



Part 3: Decision Automation and Skills Design

Usecase

This tutorial teaches you how to accomplish an action depending on certain criteria. For example, if you want to approve a loan application depending on the credit score and income of the applicant, a rule based decision to accomplish this will very helpful. This decision can be used as a skill in IBM watsonx Orchestrate and can be made available as an action in your assistant.

Environment Details

1. **IBM watsonx Orchestrate URL:** <https://dl.watson-orchestrate.ibm.com/>
2. **Credentials:** your **IBM-id**

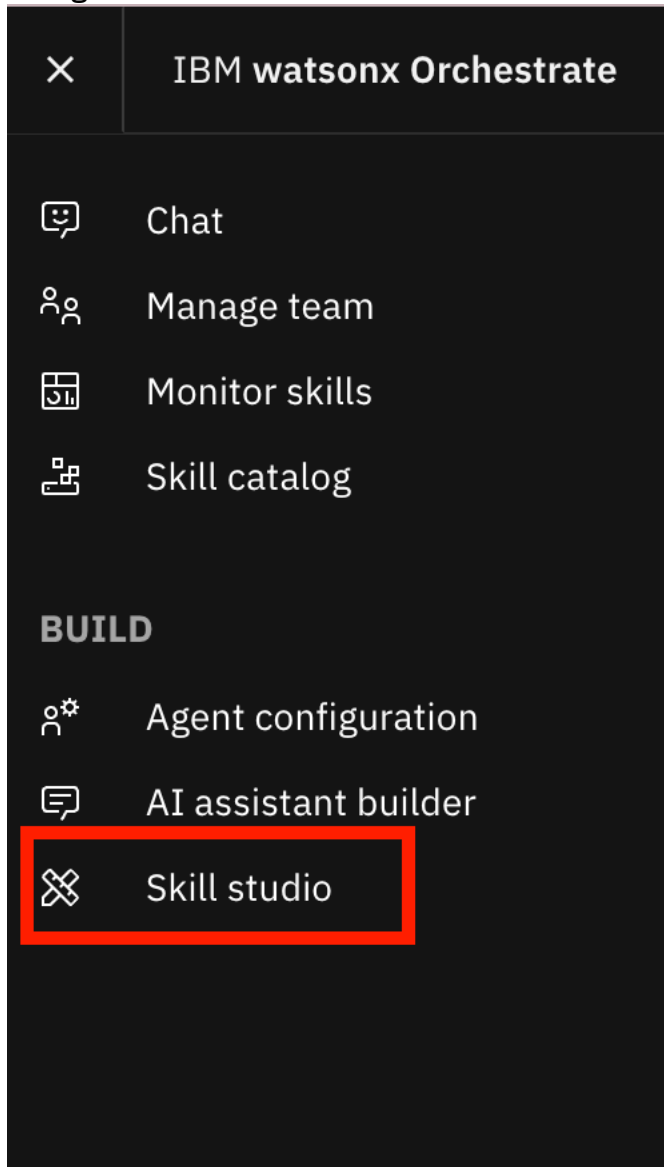
Assumptions

The following are the assumptions:

1. You have access to the IBM watsonx Orchestrate.
2. You are authorized to create automation using the **Automations**.

Step 1: Create automation

1. Navigate to **Skill studio** from the menu.



- Click the **Create** dropdown and select **Project** to create a new automation. Give it a name (e.g. “YourInitials_Lending_Services”) and click **Create**.

New project

Create project

Import project

Discovery tutorials

Industry samples

Create project

Create an empty project and build it from scratch.

Name

HB_Lending_Services

Note: This is a symbolic name that must be unique and cannot be changed later.

Description (optional)

Describe your project

- Next select **Decision** tile.

BuildDataOperationsHistoryPublish

Get started by choosing a component

Decision

Automate complex business decisions with rules and decision tables.

→

Workflow

Model your business process and publish it to use as a skill or to generate tasks.

→

Generative AI

Use generative AI to analyze or create contextual content.

→

- Select **Decision model** as the model for your decision.

BuildDataOperationsHistoryPublish

← Now choose a model

Decision model

Decompose your decision and define the data its depends on.

→

Ruleflow model

Chain together tasks and specify how and when they are run.

→

Prediction model

Implement predictions based on artificial intelligence.

→

5. Give a name to your decision (e.g., “YourInitials Personal Loan”) and click **Create**

Create a decision model

Name

MA Personal Loan

Note: This is a symbolic name that must be unique and cannot be changed later.

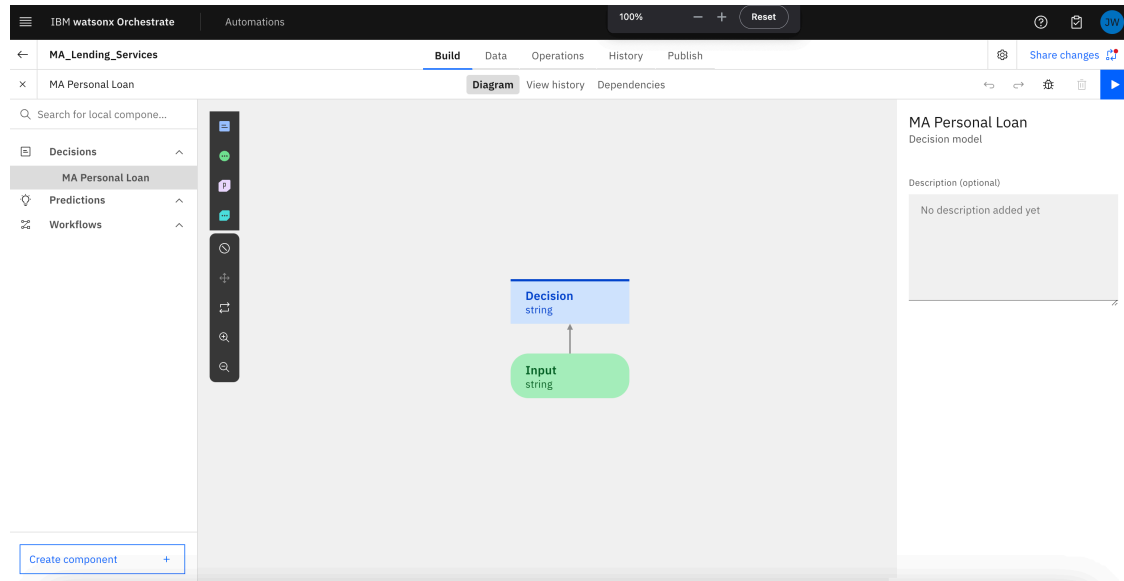
Description (optional)

Describe your component

Cancel

Create

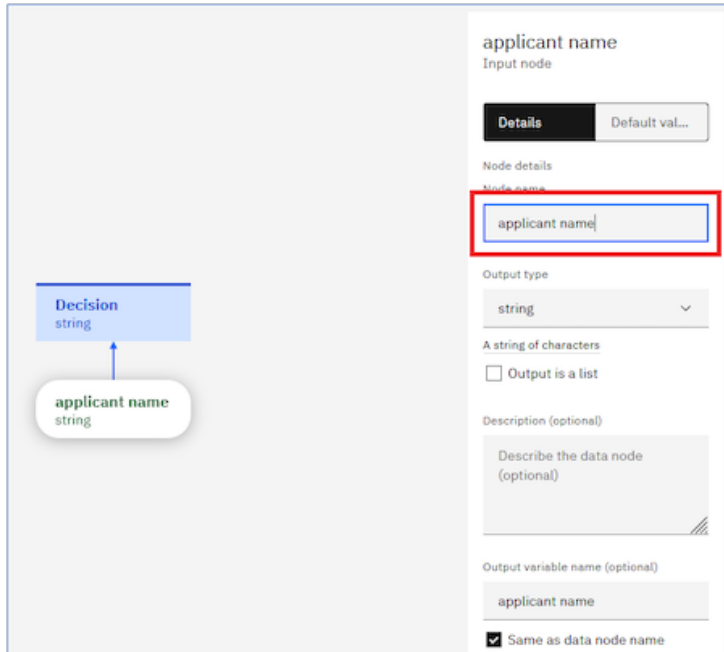
6. The **green nodes** (data nodes) represent data elements that are used by the decision’s rules. The **blue nodes** (decision nodes) represent a step in the decision. They contain rules that will execute to achieve that step. Each decision node outputs a partial decision. In complex decisions, there are many decision nodes, and the output of one decision node will flow as input of another decision node.



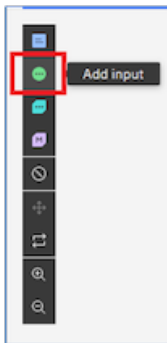
Step 1.1: Create the Data nodes

Now, let’s create the data nodes.

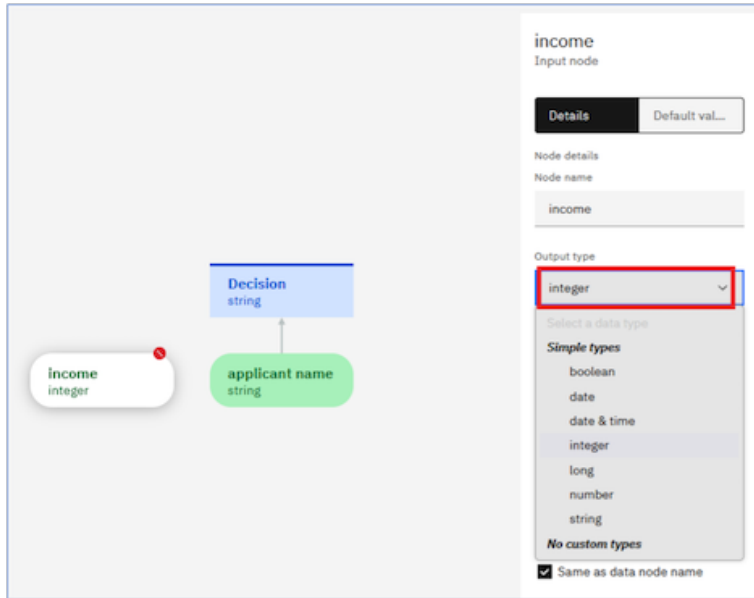
1. Click on the data node and on the right-hand side, change the name of the node to **applicant name**:



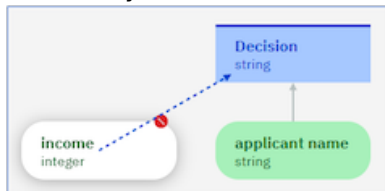
2. Create a new data node by clicking on the **Add input** button in the palette:



3. Select the newly created node, change the name of the node to **income**, and change the type of the node to **integer**:



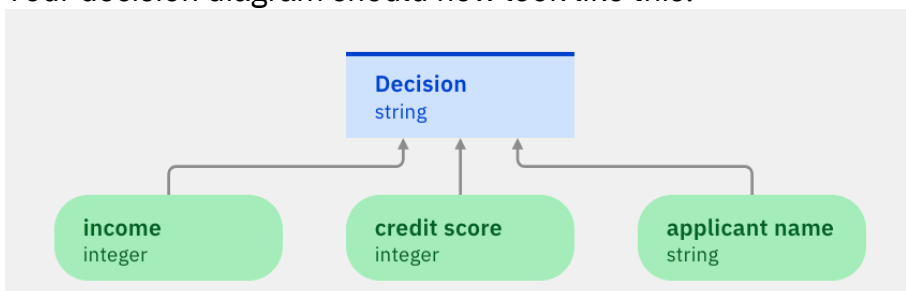
4. Hover on the node and click the **Connect to another node** button, drag the connector to the **decision node** and click on the **decision node**.
Note: If you **Add Node** from the decision node, it is automatically connected.



5. Repeat the steps 1-4 in this section to add additional nodes. They are:

Node name	Node type
income	integer
credit score	integer

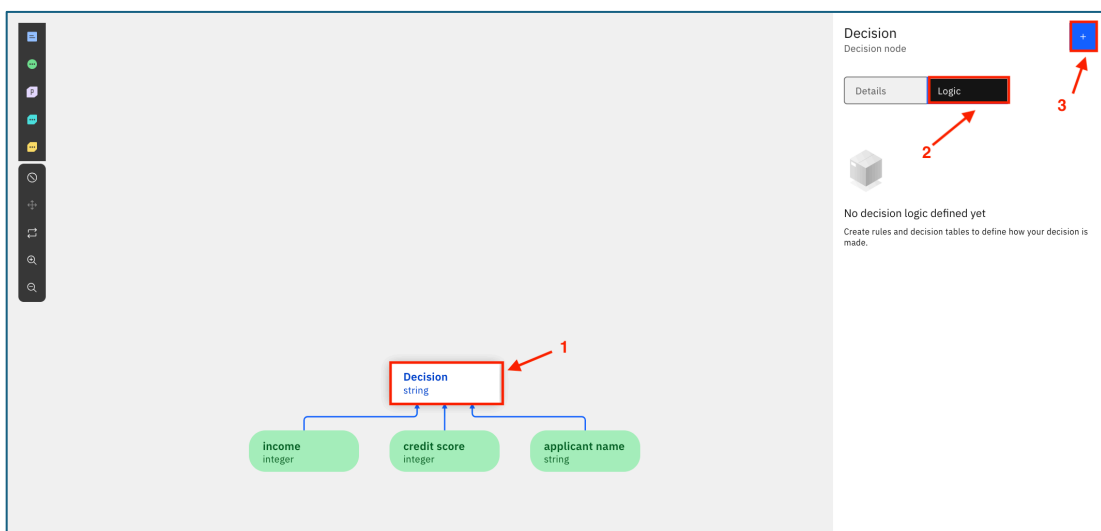
6. Your decision diagram should now look like this:



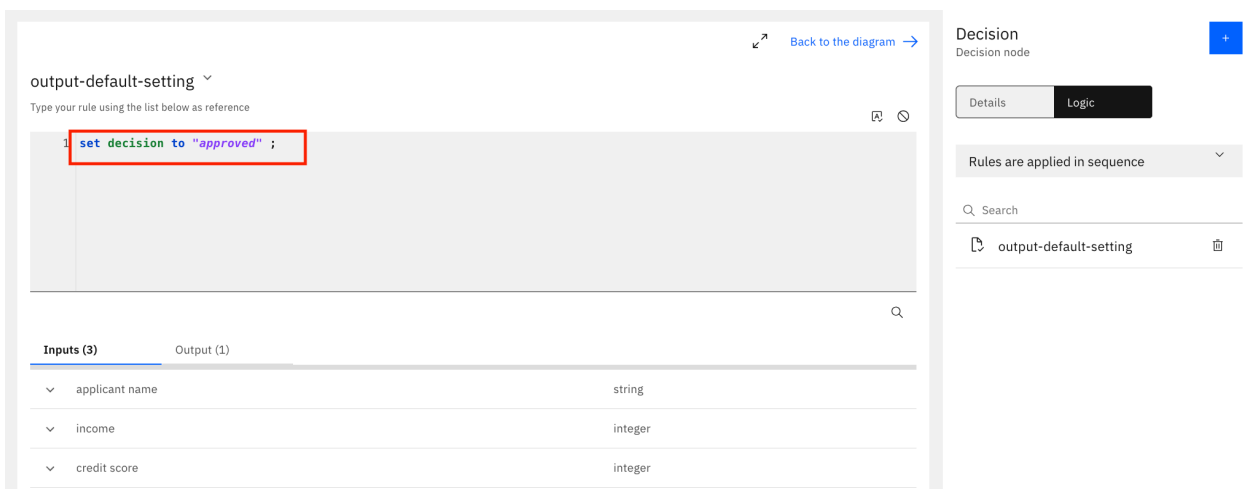
Note: *this is an example created for the purposes of our hands-on lab. In a real business scenario, you would use additional parameters e.g. SSN, loan purpose, whether an applicant is employed, etc. and you could create additional rules.*

Step 1.2: Create the Rules

1. You will now add some rules to the decision node. The first rule that you will add is a **default rule**. It will initialize the outcome of the decision to approved. The other rules will then specify the conditions under which the loan is declined. To create the default rule, click on the **decision node**, click the **+** button and select **Default rule**.



2. Click on the **string placeholder**, select **string** in the dropdown, and enter **approved**. You just created your first rule!



The screenshot shows the IBM Decision Center interface with the 'Decision' node configuration panel open. The 'Logic' tab is selected, and the 'Rules are applied in sequence' dropdown is set to 'Rules are applied in sequence'. The rule configuration area shows a single rule: 'set decision to "approved" ;'. A red box highlights the rule text. Below the rule configuration area, the 'Inputs (3)' and 'Output (1)' are listed. The inputs are 'applicant name' (string), 'income' (integer), and 'credit score' (integer). The output is 'decision' (string).

Inputs (3)	Output (1)
applicant name	string
income	integer
credit score	integer

3. Now, let's add another one to say that any applicant with a credit score under 600 will be declined. Click again on the **+** sign and select **Business rule**. Give your rule a name, **decline low credit score** select **credit score** in the criteria choices and click **create**.

Create business rule

decline low credit score

Select the criteria for your rule

^	applicant name	
<input type="checkbox"/>	'applicant name'	string
^	income	
<input type="checkbox"/>	'income'	integer
^	credit score	
<input checked="" type="checkbox"/>	'credit score'	integer

Preview your rule

```
if
  'credit score' is at least <min> and less than <max>
then
  set decision to <a string> ;
```

Cancel Create

4. Update the rule template so that your rule looks like this:

decline low credit score ^

Type your rule using the list below as reference

```
1 if
2   'credit score' is less than 600
3 then
4   set decision to "declined" ;
```

5. Add another rule to decline if income is below a certain threshold (e.g. 50,000):

decline low income ^

Name

decline low income

Description (optional)

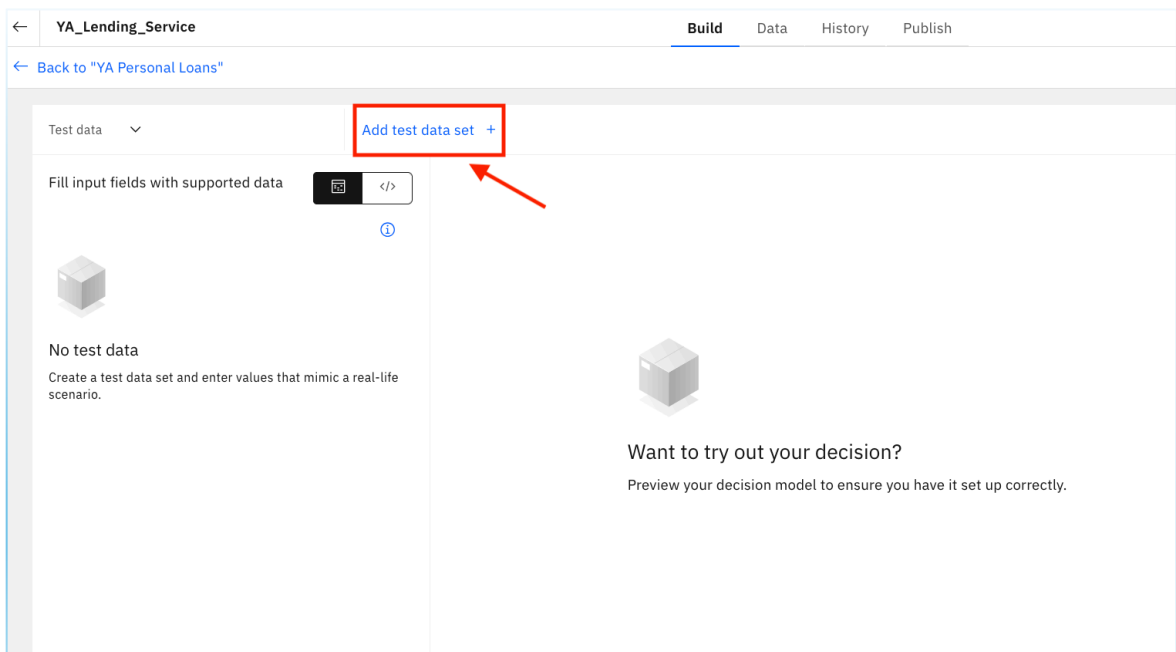
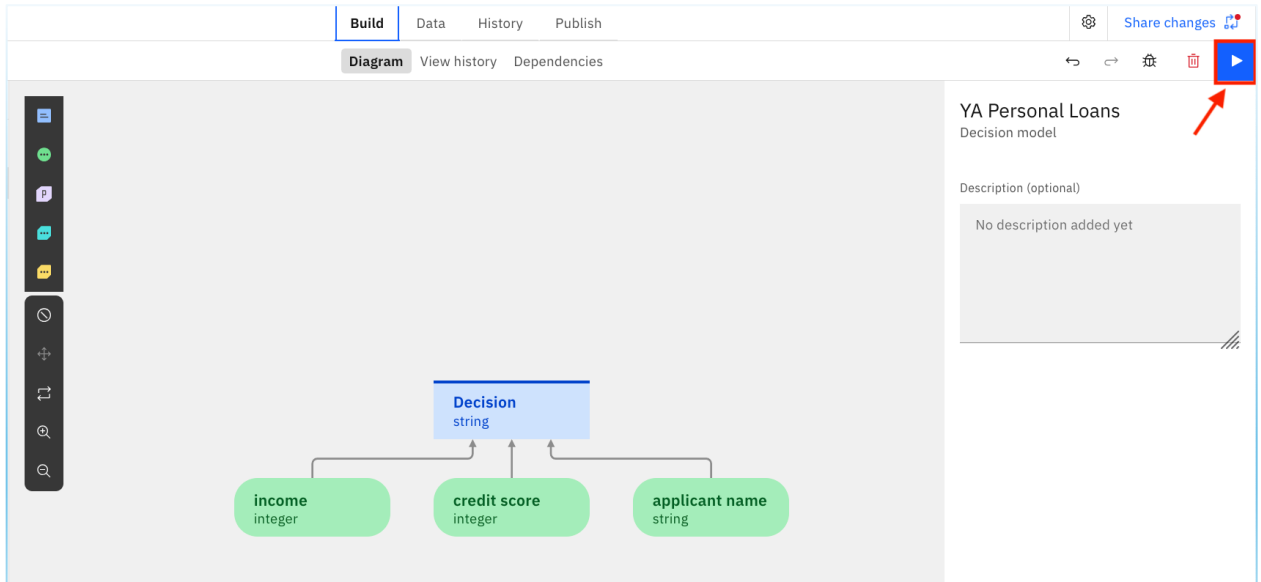
Describe this rule

Type your rule using the list below as reference

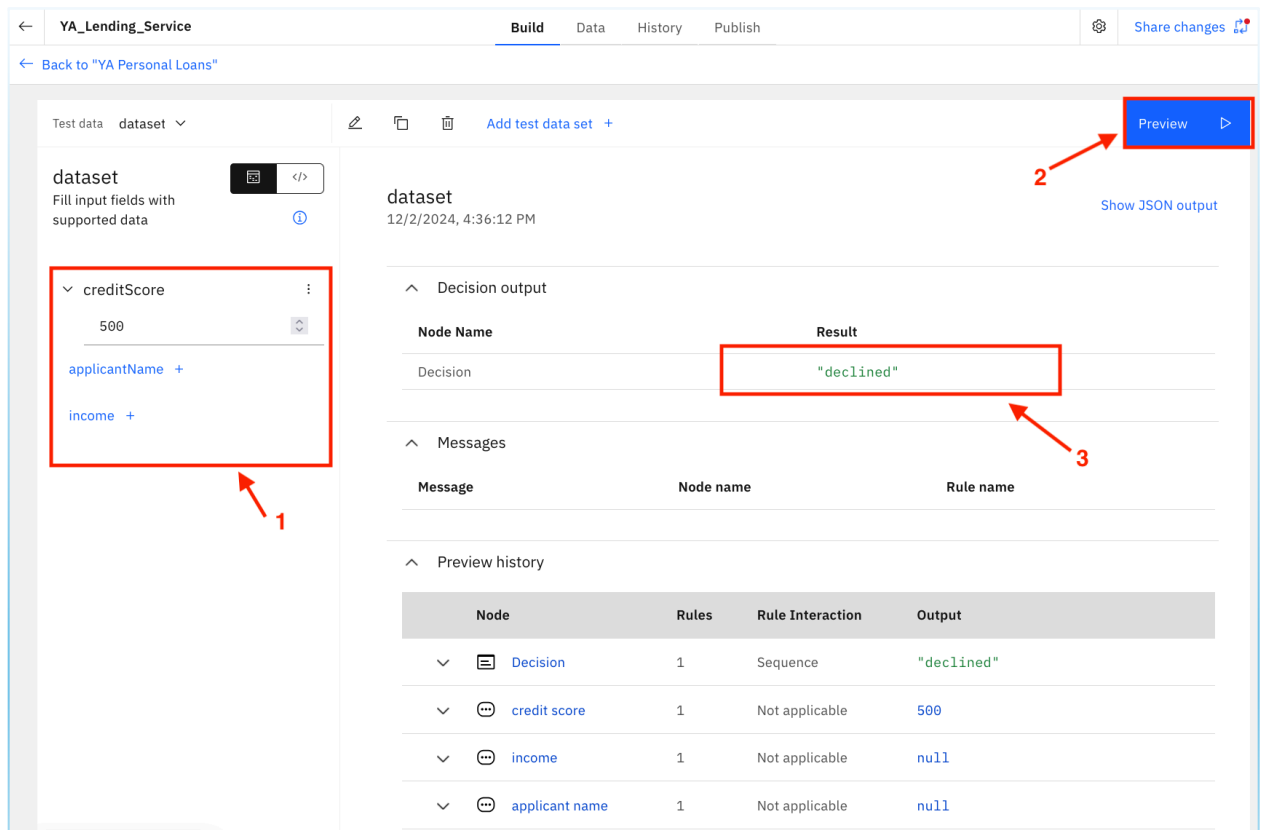
```
1 if
2   income is less than 50000
3 then
4   set decision to "declined" ;
```


Step 1.3: Test the Decision

1. You can test your rule by clicking on the **Preview** button and then selecting **Add test data set**:



2. Enter data for the input fields and click the Preview button to see the outcome of the decision. For example, enter a value of **500** for the credit score, and you should get a declined output:



YA_Lending_Service

Build Data History Publish

← Back to "YA Personal Loans"

Test data dataset ▾

dataset

Fill input fields with supported data ⓘ

creditScore

500

applicantName +

income +

dataset

12/2/2024, 4:36:12 PM

Show JSON output

Decision output

Node Name	Result
Decision	"declined"

Messages

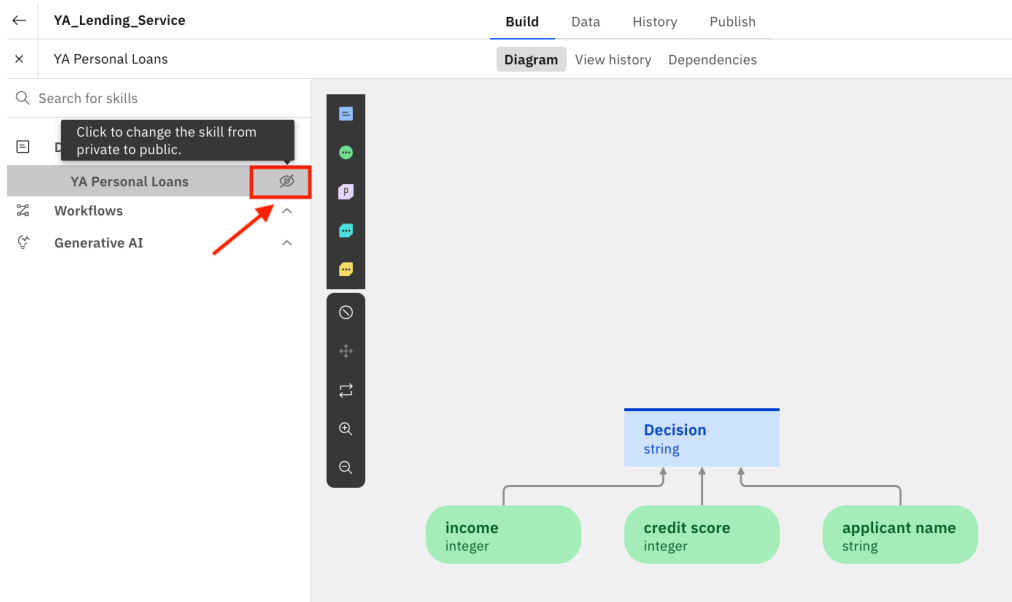
Message	Node name	Rule name
---------	-----------	-----------

Preview history

Node	Rules	Rule Interaction	Output
Decision	1	Sequence	"declined"
credit score	1	Not applicable	500
income	1	Not applicable	null
applicant name	1	Not applicable	null

Step 1.4: Deploy the decision service

1. Click on the crossed out eye icon beside your decision model name, to make your skill public.



YA_Lending_Service

Build Data History Publish

YA Personal Loans

Diagram View history Dependencies

Search for skills

Click to change the skill from private to public.

YA Personal Loans

Workflows

Generative AI

income integer

credit score integer

applicant name string

Decision string

2.



3. Share your changes, by clicking on the **Share changes** button.

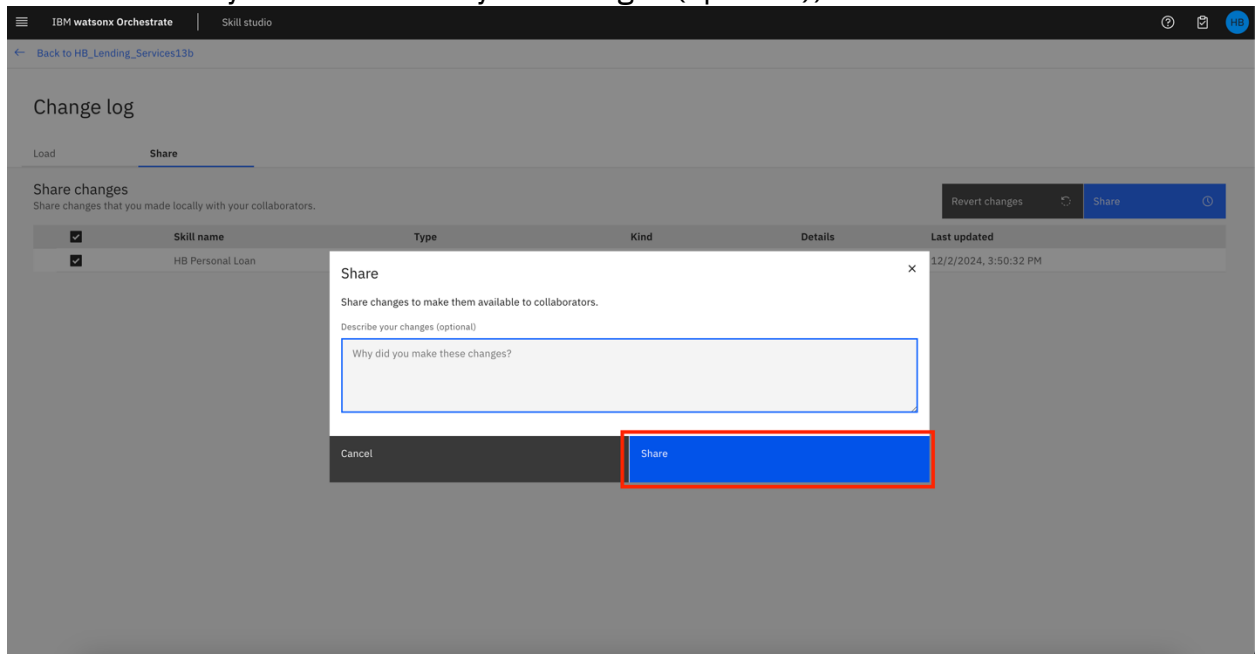
The screenshot shows the IBM Watsonx Orchestrate interface. At the top, there are tabs for 'Build', 'Data', 'History', and 'Publish'. Below these, there are tabs for 'Diagram', 'View history', and 'Dependencies'. The main area displays a decision model diagram for 'YA Personal Loans'. The diagram shows three input nodes: 'income integer', 'credit score integer', and 'applicant name string', all pointing to a central 'Decision string' node. On the right side, there is a panel titled 'YA Personal Loans' with a 'Description (optional)' section that says 'No description added yet'. In the top right corner, there is a 'Share changes' button with a red box around it and an arrow pointing to it.

4. Click on **Share**

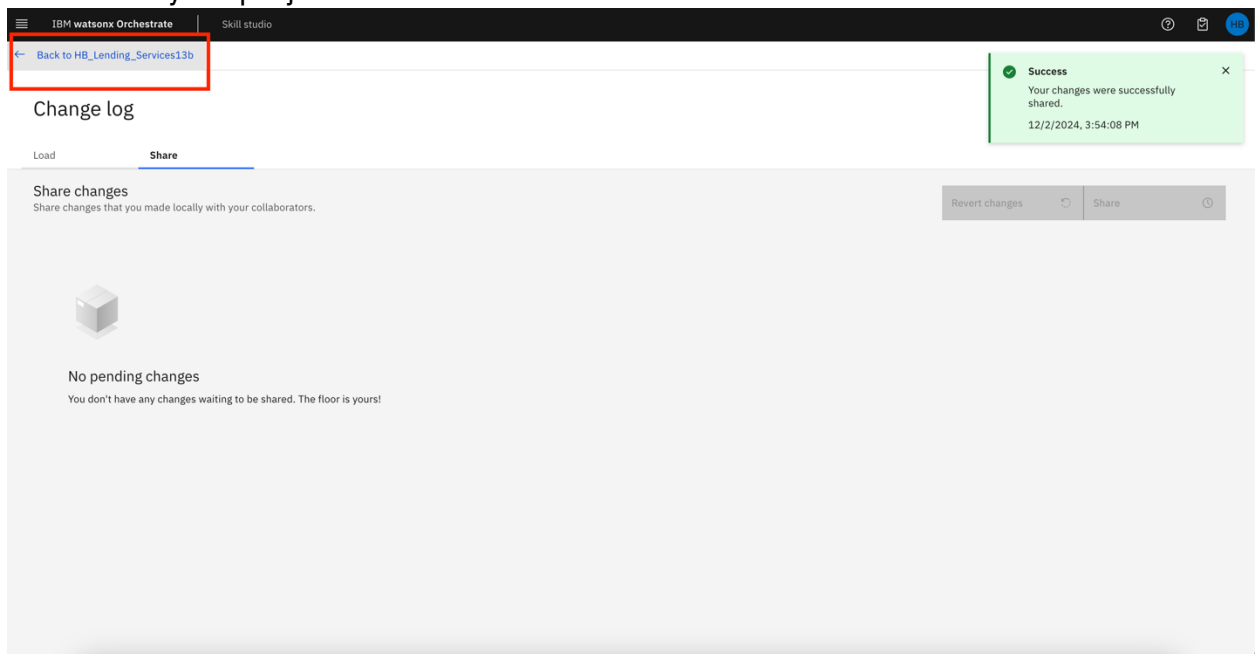
The screenshot shows the 'Share changes' dialog in the IBM Watsonx Orchestrate interface. The dialog has a 'Load' tab and a 'Share' tab. The 'Share' tab is active, showing a table of changes. The table has columns for 'Skill name', 'Type', 'Kind', 'Details', and 'Last updated'. There is one row of data: 'HB Personal Loan', 'Decision model', 'Skill added', and '12/2/2024, 3:50:32 PM'. In the top right corner of the dialog, there is a 'Share' button with a red box around it and an arrow pointing to it.

	Skill name	Type	Kind	Details	Last updated
<input checked="" type="checkbox"/>	HB Personal Loan	Decision model	Skill added		12/2/2024, 3:50:32 PM

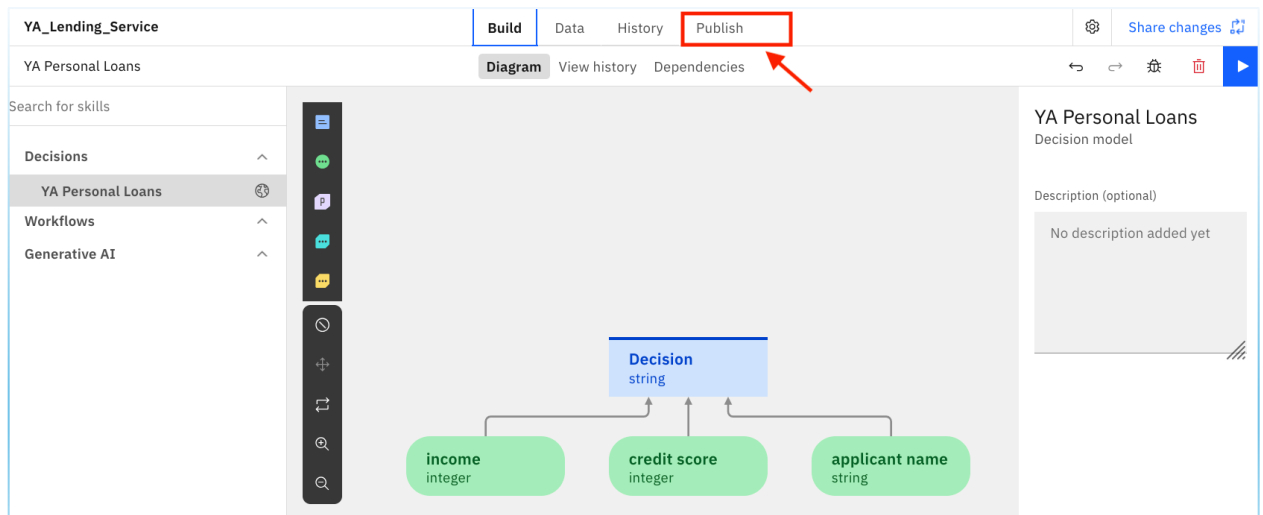
5. In a few words you can describe your changes (optional), then select **Share**



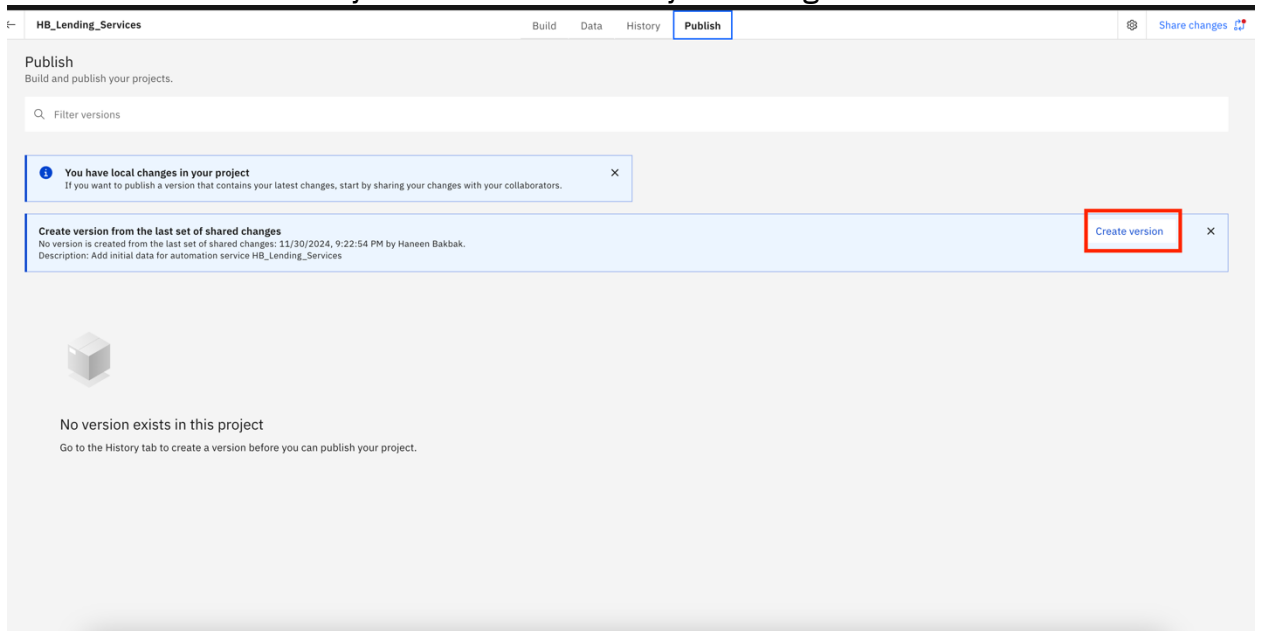
6. Go back to your project



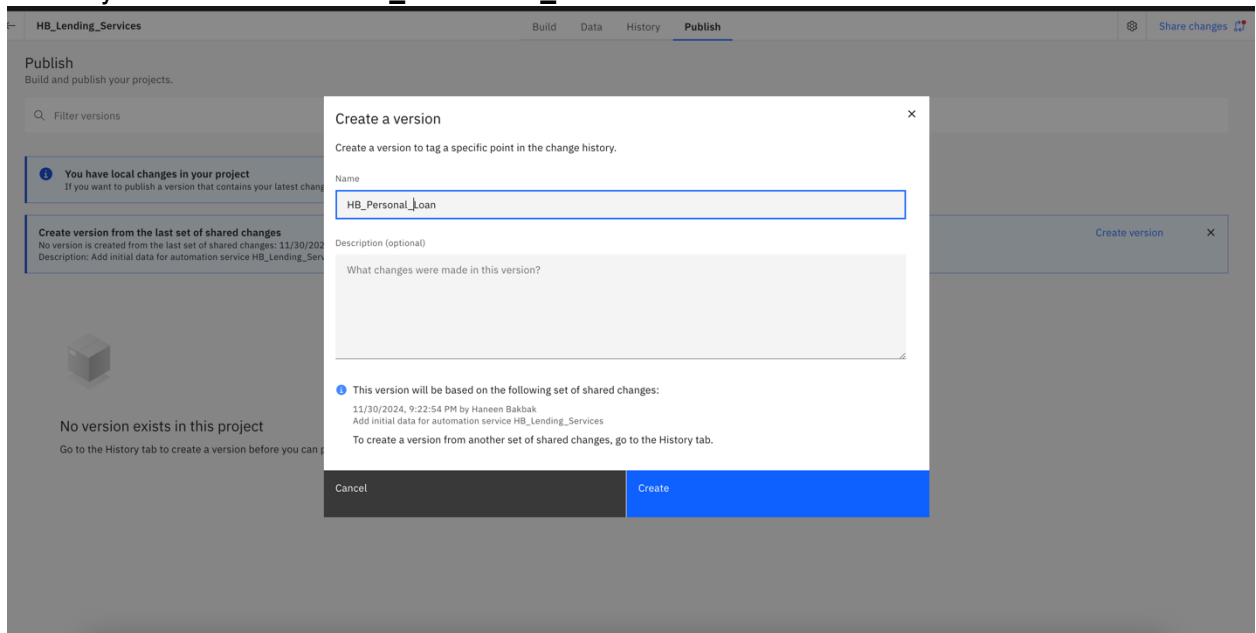
7. Click on the **Publish** tab.



8. Create a new version of your decision model by selecting **Create version**.



9. Name your version ***Initials_Personal_Loan*** and click on **Create**



HB_Lending_Services

Build Data History **Publish**

Publish
Build and publish your projects.

Filter versions

You have local changes in your project
If you want to publish a version that contains your latest changes, go to the History tab.

Create version from the last set of shared changes
No version is created from the last set of shared changes: 11/30/2024
Description: Add initial data for automation service HB_Lending_Services

No version exists in this project
Go to the History tab to create a version before you can publish.

Create a version

Create a version to tag a specific point in the change history.

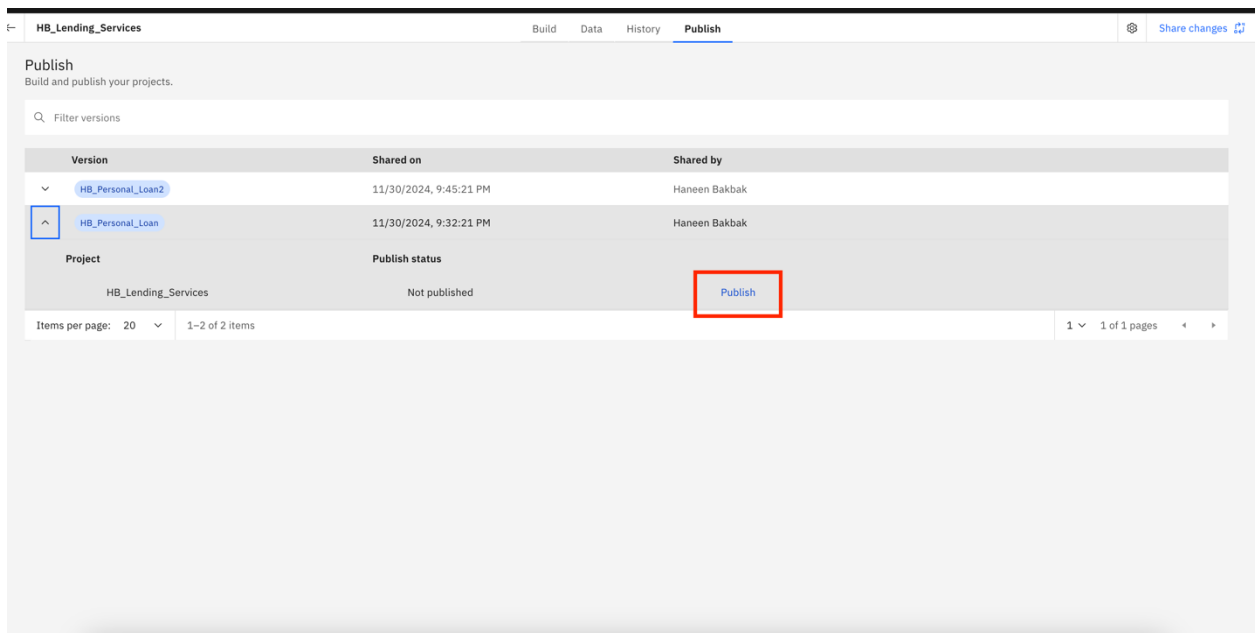
Name
HB_Personal_Loan

Description (optional)
What changes were made in this version?

This version will be based on the following set of shared changes:
11/30/2024, 9:22:54 PM by Haneen Bakbak
Add initial data for automation service HB_Lending_Services
To create a version from another set of shared changes, go to the History tab.

Cancel Create

10. Publish your new version by selecting the dropdown and clicking on **Publish**.



HB_Lending_Services

Build Data History **Publish**

Publish
Build and publish your projects.

Filter versions

Version	Shared on	Shared by
HB_Personal_Loan2	11/30/2024, 9:45:21 PM	Haneen Bakbak
HB_Personal_Loan	11/30/2024, 9:32:21 PM	Haneen Bakbak

Project
HB_Lending_Services

Publish status
Not published

Items per page: 20 1-2 of 2 items

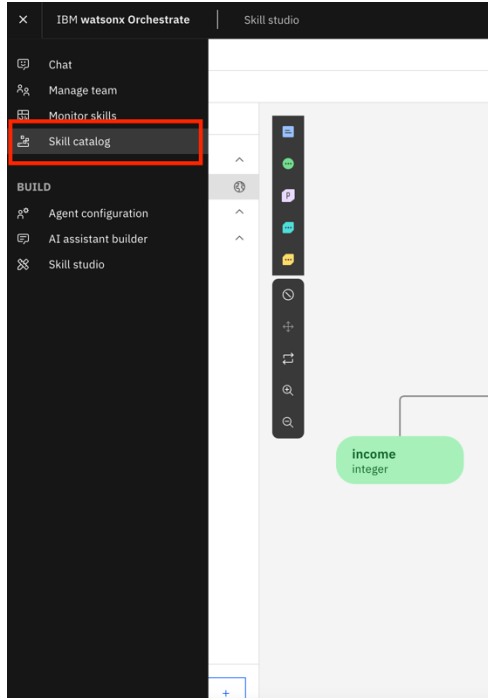
1 1 of 1 pages

Publish

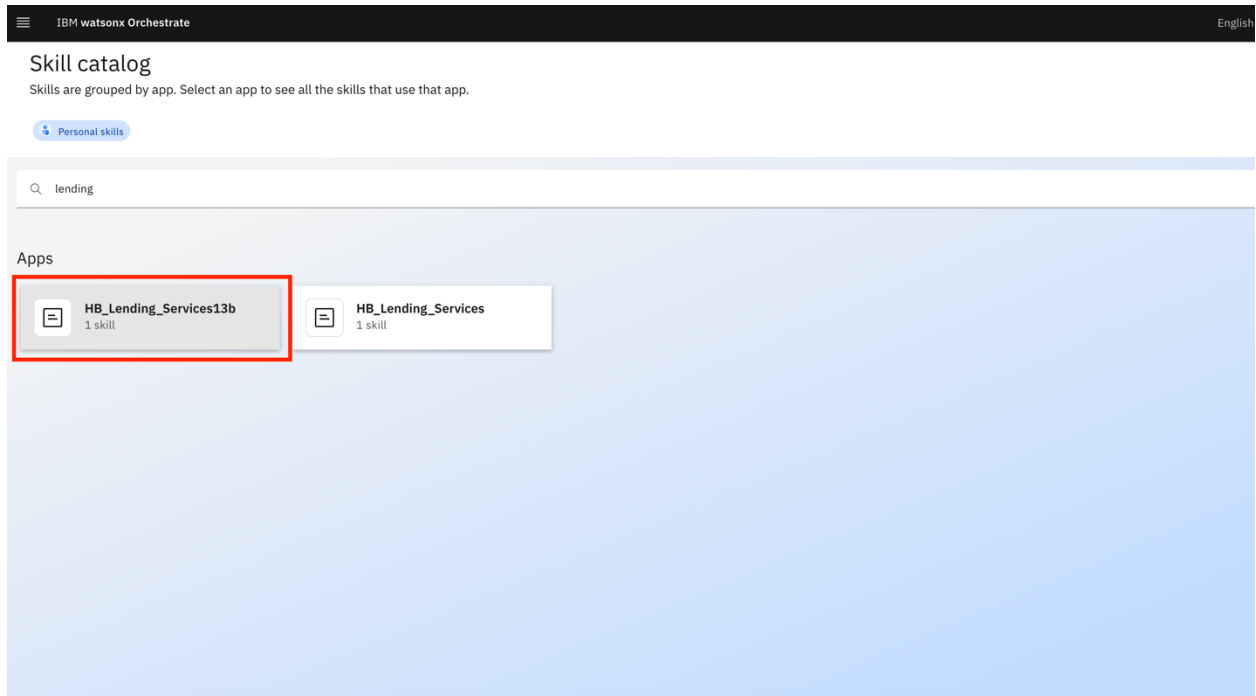
11. Your decision service is now published and operational

Step 1.5: Test Decision Flow in Chat

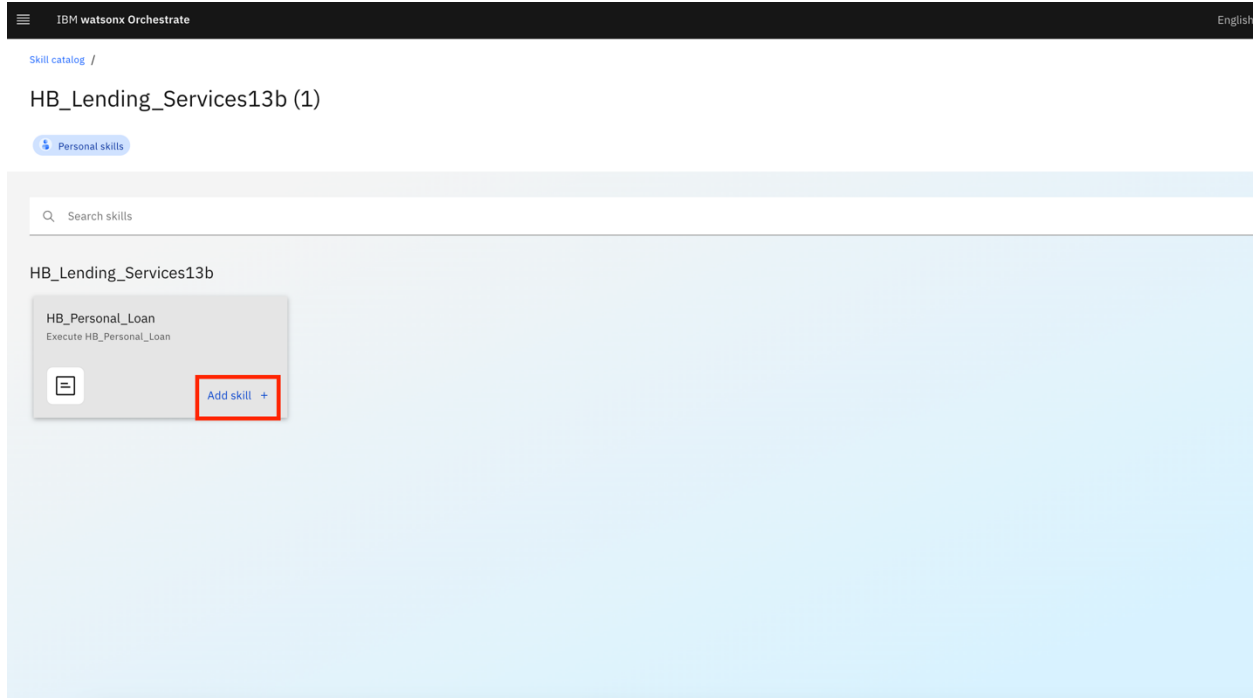
1. Navigate to **Skills catalog** from the hamburger menu



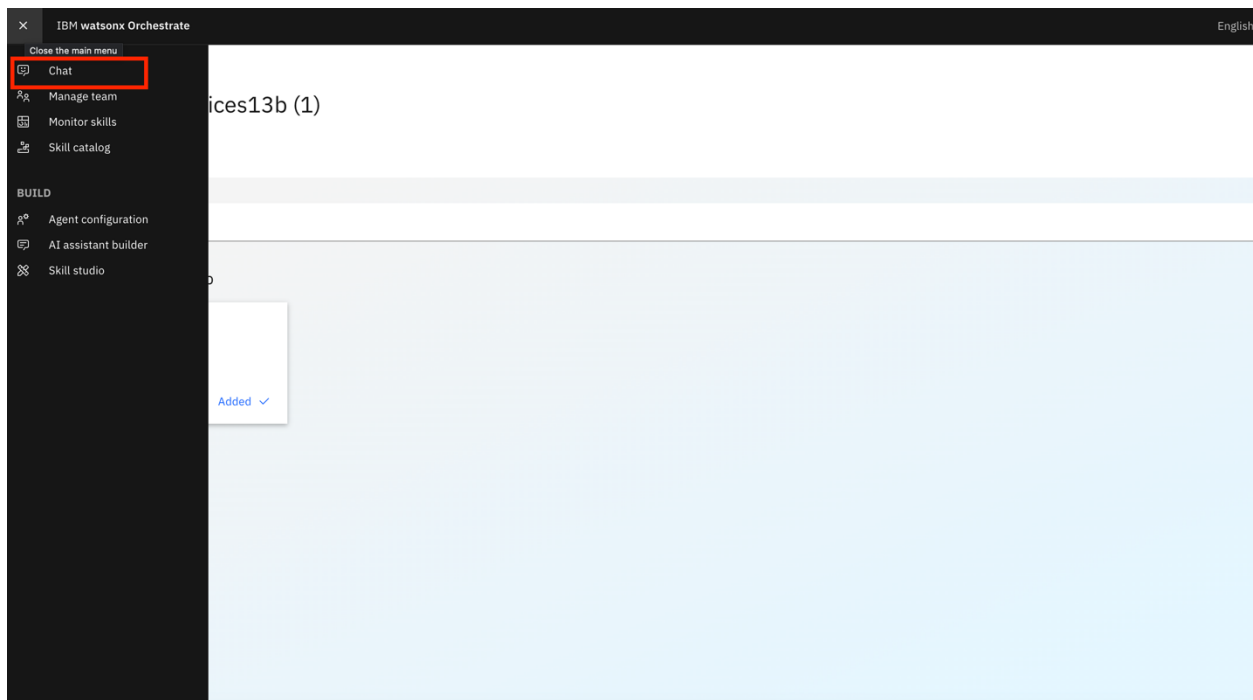
2. Search and select your decision skill **YourInitials_Lender_Services**



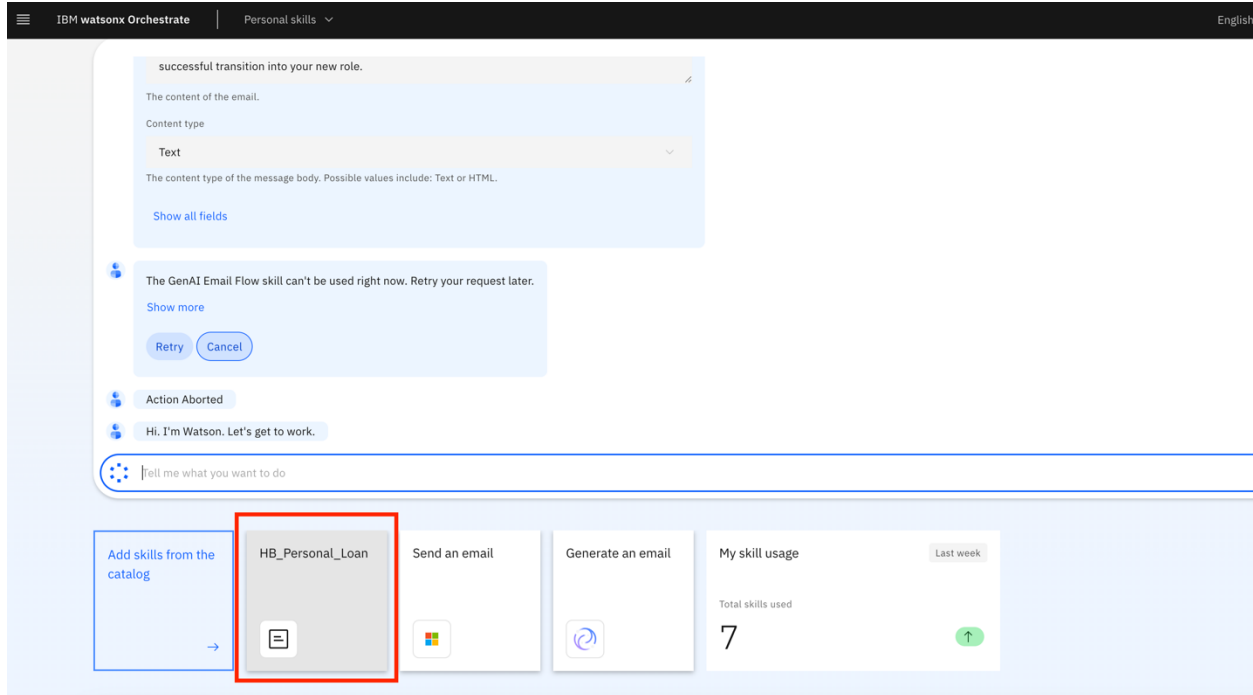
3. Add your personal loan skill **YourInitials Personal Loan** and **Add Skill +**



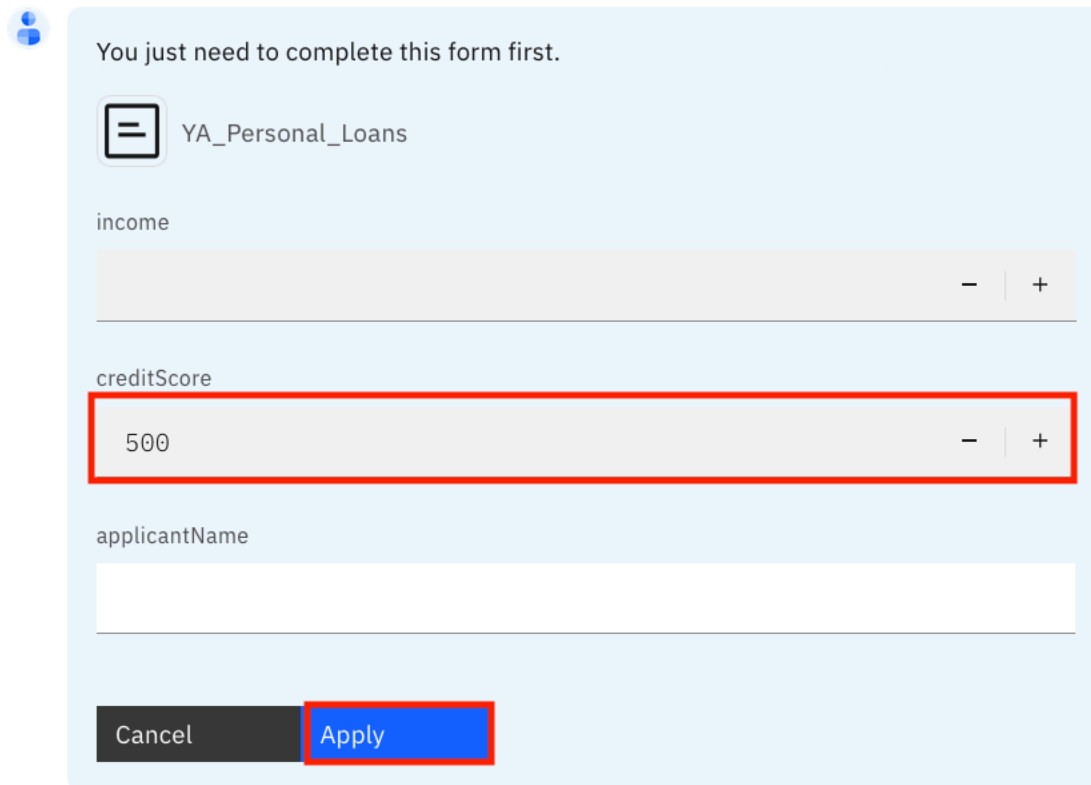
4. Navigate to **Chat** from the menu



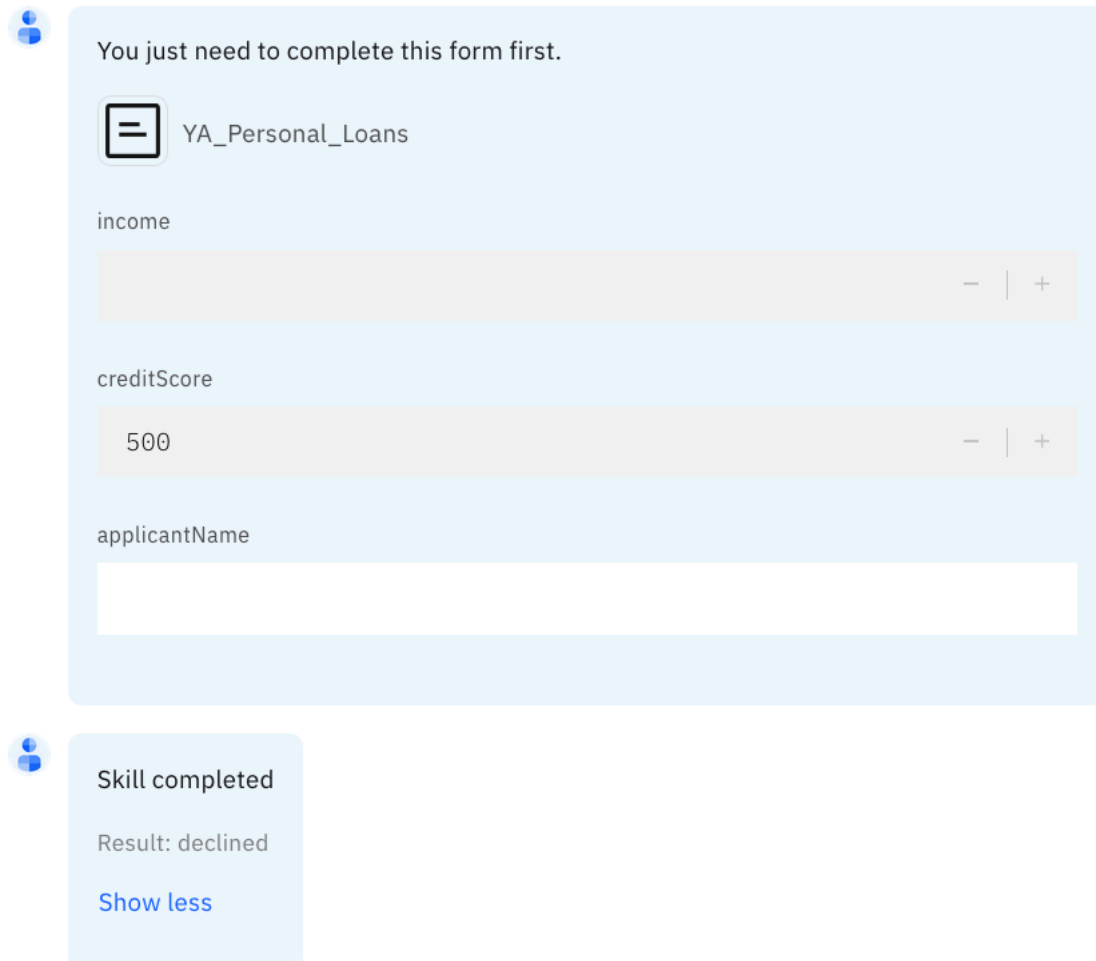
5. Select your skill **YourInitials Personal Loan**



6. Put in values for each field, make the credit score any value < 600. Then Apply



7. You should see the Skill as complete and the result as declined, which we expect as our credit score is < 600

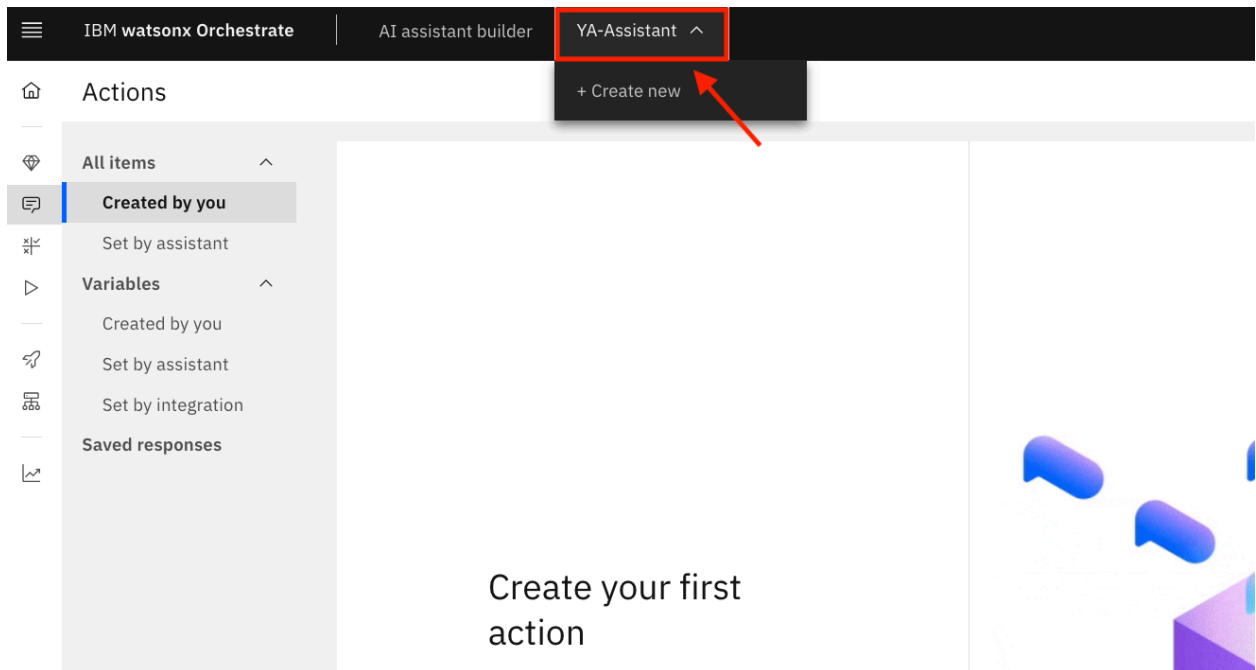


The image shows a user interface for an AI assistant. At the top, a message says "You just need to complete this form first." Below this is a form titled "YA_Personal_Loans". The form has three input fields: "income" (a range selector with minus and plus buttons), "creditScore" (a range selector with the value "500" and minus/plus buttons), and "applicantName" (a text input field). Below the form, a status message says "Skill completed" with a sub-message "Result: declined" and a link "Show less".

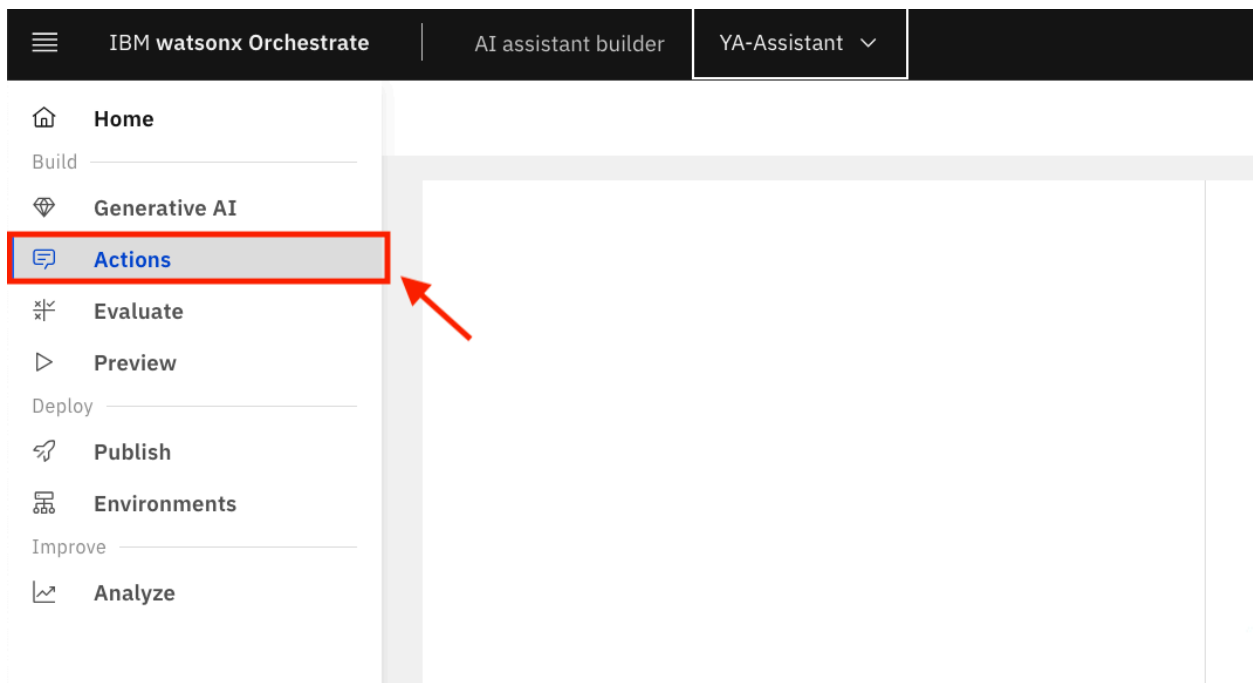
Step 1.6: Import the decision skill as an action in the assistant

Now that we've created a decision automation, we can also make it available in the assistant we created earlier.

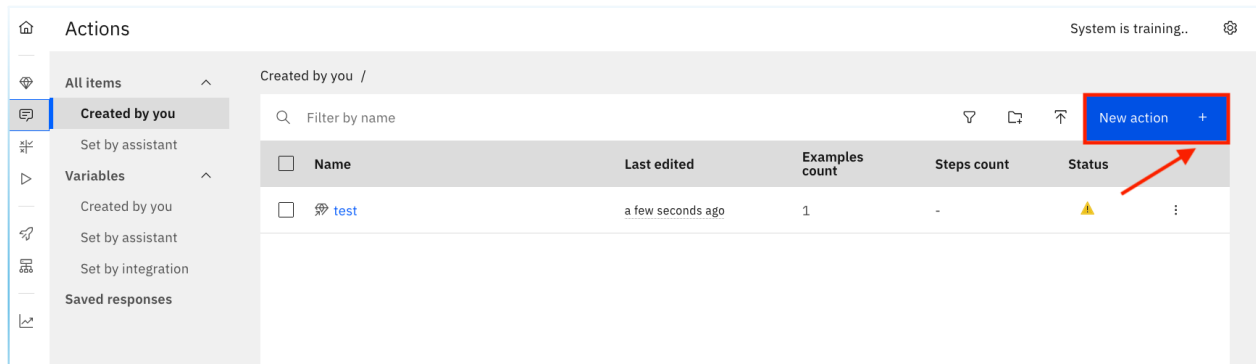
1. Open the assistant builder instance you created earlier by going into the AI assistant builder and selecting your instance (**with your own initials**):



2. Open the actions tab:



3. Create a new action:



Actions

System is training..

All items

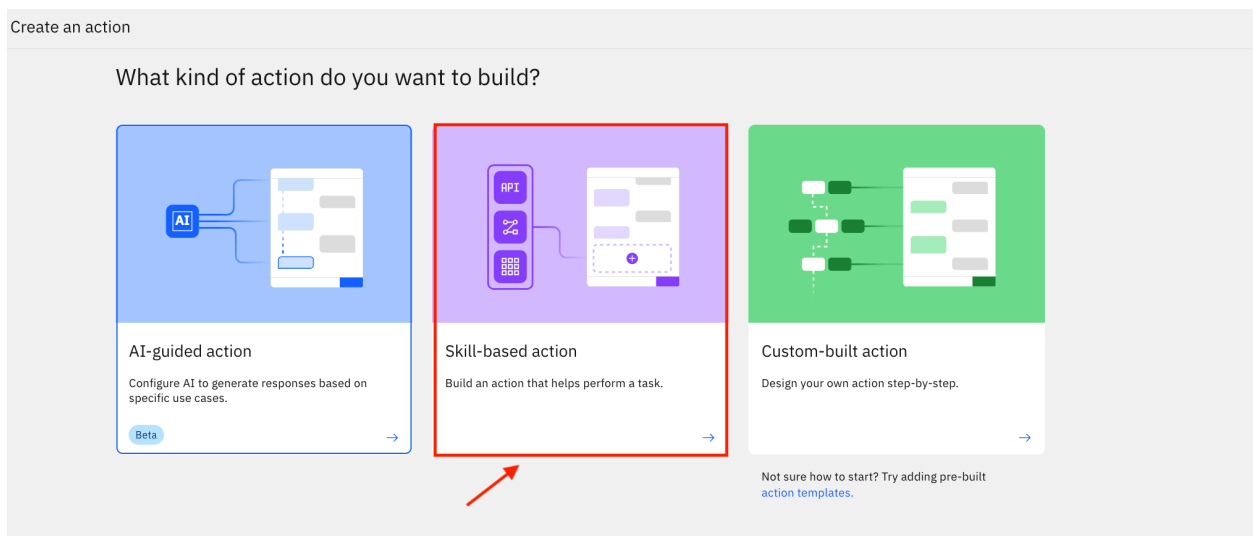
Created by you

Filter by name

Name	Last edited	Examples count	Steps count	Status
test	a few seconds ago	1	-	⚠️

New action +

4. And make it a skill-based action:



Create an action

What kind of action do you want to build?

AI-guided action

Configure AI to generate responses based on specific use cases.

Beta

Skill-based action

Build an action that helps perform a task.

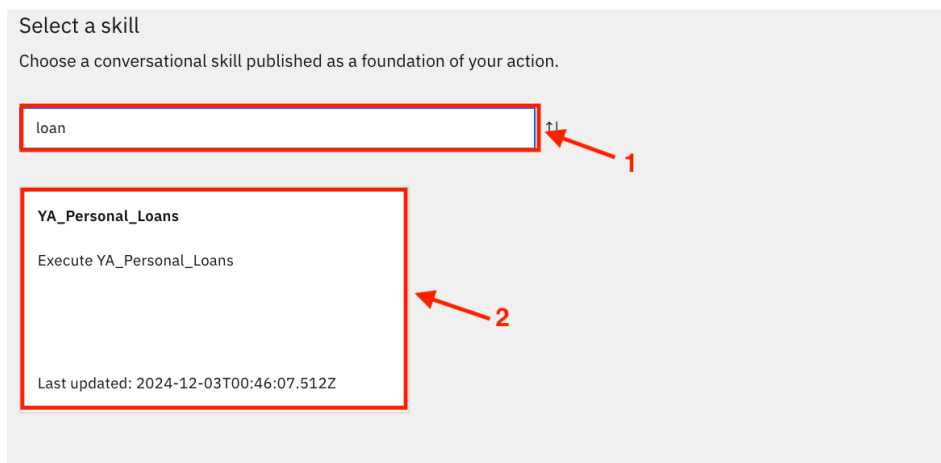
Custom-built action

Design your own action step-by-step.

Not sure how to start? Try adding pre-built [action templates](#).

5. Search for your decision skill and select it:

Build an action from a skill



Select a skill

Choose a conversational skill published as a foundation of your action.

loan

YA_Personal_Loans

Execute YA_Personal_Loans

Last updated: 2024-12-03T00:46:07.512Z



6. Click **Next**:

Build an action from a skill

Cancel Next

Select a skill
Choose a conversational skill published as a foundation of your action.

loan ↑↓

YA_Personal_Loans ✓

Execute YA_Personal_Loans

Last updated: 2024-12-03T00:46:07.512Z

7. Provide an utterance (a phrase a user might type to invoke the action), e.g. **Apply for a loan** and click on **Save**:

New action ×

What does your customer say to start this interaction?

apply for loan

Cancel Save

8. Click on **Save** and then on **Preview**:



YA_Personal_Loans

Configuration

Skill Name: YA_Personal_Loans

Skill ID: YA_Lending_Service__latest__YA_Personal_Loans

Add example phrases:

Enter phrases that a customer types or says to start the conversation about a specific topic. These phrases determine the task, problem, or question your customer has.

The more phrases you enter, the better your assistant can recognize what the customer wants.

Enter phrases your customer might use to start this action Total: 1

Enter a phrase

apply for loan

Your privacy choices

<https://dl.watson-orchestrate.ibm.com/home>

1

2

Preview

9. Once the changes have been added, type the suggested utterance in the assistant preview window and hit enter. You will now be asked to provide some of the information required as input for the decision automation:

Preview

5:01 PM

Greet customer [default]

Welcome, how can I assist you?

You 5:16 PM

apply for a loan

5:16 PM

Conversational skill called

YA_Personal_Loans recognized

Enter a value for income

Type something...



10. Provide answers as follows:

Income = 100,000

Credit score = 500

Your name


The conversation should look similar to:


Preview  

Enter a value for income

You 5:19 PM

100000


 5:19 PM


 Conversational skill called _____

Enter a value for creditScore

You 5:19 PM

500

 5:19 PM

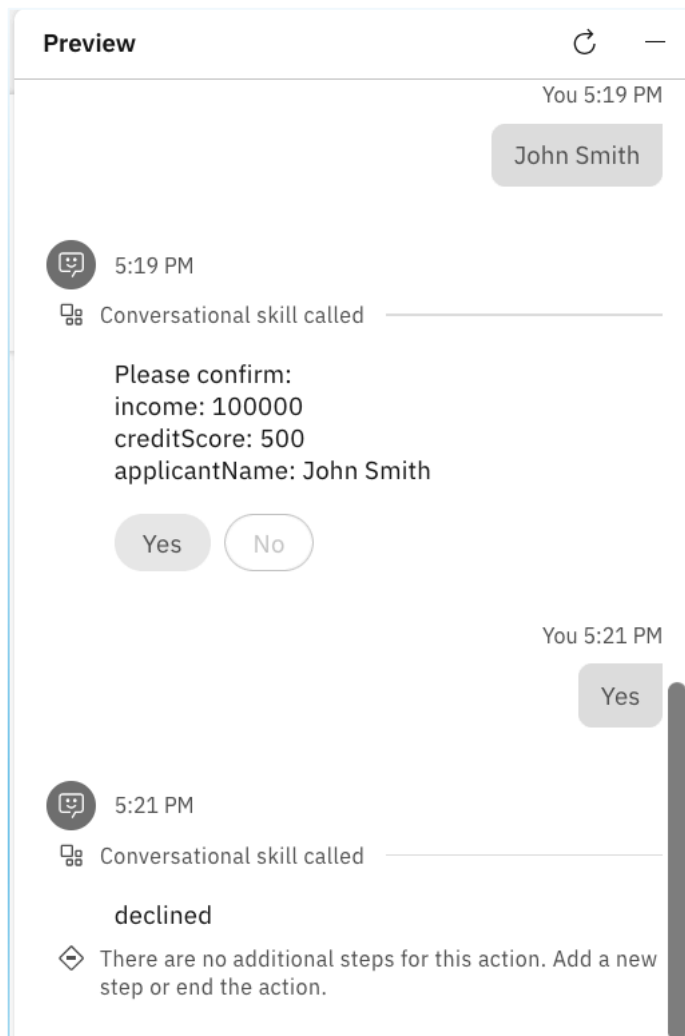
 Conversational skill called _____

Enter a value for applicantName

You 5:19 PM

John Smith

11. At this point you will be asked to confirm the entered data, and you will be notified of the loan approval decision:



Now you have implemented a skill-based action in your assistant. It uses the decision automation skill you built earlier for the loan approval process. Of course, this is just a very simple version and much more can be done in watsonx Orchestrate! You can also bring other available skills into your assistant. Additionally, it is very easy to further configure how the questions and answers are displayed in the chat.

This concludes the lab