# IBM Cloud Pak for Business Automation Demos and Labs 2022

# Application Automation using IBM RPA

V 1.6

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# **1** Introduction

IBM RPA provides a comprehensive set of Robotic Process Automation (RPA) features:

- Unattended bots Use an RPA-driven digital workforce to automate repetitive tasks without human intervention.
- Attended bots Remote Desktop Automation (RDA) enables a human workforce to augment work using bots to perform repetitive tasks on demand.
- Intelligent Virtual Agent (IVAs) chatbots Combine chat and RPA commands to create chatbots through multiple channels that can provide engaging client interactions.
- Optical Character Recognition (OCR) Process documents by extracting structured data from unstructured content.
- **Dashboards** Gain business insights into business operations.

By bringing RPA in-house, IBM can provide customers with additional benefits:

- **Faster time to value** Speed and simplicity of purchasing and deploying through easier licensing.
- A comprehensive platform to automate all types of use cases Tighter integrations between RPA and the rest of our platform.
- Automate business and IT processes Expand our automation mission to IT use cases.
- **Operationalize AI** Fulfill IBM's vision of operationalizing AI in every corner of the business.

You can explore the **Documentation** to understand more details about IBM RPA.

# 2 Overview

The objective of this lab is to learn how to automate business applications using IBM RPA Studio. The lab is composed of 2 exercises:

1. The first exercise shows how to use IBM RPA Studio to automate a stand-alone Java Swing application. The stand-alone Java application named **Client Management System** simulates an enterprise client management application that offers only a user interface but no public API.

Olient Management System		-	
Client Name:			
Onboarding Status:			
Client Point of Contact			
Name	Phone:		_
Emails	i none.		_
citiai.			
Client Address			
Street:	Unit:		
City:	State:		
7in Codo:	Country		
20000	country.		
Company Age:			
Number of Employees:			
Financial History			
Annual Revenue:			
Defaulted Payments in Las	st 3 Years		
Segment			
<ul> <li>Segment 1 - Dedicated sup</li> </ul>	pport from IBM		
Segment 2 - Coverage as I	neeaea or by BP		

2. The second exercise shows how to use IBM RPA Studio to automate a web application. The simple web application named **Services Management System** simulates a web-based enterprise services management system that also does not provide public APIs.

Ô	Focus Corp				
		Service M	anagement Sys	tem	
	Client ID:	43562752	Client Name:	XYZ Companny	
	Industry:	Healthcare 🗸	Signed Services:	Employee Benefits Plan Virtual Medical Assistance Mental Health Care On-site Medical Testing	*
	Services Fees:	\$2000	]		
		Add	Exi	t	

# 2.1 Pre-requisites

For this lab, you need to reserve **IBM Robotic Process Automation** environment from IBM Technology Zone. All the pre-requisites have been pre-installed/configured in the lab template. The information below is just for information purposes.

IBM Products:

• IBM Robotic Process Automation Studio v20.12.5.

Custom Solutions/Code:

- A Java swing application simulating the backend, third-party system for the Client Management System.
- A web application simulating the backend, third-party Services Management System for managing the services a client has signed up to.

### 2.2 References

- 1. IBM Robotic Process Automation Documentation
- 2. IBM Robotic Process Automation Command Documentation

# **3** Accessing the Environment

If you have already reserved lab environment from IBM Technology Zone and registered your RPA account, please go to <u>Chapter 4</u> directly.

### 3.1 Reserve Environment

To get started with this lab, please follow below steps to reserve an environment:

1. Click <u>here</u> to open IBM Technology Zone Reservation portal. You need to use your IBMID to login to the portal.



2. Click **Environments** on the left panel, then click the  $\square$  icon.



3. Select **Reserve for now**, then click **Submit**.

Create	e a res	ervation	
Select a environm Select your reservation t Reserve for now Reserve for later Schodule a worker	vpe. Do you need this r	Select a reservation type now or later?	Fill out your reservation
Cancel	Reset	Submit 🖺	

4. On the reservation page, make the appropriate selections as below. Once done, click **Submit**.

Purpose: Select Practice/Self-Education.

Purpose description: Enter something like Self Education.

**End date and time**: Select the end date and time that the environment will be deleted.

**Preferred Geography**: Select the geography where your environment will be created. In order to get better network connection, suggest you to select the same geography as where you located in.

Select a environment/infrastructure	Select a reservation	type	Fill out your reservation
me			
IBM Robotic Process Automation Hands-on Lab			
me this reservation. This will help identify it in your reserv	vation list.		
urpose (3)			
Practice / Self-Education			
ease select the purpose for this activity			
arpose description			
Self Education			
hat are you doing? Why do you need this? What are you try	ing to accomplish?		
sd date and time			
06/17/2021	30 PM V	America/Los_Angeles V	
allable for up to 2 weeks (336 hours)			
referred Geography			
Cloud Pak for Business Automation (CP4BA) Onbo	arding - RPA (APAC-2)		
ofen			
Enter any notes your would like to attach to this re-			

Cancel Reset Submit 🗈

5. Once you have reserved an environment, you will receive an email with a link to access the management console for the environment including a password (**Desktop URL** and **password**). It also contains a URL to access the IBM RPA Rest Service remotely.

# Your environment is ready

Your environment is now available. Please use the following information to access the environment.

For guidance and support for your environment named **IBM Robotic Process** Automation Hands-on Lab, please refer to these helpful links:

Collection Name: Cloud Pak for Business Automation (CP4BA) Onboarding -RPA [US-Central] Collection URL: https://techzone.ibm.com/collection/60b804b14ca8f000189d567d

- http://services-uscentral.skytap.com:10410
- Desktop URL:
- https://cloud.skytap.com/vms/b211ab242192247f099071618165c79b/desktops
- Desktop password: s23cmi8r
  Environment ID: 121739666
- Environment name: DTE2\_2051685\_HOUBF\_2022-03-07 02:02:38\_2022-03-08 10:02:00
- 6. Click the desktop access link above to open your environment. When you are prompted to enter environment password, please enter the desktop password above. Wait a few minutes, your environment will be started as below.



# 3.2 Activate RPA license

Before you can start and log into IBM RPA Studio, you need to re-activate the RPA license every time the RPA agent machine (or in our case the VM 5) is restarted. This is caused by special lab infrastructure setup and configuration and only required for this lab.

- 1. Click VM 5 RPA to open the Windows environment in web browser.
- 2. Click Service from Windows toolbar.



3. Check and ensure that the **IBM Robotic Process Automation Agent** service is in running status through Windows Service Manager.

	🗟 📑   🖬 📰   🕨 🔳 🕪				
Services (Local)	Name	Description	Status	Startup Type	Log On As
	BM Robotic Process Automation Agent	IBM Roboti	Running	Automatic	Local Syste
	🔐 IIS Admin Service	Enables this	Running	Automatic	Local Syste

4. Start Firefox, click **IBM RPA license** from the bookmark toolbar to open IBM RPA license manager.

👏 New Tab	× +
$\leftrightarrow$ $\rightarrow$ C $\textcircled{a}$	Q Search with Google or enter address
🕲 IBM RPA License 🕸 IBM RF	VA Web Client

5. You will see the message **Not Licensed**. Click **Activate** button to open the License Activation window.

License	Status   Configuration
Tenant: SWAT Team Computer: RPA-POC	
Edition:Not Licensed Last Error: [9400] The system could not be identified as the one to which this license was issued.	
	Activate Refresh Deactivate

6. Enter the License ID and License Password and click the **Activate** button. You can get the License ID and License Password from <u>here</u>.

License Activation	×
License Id	
License Password	
	Close Activate

When the license is activated, you should be able to see the number of licenses available for each component.



### 3.3 Register your user account

This lab requires IBM RPA account to grant you access to the IBM RPA tenant and Studio to develop, test and publish bot scripts. If you are performing this lab as a part of an IBM event, access the document that lists the available systems and URLs along with login credentials. For this lab, you will need to request RPA user account, and then follow below steps to activate your account.

1. Check your mailbox after you request your RPA account, you should receive an email from **IBM Robotic Process Automation** as below. Click **Confirm your account** from **Step 1.** 

Since IBM Robotic Process Automation Studio has been installed on the lab environment, Step 2 is not required. You could download the installer and install it on your own machine if you like.

From: To: Date: Subject:	IBM Robotic Process Automation <no-reply@wdgautomation.com> xyz@yourcomany.com 2021/04/22 II 333 has been created Welcome - Your user has been created</no-reply@wdgautomation.com>
	Welcome XYZ,
	Here is the information about your Tenant:
	Region: Southeast Asia (AP1) Tenant Name: SWAT Team Tenant Code: 5483
	Step 1. Click the button below to confirm your e-mail address. Confirm your account
	Step 2. Click the button below to download IBM Robotic Process Automation's newest version of Studio, our low-code authoring environment.
	Download the installer
	Click here to get more information about our tool.

2. Enter new password for your account. Once done, click **Reset password** which will activate your account with the password you set here.



Enter a new user for your IB	M RPA user houb	fx@gmail.com
New password		
	۲	
Confirm password		
	۵	
Reset password		

Please follow below steps to check if your account has been registered and activated successfully:

3. Start Firefox, click IBM RPA Web Client from the bookmark toolbar.

🍯 New Tab	×	+	
< → ℃ ŵ		Q Search with Google or enter address	
BIM RPA License	BM RPA Web	Client 🕒 User Account Registra	

4. Enter the email address you used to register your account in the web client login page and click the Continue button.

IBM Robotic Process Automation								
Enter your user name								
User name								
Continue								

5. Enter the password you set when activating your account, make sure to select SWAT Team tenant. Once done, click the Login button.

IBM Robotic Process Automation						
Choose a tenant and enter your password						
xyz@yourcompany.com edit						
Tenant						
SWAT Team	~					
Password						
	٢					
Login Forgot password						

You should now be successfully logged into the web client. In case you can't login, please check if you entered the correct username and password. If so, please contact your lab host.

# 4 Build it yourself – Step-by-step instructions

# 4.1 Exercise 1: Java Swing Application Automation

This exercise will be performed on the RPA-VM VM 5 - RPA and takes about 1 hour to complete.

As explained above, this is part of an end-to-end client-onboarding solution. At the end of the client-onboarding process, the bot will be automatically started by a Workflow process, the client information will be passed to bot as input parameter in JSON string.

You need to develop a bot script to retrieve the client information from the JSON string first. Then start **Client Management System** Java application to add client information. Once the client information is added into the Java application, it will generate a client ID. You need to get the client ID and start the **Services Management System** web application to add signed services information which will be performed in exercise 2.

#### The client information data model is defined as below



An example JSON string looks like below. It will be used to develop and test the bot script in this lab.

```
{ "servicesInfo":{"servicesRequested":"Fibre Internet", "servicesFee":25000, "industry":"Telecom"},
"approvalStatus":"Approved", "segment":"Segment 1",
"client":{"additionalInformation":{"defaultedPayment":true,"companyAge":10,"annualRevenue":500000
00,"numberOfEmployees":1200},"address":{"zipCode":"48911","country":"United States of America",
"unit":"1A","city":"Lansing","street":"3974 Carson St","state":"MI"},
"primaryContact":{"firstName":"June Marie","lastName":"Sample","phoneNumber":"517-555-
0000","email":"jmarie@example.com"}, "name":"Automation Elite Inc."}}
```

# 4.1.1 Develop Bot Script

1. Start the IBM RPA Studio by clicking the Studio icon on the Windows desktop.



2. Enter your user credential as below, click Login button to start and login Studio.

1. User Name: Enter the email address you used to register your RPA account and press Enter. This will enable the Tenant and password fields as well as the Login button.

- 2. Tenant: Select SWAT Team in case it is not set as default.
- 3. **Password**: Enter password you set when activating your account.

<u>)</u>				
Home View Tools Help				
Image: Series =         a <sup>®</sup> Attach to Schedule           Image: Series =         a <sup>®</sup> Attach to Buntime		×		
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	Automation			
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			L New	
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ClientManagement wal	Pesseod			
P. P. S.				
nd Suminoi Ranufia				
5.5				
	Logit			
	Eurgot, Password			

3. Click **New** and select **Wal File** which will start the IBM RPA Studio script development perspective.

<u></u>	IBM Robotic Process Automation Studio		
Home View Tools Help			
o <sup>®</sup> Attach to Schedule e <sup>™</sup> Save → o <sup>®</sup> Attach To Runtime			
Wal File Alt+Shift+W g Ant Page X			
What would you like to aut	omate?		
Open recent	Get Started		
	🗅 New		
	😂 Open		
	Wal		
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5.5			
and Freedox Field Context Divide			

First familiarize yourself with the IBM RPA Studio user interface. The **Commands** are available from the left panel. It lists all available RPA commands which you can drag and drop to develop automation script. The **Code editor** view is in the center. IBM RPA Studio provides 3 types of code views – **Script**, **Designer** and **Call Graph**. On the right, the **Variable** panel shows all defined variables and **Routines** lists all defined routines in the main script. At the bottom, the **Output** and **Error** views display all log message and errors if any.



4. **Click New variable** to first define an input parameter to store a JSON string. It will contain the client information as well as signed service information.



5. Enter **onboardingInfo** as name of the variable, select **Text** as variable type, copy the sample JSON data from **ClientOnboardingInfo.json**, you can find **ClientOnboardingInfo.json** from lab materials page in **Lab Data** folder. Check **Script Input Parameter**, then click **Save**.

🥔 Define Variable				×
Input Parameters				
Name* 🔞	onboardingInfo			
Variable type* 🔞	Text			•
Value 🕑	{"servicesInfo":{"ser Solution", "servicesF proved", "segment": {"defaultedPaymen "numberOfFmploy	vicesRequested":"Fibre Inter ee":25000,"industry":"Telecc :"Segment 1","client":{"addit t":true,"companyAge":10,"ar eec":12003."arddrecc":	rnet, Tieline om"), "approvalSt tionalInformation nnualRevenue":5	tatus":"Ap n": 50000000,
Script Input Parameter 🔞				
Script Output Parameter 🕐				
			Cancel	Save

- 6. Follow the same steps to **define two output variables** of type Text:
  - botExecutionStatus with default value "success"
  - **errorMessage** with **default value** "N/A" as below

For both check the Script Output Parameter switch.

In a real project, the bot needs to handle bot execution failures and exceptions, set appropriate status code and error message accordingly. In this lab, the bot will simply return the default value set here back to caller. You can find more information about handling exceptions in IBM RPA in the <u>documentation</u>.

Define Variable		×	Oefine Variable		
Input Parameters			Input Parameters		
Name* 🔞	botExecutionStatus		Name* 🚱	errorMessage	
	0 references			0 references	
Variable type* 🔞	Text	•	Variable type*	Text	•
Value 🔞	success		Value 🔞	N/A T	
					к м м
Script Input Parameter 🚱			Script Input Parameter 🚱		
Script Output Parameter 🕑			Script Output Parameter 🚱		
		Cancel Save			Cancel Save

7. Before you can extract the data from JSON input string, it requires to define the corresponding variables to hold the extracted data. Follow below steps to copy variables definition commands from sample script,

Home View	Tools Help	
New New New	Image: Second secon	le Breakpoint te All Breakpoints th to Schedule
File Toolbox Search Toolbox (Ctr	<ul> <li>              ⊕ Open</li></ul>	Debuggin
<ul> <li>Pinned</li> <li>Artificial Intelli</li> <li>Base</li> <li>Browser</li> <li>Communication</li> </ul>	Organize ▼     New folder       B     Documents       ↓     Downloads       ↓     Downloads       ↓     ClientManagementSample.wal       6/11/2021 7:47 /       ↓        ↓       ↓ </th <th></th>	
<ul> <li>Database</li> <li>Natural Langua</li> <li>Terminals</li> <li>Windows</li> </ul>	Videos     Correction Services Management     Schuld Serv	
	File name: ClientManagementSample.wal  All Supported Files (*.wal;*.bprr  Open Cancel	Drag commo

1. Click **Open** and select **c:\CP4AutoDemo\ClientManagementSample.wal**.

2. Click **Script** to switch to Script perspective, select from **line 4** to **line 29**, right click the mouse and select **Copy**.

٢							IBM Robotic Process A	utomation Studio
Home View	Tools Help							
New ▼ Ø Publish File	<ul> <li>Wew variable</li> <li>New routine</li> <li>₩ New rule set</li> </ul>	<ul> <li>Create report <sup>™</sup> File ▼</li> <li>Create text file</li> <li>Create workbook</li> <li>Edit</li> </ul>	View Sta Designer Record	Variables visible	Start g <sup>®</sup> Attach to	ireakpoint Il Breakpoints o Schedule Debugging	e <sup>®</sup> Attach To Runtime	
Toolbox Search Toolbox (Ctrr	f x jence	Start Page X Unitied 1. der/Warmane oblasse der/Warmane boffase der/Warmane boffase der/Warmane soffase der/Warmane soffase der/W	Val X Clenthage implies type String stores type String stores type String String String Stores type String Fees type String Contacthage type String	ementSample.vall 42 with "Yarvicetals" (A -make successoutput e "IVA"-output e "IVA"-ou	ervicesRequested\\\F ervicesRequested\\F ple Outlining pare to Definitions w All Outlining y = \\\\\/hvar objAttr = of	Fibre Internet, Tr Ctrl+E, D Ctrl+M, M Ctrl+M, C Ctrl+M, L Ctrl+M, L Ctrl+X Ctrl + X Ctrl + V	eline Solution\",\"servic	esfeel*25000,\'industry\'.' IBN RPA EUCOIC *obiclient.or/maryContact.

3. Click your script, and then click **Script** to switch to Script perspective, move the cursor to the end of line 3 and press Enter.



4. Paste the variables definition commands there. Once done, your script should be similar as below. Click **Designer** to switch to Designer perspective again.

) Home	View	Tools Help	IBI
New File	Open ▾ Save ▾ Publish	<ul> <li>Wew variable</li> <li>New routine</li> <li>₩ New rule set</li> </ul>	Create report       Image: Start
Toolbox		ų ×	Start Page × Untitled 1.wal* × ClientManagementSample.wal* ×
Search Tool	box (Ctrl+ ed I Intellige r runication se Languag als vs	e Contraction of the second se	1 defVarname obbackingInfotype Stringvalue "\/Services/fio\'{\'Service defVarname botExecutionStatustype Stringvalue "WA"output defVarname voluesagetype String defVarname voluesage -type String defVarname voluesage

8. Within IBM RPA multiple approaches are possible to extract values from a JSON string. In this exercise we will use JavaScript for that purpose. To be able to execute JavaScript we need to first start a browser.

**Type start** in search box in the Toolbox panel. Find and double click the **Start Browser** command from the **Browser**  $\rightarrow$  **Actions** command category.



9. Configure the Start Browser command as below. Once done, click Save.

#### **Input Parameters**:

**Instance name**: Enter web01.

This is the web browser instance name. Once finishing using the browser, it needs to be closed using the instance name.

Browser type:	Select Mozila Firefox.

Headless: Click the switch to turn it on.

Since we just need to execute JavaScript within the browser, it doesn't need open browser window.

Start Browser		×
	comment here	
Input Parameters		
Instance name* 🔞	web01	-
Browser type* 🔞	Mozila Firefox	•
Load user profile 🔞		
Use proxy 🕜		
Execution timeout 🔞		
Page load timeout 🔞		-
Implicit timeout 🚱		
JavaScript timeout 🔞		
Headless 🕜		
Output		
Browser 🔞		
	Ca	ancel Save

10. Once you click the **Save** button above, Studio will automatically add **Close Browser** command. This is best practice to close the resources after finish using it. As

**Instance name**, enter the same name you entered above – **web01**. Once done, click **Save**.

Close Browser			×
1	comment here		
Input Parameters			
Instance name* 🔞	web01		
Keep browser open 🔞			
9			
		Cancel	Save

11. Find the **Run JavaScript** command, drag and drop it to before the **Close Brower** command, and configure it as below to extract the client name first. Once done, click **Save**.

Please note if you double click the command, it will put the new command at the end of script, you need manually adjust the command sequence.

#### **Input Parameters:**

JavaScript Code: Enter below JavaScript snippet

var obj = JSON.parse('\${onboardingInfo}'); var objAttr = obj.client.name; return objAttr;

#### **Output:**

**Value:** click **•** icon on the right, select **vClientName** variable.

🟭 Run JavaScript			×
	comment here		
Input Parameters			
JavaScript Code* 🔞	var obj = JSON.parse('\$(onboardingInfo)'); var objAttr = obj.client.name; return objAttr;		-
Output			
Value 🛛 🚺 🖓	me}		•
		Cancel	Save

12. To avoid adding another dozens of **Run JavaScript** commands to retrieve the rest of client information, follow below steps to copy the commands from sample script,

1. Click **ClientManagementSample.wal** script, select from line 32 to line 49, right click the mouse and select **Copy**.

Home View Tools Help				
📄 🐸 Open 👻 な New variable	📋 Create report 🛛 🐴 File 👻	🔸 🖈 🔳 🌔 💷 Variables visible	Toggle Breakpoint & Attach To Runtime	
Nave - New routine	P Create text file	🖸 🕄 🛄 🙀 📃 Imports visible	Delete All Breakpoints	
✓ ♥ Publish ₩ New rule set	Create workbook	I Designer Recorder 5 Hide description	✓ g <sup>®</sup> Attach to Schedule	
File	Edit	Actions	Debugging	
Toolbox 4 x	Start Page × Untitled 1	.wal <sup>*</sup> × ClientManagementSample.wal <sup>*</sup> ×		
Search Toolbox (Ctrl+;) Q	20: defVar name vNumb	erOfEmployee type String		
* Pinned	21 defVar name vAnnua	alRevenuetype String		
Artificial Intelligence	22 defVar name vDefau	ItedPayment type String		
h Paro	24 defVar name vindivid	agetype String		
, pase	25 defVar name vWindo	owtype Window		
P DIOWSER	26 defVar name vPID	type Numeric		
<ul> <li>Communication</li> </ul>	2/ defVar name vSucce 28 defVar name vClient	sstype Boolean		
<ul> <li>Database</li> </ul>	29 defVarname vSigner	dServicesListtype Listinnertype String		
<ul> <li>Natural Language</li> </ul>	30 webStart name web	01type "Firefox"headless		
<ul> <li>Terminals</li> </ul>	31 webExecute JavaScrip	tscript "var.obj = ISON.parse(\'\$lonboardingInfo)\	<u>]:\r\nvar.objAttr = .obj.client.n</u> ame;\r\nreturn objAttr;" vClientNa	me=value
<ul> <li>Windows</li> </ul>	32 webExecuteJavaScrip 22 webExecuteJavaScrip	<pre>htscript "var obj = JSON.parse(\'\${onboardingInfo}\</pre>	');\r\nvar objAttr = obj.client.primaryContact.firstName+\" \"+ob	j.client.primaryContact.lastName;\r\nreturn objAttr;* vPrimaryContactName=valu
	34 webExecuteJavaScrip	tscript "var obj = JSON.parse(\'\${onboardingInfo})	):\r\nvar objAttr = obj.client.crimaryContact.email:\r\nreturn obj	Attr: vPrimaryContactEmail=value
	35 webExecuteJavaScrip	tscript "var obj = JSON.parse(\'\${onboardingInfo}}	);\r\nvar objAttr = obj.client.address.street;\r\nreturn objAttr;* v	ClientAddressStreet=value
	36 webExecuteJavaScrip	tscript "var obj = JSON.parse(\'\${onboardingInfo}\	);\r\nvar objAttr = obj.client.address.unit;\r\nreturn objAttr;" vCli	ientAddressUnit=value
	37 webExecuteJavaScrip 38 webExecuteJavaScrip	<pre>itscript "var obj = JSON.parse(\'\${onboardingInfo}\ #script "var obj = ISON parse(\'\${onboardingInfo})</pre>	');\r\nvar objAttr = obj.client.address.city;\r\nreturn objAttr;" vCli "\\\nvar objAttr = obj.client.address.city;\r\nreturn objAttr;" vCli	entAddressCity=value
	39 webExecuteJavaScrip	<pre>#script "var obj = JSON.parse(\'\${onboardingInto}) #script "var obj = JSON.parse(\'\${onboardingInto})</pre>	<pre>?/vivar objAttr = obj.client.address.state, vivietum objAttr; vc ?/vivar obiAttr = obj.client.address.zipCode/vivretum obiAttr;</pre>	vClientAddressZipCode=value
	40 webExecuteJavaScrip	tscript "var obj = JSON.parse(\'\${onboardingInfo}}	};\r\nvar objAttr = obj.client.address.country;\r\nreturn objAttr;*	vClientAddressCountry=value
	41 webExecuteJavaScrip	tscript "var obj = JSON.parse(\'\${onboardingInfo}\	}\r\nvar objAttr = obj.client.additionalInformation.companyAge	;\r\nreturn objAttr;" vCompanyAge=value
	42 webExecuteJavaScrip	<pre>itscript "var obj = JSON.parse(\'\${onboardingInto}\</pre>	');\r\nvar objAttr = obj.client.addition. Format	Ctrl+E, D ttr;" vNumberOtEmployee=value
	43 webExecuteJavaScrip	<pre>tscript 'var obj = JSON.parse(\'s{onboardinginio}) ftscript 'var obj = JSON.parse(\'s{onboardinginio})</pre>	TAnvar objecti = objectient.addition Toggle Outlining	Ctrl+M, M *vDefaultedPayment=value
	45 webExecuteJavaScrip	tscript "var obj = JSON.parse(\'\${onboardingInfo}}	")\r\nvar objAttr = obj.segment\r\nre Collapse to Definitio	ns Ctrl+M.O
	46 webExecuteJavaScrip	tscript "var obj = JSON.parse(\'\${onboardingInfo}}	);\r\nvar objAttr = obj.service:Info.ini Show All Outlining	Ctrl+M I
	47 webExecuteJavaScrip	tscript "var obj = JSON.parse(\"\$(onboardinginto)\ *script "var obj = JSON parse(\"\$(onboardinginto)\	);\r\nvar objAttr = obj.servicesInfo.se	25=value
	49 webExecuteJavaScrip	<pre>script var obj = JSON-parse(\\${onboardinginio}) ftscript "var obj = JSON-parse(\\${onboardinginio})</pre>	);/r/nvar objAttr = obj.approvalStatus	Ctrl + X
	50 webClose name web	501	Сору	Ctrl + C
	51 launchWindowexec	utablepath *C:\\CP4AutoDemo\\ClientManagement.	ar" vWindow=value vPID=processId v 👔 Paste	Ctrl + V
	100 % • 4			
	Script G Designe	r 🕫 Call Graph		

2. Click your script, select the line 31, right click the mouse and select Paste.

9				IBM Robotic Pro	ocess Automation Studio
Home View	Tools Help				
New ▼ Publish File	★ New variable ★ New routine ★ New rule set	☐ Create report     * File ▼       ☐ Create text file     0       ☐ Create workbook     'Ξ       Edit	View Start Start Recorder Hide description Actions	Toggle Breakpoint     O <sup>®</sup> Attach To Runti     O <sup>®</sup> Attach To Runti     O <sup>®</sup> Attach to Schedule     Debugging	me
Toolbox	<b>Р</b> >	Start Page × Untitled 1.wal*	× ClientManagementSample.wal* ×		
run java	×	21 🖌 Define Variable			
<ul> <li>Browser</li> </ul>		Define a variable with nam	e vAnnualRevenue, type String		
<ul> <li>Scripts</li> <li>Run Java</li> </ul>	aScript	22  Define Variable	a uDafaultadDaumaat tuma String		
_		<ul> <li>23 Define a variable with name</li> <li>23 Define Variable</li> <li>Define a variable with name</li> </ul>	e vIndividualService, type String		
		24 Oefine Variable Define a variable with name	e vMessage, type String		
		25 Define Variable Define a variable with name	e vWindow, type Window		
		26 Define Variable Define a variable with nom	e vPID, type Numeric		
		27 Define Variable Define a variable with name	e vSuccess, type Boolean		
		28 Define Variable Define a variable with name	e vClientID, type Numeric		
		29 Define Variable Define a variable with name	e vSignedServicesList, type List and inner type	String	
		30 Start Browser Start web01 in Mozila Firef	х		
		31 Run JavaScript Execute the following Java	Edit Enter pardir	gInfo}');, assigning Value to \${vClientNome}	
		32 Sclose Browser	Remove Del		
		Close all browser instance	X Cut Ctrl+X		
		Script G Designer	Copy Ctrl+C		
Error List			j] Paste Ctrl+V		
3 0 Errors 🔺 0	Warnings 🚺 (	) Messages	Move Up Alt+Up		
Description			Move Down Alt+Down		

3. Once done, your script should be similar as below,

	120	+			
	Ger Upen ▼	Wew variable		reate	e report Ta File * 2 2 {} (•) Variables visible
New	⊟ Save ▼	Wew routine		reate	e text file View Start The View Start Start
•	V Publish	₩ New rule set		reate	e workbook = 🖆 Script Recorder 🌾 Hide description 👻 🐠 Attach to Schedule
	File			Edit	Actions Debugging
Toolbo	их	Ψ×	St	tart Pa	Page X Untitled 1.wal* X ClientManagementSample.wal* X
run jav	a	×		39	9 🚜 Run JavaScript
▲ Break	owser				Execute the following JavaScript code: var obj = JSON.parse(\${onboardingInfo}),, assigning Value to \${vClientAddressZipCode}
4	Scripts			40	9 🧸 Run JavaScript
	👪 Run Ja	vaScript			Execute the following JavaScript code: var obj = JSON.parse(`\${onboardingInfo}'),, assigning Value to \${vClientAddressCountry}
			Ŀ	41	1 & Run JavaScript Execute the following JavaScript code: var obj = JSON.parse(\$[onboarding[nfo]]),, assigning Value to \$[vCompanyAge]
			L	42	2 & Run JavaScript Execute the following JavaScript code: var obj = JSON.parse(\$[onboardingIn[o]]),, assigning Value to \$[vNumberO]Employee]
			L	43	3 Kun JavaScript Execute the following JavaScript code: var obj = JSON.parse(\$(anboardingInfo))), assigning Value to \$(vAnnualRevenue)
			L	44	4 & Run JavaScript Execute the following JavaScript code: var obj = JSON.parse(\$(anboardingInfo)),, assigning Value to \$(vDefaultedPayment)
			L	45	5 & Run JavaScript Execute the following JavaScript code: var obj = JSON.parse(\$[onboardingInfo]]), assigning Value to \$[vSegment]
			L	46	6 & Run JavaScript Execute the following JavaScript code: var obj = JSON.parse(\${onboardingInfo});, assigning Value to \${vIndustry}
			L	47	7 Kun JavaScript Execute the following JavaScript code: var obj = JSON parse(\$[onboardingIn[o]]),, assigning Value to \$[vSignedServices]
Image: Section of the sectin of the section of the section of the section of the					
				49	Run JavaScript     Execute the following JavaScript code: var obj = JSON.parse(\$(onboarding/n(o));, assigning Value to \$(vApprovalStatus)
				50	9 San Close Browser Close all browser instances by the name web01

13. Enter **Launch** in search toolbox field, find and double click **Launch and Attach Window** command as we next need to launch Java swing application.

launch ×	main	
Windows     Controls     Controls     Launch and Attach Window     Launch or Attach Window     SAP     For Launch SAP Application	59 60 61 62 63	Retrieve Annual Revenue Retrieve Annual Revenue Execute he following JonScript code: var obj = JSON.pone(Slonboardin Retrieve Defaulted payments in last 3 years Retrieve Defaulted payments Execute the following JonScript code: var obj = JSON.pone(Slonboardin Retrieve Segment

14. Configure the Launch and Attach Window command as below. Once done, click Save.

#### **Input parameters:**

**Executable:** Click the icon and select the file C:\CP4AutoDemo\ClientManagement.jar

Launch and Att	ach Window	×	Dpen Open		×
	comment here		← → · · ↑ 📙 « Local → C	P4AutoDemo > v Ö Search CP4AutoDen	م ٥
Input Parameters			Ormanian an Namfaldan	0	
Executable* 🔞	C:\CP4AutoDemo\ClientManagement.jar		Videos	A Name	Date modifie ^
Parameters 🔞			Local Disk (C:)	ClientManagement.wal	5/25/2021 7:
Safe search 🔞			CP4AutoDemo	D private.pem	5/24/2021 4:
Timeout 🔞			ClientOnboardingChatbot	🖆 ClientManagement.jar	5/5/2021 8:4
			ServicesManagement	UserManagement	5/11/2021 6:
Output			UserManagement	ClientOnboardingChatbot	5/11/2021 6:
Window 😮			inetpub	ServicesManagement	5/10/2021 10 ¥
Process id 🔞			File name: Clier	ntManagement.jar	~
Success 🔞				Open	Cancel
	Cancel Sa	ve			

Parameters: Unchanged/leave it blank

Safe Search: Unchanged

Timeout: Unchanged/leave it blank

**Output:** 

Window: Click • icon on the right, select vWindow variable

**Process id**: Click **•** icon on the right, select **vPID** variable

Success: Click 🔳 icon on the right, select variable vSuccess variable

Launch and Atta	ach Window			×
		comment here		
Input Parameters				
Executable* 🔞	C:\CP4AutoDemo\Cl	ientManagement.jar		🖷 🔛
Parameters 🕜				
Safe search 🔞				
Timeout 🔞				
Output				
Window 🚱 🛛 📈	Window			
Process id 😗 🔽	PID			
Success 🔞 🛛 🔽	Success			-
			Cancel	Save

Next, we will use the Recorder to automate the Java application. You need to manually start the Java application first.

15. Double click **ClientManagement.jar** in the **C:\CP4AutoDemo** directory to start the Client Management System application.

Please don't close the Client Management System Login window but go back to the RPA Studio window.

		-	
🔞 Login		-	×
User ID :			
Password :			
		_	
Exit	Login		

16. Click **Start Recorder** from the Studio toolbar. This will open the Recorder. Once started, you should see the recording window as below.

۲						IBM Robotic Process Automat	ion Studio		BH ·	- =	×
Hor	ne View	Tools Help	2								
New	<ul> <li>➢ Open ▼</li> <li>➢ Save ▼</li> <li>➢ Publish</li> <li>File</li> </ul>	ゆ New variable ⑦ New routine 磁 New rule set	e 📋 Create rep e 😁 Create tex t 🔳 Create wo Edit	ort 🏠 File t file rkbook	▼	Start Actions	● Toggle Breakpoint	To Runtime			•
Toolb	ox		₽ ×	Start Page	× Untitled 1.w	val* ×		<ul> <li>Asset</li> </ul>	5		Ψ×
aunc	h Controls Launch Launch SAP Z Launch	and Attach Wind or Attach Windo SAP Application	dow w	41 Eve Siv 42 Eve Siv 43 Eve Siv 43 Eve Siv	Run JavaScrip cute the following ClientAddressCour Run JavaScrip cute the following CompanyAge) Run JavaScrip cute the following NumberOfEmploye	t JavaScript code: var obj = JSON.po itry) t JavaScript code: var obj = JSON.po t JavaScript code: var obj = JSON.po ej	rse(`\${onboardingIn{o}});, assigning Value to rse(`\${onboardingIn{o}});, assigning Value to rse(`\${onboardingIn{o}});, assigning Value to	Search	h Assets		Q
				44 Exe \${v 45	Run JavaScrip cute the following AnnualRevenue) Run JavaScrip	t JavaScript code: var obj = JSON.pd t	rse(`\${onboardingInfo}`);, assigning Value to	Varial Routi Searc	bles Assets nes h Routines		<b>₽ ×</b> Q

🐳 🌐 🅸 Rec	ording Window			
0				
Recycle Bin	l acin	_	~	
	Ugin		^	
IBM RPA Launcher	User ID =			
Acrobat Reader DC	Password =			
IBM RPA Studio	Exit	Login		

- 17. Automate the login to the Client Management System application
  - 1. **Press and hold the left CTRL** key, **move the mouse to the User ID textbox**, and wait for a few seconds. The User ID textbox will be captured and marked as light-red color as shown below. **Once** the User ID textbox is **captured**, **release the CTRL key**.

🔞 Login			-	×
	User ID :	] [		
	Password =			
	Exit	Login		

2. Select Actions  $\rightarrow$  Set Value  $\rightarrow$  By XPath from recorder toolbar menu.

Note: Since the textbox control has been captured, if you notice the red highlighting goes away when going through the menus, this is normal behavior.



3. Configure **Set Value** command as below. Please enter **admin** which is the only user that can login to the client management system application. Once done, click **Save**.

🔜 Set Value		×
	comment here	
nput Parameters		
Value* 🔞	admin	â
Value Type 🔞	Automatic	Ŧ
Set Algorithm 🔞	Default	•
Match Condition 🔞	Equal to	Ŧ
Selector* 🔞	XPath	•
Xpath* 😨	/root/root_pane[1]/layered_pane[1]/panel[1]/text[1]	â
Simulate Human 🔞		
Disable Capslock 🔞		
Update screen cache 🔞		
Element in Table 🔞		
Timeout 🔞		â
	Cancel Save	

4. Follow the same steps to automate the Password field. Enter **passw0rd** (make sure to use a zero as part of the password) which is the only valid password that can be used to login.

🔜 Set Value		×
	comment here	
Input Parameters		
Value* 🚱	passw0rd	•
Value Type 🔞	Automatic	•
Set Algorithm 🔞	Default	•
Match Condition 🔞	Equal to	•
Selector* 🕜	XPath	•
Xpath*	/root/root_pane[1]/layered_pane[1]/panel[1]/password_text[1]	•
Simulate Human 🔞		
Disable Capslock 🔞		
Update screen cache 🕑		
Element in Table 🞯		
Timeout 🕐		
	Cancel Save	

5. Follow the same steps to automate the Login button selecting Actions → Click → By XPath.

🐳 🌐 🌞 Recording	Window V	erify Actions	Image Grid	l.		
0						
Recycle Bin	(O Login				-	×
20		Userl	D :	admin		
IBM RPA Launcher						
		Passv	vord :	•••••		
Acrobat				(	_	
Reader DC		Exi	t	Login		
ά <b>'h</b>						

Configure the **Click** command as below. Once done, click **Save** which will finish the Login page automation and enter into Client Management System main window.

	comment here		
nput Parameters			
Safe Search 🔞			
Double Click 😗			
Click on Position 🔞			
Control Image 🔞			• 🕈 🗗
Similarity Degree 🔞	100		
Selector* 🔞	XPath		•
XPath*	/root/root_pane[1]/layered_pane[1]/panel[1]/	'push_button[2]	•
Simulate Human 🔞			
Update Screen Cache 🔞			
Element in Table 🔞			
Timeout 🚱			

IBM RPA searches and captures controls in the current execution context. The execution context will change when switching from one window to another, in this case, switching from the **Login** window to the **Client Management System** main window. It is required to attach the new window to the current execution context. This can be achieved by using the **Attach Window** command. Considering the performance of the machine, the new window may take some time to appear. A best practice is to use the **Wait for Window to Appear** command to ensure the new window will appear before attaching it to current execution context.

18. Select **Window** → **Wait for Window to Appear** from recorder toolbar menu.

🐥 🌐 🏶 Reco	ording Win	dow Verify Actions Image Grid
0		Wait for Window to Appear Find Window Wait for Window to Appear
Recycle Bin	•	Attach Windo
	🔘 C 🗖	Close Window — — — ×
$\sim$		Count Windows
51	CI 🐚	Maximize or Minimize Window
IBM RPA	01	Screenshot Window
Launcher	小小	Update Window

19. Configure the Wait for Window to Appear command as below.

#### **Input parameters**

Title: Change it to Client Management System.

**Clear all other fields** and ensure the **switches are turned off**. Otherwise the command may not be able to find the window and cause the script execution to fail in the verification section later.

#### Output

Window: Click i icon on the right, select vWindow variable

Process Id: Click icon on the right, select vPID variable

Success: Click icon on the right, select vSuccess variable

Once done, click **Save**.

Wait for Window to Appe	ar	AB	×
	comment here		
Input Parameters			
Use Regular Expression 🔞			
Title 🔞	Client Management System		
Identifier 🔞			
Class Name 🔞			
Process Id 🔞			
Process Name 🔞			
Wait child window 🔞			
Recursive 🔞			
Safe Search 🔞			
Styles 🔞			
Minimum Height 🔞			
Minimum Width 🚱			
Timeout 🔞			
Output			
Window 🔮 🛛 \${vWindow}			-
Process Id  \${vPID}			•
Success @ \${vSuccess}			
	Cancel	Sav	e

20. Select Window  $\rightarrow$  Attach Window from the recorder toolbar menu.

ا الله الله الله الله الله الله	Recording	Window	Verify Action	ns	Image Grid				
Recycle Rin		📑 Wai Find	t for Window to Window ch Window	o Ap	opear				
Kecycle bin	0	Clos	e Window		Attach W	indow	 _	×	
IBM RPA Launcher	C O	Cou Max Scre ¥ Upd	nt Windows imize or Minim enshot Windov ate Window	iize' v	Window				

21. Configure the **Attach Window** command as below by selecting the variable **vWindow**. Once done, click **Save**.

Attach Window	×	
comment here		
Input Parameters		
Window* @ S{vWindow}		وا و
	vWindow Window - 2 references	►
Cancel	Save	
	Select	

- 22. Automate the Client Management System application itself.
  - 1. **Press and hold the left CTRL** key, **move the mouse to the Client Name textbox**, wait for a few second, the checkbox will be captured and marked as light-red color as below. **Once the textbox is captured, release the CTRL** key.

Olient Management System		-	<
Client Name:			
Primary Contact			
Name:	Phone:		
Email:			
Client Address			
Street:	Unit:		
City:	State:		
Zip Code:	Country:		
Company Age: Number of Employees:			
Financial History			
Annual Revenue(\$):			
Defaulted Payment			
Segment Segment 1 Segment 2			
Add/Update Client	Query	Exit	

2. Select Actions  $\rightarrow$  Set Value  $\rightarrow$  By XPath from the recorder toolbar menu.

* * *	Recording Window Verify	Actions Image Grid	
Recycle Bin		Click  Click	Auto Suggest
	Client Management	Get Bounds   Focus	By Id By Name
IBM RPA Launcher	Onboarding Status:	Show or Hide Element     Click by OCR     Get Control Text by OCR	By Id and name By Class name By Class and value
<u>}</u>	Name:	Control Screenshot	By Type and index By Name and value By Inner text and control type
Acrobat Reader DC	Client Address		By XPath By Type and name

3. Configure the **Set Value** command as below. For Input Parameters, click the **•** icon and select the variable **vClientName**. Once done, click **Save**.

🔜 Set Value		×
	comment here	
Input Parameters		
Value* 😮	\$(vClientName)	
Value Type 🔞	Automatic	•
Set Algorithm 🔞	Default	-
Match Condition 🔞	Equal to	-
Selector* 🔞	XPath	-
Xpath* 🕑	/root/root_pane[1]/layered_pane[1]/panel[1]/text[1]	-
Simulate Human 🔞		
Disable Capslock 🔞		
Update screen cache 🔞		
Element in Table 🔞		
Timeout 🔞		
	Cancel Save	

- 4. Next is to automate the rest of the fields. Follow the below steps to copy the commands from sample script,
  - 1. Switch to the RPA Studio window by clicking Studio icon from windows toolbar.



2. Click ClientManagementSample.wal, select from line 58 to line 70, right click the mouse and select Copy.

Home View Tools Help				
New variable New ♥ Open ▼ ♥ New variable ♥ New routine ♥ New rule set ₩ New rule set	e 😫 Create report 🏠 File ▾ Create text file ■ Create workbook Edit	View Stop Designer Recorder Hide description Actions	Start of Coggle Breakpoint of Attach To Runtime of Attach To Runtime of Attach To Runtime of Attach To Runtime Delete All Breakpoints of Attach To Runtime Debugging	
Toolbox 🕴 🕴	Start Page × Untitled 1.	wal* × ClientManagementSample.wal* ×		
Search Toelbox (Cut+-) C Pinned Artificial Inelligence Base Browser Communication Database Natural Language Terminals Windows	1         International status           45         webExecuteJavaScript           46         webExecuteJavaScript           47         webExecuteJavaScript           48         webExecuteJavaScript           49         webExecuteJavaScript           49         webExecuteJavaScript           49         webExecuteJavaScript           40         webExecuteJavaScript           41         webExecuteJavaScript           42         webExecuteJavaScript           43         webExecuteJavaScript           44         webExecuteJavaScript           45         webExecuteJavaScript           46         webExecuteJavaScript           47         webExecuteJavaScript           48         webExecuteJavaScript           49         webExecuteJavaScript           54         webExecuteJavaScript           55         webExecuteJavaScript           56         webExecuteJavaScript           56         webExecuteJavaScript           56         webExecuteJavaScript           56         webExecuteJavaScript           56         webExecuteJavaScript           56         wetVatue -value Stript           56		5. John Stand Stan	energy and a standard organization of the sta

3. Click your script, select last line, right click the mouse and select Paste.



4. Once done, your script should be similar as below. Switch back to Recorder windows by clicking the \_ icon in the top-right of Studio to minimize the Studio window.



**Defaulted Payment** is a checkbox. It will only be checked if the client has a defaulted payment. We will use the Recorder to check it first, then add processing logic later.

5. Press and hold the left CTRL key, move the mouse to the **Defaulted Payment** checkbox. Once the checkbox is captured, release the CTRL key.

🔞 Client Ma	Olient Management System						
Client Nan	Client Name: \${vClien						
Onboardir	ng Status:	\${vApprova	ilStatus}				
Primary	Contact						
Name:	PrimaryConta	actName}	Phone: {v	PrimaryCont	actPhone}		
Email:	\${vPrimaryC	\${vPrimaryContactPhone}					
Client Ad	idress						
Street:	\${vClientAdd	fressSteet}	Unit:	\${vClientAd	dressUnit}		
City:	S{vClientAde	dressCity}	State:	\${vClientAd	dressState}		
Zip Code	: ClientAddres	sZipCode}	Country:	ClientAddre	essCountry}		
Company	Age:	5	(vCompanyA	ge}			
Number o	f Employees:	9	{vNumberOfE	mployee}			
Financia	l History						
Annual	Revenue(\$):	\${v	annualReven	ue}			
🗹 Defa	ulted Paymen	t					
Segment © Segment 1 Segment 2							
A	dd/Update Clie	ent	Query		Exit		

Select Actions → Click → By XPath from the Recorder toolbar menu. In the Click command configuration window, keep all the default settings and click Save.

				🗣 Click		×
					comment here	
				Input Parameters		
				Safe Search 🚱		
				 Double Click 😡		
🐢 🐨 🕸 Reco	ording Window Verity A	tions Image Grid		Click on Position 🔞		
	2	Click	Auto Suggest	Control Image 📵		÷- €
9 <b>1</b> 1		Get Value	<ul> <li>By Id</li> </ul>	Similarity Degree 🔞	100	-
		Set Value	<ul> <li>By Name</li> </ul>	Selector* 🕢	XPath	-
	🔞 Client Management 🖪	Get Bounds	<ul> <li>By Id and name</li> </ul>	XPath* 🚱	/root/root_pane[1]/layered_pane[1]/panel[1]/panel[3]/check_box[1]	
	1	Focus	<ul> <li>By Class name</li> </ul>			
25	Client Name:	Show or Hide Element	<ul> <li>By Class and value</li> </ul>			-
IBM RPA	Onboarding Status:	Click by OCR	<ul> <li>By Type and index</li> </ul>	Cinculate Human 🙆	-	
	Primary Contact -	Get Control Text by OCR	<ul> <li>By Name and value</li> </ul>	Undate Screen Cades	-	
	Name: PrimaryCy	Control Screenshot	By Inner text and control type	Opoate Screen cache		
<u>_</u>	Email: Change of		By XPath	Element in Table		
Acrobat	Email: S(VPrimaryC	ontactPhone)	By Type and name	Timeout 🕑		-
Reader DC	Client Address				Cancel	Save

7. Switch to the RPA Studio window by clicking Studio icon on windows toolbar.



8. As mentioned above, we need to add logic to handle if the **Defaulted Payment** checkbox is to be checked or not. Enter **if** in search toolbox window, find and double click the "If" command.



9. Configure the If command as below. Once done, click Save.

For **Left operand**, click icon on the right, select **vDefaultPayment** variable.

For Operator, select Equal to.

For Right operand, enter true.

	ets lf				х
1		com	ment here		
20	Input Parameters				
	Left operand* 🚱	{vDefaultedPayment}			•
C	Operator* 🔞	Equal to			•
	Right operand* 🚱	true			
	Negate 🕜				
t					
1				Cancel	Save

10. In the Studio Designer editor view, select the last **Click** command added, drag and drop it to the middle of the **If/End If** commands. Once done, it should look like below. This will ensure that the checkbox is only checked if the vDefaultPayment variable has the value of **true**.



11. Switch back to Recorder windows by clicking the **-** icon in the top-right of Studio to minimize the Studio window.

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 Vers
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 Construction
 Open
 Open</td

Now let's automate the **segment** field. The segment field is a set of two radio buttons. Similar to the Defaulted Payment checkbox, we will use the Recorder to click the first radio button first, then add processing logic later.

12. Press and hold the **left CTRL key**, move the mouse to the **Segment 1** radio button. Once the radio button is captured, release the CTRL key, then select **Actions** → **Click** → **By XPath** from the Recorder toolbar menu.

In the **Click** command configuration window, keep all the default settings and click **Save**.

- 13. Follow the same approach above to click the Segment 2 radio button.
- 14. Switch to the Studio window by clicking Studio icon on Windows toolbar.



15. Add an **If** command to the end and configure it as below. Once done, your script should look similar as the one below.

s*s lf			х
	comment here		
Input Parameters			
Left operand* 🔞	\${vSegment}		
Operator* 🔞	Equal to		-
Right operand* 🔞	Segment 1		
Negate 🔞			
		Cancel	Save
75 Click Single click a contro	l, searching by XPath in the attached window		
76 Click	I, searching by XPath in the attached window		
77 ===  f  f \${vSegment} is Equ	al to Segment 1, then		
78 the End If			

16. Add an **Else** command between the **If/End If** commands above. Once done, your scripts should be similar as the one below.

Click Click segment 1 Single click a control, searching by XPath in the attached w	indow			
Click Click Segment 2 Single click a control, searching by XPath in the attached window				
۶۹۶  f  f \${vSegment} is Equal to Segment 1, then				
Else				
Դ.ժ End If				

17. Drag and drop the **Click segment 1** radio button command (the first of the two) between the **If/Else** command and the **Click Segment 2** radio button command between the **Else/End If** command. Once done, your scripts should look similar as the one below.



- 18. Switch back to the Recorder window by minimizing Studio window again.
- 19. Press and hold the left CTRL key, move the mouse to the Add/Update Client button. Once the button is captured, release the CTRL key, select Actions → Click → By XPath from the Recorder toolbar menu. In the Click command configuration window, keep all the default settings and click Save.

Once you click the **Add/Update Client** button, the Client Management System application will display a message to indicate the client information has been added or updated including a client ID. You need to capture the client ID and use it in exercise 2 during the automation of the web application.

20. Press and hold the **left CTRL key**, move the mouse to the message box. Once the message box is captured, release the CTRL key.

Client Mar	nagement Sys	tem				×
Client Nam	ne:	\${vClienth	Vame}			
Onboardin	g Status:	S{vApprov	alStatus}			
Primary	Contact					
Name:	PrimaryCont	actName}	Phone:	vPrimaryCont	actPhone}	
Email:	\${vPrimaryC	ontactPhor	ie}			
Street:	gress \${vClientAd	dressSteet	Unit:	\${vClientAd	dressUnit}	
City:	\${vClientAd	dressCity}	State:	\${vClientAd	dressState}	
Zip Code:	ClientAddre	szipCode	Country:	ClientAddre	ssCountry}	
Company	Age:		\${vCompany	Age}		
Number of	Employees:		\${vNumberO	Employee}		
Financial	History					
Annual	Revenue(\$):	\${	AnnualReve	nue}		
🖌 Defau	Ited Paymer	t				
Segment Segment 1 Segment 2						
\${vClientN 13365753	ame} has be	en added o	r updated int	o system with	Client ID:	Ì
	400-4-4-00		Ouenu		F-114	_

21. Select Actions  $\rightarrow$  Get Value  $\rightarrow$  By XPath from the Recorder toolbar menu.

🦝 🕀 🕸 Reco	ording Window Verify	Actions Image Grid		
		😪 Click	•	
6		📰 Get Value		Auto Suggest
Recycle Bin		🔜 Set Value	•	By Id
	Client Management	Get Bounds	•	By Name
		Focus	•	By Id and name
51	Client Name:	Show or Hide Element	•	By Class name
IBM RPA	Onboarding Status:	🛱 Click by OCR	•	By Class and value
Launcher	Primary Contact	Get Control Text by OCR	•	By Type and index
	Name: Priman/C	Control Screenshot	+	By Name and value
Å	name. manyou		anyot	By Inner text and control type
a 👘	Email: \${vPrimar	yContactPhone}	[	By XPath
Acrobat Reader DC				By Type and name
	Client Address			

22. Configure the Get Value command as below. Once done, click Save.

For Input parameters, leave all the defaults setting.

For Output parameters, select vMessage.

🔜 Get Value				×
	co	mment here		
Input Parameters				
Selector* 🕜	XPath			-
XPath*	/root/root_pane[1]/la	iyered_pane[1]/panel[1]/text[	5]	-
Update screen cache 🔞				
Element in Table 🔞				
Timeout 🔞				
Output				
Value 🕑	\${vMessage}			
Index 🔞		_		
Selected Values 🔞				
First Selected Value 🔞				•
			Cancel	Save

23. Press and hold the **left CTRL key**, move the mouse to the **Exit** button. Once the button is captured, release the CTRL key. Select Actions  $\rightarrow$  Click  $\rightarrow$  By **XPath** from the recorder toolbar menu.

In the **Click** command configuration window, keep all the default settings and click **Save**.

*Note: The robot executes very fast, you may want to add a delay before closing the client management application for demo purpose.* 

24. Close the Recorder by clicking × icon in the top-right corner in the Recorder window and return back to Studio.



25. In order to integrate with the Services Management System web application, the bot needs to retrieve the client ID from the Client Management System Java application. The message retrieved in step 22 is stored in the variable vMessage and includes the client ID. Besides the client ID, it also contains additional information. The bot needs to extract the client ID from vMessage to use it.

Enter **extract** in the search toolbox, find and double click the **Extract Numbers** command.

Toolbox 4 ×	Start Pag	e X Untitled 1.wal X
Extract ×	71	Set Value
<ul> <li>Natural Language</li> </ul>		Set the value \${vNumberOfEmployee} to an UI control, searching by XPath
<ul> <li>Extractors</li> </ul>	72	Set Value
Boolean Extract		Set the value \${vAnnualRevenue} to an UI control, searching by XPath
🔀 Extract Address	73	ats If
🕮 Extract CNPJ		If \$(vDefaultedPayment) is Equal to True, then
🙀 Extract CPF	74	Click
🔆 Extract Date		Single click a control, searching by XPath in the attached window
Extract E-mail Address	75	t≏ End If
Extract Intent	76	
Extract Monetary Value		If SlySegment) is Equal to Segment 1 then
B Extract Named Entities	77	
🗰 Extract Numbers		Single click a control searching by XPath in the attached window
Extract Phone Number	78	> Fice
🗱 Extract Quantity	70	
🔣 Extract Time Span	79	Single slick a central conceling by VDeth, in the attached window
<ul> <li>Windows</li> </ul>	80	an E
PDF	00	End If
🤯 Get PDF Pages	81	😪 Click
Get PDF Text by OCR		Single click a control, searching by XPath in the attached window
	82	🔜 Get Value
		Get the value from an UI control, searching by XPath , assigning Value to \$(vMessage)
	83	Click

26. Configure the Extract Numbers command as below. Once done, click Save.

#### **Input Parameters:**

Language: Select en-US

Texto: Click 🛋 icon and select variable vMessage

#### **Output:**

**Values:** If the source string contains multiple numbers, the command will retrieve all numbers as a list. In this lab, it only has one number, leave it blank.

**First Value:** First number in the source string. Click the icon on the right, and select **vClientID** variable.

🗰 Extract Num	bers	×		
	comment here			
Input Paramete	ers			
Language 🔞	en-US	- m		
Texto* 🕜	\$(vMessage)	-		
Output			_	
Values 🔞				
First value 🔞	\${vClientID}		)'	T 🍋
Values mapping	0			
Success 🔞			VClientID Number - 0 references	
		Cancel Save	vNumberOfEmployee	
vuluow			vPID	
			Number - 2 references	

27. The clientID extracted above contains decimals which is not required and needs to be truncated.

Find and double click **Truncate Number** command.

Toolbox 4 X	Start Page × Untitled 1.wal* ×
truncate X  Base  Numeric  Truncate Number	72       Set Value         73       ** If         1f       if s(vDefaultedPayment) is Equal to True, then         74       Click         Single click a control, searching by XPath in the attached window

28. Configure the Truncate Number command as below. Once done, click Save.

Truncate Number		×
	comment here	
Input Parameters		
Number* 🚱	\${vClientID}	
Truncation Type* 🔞	Integer part	•
Output		
Value 🕜 🚺 {vClientID}		
	Cancel	Save

29. Add a **Log Message** command and configure it as below. Once done, click **Save**.

For Message, first type in "Client ID = ", then click the  $\blacksquare$  icon and select the variable **vClientID**.

🥽 Log Message				×
	commen	t here		
Input Parameters				
Message* 🔞	Client ID = \${vClientID}			
				_
Type"	Information			•
Log on Windows event 🔞				
			Cancel	Save

 Now you have automated the Client Management System Java application. Click the Save icon in the Studio menu toolbar and save your script to the C:\CP4AutoDemo folder.

**Note:** Please make sure to use a unique name e.g. including your initials to avoid naming conflicts when publishing your script to the shared tenant in a later exercise.



# 4.1.2 Verification Instructions

IBM RPA Studio provides two types of debug approaches to validate your bot scripts – **Start without debugging** and **Start step by step**. In this exercise, we will validate the script using the **Start without debugging** approach. You can also choose **Start step by step** if you want to set breakpoints and execute the script step by step.

1. Click the **Start** icon and select **Start without debugging** to execute the bot script.

Note: In case you run into the issue of failing to start Firefox, this may be caused by Firefox is applying an update. Just start the bot again which should successfully launch Firefox then. You can also manually start Firefox to check and ensure the update finished.



2. It will retrieve the client information from the onboardingInfo JSON string first, then it launches the Client Management System Java application, and login to it.

				De	bug		
Home	View	Tools	Help	Debug	Window		
	II	🔞 Login				-	х
Continue	Pause \$						
	_						
Start Pag	ge X			User ID:	admin		
1	Defi Define a						
2	Defi			Password :	•••••		
3	Define a						
	Define a			Exit	1	ogin	
4	Defi Define a						
5	🥥 Defi	ne Variab	le				

3. After logging into the Client Management System application, it will populate the client information and add the client into the backend system. Once done, it will retrieve the client ID and print it in the Studio output window. The actual client ID printed may differ from the one shown in the screenshot.

Client Ma	anagement Syst	tem		-	- 0	×
		_				_
Client Nar	me:	Automat	ion Elite Inc			
Onboardi	ing Status:	Approve	d			_
Primary	Contact					
Name:	June Marie S	ample	Phone:	517-555-0000		
Email:	517-555-000	0				
Client A	ddress		<b>—</b>			1
Street:	3974 Carso	n St	Unit:	1A		
City:	Lansing		State:	MI		
Zip Code	e: 48911		Country:	nited States	of America	
Company	Age:		10			
Number	f Employoos:		1200			
Financia	of Employees.		1200			
Financia	I History	F	0000000			
Annua	il Revenue(\$):	5	0000000			
✓ Defa	ulted Payment					
- Seamen	nt					
<ul> <li>Segner</li> </ul>	ment 1					
Segn	ment 2					
Automatio	on Elite Inc has	been ad	ded or update	ed into system v	vith Client	C
13485996	6					
A	dd/Update Clie	ent	Query	1	xit	

#### Summary

In this exercise, you have learned:

- 1. How to use IBM RPA Studio to develop and test an automation script.
- 2. How to use the IBM RPA Recorder to automate a Java Application by starting it, getting/setting UI control values, and clicking UI controls.
- 3. How to use various other IBM RPA commands to automate your application by for example controlling the execution flow.
- 4. How to extract the number from a given string and to truncate it to just the Integer part.

# 4.2 Exercise 2: Web Application Automation

This exercise will be performed on the RPA-VM VM 5 - RPA and takes about 45 minutes to complete.

Please open the bot script created in exercise 1 in IBM RPA Studio if not yet open and go to the end of script. You will continue with the web application automation from there.

٠	IBM Robotic Process Automation Studio	88 - 🗆 ×
Home View Tools Help		
Image: Depent of the set of the	File	ntime
Toolbox • • • Untitled	1.wal ×	Assets
Search Studens (Shr-J) C. 2 * Protect A Afficial Intelligence * Base * Borosor • Communication • Database * Natural Language * Terminals * Windows • C Sarc • Sarc	Get Value Get water for an Ut control, searching by XPath, assigning Value to S(Message) C(C) C(C) Searching by XPath in the attached window Exploration accord, searching by XPath in the attached window Extract Nambers Extract Nambers Format how to atta S(Message) with the one of U, analgoing France to S(NetTermat) Format how the searching by XPath in the attached window C(C) Control (C) Control (C	Search Aperts Q. Verlables Approx Q. Reactines Q. Search Routines Q.
Output	å x	
≧ ^>		
	I	
Output Error List Find Symbol Results		
Ready	Ln 86	Col -

# 4.2.1 Develop Bot Script

The typical process to automate a web application is to start a web browser first, then navigate to the corresponding web page, capture the controls from the HTML document and take appropriate actions.

1. Enter start in the search toolbox, find and double click the command Start Browser.



2. Configure the **Start Browser** command as below. For **Instance name**, enter **web02**. For **Browser Type**, select **Mozila Firefox**. Once done, click **Save**.

Start Browser			×
	comment here		
Input Parameters			
Instance name* 🔞	web02		
Browser type* 🔞	Mozila Firefox		•
Load user profile 🔞			
Use proxy 🔞			
Execution timeout 🔞			
Page load timeout 🔞			
Implicit timeout 🔞			
JavaScript timeout 🔞			
Headless 🚱			
Output			
Browser 🕜			÷.
		Cancel	Save

3. Once you click the **Save** button, Studio will automatically add a **Close Browser** command. For **Instance name**, please enter the same name you entered above – **web02**. Once done, click **Save**.

	Close Browser				×
			comment here		
	Input Parameters				
9	Instance name* 🔞	web02			
	Keep browser open 🔞		_		
¢				Cancel	Save

4. Find the **Navigate** command, drag and drop it to before the **Close Browser** command and enter <u>http://localhost/ServicesManagement</u> in the URL field. Once done, click **Save**.

	×
Cancel	Save
	Cancel

5. Manually start Mozilla Firefox by clicking the **()** icon from the Windows toolbar.



6. Enter <u>http://localhost/ServicesManagement</u> to open the Service Management System solution login page.

Service Management System X				
€ → ଫ 🏠 🛛 🖸 🖸	localhost/ServicesManagement/		··· 🖂 🕁	lii\ 🗈 📽
🕽 IBM RPA License 🐗 IBM RPA Web Client	User Account Registra			🛅 Other Bookman
Focus Corp				
2				
		Service Management System		
	υ	ser ID:		
	P	issword:		
		Login Exit		
		Login		

- 7. Automate the **User ID** field following below steps:
  - 1. In Firefox on the **Service Management System** login page, put cursor focus on the User ID textbox, **right click** mouse, and select **Inspect** from the context menu.

Service Management System	× +		, in the second s		- 🗆 ×
< → ୯ û	🛛 🗋 localhost/ServicesM	inagement/		⊠ ☆	II\ ⊡ © ≡
IBM RPA License 🐗 IBM RPA We	b Client 🔘 User Account Registra				🛅 Other Bookmarks
Focus Corp					
		Service Managemen	t System		
			<b>_</b>		
		User ID:	Manage Logins		
		Password:	Undo		
			Redo		
			Cut		
		Login	Paste		
			Delete		
			Check Spelling		
			Inspect Accessibility Properties		
			Inspect (Q)		

2. Firefox will open the Inspector window and highlight the User ID input textbox as below.

Service Management System	× +						Ý						- c	x נ
(←) → 健 ŵ		calhost/Servic	esManagement/							⊌	☆	hr		
BIM RPA License 🐵 IBM RPA Web	b Client 🔘 I	User Account Re	gistra									E	🗍 Other B	Bookmarks
Focus Corp														
				Service	Managem	ent Syster	n							
				User ID:										
br 0.0166664 v 18				Password:										
			IBI	I Cloud Pak for	Business Au	tomation SW	/AT Tech Jam							
< <li>Console</li>	Debugger	<b>↑↓</b> Network	{} Style Editor	Performance	I Memory	E Storage	+ Accessibility	SSS Appl	lication				Ó	, ··· >
Q, Search HTML				+ 1	🗑 Filter Style	s	:hov .cls +	* 0	6	Layout	Computed	Changes	Fonts	Animat
User I	ED:			1	element () {				inline					
<input na<="" th="" type="text"/> <td>ame="userID"</td> <td>style="height:</td> <td>22px; width: 170</td> <td>×"&gt;</td> <td>width: 17</td> <td>epx;</td> <td></td> <td></td> <td></td> <td>Select a Flex</td> <td>container or ite</td> <td>em to continue</td> <td>8</td> <td></td>	ame="userID"	style="height:	22px; width: 170	×">	width: 17	epx;				Select a Flex	container or ite	em to continue	8	
				_	3					▼ Grid				
										CSS Grid is r	not in use on th	is naae		_
										= Day Mardal		5 poge		
										* Box Model				
 kbr>					,					manda		A		
html > body > form > table > tbody	> tr > td > i	input								bon	der	1	_	

3. **Right click** with the mouse on the User ID input textbox in the Inspector and select **Copy→ XPath**. This will copy the XPath of User ID into the Windows clipboard.

Please note IBM RPA supports various different selectors, in a real project, you can choose different types of selectors based on the nature of your application. In this lab, XPath is used for illustration purposes.



4. Switch to the IBM RPA Studio, find the **Set Value to Field** command from the **Browser** command category, drag and drop it before **Close Browser** command.



5. Configure the Set Value to Field command as below. Once done, click Save.

#### **Input Parameters:**

Value:Enter admin. This is the only user that can login to the Services<br/>Management System.

#### Select type: Select XPath.

**XPath:** Paste the XPath in the clipboard that you copied in above step in Firefox.

Set Value to Field			×
	comment here		
Input Parameters			
Value* 🔞	admin		
Selector Type* 🔞	XPath		-
XPath* 🚱	/html/body/form/table/tbody/tr[1]/td[2]/input		
			•
Simulate Human 😗			
Timeout 🔞			
Output			
Success 🔞			
		Cancel	Save

8. Follow the same approach above to automate the password field. Please use **passw0rd** (with a zero) in the **Value** field when you configure the **Set Value for Field** command. This is the only password that can log into the Services Management System web application.

🕞 Set Value to Field			×
	comment here		
Input Parameters			
Value* 🔞	passw0rd		-
Selector Type* 🔞	XPath		•
XPath* 🕑	/html/body/form/table/tbody/tr[2]/td[2]/input		-
			N 71
Simulate Human 🔞			
Timeout			-
Output			
Success 🔞			
		Cancel	Save

- 9. Automate clicking Login button following below steps.
  - 1. Follow the same approach to copy the XPath of the Login button.
  - 2. Switch to the RPA Studio, find the **Click on Web Page** command, drag and drop it before the **Close Browser** command.

Toolbox 4 ×	Untitled	1.wal* X
click ×	79	Single click a control, searching by XPath in the attached window
✓ Fields ✓ Click on Web Page	80	t⊉ End If
<ul> <li>Windows</li> </ul>	01	Single click a control, searching by XPath in the attached window
Controls	82	Get Value Get the value from an UI control, searching by XPath , assigning Value to \$(vMessage)
Click on Cell	83	Click Single click a control, searching by XPath in the attached window
Mouse and Keyboard	84	Extract Numbers Extract from the text \$(vMessage) using the culture en-US, assigning First value to \$(vClientID)
Mouse Click	85	Truncate Number Returns the Integer part of \$(vClientID), assigning Value to \$(vClientID)
tit Click by OCR	86	Ressage           Log Client ID = \$(vClientID) as Information
	87	Start Browser Start web02 in Mozila Firefax
	88	Ravigate Navigate to http://localhost/ServicesManagement
	89	Set Value to Field value_selector_xpath_simulatehuman_usetable_timeout
	90	Set Value to Field value_selector_xpath_simulatehuman_usetable_timeout
	91	Close Browser

3. Configure the **Click on Web Page** command as below. Once done, click **Save**.

Click on Web Page		^
	comment here	
Input Parameters		
Search for* 🔞	XPath	•
XPath* 🔞	/html/body/table/tbody/tr/td[1]/input	
Double-click 🔞		
No wait 🔞		
Simulate human 🔞		
Timeout 😗		
Output		
Success 😮		ŧ.
		_

10. After logging into the Services Management System, it will navigate to the next page. Switch to the Firefox window, **manually login** to the Services Management System using **admin/passw0rd**. Once done, you should get below page in Firefox.

	U 1
BM M9A Ucener & BM M9A Ucener & BM M9A Ucener & BM M9A Ucener A Basistan Focus Corp Service Management System Client ID: Client Name:	
Focus Corp Service Management System Client ID: Client Name:	
Client ID: Client Name:	
Service Management System Client ID: Client Name:	
Service Management System Client ID: Client Name:	
Client ID: Client Name:	
Client ID: Client Name:	
Client ID: Client Name:	
Chent ID: Client Name:	
Employee Benefits Plan Virtual Medical Assiance	
Industry: Healthcare V Signed Services: Mental Health Care	
Unske Medikal resurg	
oervices rees.	

- 11. Follow below steps to automate filling in the **Client ID** field. This is the first field you are going to automate after switching to this page. Since the robot executes very fast, it may take some time to load the entire page before you can work with it. A best practice to make your script more robust is to check if the corresponding control is showing up on the web page before you actually work with it.
  - 1. Copy **XPath** selector for **Client ID** textbox from Firefox.
  - 2. Find the **Wait for Element in a Web Page** command. Drag and drop it before the **Close Browser** command and configure it as below. Once done, click **Save**.

#### **Input Parameters:**

Selector: Select XPath.

- **XPath:** Paste the XPath you copied from above step.
- **Timeout:** In this lab, please enter **00:00:15** to wait up to 15 seconds. The command will stop waiting as soon as the control becomes available. The time you have to set depends on the complexity of your web page and the network latency.

🕀 Wait for Element in	a Web Page	×
	comment here	
Input Parameters		
Selector* 🔞	XPath	•
XPath* 🔞	/html/body/form/table/tbody/tr[1]/td[2]/input	
Simulate Human 🔞		
Timeout 🔞	00:00:15	
Output		
Result 🕜		
	Cancel	Sava

3. Drag and drop the **Set Value to Field** command before the **Close Browser** command and configure it as below. Once done, click **Save**.

#### **Input Parameters:**

Value: Select variable vClientID.

Select Type: Select XPath.

**XPath**: Paste the XPath you copied above.

🗔 Set Value t	o Field		×
		comment here	
Input Param	eters		
Value* 🔞		\${vClientID}	
Selector Typ	e*	XPath	-
XPath* 🚱		/html/body/form/table/tbody/tr[1]/td[2]/input	
		1	-
			K N K N
Simulate Hur	nan		
Timeout 🕜			
Output			
Success 😗			
		Cance	Save

- 12. Automate the **Client Name** field.
  - 1. Copy the XPath selector for **Client Name** textbox from Firefox.
  - 2. Drag and drop the **Set Value to Field** command before the **Close Browser** command and configure it as below.

For the **Input parameters** select variable **vClientName** in the **Value** field. As **Selector Type** select **XPath** and paste the XPath of the field into the XPath field. Once done, click **Save**.

Set Value to Field			x
set value to ricid	comment here		
Input Parameters			
Value* 😮	\${vClientName}		÷.
Selector Type* 🔞	XPath		•
XPath* 🚱	/html/body/form/table/tbody/tr[1]/td[4]/input		
			-
Simulate Human 🔞			
Timeout 🔞			÷.
Output			
Success 😮			
		Cancel	Save

- 13. Automate the selection of the Industry field,
  - 1. Copy the XPath selector for **Industry** combo box.
  - 2. Find the **Select Item in Combo Box** command and drag and drop it before the **Close Browser** command.



3. Configure the Select Item in Combo Box as below. Once done, click Save.

#### **Input Parameters**

Search By:Select XPathElement XPath:Paste the XPath you copied aboveSelect Option by:Select Value

Value to Select: Select variable vIndustry

💷 Select Item in Combo	Box	×
	comment here	
Input Parameters		
Search by* 🔞	XPath	•
Element XPath* 🚱	/html/body/form/table/tbody/tr[2]/td[2]/select	
		-
Select Option by* 🔞	Value	•
Value to Select* 🔞	\${vIndustry}	
No Wait 🔞		
Simulate Human 🔞		
Timeout 🔞		
Output		
Success 🔞		
	Cancel	Save

- 14. Automate the selection of the Signed Services multi-select field. The client may sign multiple services. Those services are stored as a string in variable vSignedServices separated by a comma. You need to first split them into individual services and then make the selection.
  - 1. Find the **Split Text** command and drag and drop it before the **Close Browser** command.



2. Configure Split Text command as below. Once done, click Save.

**Input Parameters:** 

Text to split:	Select variable vSignedServices.
Delimiter type:	Select Custom delimiter.
Custom delimiter:	Enter comma (,).
Maximum number of	<b>subtexts:</b> Enter 4 since there are up to 4 services for each industry that can be selected in the client onboarding application.

#### **Output**:

**Text List:** Click **•** icon on the right, select **vSignedServicesList** variable.

	comment here		
nput Parameters			
Text to split* 🔞	\${vSignedServics}		
Delimiter type* 🔞	Custom delimiter		-
Custom delimiter* 🔞		]	
Maximum number of subtexts* 🔞	4	)	
Use regular expression 🔞			
Dutput			
Text list 🔞 vSignedServicesList			I 🐗

3. Find the **For Each** command and drag and drop it before the **Close Browser** command.



6. Configure the **For Each** command as below. Once done, click **Save**.

#### **Input Parameters:**

Collection: Select the variable vSignedServicesList.

Variable: Select the variable vIndividualService.

For Each				×
		comment here		
Input Parameter	5			
Collection* 🚱	\${vSignedServicesList}			
Variable* 🕜	{vlndividualService}			
Distinct 🕐				
r			Cancel	Save

- 7. Switch to **Firefox** and copy the XPath selector for the **Signed Services** combo box. Make sure to select the combo box itself not one of its options.
- 8. Switch back to IBM RPA Studio. Find the **Select Item in Combo Box** command and drag and drop it between the **For Each** and **End For Each** commands.



9. Configure Select Item in Combo Box as below. Once done, click Save.

#### **Input Parameters:**

Search by:	Select <b>XPath</b> .
Element XPath:	Paste the XPath copied from above step.
Select Option by:	Select Value.
Value to Select:	Select the variable <b>vIndividualService</b> .

Select Item in Combo	Box		×
	con	nment here	
nput Parameters			
Search by* 🔞	XPath		-
Element XPath* 🔞	/html/body/form/table/t	body/tr[2]/td[4]/select	
			-
Select Option by* 🔞	Value		-
Value to Select* 🔞	{vIndividualService}		÷.
No Wait 🔞			
Simulate Human 🔞			
Timeout 🔞			
Dutput			
Success 🔞			

- 15. Automate the Services Fees field following below steps.
  - 1. Copy the XPath selector for Services Fees textbox from Firefox.
  - 2. Find the **Set Value to Field** command, drag and drop it before **Close Browser** command.
  - 3. Configure the Set Value to Field command as below. Once done, click Save.

🗔 Set Value to	Field		×
	comment here		
Input Paramet	ers		
Value* 🔞	\${vServiceFees}		
Selector Type	XPath		•
XPath* 🔞	/html/body/form/table/tbody/tr[3]/td[2]/input		
			•
Simulate Huma	an 🕐 📕		
Timeout 🔞			-
Output			
Success 🔞			-
		Cancel	Save

- 16. Automate clicking **Add/Update** button to record signed services following below steps.
  - 1. Copy the XPath selector for the Add/Update button from Firefox.
  - 2. Find the **Click on Web Page** command and drag and drop it before the **Close Browser** command.
  - 3. Configure the Click on Web Page command as below. Once done, click Save.

😪 Click on Web Page			×
	comment here		
Input Parameters			
Search for* 🔞	XPath		•
XPath* 🚱	/html/body/table/tbody/tr/td[1]/input		
Double-click 🔞			
No wait 🔞			
Simulate human 🔞			
Timeout 🔞			-
Output			
Success 😨			
		Cancel	Save

17. Since the bot executes very fast, for demo purpose, you can intentionally add a **Delay** command to the check execution result as below before closing the browser. It will delay the execution for 5 second. Once done, click **Save** button from Studio toolbar to save your script.

🕑 Delay				×
	cor	nment here		
Input Parame	ters			
Timeout 🕑	00:00:05			
			Cancel	Save

You have successfully automated a web application using IBM RPA. The bot first starts Mozilla Firefox and logs into Services Management System. After that it adds the client information and the signed services information before it saves these changes. Finally, it closes the browser.

### 4.2.2 Verification Instructions

1. Click the Start icon and select Start without debugging to execute the bot script.



2. The bot script will be executed, it will launch the Client Management System Java application and add the client information first. Once done, it will retrieve the client ID from the result message.

lient Mar	nagement System		-		×		
ient Narr	e: Autom	ation Elite Inc					
nboardin	g Status: Approv	red					
Primary (	Contact						
lame:	June Marie Sample	Phone: 5	17-555-0000				
mail:	517-555-0000						
Client Ad	dress						
Street:	3974 Carson St	Unit:	1A				
City:	Lansing	State:	MI				
in Coder	40044	Country	nited Otelan of	marian			
ip coue:	40911	Country:	Inted States of	America			
ompany /	Age:	10					
amber of	Employees:	1200					
inancial	History						
Annual	Revenue(\$):	5000000					
Defen	the d Devenue at						
v Detau	neu Payment						
Seament							
Segm	ent 1						
🔾 Segm	ent 2						
utomation	n Elite Inc has been a	added or updated	into system with	Client ID:		Output	***********
485996						≧ ^>	
						5/26/2021 1:46:21 AM [Info] Client ID = 19420092	

3. The bot will then start Mozilla Firefox and login to the Services Management System web application. It will add the client information and the signed services information. Once done, it will close the browser window.

Chent ID. 12374039 Chent Name. Automation Enter Inc.	
Libro Intornot	
Tieline Solution	
Industry: Telecom V Signed Services: Business Devices	
Communication Equipmen	ıt
Services Fees: 25000	

# 4.2.3 Publish Script to Tenant

You have validated your script, let's publish it to tenant now.

1. Click the **Publish** button from the Studio menu toolbar.

() ()	IBM Robotic Process Automation Studio						
Home View Tools Help							
▶         Open ▼         New variable         If Create report           New ♥         ♥         New routine         ➡         Create text f           New ♥         ♥         New routine         ➡         Create text f           File         ■         Edit         ■         Edit	1 Di File -						
Toolbox 🕴 🗙	ClientManagement.wal X						
Search Toolbox (Ctrl+;) Q,	34 Start Browser Store and in Index Franks						
Artificial Intelligence     Base	35 Knu JavaScript Execute the following JoneScript code: vor obj = JSON parse(SlonboardingInfo) ,, ossigning Value to SlyClientName)						
Browser     Communication	36 Run JavaScript Execute the following JovaScript code: vor obj = JSON parse(3(onboardingInfa)), assigning Value to 5(vPrimaryContactName)						
Database     Natural Language	37 Run JavaScript Execute the following JavaScript code: var obj = JSON parse(SjonboardingInfo)), assigning Value to SjoPrimaryContactPhanel						
<ul> <li>Terminals</li> <li>Windows</li> </ul>	38 a Run JavaScript Execute the following JavaScript code: var obj = /SON.parse('\$]onboardingInto]], ossigning Value to \$[rPvimaryContactEmail]						
	39 " Run JavaScript Execute the following JovaScript code: var obj = JSON parse('SlonboardingInfo/), assigning Value to StyClientAddressSteet)						
	40 Run JavaScript Execute the following JovaScript code: var obj = ISON parse(\$[onboardingInfo]], ossigning Value to \$[vClientAddressUnit]						
	41 — Run JavaScript Execute the following JovaScript code: var obj = JSON.parse(SjonboordingInfo)], assigning Value to Sti-ClientAddressCity)						
	42 Run JavaScript Execute the following JovaScript code: var obj = /SON.parse('SlonboardingInfu!):, assigning Value to Sty/ClientAddressState)						
	10 m						

2. In the Publishing script window, enter appropriate values as below. Once done, click **Publish**.

**Name:** To avoid naming conflict with others on the shared RPA tenant, please use unique name for your script (e.g. including your initials). In case a script with the same name already exists on the tenant, it will show a warning message when you click the Publish button and request you to enter a different name.

**Description:** This can't be empty. You can enter some meaningful description here, for example – version number etc.

Allow Scheduling: Indicates if you can schedule this script to be run by a scheduler.

**Set as production:** Publishing a script to a tenant will generate a new version every time. Multiple versions of scripts can exist on tenant, but only one can be the production version. If you execute the script without specifying the version, it will

use the production version by default. Click **Set as production** to set it as production version.

Publishing "Client	anagement.wal"		×				
General Mapping	s Processes						
Name* 🚱	ClientManagement						
Description * 🚱	v1.0						
Allow scheduling 🚱							
Set as production @		_					
Hide advanced options							
Green time* 🔞	00:02						
Yellow time* 🚱	00:02						
Red time* 🔞	00:02						
		Cancel Publish					

Your script should have been published to the tenant successfully.

#### Summary

In this exercise, you have learned:

- 1 How to use various IBM RPA commands to automate a web application.
- 2 How to split a string containing separator delimited entries into a collection of individual strings.
- 3 How to loop over all items in a collection.
- 4 How to publish script to tenant.

Congratulations, you have successfully completed this Lab!!!