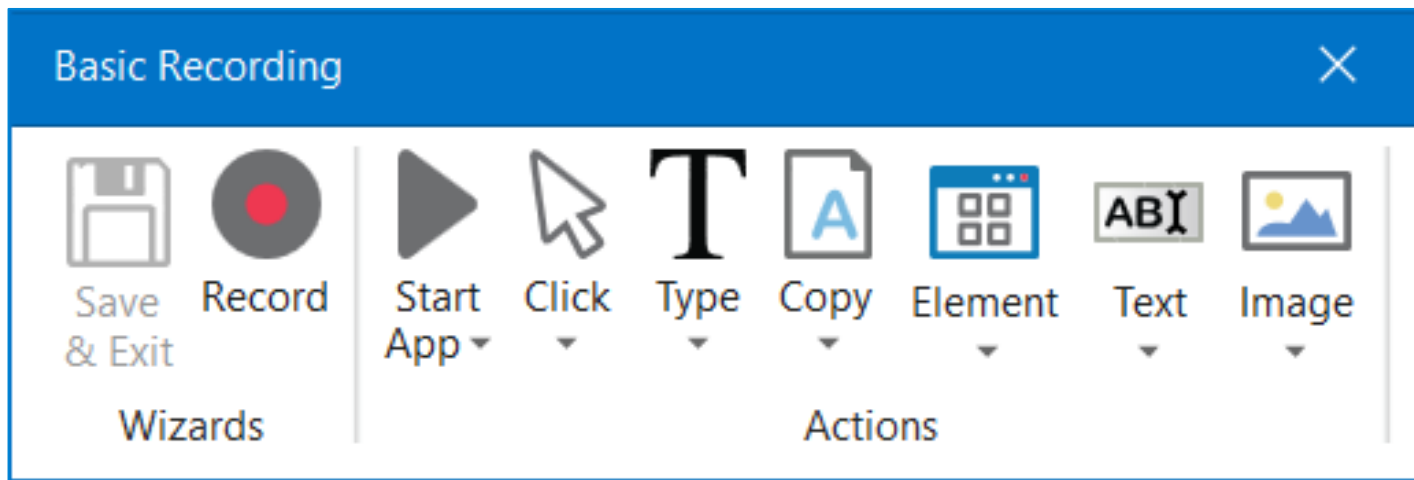
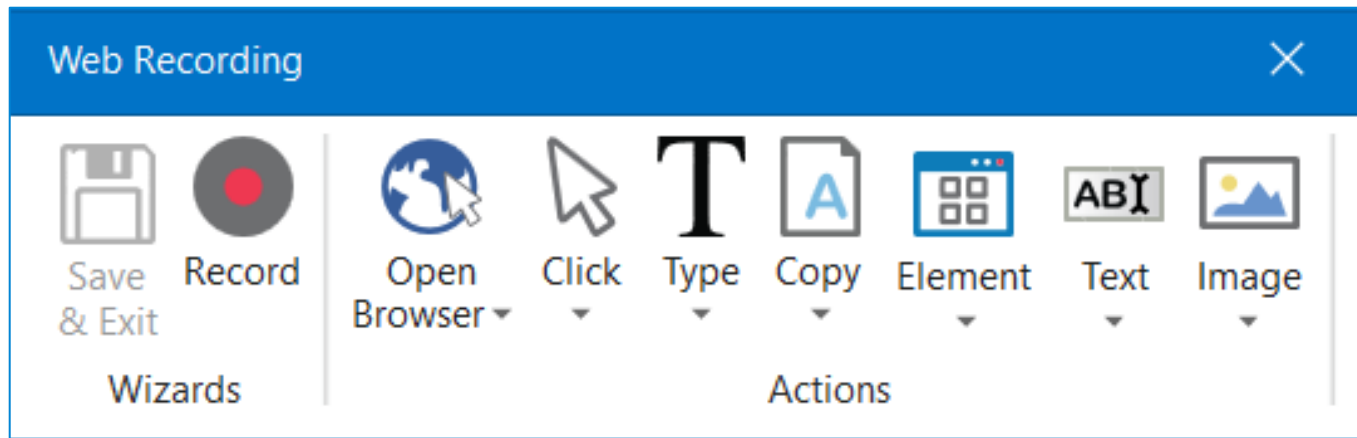# Desktop Recorders. Details

- **Desktop Recorder**
  - it records the desktop application **when multiple actions are performed in numerous windows;**
  - it is faster than the **Basic recorder**;
  - it generates an **Attach Window** container:
    - with the selector of the top-level window, in which activities are enclosed;
    - with *partial selectors* for each activity.

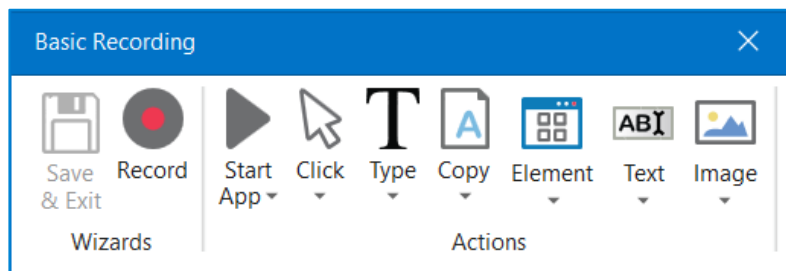# Web Recorder. Details

- **Web Recorder**
  - it automates activities performed on websites, using one of the three major browsers (IE, Chrome, Firefox);
  - it is used **when we want to act on any web-based application;**
  - **all the actions performed are placed within an** **Attach Browser** container**.**

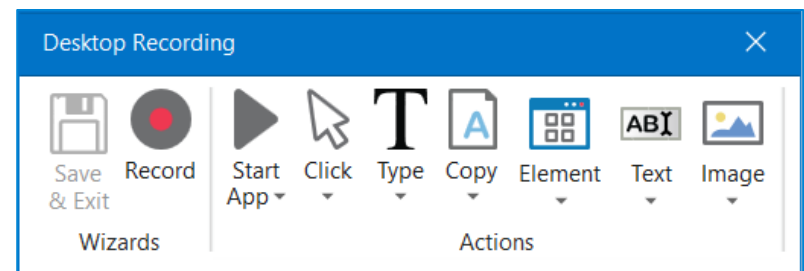# UiPath Studio Recording. Basic vs Desktop Recorder

- **Basic Recorder**
  - **it is used when multiple actions are performed in single window;**

  - it generates **full** selectors;

  - it does not use containers.

- **Desktop Recorder**
  - **it is used when multiple actions are performed in many windows;**

  - it generates **partial** selectors;

  - it uses **Attach Window** container.
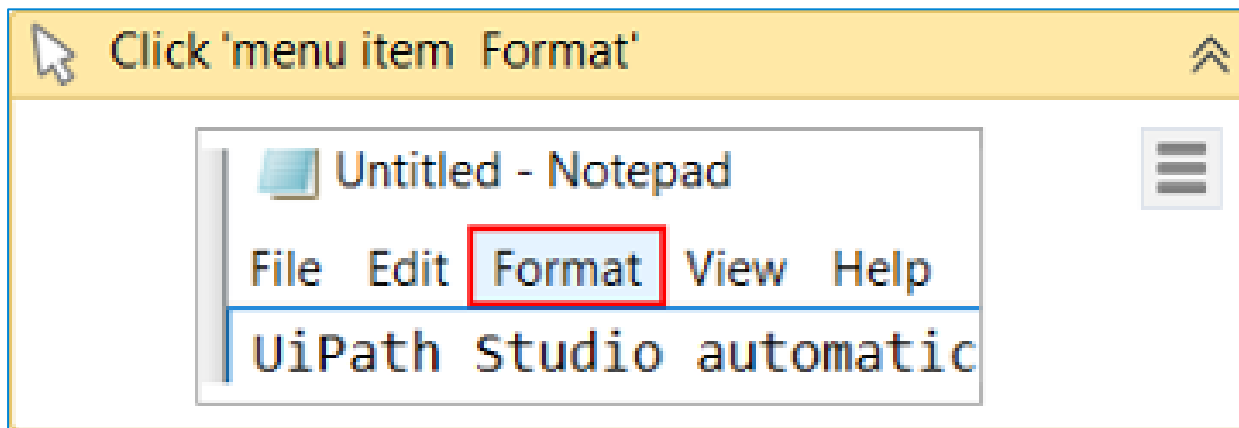
Automatic Recording. Details

- **Automatic Recording**
  - allows to document user actions in UiPath;
  - **it is used for recording multiple actions in one time;**
  - it provides a workflow that can be used to create a framework;

- **advantages:**
  - time-saving;
  - it provides a skeleton for the business processes that can be easily *customized* and *parameterized*.

- **there are four activities that are automatically generated using Automatic Recording:**
  - **Click;**
  - **Type Into;**
  - **Select Item;**
  - **Check.**

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Automatic Recording. Click Activity

- **Click** activity
  - it is generated when the user clicks:
    - **a button** when using **Basic** and **Desktop recorder**;
    - **a link** when using **Web recorder**;
- relevant properties:
  - **to add a time delay** before or after the action;
  - **to change the click type;**
 - **to add key modifiers**.

Automatic Recording. Type Into Activity

- **Type Into** activity
  - it is generated when typing into a text field or any editable UI element;
- relevant properties:
  - **to add a time delay** before or after the action or between key strokes;
  - **to change the text** at any point;
  - **to erase the entire field** before writing to it (**Empty Field** property).
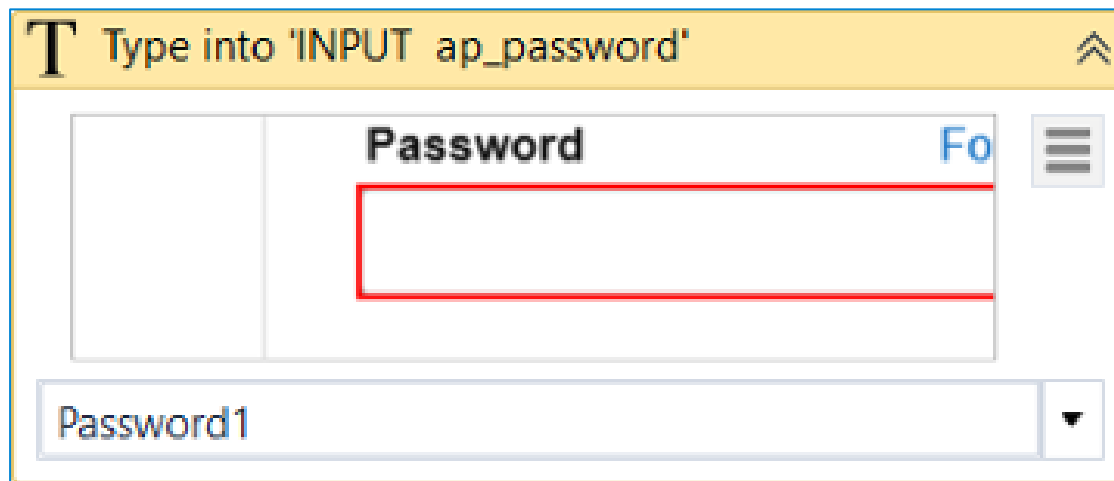
Automatic Recording. Select Item Activity

- **Select Item** activity
  - it is generated when an item is selected from a drop-down list or combo box;
- relevant properties:
  - **to add a time delay** before or after the action;
  - **to change the selected item**.
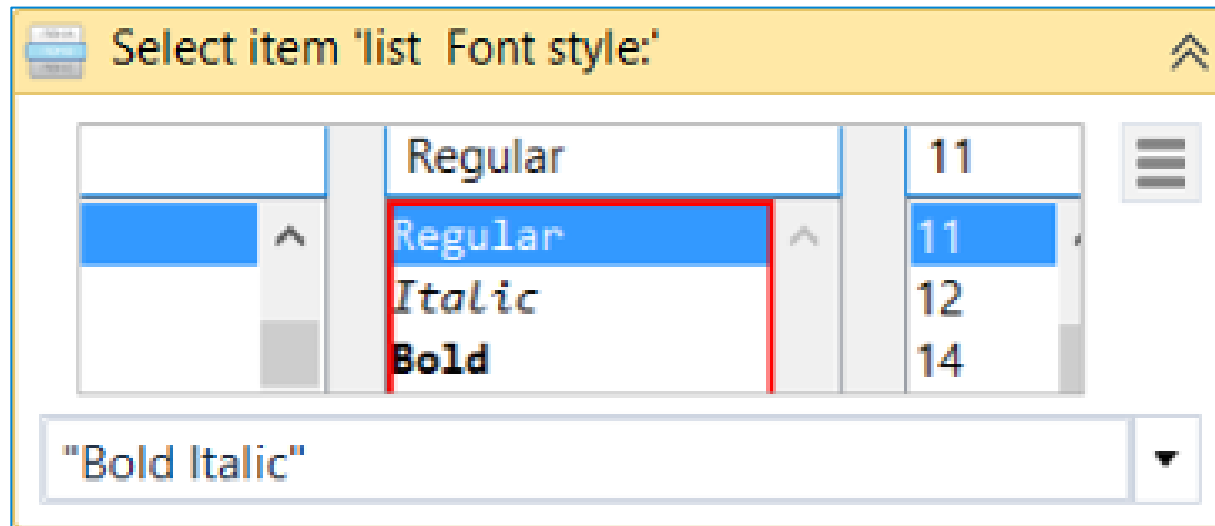
Automatic Recording. Check Activity

- **Check** activity
  - it is generated when a **radio button** or **check-box** is clicked;
- relevant properties:
  - **to add a time delay** before or after the action;
  - **to select or unselect the check box**.
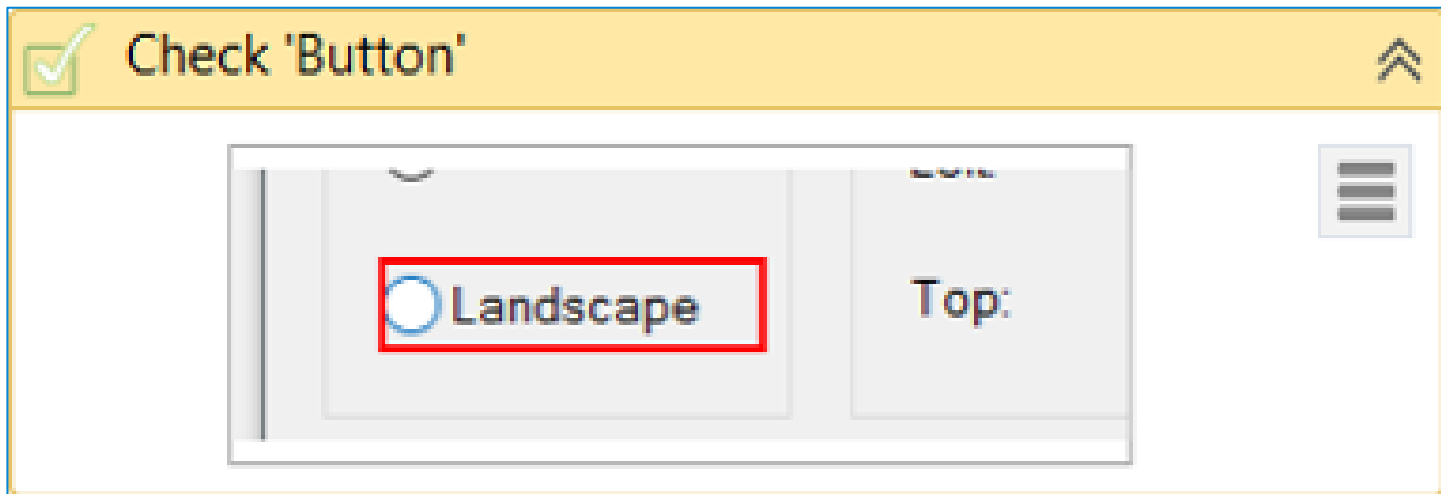
Manual Recording. Details

- **Manual Recording = single action recording**
  - allows to record actions that cannot be handled by the automatic record;

- both manual and automatic recording an be used in automations to achieve full automation of a task;
- single actions are found in the **Actions** group of any recording toolbar;

- **there are seven categories of single actions that are generated using Manual Recording:**
  - **Start App;**
  - **Click;**
  - **Type;**
  - **Copy;**
  - **Element;**
  - **Text;**
  - **Image.**
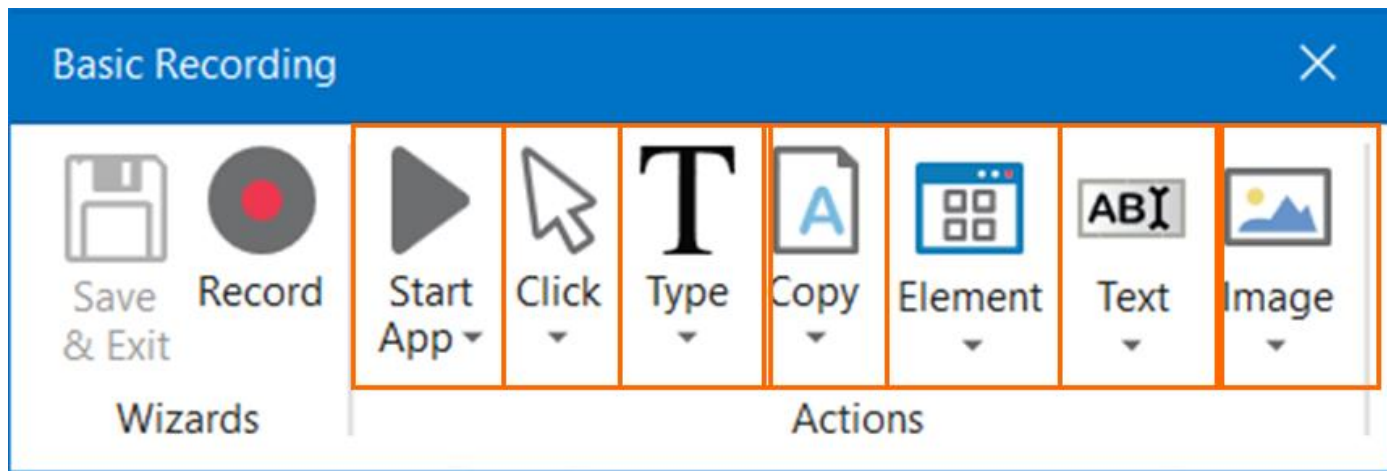
Manual Recording. Start App Actions

- **Start App (Basic & Desktop Recording)**
  - **Start App:**
    - it generates the **Open Application** activity to launch a desktop application (.exe) to perform actions within it;
  - **Close App:**
    - **it** generates the **Close Application** activity to terminate a desktop application (.exe).
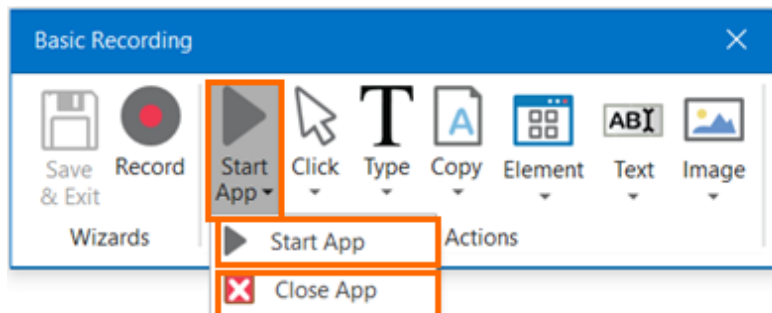
- **Open Browser (Web Recording)**
- **Open Browser:**
  - it generates the **Open Browser** activity to launch a web page and perform actions within it;
- **Close Tab:**
  - it generates the **Close Tab** activity within an **Attach Browser** to close a single tab.
- **Close Browser:**
  - generates the **Close Application** activity to terminate a browser application (.exe).
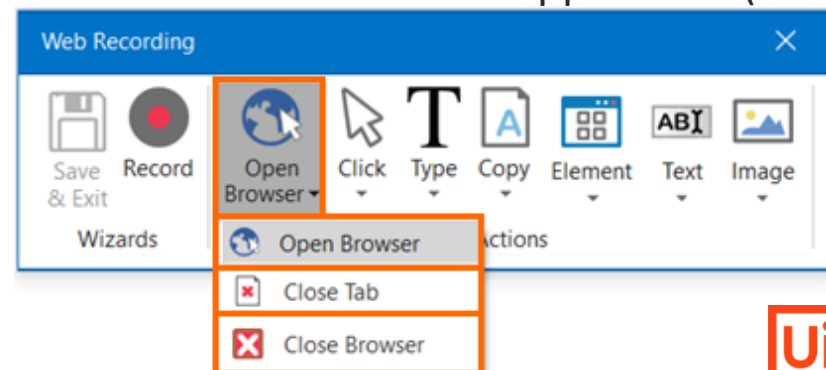
Manual Recording. Click Actions

Click:
- it generates the **Click** activity, prompting the user to indicate the UI element to click.

Select Item:
- it generates the **Select Item** activity to select an option from a dropdown list or combo box.

Check:
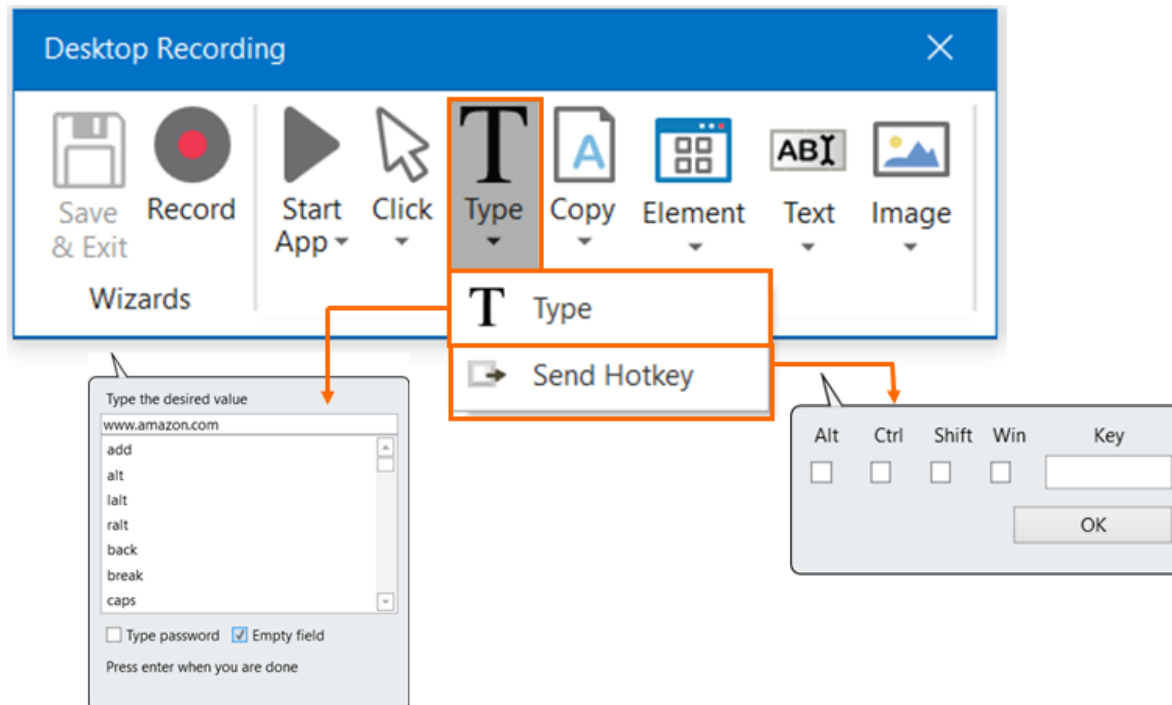- it generates the **Check** activity to select a check-box or radio button.
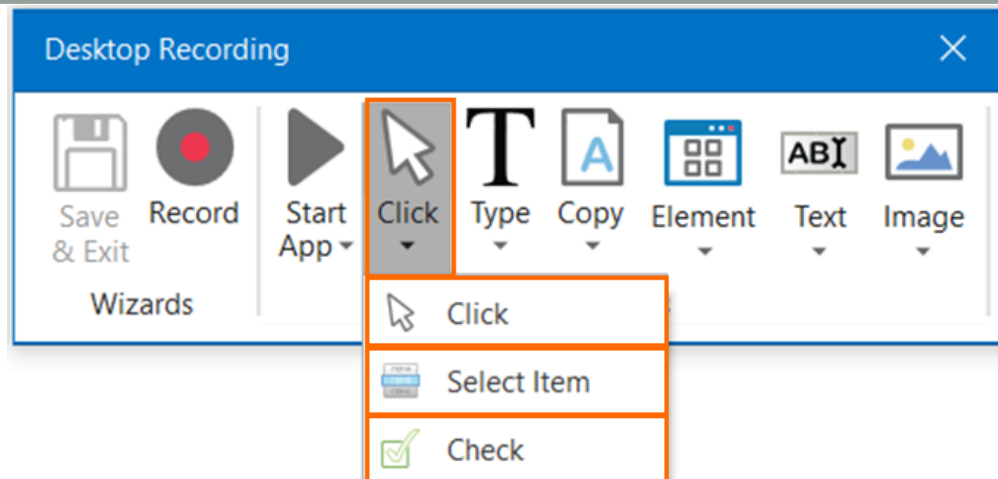
Manual Recording. Type Actions

Type:
- it generates the **Type Into** activity prompting the user for their desired value;

Send Hotkey:
- it generates the **Send Hotkey** activity prompting to define a **Alt-**, **Ctrl-**, **Shift-**, or **Win + Key** to send it to an application.

Manual Recording. Copy Actions (1)

Copy Text:

- it generates the **Get Text** activity prompting the user to indicate the UI element to copy text from.

Screen Scraping:

- available for **Basic & Desktop Recording**;

Scrape Data:

- available for **Web Recording**;
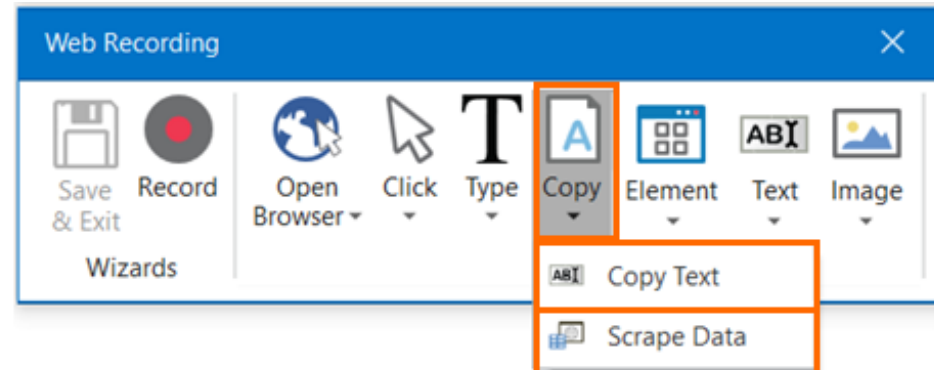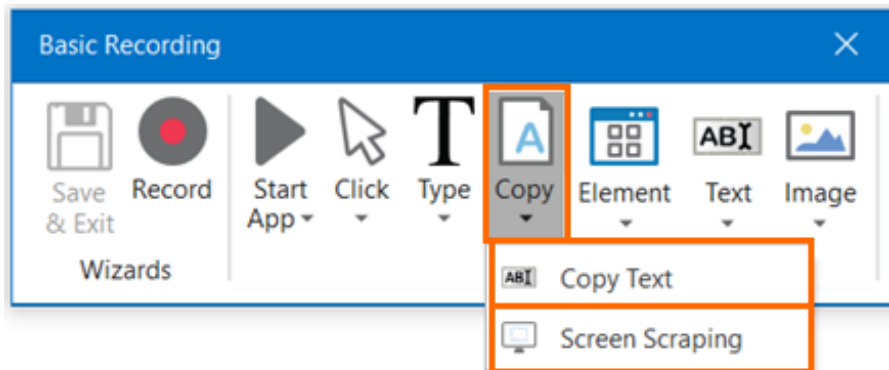
Manual Recording. Copy Actions (2)

Screen Scraping:

- it uses the **Screen Scraping** tool to generate the **Get Full Text** activity, using *different image recognition technologies*.

- it reads the data from the screen; **it scrapes both visible and non-visible UI elements from the screen**;

- the screen scraping tool can automatically detect the position of the text on the screen, using one of the following methods:
  - Full text;
  - Native text;
  - OCR.
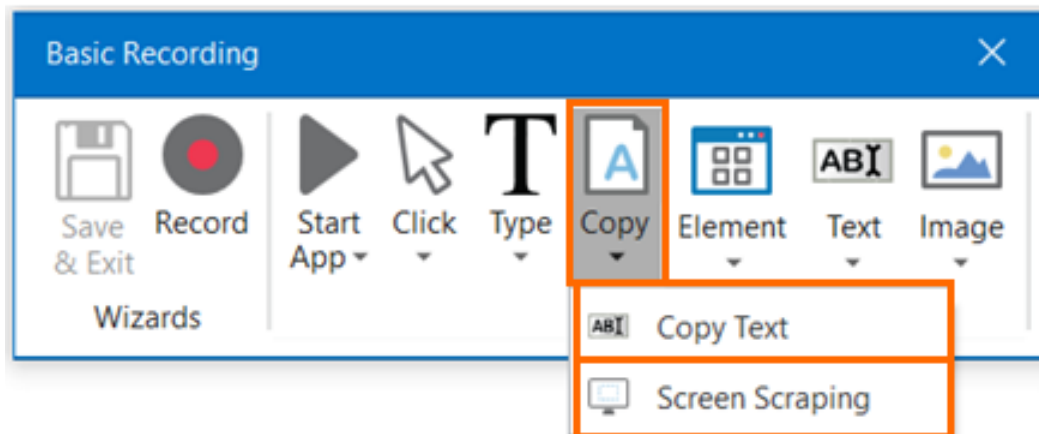
Manual Recording. Copy Actions (3)

Scrape Data:

- it uses the **Data Scraping** tool to generate the **Extract Structured Data** activity, that captures data from a web page in a structured table;
- it allows to extract any structured data from the web, application, document, spreadsheet, etc.
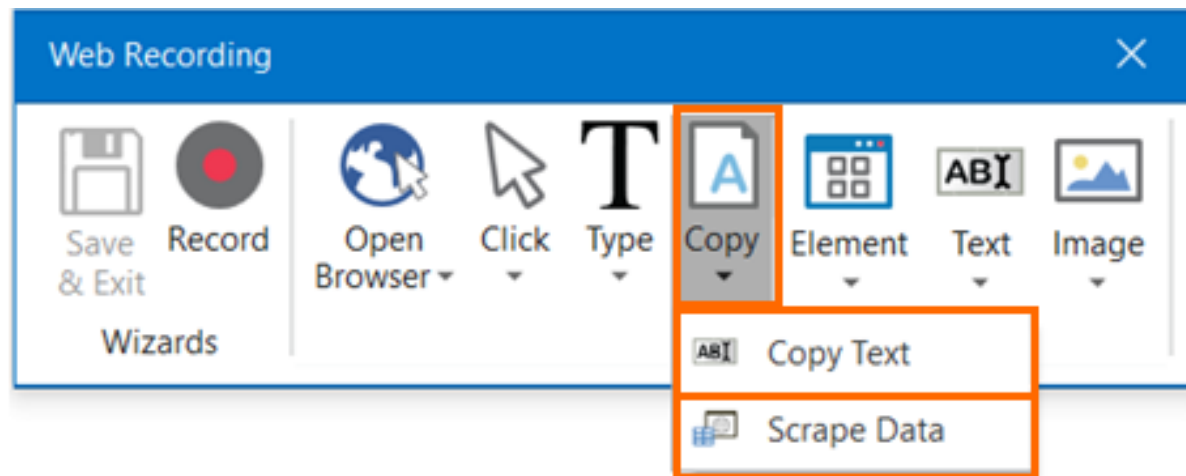
Manual Recording. Element Actions

- the **Element** category actions
  - have in common the fact that they are executed in relation with a particular Ui element identified;
- the actions are grouped in 5 sub-categories:
  - **Mouse;**
  - **Keyboard;**
  - **Control;**
  - **Find;**
  - **Window.**
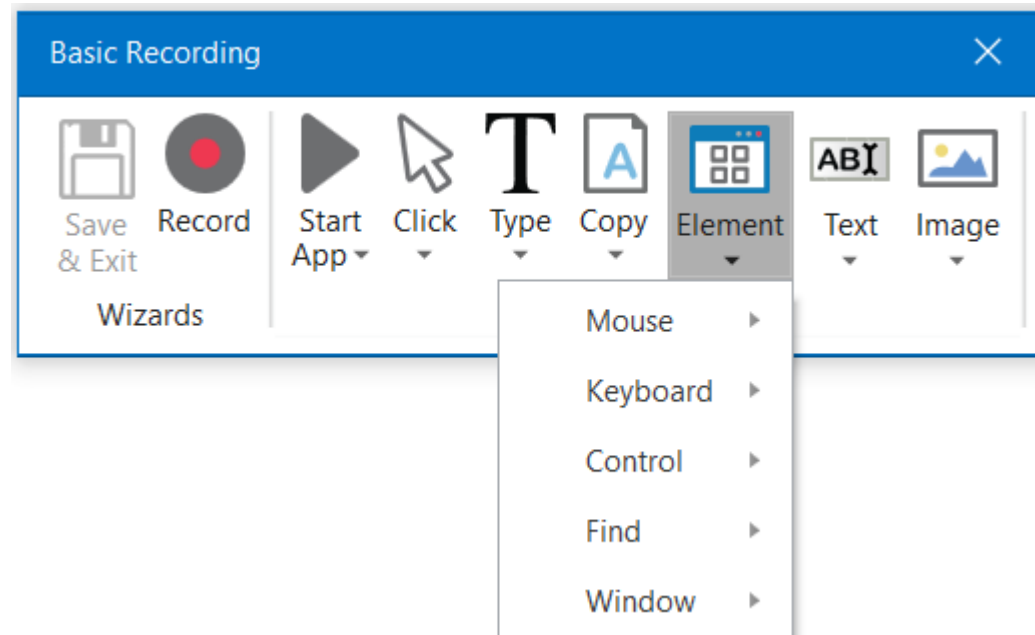
Manual Recording. Mouse Element Actions

Click Relative:

• the user indicates a relative position to a certain identified UI element.

Right Click:

• **MouseButton** property for the **Click** activity is set to **BTN_RIGHT**.

Double Click:

• **ClickType** property for the **Click** activity is set to **CLICK_DOUBLE**.

Hover:

• it generates the **Hover** activity prompting the user to indicate the UI element that he wants the mouse to hover over for a couple of seconds.
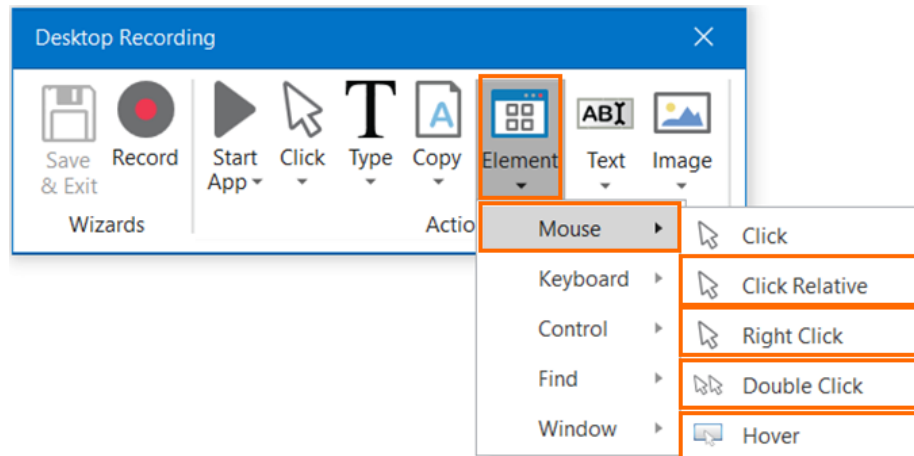
Manual Recording. Find Actions

Find Element:

- it generates a **Find Element** activity prompting the user to identify the UI element to wait for before proceeding with a certain activity.

Wait Element Vanish:

- it generates a **Wait Element Vanish** activity prompting the user to identify the UI element that has to disappear before proceeding with a certain activity.

Find Relative Element:

- It generates a **Find Relative Element** activity prompting the user to identify the relative position versus a fixed UI element before proceeding with a certain activity.
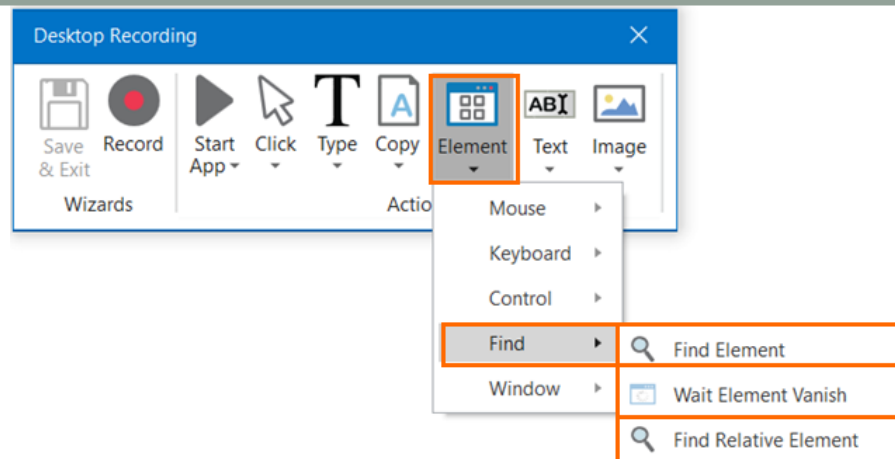
Manual Recording. Text Actions (1)

- the **Text** category actions
  - brings together several events that are very different in terms of method, but they share the fact that they are optimized to recognize and process text;
- the actions are grouped in 5 sub-categories:
  - **Mouse;**
  - **Scrape;**
  - **Copy Text;**
  - **Set Text;**
  - **Select & Copy.**
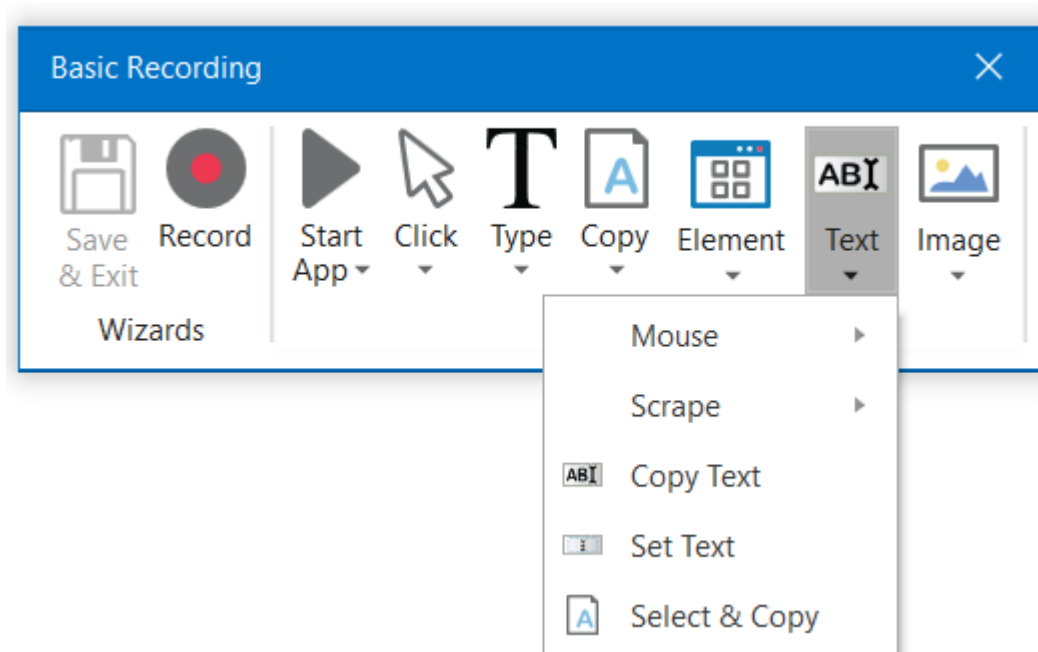
Manual Recording. Text Actions (2)

Mouse:
- •it generates **Click Text** activities prompting the user for the UI element to click.

Scrape:
- •it generates **Get Text** or **Extract Structured Data** activities using **Screen Scraping** and **Data Scraping**.

Copy Text:
- •it generates a **Get Text** activity to copy the value of a UI element and store it in a new variable.

Set Text:
- •it generates a **Set Text** activity to input in a UI element.

Select & Copy:
- •it generates a **Type Into** and **Copy Selected Text** activity prompting the user for the UI element to copy.
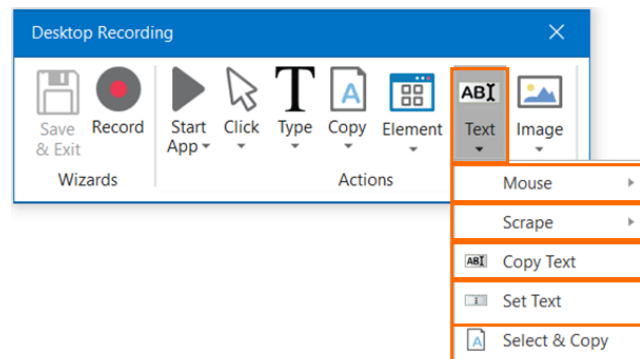
Manual Recording. Image Actions

Mouse:

•it generates **Click Image** or **Hover Image** activities prompting the user for the image to click.

Find Image:

•it generates a **Find Image** activity prompting the user for the image to find on the screen before proceeding with the activity.

Wait Image Vanish:

•it generates a **Wait Image Vanish** activity allowing the user to define the image that needs to disappear before proceeding with the activity.
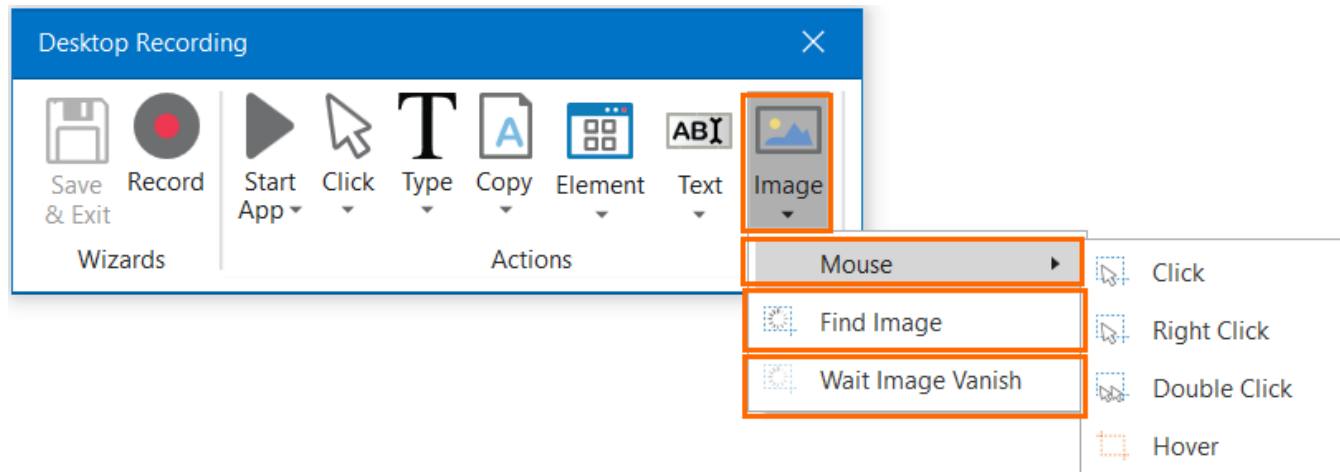
Demo 1. Basic Recording

- **Create a process that performs the following actions:**
    - **1. *open* the Notepad Application;**
    - **2. *type* "Hi, there! Welcome to the RPA class!";**
    - **3. *change* the Font to 'Corbel';**
        - ***type in 'Corbel' then click it;***
    - **4. *select* the Font Style to 'Bold Italic';**
    - **5. *set* the Font Size to 16;**
    - **6. *save* the file as "Demo1-Basic.txt";**
    - **7. *close* the Notepad Application.**

Demo 2. Desktop Recording

- **Create a process that performs the following actions:**
    - **1. *open* the Notepad Application;**
    - **2. *type* "Hi, there! Welcome to the RPA class!";**
    - **3. *change* the Font to 'Corbel';**
        - **type in 'Corbel' then click it;**
    - **4. *select* the Font Style to 'Bold Italic';**
    - **5. *set* the Font Size to 16;**
    - **6. *save* the file as "Demo2-Desktop.txt";**
    - **7. *close* the Notepad Application.**

    - **Notice the differences in using specific containers!**

Basic Recorder vs. Desktop Recorder

Basic Recorder vs. Desktop Recorder. Containers

- the workflows generated by the use of **Basic and Desktop Recording** reveal the difference in their behavior in terms of usage of containers;

- a **container** is
  - a "box" that holds the activities that are being performed on the same application;

- **Basic Recording** identified the app ('Notepad') and placed all the activities inside one big container, with the default name **Basic**.

- Desktop Recording created a new container **Attach Window** each time windows are changed, even if they belong to the same application;
  - it created one for the main window, one for the menu, one for the font, etc.;
  - The entire recording is placed inside a container named **Desktop**.
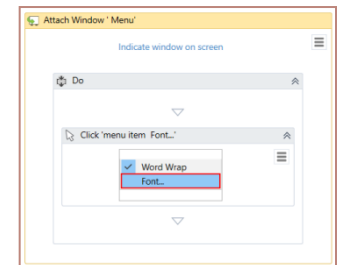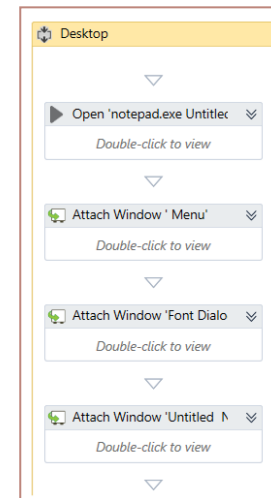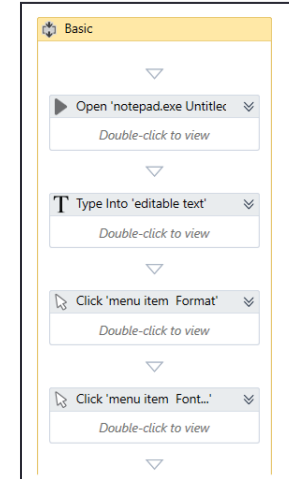
Basic Recorder vs. Desktop Recorder. Selectors

- **Basic Recorder**
  - selectors are used entirely;

  - **Type into** activity selector

Edit Selector

```
<wnd app='notepad.exe' cls='Notepad' title='Untitled - Notepad' />
<wnd aaname='Text Editor' cls='Edit' />
<ctrl name='Text Editor' role='editable text' />
```

  - **Click** activity selector

Edit Selector

```
<wnd app='notepad.exe' cls='#32770' title='Font' />
<wnd ctrlid='1137' />
<wnd ctrlid='1000' />
<ctrl name='Font style:' role='list' />
<ctrl name='Italic' role='list item' />
```

- **Desktop Recorder**
  - the first line is faded/disabled, meaning that it is not used by default.
  - **Type into** activity selector

Edit Selector

```
<wnd app='notepad.exe' cls='Notepad' title='Untitled - Notepad' />
<wnd aaname='Text Editor' cls='Edit' />
<ctrl name='Text Editor' role='editable text' />
```

  - **Click** activity selector

Edit Selector

```
<wnd app='notepad.exe' cls='#32770' title='Font' />
<wnd ctrlid='1137' />
<wnd ctrlid='1000' />
<ctrl name='Font style:' role='list' />
<ctrl name='Italic' role='list item' />
```

Demo 3. Web Recording

- **Create a process that performs the following actions:**
    - **1. *read* a movie title;**
    - **2. *open* browser and access www.imdb.com;**
    - **3. *type* into the navigation bar the movie title;**
    - **4. *click* Search button;**
    - **5. *click* on the first title from the results page;**
    - **6. *get* the movie rating;**
    - **7. *display* the movie rating.**

Summary on Types of Recorders

Feature	Basic Recorder	Desktop Recorder	Web Recorder	Image	Native Citrix
Selector Type	Full	Partial	Partial	N/A	Remote
Speed	Slower	Fast	Fast	Varies	Slower
Simulate Type/Click	No	No	Yes	No	Yes
Position Dependent	No	No	No	Yes	No
Usage	Single actions on a Desktop Application	Multiple actions on a Desktop Application	Web Browsers (IE, Firefox, Chrome, etc.)	Virtualized Environments (VNC, VM, Citrix, SAP)	Environments set up for Native Citrix

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References

- UiPath Academy - https://academy.uipath.com
  - Level 1 – Foundation Training, Lesson4;
- UiPath Docs - https://docs.uipath.com/studio
  - Recording Functionality- https://docs.uipath.com/studio/docs/about-recording