

IBM Training

Student Exercises

Lab-3: Create a COVID-19 Chabot Hands-On Lab

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Introduction

This lab will build a chatbot to respond to questions about COVID-19. Watson Assistant and Watson Discovery services from IBM will be used to build the chatbot.

Objectives

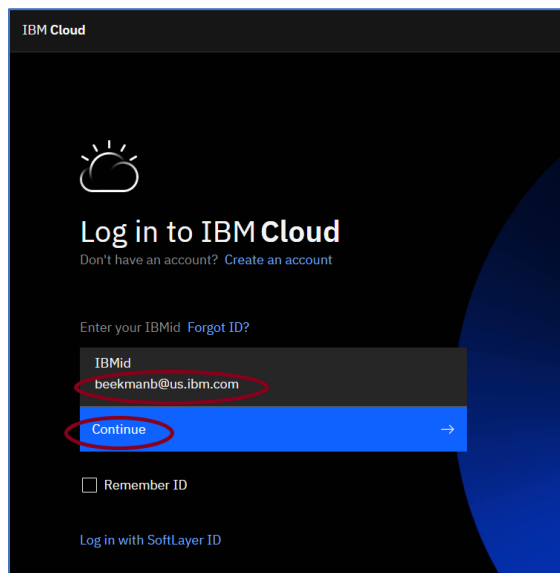
The goal of this lab is to familiarize the user with the Watson Assistant service. Watson Assistant is IBM's AI offering that lets you build, train, and deploy conversation interactions into any application, device, or channel. Watson Assistant can be deployed on any cloud or on-premises environment.

After completing this lab, you will be familiar with these features of Watson Assistant and IBM Cloud.

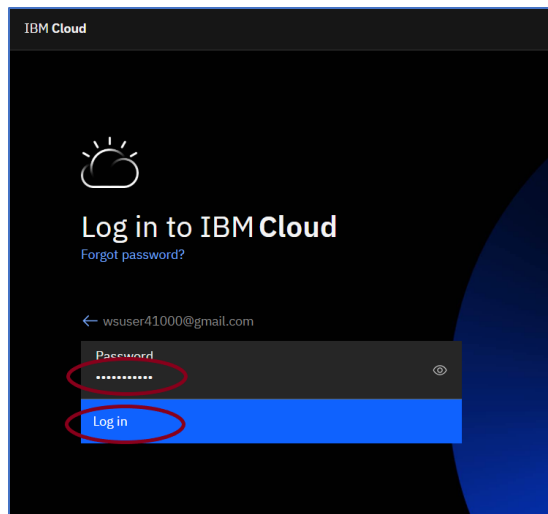
1. Provision an instance of Watson Assistant
2. Add a dialog skill to your Watson Assistant instance
3. Connect your Watson Assistant with Watson Discovery
4. Create Cloud Functions
5. Integrate data sources via a Watson Assistant webhook

Exercise 1: Create a Watson Assistant Instance

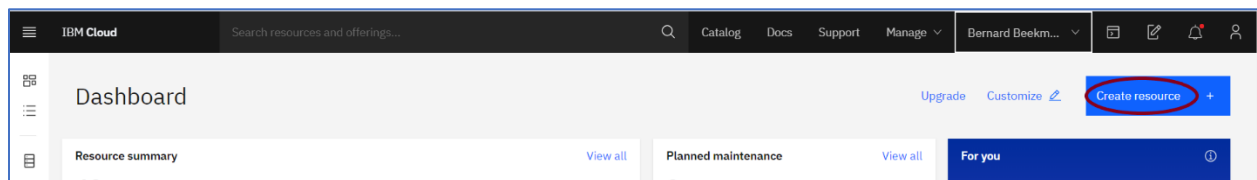
1. Log into your IBM Cloud account by typing in the url **cloud.ibm.com** in your Firefox or Chrome browser.
2. Enter your **IBMid** and click **Continue**.



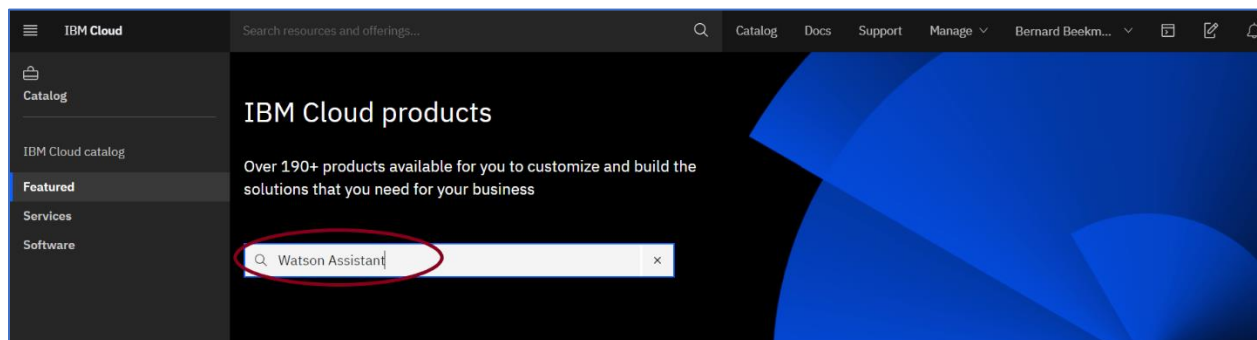
3. Enter your **Password** and click **Log in**.



4. Click **Create Resource**.




5. Enter **Watson Assistant** and click the <Enter> key.



6. Click on **Watson Assistant**.

Search results for 'Watson Assistant' 1 result



Watson Assistant
IBM • Services • AI

Watson Assistant lets you build conversational interfaces into any application, device, or channel.

Lite • Free • IAM-enabled

7. Click on the **Plus Trial** and click **Create**.

Plan	Features	Price
Lite	10,000 Messages/Month AI-Based Intent and Entity Recognition Entity Synonym Recommendations Visual Dialog Edit with Simple Response Types (Text, Options, Images, etc...) Prebuilt Content Available Analytics Dashboard with 7 Days of Storage 5 Dialog Skills, Each with 100 Dialog Nodes Shared Public Cloud	Free
Plus Trial	Everything in Plus, for 30 days, for free! 50,000 Messages 5,000 Users Creation limits consistent with the Lite Plan Plus Trial Plan Lite plan services are deleted after 30 days of inactivity.	Free
Plus	Unlimited Users/Month 50 Dialog and Search skills, Unlimited Dialog Nodes for Dialog skills Web-chat and service Desk Integrations Intent Recommendations Intent Conflict Detection Disambiguation	\$120.00 USD/Thousand Authorized Users
Premium	Everything in Plus, with these additions... Analytics Dashboard with 90 Days of Storage Up to 30 Instances with the ability to share log and analytics data across them Usage and Training Data is Private • Stored in an Isolated Single Tenant Environment	

Summary

Watson Assistant **Free**

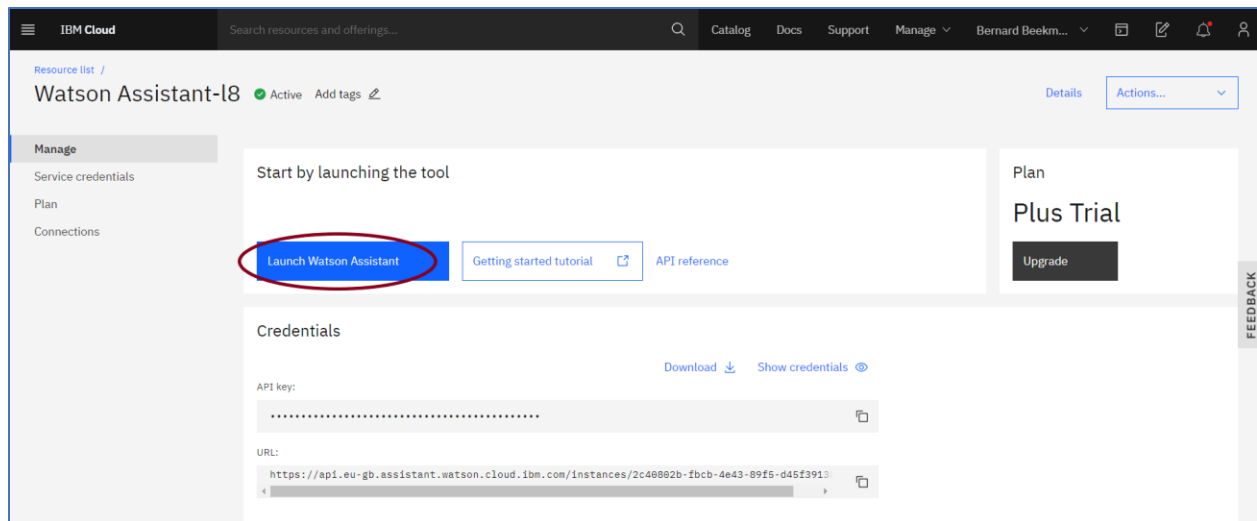
Region: Dallas
Plan: Plus Trial
Service name: Watson Assistant-qb
Resource group: Default


Create

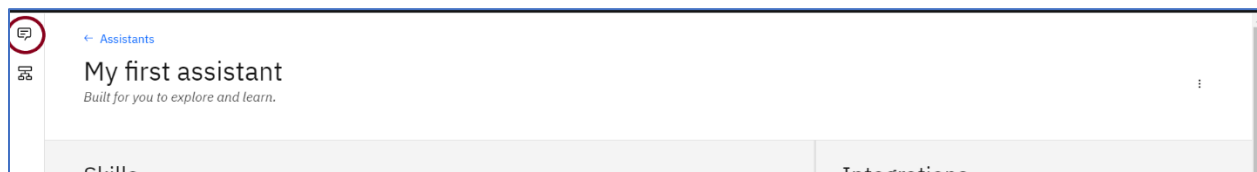
Add to estimate

FEEDBACK

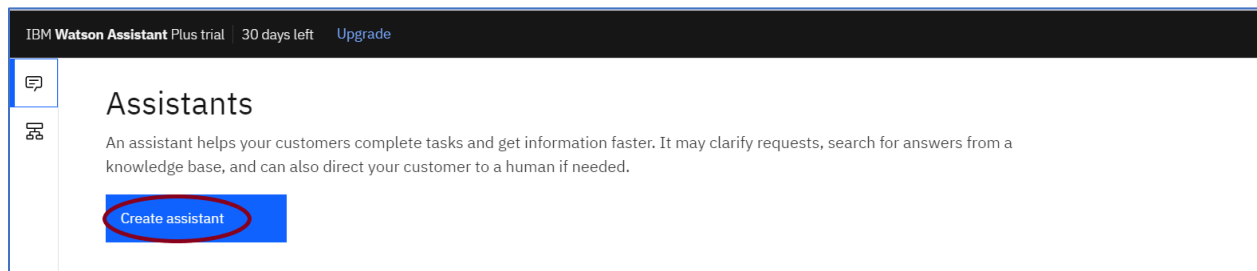
8. Click on **Launch Watson Assistant**.



9. The My first assistant is created automatically. Click on the assistant icon  to create a second assistant.



10. Click on **Create assistant**.



11. Enter **COVID-19 Crisis Communication** for the **Name** and click **Create 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.

COVID-19 Crisis Communication

Description (optional)

Add a description for this assistant

Preview Link ⓘ

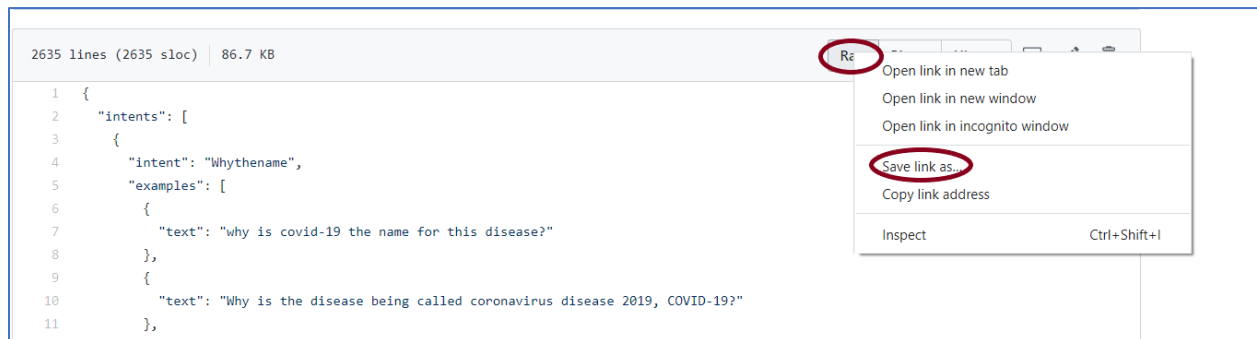
☒ Enable Preview Link

Create assistant

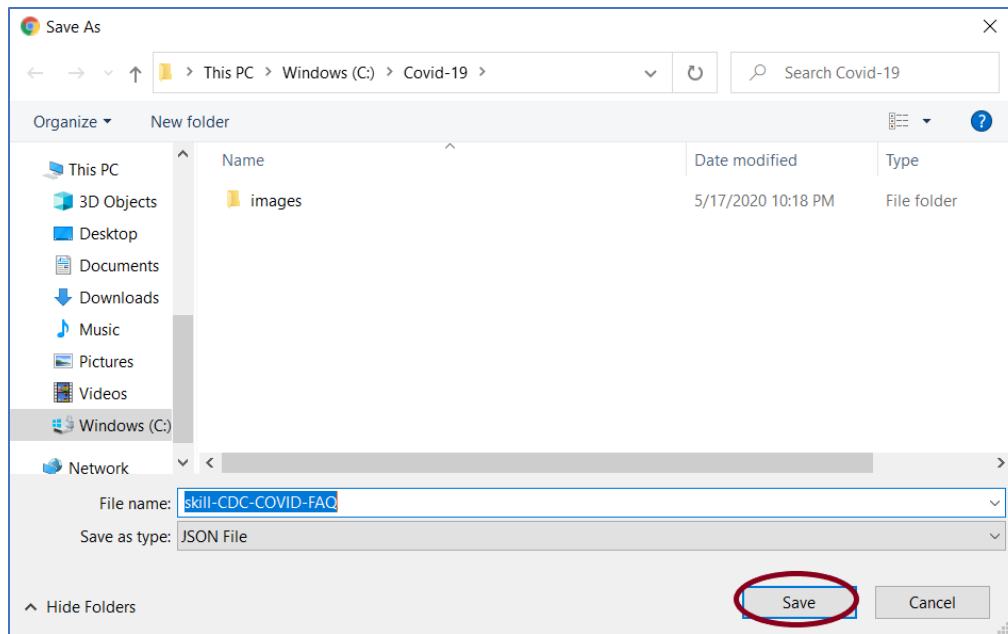
Exercise 2: Download the COVID-19 FAQ file.

In this exercise, you will download a COVID-19 FAQ file. This file will contain the configuration for Watson Assistant to be able to respond to COVID-19 inquiries. The file consists of pre-defined intents, entities, and dialogs.

1. Click [here](#) to download the FAQ file.
2. Right-click on **Raw**, then click on **Save link as ...**



3. Navigate to the location that you want to save the file then click **Save**.



Intents, Entities, and Dialogs are discussed in more detail below to explain the content of the JSON file and how intents, entities, and dialogs are used by Watson Assistant to implement a chatbot. The lab steps continue with Exercise 3: Create a Watson Assistant Skill.

Intents

Intents are purposes or goals that are expressed in a customer's input, such as answering a question or processing a bill payment. By recognizing the intent expressed in a customer's input, the Watson Assistant service can choose the correct dialog flow for responding to it.

In planning the intents for your application, consider what your customers might want to do, and what you want your application to be able to handle on their behalf. For example, you might want your application to help your customers make a purchase. If so, you can add a `#buy_something` intent. (The `#` that is added as a prefix to the intent name helps to clearly identify it as an intent.)

After you decide which business requests that you want your application to handle for your customers, you must teach Watson about them. For each business goal (such as `#buy_something`), you must provide at least 5 examples of utterances that your customers typically use to indicate their goal. For example, `I want to make a purchase.`

Ideally, find real-world user utterance examples that you can extract from existing business processes. The user examples should be tailored to your specific business. For example, if you are an insurance company, a user example might look more like this, `I want to buy a new XYZ insurance plan.`

The examples that you provide are used by your assistant to build a machine learning model that can recognize the same and similar types of utterances and map them to the appropriate intent.

Entities

Entities represent information in the user input that is relevant to the user's purpose.

If intents represent verbs (the action a user wants to do), entities represent nouns (the object of, or the context for, that action). For example, when the *intent* is to get a weather forecast, the relevant location and date *entities* are required before the application can return an accurate forecast.

Recognizing entities in the user's input helps you to craft more useful, targeted responses. For example, you might have a `#buy_something` intent. When a user makes a request that triggers the `#buy_something` intent, the assistant's response should reflect an understanding of what the *something* is that the customer wants to buy. You can add a `@product` entity, and then use it to extract information from the user input about the product that the customer is interested in. (The `@` prepended to the entity name helps to clearly identify it as an entity.)

Your assistant detects entities in the user input by using one of the following evaluation methods:

Dictionary-based method

Your assistant looks for terms in the user input that match the values, synonyms, or patterns you define for the entity.

- **Synonym entity:** You define a category of terms as an entity (`color`), and then one or more values in that category (`blue`). For each value you specify a bunch of synonyms (`aqua`, `navy`). You can also pick synonyms to add from recommendations made to you by Watson.

At run time, your assistant recognizes terms in the user input that exactly match the values or synonyms that you defined for the entity as mentions of that entity.

- **Pattern entity:** You define a category of terms as an entity (`contact_info`), and then one or more values in that category (`email`). For each value, you specify a regular expression that defines the textual pattern of mentions of that value type. For an `email` entity value, you might want to specify a regular expression that defines a `text@text.com` pattern.

At run time, your assistant looks for patterns matching your regular expression in the user input, and identifies any matches as mentions of that entity.

- **System entity:** Synonym entities that are prebuilt for you by IBM. They cover commonly used categories, such as numbers, dates, and times. You simply enable a system entity to start using it.

Annotation-based method

When you define an annotation-based entity, which is also referred to as a contextual entity, a model is trained on both the *annotated term* and the *context* in which the term is used in the sentence you annotate. This new contextual entity model enables your assistant to calculate a confidence score that identifies how likely a word or phrase is to be an instance of an entity, based on how it is used in the user input.

- **Contextual entity:** First, you define a category of terms as an entity (`product`). Next, you go to the *Intents* page and mine your existing intent user examples to find any mentions of the entity, and label them as such. For example, you might go to the `#buy_something` intent, and find a user example that says, I want to buy a Coach bag. You can label `Coach bag` as a mention of the `@product` entity.

For training purposes, the term you annotated, `Coach bag`, is added as a value of the `@product` entity.

At run time, your assistant evaluates terms based on the context in which they are used in the sentence only. If the structure of a user request that mentions the term matches the structure of an intent user example in which a mention is labeled, then your assistant interprets the term to be a mention of that entity type. For example, the user input might include the utterance, I want to buy a Gucci bag. Due to the similarity of the structure of this sentence to the user example that you annotated (I want to buy a Coach bag), your assistant recognizes Gucci bag as a `@product` entity mention.

When a contextual entity model is used for an entity, your assistant does *not* look for exact text or pattern matches for the entity in the user input but focuses instead on the context of the sentence in which the entity is mentioned.

If you choose to define entity values by using annotations, add at least 10 annotations per entity to give the contextual entity model enough data to be reliable.

Dialogs

The **dialog** uses the intents that are identified in the user's input, plus context from the application, to interact with the user and ultimately provide a useful response.

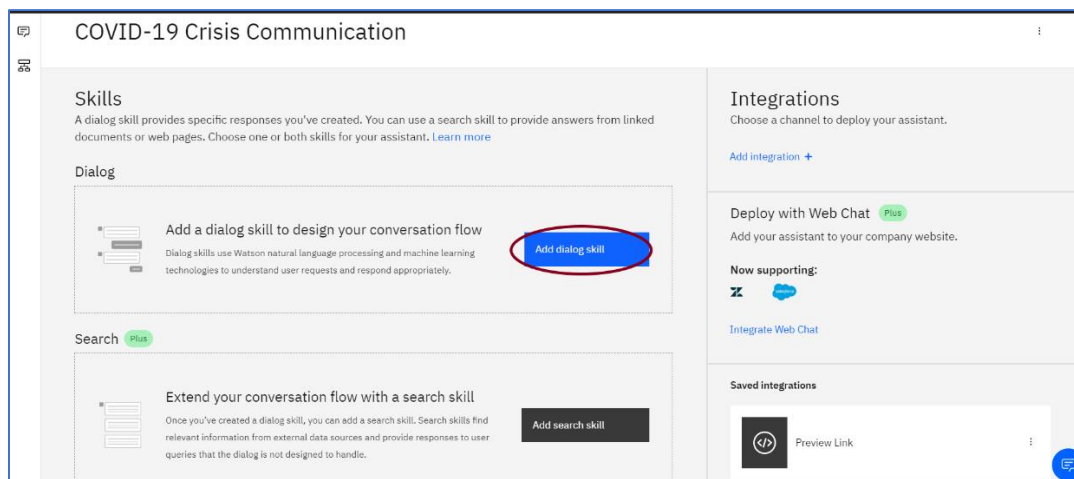
The dialog matches intents (what users say) to responses (what the bot says back). The response might be the answer to a question such as Where can I get some gas? or the execution of a command, such as turning on the radio. The intent and entity might be enough information to identify the correct response, or the dialog might ask the user for more input that is needed to respond correctly. For example, if a user asks, Where can I get some food? you might want to clarify whether they want a restaurant or a grocery store, to dine in or take out, and so on. You can ask for more details in a text response and create one or more child nodes to process the new input.

Exercise 3: Create a Watson Assistant Skill

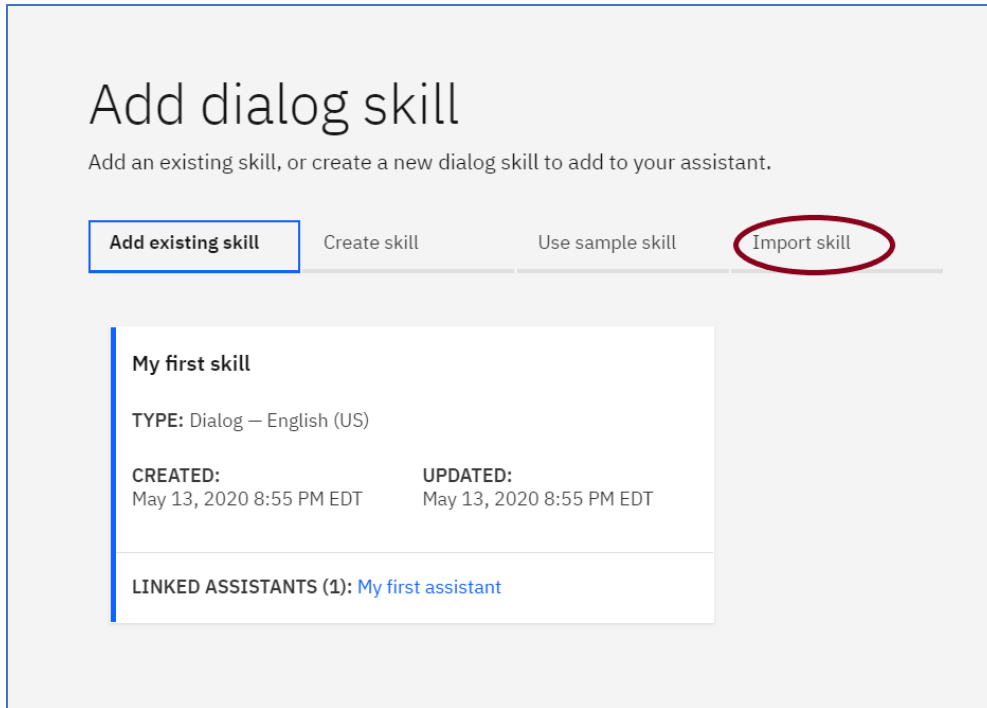
Watson assistant receives user input and routes it to the appropriate skill. Two types of skills can be created in the assistant.

- The **dialog skill** interprets the user input and directs the flow of the conversation. The dialog gathers any information it needs to respond or perform a transaction on the user's behalf. This skill understands typical questions or requests from users and answers or fulfills them by following a dialog that is scripted by you.
- The **search skill** routes complex customer queries to Watson Discovery. Watson Discovery treats the user input as a search query. It finds information relevant to the query from the configured data sources, extracts the passage, and returns it so the assistant can share the information with the user as its response.

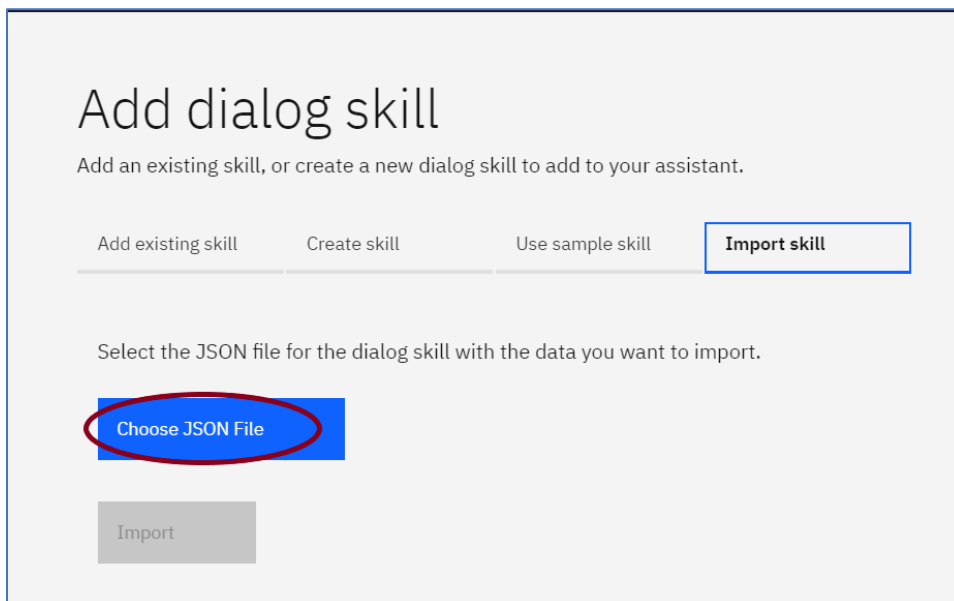
1. Click **Add dialog skill**



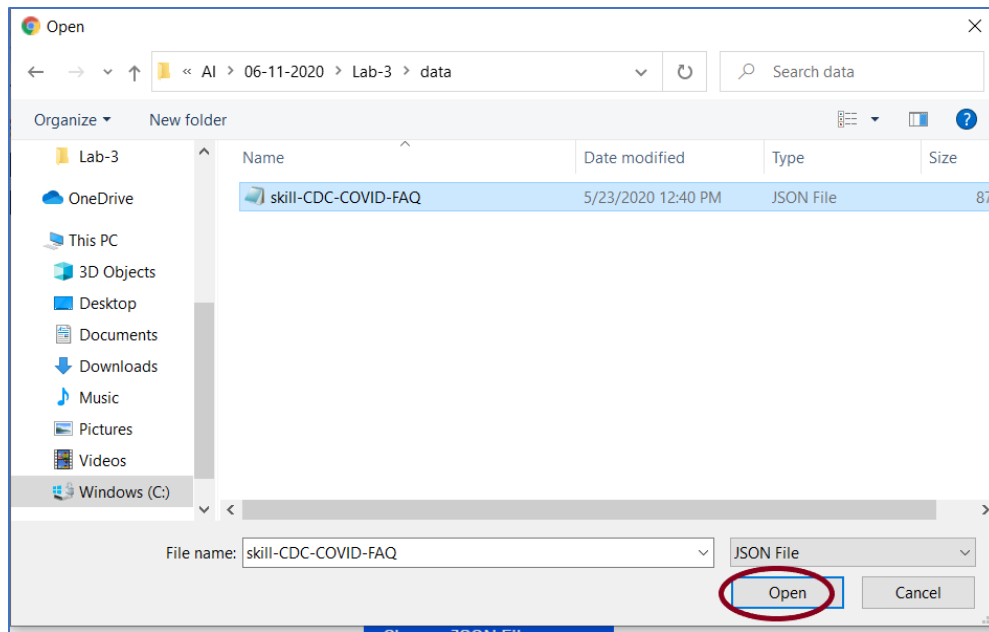
2. Click **Import skill**.



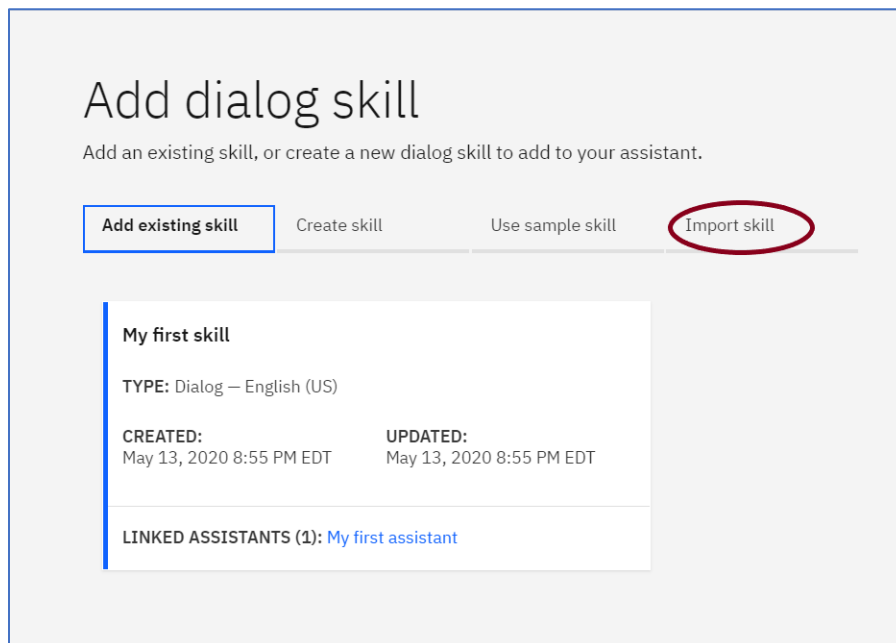
3. Click on **Choose JSON File**.



4. Navigate to the directory where you stored the JSON file, click on the file, and click



5. Click **Import**.



6. The file was successfully imported, and the CDC COVID FAQ skill was added. You can see there are 52 **Intents**, 9 **Entities**, and 73 **Dialog nodes**. Click on the **CDC COVID FAQ Skill**.

Skills

A dialog skill provides specific responses you've created. You can use a search skill to provide answers from linked documents or web pages. Choose one or both skills for your assistant. [Learn more](#)

Dialog

CDC COVID FAQ

LANGUAGE: English (US) **TRAINED DATA:** 52 Intents | 9 Entities | 73 Dialog nodes **VERSION:** draft **DESCRIPTION:** --- **VERSION CREATED:** Jun 23, 2020 10:31 PM EDT

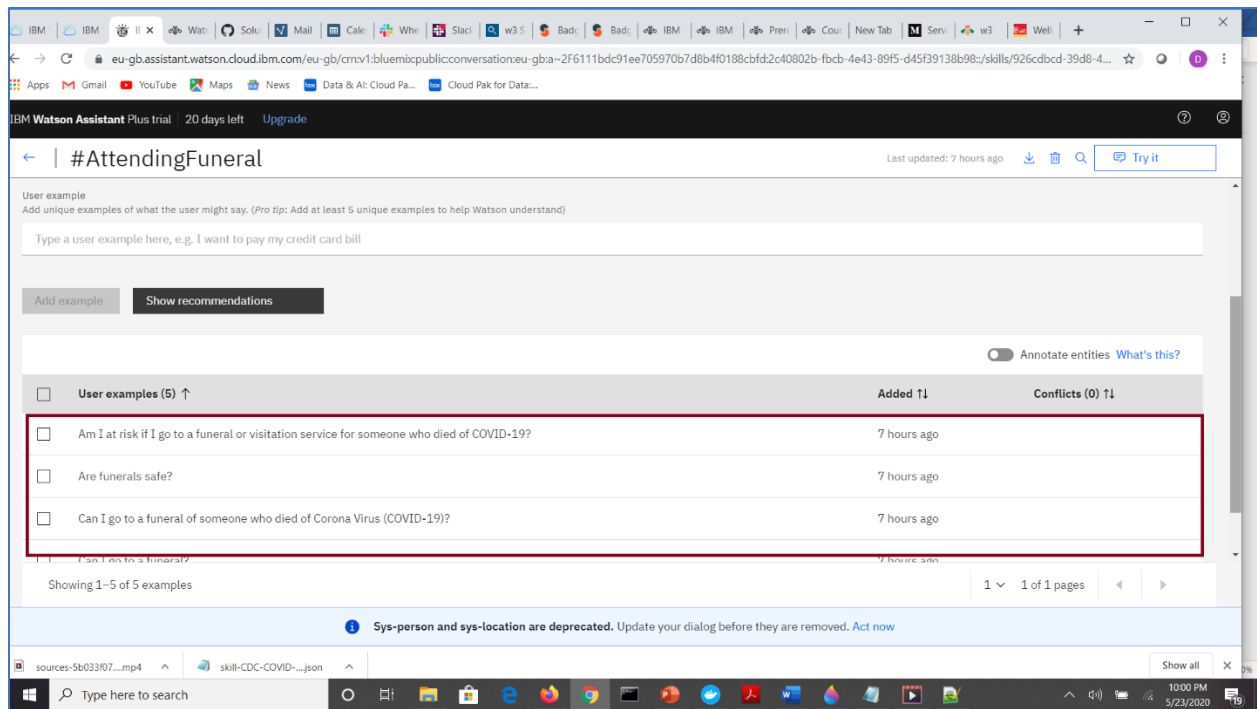
LINKED ASSISTANTS (1): COVID-19 Crisis Communication

7. You can browse through the Intents. Click on one of them and view the examples provided to train the intent. #AttendingFuneral was selected in the figure below.

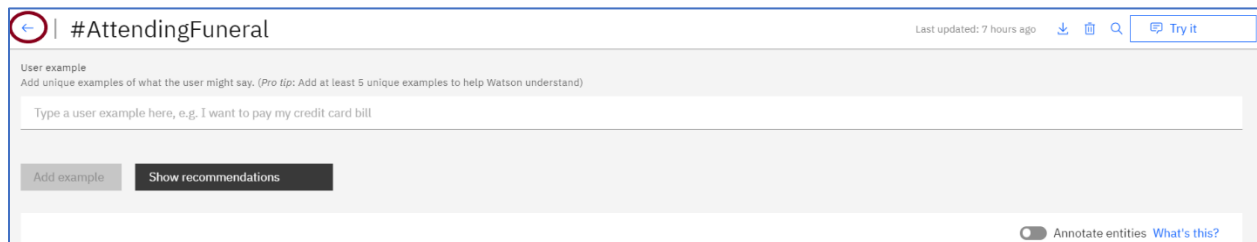
The screenshot shows the 'Intents' tab for the 'CDC COVID FAQ' skill in a development environment. A table lists 41 intents, with '#AttendingFuneral' highlighted. The table columns are Intents (41) ↑, Description, Modified ↑↓, Conflicts ↑↓, and Examples ↑↓. The '#AttendingFuneral' intent has 5 examples. The bottom of the screen shows 'Showing 1-41 of 41 intents' and '1 of 1 pages'.

Intents (41) ↑	Description	Modified ↑↓	Conflicts ↑↓	Examples ↑↓
#AnimalContact	Human - Animal interaction guidance	7 hours ago		7
#AttendingFuneral	Funeral attendance guidance	7 hours ago		5
#CDC_Response	Info about the CDC	7 hours ago		5
#ChildrenAndFaceMasks	Guidance regarding Children wearing Facemas...	7 hours ago		5
#ChildrenSocializing	Child Socialization guidance	7 hours ago		6
#CommunitySpread	Defining Community Spread	7 hours ago		7

8. Scroll down to view the examples.



9. Click on the back arrow icon  to return to the **Intents** page.

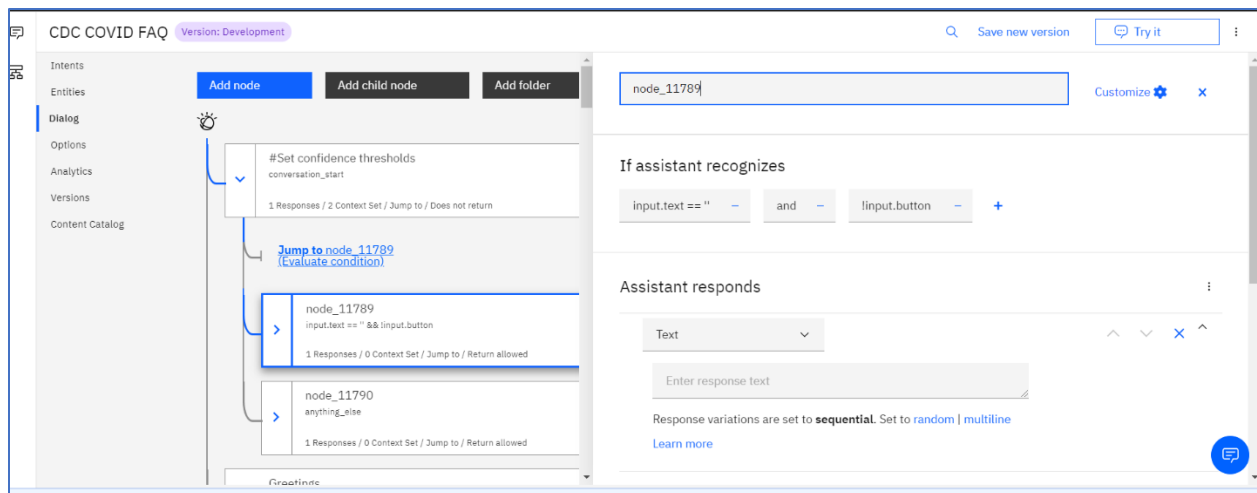


10. Click on **Entities**. Six (6) entities are shown. Note, there are also 3 system entities that are enabled in the **System entities** tab. That adds up to the 9 total entities documented above. The entities all use the Dictionary-based evaluation method. Four entities (shown in Maroon) use dictionaries, 1 entity (shown in Blue) uses a regular expression, and 1 entity (shown in Green) uses a system entity.

Entity (6) ↑	Values	Modified ↑↓
@coronavirus	coronavirus	7 hours ago
@landmark	empire state building, times square, grand central	7 hours ago
@phone	US Phone pattern	7 hours ago
@reply	no, yes	7 hours ago
@school_type	high school, grade school, middle school, college, preschool	7 hours ago
@zip_code	@sys-number	7 hours ago

Showing 1–6 of 6 entities

11. Click on the Dialog option. Browse through the dialog nodes to get a feel for the navigation logic.




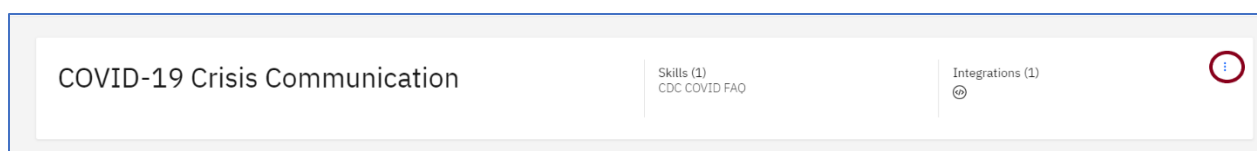
12. Click on the Assistant icon  to return to the All Assistants page.



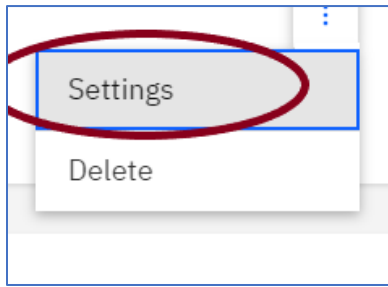
Exercise 4: Get Assistant and Skill Identifier and API keys.

You will need identifiers and API keys to integrate the chatbox with other services.

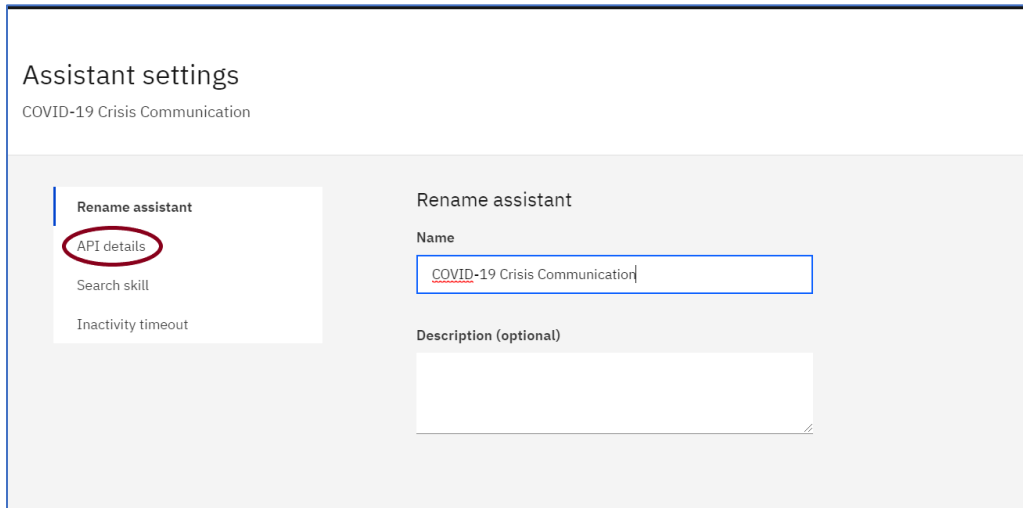
1. Click on the vertical ellipse  at the right side of the COVID-19 Crisis Communication Assistant.



2. Click **Settings**.



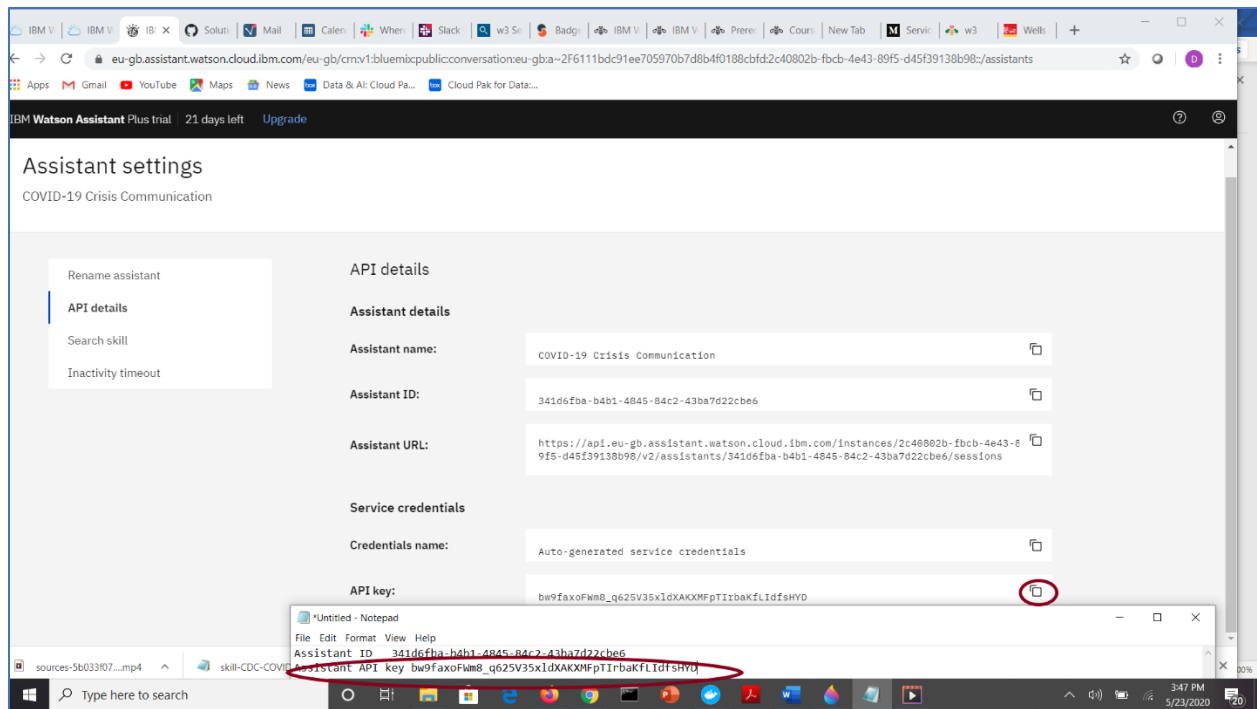
3. Click on **API details**.



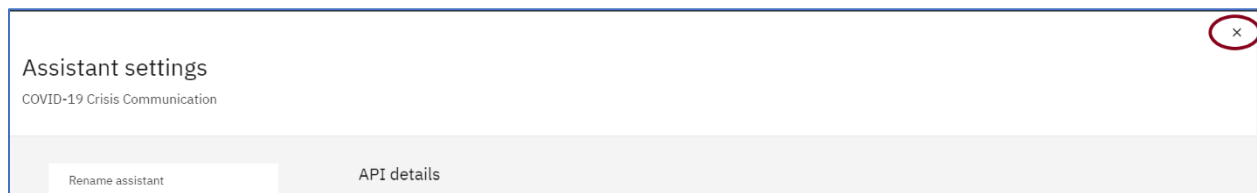
4. Open Notepad or another editor that you generally use. Type in Assistant Id: and then copy and paste the **Assistant ID** in.



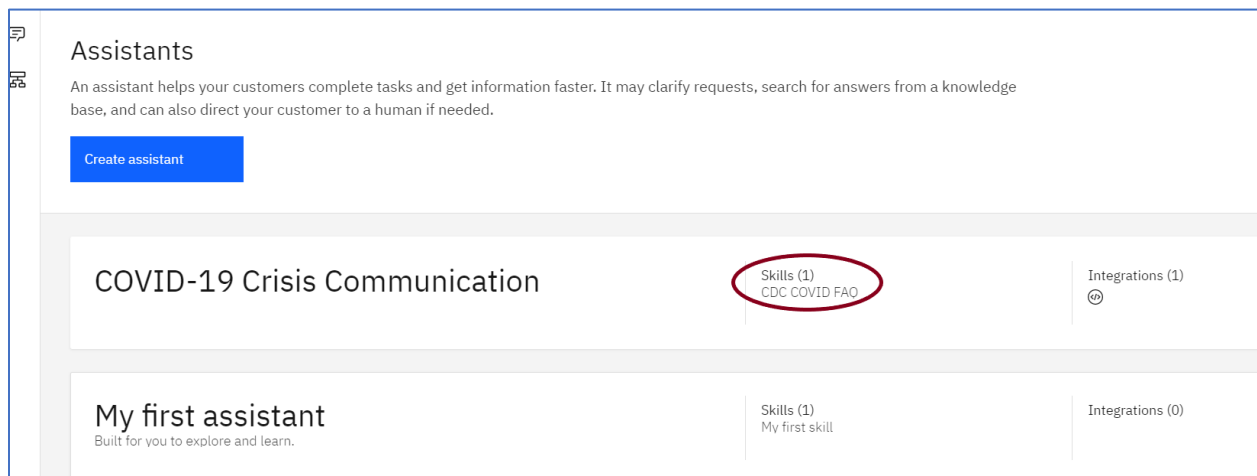
5. Type in Assistant API key, and then cut and paste the API key.




6. Close the Assistant settings page by click on the “x”.



7. Click on the **CDC_COVID_FAQ Skills** link.



8. Click on the vertical ellipse  and then click on **View API details**.

Skills

A dialog skill provides specific responses you've created. You can use a search skill to provide answers from linked documents or web pages. Choose one or both skills for your assistant. [Learn more](#)

Dialog

CDC COVID FAQ

LANGUAGE:
English (US)

TRAINED DATA:
41 Intents | 9 Entities | 62 Dialog nodes

VERSION:
draft

DESCRIPTION:

VERSION:
May 23,

View API details

Export

Swap skill

Change skill version

Remove skill

LINKED ASSISTANTS (1): COVID-19 Crisis Communication

Search Plus

Expand your assistant's knowledge

9. Copy and Paste the **Skill ID** to Notepad.

Skill details

Skill name: CDC COVID FAQ

Skill ID: 926cdbcd-39d8-4456-9177-38088ed484c4

Copy

Legacy v1 workspace URL: <https://api.eu-gb.assistant.watson.cloud.ibm.com/instances/2c40802b-fbcb-4e43-89f5-d45f39138b98/v1/workspaces/926cdbcd-39d8-4456-9177-38088ed484c4/message>

Service credentials

Service credentials name: Auto-generated service credentials

API key: bw9faxoFWm8_q625V35xldXAKXMFpTlrbakfLIdfsHYD

*Untitled - Notepad
File Edit Format View Help
Assistant ID 341d6fba-b4b1-4845-84c2-43ba7d22cbe6
Assistant API key bw9faxoFWm8_q625V35xldXAKXMFpTlrbakfLIdfsHYD
Skill ID: 926cdbcd-39d8-4456-9177-38088ed484c4

Paste

10. Close the **Skill details** page.

Skill details

Skill name: CDC COVID FAQ

Skill ID: 926cdbcd-39d8-4456-9177-38088ed484c4

Legacy v1 workspace URL: <https://api.eu-gb.assistant.watson.cloud.ibm.com/instances/2c40802b-fbcb-4e43-89f5-d45f39138b98/v1/workspaces/926cdbcd-39d8-4456-9177-38088ed484c4/message>

11. Click on **Preview** link.

Skills

A dialog skill provides specific responses you've created. You can use a search skill to provide answers from linked documents or web pages. Choose one or both skills for your assistant. [Learn more](#)

Dialog

CDC COVID FAQ

LANGUAGE:	TRAINED DATA:	VERSION:	DESCRIPTION:	VERSION CREATED:
English (US)	41 Intents 9 Entities 62 Dialog nodes	draft	---	May 23, 2020 2:58 PM EDT

LINKED ASSISTANTS (1): COVID-19 Crisis Communication

Search Plus

Expand your assistant's knowledge

For customer questions or requests that require lengthy or complex responses, add a search skill. A search skill can access your existing self-service content to find relevant information and share it with your customers. [Learn more](#)

Add search skill

Integrations

Choose a channel to deploy your assistant.

[Add integration +](#)

Deploy with Web Chat Plus

Add your assistant to your company website.

Now supporting:

[Integrate Web Chat](#)

Saved integrations

Preview Link

12. Click link to try out the chatbot.

Preview link integration

Integration name

Preview Link

Description

A public link you can share to test your assistant outside of the tooling.

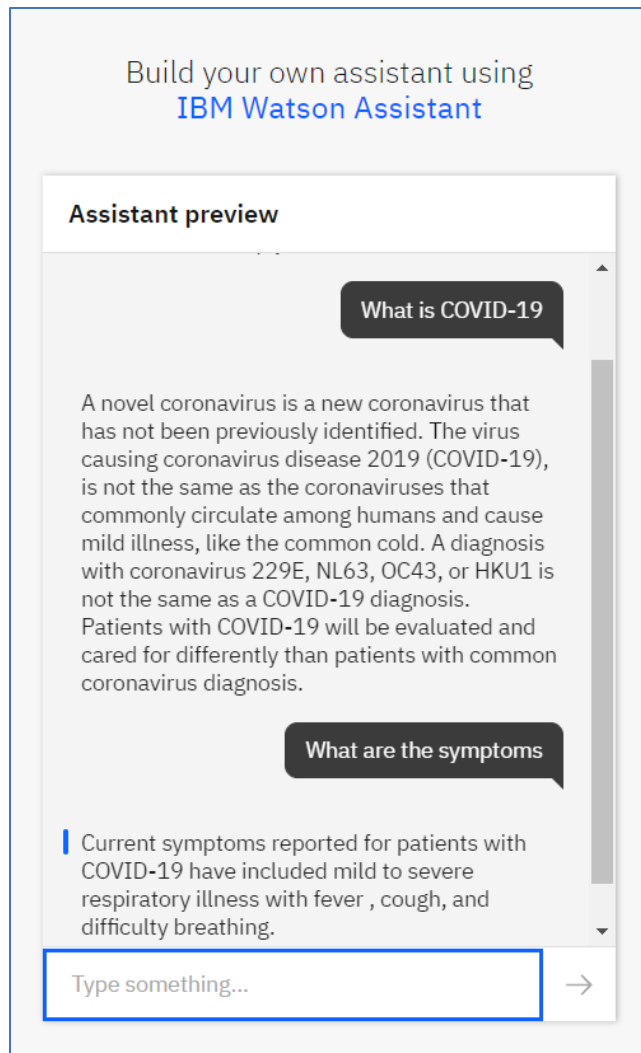
Try it out and share the link

Use of the assistant embedded in this web page incurs billing charges. ⓘ

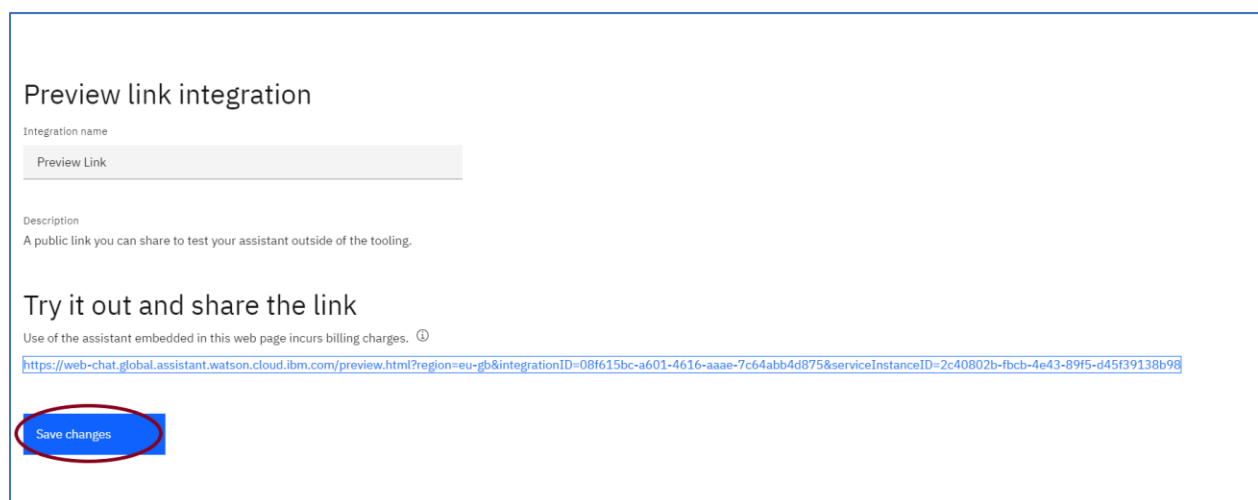
<https://web-chat.global.assistant.watson.cloud.ibm.com/preview.html?region=eu-gb&integrationID=08f615bc-a601-4616-aaae-7c64abb4d875&serviceInstanceID=2c40802b-fbcb-4e43-89f5-d45f39136b76>

Save changes

13. Type in “What is COVID-19” and then click on the right arrow icon. Type in “What are the symptoms and then click on the right arrow icon. You should see the responses shown in the figure below.



14. Close the browser tab corresponding to the Assistant preview.
15. Click **Save changes**.



Integrating Data Sources

The data that is currently driving the chatbot is static data. You can connect your Watson Assistant chatbot to data sources to query dynamic data. The following section shows you how to do this by adding webhooks to Watson Assistant.

Our crisis communication chatbot uses two different data sources:

- [Watson Discovery](#)
- [COVID-19 API](#)

Defining webhooks

First, let's look at what webhooks do. A *webhook* is a mechanism that allows you to call out to an external program based on something happening in your program. When used in a dialog skill, a webhook is triggered when the assistant processes a node that has a webhook enabled. The webhook collects data that you specify or that you collect from the user during the conversation and save in context variables.

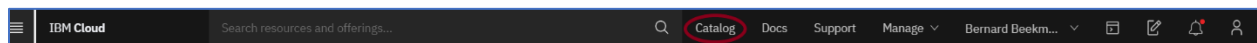
The chatbot sends the data as part of a HTTP POST request to the URL that you specify as part of your webhook definition. The URL that receives the webhook is the listener. It performs a predefined action using the information that you pass to it as specified in the webhook definition and can optionally return a response.

Exercise 5: Configuring Connection to Watson Discovery

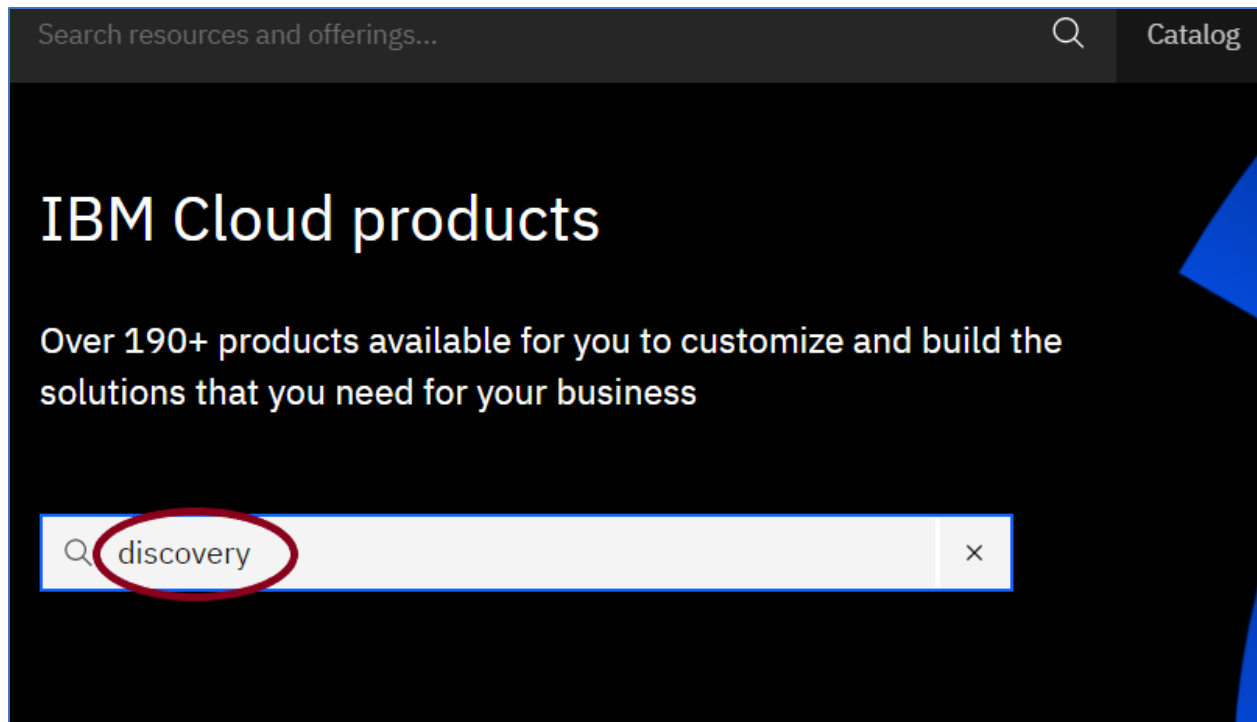
1. This lab is designed to be able to standalone. So, the assumption here is that a Discovery service needs to be created. If one already exists, please skip to step 7. Otherwise, click on the Watson Service browser tab.



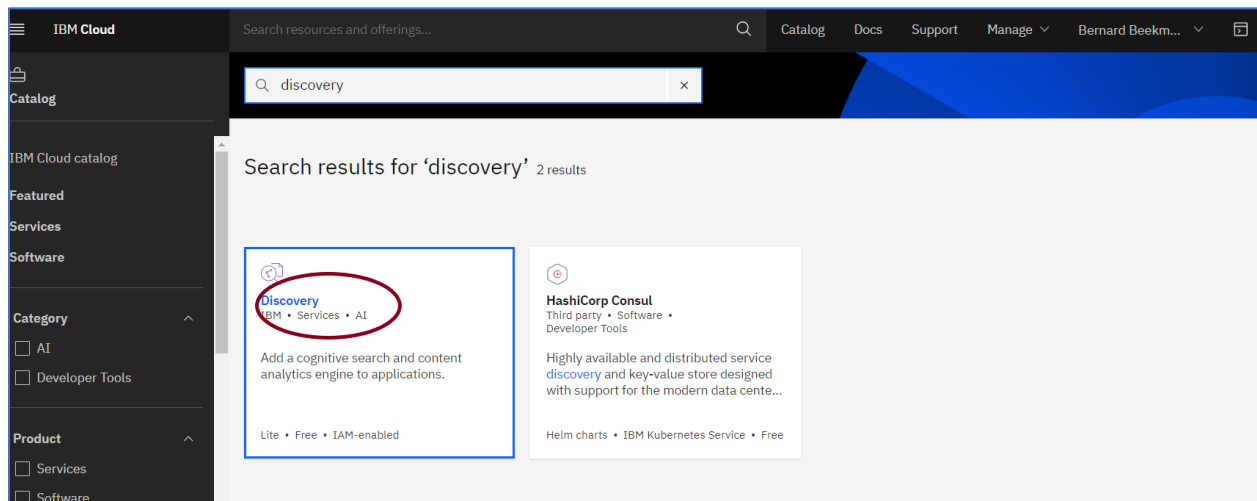
2. Click on **Catalog**.



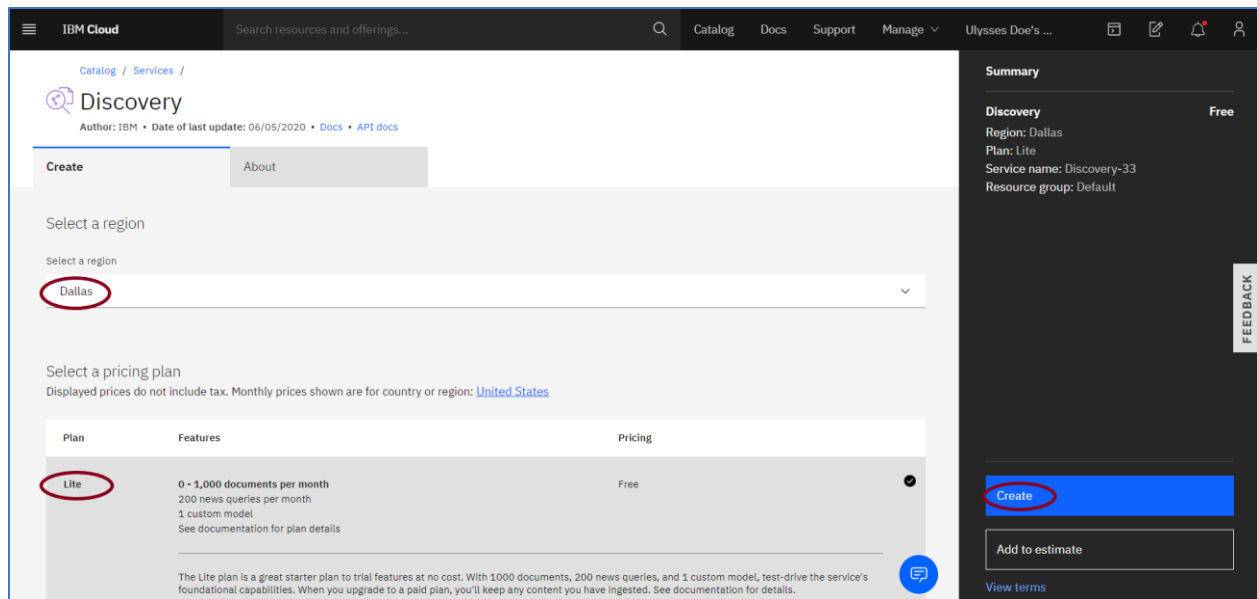
3. Enter discovery in the search box and click the <Enter> key.



4. Click **Discovery**.



5. Click **Create** to create the Discovery instance. **MAKE SURE TO CHANGE THE DISCOVERY INSTANCE TO BE THE SAME REGION AS THE WATSON ASSISTANT INSTANCE.**



6. The service may take some time to create. The **Resource** list page is displayed with the Discovery service showing a status of Provision in progress.



7. When the service becomes Active, click on the Discovery service.

Services (5)						
Discovery-33	Default	Dallas	Discovery	Active	—	
KnowledgeCatalog	Default	Dallas	Knowledge Catalog	Active	—	
Watson Assistant-qb	Default	Dallas	Watson Assistant	Active	—	
WatsonMachineLearning	Default	Dallas	Machine Learning	Active	—	
WatsonStudio	Default	Dallas	Watson Studio	Active	—	


8. Copy and Paste the API key into the Notepad file. Label it Discovery API.

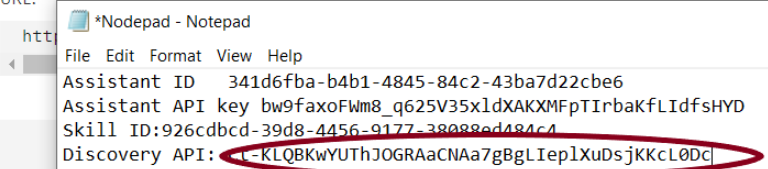
Start by launching the tool

[Launch Watson Discovery](#) [Getting started tutorial](#) [API reference](#)

Credentials

[Download](#) [Show credentials](#)

API key: 

URL: 

```
*Nodepad - Notepad
File Edit Format View Help
Assistant ID 341d6fba-b4b1-4845-84c2-43ba7d22cbe6
Assistant API key bw9faxoFwm8_q625V35xldXAKXMfpTirbaKfLIdfshYD
Skill ID:926cdbcd-39d8-4456-9177-38088ed484c4
Discovery API: Ct-KLQBKwYUTHJOGRAaCNAa7gBgLIeplXuDsJkKcL0Dc
```


9. Copy and Paste the **URL** into Notepad file. Label it Discovery URL.

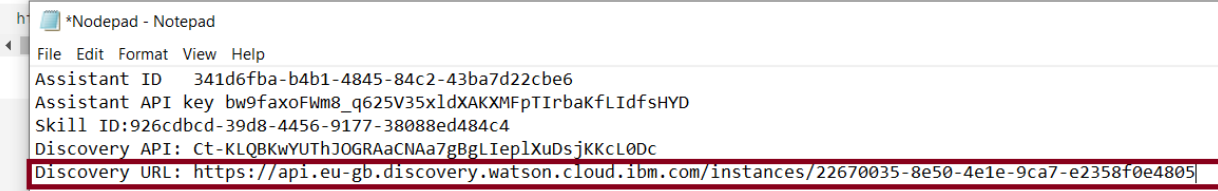
Start by launching the tool

[Launch Watson Discovery](#) [Getting started tutorial](#) [API reference](#)

Credentials

[Download](#) [Show credentials](#)

API key: 

URL: 

```
*Nodepad - Notepad
File Edit Format View Help
Assistant ID 341d6fba-b4b1-4845-84c2-43ba7d22cbe6
Assistant API key bw9faxoFwm8_q625V35xldXAKXMfpTirbaKfLIdfshYD
Skill ID:926cdbcd-39d8-4456-9177-38088ed484c4
Discovery API: Ct-KLQBKwYUTHJOGRAaCNAa7gBgLIeplXuDsJkKcL0Dc
Discovery URL: https://api.eu-gb.discovery.watson.cloud.ibm.com/instances/22670035-8e50-4e1e-9ca7-e2358f0e4805
```

10. Click **Launch Watson Discovery**.

Start by launching the tool

Launch Watson Discovery [Getting started tutorial](#) [API reference](#)

Credentials

[Download](#) [Show credentials](#)

API key:

.....

URL:

11. Click **Watson Discovery News** to open the Watson Discovery NEWS service, which is a prepopulated discovery dataset updated and maintained by the Watson Discovery team.

Manage data


Collections of your private data and pre-enriched data to configure and query against. [Learn more.](#)

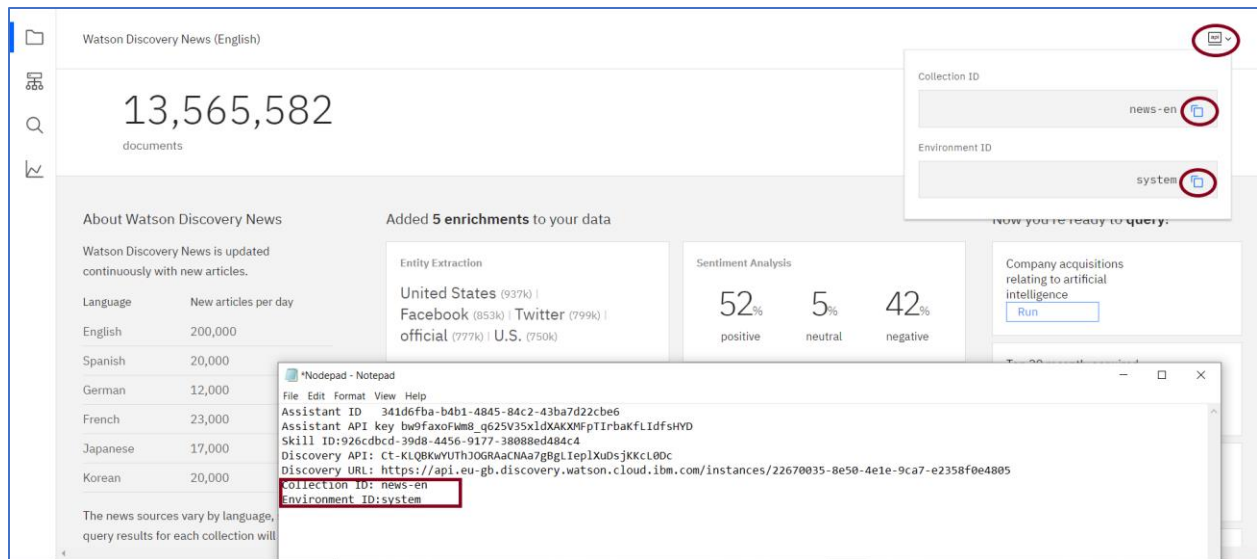
Create a new data collection [Upload your own data](#) [Connect a data source](#)

PRE-ENRICHED DATA

Watson Discovery News

News sources: English

12. From the top right corner, click on the API icon . Copy and Paste the Collection ID and the Environment ID into the Notepad file.



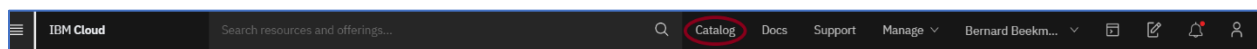
Exercise 6: Create Cloud Functions

IBM Cloud Functions are a Functions-as-a-Service (FaaS) platform based on Apache OpenWhisk. You can run your application code without servers, scale it automatically, and pay nothing when not in use.

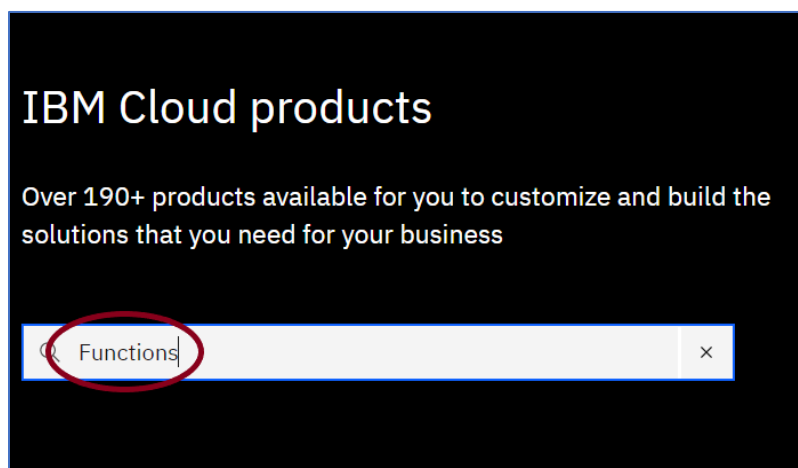
1. Click on the **Watson Service Page** browser tab.



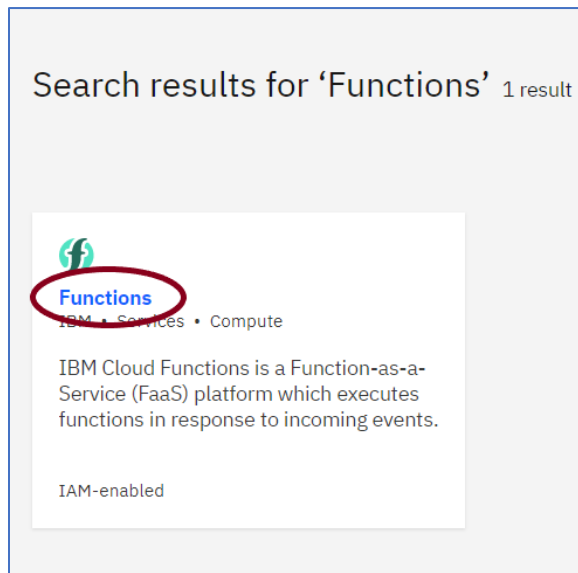
2. Click on **Catalog**.



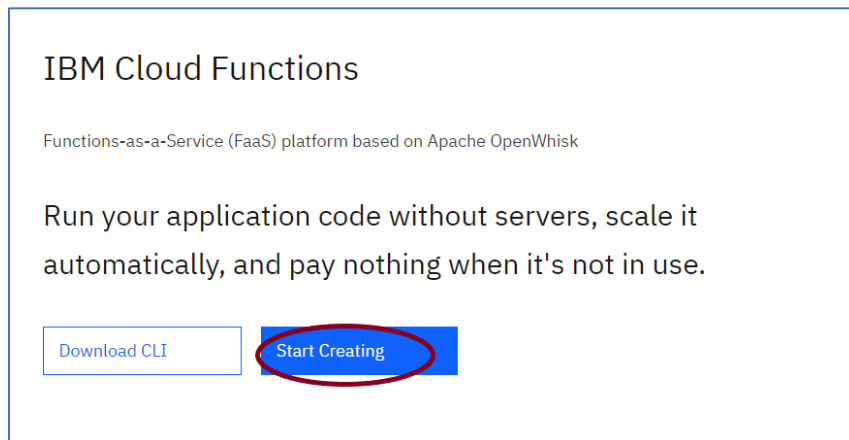
3. Type in **Functions** in the **Search** text box and press the <Enter> key.



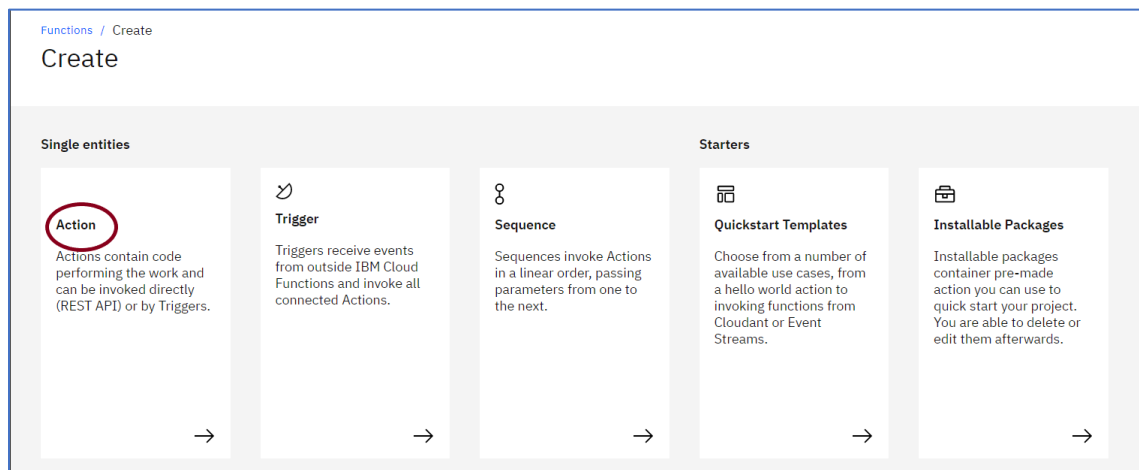
- Click on the **Functions** tile.



- Click **Start Creating**.



- Click **Action**.



7. Enter **COVID-19-News** for the **Action Name**, select **Node.js 10** for the **Runtime**, and click **Create**.

Functions / Create / Action

Create Action

Actions contain your function code and are invoked by events or REST API calls.

[Learn more about Actions](#)

[Learn more about Packages](#)

Action Name:

Enclosing Package: [Create Package](#)

Runtime:

Looking for Java, .NET or Docker? [Docker](#) Actions can be created with the [CLI](#)

[Previous](#) [Cancel](#) [Create](#)

8. Copy and paste the code from [action/covid-webhook.js](#)

Code Node.js 10 Edit mode - press ESC to exit

```
1 /**
2  *
3  * main() will be run when you invoke this action
4  *
5  * @param Cloud Functions actions accept a single parameter, which must be a JSON object.
6  *
7  * @return The output of this action, which must be a JSON object.
8  *
9  */
10 var request = require("request-promise");
11 const DiscoveryV1 = require("watson-developer-cloud/discovery/v1");
12
13 function getRandomInt(max) {
14   return Math.floor(Math.random() * Math.floor(max));
15 }
16
17 const statesMap = {
18   alaska: "99501:US",
19   alabama: "35801:US",
20   arkansas: "72201:US",
21   american_samoa: "96799:US",
22   arizona: "85001:US",
23   california: "90001:US",
24   colorado: "80201:US",
25   connecticut: "06101:US",
26   district_of_columbia: "20001:US",
27   delaware: "19901:US",
28   florida: "33124:US",
29   georgia: "30301:US",
30   guam: "GU:US",
31   hawaii: "96801:US",
32 }
```

[Reset](#) [Save](#)

9. Our code has two main parts. We decide whether to call the COVID-19 API or Watson Discovery based on a parameter sent on the function call. If a query param of `type=api` is set, you call the COVID-19 api on the [summary endpoint](#).

For example, the response for `type=api` and `location=United States of America` is shown below.

```
{
  "result": "Total Cases: 1920061\nTotal Deaths: 109802\nTotal Recovered: 500849\n\nSource: Johns Hopkins CSSE"
}
```

10. You could define static parameters as part of the Cloud Function by clicking on **Parameters**, but we will pass the parameters from the Watson Assistant.

The screenshot shows the IBM Cloud Functions console for the 'COVID-19-News' action. The left sidebar has tabs for 'Code', 'Parameters', 'Runtime', 'Endpoints', 'Connected Triggers', 'Enclosing Sequences', and 'Logs'. The 'Parameters' tab is selected and circled in red. The main area displays the 'Code' editor with a Node.js 10 script. The script includes a comment explaining that the main function will be run when invoked, and it defines a function 'getRandomInt' that returns a random integer between 0 and a specified maximum. It also defines a 'statesMap' object containing state names and their corresponding random integers.

11. Click on the **Endpoints** tab on the left.

The screenshot shows the IBM Cloud Functions console for the 'COVID-19-New' action. The left sidebar has tabs for 'Code', 'Parameters', 'Runtime', 'Endpoints', 'Connected Triggers', 'Enclosing Sequences', and 'Logs'. The 'Endpoints' tab is selected and circled in red. The main area displays the 'Code' editor with a Node.js 10 script. The script includes a comment explaining that the main function will be run when invoked, and it defines a function 'getRandomInt' that returns a random integer between 0 and a specified maximum. It also defines a 'statesMap' object containing state names and their corresponding random integers. On the right side, the 'Activations' section shows a list of activations for the function. The first activation is highlighted, showing the 'Activation ID', 'Results', and 'Logs'.

12. Click on **Enable as a Web Action**. Copy and paste the http url to the Notepad file. Label it as Web Action url and add .json to the end of the url, as shown in blue below. Click on **Save**.

Web Action [Reset] [Save]

☒ **Enable as Web Action** Allow your Cloud Functions actions to handle HTTP events. Web Actions allow to control the response data and type by using a set of URL extensions, such as .json or .html. Learn more about [Web Actions](#).
Note: The Web Action URL below requires to return a dict object that contains a body property.

☐ **Raw HTTP handling** When enabled your Action receives requests in plain text instead of a JSON body

HTTP Method	Auth	URL
ANY ⓘ	Public	https://eu-gb.functions.cloud.ibm.com/api/v1/web/BEEKMANB%40US.IBM.COM_fisheries/default/COVID-19-News

RE *Notepad - Notepad

File Edit Format View Help

Assistant ID 341d6fba-b4b1-4845-84c2-43ba7d22cbe6

Assistant API key bw9FaxoFwm8_q625V35xldXAKXMFpTirbaKFLIdfsHYD

Skill ID:926cdcbd-39d8-4456-9177-38088ed484c4

Discovery API: Ct-KLQ8KwYUThJ0GRAaCNAa7gBgLIep1XuDsJKKcL0Dc

Discovery URL: https://api.eu-gb.discovery.watson.cloud.ibm.com/instances/22670035-8e50-4e1e-9ca7-e2358f0e4805

Collection ID: news-en

Environment ID: system

Web Action url: https://eu-gb.functions.cloud.ibm.com/api/v1/web/BEEKMANB%40US.IBM.COM_fisheries/default/COVID-19-News.json

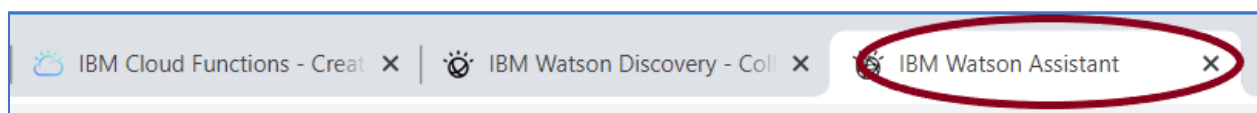
Exercise 7: Integrate data sources via a Watson Assistant webhook.

A webhook is a mechanism that allows you to call out to an external program based on something happening in your Watson Assistant dialog skill. A webhook is triggered when the assistant processes a node that has a webhook enabled. The webhook collects data that you specify or that you collect from the user during the conversation and save in context variables. It sends the data as part of a HTTP POST request to the URL that you specify as part of your webhook definition. The URL that receives the webhook is the listener. It performs a predefined action using the information that you pass to it as specified in the webhook definition and can optionally return a response.

You can use a webhook to do the following types of things:

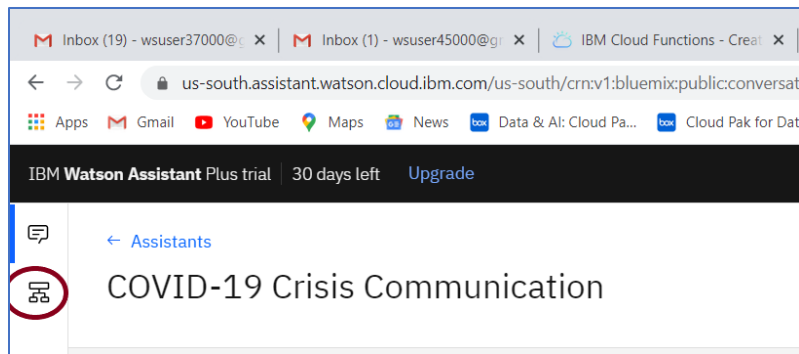
- Validate information that you collected from the user.
- Interact with an external web service to get information. For example, you might check on the expected arrival time for a flight from an air traffic service or get a forecast from a weather service.
- Send requests to an external application, such as a restaurant reservation site, to complete a simple transaction on the user's behalf.
- Trigger a SMS notification.
- Trigger a IBM Cloud™ Functions web action.

1. Click on **Watson Assistant**.

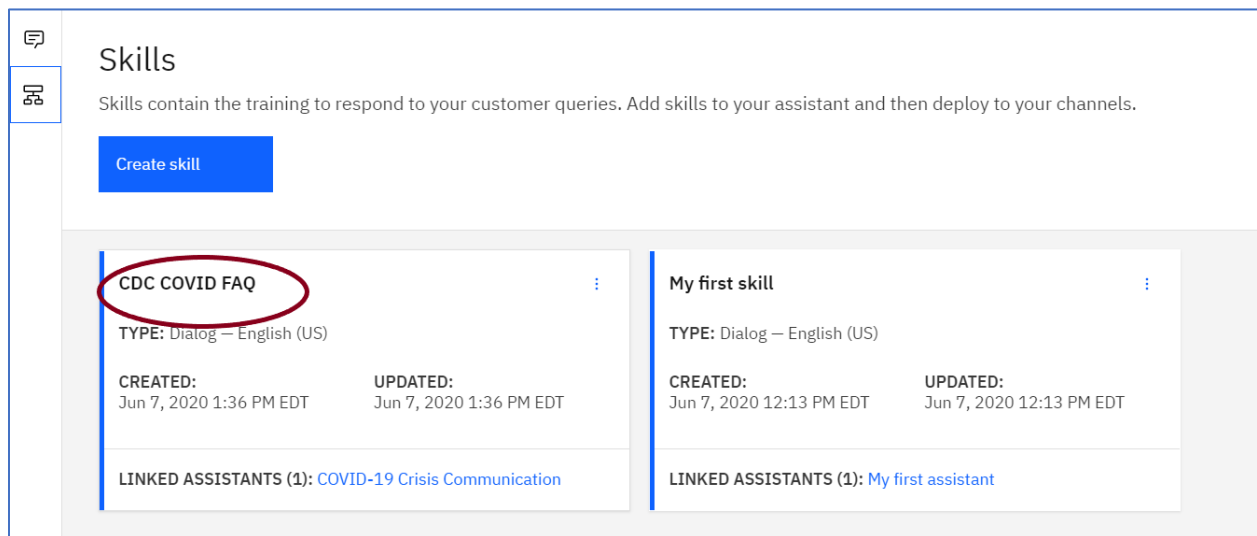


2. Click on the Skills icon

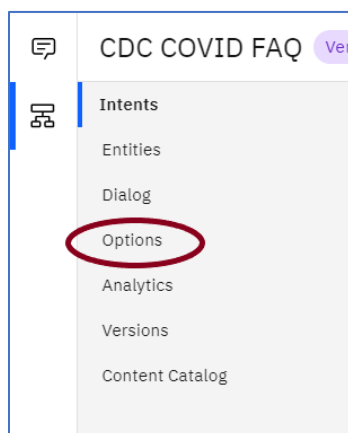




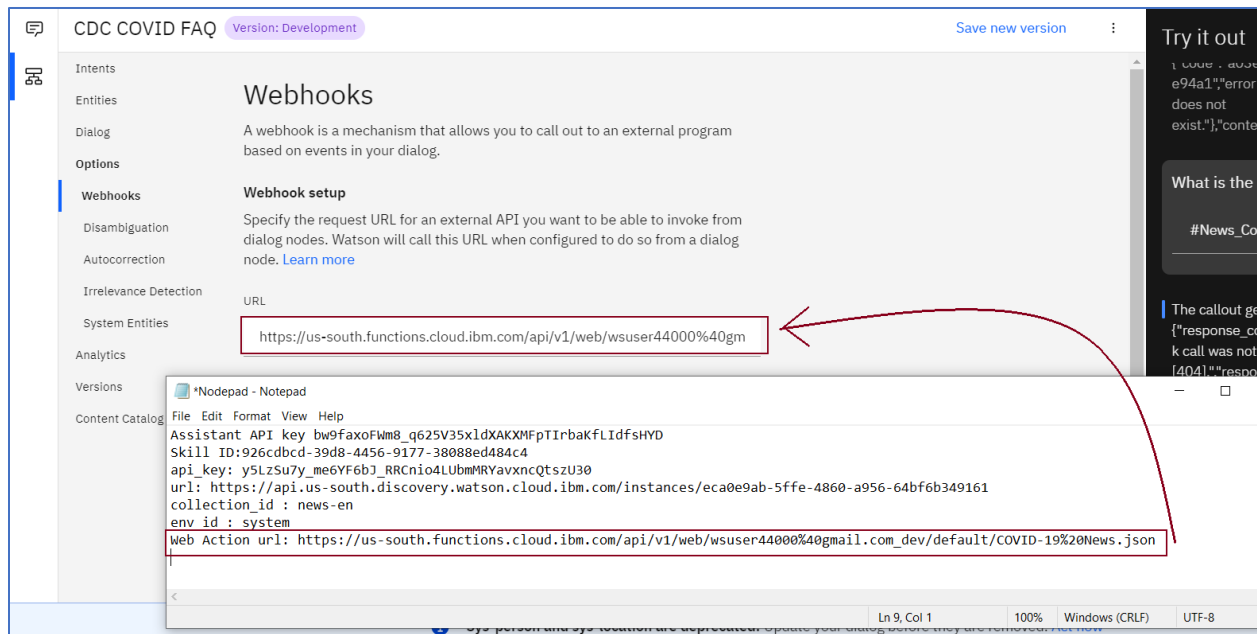
3. Click on the **CDC COVID FAQ** skill.



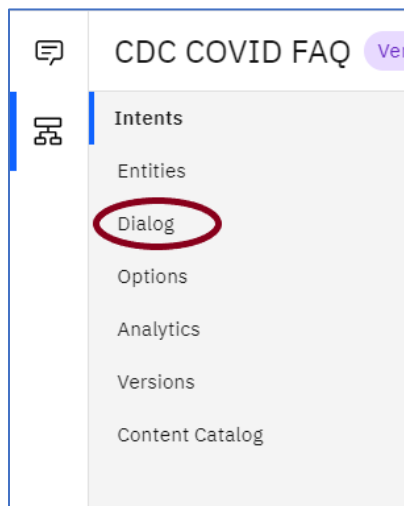
4. Click on **Options**.



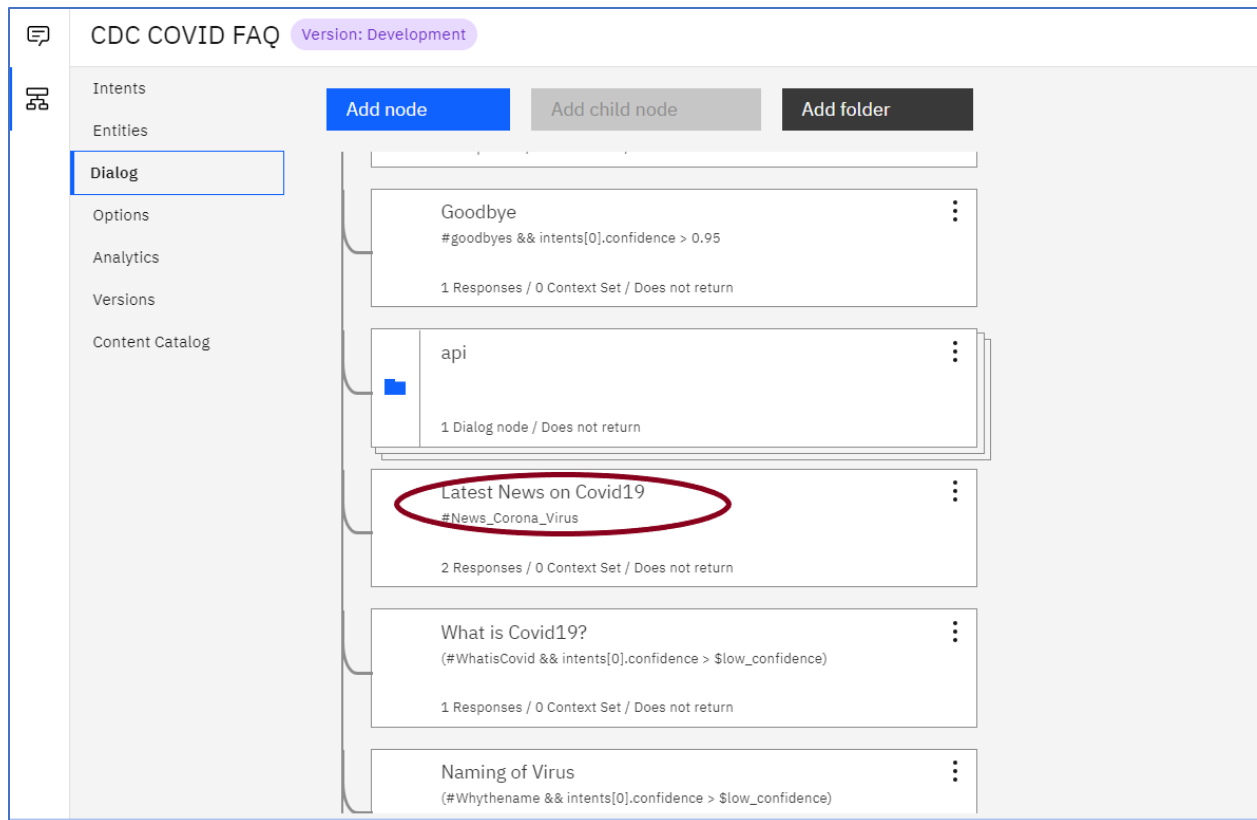
5. Cut and paste the Web Action url from the Notepad file into the **URL** field.



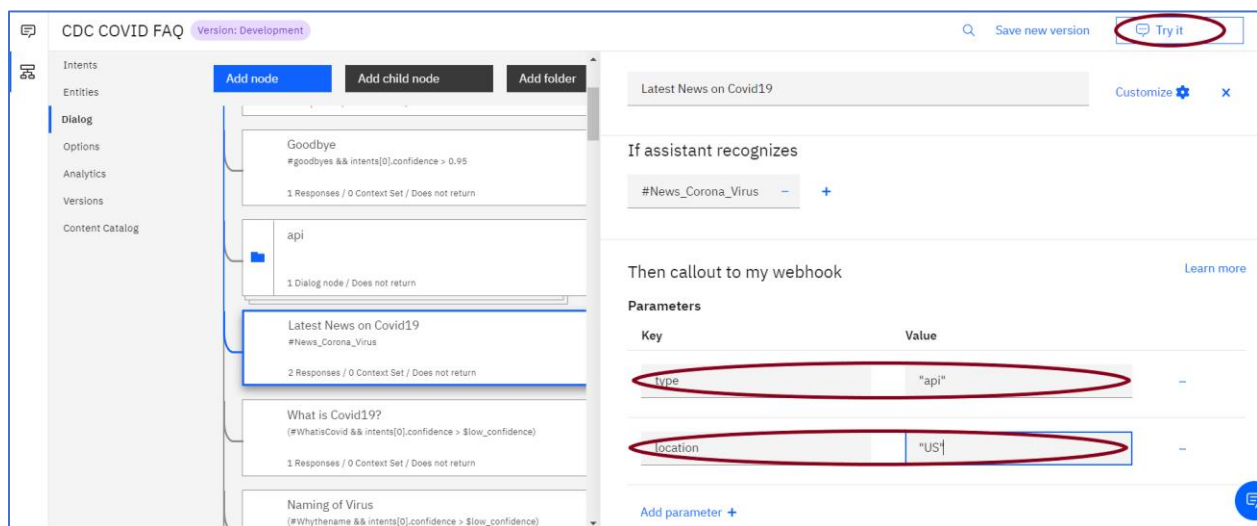
6. Click on **Dialog**.



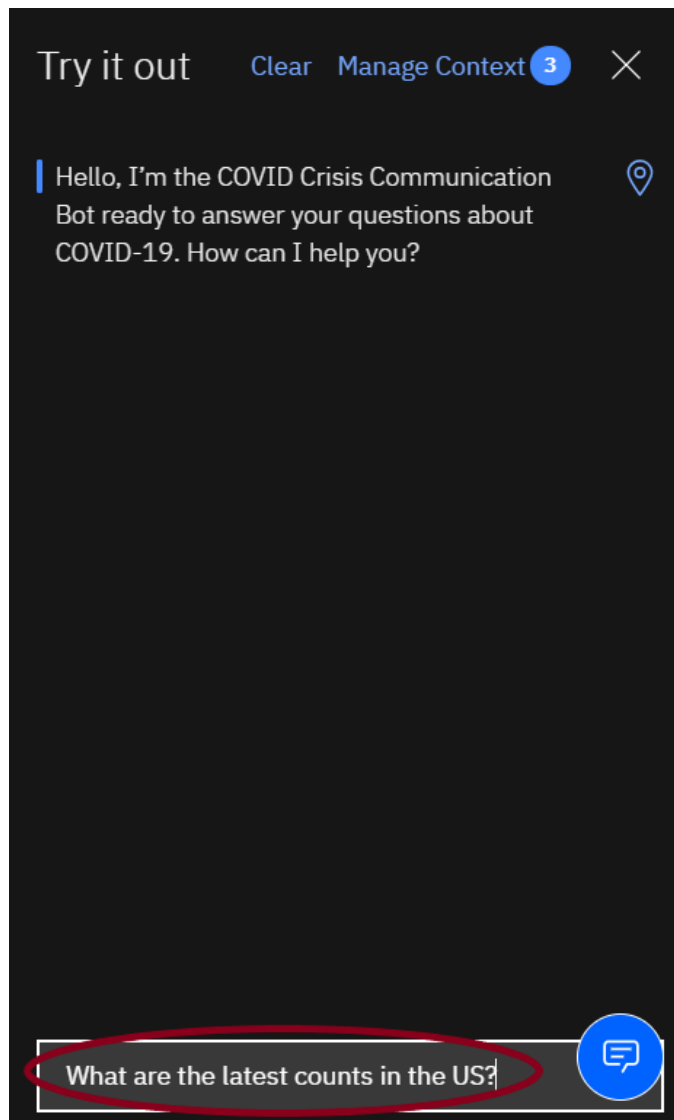
7. Click on **Latest News on Covid19**



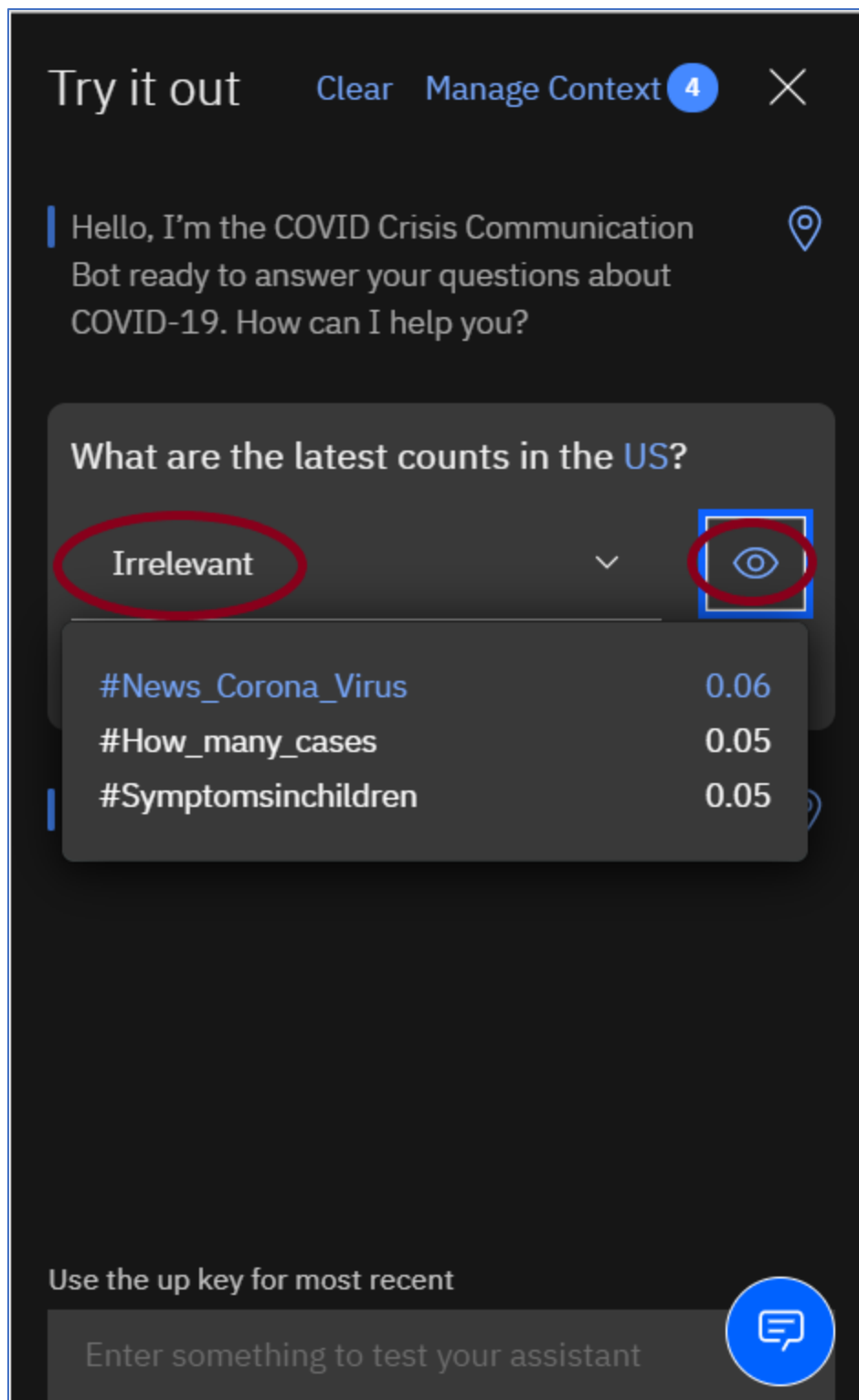
8. Add parameters **type** with value “api”, and **location** with value “US”, then click **Try It**.



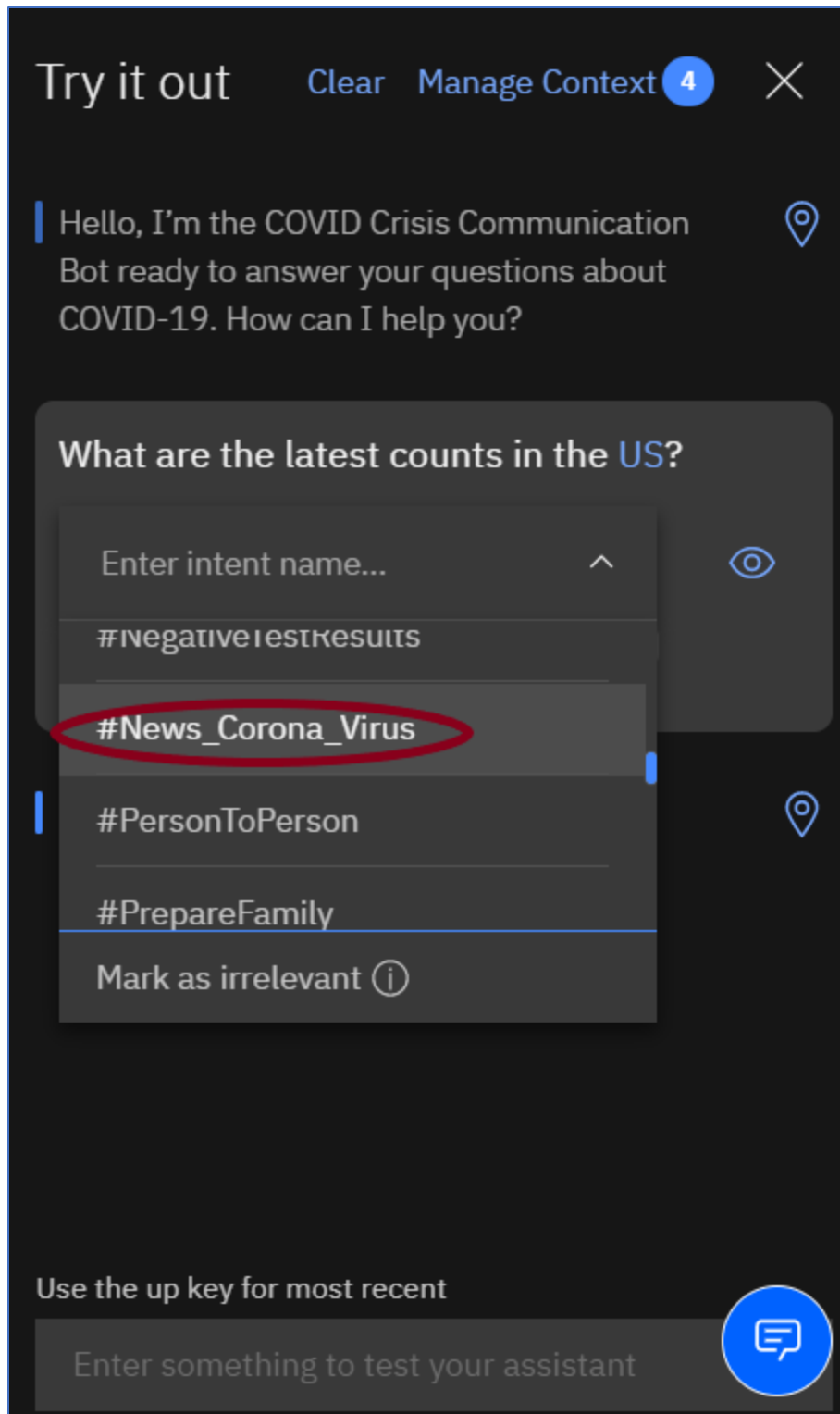
9. Enter “What are the latest counts in the US” and then press <Enter>



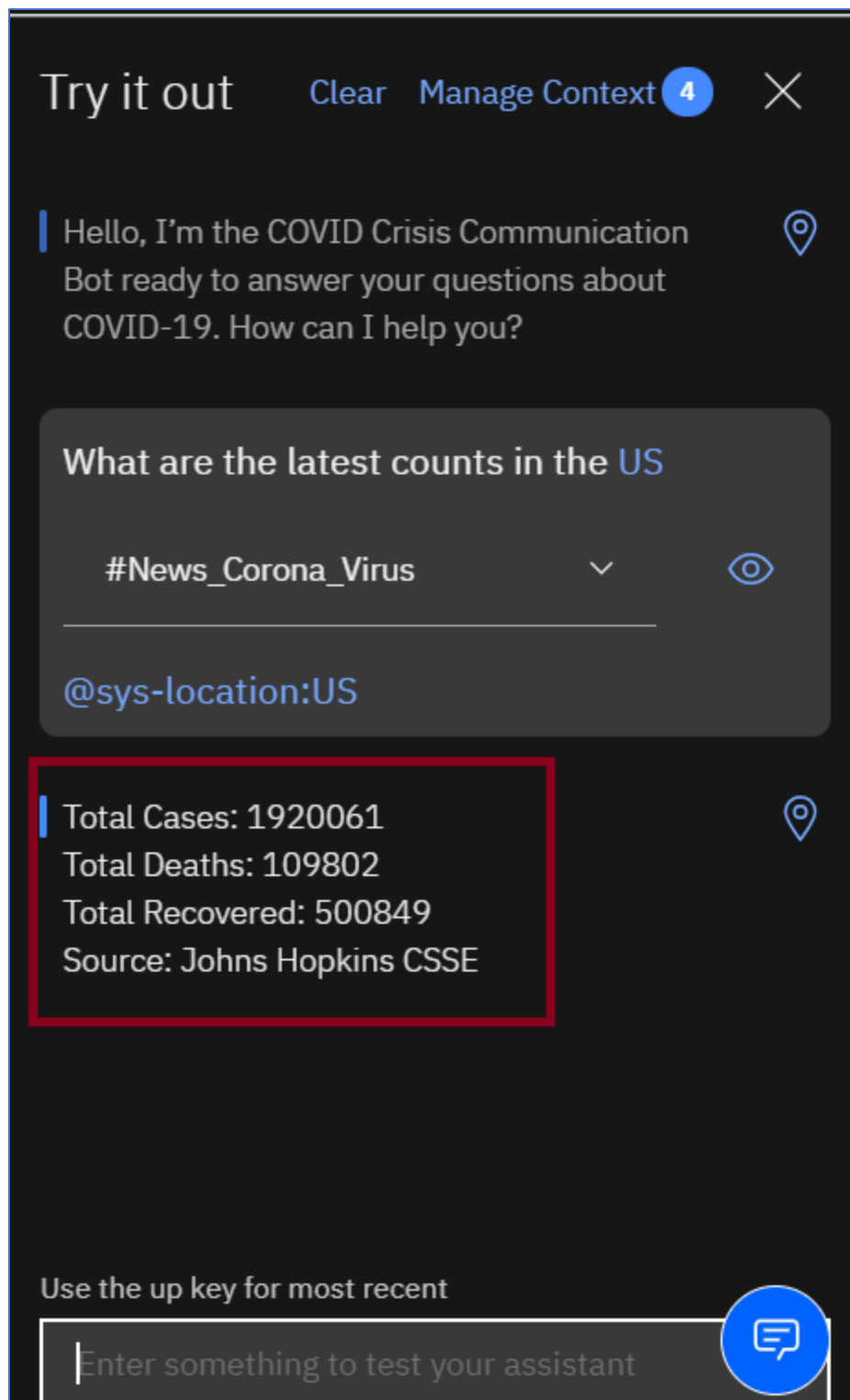
10. The system responds with Irrelevant, meaning that it couldn't find an Intent. By hovering over the eye icon, you can see that #News_Corona_Virus intent had the highest confidence, but was below the cutoff threshold for relevance.



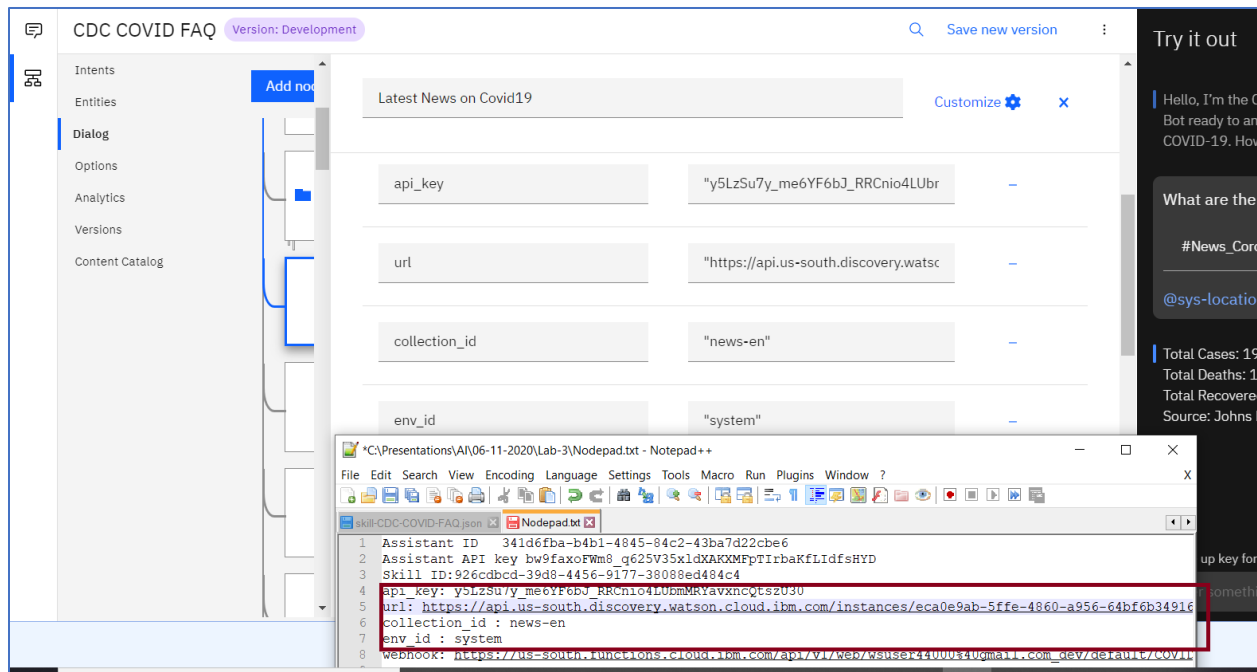
11. Click the down arrow icon next to Irrelevant, and select the #New_Corona_Virus intent to train the assistant.



12. Wait until **Watson is Training** message disappears. Retype in the question, “What are the latest counts in the US” and press the <Enter> key. The system responds with the latest counts.



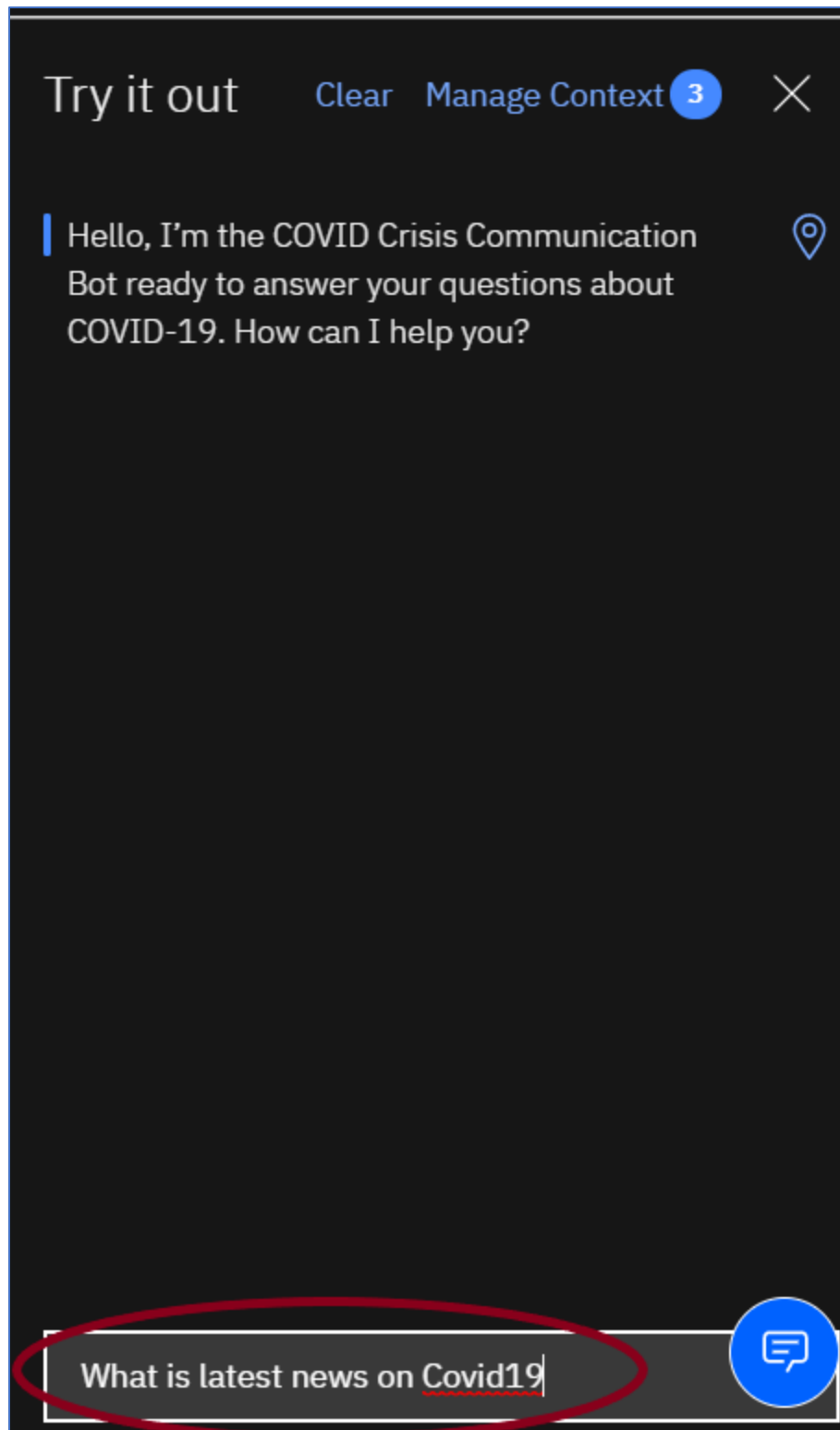
13. Add the Watson Discovery Parameters by copying and pasting from the Notepad file. Add api_key, url, collection_id, and env_id.



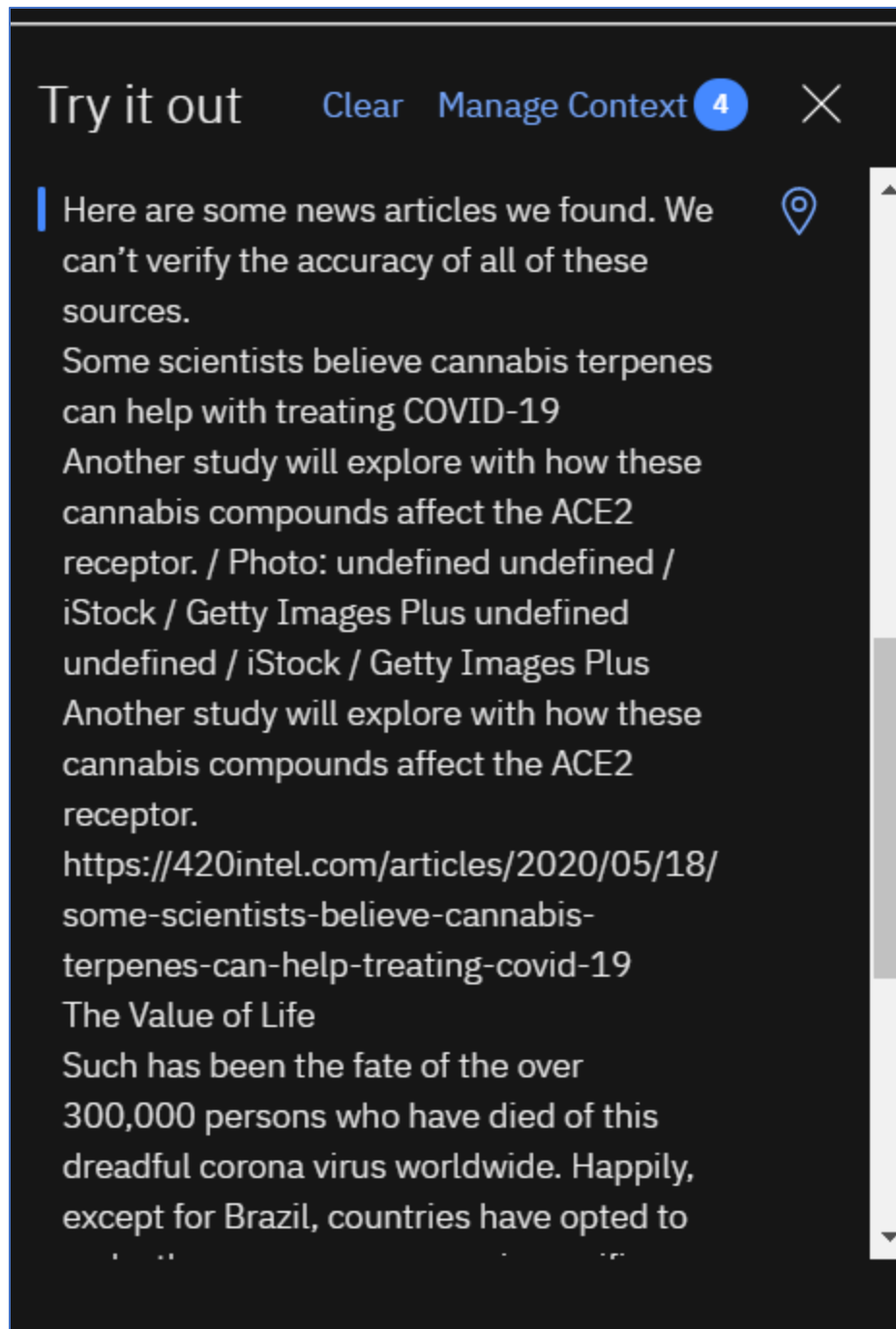
14. Change the value for type to be “napi”.



15. Type “what is the latest news on Covid19” and press the <Enter> key (you don’t need to type the quotes).



16. The system responds with a count of 3 articles from the Watson News collection.



This exercise showed how to integrate Watson Assistant with two data sources. For the purposes of this lab, we showed the connectivity within a single intent. In practice, we would have two intents, one that would get the latest data counts, and the second would collect the latest news.

You have completed the Lab!

