102: Actions and basic Identity Access Management (IAM)

In this section

Learn about the fundamental building blocks of a virtual assistant and how to collaborate on an assistant with colleagues.

Prerequisites

Complete this section with the assistant you used in the 101 section **or** your own assistant. If you want to use your own assistant, you must upload the following Action skill which reflects the skill after completing section 101.

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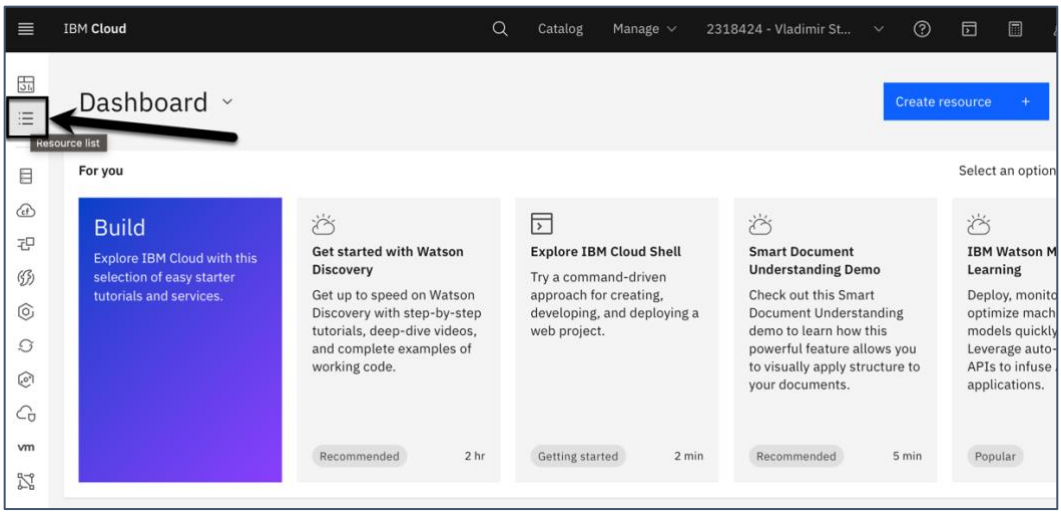
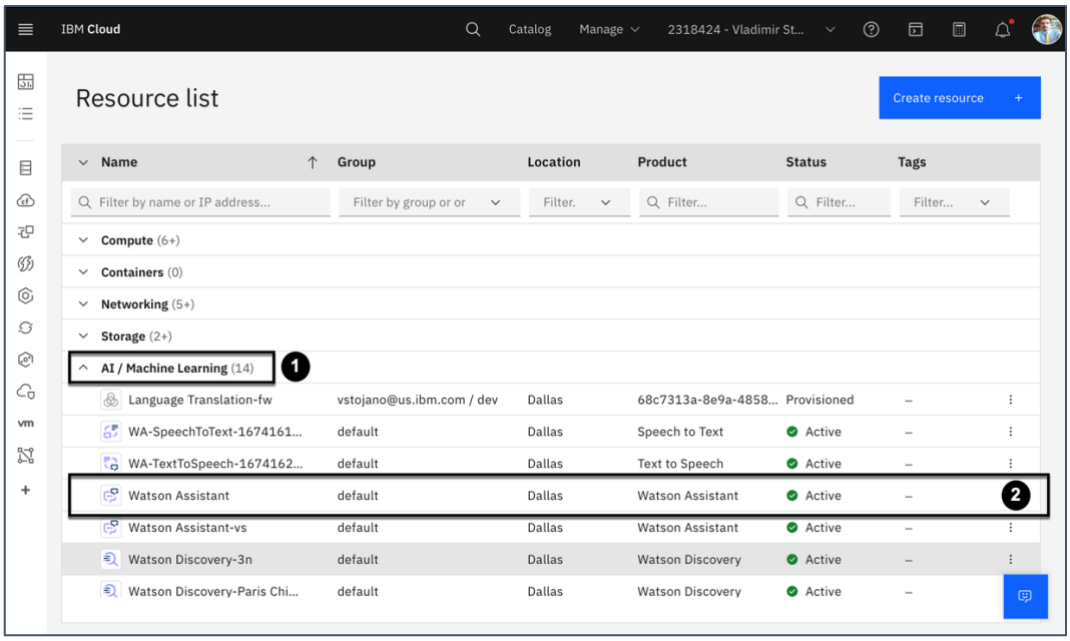
Collaborating on an assistant

Learning something new is often easier with a friend. If you are working on this lab with others or as part of a workshop, follow the instructions below to share an instance of Watson Assistant with a colleague. Otherwise, you may skip to the next section, *Introduction to Actions.*

First, navigate to your instance of Watson Assistant. To get there from the IBM Cloud home screen, open the IBM Cloud resource list by clicking on the **Resource list** icon in the upper-left of the IBM Cloud page:

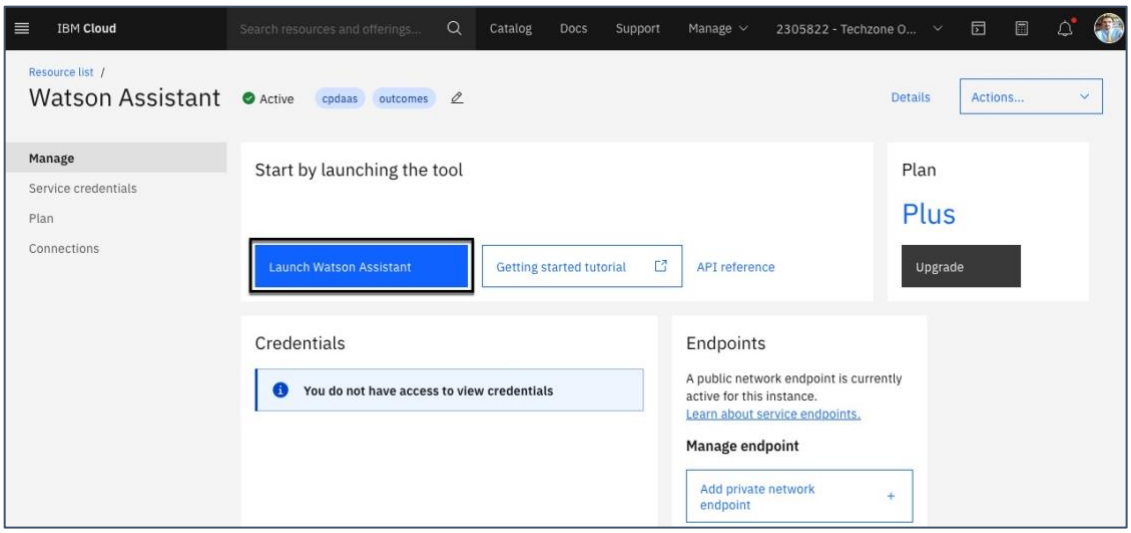


You should see a list of your provisioned services. Under **AI/Machine Learning (1)**, you will find your **Watson Assistant (2)** service, similarly to the image below:

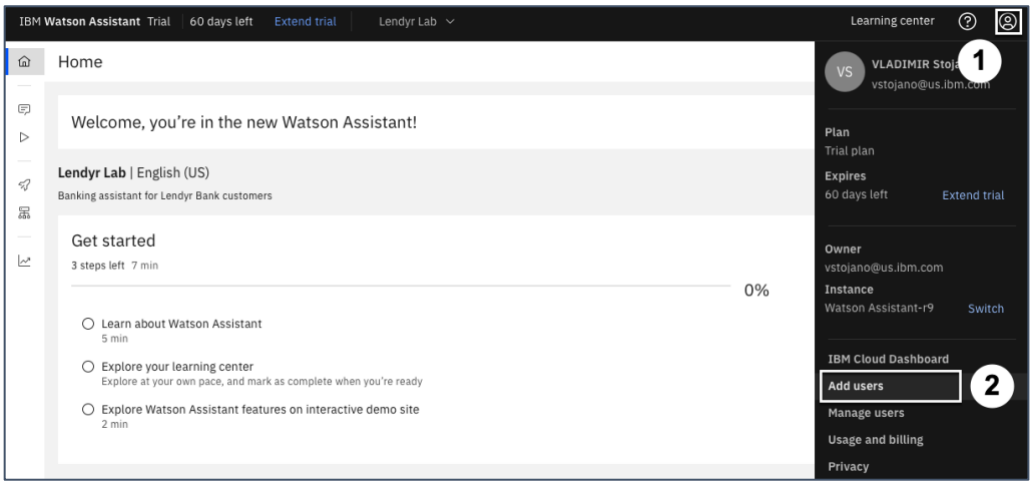


To launch Watson Assistant, click your **Watson Assistant (2)** service, as shown on the image above. (Your instance may have a suffix or a different name.)

Then, as shown on the image below, click the **Launch Watson Assistant** button to open the Watson Assistant home page:

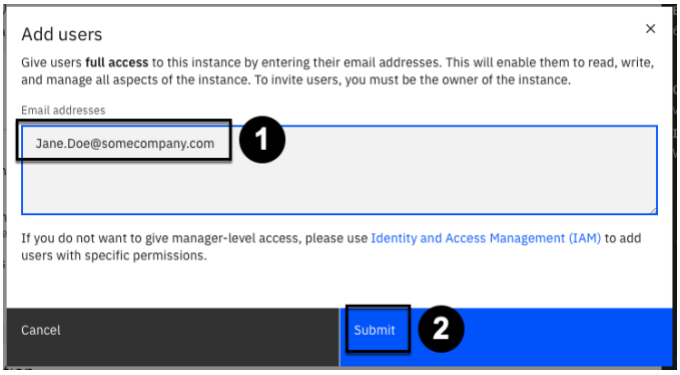


Now, you can invite your colleague to this instance. To do so, click the **Manage** button (**1)** in the top right corner of the Watson Assistant interface, and select **Add users (2)**.



Note: When you use **Add users** to invite new users, they receive *full* access to your instance. The 200 series of this lab will discuss identity and access management (IAM), which will allow you to control access at a more granular level.

In the popup, type in the email address of a colleague **(1)**, then click **Submit (2)**:



You will get a confirmation popup like in the image below:

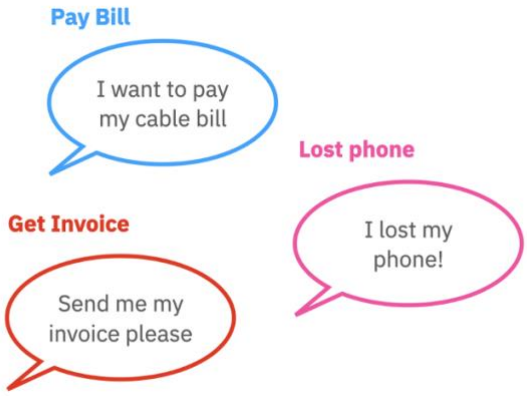
Have your colleague check their email, accept the invitation, and follow the simple sign-up process prompts as applicable (depending on whether they have an existing IBM Cloud account, or not).

Note: Users invited to an instance of Watson Assistant must actively **accept** the invitation to access the instance.

Introduction to Actions

What is an Action?

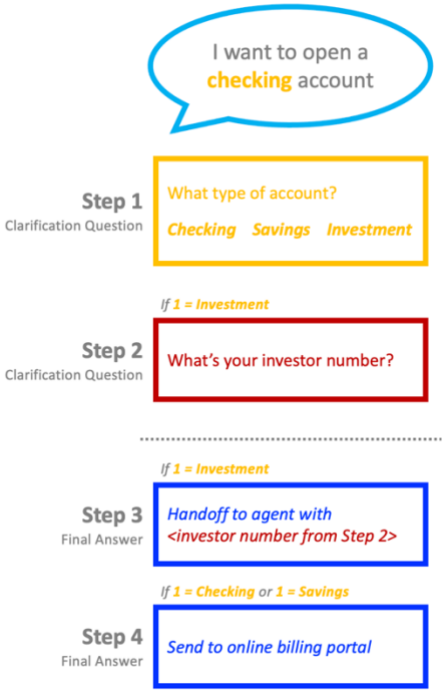
An Action is a *problem* or a *task* that an end user wants to resolve or accomplish. This may include anything from paying a bill, to getting an invoice, to opening an account, to saying hello, to asking about the weather—all are examples of Actions in your assistant. From the perspective of a builder, Actions are the fundamental building block of Watson Assistant.



Brainstorm some actions, or problems and tasks that end users want to resolve. Think about the industries or use cases you work in. What problems do end users in those industries want solved? What tasks do their end users want to accomplish?

Write your answer above. To see others' answers, submit your answer here.

The example below shows the breakdown of an Action, which you can call **Open a new account**:



What is a Step?

A Step is simply a back-and-forth interaction between the assistant and the end user. Steps represent the clarification questions, final answers, or human agent handoff points in the Action. The features that enable steps to flow and function, like the flow logic, response options, or the storage of a user's response, are contained within the structure of the Action.

In the example above, the assistant either asks clarifying questions before handing the conversation over to an agent (with the investor number as context) to open an investment account (Steps 2 and 3) or guides the user to the online account portal for checking and savings accounts (Step 4).

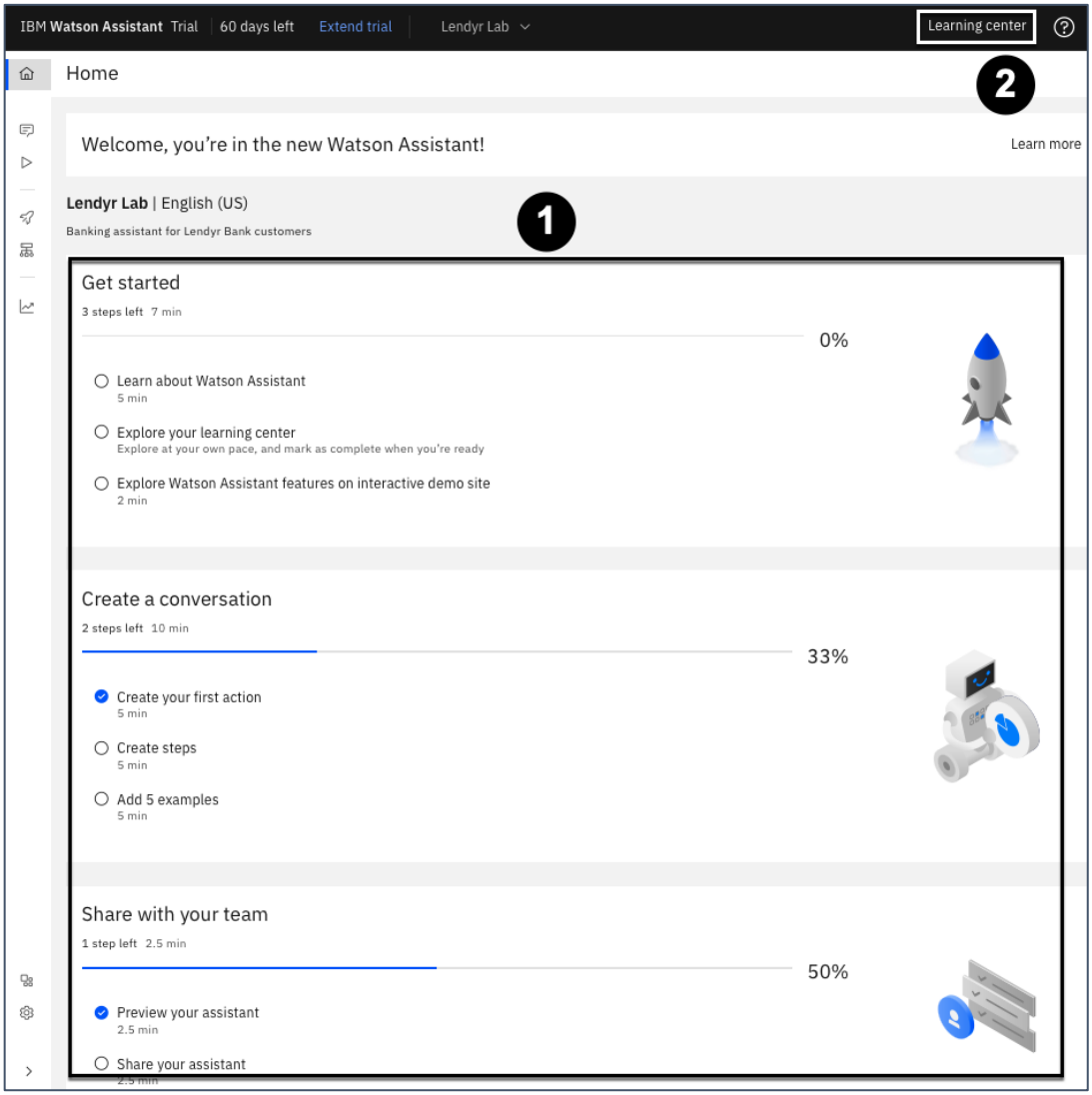
Build your first Action

Walk through the following steps to build and preview your first Action in Watson Assistant.

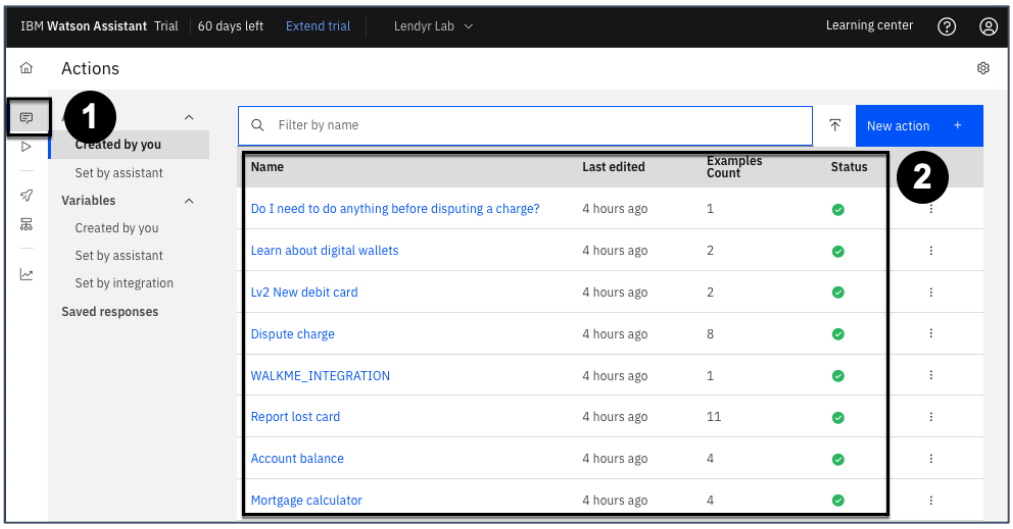
First, let’s take a moment to explore the Home page of your assistant.

1. Each section is organized with progress bars so you can see what you’ve done and how far you have to go to build a complete assistant. Note that **Create your first action** is checked because you imported the Lendyr.com assistant Actions into the new assistant. If you hadn’t done so, this checkbox would not be checked.

2. In the top right of your screen, you’ll find the **Learning center**. Click to expand and open the menu items to find tours, shortcuts to useful content, and more. All of these are aimed at getting you up and running as quickly as possible.



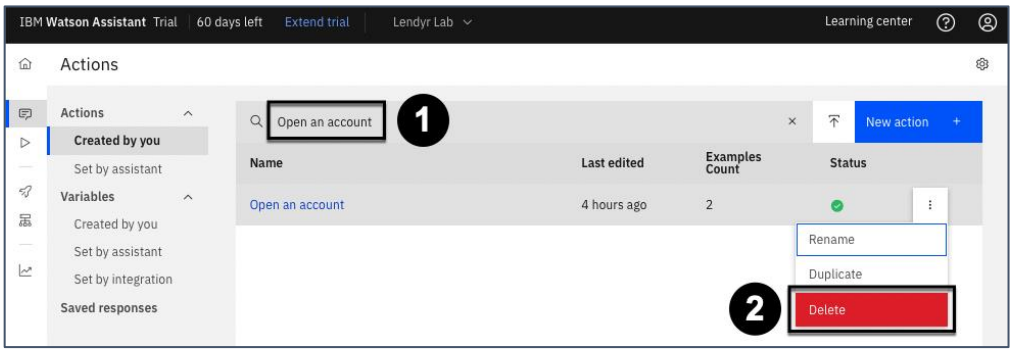
To get started with Actions, open the **Actions** page from the left menu **(1)**. Note that your assistant is populated with the Lendyr Bank assistant's Actions **(2)** which you uploaded in the 101 section of the lab:



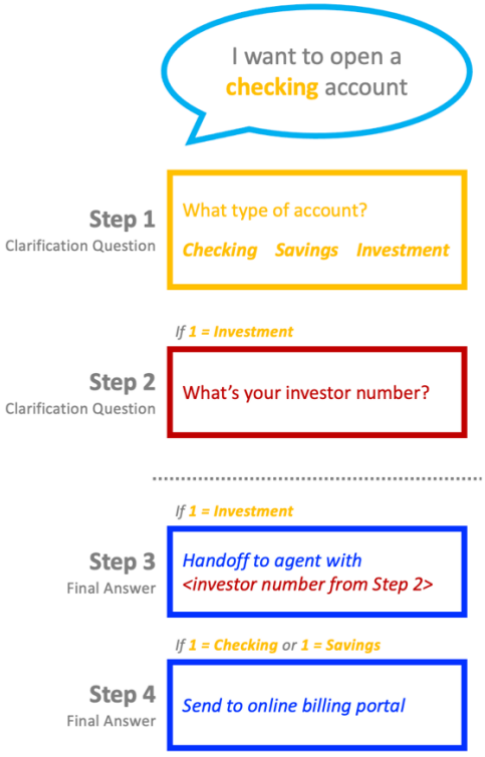
Use the search bar to find an Action named "Open an account" **(1)**, as shown below. This Action creates an account for an end user by helping to automate the process.

Now, imagine that you work on the Lendyr virtual assistant team, and you received a message that this automation will be discontinued. You need to replace this Action with a new one so that customers don't run into a "dead end" when they try to open a new account.

Delete the **Open an account** Action **(2)**:

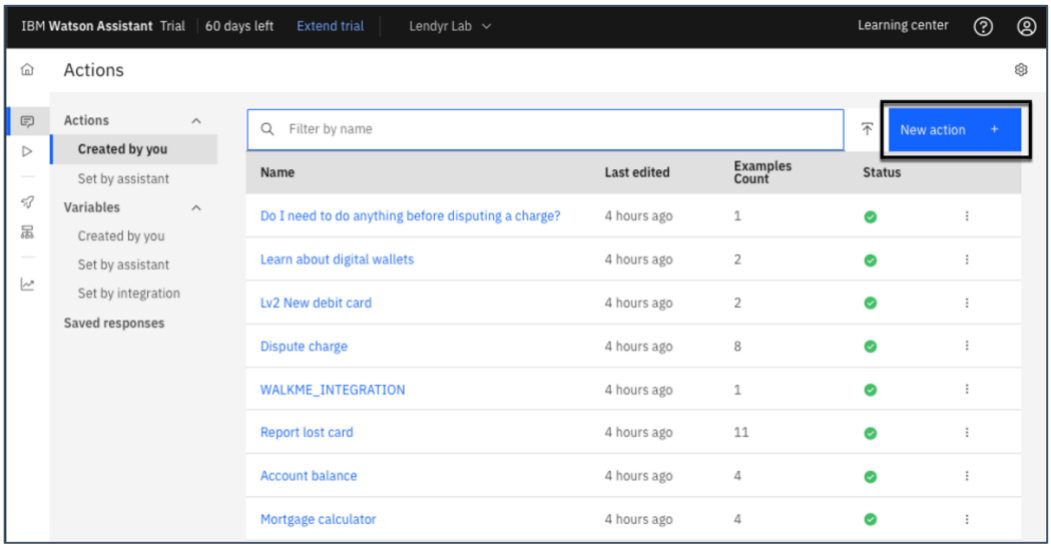


Next, you will build a new conversation flow using the above "I want to open a checking account" example. Let's review it once more:

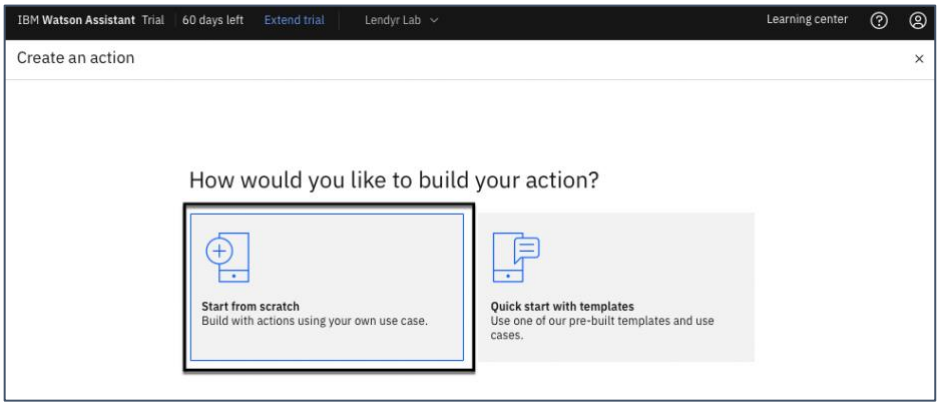


Remember that Actions represent topics your assistant is trained to handle, such as "open a new account." In our example, for a checking or savings account, the customer will be sent to the online account portal. For investment accounts, Lendyr's policy dictates that a human agent must open the account. In this case, the assistant needs to get the customer's investor number first to speed things up with the human agent.

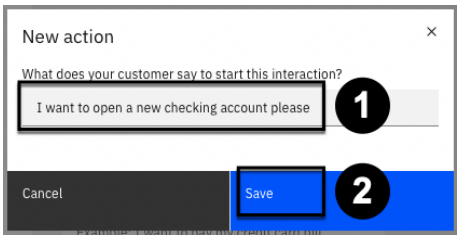
Let's build it! First, click **New Action +**:



You will be prompted to create your first Action from scratch or from a template. To follow along with this example, you'll want to choose the first option:

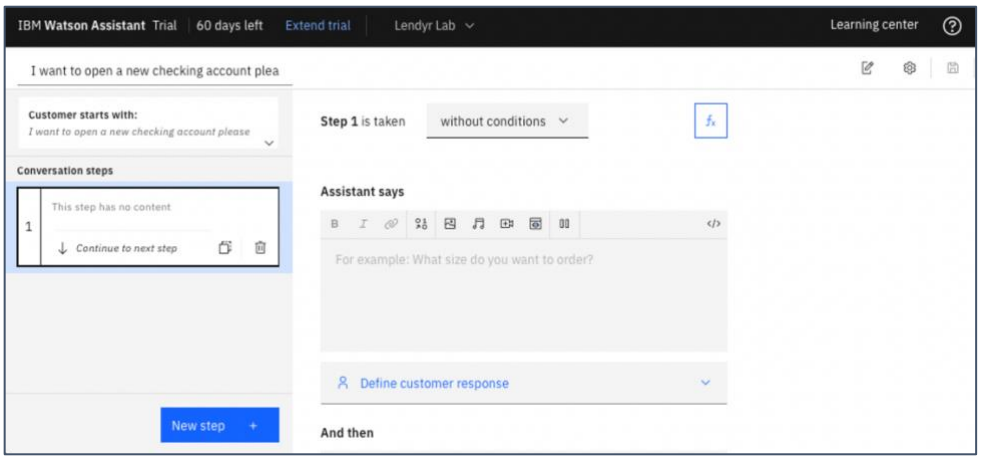


Now, you will need to "train" your assistant's topic-recognition AI by giving it some example sentences. In the popup, start with something like: "I want to open a new checking account please" and click **Save**:



Create your first step

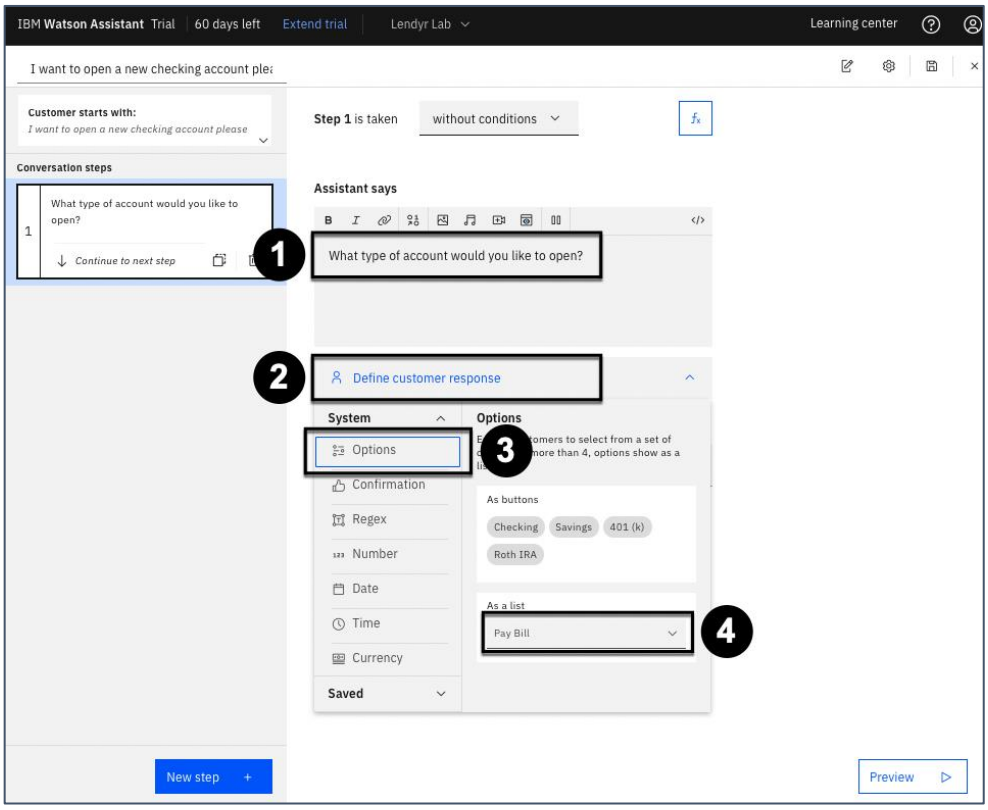
Your screen should now look like the image below. Note that when you create an Action, an empty **Step 1** is automatically created to speed up the build:



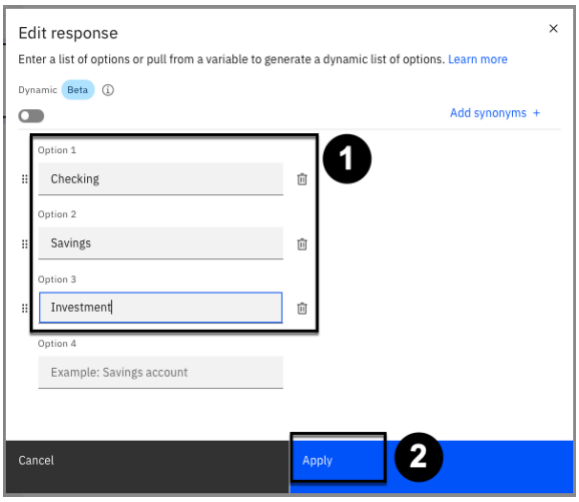
Now it's time to create the first step in the account opening interaction. We'll start with the clarification question around the customer's desired account type:

As shown below,

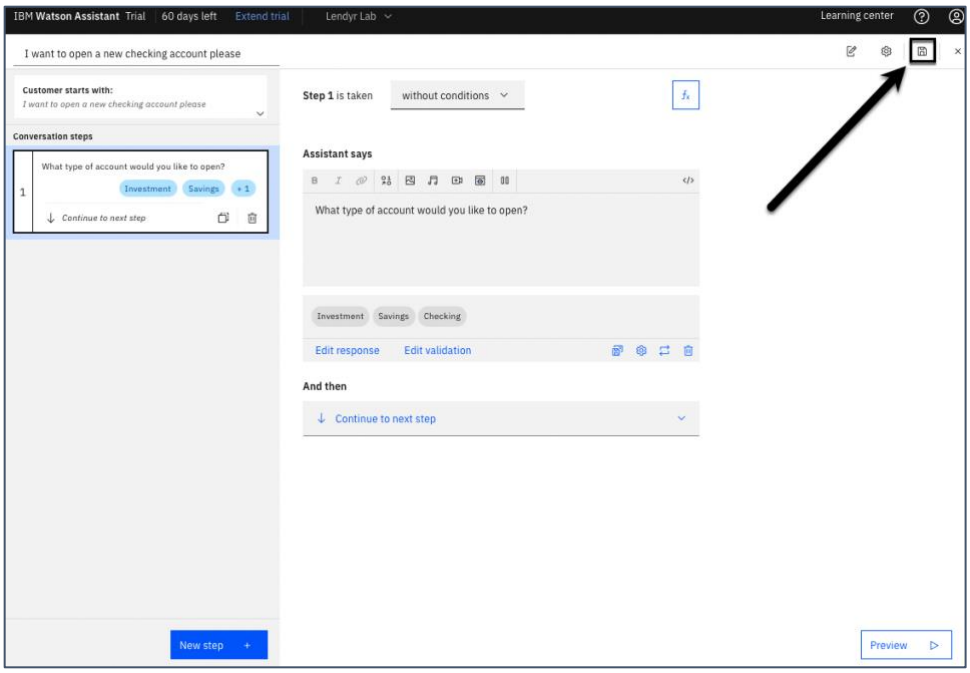
1. In **Step 1,** add the clarifying question in the **Assistant says (1)** text box, such as: "What type of account would you like to open?"
2. Then, click **Define customer response**. This tells the assistant what type of response is needed from the customer.
3. Hover over **Options**.
4. Finally, click **As a list** to enter the account options.



On the popup screen, enter the three options **(1)** for **Checking**, **Savings**, and **Investment**, and click **Apply (2)** to save your changes:



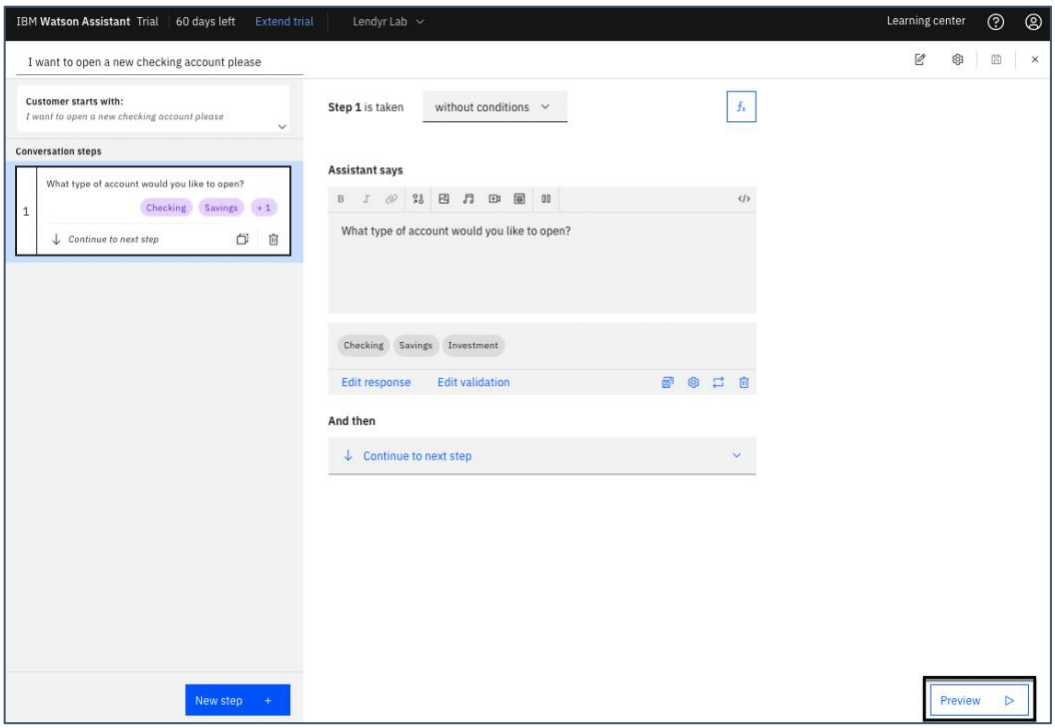
You are now done with your first step! Your screen should now look similar to the image below. Click **Save** in the upper-right to save your changes:



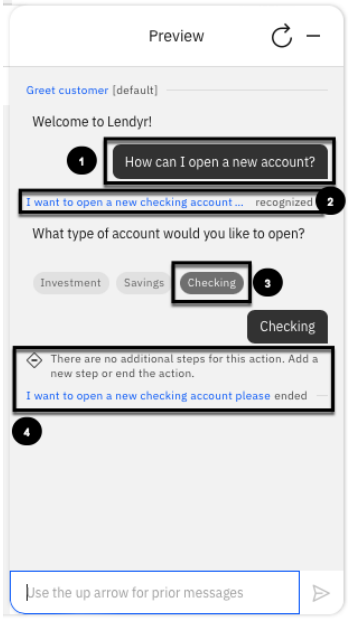
Aside from the Save button, Watson Assistant automatically saves changes when you click on a new step or open the preview. There's no "undo," however the auto-save can be switched off. For more details, check the product documentation here.

Preview your Action

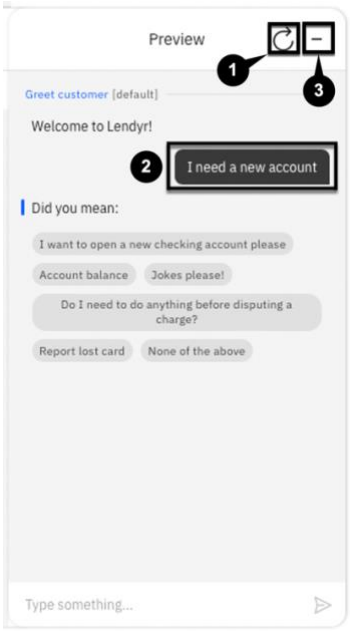
Note the **Preview** button on the lower-right, which is shown on virtually every screen as you build your Actions. This button gives you the ability to instantly preview how the assistant works, at any time. Go ahead and click **Preview**:



This opens the **Preview** panel shown below. Try out a few interactions to see if it recognizes what you ask. For example, ask "How can I open a new account?" **(1)** Note that you didn't train the assistant on this specific question (you trained it on "I want to open a new checking account please"). Yet, its AI recognizes our intent **(2)**. Select one of the account types **(3)**, and note that the Action is now complete **(4)**; there are no additional steps for the assistant to take:

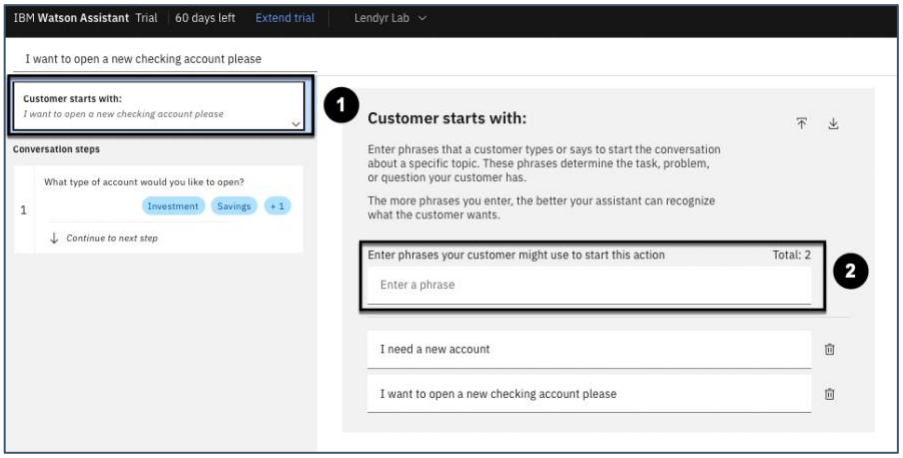


Click the button to refresh the assistant **(1)**, and try asking the question another way, such as "I need a new account". **(2)** Note that the assistant doesn't recognize this input:



Click the **minimize icon (3)**, as shown above, to minimize the chat Preview.

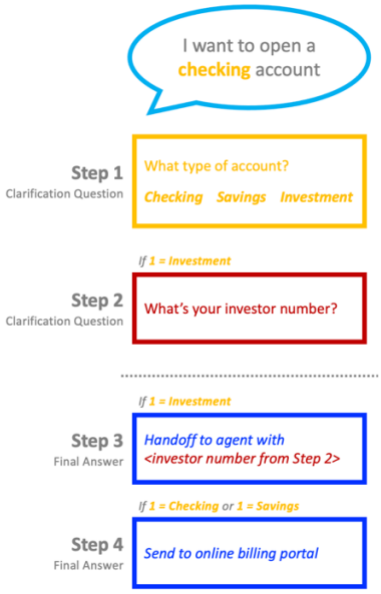
Since this is a query you'd like your assistant to recognize, add it as an example phrase by clicking **Customer starts with (1)**. Then, type it in, and press enter **(2)**. Your screen should look like this:



Go ahead and **Preview** your assistant again, ask it "I need a new account," and note that it now recognizes your phrase.

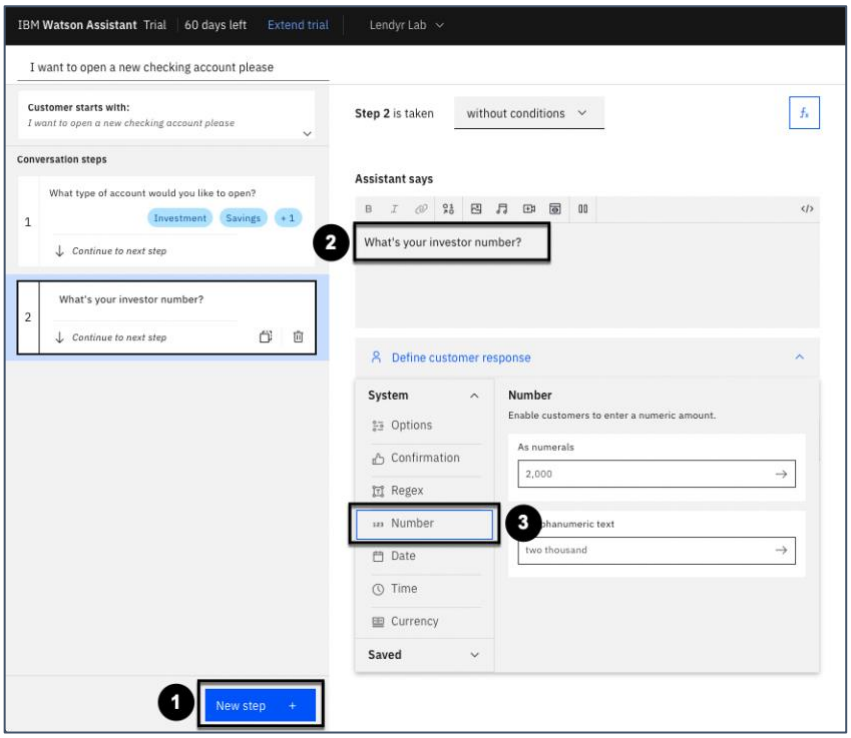
Create another clarification step

With your first step created and tested, let's finish this Action by creating another step. As a reminder, you still need to build steps 2, 3, and 4:

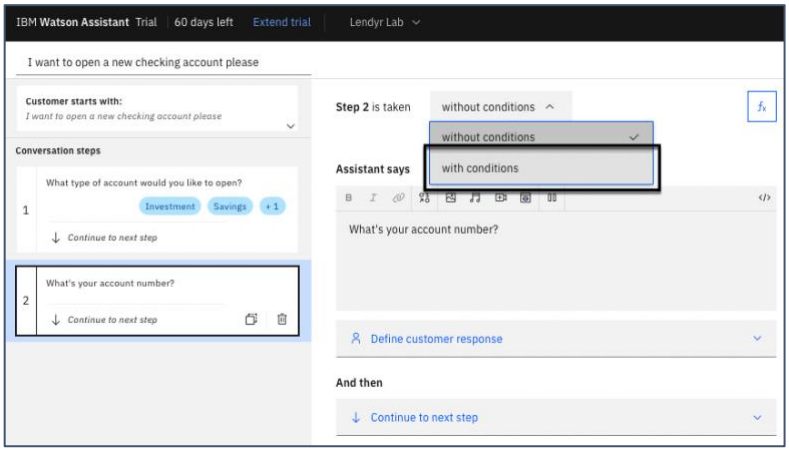


First, click on **Step 1** to exit the **Customer starts with screen**. Then, as shown below:

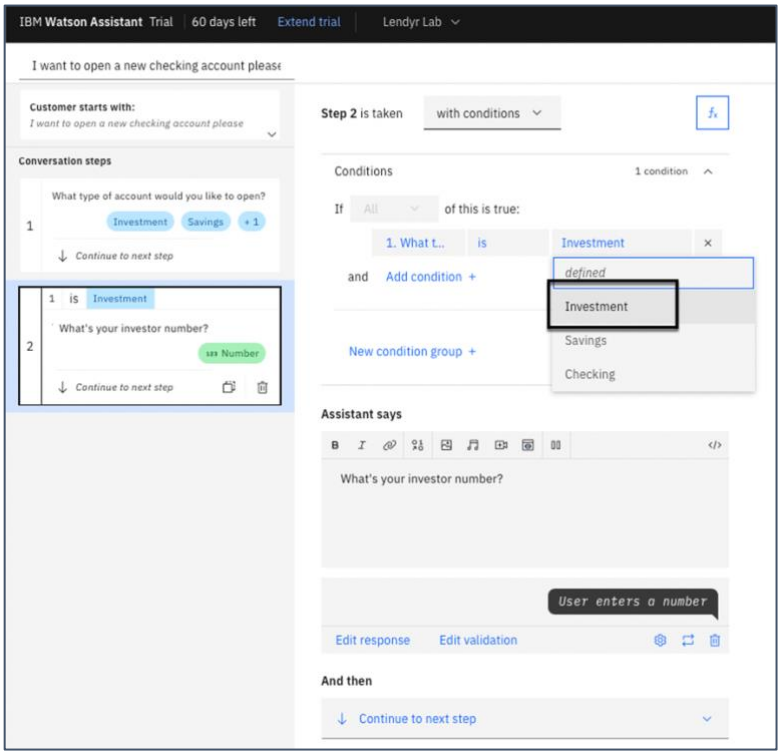
1. Add **Step 2** by clicking on **New step +.**
2. Enter "What's your investor number?" in the **Assistant says** box.
3. Click **Define customer response** and select **Number**.



Next, you need to add some flow logic. Remember, given the way this flow works, an investor number should only be gathered in the case of the customer wanting to open an investment account. To handle this scenario, you need to add a condition to your step. To do that, change the step to be taken **with conditions** instead of **without**:

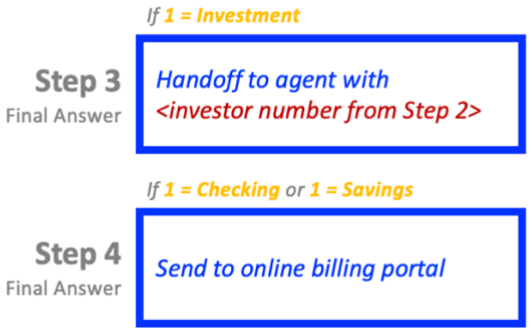


Conditions are requirements which must be met for a step to be triggered. Here, you will test that the answer to Step 1 is **Investment** and not **Checking** or **Savings**. To do this, make sure you have the condition set to **Investment**. Your finalized Step 2 should look like the image below:



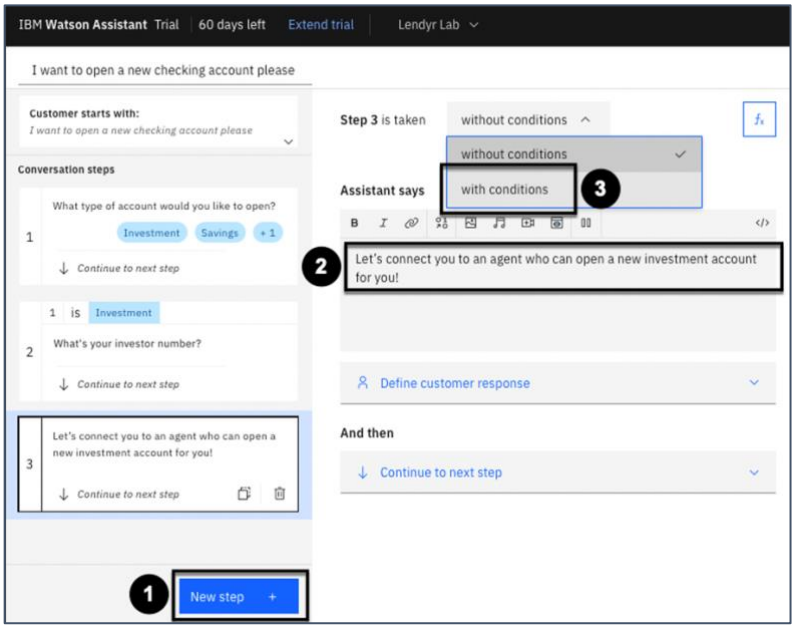
Create an agent handoff step

Now, you will add steps 3 and 4, each of which provide a final outcome for the user:

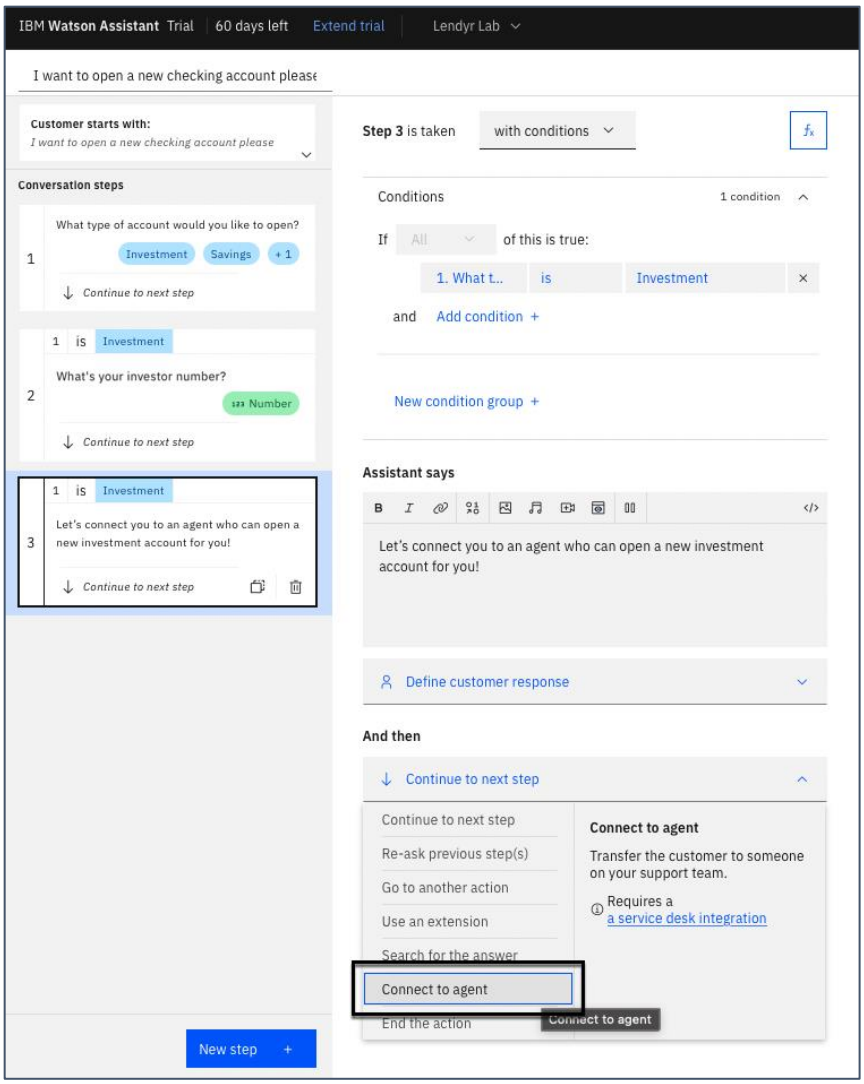


As shown below,

1. Add **Step 3** by clicking on **Next step +.**
2. Enter “Let’s connect you to an agent who can open a new investment account for you!” in the **Assistant says** box.
3. Select **with conditions** to make this step conditional, and enter the same condition as before, **Step 1 = Investment**. (By default, the condition will be populated with Step 2.)



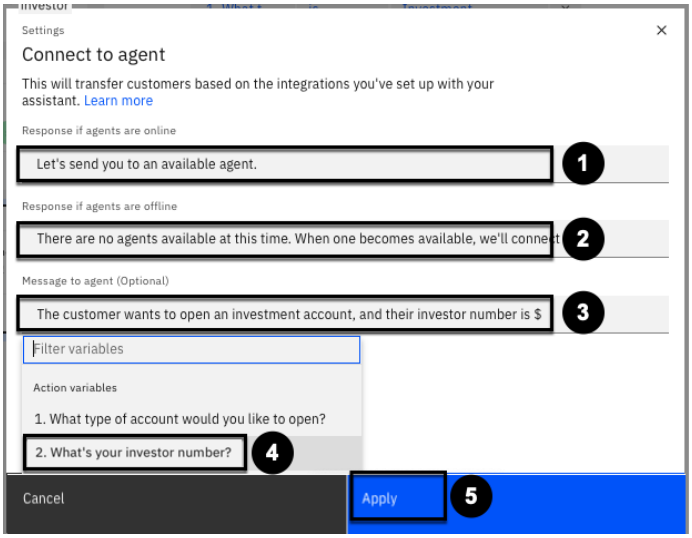
Finally, for this step, you don’t need to gather any information from the user, so you can leave the **Define customer response** section empty. You should, however, set up the assistant to route this conversation to a human agent. To add that, change the **And then** setting to connect to a human agent:



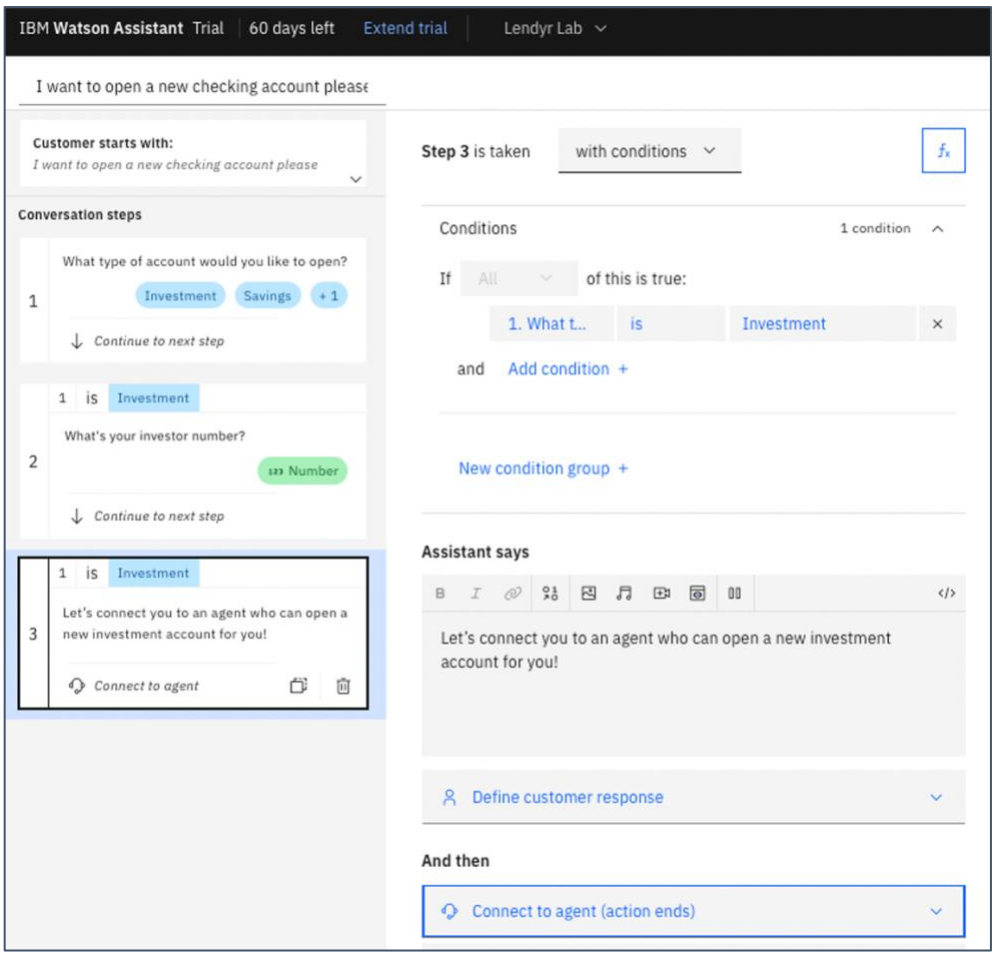
In the **Connect to agent** popup shown below, note that the first two inputs are pre-populated – **Response if agents are online (1)** and **Response if agents are offline (2)**. You may rephrase these two pre-populated responses if you wish. In the third input, **Message to agent (Optional) (3)**, insert the context that you gathered for the human agent to review: the customer's investor number, and the fact that they want to open an investment account. To do this, type "The customer wants to open an investment account, and their investor number is $"

Note that as you type the "$" sign, a quick select box appears; select **2. What's your investor number? (4)**

This will pass on the customer's response with their investor number to the agent. The popup should now look like the image below; click **Apply (5).**



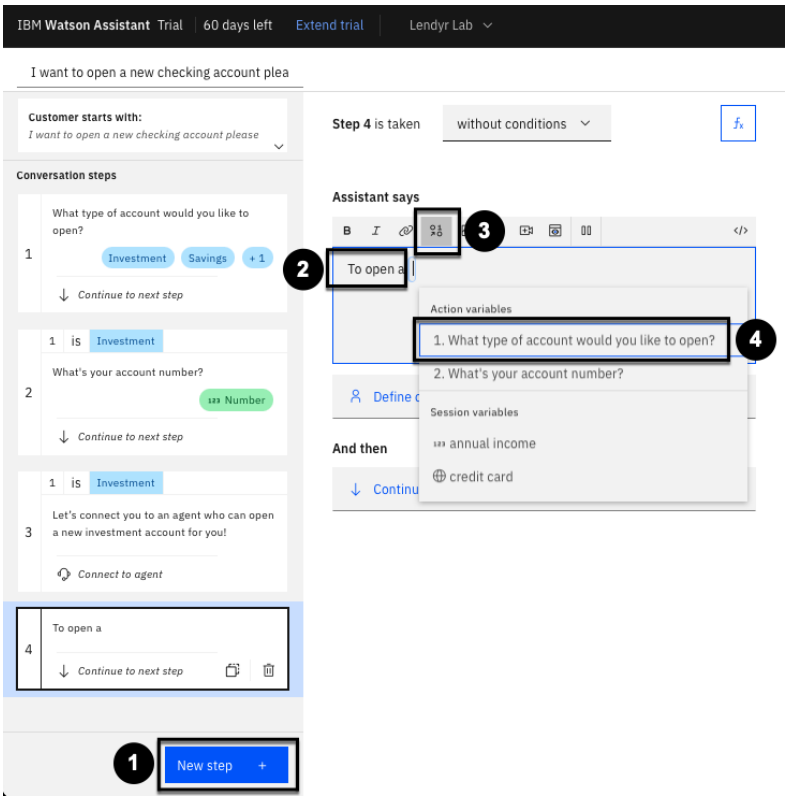
Step 3 should now be complete and look like this:



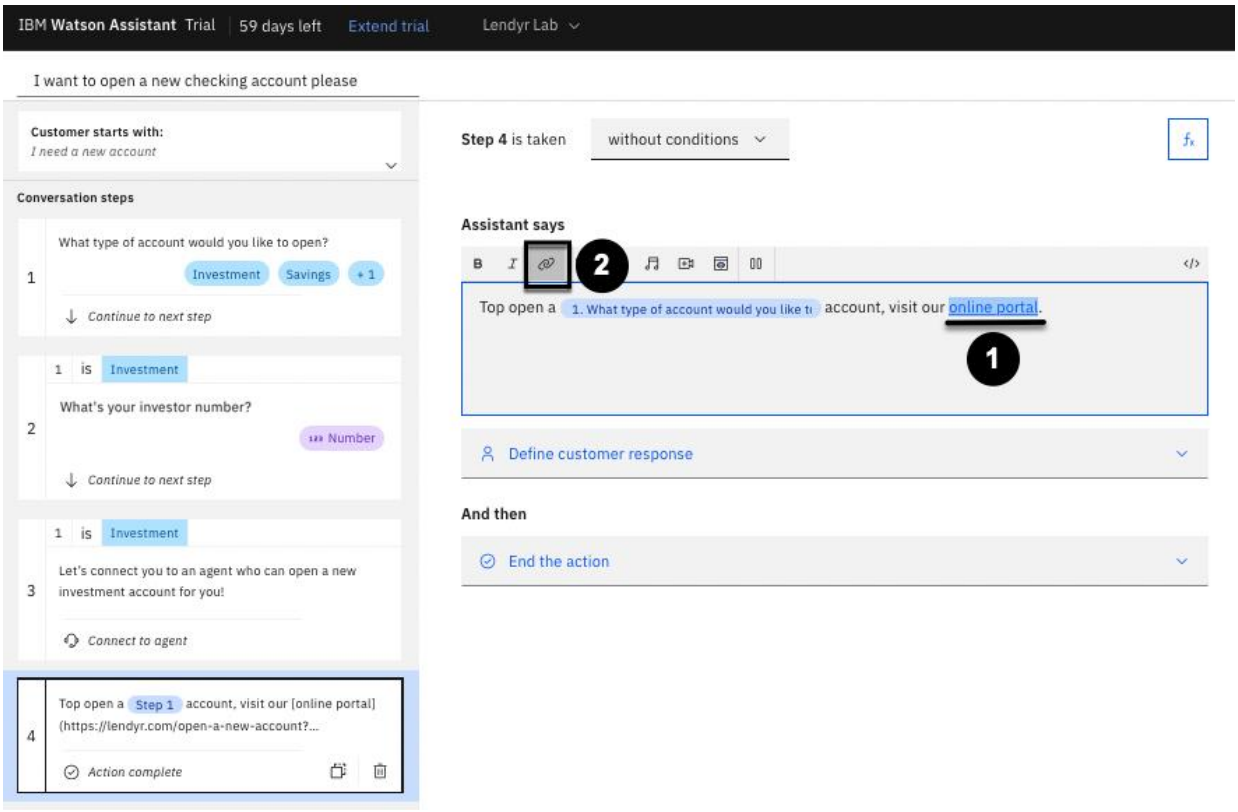
Create a final response step

Lastly, add Step 4. It should say something like: **To open a <type of account>, go to our online portal <link to portal>**. The screenshot below illustrates how to create this step:

1. Add **Step 4** by clicking on **Next step +.**
2. Enter "To open a".
3. Click the **Variable** button.
4. Insert the response from Step 1 as the Action variable. (**1. What type of account would you like to open?**)

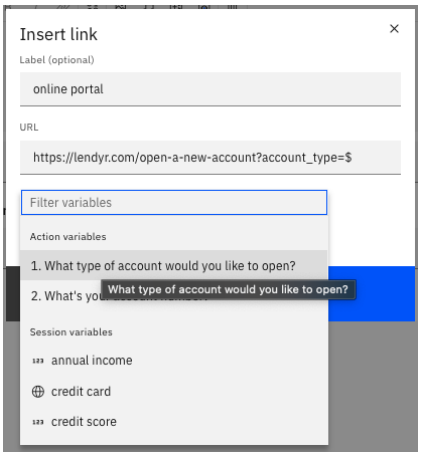


Complete the **Assistant says** phrase as shown below. Add a link to the "online portal" **(1)** text by selecting it, then clicking the **Link (2)** toolbar icon:



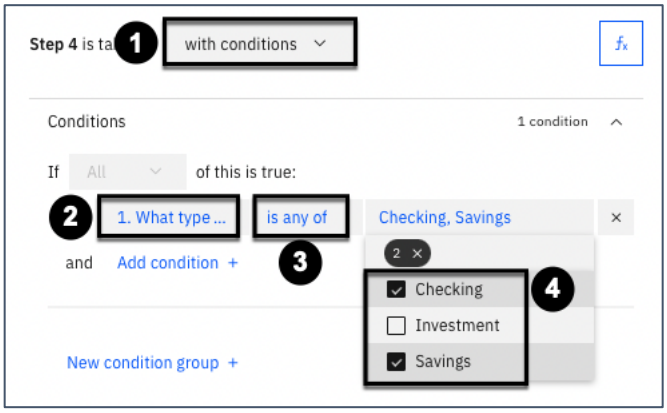
In the link popup, type in a URL and pass it a parameter, which would be a typical scenario. For example, type in "lendyr.com/open-a-new-account?account_type=$"

At this point, the "$" sign will once again invoke our Action variables, and you can select the type of account. *This is not a real working URL; it is an illustration of how a builder would pass a parameter through a link.* Click **Apply** when done:

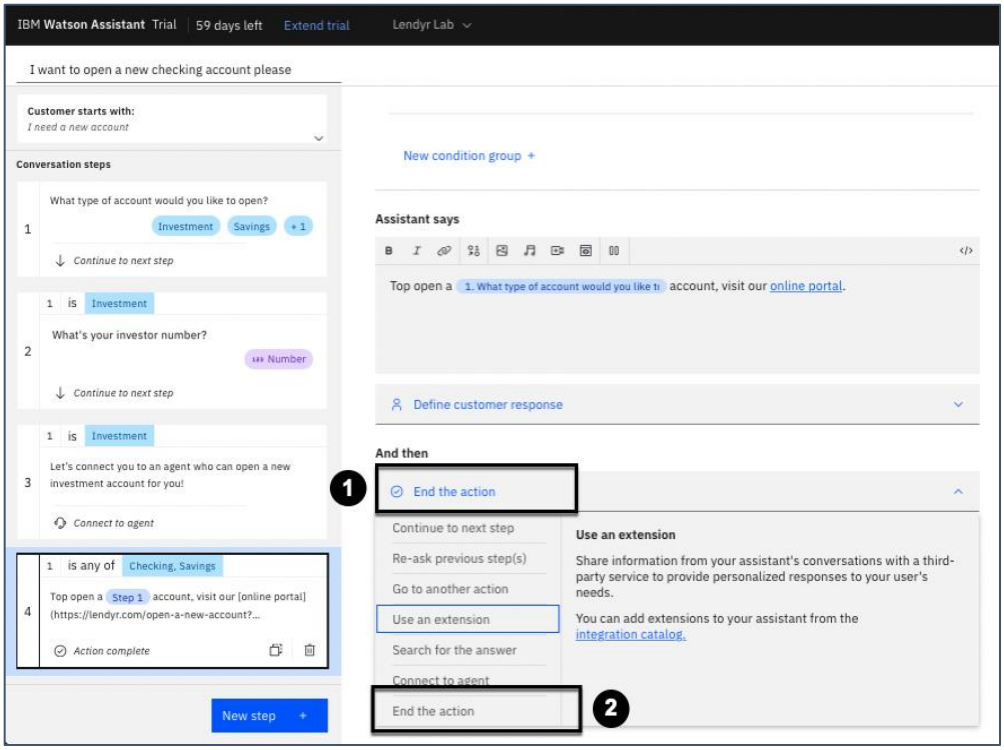


Next, make sure this step only fires for a checking or savings account. To do that, as shown in the image below,

1. Choose **with conditions**.
2. Select **1. What type …**
3. Change the condition from **is** to **is any** of.
4. This will enable a multi-select: check both the **Checking** and **Savings** boxes.

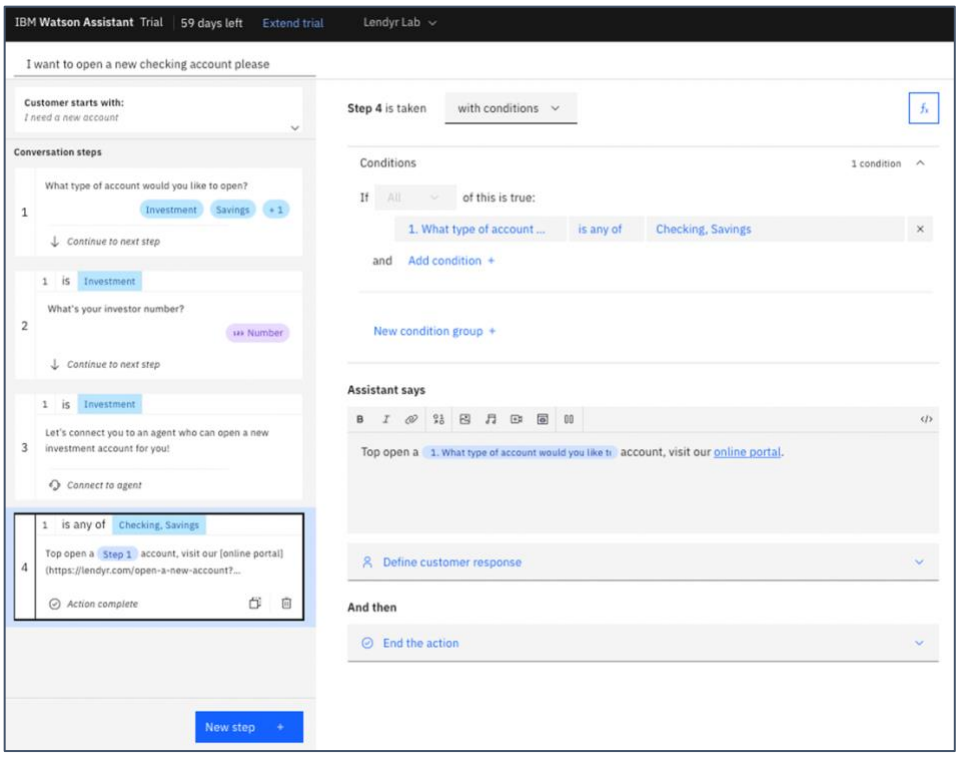


Finally, make sure the Action ends after this step is reached by changing the **And then (1)** setting to **End the action (2)**:



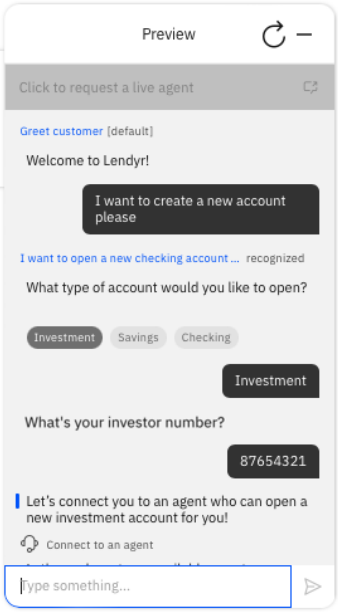
Test the whole Action

Boom! Your steps should now be complete and look like this.



Now for the fun part, let's try it out! Click **Preview** in the lower right corner, and interact with your assistant like in the image below (remember to **Refresh** before each new conversation):

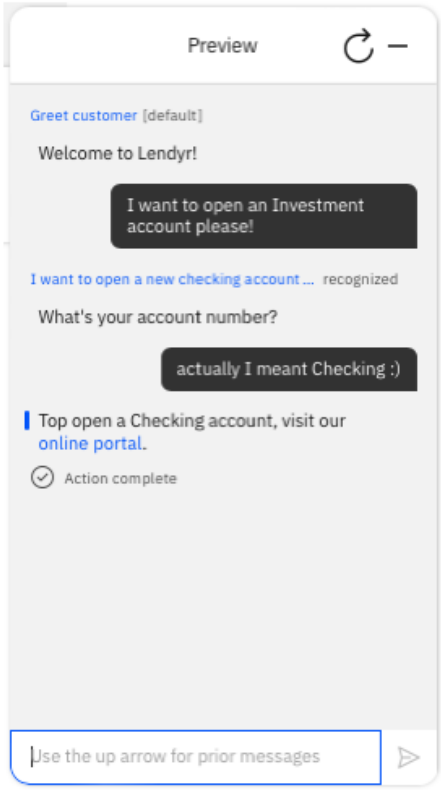
- Say "I want to create a new account please".
- Select "Investment".
- Enter a numeric value, such as "87654321".



Now, start another conversation:

- Say “I want to open an Investment account please!”.
- Instead of answering with an account number, say “actually I meant Checking :)”.

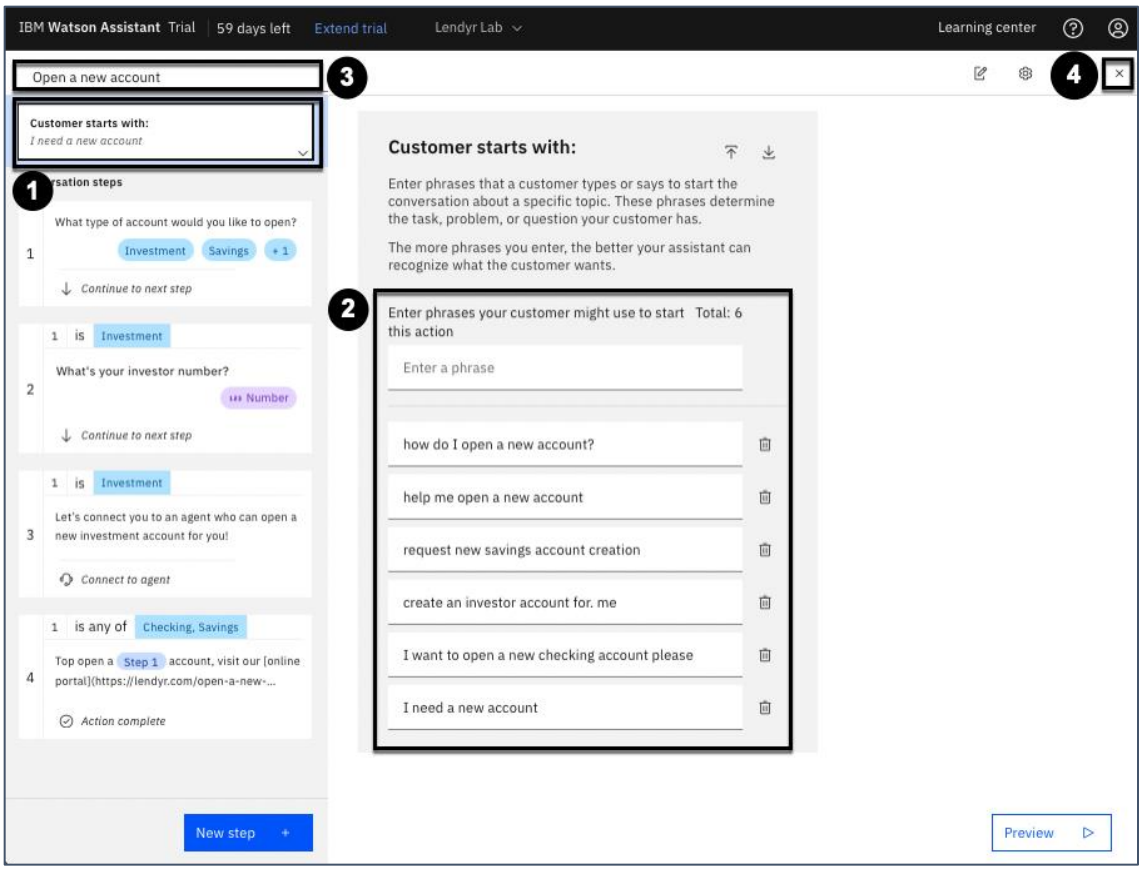
Note how Watson Assistant’s AI captures the intent to open an **Investment** account and does not ask the user for the type of account. Then, note how the AI understands and adjusts when the user says they made a mistake and meant **Checking**:



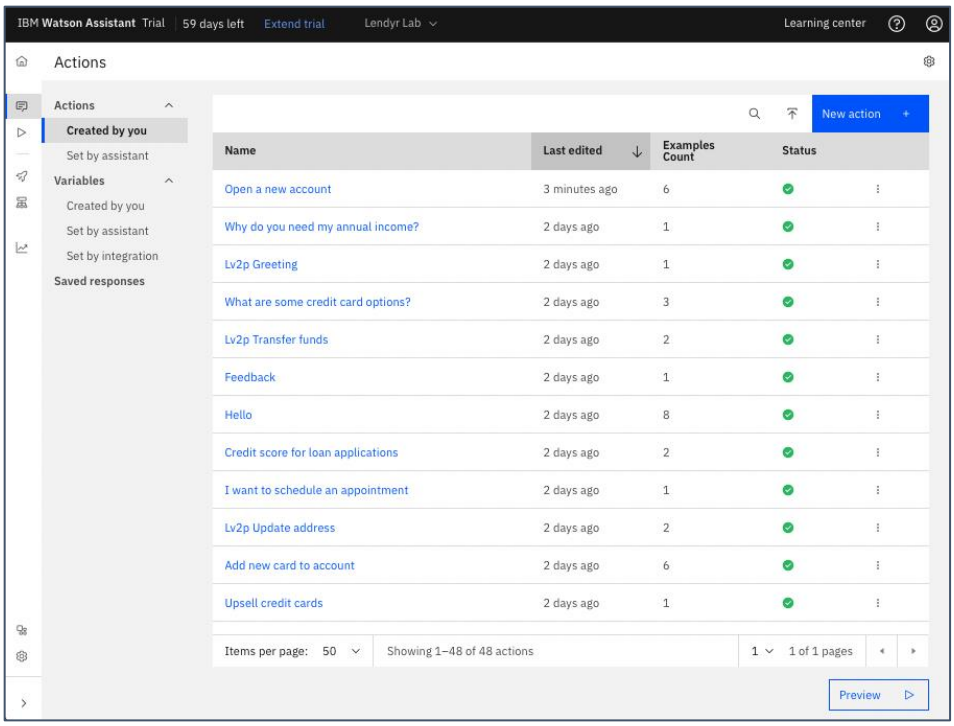
Add some more examples

You may notice when testing that the assistant doesn’t correctly recognize everything you ask it. To address this, you need to train the AI with more than just one example phrase. As shown below,

1. Click on the **Customer starts with:** section.
2. Add a few more varied examples, like the ones in the screenshot.
3. Rename the Action to better reflect what it performs, so that it is easier to find for others working on your assistant. In the image below, it is renamed to “Open a new account”.
4. Once finished, you can close the Action builder window, taking care to save your changes when prompted since these steps don’t autosave, and return to your list of Actions.



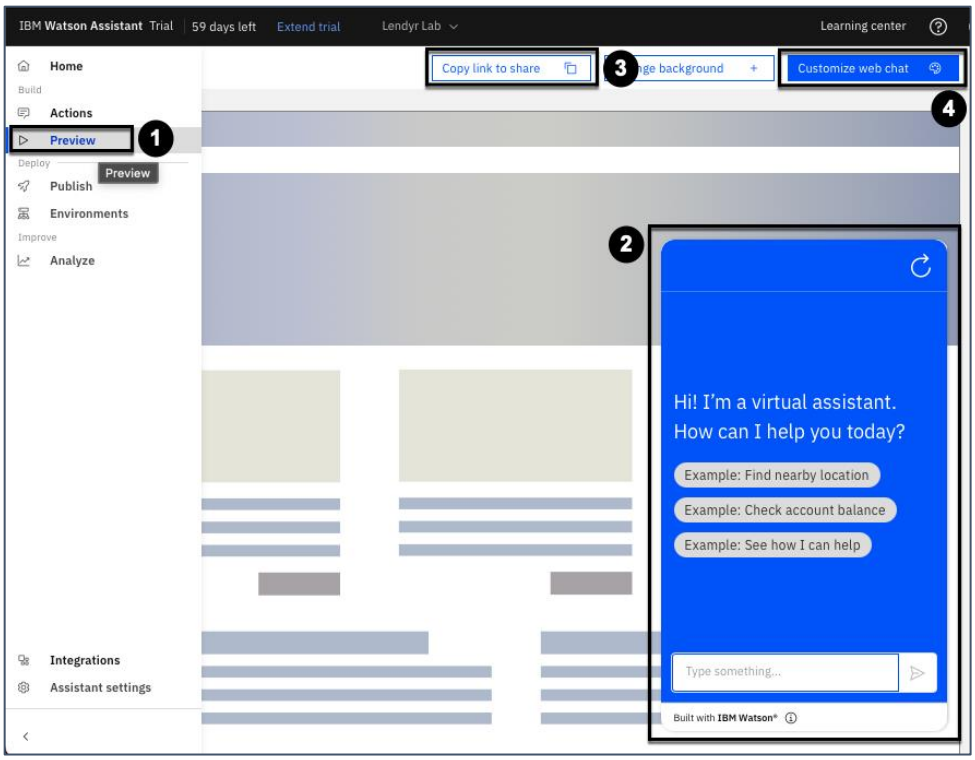
Spend a moment observing the Actions window. Note the different ways you can filter and search the Actions. For example, the screenshot below shows them sorted by **Last edited**, putting your Action at the top of the list:



Preview your assistant

Next, you will check to see how your assistant will appear to users on one of your channels—specifically the web channel. To do this, as shown below,

1. On the left, click **Preview**. The preview page which will be displayed is a representation of your "draft" work in progress.
2. Note the inline preview for you to test.
3. You can also share your work with others on your team quickly with a shareable URL.
4. The **Customize web chat** button allows you to change the look of your assistant; you will explore this in a moment.



Below are two shareable URLs **(3)** showcasing assistant previews **(2)** that have been customized using the **Customize web chat** settings **(4)**.

Bank of America and Goodwill Industries

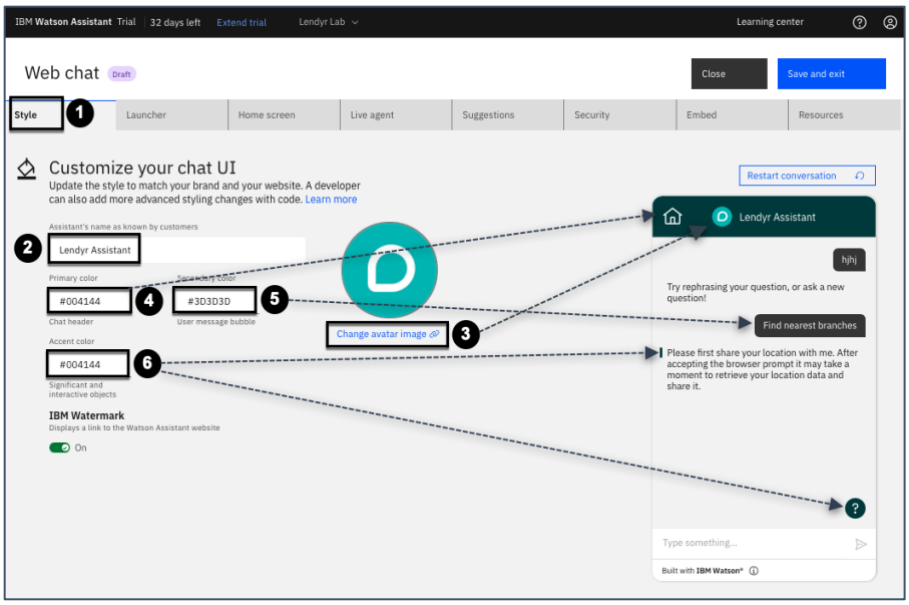
These are simple example assistants created for this lab – not production-ready.

Customize your assistant to look like the Lendyr Bank website

While you can make your assistant look and feel any way you like, its Actions are like those on the Lendyr website. In the following steps, you will customize it to also look like the Lendyr Bank assistant.

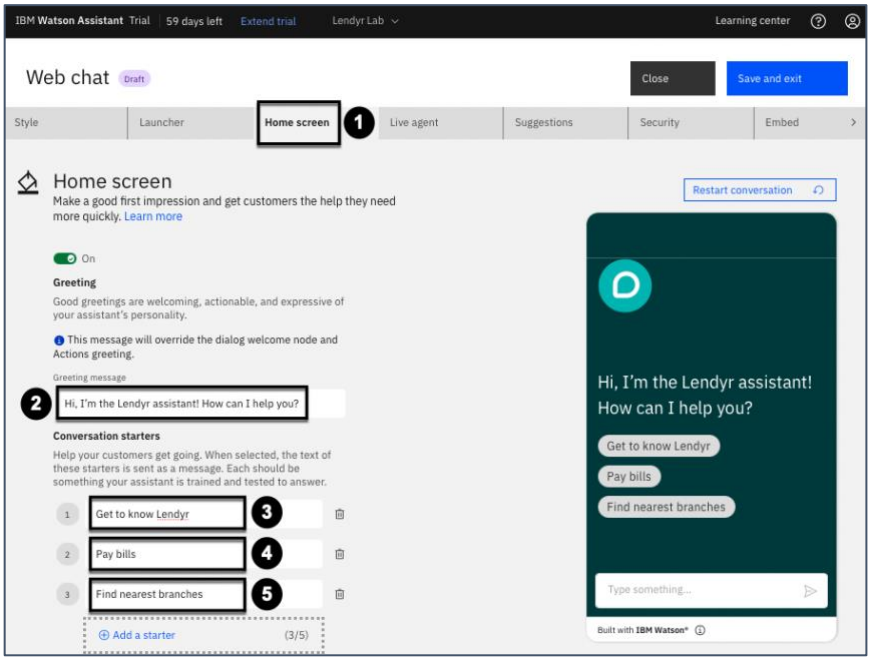
Click on the **Customize web chat (4)** button. Then, as shown in the screenshot below,

1. Make sure you are in the **Style** tab.
2. Change **Assistant's name as known by customers** to "Lendyr Assistant".
3. Click on **Add an avatar image** and point to https://web-chat.global.assistant.watson.appdomain.cloud/assets/Lendyr-Avatar.png.
4. Change **Primary color** to: #004144. This is the color of the chat header.
5. Change **Secondary color** to: #3D3D3D. This colors the message bubble.
6. Change **Accent color** to: #004144. This is tertiary color that accentuates certain assistant responses and icons, as shown below.



Your assistant should now look like the image above. (Note, some color changes may require that you restart the chat.) Next, you will change the default greeting, and the suggested example conversation starters (customer utterances). To do this, as shown below,

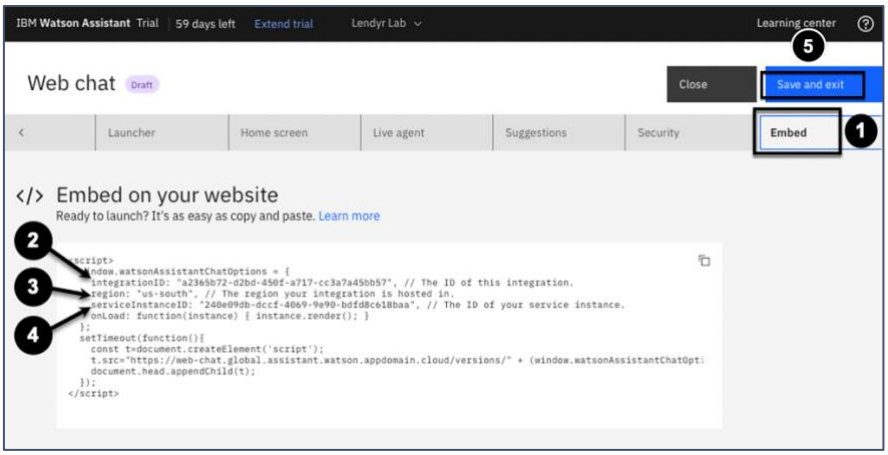
1. Click on the **Home screen** tab.
2. Change **Greeting** to: “Hi, I’m the Lendyr assistant! How can I help you?”
3. Change **Starter 1** to: “Get to know Lendyr”
4. Change **Starter 2** to: “Pay bills”
5. Change **Starter 3** to: “Find nearest branches,” and note that you can add up to five (5) conversation starters:



Preview your assistant on Lendyr Bank's website

Now, you will embed your assistant in the Lendyr Bank's website! To do this, as shown below,

1. Click on the **Embed** tab.
2. Copy the value for your assistant's **integrationID** and paste it into a text document. You will use this value shortly.
3. Copy the value for your assistant's **region** and paste it into a text document. You will use this value shortly.
4. Copy the value for your assistant's **serviceInstanceId** and paste it into a text document. You will use this value shortly.
5. Finally, click **Save and exit**.



Now, take your assistant's integrationID, region, and serviceInstanceId, and plug them into this URL:

https://www.ibm.com/products/watson-assistant/demos/lendyr/demo.html?
integrationID=ID_HERE&region=REGION_HERE&serviceInstanceID=ID_HERE

Take care to ensure there are no spaces in the areas where you paste the embed values. Then, write or paste the updated URL below or into a text document:

Pro tip: *bookmark this URL in your browser for easy reference!*

Open this URL and explore the "Open a new account" Action in your assistant. You have successfully created and used your first Action on the Lendyr Bank site! Nicely done.

Let's review: what's in an Action?

As you built your first Action, you started to explore different features of the Actions build experience.

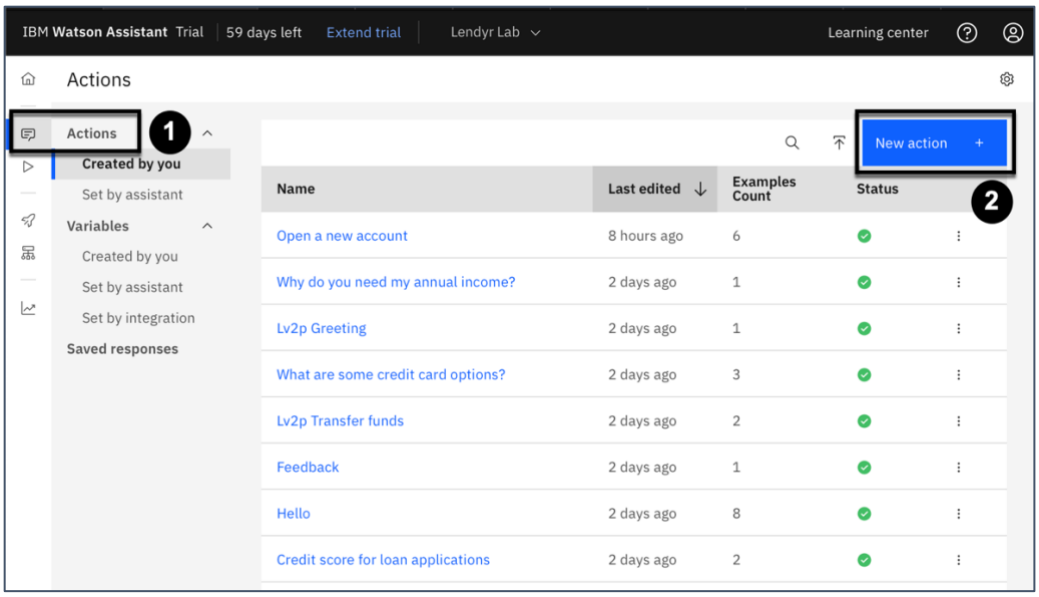
- **Steps** are the back-and-forth interactions between the assistant and the end user.
- **Assistant says** is the part of the back-and-forth interaction where the assistant says something to the end user.
- **Response types** define the type of response the end user can provide, like numbers or options.
- **Conditions** determine the direction of the conversational flow, so the assistant can change the flow according to the end user's response in each step.
- **Variables** are values that the assistant stores and can reference in conditions or in **Assistant says.**
- **And then** is the part of each step that determines what happens after the back-and-forth interaction between the assistant and the end user.
    - **Continue to next step** is the default, moving the conversation to the next step in the Action.
    - **Connect to agent** sends the end user to speak with a live agent.
    - **End the action** concludes the current Action, readying the assistant to begin a new Action in response to the end user's next message.

Reflect on your experience building your first Action. Write out a few thoughts. What was easy to understand? What is hard to understand? Did you have fun? What features do you want to learn more about? Why?

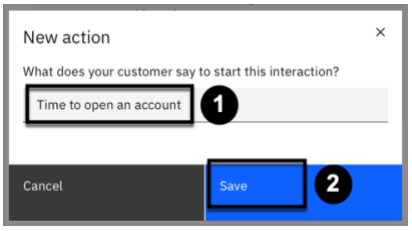
Write your answer above. To see others' answers, submit your answer here.

Simple Q&A Action

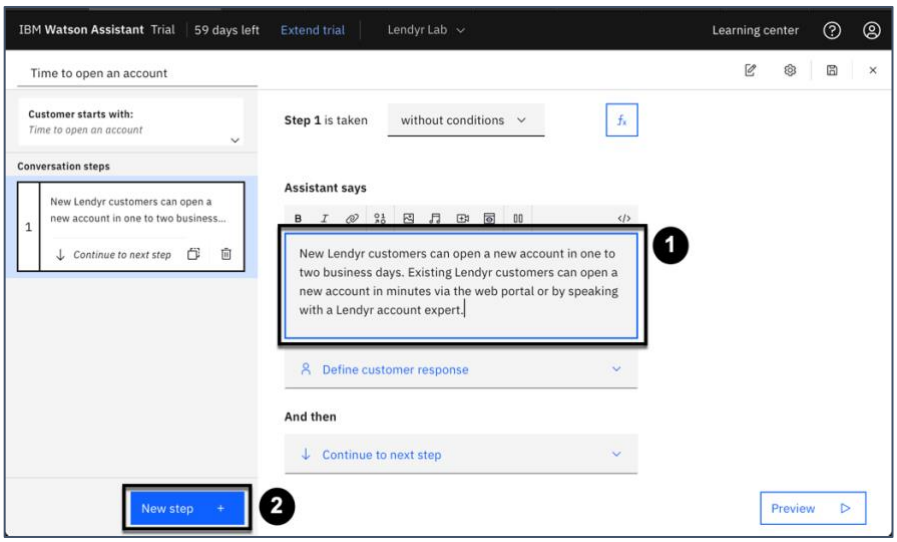
Let's build a second Action. This Action will simply answer an end user's question about how long it takes to open an account. First, get back to the **Actions (1)** screen by clicking on the **Actions** left-hand menu item. Then, click **New action + (2)**:



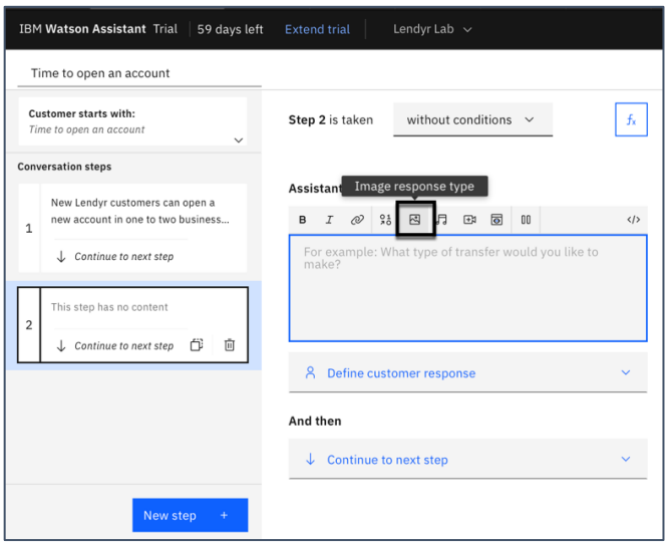
As you did earlier, select the **Start from scratch** option (we'll look at templates later in this lab). For the customer utterance, enter "Time to open an account" **(1)** and click **Save (2)**:



In the first step, in **Assistant says (1)**, enter: "New Lendyr customers can open a new account in one to two business days. Existing Lendyr customers can open a new account in minutes via the web portal or by speaking with a Lendyr account expert." Then, click **New step +**:



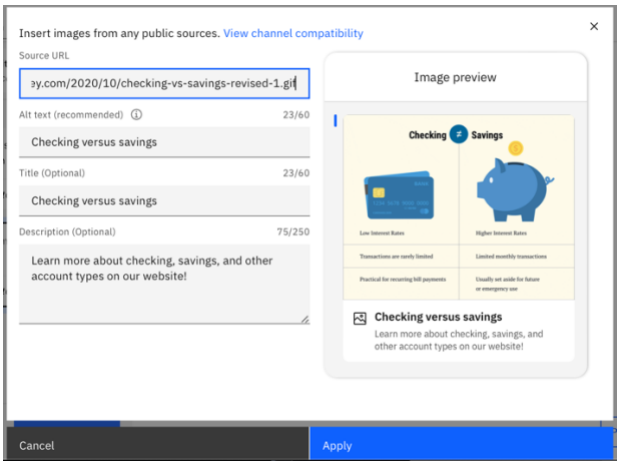
In this second step, click the **Image response type** icon in **Assistant says**:



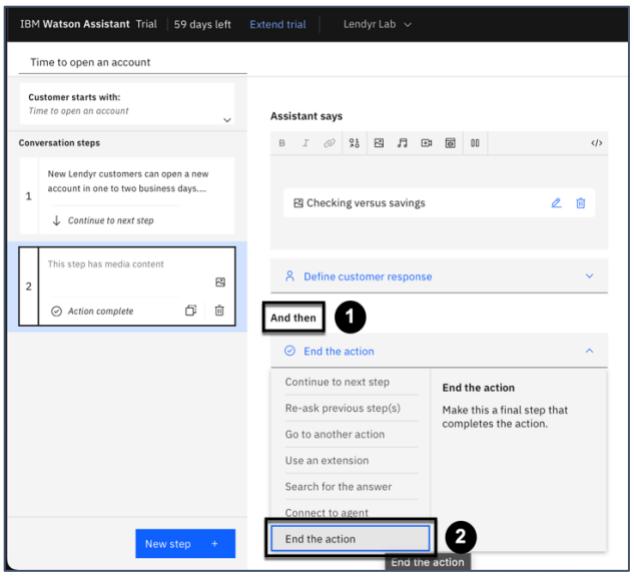
Then, add an image with the following properties:

- **Source URL:** https://img.money.com/2020/10/checking-vs-savings-revised-1.gif
- **Alt text:** Checking versus savings
- **Title:** Checking versus savings
- **Description:** Learn more about checking, savings, and other account types on our website!

Verify that your screen looks like the image below, and click **Apply**:



This will be the last step in this Action, so change **And then (1)** to **End the action (2)**:



Brainstorm and add a few more example phrases to this Action – start with, “How long does it take to open a new account?” (Remember, you can enter these by clicking on the **Customer starts with:** window.) Now, Save and Preview your new Action using your custom Lendyr URL!

Action Templates

You have built two Actions: “Open a new account” and “Time to open an account.”

What sort of organization might build these Actions in a virtual assistant? What industry are they in?

Brainstorm a few more Actions that might be useful for this type of organization:

Read this guide on how to use Action templates. Explore the Action templates library in your assistant and add two or three Actions from templates to your assistant. Try to choose two or three that might be useful for the type of organization you identified above.

Make sure to open and explore the Actions once you have added them to your assistant. Do they have any new or custom response types? How simple or complex is their conditioning? How do they use variables in conditions or in responses to the end user? Jot down some notes.

Why Actions?

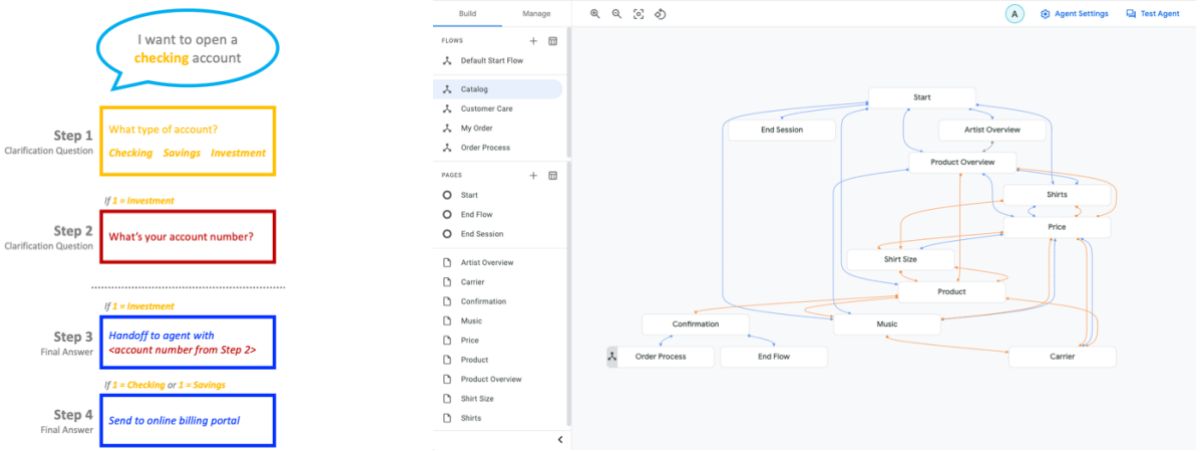
Actions are a unique conceptual model and build approach for conversational flows. What is unique about Actions?

For the builder, Actions make the build experience dramatically easier along two dimensions.

First, Actions present a variety of technical conversational AI concepts in an accessible and non-technical manner. Here are a variety of technical terms that you did **not** learn in this lab, because Watson Assistant doesn't require you to learn them to build a powerful conversational flow: intents, entities, parameters, flows, pages, fulfillment, slot-filling, branches, dialog nodes, routing.

Second, each Action wraps a bunch of conversational components into **one** build unit. Instead of building example phrases, response types, conditions, and steps separately and then stitching them together, each Action is a complete end-to-end conversational flow that represents a task an end user can complete.

Simply put, compare this visual representation of an Action in Watson Assistant with a visual representation of the conceptual and build model from a competing conversational AI product.



Which looks more friendly to a builder?

For the product manager, the Action is also attractive for several reasons.

First, product and project managers for virtual assistant and customer care implementations are outcome focused. They measure containment or call deflection, task completion, and outcome achievement. Actions align to this focus; each Action corresponds 1:1 to a task to be completed by the end user. Each Action has a defined start and end point, which makes it easy to track outcomes in analytics and understand how well each Action is working as a customer self-service or customer support tool.

Second, the accessibility and modularity of Actions that appeal to builders also appeal to the product manager. Actions' accessibility means that new builders onboard more quickly, and new builders do not need to have a technical background to build complex, powerful conversational flows. Actions' modularity means that the product manager and builders can easily build complex, outcome focused Actions that draw from a wide set of modular sub-actions. This lab will explore complex Actions and sub-actions in later sections.

Great work! That concludes this section of the lab. In the next section, you will use the Actions you built here to explore the artificial intelligence features and functionality that run out-of-the-box in Watson Assistant.

Report an issue

Report an issue, share feedback, or request a change or addition to the hands-on lab here.