

ORACLE®

Oracle Digital Assistant

The Complete Training

Building Conversational Unit Tests

Safe Harbor Statement

The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, and timing of any features or functionality described for Oracle's products remains at the sole discretion of Oracle.

Topic Agenda

- 1 ➤ Conversation testing
- 2 ➤ Test Suite
- 3 ➤ Handling dynamic content in bot responses
- 4 ➤ Updating failed test cases

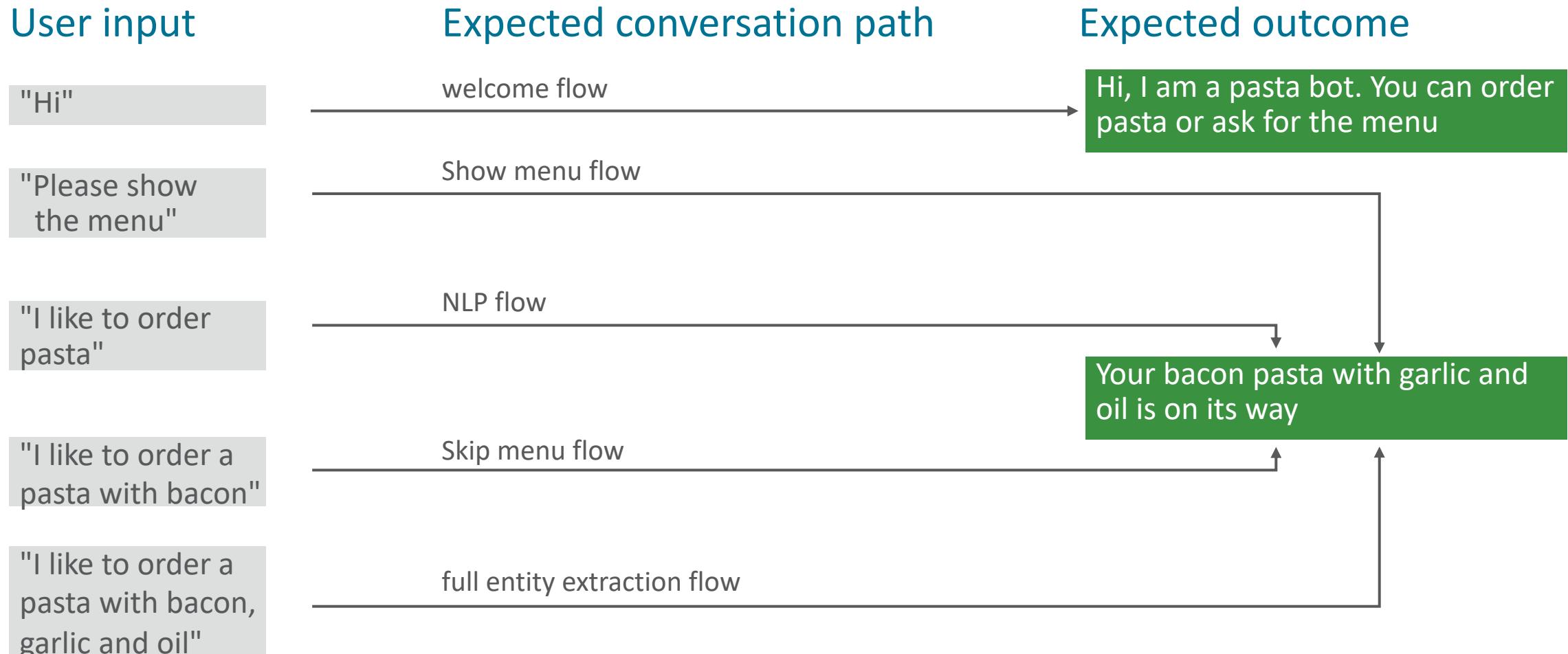
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Conversation testing challenges

- Skills have no single conversation path
 - User-bot conversations are not sequential
 - Conversations may branch based on selected values
 - Different users use different conversation paths
 - First time users vs. experienced users
- Skills can be versioned, cloned or extended
 - Skills core functionality needs to be verified after modification
- Manual tests are labor intensive

Sample: pasta ordering conversation paths to test



Integrated conversation tester

- Conversation flow can be tested without messenger
 - Simulates messenger types
- Displays the following information
 - Variables and their values
 - Postback actions
 - Resolved intents
 - Dialog flow states visited
 - Full bot response (JSON)

States

```
graph TD; A((showFlowersMenu)) --> B((setFlowerNameToOrderProductName)); B --> C((askQuantity)); C --> D((ensureAtLeastOneItemOrdered)); D --> E((confirmOrderAndQuantity)); E --> F((askDeliveryOption));
```

Variables

```
orderNumber: 24hrsflwrs_1541662087545
system.entityToResolve
orderQuantity
  number: 12
  entityName: NUMBER
  type: Integer
orderProductName: Roses
deliveryCostOptions
orderMenuRangeSize: 4
advtImagesHost: https://advt24hrflowersimage
flowersName: Roses
menu
useTranslationService: true
```

Postback Actions

Label	Action	Variables
I like to order 12 red roses for overnight delivery		deliveryOption: overnight deliveryCost: 10
Understood. I noted 12 item(s) of "Roses" for you.		deliveryOption: sameday deliveryCost: 20
How do you like your order to be delivered?		deliveryOption: courier deliveryCost: 35
Over night delivery (+10\$)		deliveryOption: parcel service deliveryCost: 0
Same day delivery (+20\$)		
Instant delivery by courier (+35\$)		
Parcel service (free shipping)		

Testing Skill

I like to order 12 red roses for overnight delivery

Understood. I noted 12 item(s) of "Roses" for you.

How do you like your order to be delivered?

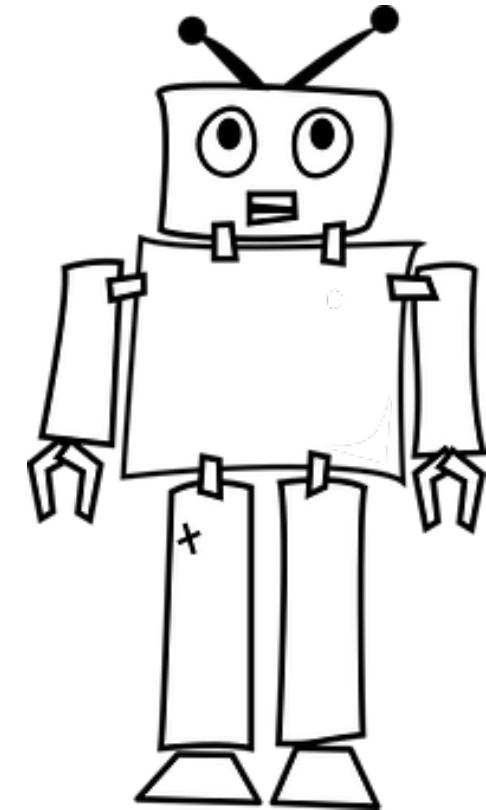
Over night delivery (+10\$)
Same day delivery (+20\$)
Instant delivery by courier (+35\$)
Parcel service (free shipping)

Reset

Topic Agenda

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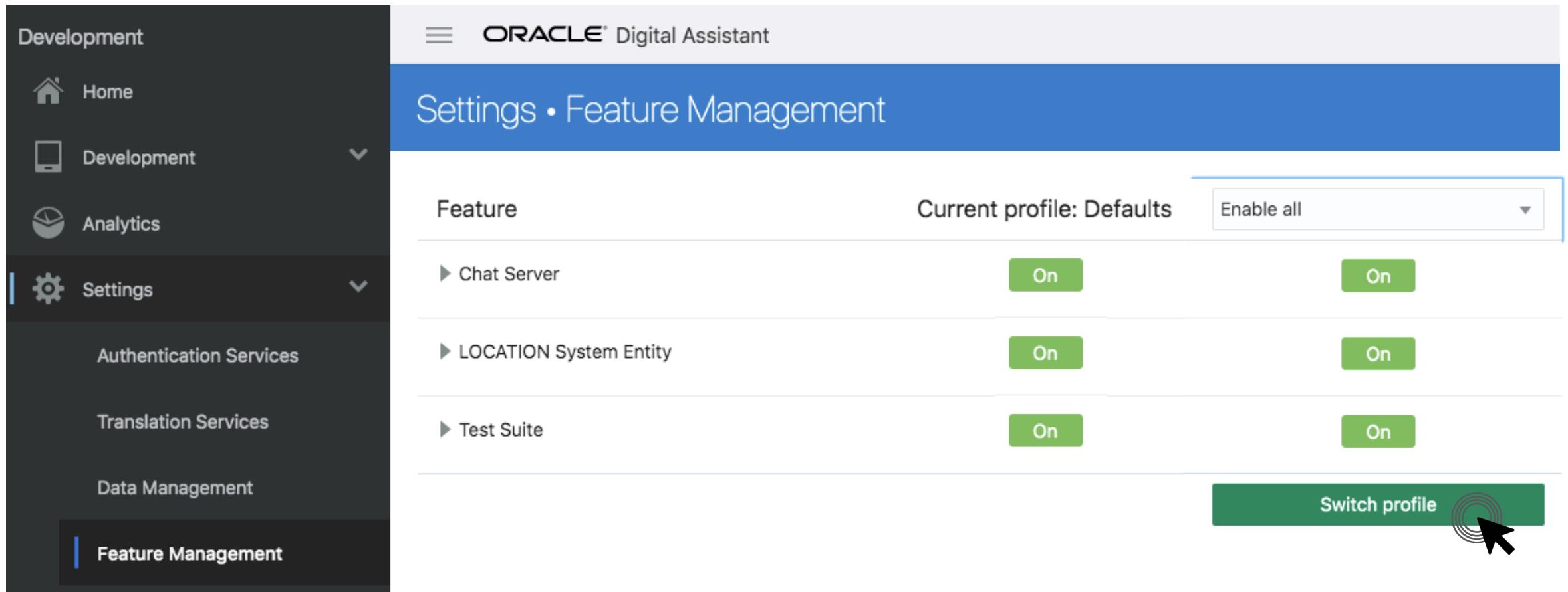
**A conversation is the test unit in
Oracle Digital Assistant**



Terminology

- Test Suite
 - Collection of test cases
 - Unit of execution
- Test Case
 - Represents a conversation users may have with a skill
 - Sequence of utterances and expected responses
- Utterance
 - A single step in a test case
 - Represents a user input and an associated expected bot response
 - If utterance fails testing, testcase is not continued

Enabling test cases



The screenshot shows the Oracle Digital Assistant Feature Management interface. On the left, a dark sidebar lists 'Development' and 'Feature Management' under 'Settings'. The main area is titled 'Settings • Feature Management' and shows three features listed in a table:

Feature	Current profile: Defaults	Action
▶ Chat Server	On	On
▶ LOCATION System Entity	On	On
▶ Test Suite	On	On

A green button at the bottom right says 'Switch profile' with a circular arrow icon. A mouse cursor is hovering over this button.

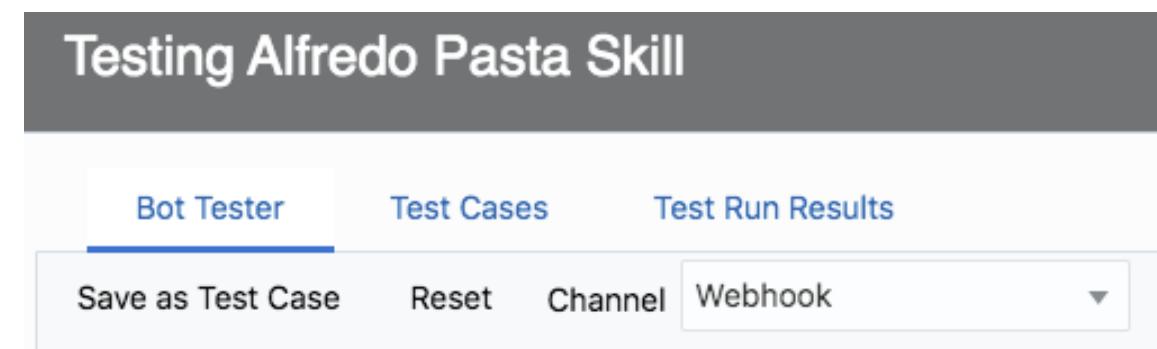
Conversation tester views

Test suite disabled



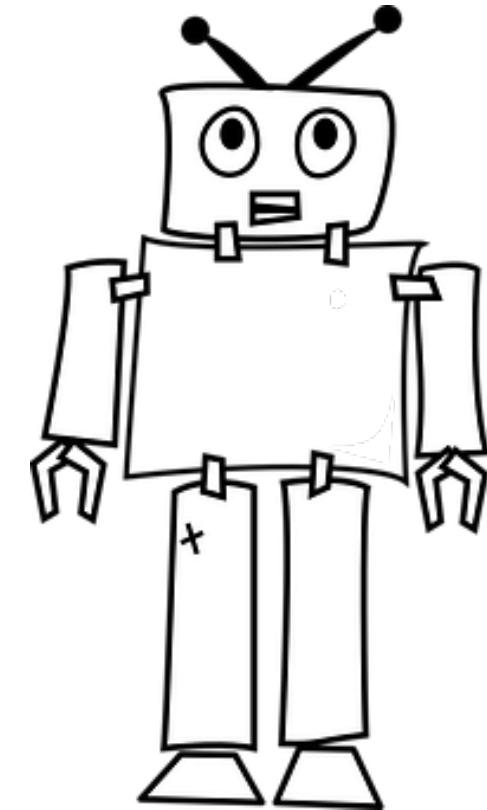
- Ad-hoc testing of conversations
- Simulates messenger channels
 - "Webhook" as the default

Test suite enabled

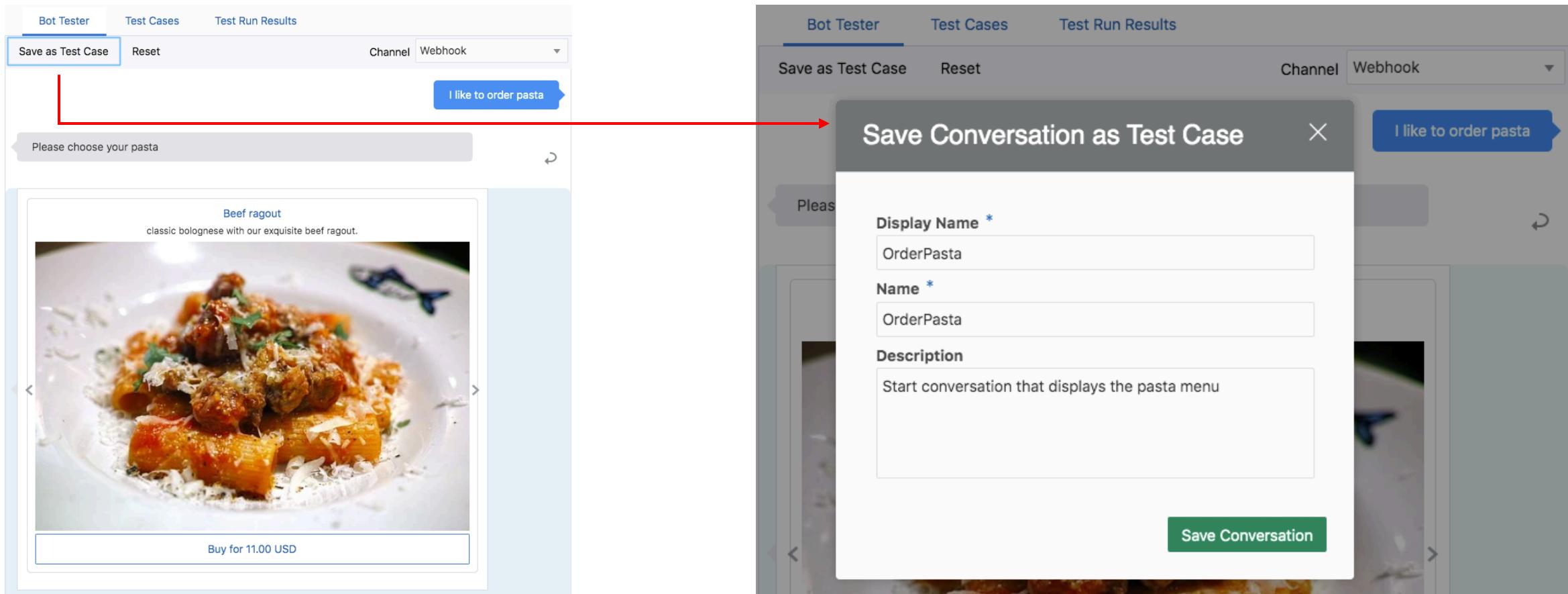


- Ad-hoc testing and test-cases
- Save ad-hoc tests as test case
- Manage and run test cases

You can create test cases for your skills
by **saving conversations with the bot**
in the tester



Creating a test case from a conversation



Test case created from a conversation

Bot Tester Test Cases Test Cases Test Run Results

+ Test Case Run All Test Cases

Filter Search icon

Sort By: Display Name Ascending

OrderPasta X

Page 1 of 1 < > X

Enabled On

* Display Name: OrderPasta

* Name: OrderPasta

Description: Optional test case short description

Variables

* Conversation

```
1 [ {  
2   "source": "user",  
3   "type": "text",  
4   "payload": {  
5     "message": "I like to order pasta"  
6   }  
7 },  
8 {  
9   "source": "bot",  
10  "type": "text",  
11  "payload": {  
12    "message": "I am really sorry, but it seems that what you asked for is not a  
choice on our menu."  
13  }  
14 },  
15 {  
16   "source": "user",  
17   "type": "text",  
18   "payload": {  
19     "message": "I like to order pasta"  
20   }  
21 }
```

Select or delete test case

Test case created from a conversation

The screenshot shows the Oracle Bot Tester interface with the 'Test Cases' tab selected. On the left, there's a sidebar with a '+ Test Case' button, a 'Run All Test Cases' button, a 'Filter' input field, and a 'Sort By' dropdown set to 'Display Name Ascending'. A search icon is also present. Below the sidebar, a list of test cases is shown with 'OrderPasta' selected. At the bottom, there are navigation buttons for 'Page 1 of 1' and arrows.

The main configuration area on the right includes:

- Enabled:** A toggle switch is highlighted with a red border and a red arrow pointing to it from the text 'Disable test case so it does Not execute in test suite'.
- * Display Name:** OrderPasta
- * Name:** OrderPasta
- Description:** Optional test case short description
- Variables:** A section labeled with a question mark icon.
- * Conversation:** A code editor containing a JSON-like conversation log. The code is numbered from 1 to 21.

```
1 [  
2   {  
3     "source": "user",  
4     "type": "text",  
5     "payload": {  
6       "message": "I like to order pasta"  
7     }  
8   },  
9   {  
10    "source": "bot",  
11    "type": "text",  
12    "payload": {  
13      "message": "I am really sorry, but it seems that what you asked for is not a  
choice on our menu."  
14    }  
15  },  
16  {  
17    "source": "user",  
18    "type": "text",  
19    "payload": {  
20      "message": "I like to order pasta"  
21    }  
}
```

A large red text annotation on the right side of the screen reads: 'Disable test case so it does Not execute in test suite' with a red arrow pointing to the 'Enabled' toggle switch.

Test case created from a conversation

Bot Tester Test Cases Test Cases Test Run Results

+ Test Case Run All Test Cases

Filter 🔍

Sort By Display Name Ascending ▼

OrderPasta ✖

Page 1 of 1 | ◀ ◀ ▶ ▶

Enabled

* Display Name

* Name

Description

Variables ?

* Conversation

```
1 [ {  
2   "source": "user",  
3   "type": "text",  
4   "payload": {  
5     "message": "I like to order pasta"  
6   }  
7 },  
8 {  
9   "source": "bot",  
10  "type": "text",  
11  "payload": {  
12    "message": "I am really sorry, but it seems that what you asked for is not a  
choice on our menu."  
13  }  
14 },  
15 {  
16   "source": "user",  
17   "type": "text",  
18   "payload": {  
19     "message": "I like to order pasta"  
20   }  
21 }
```

Run single test case → Run

Executing a test case for a skill

Testing Alfredo Pasta Skill

Bot Tester Test Cases Test Run Results

+ Test Case Run All Test Cases

Filter

Sort By Display Name Ascending

Full Entity Extraction Flow X

NLP flow X

Order From Menu Flow X

Show Menu Flow X

Skip menu flow X

Welcome Flow X

Page 1 of 1 K < > K

Enabled

* Display Name Welcome Flow

* Name WelcomeFlow

Description Optional test case short description

Variables

Conversation

```
[  
  {  
    "source": "user",  
    "type": "text",  
    "payload": {  
      "message": "Hi"  
    }  
  },  
  {  
    "source": "bot",  
    "type": "text",  
    "payload": {  
      "message": "Hi. I am a bot  
to order pasta. You can type 'I like  
to order pasta' to see a menu"  
    }  
  }  
]
```

Submit Test Run Job for Welcome Flow

The currently selected test case will be run.

Test Run Job Name *

Welcome Flow - Mon, 12/9/2019 08:47

Submit

Testing Alfredo Pasta Skill

Bot Tester Test Cases Test Run Results

Test Run Results (Started 2019-12-09, 8:47:57)

Filter

Sort By Test Run Started Descending

Welcome Flow - Mon, 12/9/2019 ... X

Page 1 of 1 (1 of 1 items) K < > K

1 All

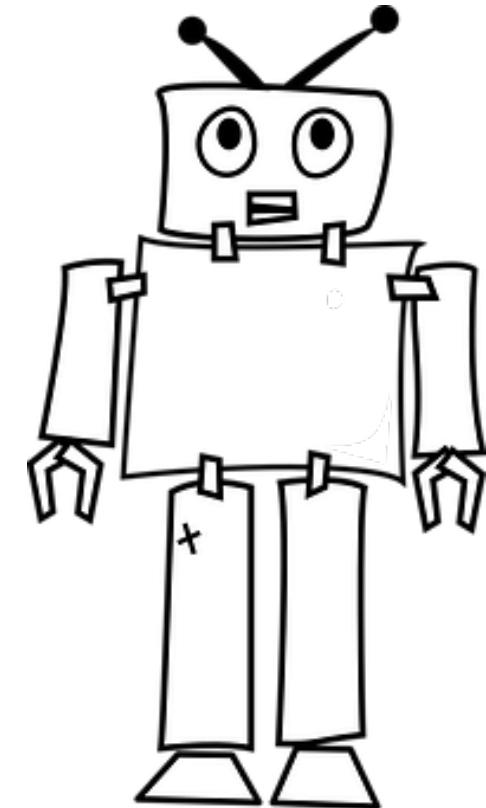
1 Passed

Filter

✓ WelcomeFlow (Elapsed Time: 1 seconds)

The **execution** of a test case **stops** at the first utterance that does not produce the expected bot response.

If so, the entire test case is marked as failed with a message indicating the problem.



Test case created from a conversation

Bot Tester Test Cases Test Cases Test Run Results

+ Test Case Run All Test Cases

Filter Search

Sort By Display Name Ascending

OrderPasta X

Enabled

* Display Name OrderPasta

* Name OrderPasta

Description *Optional test case short description*

Variables Variables ← List of place holder variables in messages (later more on this)

* Conversation

```
1 [ {  
2   "source": "user",  
3   "type": "text",  
4   "payload": {  
5     "message": "I like to order pasta"  
6   }  
7 }, {  
8   "source": "bot",  
9   "type": "text",  
10  "payload": {  
11    "message": "I am really sorry, but it seems that what you asked for is not a  
choice on our menu."  
12  }  
13 }, {  
14   "source": "user",  
15   "type": "text",  
16   "payload": {  
17     "message": "I like to order pasta"  
18   }  
19 } ]
```

Test case created from a conversation

Bot Tester Test Cases Test Cases Test Run Results

+ Test Case Run All Test Cases

Filter Search

Sort By Display Name Ascending

OrderPasta Edit X

Page 1 of 1 | < < > >

Enabled

* Display Name OrderPasta

* Name OrderPasta

Description Optional test case short description

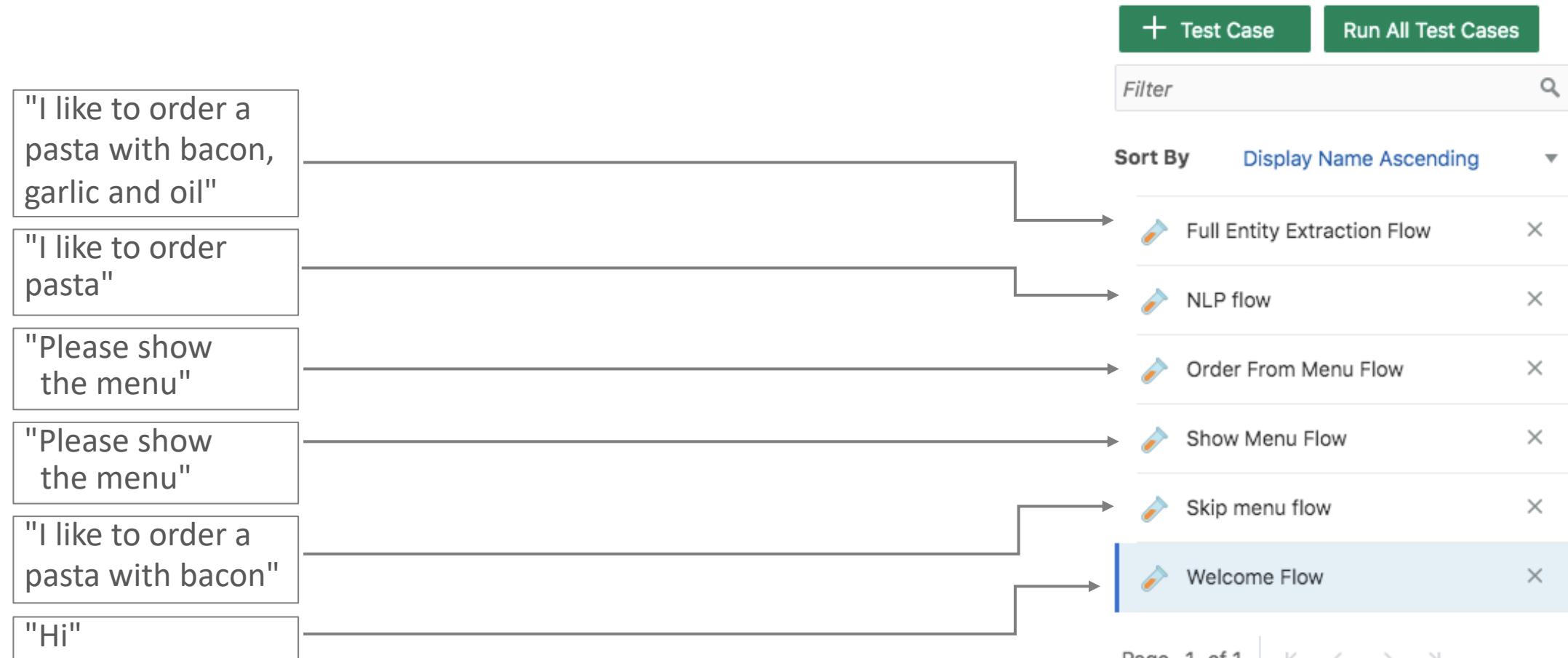
Variables

* Conversation

```
1 [ {  
2   "source": "user",  
3   "type": "text",  
4   "payload": {  
5     "message": "I like to order pasta"  
6   }  
7 },  
8 {  
9   "source": "bot",  
10  "type": "text",  
11  "payload": {  
12    "message": "I am really sorry, but it seems that what you asked for is not a  
choice on our menu."  
13  }  
14 },  
15 {  
16   "source": "user",  
17   "type": "text",  
18   "payload": {  
19     "message": "I like to order pasta"  
20   }  
21 }
```

JSON test script. You can edit the script if needed. →

Test suite



Executing a test suite

ORACLE® Digital Assistant

Skills • Alfredo Pasta DRAFT • 1.1

Run Tests

Submit Test Run Job for Alfredo Pasta 1.1

All enabled test cases in the skill bot will be run.

Test Run Job Name *

Alfredo Pasta 1.1 - Mon, 12/9/2019 08:54

Submit

Testing Alfredo Pasta Skill

Bot Tester Test Cases Test Run Results

Test Run Results (Started 2019-12-09, 8:54:54 am, Completed 2019-12-09, 8:54:59 am)
Last Refreshed a few seconds ago

6	6	0	0
All	Passed	Failed	In Progress

Filter

Sort By Test Run Started Descending

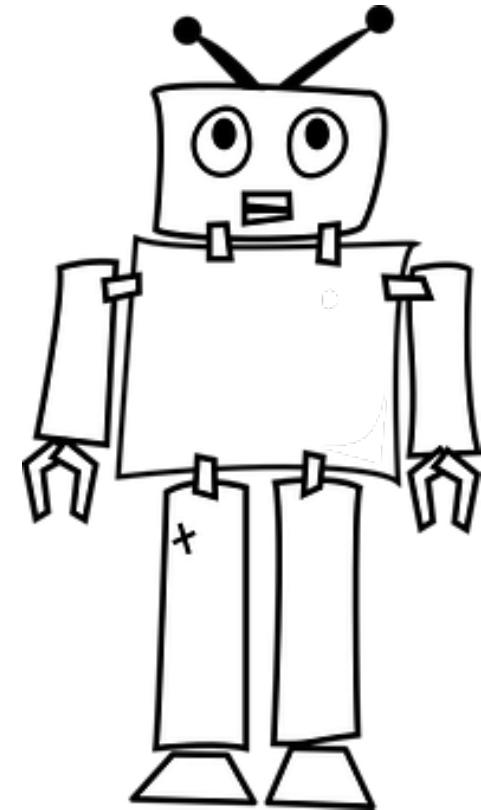
Alfredo Pasta 1.1 - Mon, 12/9/2019 ...

Welcome Flow - Mon, 12/9/2019 ...

Page 1 of 1 (1-2 of 2 items) | < 1 > >>

Skipmenuflow (Elapsed Time: 0 seconds) Download Log
WelcomeFlow (Elapsed Time: 0 seconds) Download Log
NLPflow (Elapsed Time: 1 seconds) Download Log
ShowMenuFlow (Elapsed Time: 1 seconds) Download Log
OrderFromMenuFlow (Elapsed Time: 2 seconds) Download Log
FullEntityExtractionFlow (Elapsed Time: 2 seconds) Download Log

A test case **does not need to be a complete conversation path**. You can save partial conversations as a test case



Summary of test cases

- Only exists for skills yet
- Saved with the skill and all its variants
 - version, clone, extension
- Conversation scripts are formatted in JSON
- Test can be run for individual test cases or the whole suite

The image shows two side-by-side screenshots of the Oracle Bot Tester interface. Both screenshots have a header bar with tabs: 'Bot Tester', 'Test Cases' (which is selected), and 'Test Run Results'. Below the header is a green button labeled '+ Test Case' and a blue button labeled 'Run All Test Cases'. There is also a 'Filter' input field with a magnifying glass icon.

Left Screenshot (Original Skill): The title is 'Testing Alfredo Pasta Skill'. The 'Sort By' dropdown is set to 'Display Name Ascending'. The list of test cases includes:

- Full Entity Extraction Flow
- NLP flow
- Order From Menu Flow
- Show Menu Flow
- Skip menu flow
- Welcome Flow

Right Screenshot (Clone Skill): The title is 'Testing Alfredo Pasta Clone Skill'. The 'Sort By' dropdown is set to 'Display Name Ascending'. The list of test cases includes:

- Full Entity Extraction Flow
- NLP flow
- Order From Menu Flow
- Show Menu Flow
- Skip menu flow
- Welcome Flow

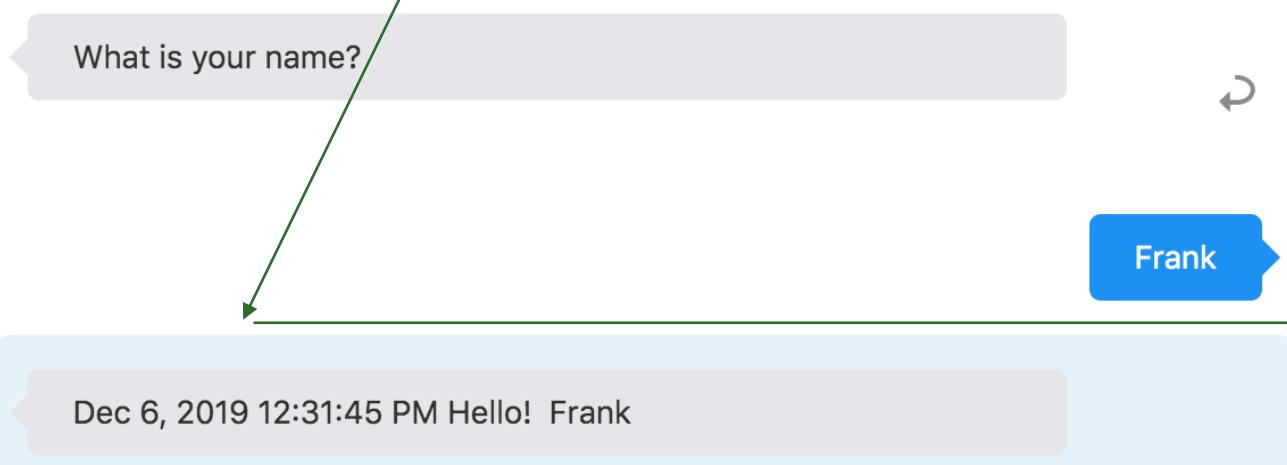
A red circle highlights the word 'Clone' in the title bar of the right screenshot. A red arrow points from the word 'cloned' in red text above the right screenshot to the 'Clone' word in the title bar.

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Dynamic content in a bot response

```
33 printMessage:  
34   component: "System.Output"  
35   properties:  
36     text: "${today.value} ${greeting.value}  
37       ${name.value}"  
38 transitions:  
39   return: "done"  
40
```



- Test case fails if bot response contains changing values
 - Example: current date



Filter

⚠ FullConversation (Elapsed Time: 1 seconds)

Json Pointer:
/5/payload/message

Expected Value:
Dec 6, 2019 12:31:45 PM Hello! Frank

Actual Value:
Dec 6, 2019 12:36:41 PM Hello! Frank

Handling dynamic content when testing bot responses

```
33 printMessage:  
34   component: "System.Output"  
35   properties:  
36     text: "${today.value} ${greeting.value}  
37       ${name.value}"  
38   transitions:  
39     return: "done"  
40
```

Variables SYSTEM_BOT_ID, TODAY

```
* Conversation  
  79   "payload": {  
  80     "message": "What is your name?"  
  81   }  
  82   },  
  83   {  
  84     "source": "user",  
  85     "type": "text",  
  86     "payload": {  
  87       "message": "Frank"  
  88     }  
  89   },  
  90   {  
  91     "source": "bot",  
  92     "type": "text",  
  93     "payload": {  
  94       "message": "${TODAY} Hello! Frank"  
  95     }  
  96   }
```

- Replace part of message that changes with a placeholder
 - E.g. \${MY_VAR}
- Placeholder variable is ignored when running a test case



Filter

✓ FullConversation (Elapsed Time: 1 seconds)

Page 1 of 1 (1 of 1 items)

K < 1 > K

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Updating failed test cases

- Test cases may fail because the skill has been changed
 - E.g. developer changed the bot response for a user message
- You can update test cases from the test case result page
 - Press **Apply Actual** button to update the test case with the actual bot response
- Not a solution for test cases that contain date / time information
 - Use placeholder variables instead

The screenshot shows a test case result page with the following statistics:

0 All	0 Passed	0 Failed	1 In Progress
-------	----------	----------	---------------

A search bar labeled "Filter" is present. Below the statistics, a failed test case is listed:

! WelcomeFlow (Elapsed Time: 2 seconds) [Download Log](#)

Json Pointer: /1/payload/message

Expected Value: Hi. I am a bot to order pasta. You can type 'I like to order pasta' for me to show the menu

Actual Value: Hi. I am a bot to order pasta. You can type 'I like to order pasta' to see a menu

Page 1 of 1 (1 of 1 items) | < 1 > >

An "Apply Actual" button is highlighted with a red circle and a mouse cursor. A confirmation dialog box is displayed:

Are you sure you want to update WelcomeFlow test case with actual value?

Canceling this request in (secs) 12

Yes **No**

At the bottom, a success message is shown:

✓ WelcomeFlow test case has been successfully updated

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