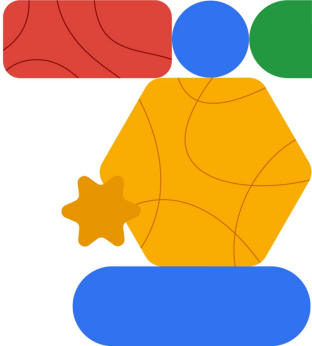


# Implementing your testing strategy in Conversational Agents



# Unit testing



# Testing in Conversational Agents

categories: Route testing and NLU testing

## Route testing

- Testing each route available on a single page
- Includes conditional routes and fallbacks scenarios

## NLU testing

- Testing recognition of user phrases on specific pages

## Routing

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# Routing tests in Conversational Agents

## Definition

Referred to as Partial Page Testing in Conversational Agents, that focuses on specific components or pages of the agent, rather than the entire conversation flow.

## Scope

Limited to individual pages in a flow.

## Purpose

- To test the functionality of specific components or logic within a flow.
- To quickly identify and fix issues in isolated parts of the agent.

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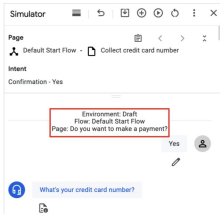
For each route on a page, you need to create an explicit test case.

The screenshot displays a configuration window for a conversational agent route. The window has a title bar with the text "Do you want to make a payment?" and a close button (X). The main content area is divided into several sections: "Description" with an "Edit description" button; "Entry fulfillment" with a text input field containing "Do you want to make a payment today?"; "Parameters" with a plus sign; "Routes" with a plus sign and a red rectangular highlight; and "Confirmation - Yes" with a checkbox. To the right of the configuration window, a small preview of the agent's output is visible, showing a button labeled "Collect credit card nu...".



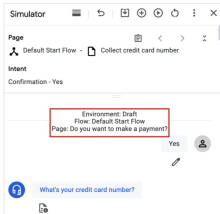
# Routing tests in Conversational Agents Simulator

To reduce turns included in test case, use a different input page as the start.



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# NLU tests in Conversational Agents

## Definition

---

NLU tests can be run in Conversational Agents test cases, but it's recommended to test them in a process outside of Conversational Agents to allow testing of more utterances.

## Scope

---

Scope means it's limited to individual pages in a flow.

## Purpose

---

The purpose is to test the efficacy of user utterances getting tagged to the correct intent on each page.

# NLU tests in Conversational Agents

NLU testing requires a wide variety of user utterances to be tested for their intent in Conversational Agents

## NLU Testing

Page	Utterance	Expected intent
Do you want to make a payment?	Yes	Confirmation - Yes
Do you want to make a payment?	Sure	Confirmation - Yes
Do you want to make a payment?	Of course	Confirmation - Yes

The screenshot shows a configuration window for the intent "Do you want to make a payment?". It includes sections for Description, Entry fulfillment, Parameters, and Routes. The "Routes" section is highlighted with a red box, showing a single route labeled "Confirmation - Yes" with a "D" icon. To the right, a snippet of a user utterance "Collected credit card nu..." is visible.

Do you want to make a payment? ✕

Description

Edit description

Entry fulfillment

Do you want to make a payment today?

Parameters +

Routes +

Confirmation - Yes D

Collected credit card nu...

# Unit test driven development



# The importance of test driven development

## Objective

The end to end development life cycle of a conversational agent needs to be supported by a **robust test strategy**.



A/B tests

E2E/UAT tests

Integration system tests

Unit tests

# Test driven development

## Process

Understand  
your  
requirements

Write test  
cases

Implement the  
agent's  
features

Run tests

Refactor and  
repeat

Continuous  
integration

Monitoring  
and feedback  
loop

## Explanation

### What:

Before you start writing test cases, clearly define what you expect your agent in Conversational Agents to do. This includes understanding the different types of user inputs (intents) and the expected responses or actions from the agent.

### How:

Define your CUJs.

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## Explanation

### What:

Start by writing test cases before developing the actual features. For an agent in Conversational Agents, these test cases can include different scenarios of user-agent interactions. You might write tests for how the agent should respond to specific intents, how it handles context switching, or how it manages fallbacks.

### How:

Map your CUJ tasks to your test cases via a Requirements Traceability Matrix (RTM).



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## Explanation

### What:

With your tests in place, begin implementing the agent's features. This involves defining intents, training phrases, parameters, responses, and fulfillment logic in Conversational Agents.

### How:

Standard Conversational Agents development and using the simulator as you build the feature.

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## Explanation

### What:

After implementing a feature, run your tests to see if the agent behaves as expected.

### How:

The standard approach is to use the native menus in Conversational Agents. You can also use automated scripts for running test cases via the API.

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### What:

If tests fail, modify your agent's configuration and logic until all tests pass. Then, refactor your code to improve efficiency, readability, and maintainability. After refactoring, run the tests again to ensure nothing broke during the process. Repeat this cycle as you continue to develop new features.

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## Explanation

### What:

For more advanced setups, integrate your TDD process with a continuous integration system. This will allow you to automatically run tests whenever changes are made to the agent, ensuring consistent quality and functionality.

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## Explanation

### What:

After deployment, continuously monitor the agent's performance. Collect user feedback and conversation logs to identify areas for improvement. Write new tests for these improvements and follow the TDD cycle to implement them.

### How:

Document Key Learnings (KLRs) derived from test results to share with other developers.



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Google Cloud