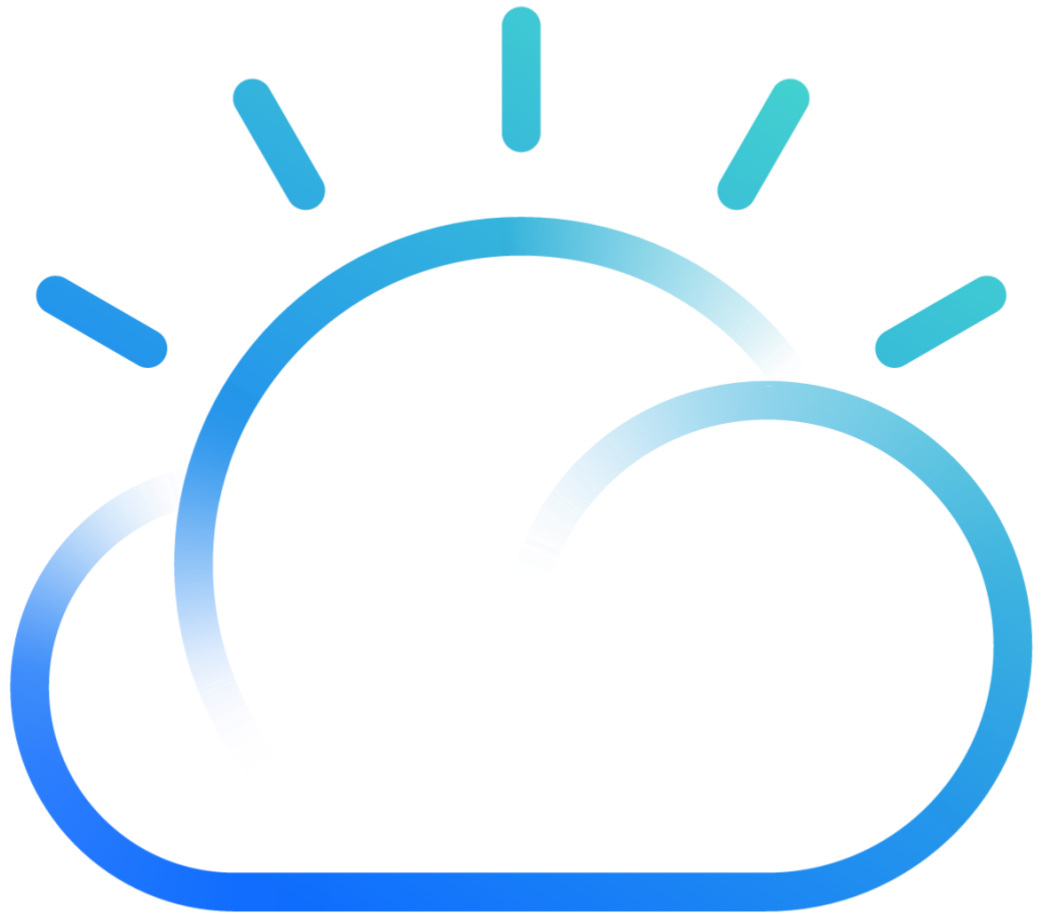


AI Lab Challenge 3

*Watson Assistant: Build
a Virtual Agent*



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Preface

Industry Use-case: Build a Chatbot for a Restaurant

While chatbots offer many benefits, the most significant of them are listed below:

- Book tables and orders, even before the customer has reached the restaurant.
- Customers can track the status of their orders.
- Serve any number of customers 24/7
- Personalized marketing
- Customer analytics
- Does the job of many employees and avoids employees training cost?
- Integrate chatbot to social media and make use of vast social media user base
- Increases brand engagement
- Businesses can stay in direct contact with the customers, which will enable to stop unnecessary revenue share with services delivery mediums, such as Postmates.

Chatbots help in dealing with the challenges faced by the restaurant industry with analytics, as well. Chatbots can help management gather and organize sales data, then strategize their marketing efforts based on location and customer interests. This helps management to deliver personalized marketing plans, push notifications (about loyalty programs or new items) and personalized dining experiences to the customers. This instills a feeling of community with the customers, which ultimately helps the management retain customers as well as increase their satisfaction.



Let's disrupt the traditional way of ordering food with Watson Assistant.

<https://businessfirstfamily.com/pick-restaurant-online-ordering-software/>

Overview

Chatbots make software accessible to everyone who understands human language. A customer can avoid the frustration that comes with having to memorize and navigate complex menus and button layouts that are always changing with software updates. Instead, computers can be operated with simple human language that people can understand. Customers can now simply ask a bot to take them where they want to go, or to enable a feature without having to hunt it

down. Good bot services encourage users to engage more deeply with software features that might otherwise go unnoticed, because they provide a richer, more natural experience. For example, imagine an image editing suite that can respond to a command like: “Make the background of my photo darker.”

In addition to enhancing the customer experience, chatbots free up agents to respond to the more complex problems that are better solved by a customer service agent. When people are able to delegate a portion of their workload onto a conversational bot, they are now able to participate in higher value decision making for the company and expand their skills, which benefits the company and enriches the agents.

The Royal Bank of Scotland used Watson to build their bot framework, which consists of two bots called “Cora” and “Marge.” Cora handles simpler, “first-time” problem resolution, and Marge assists the agents themselves when they need more information to respond to a customer’s query.

Click the link below and scroll to the bottom of the page. There is an imbedded chatbot with various skills that you can play with. Try it:

<https://www.ibm.com/watson/how-to-build-a-chatbot>

Estimated Time to Complete: 1 Hour

Objectives

Here's how you will implement your assistant:

- **Create a dialog skill.** Use the intuitive graphical tool to define the training data and dialog for the conversation between your assistant and your customers.

The training data consists of the following artifacts:

- **Intents:** Goals that you anticipate your users will have when they interact with the service. Define one intent for each goal that can be identified in a user's input. For example, you might define an intent named *store_hours* that answers questions about store hours. For each intent, you add sample utterances that reflect the input customers might use to ask for the information they need, such as, what time do you open?

Or use prebuilt content catalogs provided by IBM to get started with data that addresses common customer goals.

- **Entities:** An entity represents a term or object that provides context for an intent. For example, an entity might be a city name that helps your dialog to distinguish which store the user wants to know store hours for.

As you add training data, a natural language classifier is automatically added to the skill and is trained to understand the types of requests that you have indicated the service should listen for and respond to.

- **Dialog:** Use the dialog tool to build a dialog flow that incorporates your intents and entities. The dialog flow is represented graphically in the tool as a tree. You can add a branch to process each of the intents that you want the service to handle. You can then add branch nodes that handle the many possible permutations of a request based on other factors, such as the entities found in the user input or information that is passed to the service from an external service.
- **Create an assistant.**
 - **Add the dialog skill to your assistant.**
 - **Integrate your assistant.** Create a channel integration to deploy the configured assistant directly to a social media or messaging channel.

There are seven Milestones you must complete:

1. Create Watson Assistant Service
2. Create an assistant
3. Create a dialog skill
4. Add intents from a content catalog
5. Build a Dialog
6. Add Your Skill to Your Assistant
7. Integrate the Assistant

Tools



Watson Assistant

Flow

This diagram shows the overall architecture:

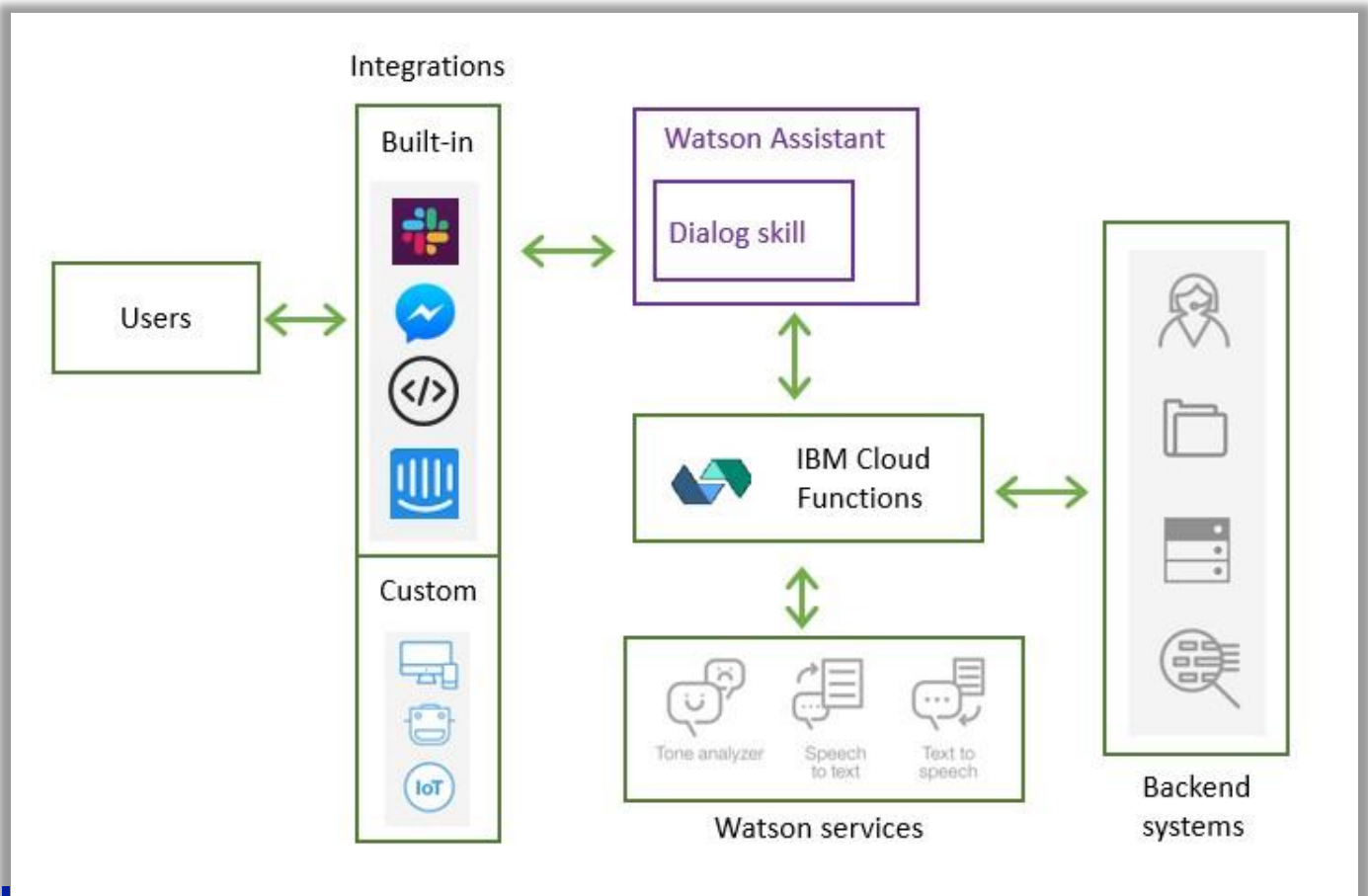


Figure 0-1 Architecture Flow

Prerequisites

This lab requires that you have an IBM Cloud Account, if you have not yet created your IBM Cloud Account please refer to *Setting up your Cloud Account*.

Milestone 1: Create Watson Assistant Service

Milestone Overview

This lab requires you to complete seven Milestones:

1. **Create Watson Assistant Service**
2. Create an Assistant
3. Create a dialog Skill
4. Add intents from a content catalog
5. Build a Dialog
6. Add Your Skill to Your assistant
7. Integrate the Assistant

This guide is an instructional approach to working with the IBM Watson™ Assistant service where you can create virtual agents and bots that combine machine learning, natural language understanding, and integrated dialog tools to provide automated customer engagements. Creating your first conversation using the IBM Watson™ Assistant service entails the following steps:

- Train Watson to understand your users' input with example utterances: Intents and Examples
- Identify the terms that may vary in your users' input: Entities
- Create the responses to your user's questions: Dialog Builder

Steps

Complete the following steps:

1. Login into IBM Cloud: <https://cloud.ibm.com>
2. Click the **Catalog** tab.
3. Search for the **Watson Assistant** service and click that tile under the AI heading.
4. Fill out the necessary information and click **Create**.

After you create a Watson Assistant service instance, you land on the **Manage** page of the Watson Assistant dashboard.

5. Click **Launch Watson Assistant**. If you're prompted to log in, provide your IBM Cloud credentials.

A new browser tab or window opens, and the Assistants page of Watson Assistant is displayed.

- An assistant named **My first assistant** is created for you automatically. An *assistant* is a cognitive bot to which you add skills that enable it to interact with your customers in useful ways.

- A dialog skill named **My first skill** is added to the assistant for you automatically. A *dialog skill* is a container for the artifacts that define the flow of a conversation that your assistant can have with your customers.

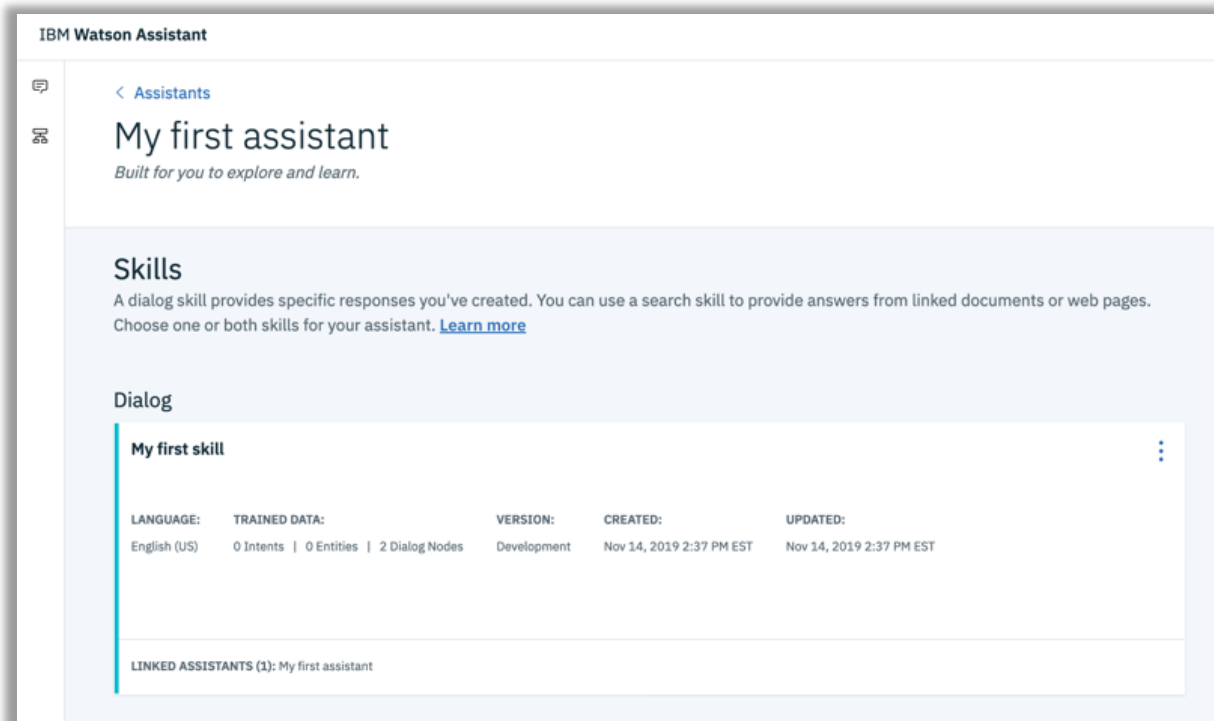


Figure 1-1 **My First Assistant**

Milestone 2: Create an Assistant

Milestone Overview

This lab requires you to complete seven Milestones:

1. Create Watson Assistant Service
2. **Create an Assistant**
3. Create a dialog Skill
4. Add intents from a content catalog
5. Build a Dialog
6. Add Your Skill to Your assistant
7. Integrate the Assistant

An *assistant* is a cognitive bot to which you add skills that enable it to interact with your customers in useful ways.

Steps

1. Click the **Assistants** icon , and then click **Create assistant**.

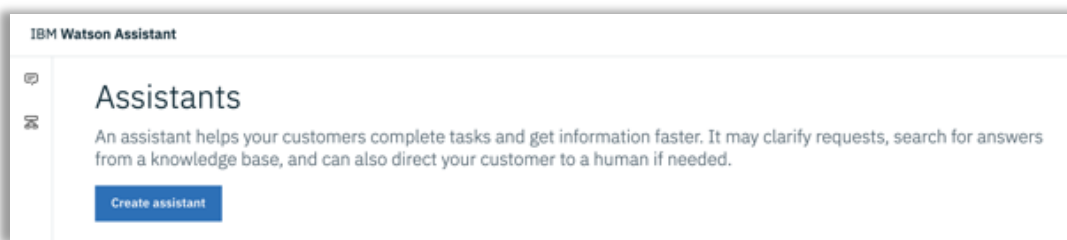
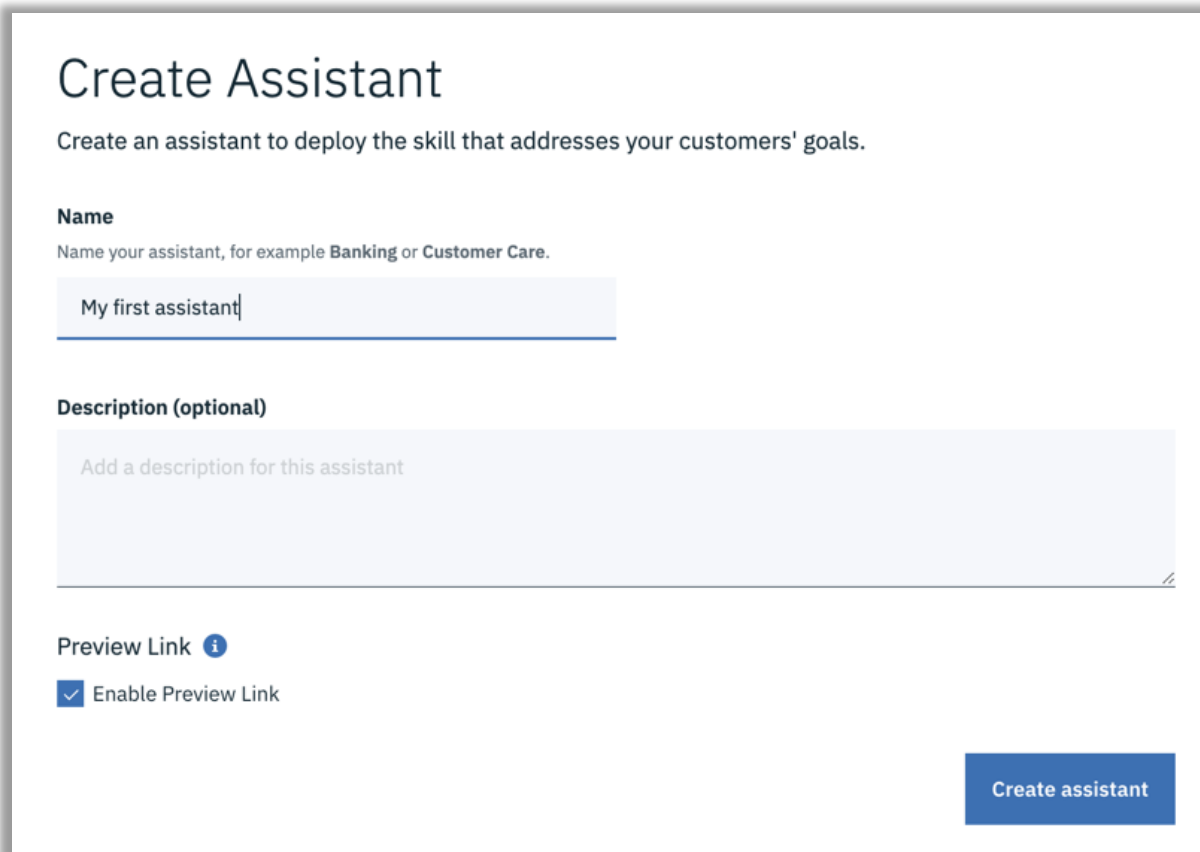


Figure 2-1 **Create Assistant**

2. Name the assistant My first assistant.



Create Assistant

Create an assistant to deploy the skill that addresses your customers' goals.

Name
Name your assistant, for example **Banking** or **Customer Care**.

My first assistant

Description (optional)

Add a description for this assistant

Preview Link ⓘ

☒ Enable Preview Link

Create assistant

Figure 2-2 Constructing My first assistant

3. Click **Create assistant**.

Milestone 3: Create a Dialog Skill

Milestone Overview

This lab requires you to complete seven Milestones:

1. Create Watson Assistant Service
2. Create an Assistant
3. **Create a dialog Skill**
4. Add intents from a content catalog
5. Build a Dialog
6. Add Your Skill to Your assistant
7. Integrate the Assistant

A *dialog skill* is a container for the artifacts that define the flow of a conversation that your assistant can have with your customers.

Steps

1. Click the *My first assistant* tile to open the assistant.

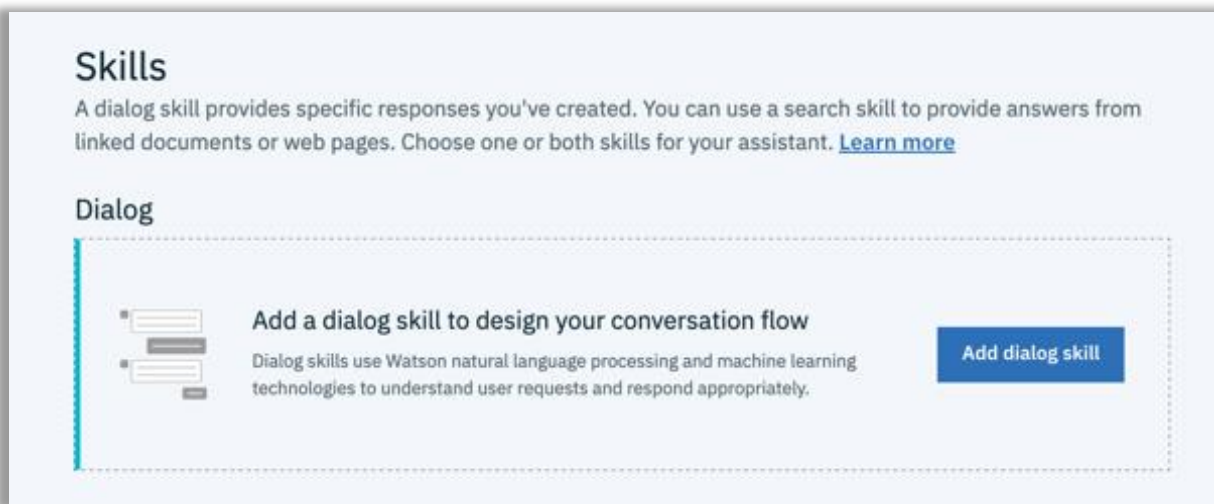
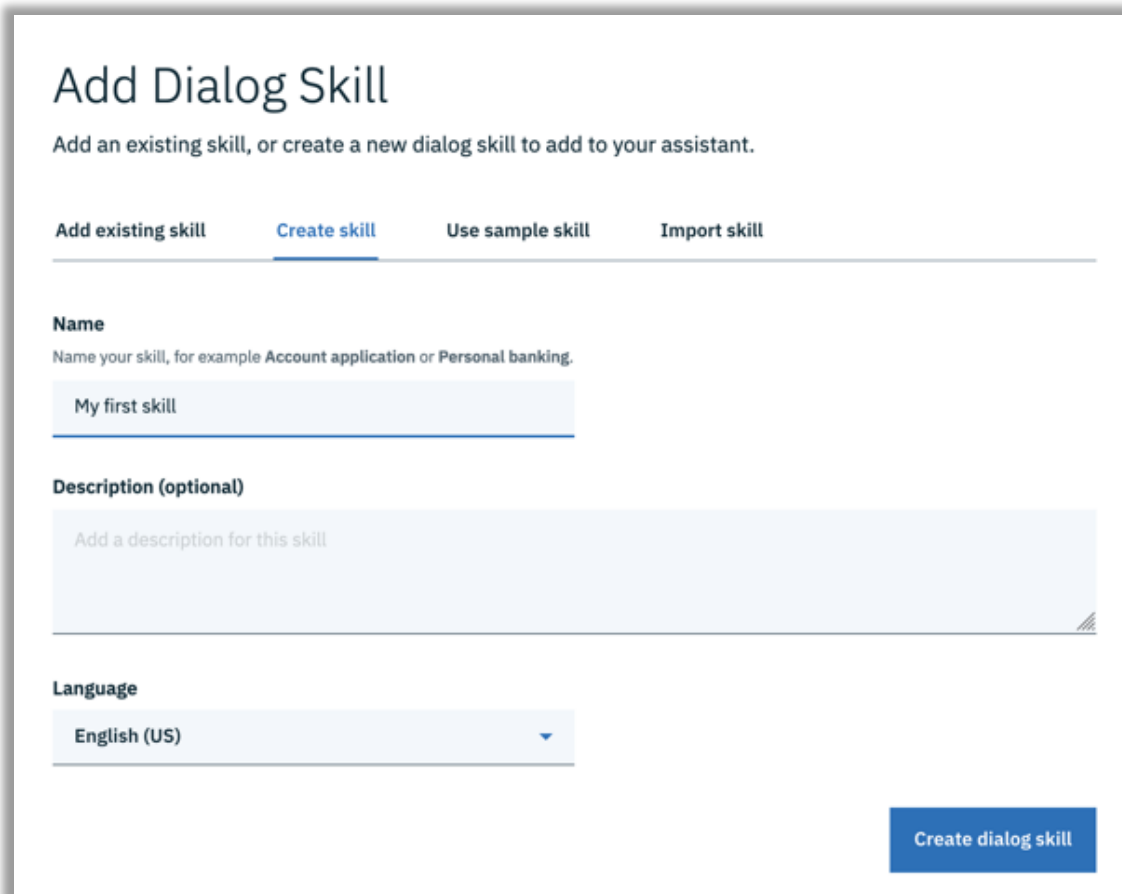


Figure 3-1 Add Dialog Skill to assistant

2. Click **Add dialog skill**.
3. Give your skill the name My first skill.

4. **Optional.** If the dialog you plan to build will use a language other than English, then choose the appropriate language from the list.



The screenshot shows a web form titled "Add Dialog Skill". Below the title is a subtitle: "Add an existing skill, or create a new dialog skill to add to your assistant." There are four tabs: "Add existing skill", "Create skill" (which is selected and underlined), "Use sample skill", and "Import skill". The form has three main sections: "Name" with a text input field containing "My first skill"; "Description (optional)" with a large text area containing the placeholder "Add a description for this skill"; and "Language" with a dropdown menu showing "English (US)". A blue button labeled "Create dialog skill" is located at the bottom right of the form.

Figure 3-2 Create dialog skill

5. Click **Create dialog skill**.

The skill is created, and you return to the assistant page.

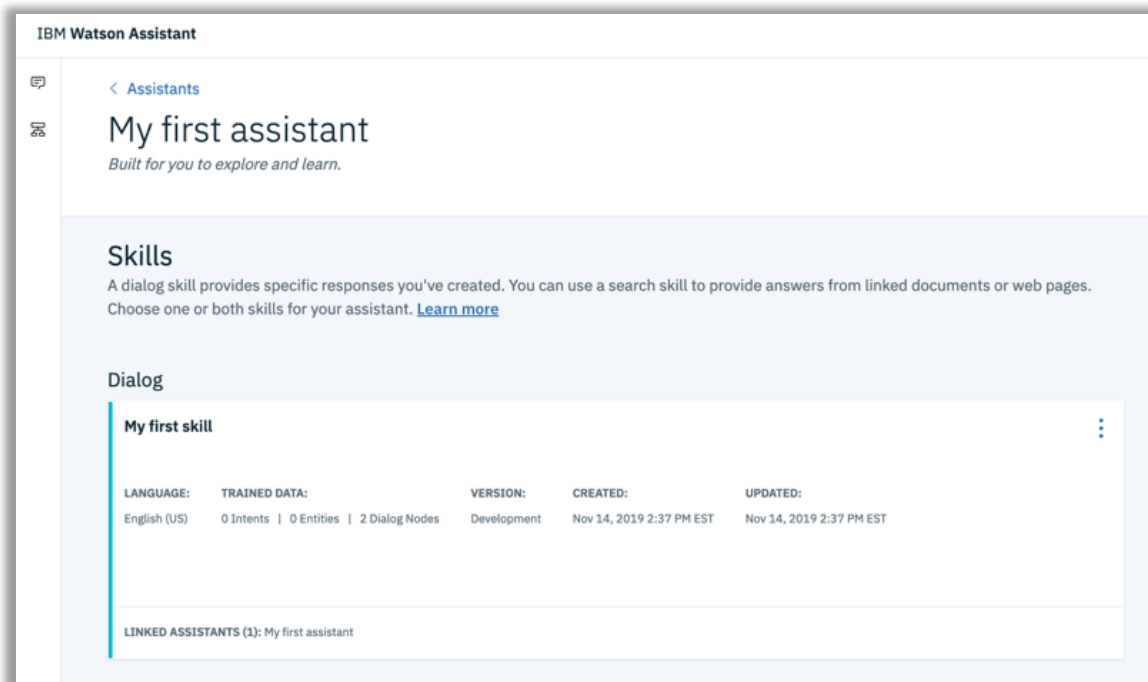


Figure 3-3 My first assistant with Dialog Skill added

6. Click to open the skill you just created.

Milestone 4: Add Intents from a Content Catalog

Milestone Overview

This lab requires you to complete seven Milestones:

1. Create Watson Assistant Service
2. Create an Assistant
3. Create a dialog Skill
4. **Add intents from a content catalog**
5. Build a Dialog
6. Add Your Skill to Your assistant
7. Integrate the Assistant

When you open the *My first skill*, you land on the *Intents* page.

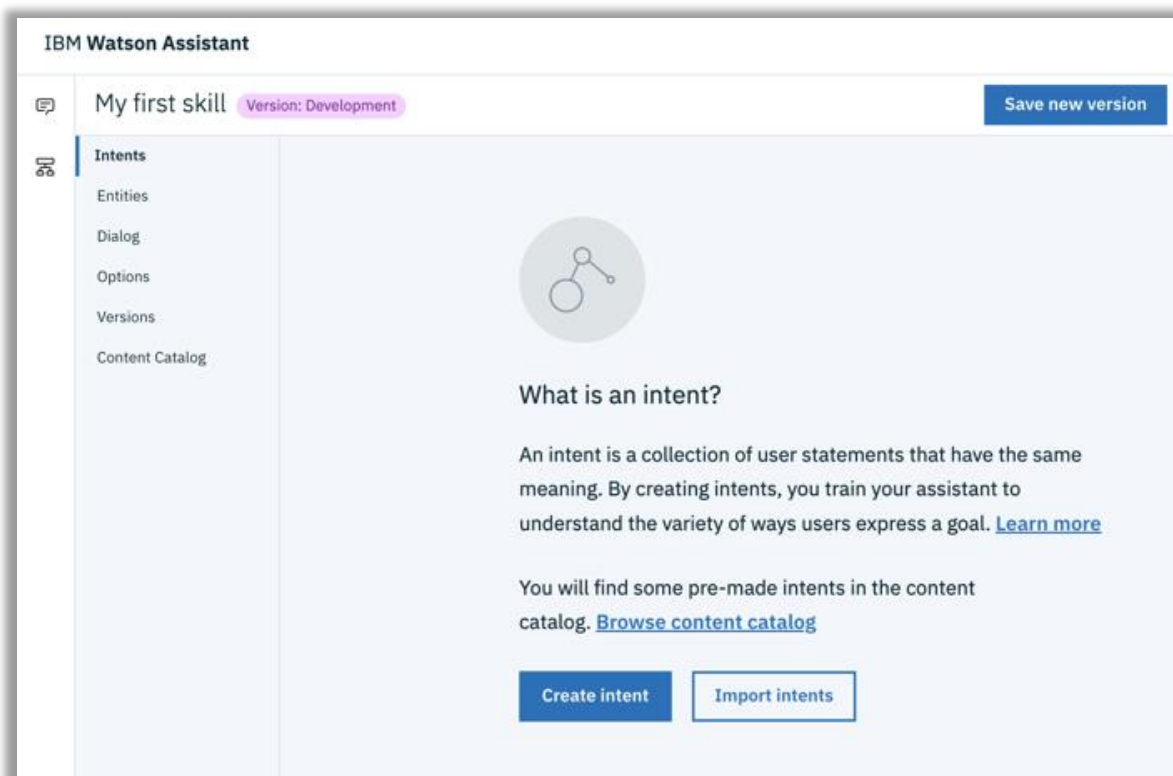


Figure 4-1 Create Intent

Preview

If you land on a page named *Actions* instead, then you are using the preview experience. For information about what to do next, see [Creating actions](#).

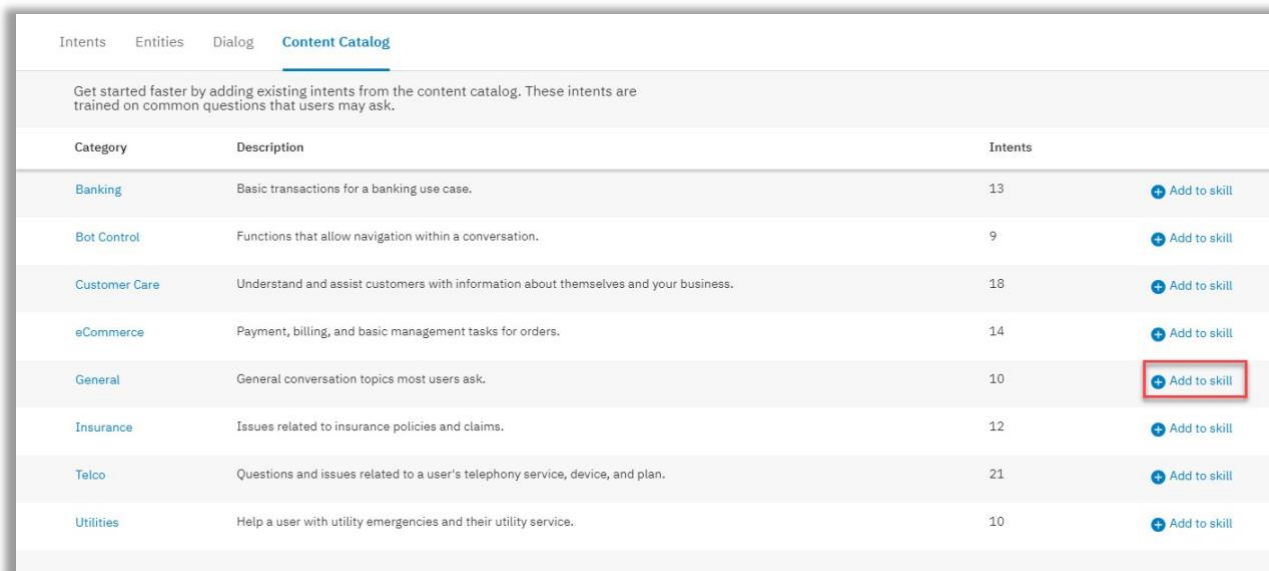
If available in your location, a tour begins that you can step through to learn about the product. Follow the tour; it provides a great overview of the product.

Add training data that was built by IBM to your skill by adding intents from a content catalog. In particular, you will give your assistant access to the **General** content catalog so your dialog can greet users, and end conversations with them.

Add training data that was built by IBM to your workspace by adding intents from a content catalog. In particular, you will give your assistant access to the **General** content catalog so your dialog can greet users, and end conversations with them.

Steps

1. In the Watson Assistant tool, click the **Content Catalog** tab.
2. Find **General** in the list, and then click **Add to skill**.



Get started faster by adding existing intents from the content catalog. These intents are trained on common questions that users may ask.

| Category | Description | Intents | |
|---------------|--|---------|------------------------------|
| Banking | Basic transactions for a banking use case. | 13 | Add to skill |
| Bot Control | Functions that allow navigation within a conversation. | 9 | Add to skill |
| Customer Care | Understand and assist customers with information about themselves and your business. | 18 | Add to skill |
| eCommerce | Payment, billing, and basic management tasks for orders. | 14 | Add to skill |
| General | General conversation topics most users ask. | 10 | Add to skill |
| Insurance | Issues related to insurance policies and claims. | 12 | Add to skill |
| Telco | Questions and issues related to a user's telephony service, device, and plan. | 21 | Add to skill |
| Utilities | Help a user with utility emergencies and their utility service. | 10 | Add to skill |

Figure 4-2 Add Skills from Content Catalog

3. Open the **Intents** tab to review the intents and associated example utterances that were added to your training data. You can recognize them because each intent name begins with the prefix `#General_`. You will add the `#General_Greetings` and `#General_Ending` intents to your dialog in the next step.

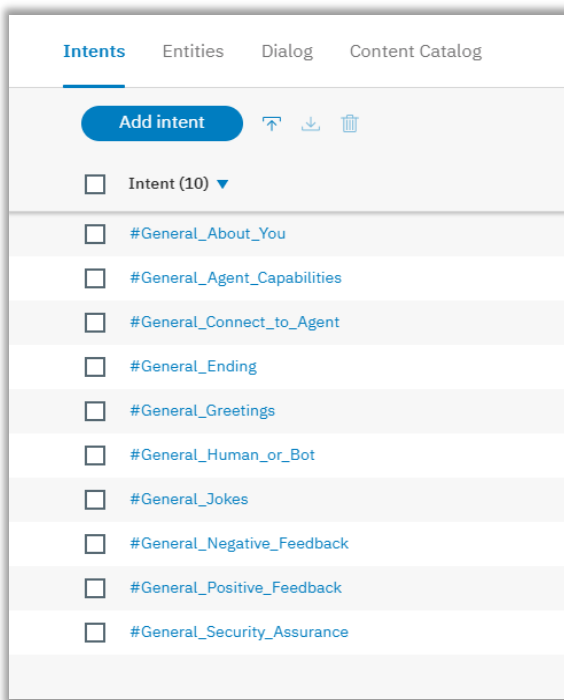


Figure 4-3 Intents tab – viewing added intents

You successfully started to build your training data by adding prebuilt content from IBM.

Milestone 5: Build a Dialog

Milestone Overview

This lab requires you to complete seven Milestones:

1. Create Watson Assistant Service
2. Create an Assistant
3. Create a dialog Skill
4. Add intents from a content catalog
5. **Build a Dialog**
6. Add Your Skill to Your assistant
7. Integrate the Assistant

A dialog defines the flow of your conversation in the form of a logic tree. It matches intents (what users say) to responses (what the bot says back). Each node of the tree has a condition that triggers it, based on user input.

We'll create a simple dialog that handles greeting and ending intents, each with a single node.

A. Adding a start node

1. In the Watson Assistant tool, click the **Dialog** tab.
2. Click **Create**. You see two nodes:
 - **Welcome**: Contains a greeting that is displayed to your users when they first engage with the assistant.
 - **Anything else**: Contains phrases that are used to reply to users when their input is not recognized.

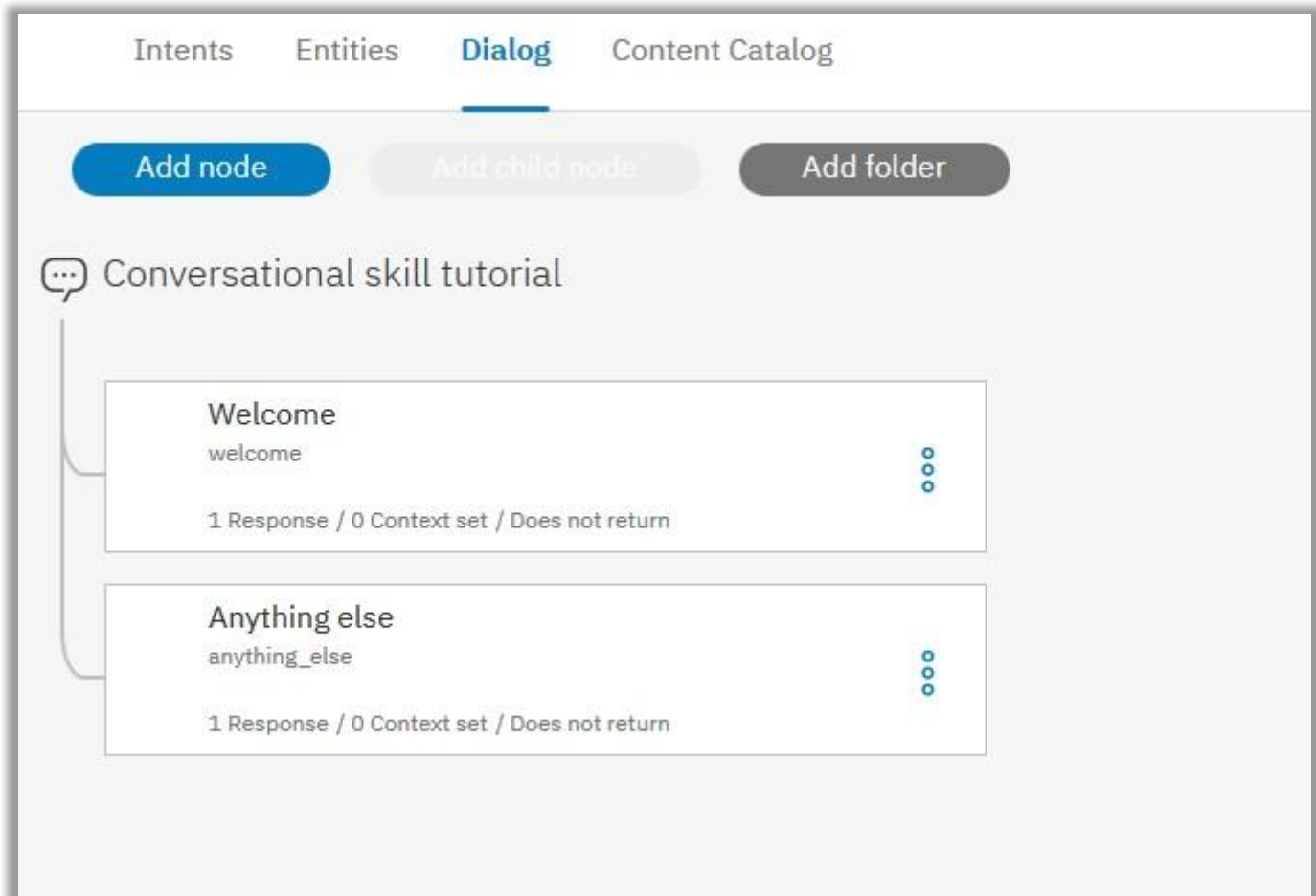


Figure 5-1 **Default Nodes**

3. Click the **Welcome** node to open it in the edit view.
4. Replace the default response with the text, Welcome to the Watson Assistant tutorial!

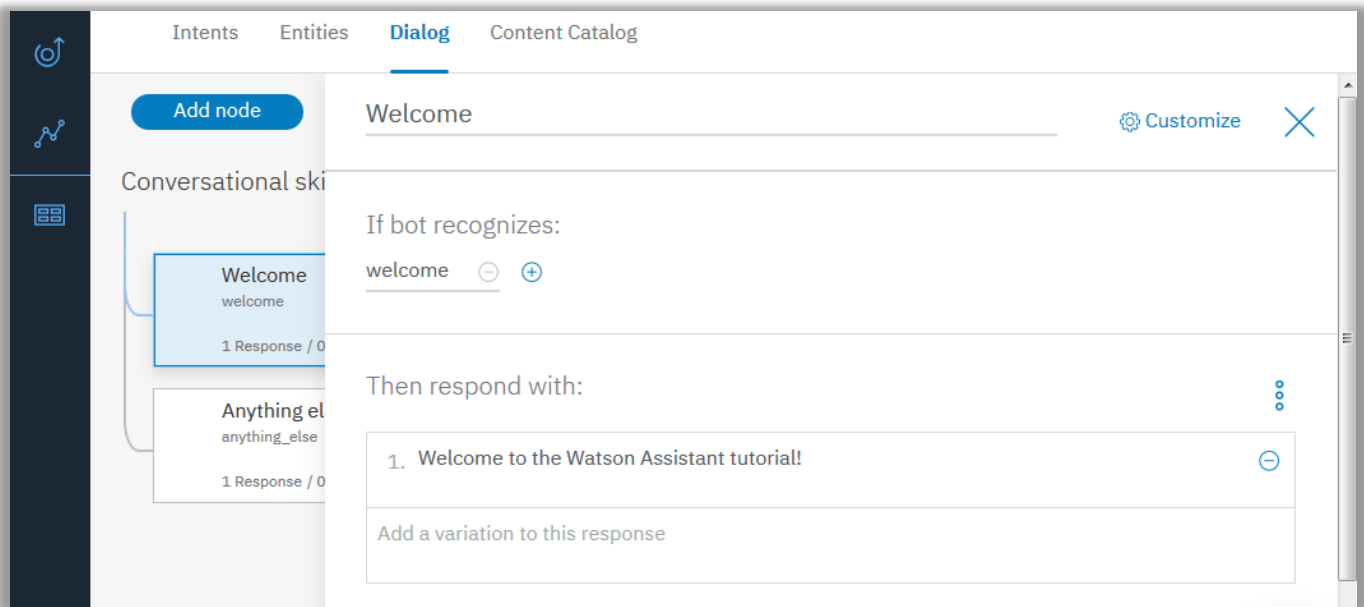



Figure 5-2 **Edit Welcome Node**

- Click to close the edit view.

B. Testing the Start node

You can test your dialog at any time to verify the dialog. Let's test it now.

- Click the  icon to open the "Try it out" pane. You should see your welcome message.

C. Adding nodes to handle intents

Now let's add nodes to handle our intents between the Welcome node and the Anything else node.



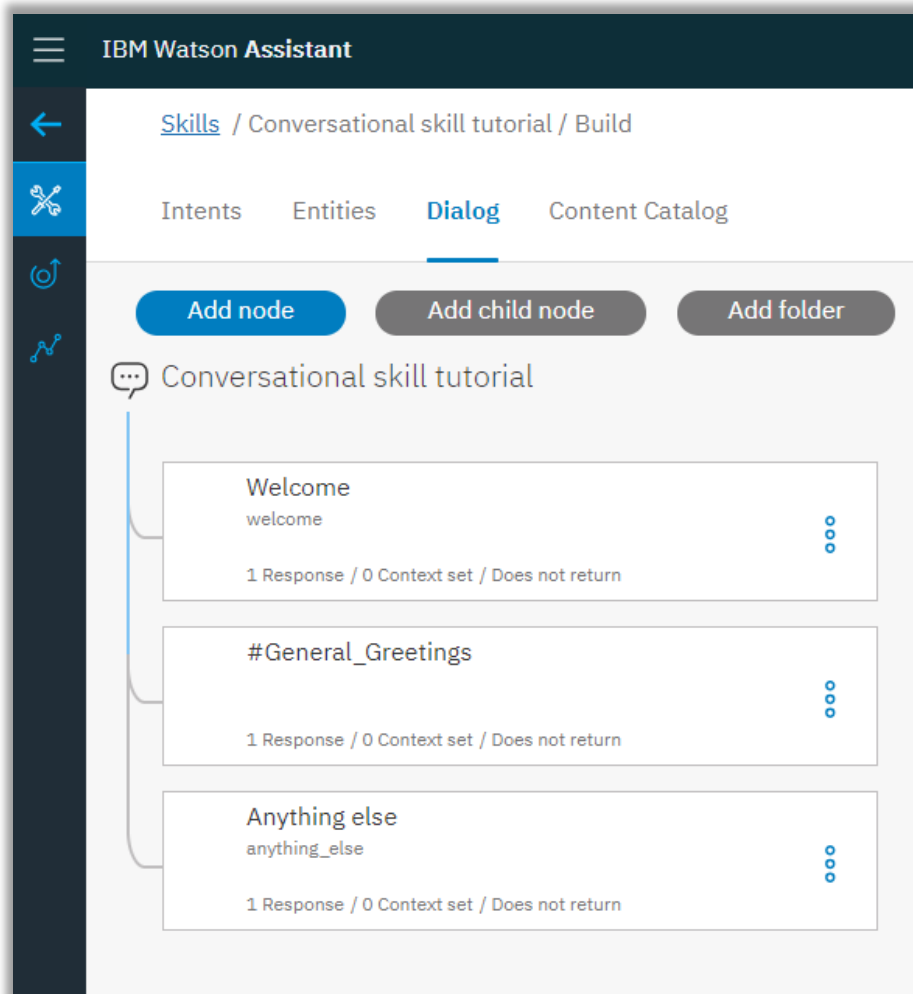
- Click the More icon  on the **Welcome** node, and then select **Add node below**.
- Type #General_Greetings in the **Enter a condition** field of this node. Then, select the **#General_Greetings** option.
- Add the response, Good day to you!
- Click  to close the edit view.

Figure 5-3 **Added #General_Greetings Node**



10. Click the More icon on this node, and then select **Add node below** to create a peer node. In the peer node, specify #General_Ending as the condition, and OK. See you later. as the response.

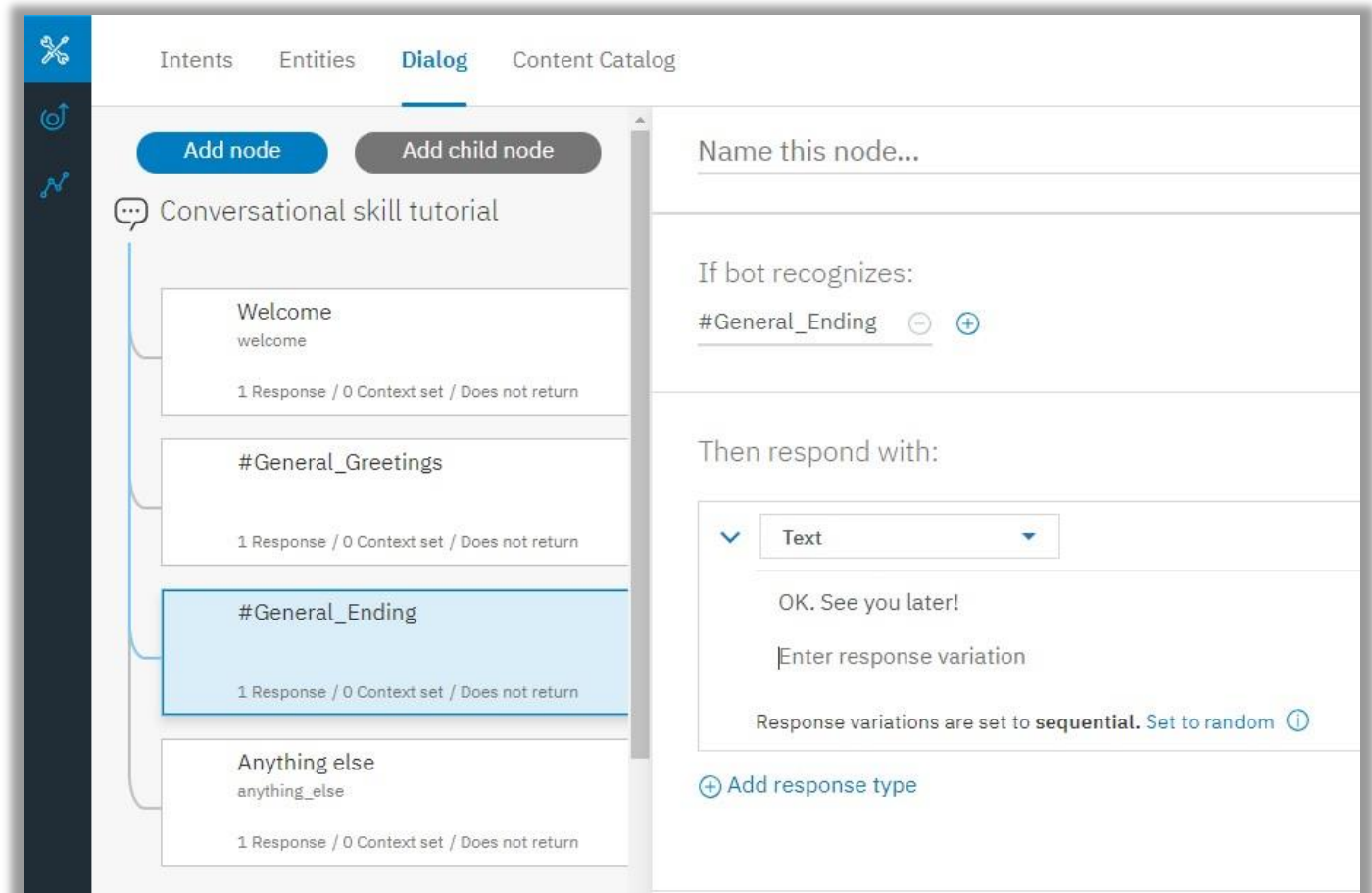
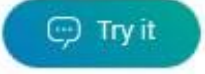


Figure 5-4 Adding #General_Ending

11. Click  to close the edit view.

D. Testing intent recognition

You built a simple dialog to recognize and respond to both greeting and ending inputs. Let's see how well it works.

12. Click the  icon to open the "Try it out" pane. There's that reassuring welcome message.
13. At the bottom of the pane, type Hello and press Enter. The output indicates that the #hello intent was recognized, and the appropriate response (Good day to you.) appears.

14. Try the following input:

- bye
- howdy
- see ya
- good morning
- sayonara

Watson can recognize your intents even when your input doesn't exactly match the examples that you included. The dialog uses intents to identify the purpose of the user's input regardless of the precise wording used, and then responds in the way you specify.

Add an intent that recognizes when customers ask for details about the restaurant itself. An intent is the purpose or goal expressed in user input. The `#General_About_You` intent that is provided with the *General* content catalog serves a similar function, but its user examples are designed to focus on queries about the assistant as opposed to the business that is using the assistant to help its customers. So, you will add your own intent.

Add the `#about_restaurant` intent

1. Click the **Intents** tab.
2. Click **Add intent**.

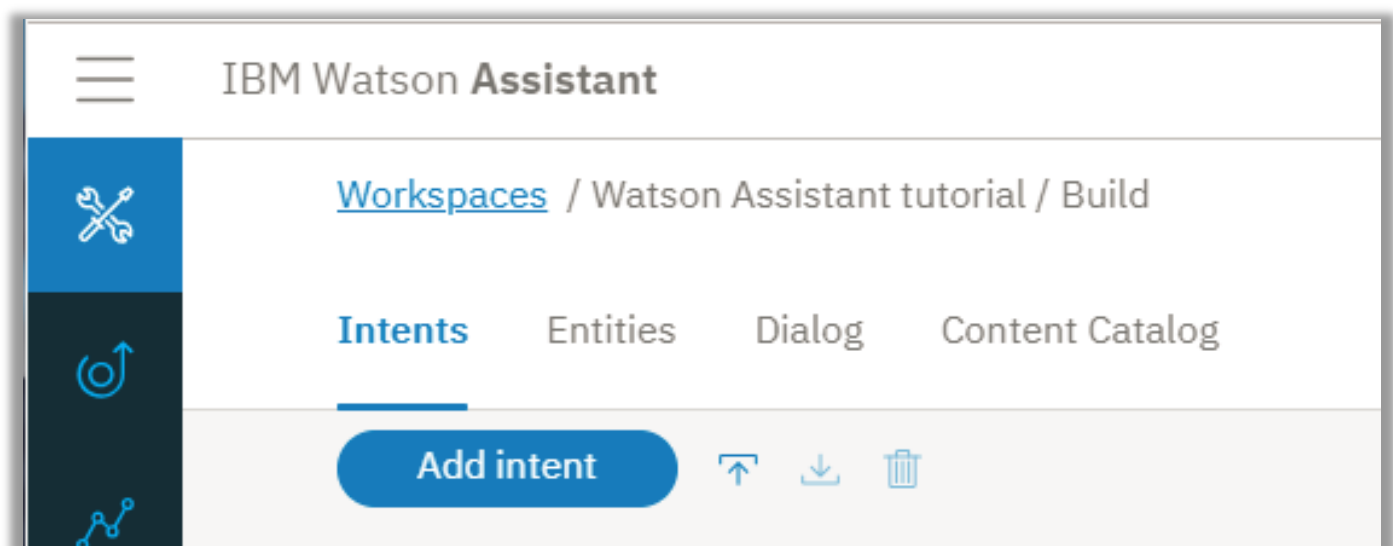


Figure 2-1 Assistant tutorial – Add intent

3. Enter **about_restaurant** in the *Intent name* field, and then click **Create intent**.
4. Add the following user examples:

Tell me about the restaurant

I want to know about you

who are the restaurant owners and what is their philosophy? What's your story?

Where do you source your produce from?

Who is your head chef and what is the chef's background? How many locations do you have?

do you cater or host functions on site?

Do you deliver?

Are you open for breakfast?

5. Click the **Close** icon to finish adding the **#about_restaurant** intent.

You added an intent and provided examples of utterances that real users might enter to trigger this intent.

Add a dialog node that is triggered by the **#about_restaurant** intent

Add a dialog node that recognizes when the user input maps to the intent that you created in the previous step, meaning its condition checks whether the service recognized the **#about_restaurant** intent from the user input.

1. Click the **Dialogs** tab.
2. Find the **#General_Greetings** node in the dialog tree.

You will add a node that checks for questions about the restaurant below this initial greeting node to reflect the flow you might expect to encounter in a normal conversation. For example, **Hello**. then **Tell me about yourself**.

- Click the **More** icon on the **#General_Greetings** node, and then select **Add node below**.

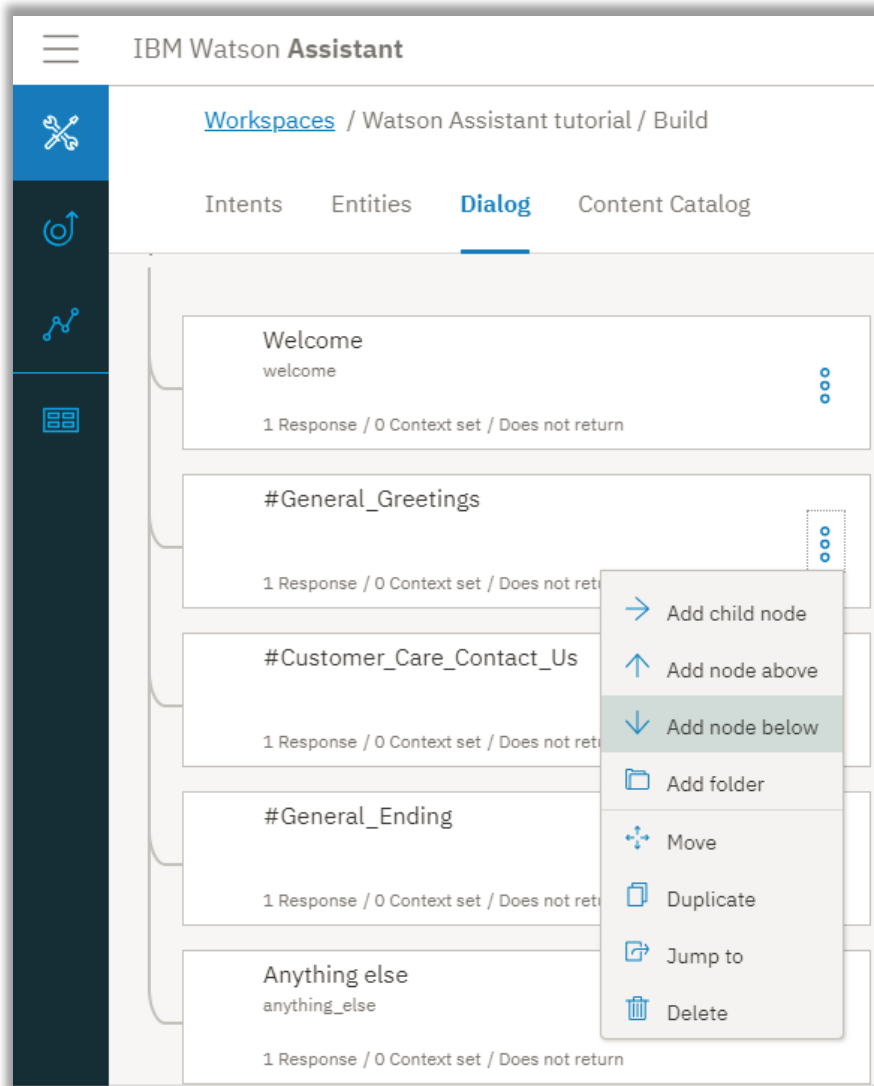


Figure 2-2 Add additional nodes

- Start to type **#about_restaurant** into the Enter a condition field of this node. Then select the **#about_restaurant** option.
- Add the following text as the response:

Truck Stop Gourmand is the brain child of Gloria and Fred Smith. What started out as a food truck in 2004 has expanded into a thriving restaurant. We now have one brick and mortar restaurant in downtown Portland. The bigger kitchen brought with it new chefs, but each one is faithful to the philosophy that made the Smith food truck so popular to begin with: deliver fresh, local produce in inventive and delicious ways. Join us for lunch or dinner seven days a week. Or order a cake from our bakery.

5. Let's add an image to the response also. Click **Add response type**. Select **Image** from the drop-down list.
6. In the **Image source** field, add <https://www.ibmlearningcenter.com/wp-content/uploads/2018/02/IBM-Learning-Center-Food4.jpg>.
7. Move the image response type up, so it is displayed in the response before the text is displayed. Click the **Move** up arrow to reorder the two response types.

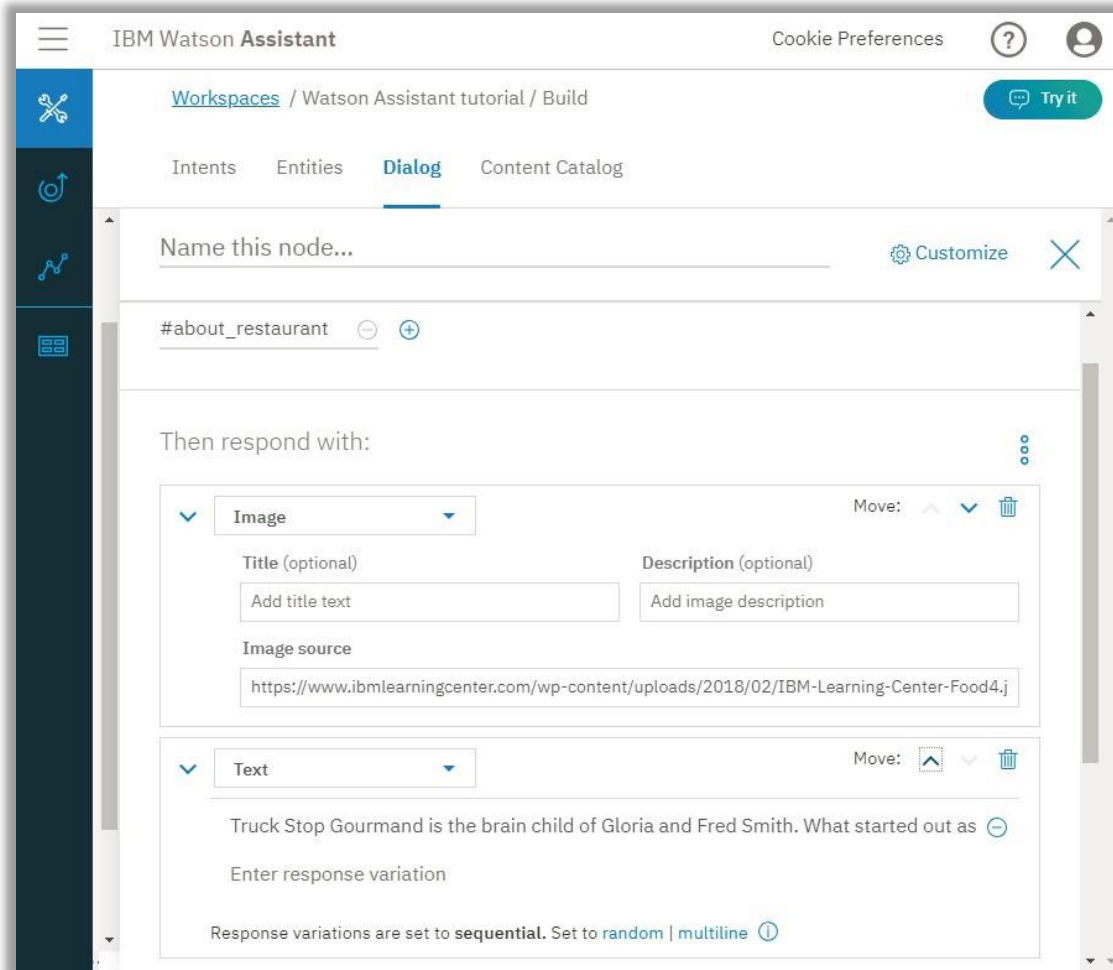




Figure 2-3 Add an image as a response type

7. Click  to close the edit view.

Test the #about_restaurant dialog node

Test the intent by checking whether user utterances that are similar to, but not exactly the same as, the examples you added to the training data have successfully trained the service to recognize input with an **#about_restaurant** intent.

1. Click the  icon to open the "Try it out" pane.
2. Enter, **I want to learn more about your restaurant.**

The service indicates that the **#about_restaurant** intent is recognized, and returns a response with the image and text that you specified for the dialog node

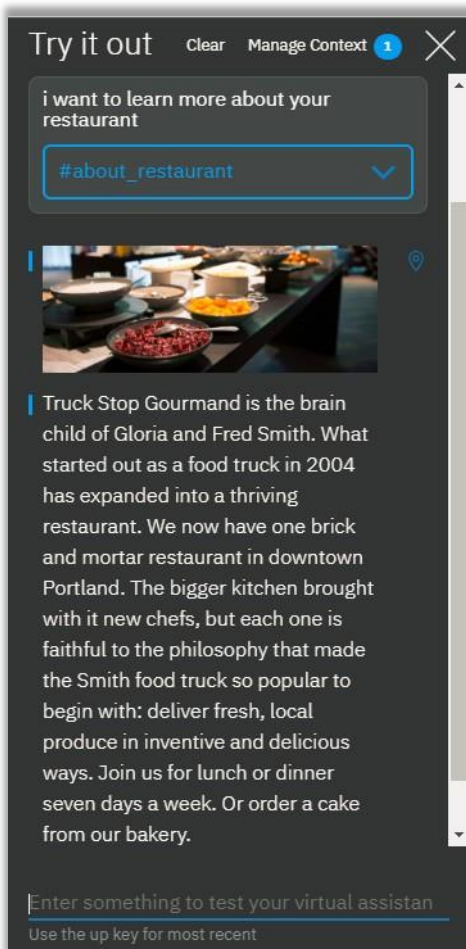


Figure 2-4 Testing that Chatbot will display image

E. Create an Assistant

An assistant is a cognitive bot to which you add a skill that enables it to interact with your customers in useful ways.

1. Click the **Assistants** tab.
2. Click **Create new**.

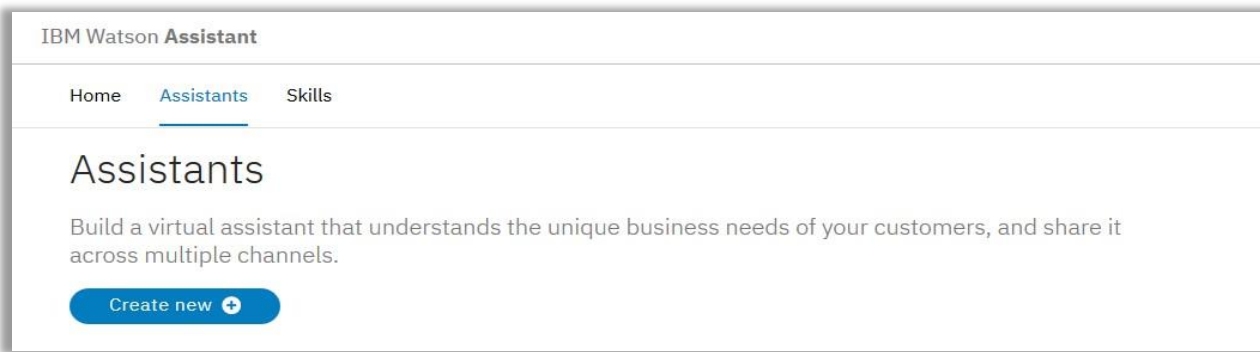


Figure 5-5 Create new assistant

3. Name the assistant Assistant tutorial.
4. In the Description field, enter This is a sample assistant that I am creating to help me learn.
5. Click **Create**.

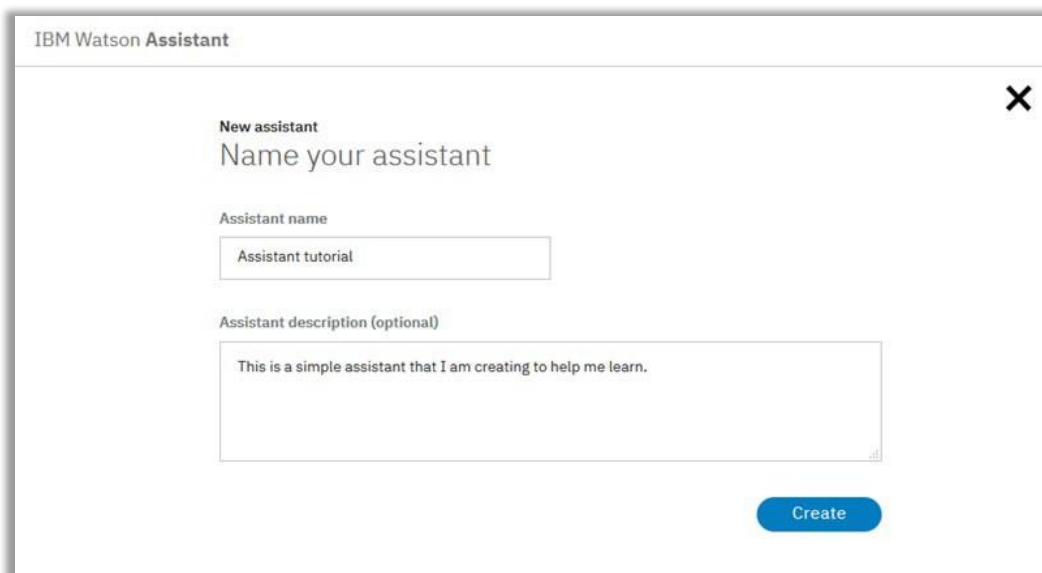


Figure 5-6 Create Assistant tutorial

Milestone 6: Add Your Skill to Your assistant

Milestone Overview

This lab requires you to complete seven Milestones:

1. Create Watson Assistant Service
2. Create an Assistant
3. Create a dialog Skill
4. Add intents from a content catalog
5. Build a Dialog
6. **Add Your Skill to Your assistant**
7. Integrate the Assistant

Add the dialog skill that you build to the assistant you created.

Steps

1. From the new assistant page, click **Add skill**.

If you created or were given developer role access to any workspaces that were built with the generally available version of the Watson Assistant service, you will see them listed on the Skills page as conversational skills.

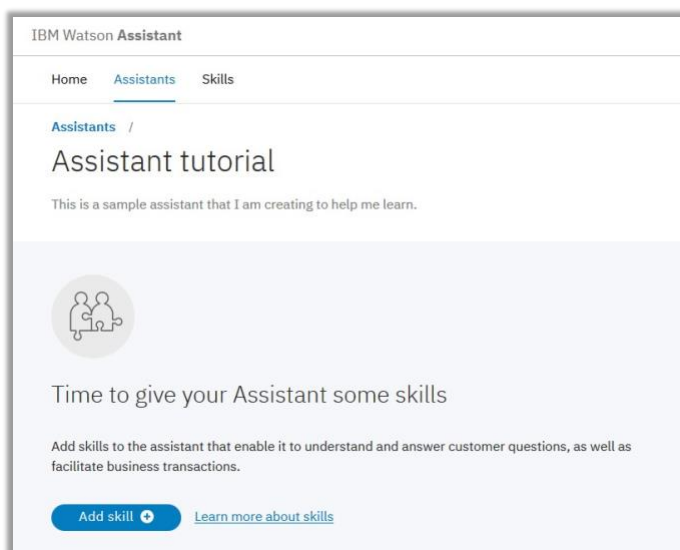


Figure 6-1 Adding Skill to new assistant

2. Choose to add the skill that you created earlier to the assistant.

Milestone 7: Integrate the Assistant

Milestone Overview

This lab requires you to complete seven Milestones:

1. Create Watson Assistant Service
2. Create an Assistant
3. Create a dialog Skill
4. Add intents from a content catalog
5. Build a Dialog
6. Add Your Skill to Your assistant
7. **Integrate the Assistant**

Now that you have an assistant that can participate in a simple conversational exchange, publish it to a public web page where you can test it out. The service provides a built-in integration that is called a Preview Link. When you create this type of integration, it builds your assistant into a chat widget that is hosted by an IBM-branded web page. You can open the web page and chat with your assistant to test it out.

Steps

1. Click the **Assistants** tab, find the **Watson Assistant tutorial** assistant that you created, and open it.
2. From the *Integrations* area, click **Add integration**.
3. Find **Preview Link** and click **Select integration**.
4. Click the URL that is displayed on the page. The page opens in a new tab.
5. Say **hello** to your assistant, and watch it respond. You can share the URL with others who might want to try out your assistant.



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