IBM Cloud Pak for Business Automation Demos and Labs 2022

Chatbot Development and Configuration

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 develop a chatbot script using IBM RPA Studio, and then shows how to run it externally on a SaaS tenant through a chat mapping configuration. As part of this exercise, we will also show how to create and train a knowledge base that is then used in a chatbot script for national language understanding.

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.

All the pre-requisites have been pre-installed/configured in this lab template. The information below is just for information purposes.

IBM Products:

• IBM Robotic Process Automation Studio v20.12.5.

Custom Solutions/Code:

- Client Onboarding Toolkit which contains the predefined business object definition and service flow to start the RPA bot matching the information required by the two backend systems below.
- 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.

Business value	Environments
Environments	Jun 3, 2021 IBM Robotic Process Automation Hands-on Lab
Metadata	Skytap: APAC-2. US-Central. EMEA
Comments	In this lab, participants will get hands on experience on how to use IBM Robotic Process Automation to automate business application, how to start bot using REST API and how to develop a chatbot and configure the chat mapping.

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

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Name			
IBM Robotic Process Automation Hands-on	Lab		
Name this reservation. This will help identify it in you	ir reservation list.		
Purpose U			
Practice / Self-Education			
Please select the purpose for this activity			
Purpose description			
Self Education			
What are you doing? Why do you need this? What are	you trying to accomplish?		
Part data and lines			
Select a date	Select a time		
06/17/2021	9:30 PM	 America/Los_A 	ngeles 🗸
Available for up to 2 weeks (336 hours)			
Preferred Geography			
Cloud Pak for Business Automation (CP4BA) Onboarding - RPA [APAC-2]		
Notes			
Enter any notes your would like to attach to	this reservation		
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. This will be used in the Workflow and RPA integration scenario exercise.

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	× +
< → C @	🔍 þearch with Google or enter address
🖨 IBM RPA License 🖷 IBM	/ RPA 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

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

License Tenant: SWAT Team Computer: RPA-POC Edition: Enterprise Id: 5358 Licensed to: SWAT TEAM Runtime: 0 of 1 Studio: 0 of 1 Launcher: 0 of 0 Vault: 1 of 1 IVR: 0 of 1 Bot: 0 of 1

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.



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

Reset password

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.



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		
1		
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	
	0
Login Foreot 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

This exercise will be performed on the RPA VM, VM 5 - RPA and takes about 1.5 hours.

One of the key advantages of IBM RPA is the embedded Chatbot support. It provides rich commands for end-users to quickly develop a chatbot and provide an easy-to-user interface for enterprises to interact with its customers, partners or employees. Combining the chatbot and RPA commands, it can create chatbots through multiple channels that provide engaging client interactions. Embedded knowledge base support through machine learning technologies can make your chatbot even smarter and fulfill all kinds of different business requirements. A typical process to develop a chatbot includes three steps:

- 1. Create and train a knowledge base.
- 2. Develop a chatbot script using various RPA commands using IBM RPA Studio.
- 3. Configure a chat mapping within a tenant.

As part of the end-to-end client onboarding solution, we will develop a chatbot to enable a client to easily manage and update its basic client information when there are any changes. The client onboarding solution contains lots of information including primary contact, address, financial details and the number of employees the client company has. To illustrate the typical process on how to create and configure a chatbot, we will focus on creating a chatbot to only update the number of employees covering below aspects:

- 1. How to use the Machine Learning Model Builder to create a knowledge base.
- 2. How to use the Knowledge Base Training tool to train and publish the knowledge base.
- 3. How to develop a chatbot script using IBM RPA Studio.
- 4. How to configure a chat mapping for a tenant.

Due to a limitation for the number of bot integration services available in a tenant, you are not able to actually perform the chat mapping configuration by yourselves in this lab. Instead, we will provide instructions on how to do that to help you understand the typical procedure.

4.1.1 Create Knowledge Base

To create a knowledge base, a knowledge base file is needed which must be an Excel XLSX file. The knowledge base file name is not relevant, but its inner structure must have three spreadsheets – **KB**, **Words** and **Synonym.** Please refer to the <u>IBM Robotic</u> <u>Process Automation Documentation</u> to understand the details of the knowledge base file.

Perform the following steps to create a knowledge base:

1. Start the IBM RPA Studio from windows desktop.



2. Log into the IBM RPA Studio using your IBM RPA account. Make sure to select the **SWAT Team** tenant.

IBM Robotic Process Automation
Please, enter your login data.
User Name Terant Password
Login Forgot Password

3. Click **Tools** → **Machine Learning Model Builder** from the IBM RPA Studio toolbar.

Home View Tools	Help	
* Regular Expression Builde C Assets Synchronization Tests Explorer	r 🖧 Machine Learning Model Builder	O ptions
General	Artificial Intelligence	Options

4. Configure the knowledge base model as below. Once done, click **Save**.

Name: To avoid naming conflicts when publishing the model to the tenant, please make sure to use a unique name, for example – KB4**YourShortName**.

Culture: Select English.

Algorithm: Select Knowledge Base V2.

File: Click the *icon* on the right, browse to **C:\CP4BADemo** and select the provided knowledge base model file **KB4ClientMgmt.xlsx**.



5. The knowledge base model will be created and listed in knowledge base list on the left panel. In case you can't see your knowledge base model, click
 Tools→Knowledge Base Training, then click the icon to refresh the list.

Home	View	Tools	Help	
* Regula C Assets	r Expressi Synchron xplorer General	on Builder zation	Kh Machine Learning Model Builder Knowledge Base Training Artificial Intelligence	Options Options
Knowledge	e Bases		₽ × Start Page	×
kb4cl 2 KB4ClientMgmt			C Wha	t would you like to automate?
			Open	recent
			Search	

4.1.2 Train Knowledge Base

The Knowledge Base Training tool is an interface used to train Knowledge Base models, modify words, synonyms and review changes in the knowledge base file spreadsheet and publish it to a tenant. Please read the <u>documentation</u> to understand how to train a knowledge base model.

1. Click on **Knowledge Base Training**, find the knowledge base model you created above, and click the **version 1** to open the Knowledge Base Training interface.

Please note it will create a new version every time you publish a new knowledge base model to a tenant. If you see multiple versions of knowledge base model listed, select the latest version (recommended) or any version to train the knowledge base model.

Home View Tools	Help	
 Regular Expression Builder Assets Synchronization Tests Explorer General 	A Machine Learning Mo	xdel Builder ing Options nce Options
Knowledge Bases		tart Page X
KB4ClientMgmt Version 1	U III	What would you like to automate? Open recent
		Search UserMgmtChatbot.wal C\WDGAuto\Uam\UserMgmtChatbot.wal UserManagement.wal C\WDGAuto\Uam\UserManagement.wal ServicesManagement.wal C\UWDGAuto\Uam\ServicesManagement.wal

2. Familiar yourself with Knowledge Base Training tool. As mentioned above, the Knowledge Base Training tool provides an interface to train the knowledge base model, change Terms and Synonyms and publish the knowledge base to a tenant. You can click the corresponding tab to take a look at each interface. You can also use the tool to export the knowledge base model to an XLSX file.

 						
Home View Tools						
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Ket-Gentragint Version 7		Selected Ans Score Tags Context Other Answe Search other	n: antener: Q. A.	Minimum Score: 00 0		Related Questions
Sutput						,

3. Type in "May I change my company's employee number" and press Enter. It will try to get the best answer from the knowledge base model. Since the initial knowledge base model is empty, it doesn't have any answer. The bot will say "No answers found, click to add a new one.".

0			IBM Robotic Process Automation Studio					x
Home View Tool * Regular Expression Buil Assets Synchronization Tests Explorer General	s Help der Å Machine Learning Model Builder	Options						
Knowledge Bases # ×	Start Page X KB4ClientMgmt - v1	×						
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 KB4ClientMgmt 	Selected Answer:		Minimum Score: 650 \$			Related Questions:		
	Tage: Context: Other Answer: Search other answer	Q. A.	May 1 change my company's fee No amuer fount. Click to add a new one	employee nun	Usen 1ber?			
	Add New Answer:					Add New Question:		
	Add New Answer	+	May I change my company's employee number			Add New Question		+
	Trainer Terms Synonyms	Changes						
Output 植스								7 ×
Output Error List								

4. You can click the bot message or click the <u>+</u> icon below to **Add New Answer** to add a new answer. **Click** the <u>+</u> icon.

<u>۹</u>						
Home View Too	s Help					
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KB4ClientMgmt	Selected Answer:		Minimum Scores 650 ±		Related Questions:	
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	Add New Answer:	_			Add New Question:	
	Add New Answer	+	May I change my company's employee number?		Add New Question	+
	Trainer Terms Synonyms	Changes				
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Configure the Add New Answer as below. Once done, click Save.
 Answer Text: Enter Update the employee number.

Tags: Tags are text triggers that guide the conversation intent between bot and user. The "+" or the "-" sign at the beginning of a tag increments or decrements a tag, respectively. **Click** the "+" icon, enter +**UpdateEmployeeNumber**.

Context: Click the **Add New** button and enter **Update client onboarding information**.



6. The bot will automatically pick up the answer and change from "*No answer found, click to add new one*" to the answer added above. In the **Selected Answer** panel, it will also list the score, which is between 0 and 1000. 1000 means that it is completely certain that it found the correct answer. Click the **Retrain** button in the top-right corner to train the knowledge base model with the question and answer.

Home View Tools Regular Expression Builder Assets Synchronization Tests Explorer	Help Machine Learning Model Builder	*				
Regular Expression Builder Assets Synchronization	A Machine Learning Model Builder	*				
General	Artificial Intelligence	Options Options				
nowledge Bases # × 9	art Page × KB4ClientMgmt - v1	×				
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A	ld New Answers dd New Answer	+	Update the employee number May I change my company's employee number?		Add New Question: Add New Question	
- Internet	rainer terms synonyms o	nanges				0
E As						

7. Enter another question "May I update my company's employee number?". The bot will get the same answer, but the score is only 108 with the Yellow triangle besides to answer.

ē			IBM Robotic Process Automation	Studio				
Home View Tools	Help							
 Regular Expression Build Assets Synchronization Tests Explorer General 	ler 🏠 Machine Learning Model Builder	Options Options						
nowledge Bases 🛛 🕈 🗙	Start Page X KB4ClientMgmt - v1	×						
bid D				Export Knowledge Base	Options		Re	train
KB4ClientMgmt Version 1	Selected Answer: Score: 100.050219714642 Tags: Lipidate replayeethumber Context: Update client onboarding inform Other Asswer: Search other answer Update the employee number edit	sation Got Update	Score: 650 \$ the employee number May I upo the employee number	late my company's employee numb	User: er?	Related Questions: Search for related questions May I change my compan number?	/s empl	oyee
	Add New Answer:					Add New Question:		
	Add New Answer Trainer Terms Synonyms	+ Type a mes	sage			Add New Question		
lutput								9
E ^>								

8. To increase score, click **select** from **Selected Answer** panel, then click **Retrain**. It will change the core to 1000 which means the correct answer.



You can continue training the knowledge base model to make it more comprehensive and answer more questions. Instead of continuing to train the knowledge base model with more question which is not the focus of this lab, we will publish the trained knowledge base and use it in chatbot.

9. Switch to the **Changes** tab and **check** the **Production version** checkbox. **Click Publish** to publish the knowledge base model to tenant and select **No** in following pop-up window.

3	100-0		IBM Robotic Process Automation Studio) x
Home View Tools	Help					
Regular Expression Builde Assets Synchronization Tests Explorer	r 🐧 Machine Learni	ing Model Builder te Training Options				
General	Artificial In	telligence Options				•
nowledge Bases # ×	Start Page X KB	4ClientMgmt - v1 X				-
Ad D				Export Knowledge Base Options:	Retrain	rain
Version 1	Drag a column heade	er here to group by that column		1	earch	
	Date	Туре	Question	Answer)	×
	5/30/2021	Conhecimento Adicionado	May I change my company's employee number?	Update the employee number)	×
	5/30/2021	Conhecimento Adicionado	May I update my company's employee number?	Update the employee number	3	×
	 5/30/2021 	Conhecimento Adicionado	May I revise my company's employee number?	Update the employee number	3	×
						IBM Robotic Process Automation
Med	Trainer Terms	Synonyms Changes	ו		 Production Version Publish 	Version published successfully: Do you want to continu training it?
E A						
						Yes No

4.1.3 Develop Chatbot Script

You have created and trained a knowledge base model. You can read the <u>documention</u> to learn how to use the knowledge base in a chat. Any automation can use a knowledge base model. However, the most common applications for knowledge base models are:

- Decision making based on uncontrolled text input.
- Non-linear interaction with user by text input.

IBM RPA provides two commands **Answer question** (answerQuestion) and **Bot ask and answer** (botAnswerQuestion) to handle questions using a knowledge base model. They will return the best answer along with tags, score, and context. These two commands also return alternative answers. The bot then must use the returned response in its favor during the automation, either for decision making by flow control or by returning the best answer to the user.

Besides those two commands, IBM RPA also provides a rich set of communication commands for general chatbot development. You can read the <u>documentation</u> to get familiar with those commands.

In this exercise, we will use communication commands to develop a simple chatbot to update the number of employees. An **UpdateEmployeeNumber** script has already been developed and published to the tenant. It will start the Client Management System Java application, query the client information based on the client name, and then update the number of employees. Both the client name and the number of employees are defined as Script Input Parameter.

- 1. Click **Home** to switch to the IBM RPA Studio script development perspective.
- 2. Click **New** and select **Wal File**.



3. Enter **create a** in the command search toolbox to filter out the **Create a Language** command. Double click it.



4. Configure the Create a Language command as below. Once done, click Save.

Input Parameters:

Culture: Select en-US.

Speech: Leave blank as this option applies to IVR (Interactive Voice Response) only.

Output: Enter vCulture.

Once you click **Save**, a variable with this name and type Language will be created.

O Create a L	anguage		×
	comment here		
Input Param	eters		
Culture 🔞	en-US		- 10
Speech 🔞			
Output			
Culture 🔞	vCulture		
		Cancel	Save

5. Find and double-click the **Connect to Chatbot or IVR** command from the communication command category. Configure it as below. Once done, click **Save**.

Input Parameters:

Type of communication: Select Chat.

Language:	Click the • icon and select variable vCulture defined above.
Timed Out:	Leave it blank.
	This parameter is to specify a routine to be executed if there is no response from the user within the time specified in the Timeout parameter.
Timeout:	Enter 00:03:00 to specify that the chat will be timed out if there is no response with 3 minutes.
	Please note if Timeout is not specified, the execution uses the context timeout defined by the Set Timeout command. If this command is not used either, the default timeout is 5 seconds.
Output:	
Chat: Ent	ter vChat.

Ivr: Leave it blank or enter vIVR. IVR is not covered in this lab.

Connect to Chatbot or IVR			
	comment here		
nnut Parameters			
Type of communication*	Chat		
Language* 🚱	\${vCulture}		
Timed out 🔞			• 1
Disconnected 🔞			+ I
Message 🚱			
Auto answer 🔞			
Storage Adapter 🔞			
Timeout 🕜	00:03:00		
Dutput			
Chat 🕑 VChat			
ivr 🕑 🛛 vivr			
		Cancel	Save

6. Once you click **Save**, it will automatically add a **Disconnect Chatbot or IVR** command. Leave the **Transfer** field blank and click **Save**.

End of the second secon			×
	comment here		
Input Parameters			
Transfer 🔞			
		Cancel	Save

Next is to use communication commands to develop chatbot scripts to interact with user. You can use the **Bot Ask** command to get input first, then use **Answer Question** to get the answer. Or you can just use **Bot Ask and Answer** command to get input and answer together. We will use the latter one in this lab.

7. First to use the **Bot Ask** command to request the client's company name. Drag and drop it to before the **Disconnect Chatbot or IVR** command. Configure it as below. Once done, click **Save**.

Input Parameters:

Language:	Click the icon and select variable vCulture .
Text:	This is the question asking for input from user. Enter Hello, may I have your company name please?.
Output: Value:	Returns the company name, enter vClientName.
Success:	Returns a Boolean value indicating if this command execution was successful or not, enter vSuccess .

	comment here	
Input Parameters		
Language 🔞	\${vCulture}	
Text* 🚱	Hello, may I have your company name please?	
		-
Retry 🕜		
Time out sub 🔞		
Recognition timeout 🔞		
Speech complete timeout		
No input timeout 🔞		
Speech incomplete timeout		
Confidence threshold 🔞		
Beep 🕜		
Timeout 🚱	00:01:00	
Output		
Value 🕑 VClien	Name	-
Utterance 🕜		
Timed out 😗		
Success 🕲 VSucce	55	
History Message		

8. Find the **Bot Ask and Answer** command. Drag and drop it to before the **Disconnect Chatbot or IVR** command. Configure it as below. Once done, click **Save**.

Input Parameters:

Language:	Click the icon and select the variable vCulture .
Text:	This is the question to ask to the user. Enter a generic question like Hello, what can I help you?
Sub-rountine:	Leave it blank. This specifies the subroutine that runs if there is no response from the user within the duration specified in the Timeout parameter.
Knowledge Base:	Enter the knowledge base model name you created, trained and published to the tenant. Please make sure the right name.
	This is the knowledge base model to be used for questions and answers.
Version:	Enter 2 or leave it blank.
	This is the knowledge base model version to be used by bot. If the version number is not specified, the bot will use the production version by default, or will use the version you specified here.
Minimum score:	Enter 850.
	This is to specify the minimum acceptable score indicating whether the answer is correct in relation to the question when trying to get an answer from knowledge base model.
Timeout:	Enter 00:05:00.

Output:

Utterance: Enter vUtterance to hold the first text entered by the user.

- **Time Out**: Enter **vTimeout** to hold if the execution of this command is timeout or not.
- **Answer**: Enter **vAnswer** to hold the best answer that gives the highest score to the question asked.
- **Tags**: Enter **vTags** to hold the conversation question context tags.
- Context: Enter vContext to hold the conversation context.
- **Score**: Enter **vScore** to hold the score for the best answer.

Success: Enter vSuccess to hold "True" if the script executed successfully or "False" if not.

🔆 Bot Ask and Answer		×
	comment here	
Input Parameters		
Language	\${vCulture}	
Text* 🕑	Hello, what can I help you?	-
Retry 🚱		
Sub-routine 😰		- 18
Knowledge base* 🚱	ClientOnboarding	- 18
Version	2	
Minimum score 🕜	800	
Number of answers		
Options 😮		
Recognition timeout 🔞		
Speech complete timeout 🔞		
Start timeout 🕜		
Speech incomplete timeout 🚱		
Confidence 🔞		
Beep 🚱		
Timeout 🔞	00:05:00	

Output				
Utterance 🔞	vUtterancee			
Timed out 😮	vTimeout			
Answer 😮	vAnswer			
Tags 🔞	vTags			
Context 😮	vContext			
Score 🕐	vScore			
Additional answers 😮				
Data 🔞				
Success 🔞	vSuccess			
History message 🔞				•
			Cancel	Save

After you click **Save**, your script should be similar as the one below. The **Bot Ask and Answer** command will get the best answer to the question. Next, we will add flow control to update the number of employees.



9. Add a **Log Message** command. Put it before the **Disconnect Chatbot or IVR** command, configure it as below to log he answer, tags, context, score and whether chatbot is timeout or not.

Home View Tools Help	
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Toolbox 4 × Start I	Page X Untitled 2.wal* X
log me X 1 * Base * General The Log Message	
1	
	Cancel Save

- Add an If command before the Disconnect Chatbot or IVR command. Configure it as below which will add flow control if the answer tags contain UpdateEmployeeNumber. Once done, click Save.
- *Note: In a real project, you will likely need to add more conditional decision logic to control the flow.*

Home View	Tools Help							
New ↓ Save ↓ Publish File	♥ New variable 📋 Cr ♥ New routine 😁 Cr ₩ New rule set 🔳 Cr ₽	reate report 2 F reate text file reate workbook Edit	le • • • • • • • • • • • • • • • • • • •	Variables visible Imports visible Hide description	 Toggle Breakpoint Delete All Breakpoint Attach to Schedule Debuggi 	e [®] Attach To Runtime		
Toolbox	4 ×	Start Page ×	Untitled 2.wal* ×					
d Files Files Control	time if cocess Exists e to a Variable if ge Contains	13 (c): Creat Creates a 14 (c): Connect 15 16 17 18 19 20 (c): Disco Discome	te a Language longunge verieble with the cultur teet to Chatbot or IVR in, uning Stochathe, esingining ik Bot Ask Bot Ask and Answer Stochather, Score to Stocerel Log Message organisment Stochaster, Conference of Stocerel in Log Message organisment Stochaster, Conference if if the stochaster and the stochaster is conference of Stocerel in Log Message on the stochaster of Stocerel in Log Message on the stochaster of Stocerel in Log Message on the stochaster of Stocerel in Log Message in Log Messag	e en-US, assigning Culture to Chat to Si/Chat) and Ive to Si/ ny name please? using the lar ing the language Si/Culturel, operator to Si/Culturel, operator to Si Negate O	S(/Culture) S(/Culture), assign guage S(-Culture), assign corr (Vlags) ontains pdateEmployceNumber	ng Value to S(vClientName) ing Utterance to S(vCliteranc ument here	and Success to \$(vSuccess) ee], Tuned out to \$(vTimeout), x × Cancel Save	Answer to \${vAnswer}, Tags to \${vTags!

11. Add an Else command in the middle of the If/End If command.

te report Difie • • • • • • • • • • • • • • • • • • •
Start Page X Untilled Zuwa ¹¹ X 13 §C Create a Language Creates a language variable with the culture en-US, assigning Culture to \$(vCulture) 14 \$\vec{v}{v}_{L}^{2}\$ Connect to Chatbot or IVR Connect Oct, using \$(vCulture], assigning Chat to \$(vChat) and hr to \$(vlw) 15 \$\vec{v}{v}_{L}^{2}\$ Bot Ack
Ack Hello, may I have your company name please? using the language \$(vCulture), assigning Value to \$(vClientName) and Su Kent Ask and Answer Ack Hello, what can I help you' using the language \$(vCulture), attempting 2 times, assigning Utterance to \$(vCliterance), Tim to \$(vContent), Score ByGorei and Success to \$(vSucce).
17 Standard Log Message
18 I*- 1 If If S(vTagi) contains UpdateEmployeeNumber, then
19 2 Else
20 to End If

12. If the user expects to update the number of employees, the chatbot needs to request the number of employees first. Add a **Bot Ask Number** command and put it in the middle of the **If/Else** command. Configure it as below. Once done, click **Save**.

Input Parameters:

Language: Select the variable vCulture using the picker.

Text: Enter **Hi**, how many employees does your company have?

Timeout: Set it to **00:03:00**.

Output:

This command has many output parameters. To simplify the exercise, we will only care about one of them.

First: Enter **vEmployeeNumber** to hold the first number recognized by the bot.

Home View Tools Help			
Image: Save = Image: S	reate report D File • • • • II • • • • • • • • • • • • • •	Varables visible Toggle Breakpoint of Attach To Runtime Toggle Breakpoints Source All Breakpoints	×
real Communication & V × bota sh V + Second A + Secon	a an type x 800/anteriat" x 13 30 Create a Language Create isogen violate with the culture 14 22 Connect to Chabbot or IVR Convert County for Chabbot or IVR Convert County for Chabbot or IVR Convert County for Chabbot or IVR 15 801 Ada 16 801 Ada 17 € Do Message Log Amere S Monard: at help 18 ••• If 18 0.1 100 Message 19 ••• Connect Chabbot or IVR 20 ••• If and IT 21 € Disconnect Chabbot or IVR Connect County of Chabbot or IVR Connect County of Chabbot or IVR Connect County of Chabbot or IVR County of Chabbot or IVR County of Chabbot or IVR	Language Language Language Longuage Longua	The second secon
Toolbox Knowledge Bases	↔ Script G Designer Ø Call Graph	Values mapping	
Error List		Success	
O Errors A 0 Warnings O Messa	ages	Cancel	Save

13. Next is to call the **UpdateEmployeeNumber** script to update the employee number. Drag and drop an **Execute Script** command after the **Bot Ask Number** command. Configure it as below. Once done, click **Save**.

Input Parameters:

Name: Select UpdateEmployeeNumber.

Parameters: Map ClientName and EmployeeNumber.

New variable ☐ Cr New 3 Save ↓ New routine ⊕ Cr New routine ⊕ Cr New route set ■ Cr File ↓ New route set ■ Cr	eate report	Variables visible Imports visible Imports visible Start Filde description Of Attach to Schedule ns Debugging	
Control Co	Start Kage X With Charlow Control 13 C Create a Language variable with the cultur 14 Connect to Chatbot or IVR Connect Chat, using SivoLiturel, assigning 15 M. Bot Ask 16 K Bot Ask and Answer 16 K Bot Ask and Answer 17 Log Message 18 If SivoLiturel, SivoLiturel, as Inf 18 If SivoLiturel, Sore to Sivocrel 19 Start Kinge wanner = Sivonnerel, as Inf 18 If SivoLiturel, Sore to Sivocrel 19 Execute Script 20 Execute Script 21 If Else 22 Lad Inf 23 Disconnect Chatbot or IVR Disconnect Disconnect Chatbot or IVR	e Execute Script C Input Parameters Handle error • File • Sid Name* • UpdateEmployeeNumber • Parameters • • ClientName • Sid • Outputs • • Version • • Output Success • Error message • • Error routine name • • Error • • Cancel Save	x iswer to \${vAnswer}, Tags to \${vTags}, Contex

14. Drag and drop the **Bot Says** command after the **Execute Script** command. Configure it as below. For the **Text** parameter, enter something like **The employee number** has been updated in the backend system successfully. Once done, click Save.

Home View Tools Help			
New Publish File File	t File ▼ ↑ ↑ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	Toggle Breakpoint O [®] Attach To Runtime Debugging	
Toolbox 4 × Start Page	RPAChatbot.wal* ×		
bot say × 13 0	Create a Language		
 Communication 	Creates a language variable with the culture en-US, assigning Cult	ture to \${vCulture}	
4 General 14 7 (C. Bot Says 15 16 17 18 19 20 21 22 23 24 6 24	2 Connect to Chatbot or IVR Connect to Chatbot or IVR Connect Chat, using S(c.Uture), assaring Chat to S(cChat) and Iv	r to S(vivr) the language S(vCulture), assigning Value to S(vClientName) and Si abure1 intermetion 2 times: assigning littermaces in Sol Intermaces I. To comment here AcCulture1 he employee number has been updated in the backend system suc Ce	ccess to 5(vSuccess) medicat to 5(vSuccess) X ccessfully. ncel Save

In real project, If the bot can't answer a user's question, the bot needs to have more sophisticated logic to handle the situation. In this lab, it will simply print a message and close the chatbot. You can use other IBM RPA communication commands to further enhance the logic.

15. Drag and drop another **Bot Says** command between the **Else/End If** commands. Configure the command as below. For Language select the variable vCulture. For Text, enter a message, for example **Sorry, I can't answer you, thanks**. Once done, click **Save**.

New Vew File	 Wew variable Wew routine Wew rule set C 	Create report 12 Fil Create text file Create workbook Edit	e • • • • • • • • • • • • • • • • • • •	Variables visible Variables visible Hide description	Toggle Breakpoint	g [®] Attach To Runtime		
Toolbox	å ×	Start Page × F	RPAChatbot.wal* ×					
delay Base	×	13 Create Creates a l	e a Language anguage variable with the culture	en-US, assigning Cu	lture to \${vCulture}			
 General Delay 		14 14 Connect C	ect to Chatbot or IVR hat, using \${vCulture}, assigning (Chat to \${vChat} and	lvr to S(vlvr)			
		15 iii A	Bot Ask sk Hello, may I have your compar	ny name please? usin	g the language \${vCulture}, assigning	Value to \${vClientName	and Success to \$(vSuccess)	
		16 💥 A tu	Bot Ask and Answer sk Hello, what can I help you? usi o \${vContent}, Score to \${vScore} o	Bot Says	ulture) attematina 2 times assianini	a Litterance to Styl Itteran	ree) Timed out to StyTimeout) Aps	wer to \${vAnswer}
		17 📢	Log Message ogs Answer = \${vAnswer} as Info		comm	ent here		
		18 .* <i> </i>	If \$(vTags) contains UpdateEmploy	Input Parameter	s \${vCulture}			
		19	Bot Ask Number Ask Hi, how many employe	Text" 🕑	Sorry, I can't answer you, thanks.			
		20	Execute Script Execute the script UpdateEn	,			-	
		21	Bot Says Says the text The employee				Cancel Save	
		22 🗦	Else					
		23	Bot Says Says the text Sarry, I can't	nswer you, thanks. u	sing the language \$(vCulture)			
		24 13	End If					

16. Before closing the chatbot, you may want to add a delay command. This will give you a chance to look at the chatbot message. Drag and drop a **Delay** command before the **Disconnect Chatbot or IVR** command. Set the Timeout to **00:00:03**. Once done, click **Save**.

ew	rkbook	3 3 Script Recorder % Hide description ≤ a [®] Clearn a ternapports Actions Actions a [®] Attach to Schedule.
olbox 🕴 🗙	Start Page	X Untitled 1.wal* X
Jay × Base	17	G Log Message
General Delay	18	•*• If If \$(vTags) contains UpdateEmployeeNumber, then
	19	Bot Ask. Number Ask Hi, how many employee does your company have? using the language \$(vCulture), assigning First to \$(vEmployeeNumber)
	20	
		Logs employee number = Stylemaloweet/umber) as information
	21	ve Log message Log engine nuplex a ful maturel and enternation ■ Execute Sqr () Delay Execute He soft () Delay Execute He soft () Performed Anti-American Stresser Fronte He soft () Performed Anti-American Stresser Here Stresser () Performed Anti-American Stresser
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You have successfully created a simple chatbot script. Save your script as C:\CP4AutoDemo\Chatbot4You.wal by clicking Save in the Studio menu toolbar.

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.



4.1.4 Validation Instructions

Typically, when you develop and debug a chatbot script, you can simply run it from IBM RPA Studio. For a production environment, additional configuration is needed in the tenant to enable execution of chatbots without using Studio. This allows you to embed a chatbot in any application. In this exercise, you will follow the instruction below to validate your chatbot scrips from RPA Studio. It is similar to run and debug any other script.

1. Click the **Start** icon in the Studio menu toolbar.

) Home View	Tools Help	
New New New New	New variable @ Create report ℃ Fil ⑦ New routine @ Create text file @ New rule set ■ Create workbook Edit	Vev Sat Sat Sat Sat Attach to Sublet Sat Attach to Sublet Sat Attach to Sublet Delegging
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delay 4 Base	× 14 10	Connect to Chatbot or IVR onnect Chat, using \$(ICulture), assigning Chat to \$(VChat) and Irr to \$(Vhr)
 General Delay 	15	Bot Ask Ask Hello, may I have your company name please? using the language \$/vCulture!, assigning Value to \$/vClientName) and Success to \$/vSuccess)
	16	10 Bot Ask and Answer Advisity unit can hap use using the language (FGCater) assigning Uthranes to (Ficherance / Timed out to (Ficherance / Answer to Solemann) Tags to Soling , Context to Exchange (Solemann) Exchange the Solemann
	17	Log Message Log: Annex = 3(vAnnex)_as Information
	18	(*) If // Slv/Tagi) contains UpdateEmployeeNumber, then
	19	Bot Ask Number Ask Hi, how many employee does your company have? using the language \$\cutume assigning First to \$\symployeeNumber\)
	20	Log Message Log semployee number = SivEmployeeNumber) as Information
	21	Execute Script Execute the script UpdateEmployeeNumber, passing the parameters ClientName StrClientName/EmployeeNumber.StrEmployeeNumber/
	22	R Bot Says

2. The chatbot will start. It may take a few seconds since it needs connect to some services running on the SWAT team tenant. Once connected, it will prompt a message to request you enter your company name.

BM Robotic Process Automation	×
Chat	
	^
Please wait while loading. Protocol JaqirbKKro17eoRUj6dqzb-n Node DEBU	G.
ap1wdgchat	
Hello, may I have your company name please?	
ap1wdgchat at 10:08:54 PM	~
I	\triangleright

3. Enter Automation Elite Inc. in the input text and press enter to send the message.

hat		
		-
Please wait while loading. Protocol AKaXxP3Odhp2	2Tj9EWQKpzG-n Node DEBUG.	
Hello, may I have your company name please?		
Hello, may I have your company name please? ap1wdgchat at 10:12:16 PM		

4. The bot will then prompt another message. Enter the following question **May I** change my company's employee number? into the textbox and press Enter to send the message.

IBM Robotic Process Automation	- = ×
Chat	
Please wait while loading. Protocol AKaXxP3Odhp2Tj9EWQKpzG-n Node DEBUG.	^
ap1wdgchat	
Hello, may I have your company name please?	
ap1wdgchat	
	Automation Elite Inc.
	Studio
Hello, what can I help you?	
ap1wdgchat at 10:12:52 PM	×
May I update my company's employee number?	X >>

5. The bot will try to get the best answer from the knowledge base model against your question. You can look at the log message in the Studio log window to check the answer, tags and context returned from the knowledge base.



6. Once you see the chatbot message "Hi, how many employees does your company have?", enter something like **My company has 1500 employees**. Once done, press **Enter** to send the message.

IBM Robotic Process Automation	×
Chat	
ap maganat	Automation Elite Inc.
Hello, what can I help you? ap1wdgchat	
	may I change my company's employee number? Studio
Hi, how many employee does your company have? ap1wdgchat at 1026:17 PM	v
my company has 1500 employees.	X >>

7. The bot will extract the employee number from your input first, then start the Client Management System application, and query and update the employee number.

Client Name: Auton			ation Elite Inc.		-
Onboardin	g Status:	Approv	ved		
Primary (Contact				
Name:	June Marie		Phone:	517)555-0000	
Email:	jmarie@ex	maple.co	m		
Client Ad	dress				
Street:	3974 Cars	on St	Unit:	1A	
City:	Lansing		State:	MI	
Zip Code:	48911		Country:	nited States of An	nerica
ompany /	Age:		10 years		
lumber of	Employees	ĸ	1500.0		
Financial	History				
Annual	Revenue(\$)	•	50,000,000.00		
🔲 Defau	Ited Payme	nt			
Segment					
Segm	ent 1				
Segm	ent 2				
utomation 2738058	n Elite Inc. h	as been	added or update	d into system with (Client ID:

8. Once the employee number has been updated in backend system, the bot will prompt another message indicating the update and then close the chatbot session.

In NOOUL FICESS Automation	<u> </u>	^
Chat		
may I change my company's employee numb	er?	^
Hi, how many employee does your company have?		
ap1wdgchat my company has 1500 employe	es.	ľ
The employee number has been updated in the backend system successfully. aptwogorat at 1027/16 PM	tudio	~
I	\triangleright	·

4.1.5 Configure Chat Mapping

A chatbot script can't be simply scheduled to run from a tenant as a normal bot script. To execute chatbots externally without using IBM RPA Studio, it is required to configure the chat mapping in a tenant. Due to a limitation for the number of bot integration services, you are not able to perform the chat mapping yourselves. Instead, we will provide a guide to work through the process to help you understand the general chat mapping procedures.

Please don't make any change to the chat mapping in the SWAT Team tenant or create new chat mapping.

Both available bot integration services have been configured and used for other important business objectives, any change will break them.

Perform the following steps (without Saving at the end!):

1. Publish your bot script to the tenant by clicking **Publish** in the IBM RPA Studio.

99					IBM Robotic Process Automation Studio
Home View	Tools Help				
New Publish	* New variable ☐ Create reg * New routine Create te: ☆ New rule set ■ Create wo Edit	nort 🖒 File 🕶 t file rkbook	View Start Script Recorder Action	Variables visible Imports visible Hide description Is	Toggle Breakpoint o ⁹ Attach To Runtime Delete All Breakpoints o ⁹ Attach to Schedule Debugging
Toolbox	Ϋ ×	Start Page X	ChatbotSample.wal	Imports visible	
delay	×	13 0 Cr	eate a Language	loggics scripts import	10 C
 Base General Delay 		Creat 14 🗮 Co Conn	es a language variable with t onnect to Chatbot or ect Chat, using \${vCulture}, a	he culture en-US, assign IVR ssigning Chat to \${vCha	ing Culture to S(vCulture) tt) and lvr to S(vlvr)

2. Configure the **Publishing** window as below. Give a name to the chatbot script, make sure to use a unique name to avoid naming conflicts and **check Set as production**. Once done, click **Publish** to publish script to the tenant.

Publishir	ng "ChatbotS	ample.wal"	x
General	Mappings	Processes	
Name* 🔞)	ChatbotSample	
Descriptio	on * 😗	v1.0	
Allow sche	eduling 🔞		
Set as pro	duction 😗		
		Show advanced options	
			Cancel Publish

3. Open the web client using Firefox, log in with your RPA account.

IBM R	IBM Robotic Process Automation							
	Scripts							
Ē	Scripts	Projects	Parameters					
~;;	Scripts							
	Cohoduloo							

4. Click **Chatbot** icon in the left panel, then click **Create Chat mapping**.

IBM	Robotic Process Automation						Eng	lish (United States) 🔌	, (1) (
텖	Chatbots									
Ē	Chat	IVR								
~;;	Chats Mappings									
_							Q	Create chat mapp		+
æ			Name	Bot	Script	Created	Modified By	Last modified		
E			Client Onboarding Chatbot	SWAT- BOT	Chatbot4ClientOnboarding	2 months ago		about 2 months ago		
s;			User Management Chatbot	SWAT- BOT2	UserMgmtChatbot	about 1 month ago		22 days ago		:
Ģ	Chatbots		Items per page: 10	~ s	Showing 1 to 2 of 2 entries			1 ∨ oflpage	•	•
æ										
*										
₿										

- 5. Follow below steps to configure New Chat mapping.
 - 1. Select appropriate bot integration service, input a chat mapping name and greeting message. Once done, click **Next**.

Create chat ı	napping
Bot	Bot Choose an option
O Script	Name
○ Styling	
	Greeting
	Next

Bot: The bot integration service needs to be configured in the IBM RPA SaaS tenant. This can only be configured by the IBM RPA support team. It is recommended to open a support ticket with your tenant information to request help from support team.

×

>

Name: Chat mapping name. You can use any name, suggestion is to give a meaningful name.

Greeting: Greeting message when the chatbot initially starts up.

2. Select the chatbot script you published to tenant and its version, then select the computers to execute the chatbot. Once done, click Next.

Create chat mappin	g
⊘ Bot	Script name Choose an option
 Script Styling 	Script version Choose an option
	Computers Choose an option
	Unlock machine
	Previous
Script Name:	Chatbot script name.
Script Version:	Chatbot script version.
Computers:	A chatbot essentially is still an RPA bot. It needs a machine with the IBM RPA agent installed to execute the chatbot. Specify which machine or group will be used to execute the chatbot.
Unlock machine	Specify whether to unlock the machine to execute the chatbot. If you turn on the option, it is required to configure the RPA agent machine's user credentials for RPA to use to unlock the machine.

3. Click **Add file** button and upload a CSS file. **As already mentioned, don't save your Chat mapping.** Click **X** icon on the top-right window to exit Chat Mapping configuration without saving.

Create chat mapp	ing		\boxtimes
 Bot Script 	<pre>} .wc-message-from-bot svg.wc-message- padding-left:35px; }.wc-message-from.wc-message-from-bot margin-left:43px; }</pre>		
Styling	Show more V		
	Upload CSS file Max file size is 500 kb. Only CSS files are		
	supported.		
	Add file		
		Previous	Create



After you have configured the chat mapping, you can call your chatbot with an URL. The format of URL is

1 + 4 + 4 = 1 + 1 / (T - 4 - 4 - 4 - 1 + 1 + 4 - 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1		- 4 4	/ / /	D _ 4
https://lengntke	JIANN AT WAGAI	utomation cor	m/integration/i	KAT
mups.// i chaming	sion oot.wuga	atomation.com	III/IIIIOZIALIOII/I	σσι

TenantReg	gion : This is the region name of your tenant. You can get it from your web
_	client URL. For example, if your web client URL is
	https://ap1app.wdgautomation.com/, your tenant region is ap1.
Bot:	This is the bot integration service name that the IBM RPA SaaS support team created for you.

Summary

In this exercise, you have learned:

- The knowledge base model base file format.
- How to use Machine Learning Model Builder to create a knowledge base.
- How to use Knowledge Base Training tool to train and publish a knowledge base.
- How to develop and test a chatbot using the knowledge base model.
- How to develop chatbot scripts using the communication commands.

Congratulations, you have successfully completed IBM RPA Lab!!!