Chatbots & PHP

A Get Started Guide

Hi, who is this?

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Hi, my name is Katy

- Developer, knitter, vegetable grower
- Works at **Deeson** & **GreenShoot Labs**
- @maccath on Twitter
- Not a bot

So, Chatbots…?

They're a hot topic!

Chatbot Popularity

- 4/6 most popular social platforms are messengers
- 30% increase in users globally in 1 year
- More messages are sent than emails
- Since allowing bots on FB Messenger in 2016, business to user messaging has doubled

But why?

Well…

Good for Consumers

- Avoids ‘app fatigue’.
- Can get straight to the point.
- Intuitive interface based on natural human communication.

Good for Businesses

- No need for physical availability.
- Can deal with multiple queries simultaneously.
- Maintain a presence within the most popular applications.

Good for Developers

- No more ‘apps’!
- Learn about and use Artificial Intelligence.
- ChatOps, Productivity, Laziness.
- Skynet.

Chatbots are old news…

Quite!

The First ‘Chatterbots’

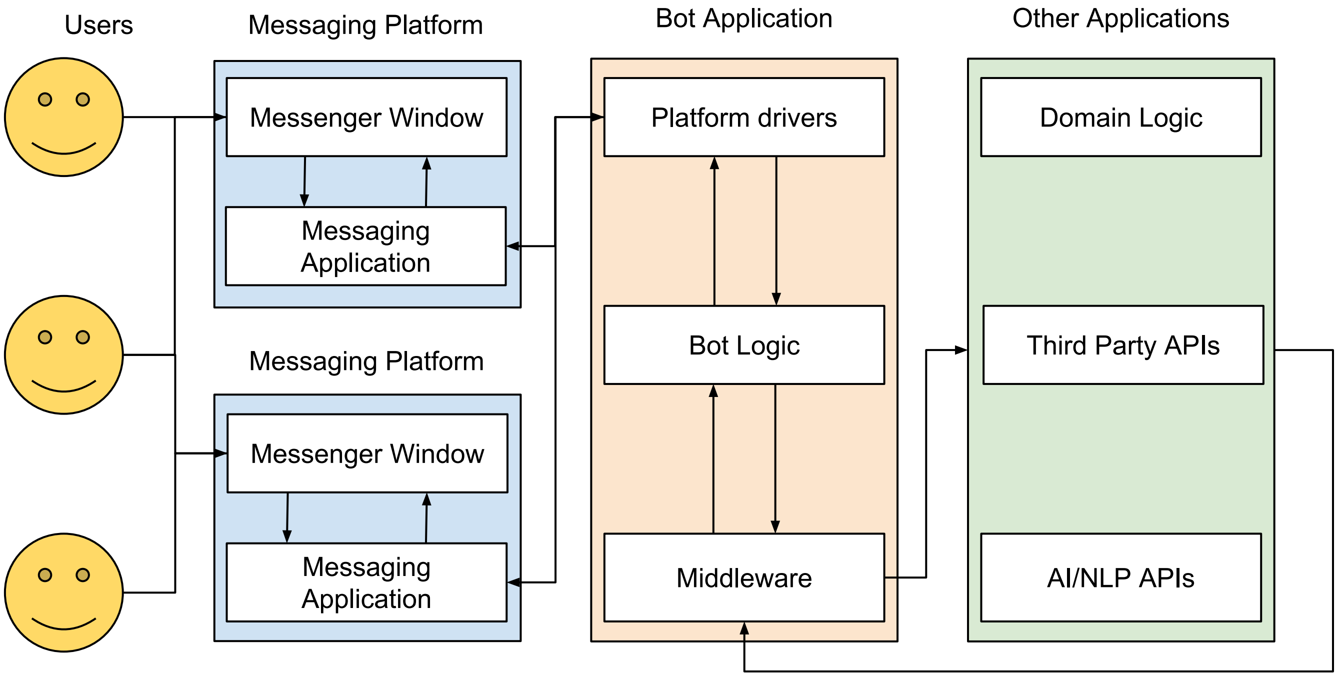
- ELIZA - developed in the 1960s
- ALICE - developed in the 1990s
- Smarterchild - developed in the 2000s

Chatbots With Purpose

- **ChatOps** - Hubot (CoffeeScript), Lita (Ruby), Errbot (Python)
- **Personal assistants** - Siri (Apple), Cortana (Microsoft), Alexa (Amazon), Assistant (Google)

How do bots even work?

Allow me to show you...


Users
Messaging Platform
Messenger Window
Messaging Application
Messaging Platform
Messenger Window
Messaging Application
Bot Application
Platform drivers
Bot Logic
Middleware
Other Applications
Domain Logic
Third Party APIs
AI/NLP APIs

Push Communication

1. An event occurs on messenger platform
2. HTTP request containing details is composed by messenger app
3. HTTP request delivered to your bot application via a webhook
4. Bot application reacts and composes appropriate HTTP response
5. Response delivered to the messenger platform via a webhook

Real-time Communication

1. Bot application requests websocket connection to messenger platform
2. Messenger platform accepts request for websocket connection

⬇

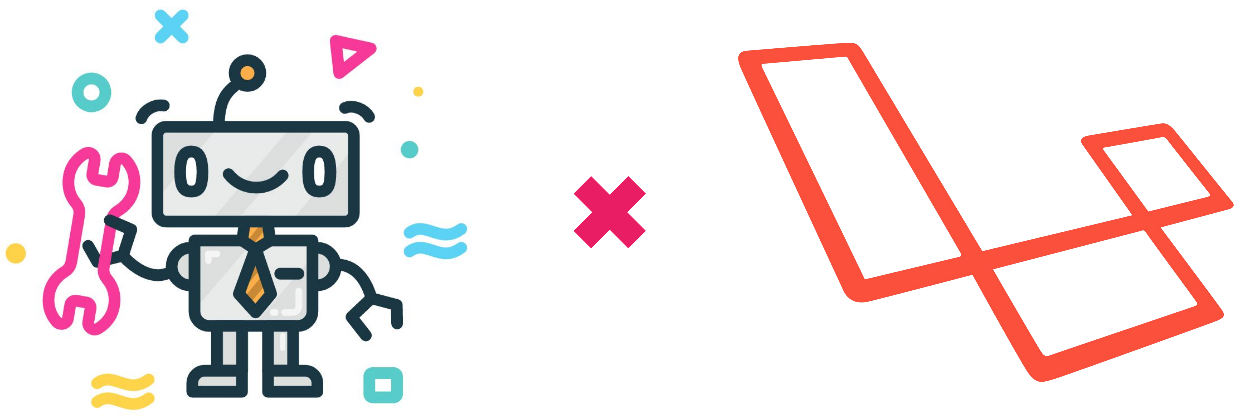
1. An event occurs on messenger platform
2. HTTP request immediately received by bot application via websocket
3. Bot application reacts and composes appropriate HTTP response
4. Response delivered to the messenger platform via websocket

Ok, how do we build one?

Using BotMan!

What is BotMan?

- Framework for chatbot development
- Like BotKit… but for PHP!
- Open source
- Framework agnostic
- Clean code, easy to extend



Creating a New Bot

```
$ ~/
```

- `composer create-project --prefer-dist botman/studio food-bot`

Let’s run it!

```
$ ~/food-bot/

→ php artisan botman:tinker
```

How does it hear me?

Like this:

Hearing messages

routes/botman.php

```php
$botman->hears('Hi', function ($bot) {
    $bot->reply('Hello!');
});
```

What about parameters?

routes/botman.php

```php
$botman->hears("Hi, I’m {name}", function ($bot, $name) {
    $bot->reply("Hello, $name!");
});
```

What about patterns?

routes/botman.php

```
$botman->hears(
    'I want ([0-9]+) {item}!',
    function ($bot, $num, $item) {
        $bot->reply("Alright, $num $item it is!");
    }
);
```

Can it hold a conversation?

Of course…!

A wild request appears!

routes/botman.php

```
$botman->hears(
    'I want to book a table!',
    function ($bot) {
        $bot->startConversation(new TableBookingConvo());
    }
);
```

app/Conversations/TableBookingConvo.php

Let's talk about this

```
class TableBookingConvo extends Conversation
{
    public function run()
    {
        // This will be called immediately
        $this->askWhen();
    }
}
```

app/Conversations/TableBookingConvo.php

```php
public function askWhen()
{
   $this->ask('For when?', function (Answer $answer) {
        $this->date = new DateTime($answer->getText());
        $this->say(
            'Ok; ' . $this->date->format('l jS F Y \a\t g.ia')
        );
        $this->askHowMany();
    });
}
```

app/Conversations/TableBookingConvo.php

And for how many people?

```php
public function askHowMany()
{
    $this->ask('How many people?', function (Answer $answer) {
        $this->num = (int) $answer->getText();
        $this->say($this->num . '? Cool!');
        $this->book();
    });
}
```

app/Conversations/TableBookingConvo.php

```php
public function book()
{
    // Implementation of booking process goes here

    $this->say(sprintf(
        'Alright, that’s booked for %d people on %s.',
        $this->num,
        $this->date->format('l jS F Y \a\t g.ia')
    ));
}
```

How can others use it?

Through different platforms.

nexmo®

a Vonage® Company

HipChat

Listing platform drivers

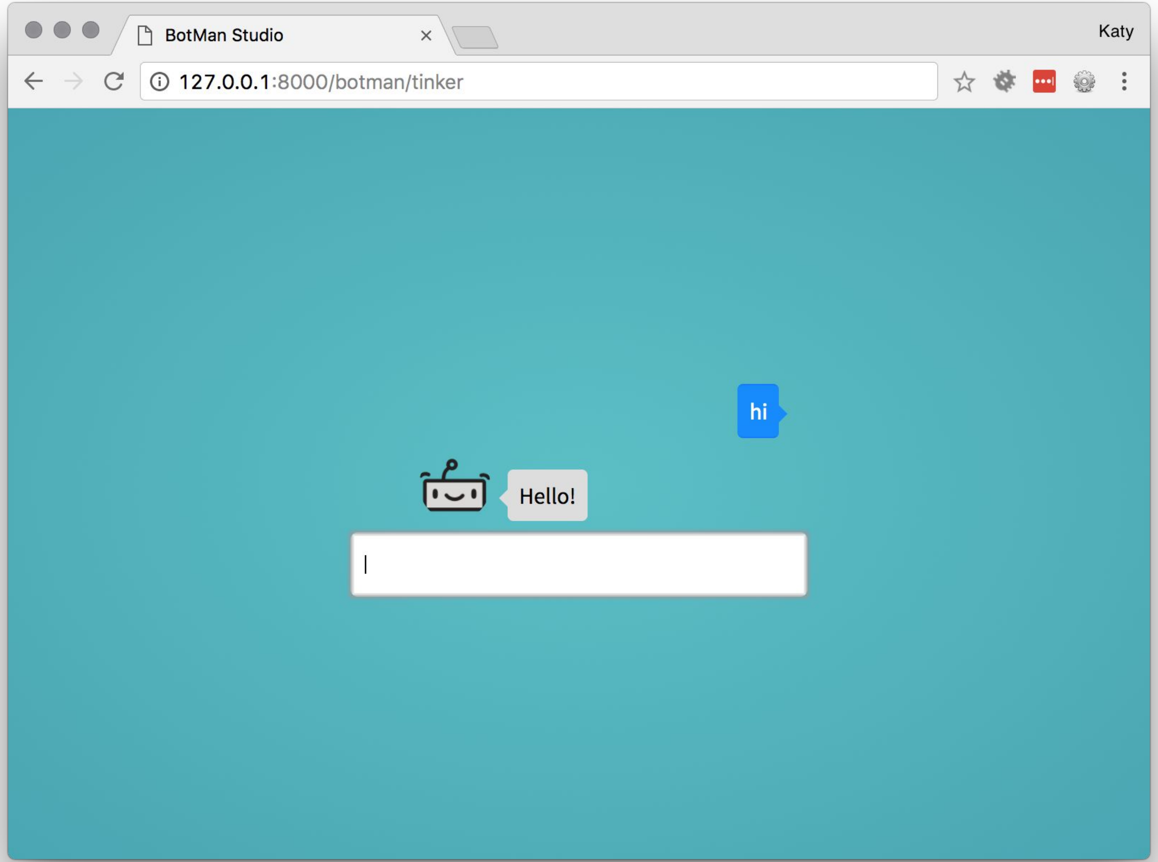
```
$ ~/food-bot/
```

```
→ php artisan botman:list-drivers
```

Using the web driver

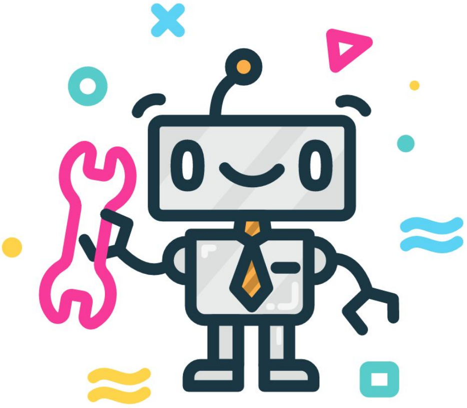
```
$ ~/food-bot/

→ php artisan serve
```



hi

Hello!



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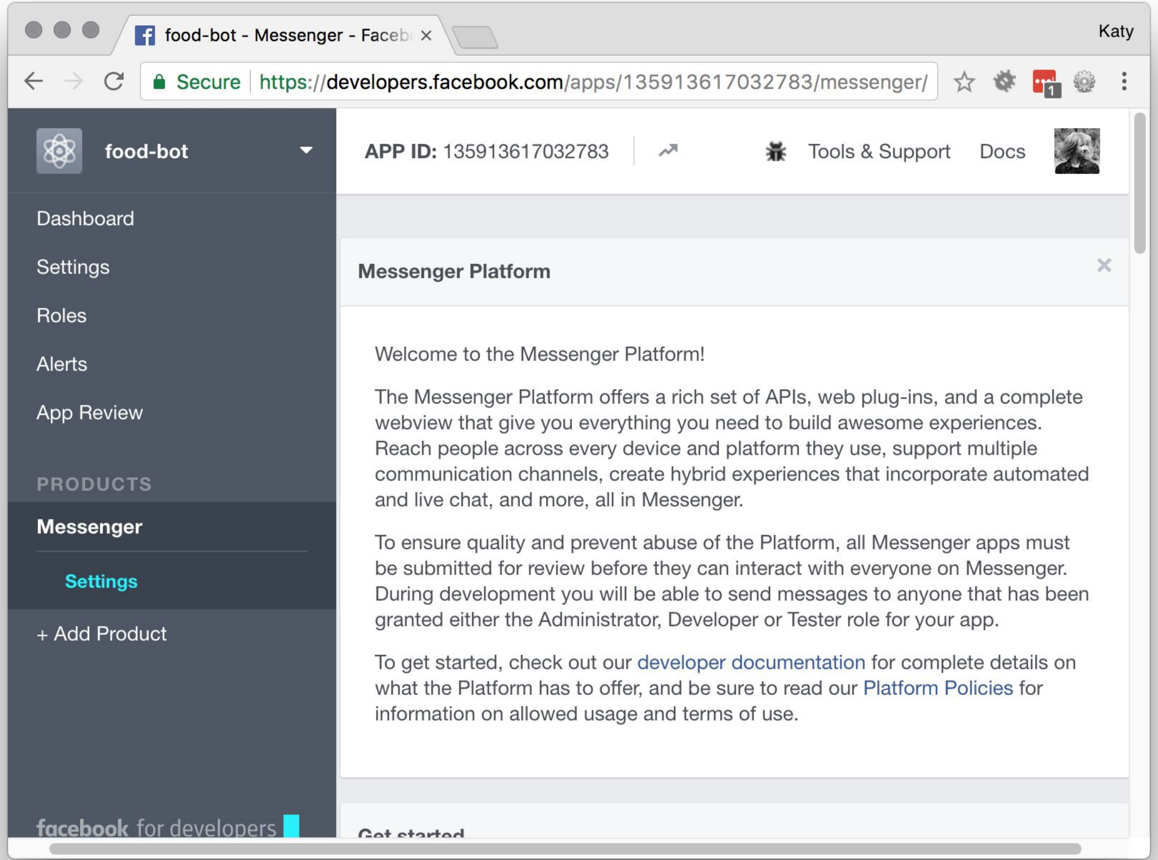


Messenger Platform

Welcome to the Messenger Platform!

The Messenger Platform offers a rich set of APIs, web plug-ins, and a complete webview that give you everything you need to build awesome experiences. Reach people across every device and platform they use, support multiple communication channels, create hybrid experiences that incorporate automated and live chat, and more, all in Messenger.

To ensure quality and prevent abuse of the Platform, all Messenger apps must be submitted for review before they can interact with everyone on Messenger. During development you will be able to send messages to anyone that has been granted either the Administrator, Developer or Tester role for your app.

To get started, check out our developer documentation for complete details on what the Platform has to offer, and be sure to read our Platform Policies for information on allowed usage and terms of use.

Get started

Installing Facebook drivers

```
$ ~/food-bot/

→ php artisan botman:install-driver facebook
```

Are there any special features?

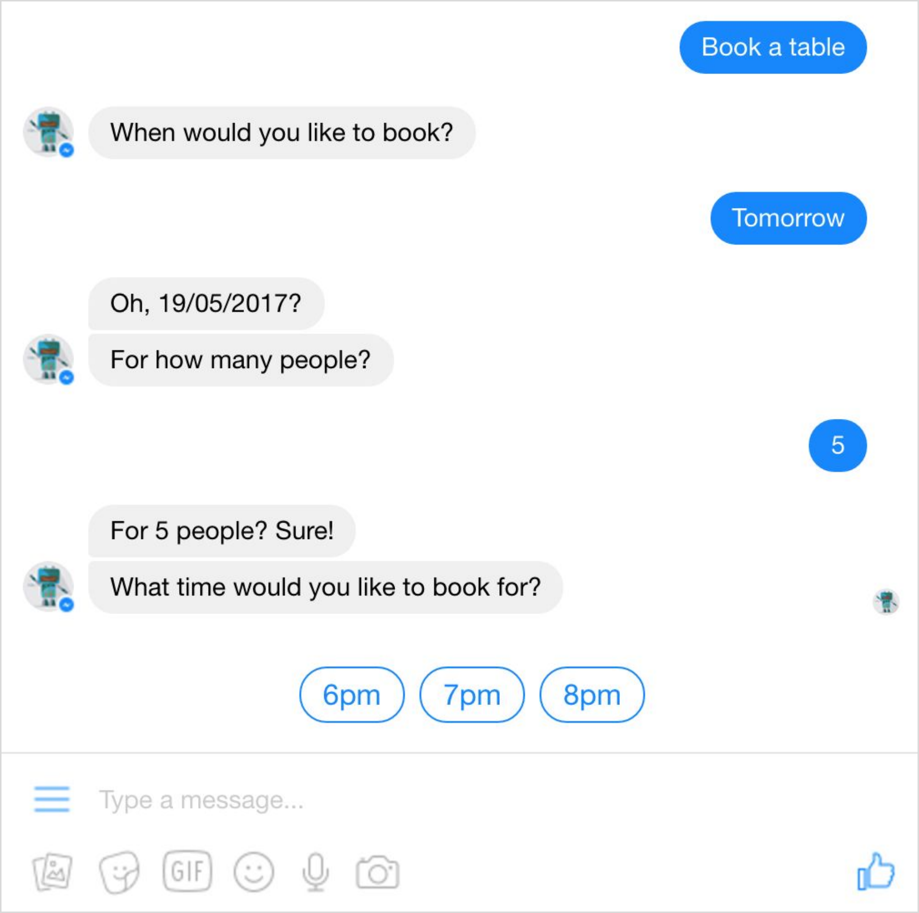
Yeah, loads!

Interactive messages

Need specific answers?

Multiple choice?

Use interactive messages to guide your users!



Book a table

When would you like to book?

Tomorrow

Oh, 19/05/2017?

For how many people?

5

For 5 people? Sure!

What time would you like to book for?

app/Conversations/TableBookingConvo.php

Composing questions

```php
$whatTime = Question::create('What time would you like to book?')
  ->fallback('Unable to ask question')
  ->callbackId('booking_time')
  ->addButtons([
    Button::create('6pm')->value('18:00'),
    Button::create('7pm')->value('19:00'),
    Button::create('8pm')->value('20:00'),
  ]);
```

app/Conversations/TableBookingConvo.php

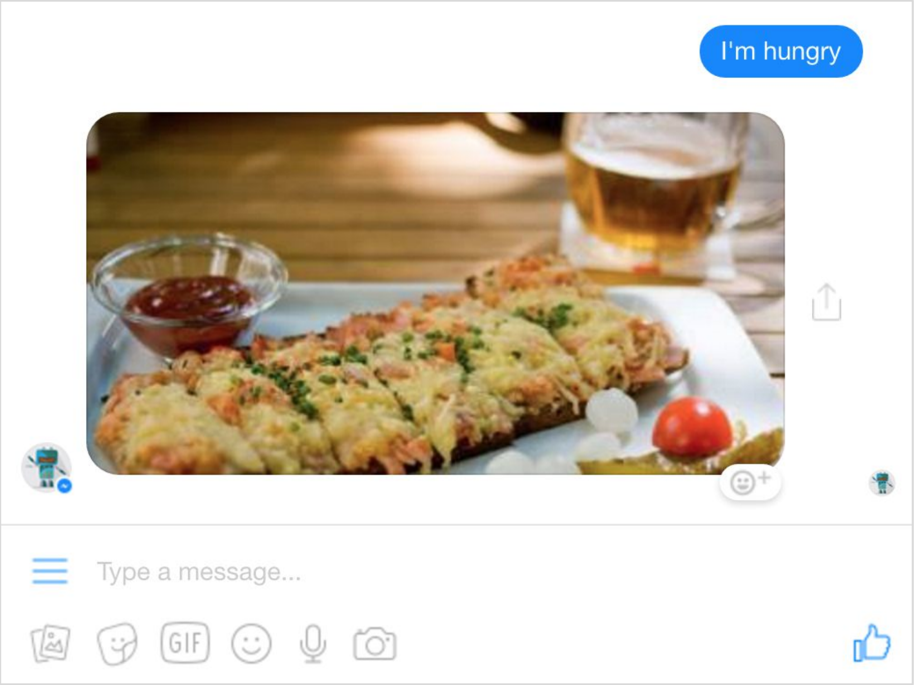
Handling the response

```
$this->ask($whatTime, function (Answer $answer) {
    if ($answer->isInteractiveMessageReply()) {
        $this->time = $answer->getValue();
        $this->say('Cool, ' . $this->time);
    } else {
        // Handle a typed message reply
    }
});
```

Attachments

A picture says a thousand words, so send attachments!:

- Images
- Audio
- Locations
- Web links



I'm hungry

app/routes/botman.php

Sending pictures

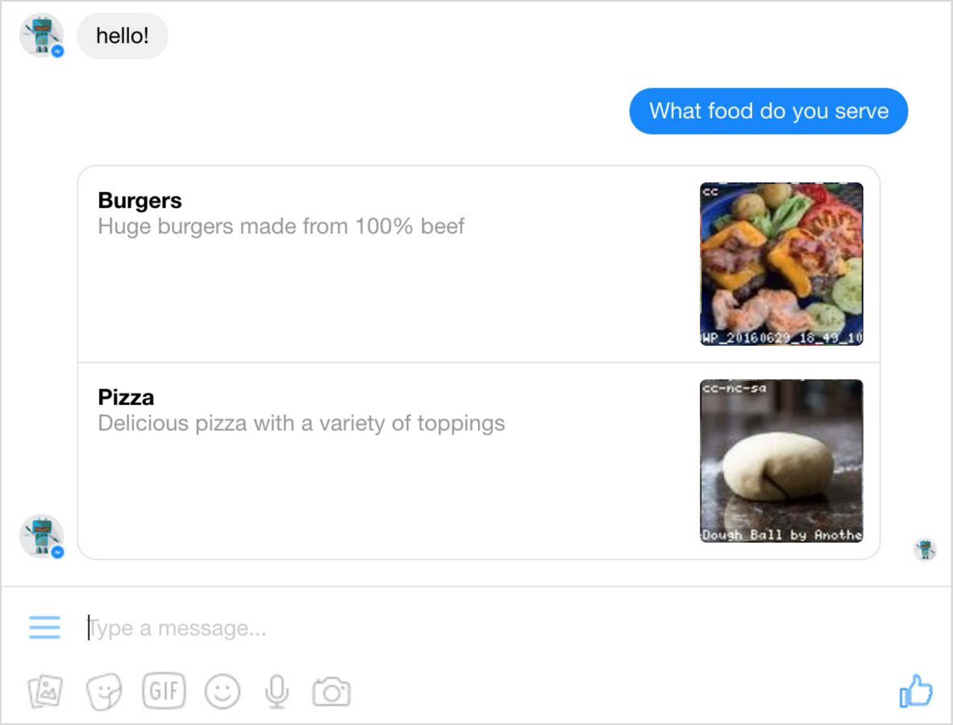
```
$botman->hears("I'm hungry", function ($bot) {
  $message = Message::create('Have some food!')
    // attach an image
    ->image('http://lorempixel.com/400/200/food/');


  $bot->reply($message);
});
```

Templates

Frequent use cases demand reusable templates:

- Receipts
- Lists
- Carousels
- Buttons



hello!

What food do you serve

Burgers
Huge burgers made from 100% beef

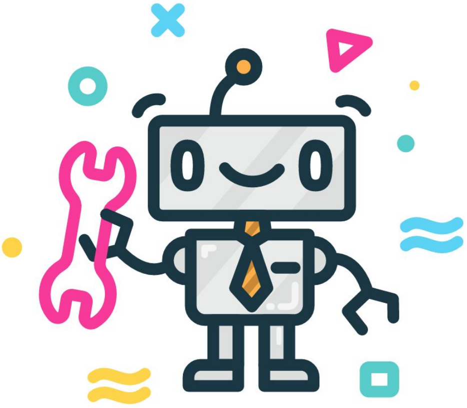
Pizza
Delicious pizza with a variety of toppings

app/routes/botman.php

```php
$botman->hears("What food do you serve", function ($bot) {
  $bot->reply(
    ListTemplate::create()
      ->useCompactView()
      ->addElement(
        Element::create('Burgers')
          ->subtitle('Huge burgers made from 100% beef')
          ->image('http://loremflickr.com/100/100/burger/')
      )
      // ... add more items
  );
});
```

But my team uses Slack…

That works too!



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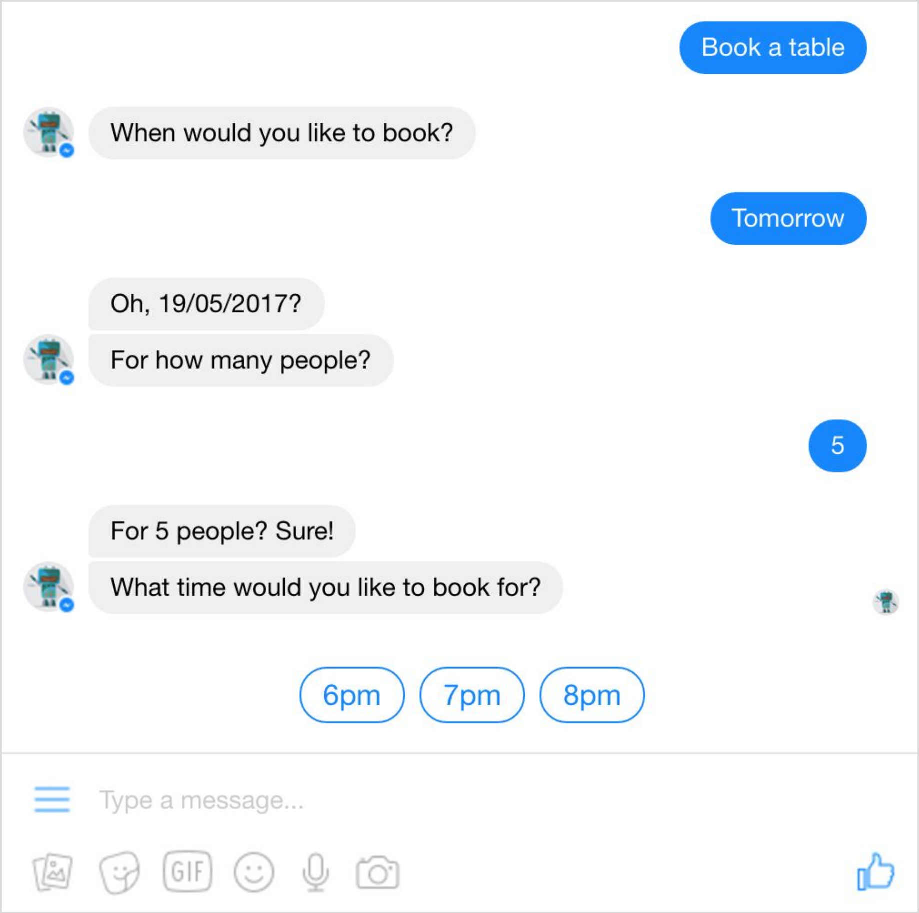
Installing Slack drivers

```
$ ~/food-bot/

➔ php artisan botman:install-driver slack
```

Menus

Like buttons in Facebook, but more options - you can even use channels and users as options!



Book a table

When would you like to book?

Tomorrow

Oh, 19/05/2017?

For how many people?

5

For 5 people? Sure!

What time would you like to book for?

Creating menus

app/routes/botman.php

```
$botman->hears("Can I reserve a table?", function ($bot) {
   $bot->reply(Menu::create("What time?")
       ->name("available_times")
       ->options([
          ['text' => '5pm', 'value' => '1700'],
          ['text' => '6pm', 'value' => '1800'],
       ]) //...
```

Not very intelligent though.

Ok, we’ll investigate AI.

Natural Language Processing

- Intent - yes, no, ok, hello, goodbye 👍 👎 👌 👋
- Tone - happy, sad, angry 😊 😐 🙁 😡
- Entities - how, when, where 🚗 📆 💷 ✉️ 🗺️
- Domain - bookings, information, idle chat 🎟️ 📰 💬

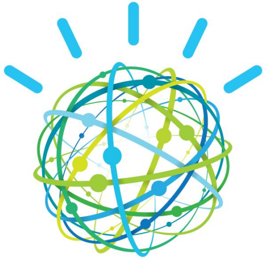
Machine Learning

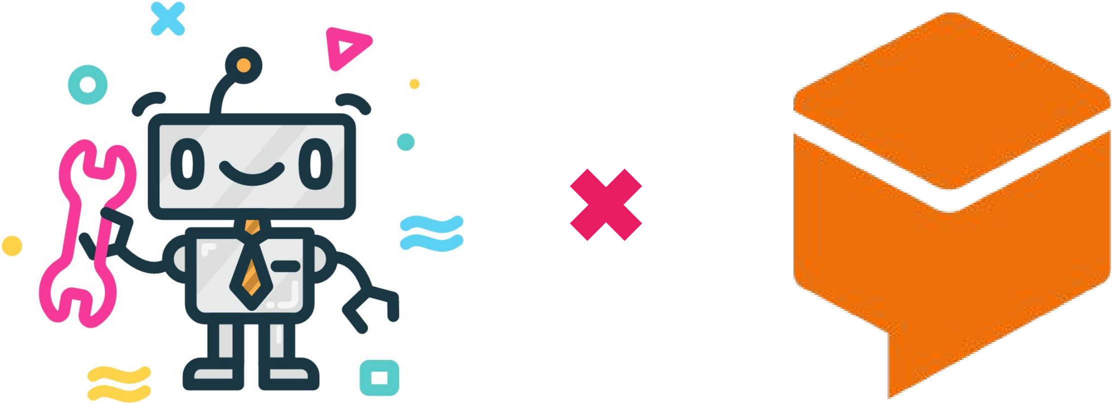
- Mis-spellings - “Do you like spagetty?” 🤔 ❕ 🍝
- Entities - “Can I travel by sea?” 🤔 ❕ 🌊 ➡️ 🚢
- Synonyms - “I hate eggplant.” 🤔 ❕ 🇺🇸 ➡️ 🍆
- Slang - “Amazing, that’s sick!” 🤔 ❕ 😷 🔀 😀

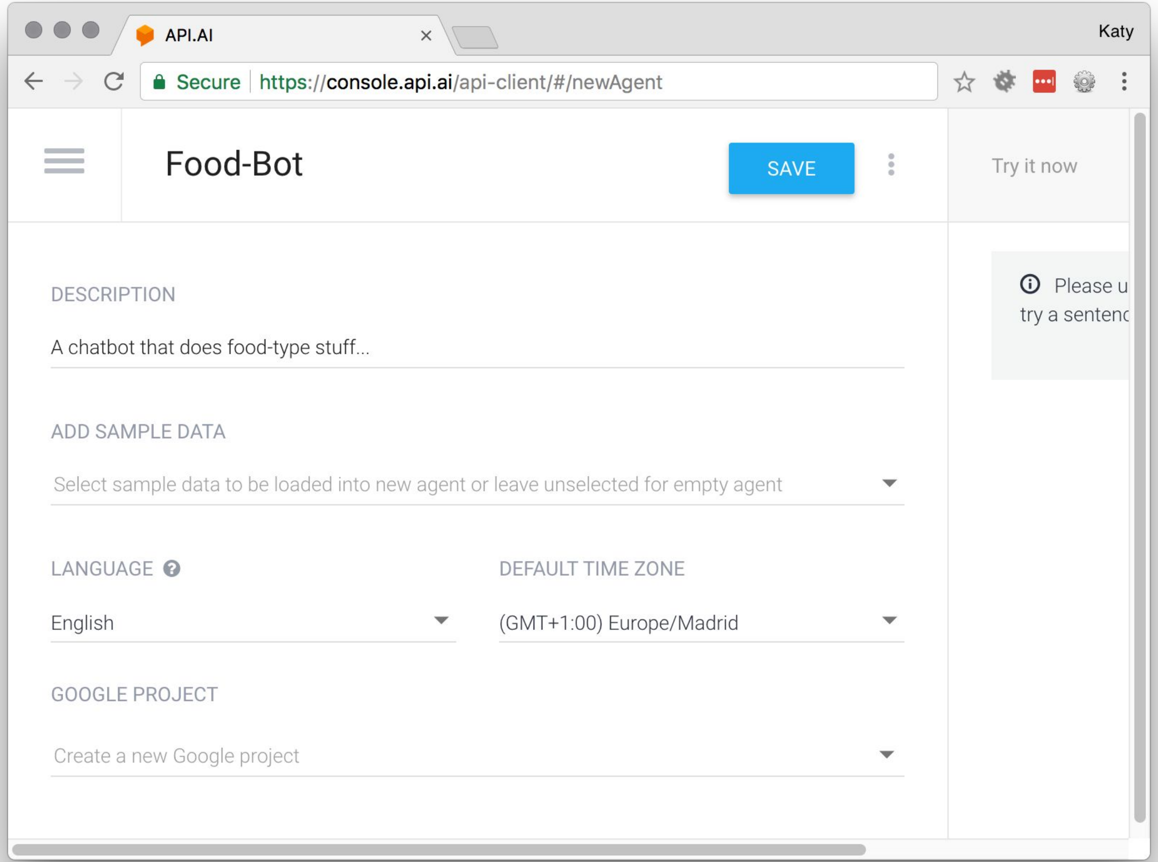
How would we implement all that?!

Let’s not reinvent the wheel!

wit.ai







Food-Bot

DESCRIPTION

A chatbot that does food-type stuff...

ADD SAMPLE DATA

Select sample data to be loaded into new agent or leave unselected for empty agent

LANGUAGE

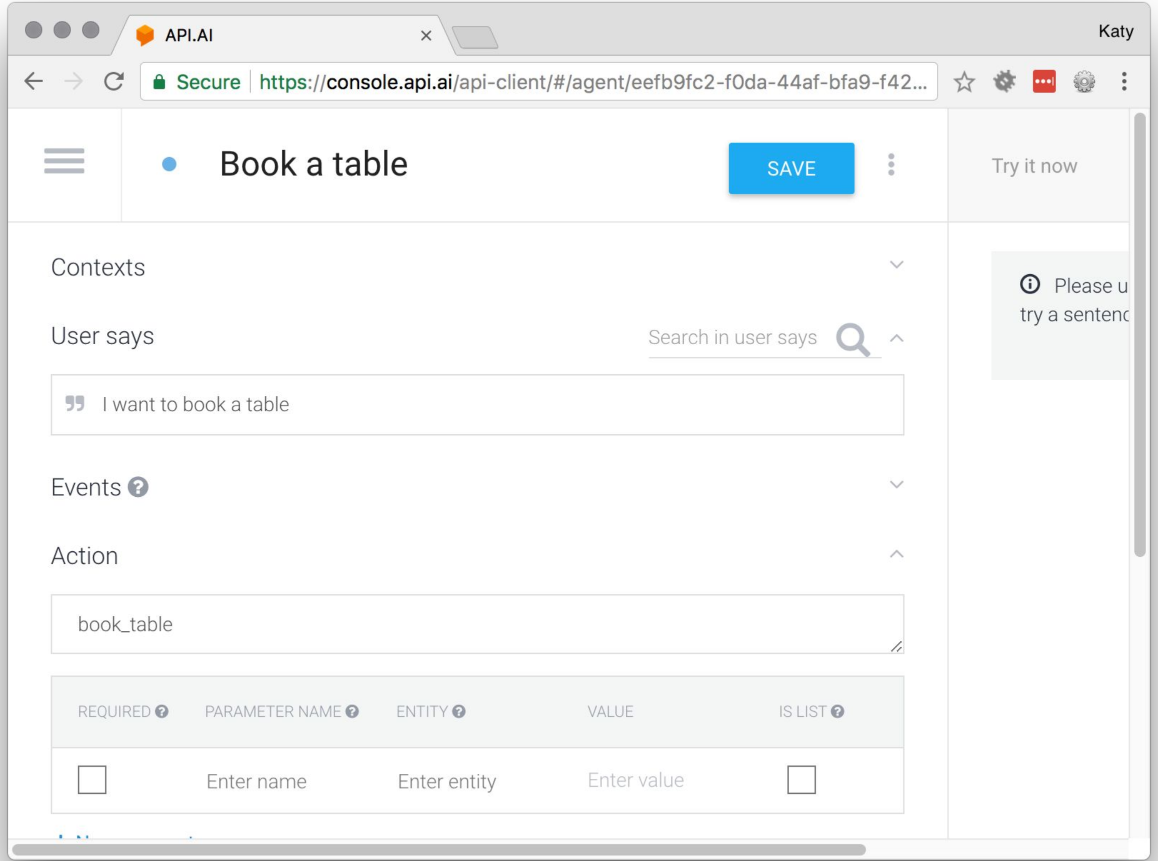
English

DEFAULT TIME ZONE

(GMT+1:00) Europe/Madrid

GOOGLE PROJECT

Create a new Google project


API.AI
Katy
Secure
https://console.api.ai/api-client/#/agent/eefb9fc2-f0da-44af-bfa9-f42...
SAVE
Try it now

Book a table

Please u
try a sentenc

Contexts

User says

Search in user says

I want to book a table

Events

Action

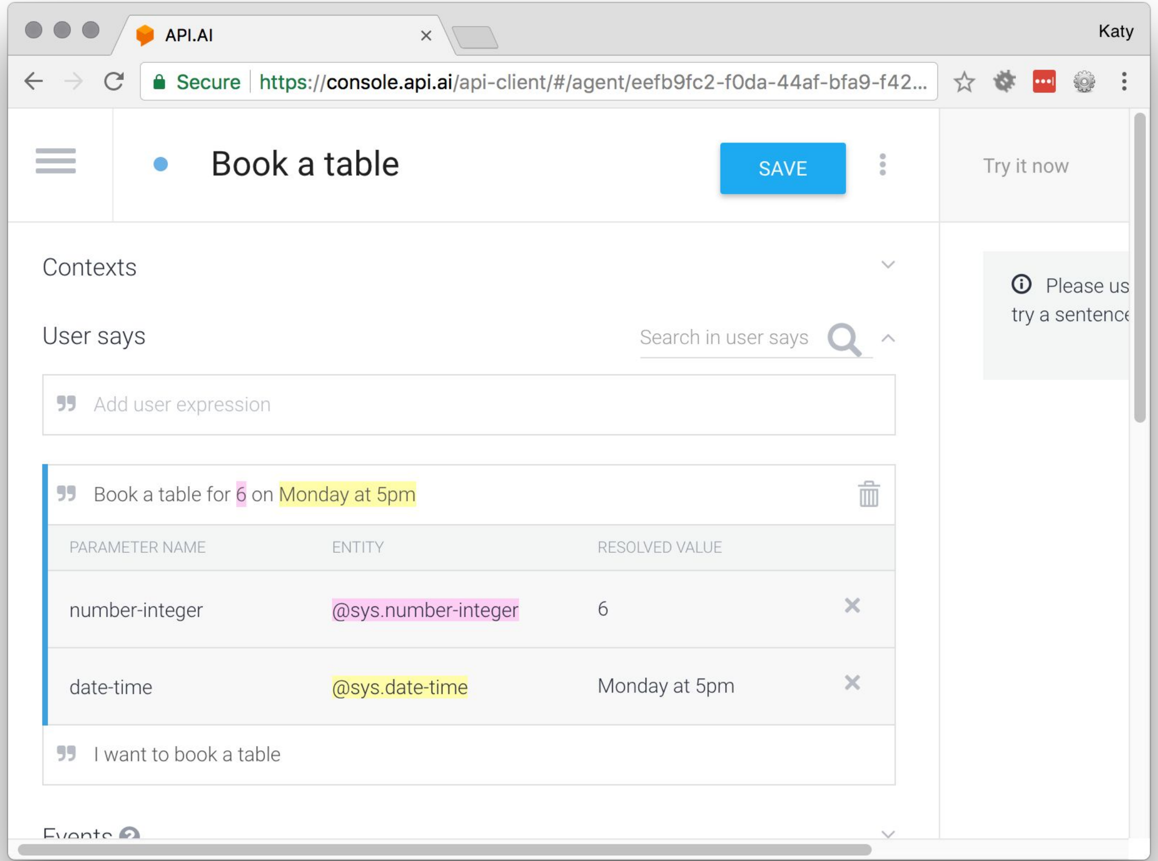
book_table

REQUIRED	PARAMETER NAME	ENTITY	VALUE	IS LIST
□	Enter name	Enter entity	Enter value	□

Using the API.AI Middleware

routes/botman.php

```
$apiAi = ApiAi::create('your-api-ai-token')->listenForAction();
$botman->middleware->received($apiAi);


// Hears an action, not a phrase!
$botman->hears("book_table", function ($bot) {
    //...
})->middleware($apiAi);
```



API.AI
Katy
Secure
https://console.api.ai/api-client/#/agent/eefb9fc2-f0da-44af-bfa9-f42...
SAVE
Try it now

Book a table

Contexts

User says

Search in user says

Add user expression

Book a table for 6 on Monday at 5pm

PARAMETER NAME	ENTITY	RESOLVED VALUE
number-integer	@sys.number-integer	6
date-time	@sys.date-time	Monday at 5pm

I want to book a table

Events

Please us
try a sentence

app/Conversations/TableBookingConvo.php

Identifying entities

```
public function run()
{
  // Before we move on, let’s figure out what we know...
  $this->determineEntities();

  $this->askWhen();
}
```

app/Conversations/TableBookingConvo.php

```php
private function determineEntities()
{
  $message = $this->bot->getMessage();
  $entities = $message->getExtras('apiParameters');

  if (!empty($entities['date-time'])) {
    $this->date = new \DateTime($entities['date-time']);
  }

  if (!empty($entities['number-integer'])) {
    $this->num = (int) $entities['number-integer'];
  }
}
```

app/Conversations/TableBookingConvo.php

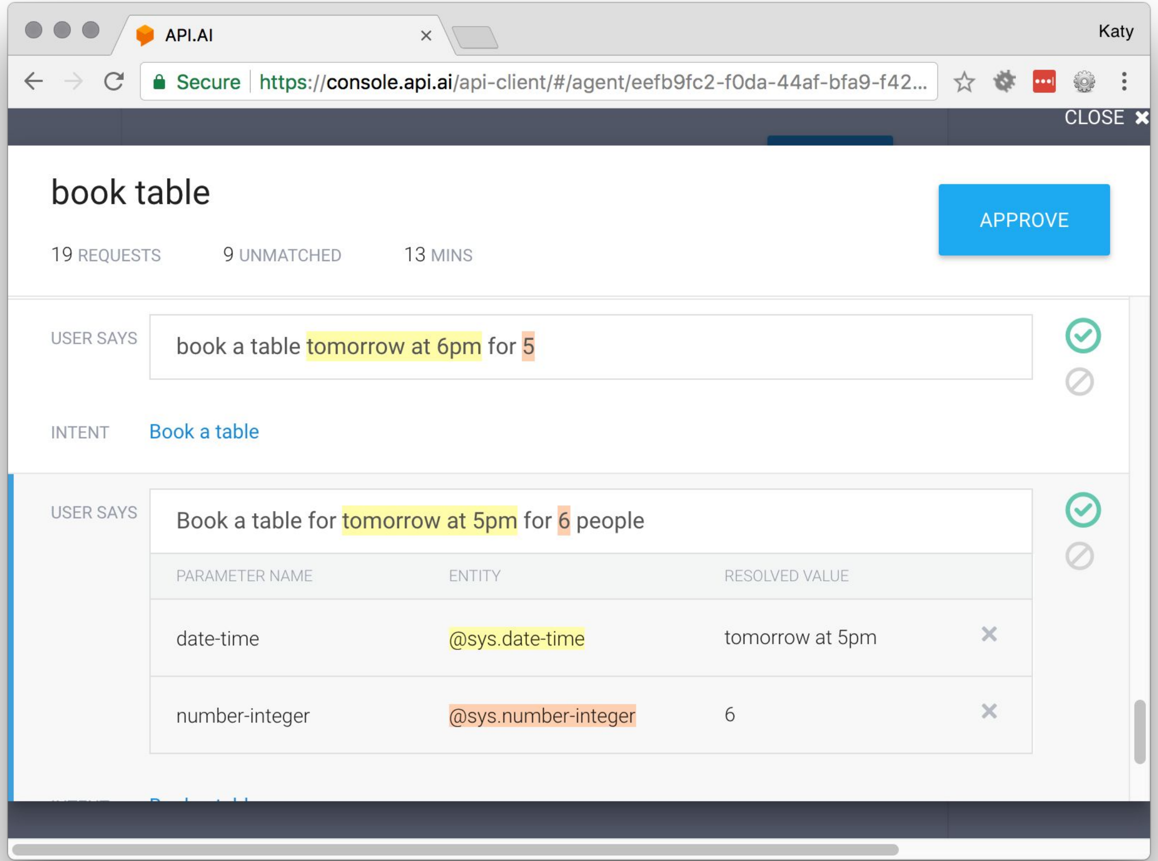
Identifying entities

```
private function askWhen()
{
  // Skip to next question, we already know the answer!
  if ($this->date) {
    $this->askHowMany();
    return;
  }

  // Continue asking as normal...
}
```

app/Conversations/TableBookingConvo.php

Identifying entities

```php
private function askHowMany()
{
  // Skip to booking, we already know the answer!
  if ($this->num) {
    $this->book();
    return;
  }

  // Continue asking as normal...
}
```



API.AI
Katy
Secure
https://console.api.ai/api-client/#/agent/eefb9fc2-f0da-44af-bfa9-f42...
CLOSE ✖

book table

19 REQUESTS 9 UNMATCHED 13 MINS

USER SAYS: book a table tomorrow at 6pm for 5

INTENT: Book a table

USER SAYS: Book a table for tomorrow at 5pm for 6 people

PARAMETER NAME	ENTITY	RESOLVED VALUE
date-time	@sys.date-time	tomorrow at 5pm
number-integer	@sys.number-integer	6

How can I learn more?

Here are some resources:

Further reading:

- Chatbots Magazine - https://chatbotsmagazine.com
- BotMan - https://botman.io/2.0
- Chatbots.Fail - https://chatbot.fail
- UX - https://uxdesign.cc/chatbots-conversational-ui

Thanks for listening!