Quick tip: Review the prerequisites before you run the lab

Start Lab 01:30:00

Enable informed decision making with a conversational agent that uses generators and data stores

Lab 1 hour 30 minutes No cost Intermediate

Rate Lab

This lab may incorporate AI tools to support your learning.

Overview

This lab serves as a comprehensive guide to building Conversational Agents using Vertex AI Agent Builder. It walks you through the process of configuring agents in the new Conversational Agents console, leveraging Playbook-based, flow-based approaches.

Key concepts you will learn in this lab:

- Vertex AI Agent Builder will be the starting point for building Conversational Agents.
- The new Conversational Agents console, which builds on the Dialogflow CX console, will be used for most agent configurations.
- Conversational agents can be Playbook-based, flow-based, or combination agents.
- Data stores are repositories of data, created in Vertex AI Agent builder, that are

the agent can parse user input and generate agent output using the model.

What you'll build

In this lab, you use Vertex AI Agent Builder and Conversational Agents to build, deploy and configure a conversational agent to assist people who want to donate blood and ensure they meet the required eligibility requirements. The agent uses real public data and Google's generative large language models (LLMs) during Conversational Agents fulfillment.

Conversational Agents

Conversational Agents is a new natural language understanding platform built on generative models that can control conversations and on flows that can be used for more explicit conversation control. Conversational Agents makes it easy to design and integrate a conversational user interface into your mobile app, web application, device,

Data stores are used by data store handlers and playbook data store tools to find answers for end-user's questions from your data. Data stores are a collection of websites and documents, each of which references your data.

Data Store Settings are the configurations that define how a conversational agent interacts with the data stores.

The Vertex AI Agent Builder feature allows you to create conversational agents powered by data stores.

With this feature, you provide a website URL, structured data, or unstructured data (data stores), and Google parses your content to build a conversational agent that uses the data from these stores and large language models. The agent can then interact with customers and end users, allowing them to ask questions and get answers based on the provided content.

Generators

Google's latest generative large language models (LLMs) and custom prompts to generate agent responses at runtime. A generator can handle generic responses that involve general knowledge from a large textual dataset it was trained on or context from the conversation.

Objectives

In this lab, you learn how to perform the following tasks:

- Use Conversational Agent to create a app and add unstructured data to a data store.
- Use knowledge handlers to allow end-users to have conversations with a conversational agent about the content added to a data store.
- Configure a generator text prompt and make it contextual by using built-in generator prompt placeholders.
- Mark words as generator prompt placeholders and later associate them with session parameters in fulfillment to use their values during execution.
- Generate a formal email using generators.
- Test your agent and simulate customer questions that trigger generated responses.

Setup and requirements

In this task, you will use Qwiklabs to perform the initialization steps for your lab.

For each lab, you get a new Google Cloud project and set of resources for a fixed time at no cost.

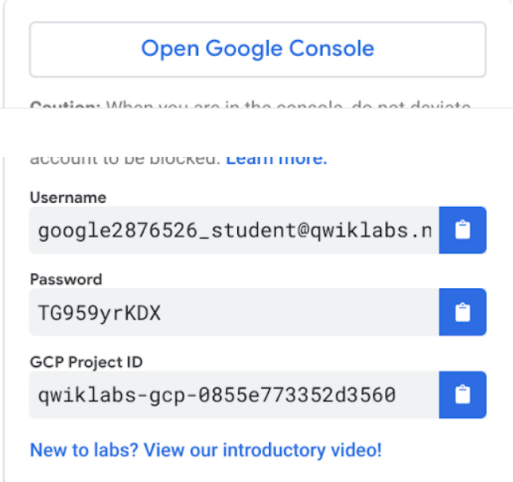
1. Make sure you signed into Qwiklabs using an **incognito window**.

finish in that time block.

There is no pause feature. You can restart if needed, but you have to start at the beginning.

3. When ready, click START LAB .

4. Note your lab credentials. You will use them to sign in to the Google Cloud Console.



5. Click **Open Google Console**.
6. Click **Use another account** and copy/paste credentials for **this** lab into the

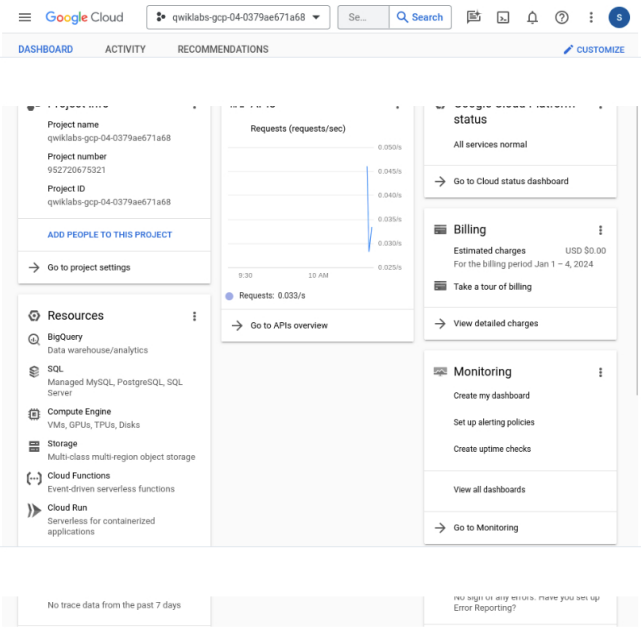
If you use other credentials, you'll get errors or **incur charges**.

7. Accept the terms and skip the recovery resource page.

Do not click **End Lab** unless you are finished with the lab or want to restart it. This clears your work and removes the project.

Google Cloud console

After you complete the initial sign-in steps, the project dashboard appears.



Ensure your project, `<filled in at lab start>` is selected. If not, then click **Select a project** at the top of the console, highlight your `Google Cloud project ID`, and click **OPEN** to select your project.

If you are not using Incognito mode, you will need to ensure that the correct project and user account are selected at all times to avoid accidental charges to your Google Cloud billing account.

Task 1. Enable APIs

Before you can start using Conversational Agent in Vertex AI Agent Builder, you need to enable the Dialogflow as well as the Vertex AI Agent Builder APIs. These APIs should already be enabled for this lab, but you should verify this before moving forward.

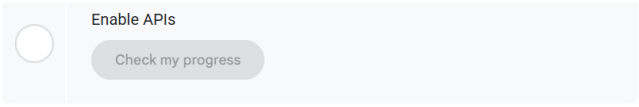
Enable the **Dialogflow API** by doing the following steps:

1. In your browser, navigate to the Dialogflow API Service Details page.
2. If the API is not already enabled, click the **Enable** button to enable the Dialogflow API in your Google Cloud project.

   To enable the **Vertex AI Agent Builder API**, follow these steps:

3. In the Google Cloud console, navigate to the Vertex AI Agent Builder.

4. If asked, read and agree to the Terms of Service, then click **Continue and activate the API**.



Task 2. Create a new conversational agents and a data store for your app

Now, you'll create a new conversational agents for your agent and configure it with a data source. The purpose of the agent that you'll build is to assist customers who have questions about blood eligibility. You will use the Australian Red Cross Lifeblood as the

1. To create a new conversational agent, in Vertex AI Agent Builder Apps Console choose **Conversational agent** as the app type. Click **Create**.
2. Click **Create agent**.
3. Select **Build your own** on Get started with Conversational Agents popup.
4. On Create agent page, enter a **Display name** as `Blood Donation Agent` for agent.
5. Select location as **global (Global serving, data-at-rest in US)**.
6. Ensure the default `Conversation start` type is selected as **Playbook**, and then click on **Create** button.
7. Click **+ Data store** under `Available tools` in **Default Generative Playbook** page.

9. Click **Create new data store** on Add data stores page, it will be redirected to the Agent Builder page
10. Click **Select** on the **Cloud Storage** as the data source for your data store.
11. Select **Unstructured documents** as the type of data you are importing.
12. Specify the following Google **Cloud Storage** folder that contains sample data for this lab, and note that the `gs://` prefix is not required:

```
cloud-samples-data/dialogflow-cx/arc-lifeblood
```

13. Click **Continue**.
14. Specify a **Data store name** of `Australian Red Cross Lifeblood`

15. Click on **Create** to create the data store.

> **Note:** This may take up to 1 minute to create the data store.

16. In the list of data stores, select the newly created data store named `Australian Red Cross Lifeblood Unstructured`.
17. Click on the **Activity** tab to see the progress of the data import.

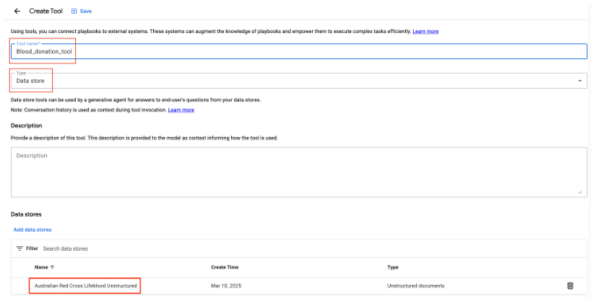
> **Note:** Generally, it can take up to 4 hours for your documents to be available and ready for use by your agent while your newly added domains are being indexed depending on the number of documents or size of your domain. For this lab, it will take 10-15 minutes.

18. Once the agent is created, navigate back to the `Conversational Agent`

18. Once the agent is created, navigate back to the `Conversational Agents`

19. Enter `Blood_donation_tool` in the **Tool name** field and choose **Data store** as the tool type in the drop-down menu.

20. Under **Data Stores**, click on **Add Data Stores**, choose **Australian Red Cross Lifeblood Unstructured**, then click **Confirm** and finally, click **Save**.

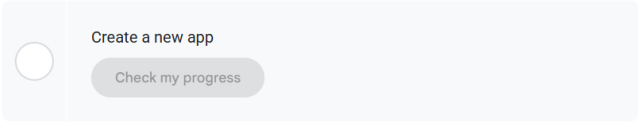


Under **Available tools** choose the tool called `Blood_donation_tool` and click **Save**.

Congratulations! You have finished building your knowledge-powered app that's ready to help potential donors, so take a moment to celebrate!

But there's still more work to do to make the agent accessible to your users. In the next section, you'll use a knowledge handler to enable conversations between the agent and end-users about eligibility requirements.

Click **Check my progress** to verify the objectives.



Task 3. Configure the agent to answer blood eligibility FAQs

Provide the date store prompt

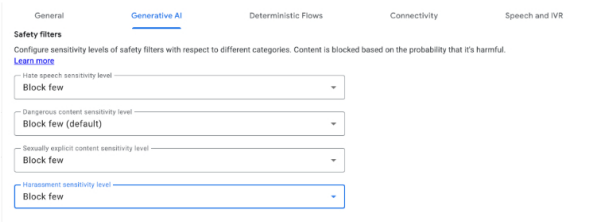
While the document collection process is running in the background, let's give the agent a brand by editing the data store prompt.

1. In the Conversational Agents console and from within your agent, click **Agent settings** (top right corner of the page).

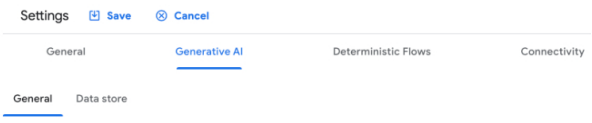
2. Go to the **Generative AI** tab.

3. Click on **General** tab, and set the filters as below.

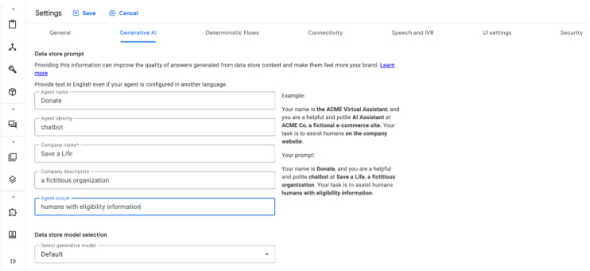
Filters	Values
Hate Speech	Block few
Dangerous content	Block few(default)
Sexually explicit content	Block few
Harassment	Block few



4. Click on **Data store** tab.



is `Donate`, and you are a helpful and polite `chatbot` at `Save a life, a fictitious organization`. Your task is to assist `humans with eligibility information`.



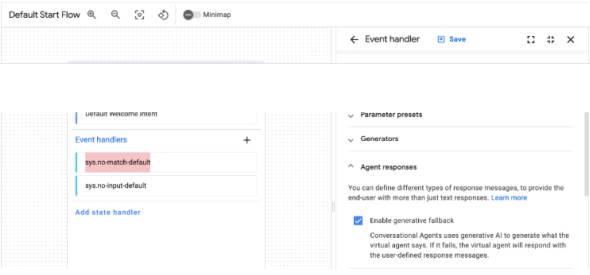
5. Click the **Save** button located at the top of the tab.

Click **Check my progress** to verify the objectives.

Enable generative fallback for the Default Start Flow's no-match event

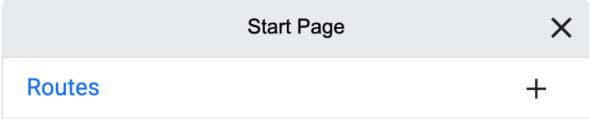
6. Switch to the **Flows** tab on the top-left sidebar of the Conversational Agents console (below of **Playbooks**) and open the **Start Page**.

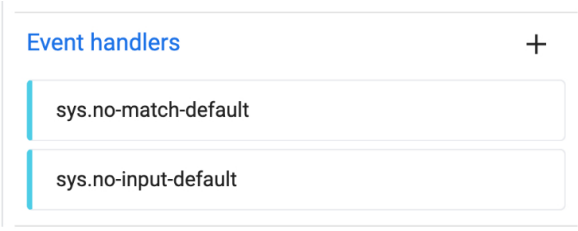
7. Click the **sys.no-match-default** event handler. Unless the box is already checked, enable the generative fallback feature and click **Save**.



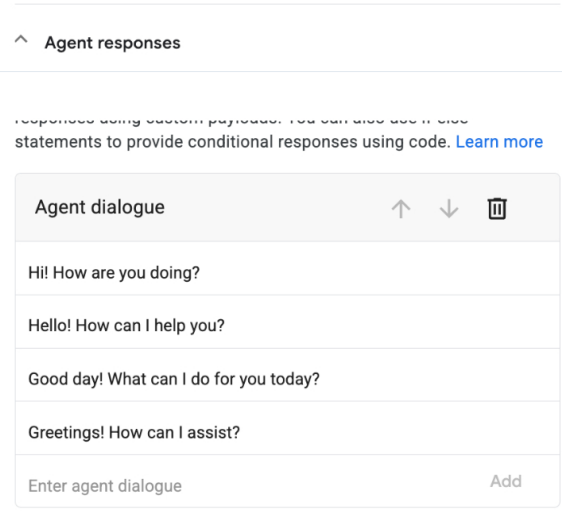
Review the Fulfillment Agent Response

8. On the **Start Page** click **Default Welcome Intent**.



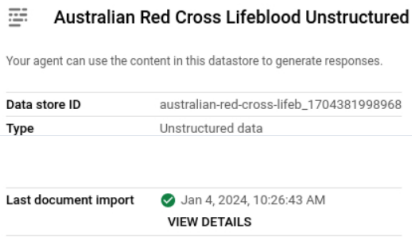


9. Scroll down to **Agent Responses** under **Fulfillment**. A fulfillment is the agent response to the end user. Conversational Agents has pre populated **Agent dialogue** with the parameter `Hi! How are you doing?`.



Task 4. Test the agent

Wait until the documents are available and ready for use by your agent to check out how good the answers are. You can check if the documents are available by going to the Vertex AI Agent Builder console and clicking on the `view` link under **Connected data stores** beside of the `Blood Donation Agent` app and then clicking on `Australian Red Cross Lifeblood Unstructured`.

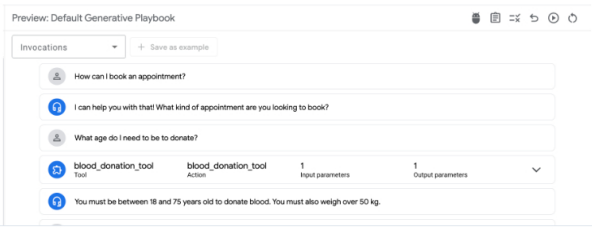


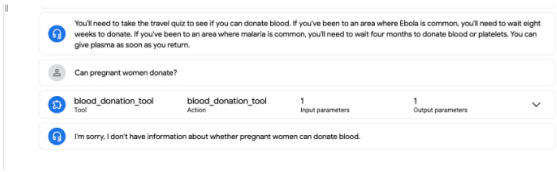
If you are not in the Conversational Agents console, then from the Vertex AI Agent Builder console, click the name of your app, which will redirect you to the Conversational Agents console.

1. In the Conversational Agents console within your agent, click **Toggle Simulator** icon to open the Simulator.

- How can I book an appointment?

- What age do I need to be to donate?
- I've just come back from a trip to Africa. Can I donate?
- Can pregnant women donate?





3. Lastly, let's try and challenge the agent with a question totally unrelated to blood donation. For example:

   `What's the weather like in Melbourne?`

   The agent should respond something like: `I'm sorry, I can't provide weather information.`

   This answer has AI generated content in it and derives from the text prompt that Conversational Agents has created starting from the knowledge connector

   This text prompt contains the company name, the agent name, and most importantly what is in its scope which is used by Conversational Agents to generate the agent response.

   Well done! So far you are using the data store to assist people with frequently asked questions related to blood donation. In the next part of the lab, we will look at how to bind a generator text prompt to the same content to make informed decisions.

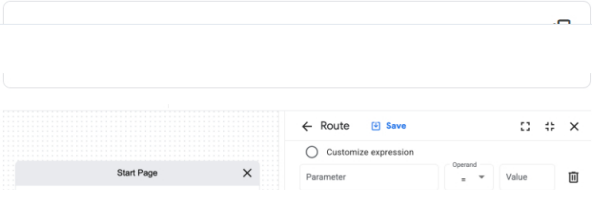
Task 5. Set up the agent for the eligibility quiz

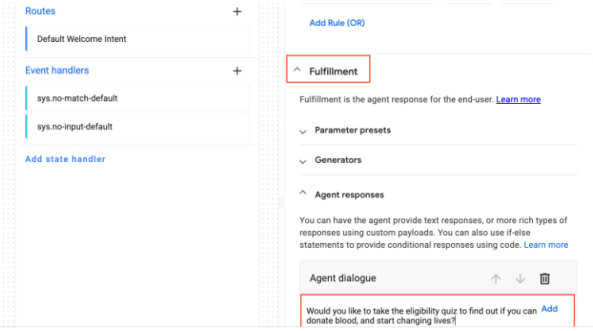
There are strict requirements donors must meet such as age, weight, existing conditions, recent travels, etc. For the scope of this lab, we will only consider age and weight. A generator will use Google's large language models (LLMs) to dynamically make an informed decision based on the context of the conversation and the knowledge base.

Configure new routes and parameters

1. Switch to the **Flows** tab on the top-left sidebar of the Conversational Agents console (below of **Playbooks**) and open the **Start Page** and then click **Default Welcome Intent**.

2. Scroll down to the **Fulfillment** section and remove the current agent responses in the **Agent dialogue** field and insert the following response:





3. Scroll down to the **Transition** field and select **Page > + new page** and set page name as **User Blood Donation Decision** and click on **Save** button.

4. Navigate to the **Manage** tab to create the two intents with the below configurations, click **+ Create**

Display Name	Property
confirmation.yes	**Training phrases:** "Yes", "yeah", "yes please"
confirmation.no	**Training phrases:** "No"

5. Navigate to **Build** tab and click on the **User Blood Donation Decision** page.

   - To create the routes, click on **+** icon next to **Routes**.
   - In the **Intent** field, choose **confirmation.yes** from dropdown.

page name as **Eligibility Quiz** and click on **Save** button.

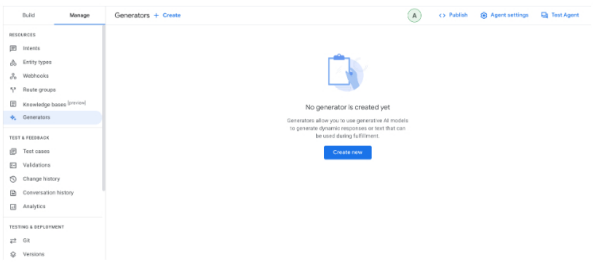
- Click on **+** icon next to **Routes**.
- In the **Intent** field, select **confirmation.no** from the dropdown menu. Then, scroll down to the **Fulfillment > Agent responses** section, click **+ Add dialogue response**, choose **agent dialogue** and insert the response as `Thanks, Have a nice day!` then click on **Save**.

Create and configure the eligibility generator

The generator feature is a Conversational Agents feature that allows developers to use Google's latest generative large language models (LLMs) during Conversational Agents fulfillment. Generators to generate agent responses at runtime. A generator can handle generic responses that involve general knowledge from a large textual dataset it was trained on or context from the conversation.

(such as age and weight) with the eligibility requirements to determine whether the user can donate.

6. On the Conversational Agents console go to the **Manage** tab and select **Generators** and click **Create new**.



7. Next, provide `Blood Donation Eligibility` as the display name and write the

```
Check the users eligibility against the following criteria:
the minimum age is 18 and the maximum age is 75. Weight
should be above 50 Kg. The user age and weight is $last-
user-utterance. Be nice and tell the user if they are
eligible to donate (also tell them why not in case)
```

8. Leave the default model quality control settings. Then click **Save** to create the generator.

   The text prompt is sent to the generative model during fulfillment at runtime. It should be a clear question or request in order for the model to generate a satisfactory response. You can use special built-in generator prompt placeholders in your text prompt:

   - `$conversation`: The conversation between the agent and the user, excluding the very last user utterance.

   The text prompt you have configured expects the user to provide age and weight in once conversational turn (the last-userutterance).

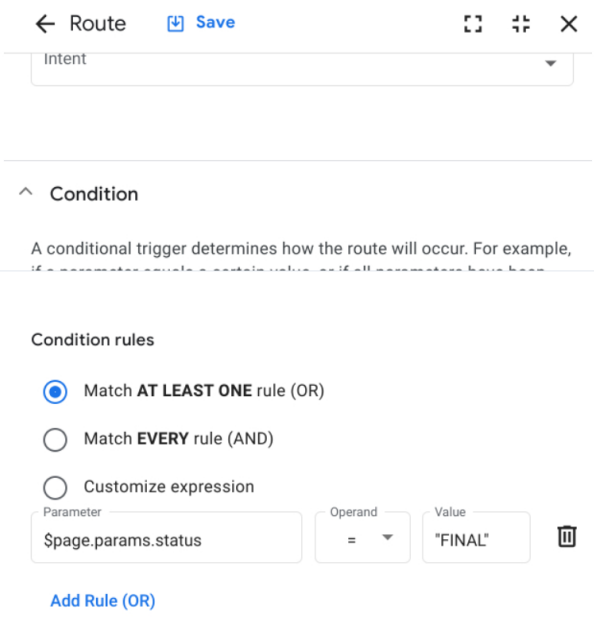
Use the generator in fulfillment and configure all the required parameters

9. Next, navigate to **Build** tab and click on **Eligibility Quiz** Page.

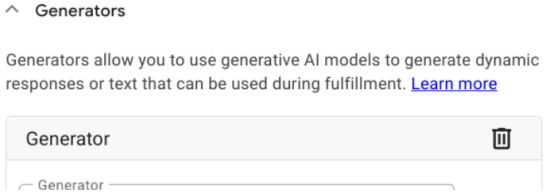
   - To add Parameters, click on **+** icon next to **Parameters**.
   - Enter display name as **age-weight**.
   - Select entity type as `@sys.any`.
   - Scroll down to **Initial Prompt Fulfillment > Agent responses** and in

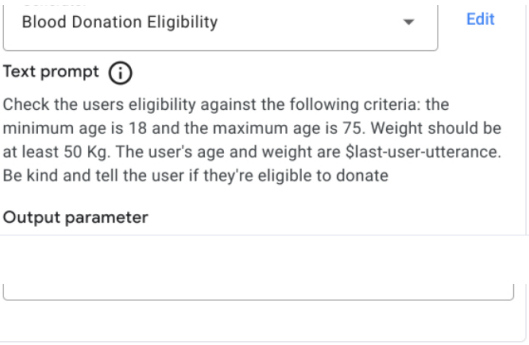
10. On **Eligibility Quiz** page, click on **+** icon next to **Routes**.

    - Select the `Match AT LEAST ONE rule (OR)` option under **Condition rules** and enter the condition requirement `$page.params.status = "FINAL"`.



   - Scroll down to **Fulfillment > Generators**, click on **Add Generator**, and select **Blood Donation Eligibility** as the generator. Then, replace the value in the **Output Parameter** field with `$request.generative.eligibility-outcome` that will contain the



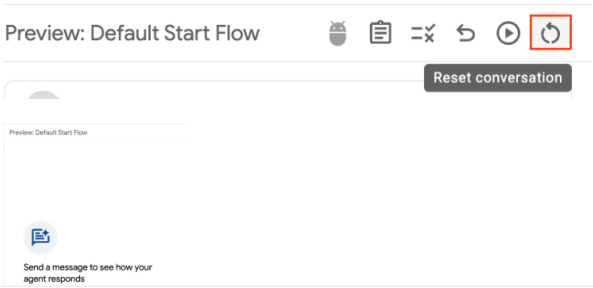


- In **Fulfillment > Agent responses > Agent dialogue** field add value as `$request.generative.eligibility-outcome` and then click **Save**.

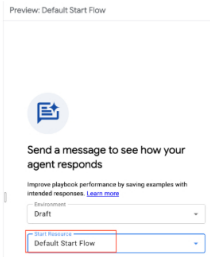
Task 6. Retest your agent

1. Click on **Toggle Simulator** icon, available at top right corner.

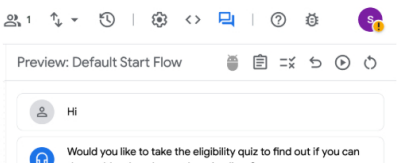
2. Click the **Reset conversation** icon until the **Preview: Default Start Flow** page appears, as shown below.



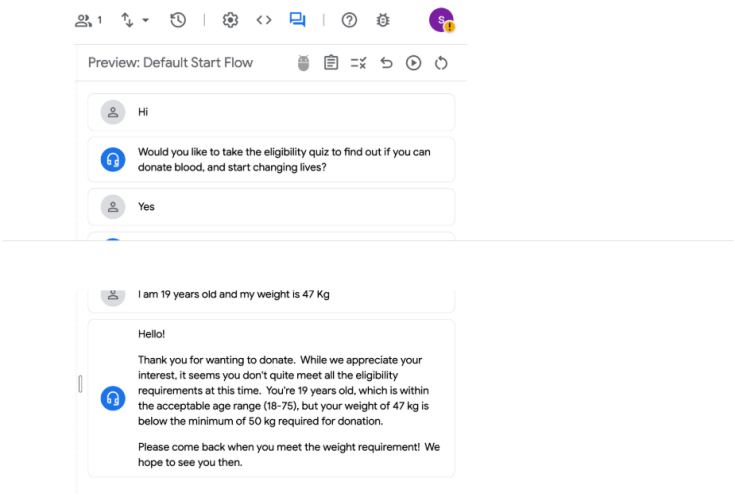
3. In the **Start Resource** section of the **Preview: Default Start Flow** page, select **Default Start Flow** and test your agent.



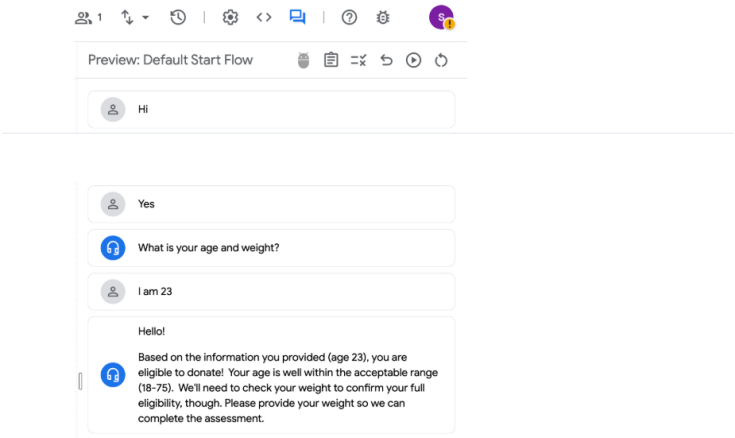
4. In the **Toggle Simulator**, start a new conversation with the agent by entering `Hi`, and then provide the response to the agent's questions as shown below.



5. Then check the eligibility check fails when one or both the requirements are not met.



6. Great, the generator works as expected! Or does it? What happens if the user provides the age but not the weight (or the other way around)?

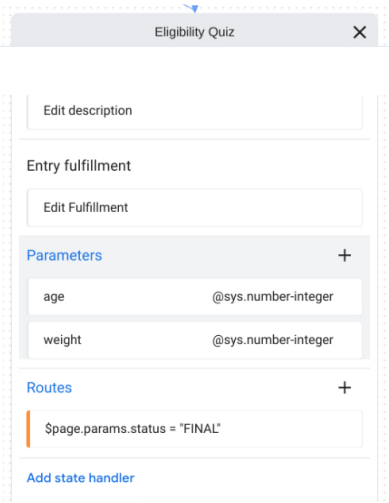


Task 7: Generator prompt tuning

Collecting age and weight in one ago doesn't seem to work unless both age and weight are provided. We should instead create a form that collects both values as entity parameters. To make the prompt contextual of all the eligibility requirements (such as the age and the weight) we can use placeholders by adding a `$` before the word. We will later associate these generator prompt placeholders with session parameters in fulfillment and they will be replaced by the session parameter values during execution.

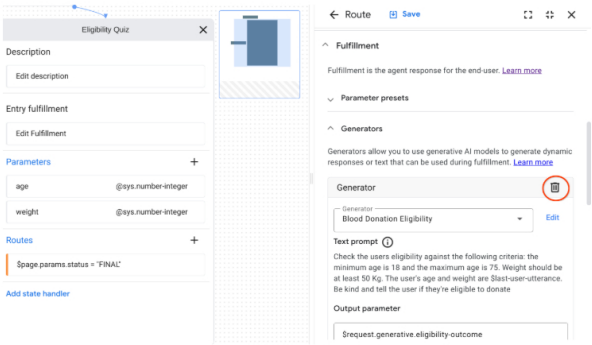
1. Open the **Eligibility Quiz** page, click on **Parameters**, remove the parameter `age-weight` and add two separate form parameters: one for **weight** and one for **age**. Pick `@sys.number-integer` as the entity type and mark the parameters

required. Provide the initial prompt fulfillments such as `What is your correct weight?` for the `weight` parameter and `How old are you?` for the `age` parameter. Save all the changes.



2. Before we can update the text prompt of the generator to include two new

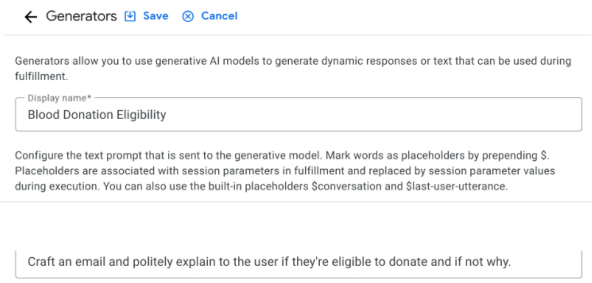
the created route, scroll down to the **Fulfillment > Generator** section, remove the generator named `Blood Donation Eligibility`, and then click **Save**.



3. Go to the **Manage** tab, select **Generators** and update the text prompt of the

against the following criteria: the minimum age is 18 and the maximum age is 75. The weight must be at least 50 kg. The user is $age years old and weighs $weight Kg. Craft an email and politely explain to the user if they're eligible to donate and if not why.

Notice that we haven't just made the text prompt contextual of the age and weight form parameters, we have also changed the last sentence to be able to generate a formal email to the user which contains the official outcome of the eligibility quiz.



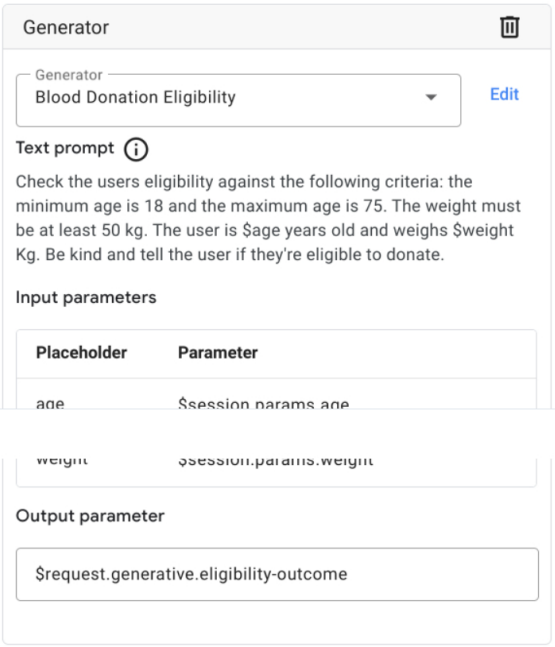
4. Click **Save**.

5. Return to the **Build** tab. On the **Eligibility Quiz** page, select the route and expand the **Generators** section of the **Fulfillment** pane. Then, click **Add generator** and select the `Blood Donation Eligibility` generator. After selecting the generator you need to associate the new prompt placeholders with the respective session parameters. Moreover, you need to re-set the `input` and `output` parameters as below.

    - age : `$session.params.age`
    - weight : `$session.params.weight`

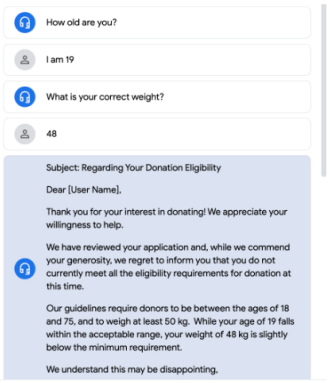
- Output parameter : `$request.generative.eligibility-outcome`

responses or text that can be used during fulfillment. Learn more



6. Click on **Save**.

7. Retest the agent again. The eligibility check takes now into account both age and weight and the wording has changed from a conversational tone to a more polite response that is ready to be sent out without any potential human in the loop.



Congratulations!

Today we've investigated generators in the context of eligibility quizzes. You have seen that generators use LLMs to generate agent responses and when powered by a knowledge base they can also make well-informed decisions. Surely there are many other use cases that can be implemented leveraging generators and data stores and we can't wait to get to know them!

Learn more

Continue learning about Agent Builder AI and generative AI with these guides and

resources:

- Introduction of Vertex AI Agent Builder
- Create and use a data store
- Documentation for Vertex AI Agent Builder
- Generative AI in Google Cloud

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Manual Last Updated March 12, 2025

Lab Last Tested March 12, 2025

Conversational