Practice with Flask Part 2

Skills Network

Estimated time needed: 45 minutes

Welcome to part 2 of Flask lab. You will work with routes and HTTP requests in this lab. You will practice creating a small RESTful API. Finally, you will work with application level error handlers for common errors like:

- 404 NOT FOUND
- 500 INTERNAL SERVER ERROR

You should know all the concepts you require for this lab from the previous set of videos. Feel free to pause the lab and review the module if you are unclear on how to perform a task or need more information.

Learning Objectives

After completing this lab, you will be able to:

- Write routes to process requests to the Flask server at specific URLs
- Handle parameters and arguments sent to the URLs
- Write error handlers for server and user errors

About Skills Network Cloud IDE

Skills Network Cloud IDE (based on Theia and Docker) provides an environment for hands on labs for course and project related labs. Theia is an open source IDE (Integrated Development Environment) that runs on desktop or the cloud. To complete this lab, you will use the Cloud IDE based on Theia and MongoDB running in a Docker container.

Important Notice about this lab environment

Please be aware that sessions do not persist for this lab environment. Every time you connect to this lab, a new environment is created for you. Any data saved in earlier sessions will be lost. Plan to complete these labs in a single session to avoid losing your data.

Set Up the Lab Environment

There are some required prerequisite preparations before you start the lab.

Open a Terminal

Open a terminal window using the menu in the editor: **Terminal** > **New Terminal**.

In the terminal, if you are not in the `/home/project` folder, change to your project folder now.

```
cd /home/project
```

Copied! Executed!

Create the lab directory

You should have a lab directory from Part 1 of the lab. If you do not have the directory, create it now.

```
mkdir lab
```

Copied! Executed!

Change to the `lab` directory:

```
cd lab
```

Copied! Executed!

You created a `server.py` file in the lab directory in Part 1 of the lab. Create the file if it is not present and add the following starting code snippet to it.

```
from flask import Flask
app = Flask(__name__)

@app.route("/")
def index():
    return "hello world"
```

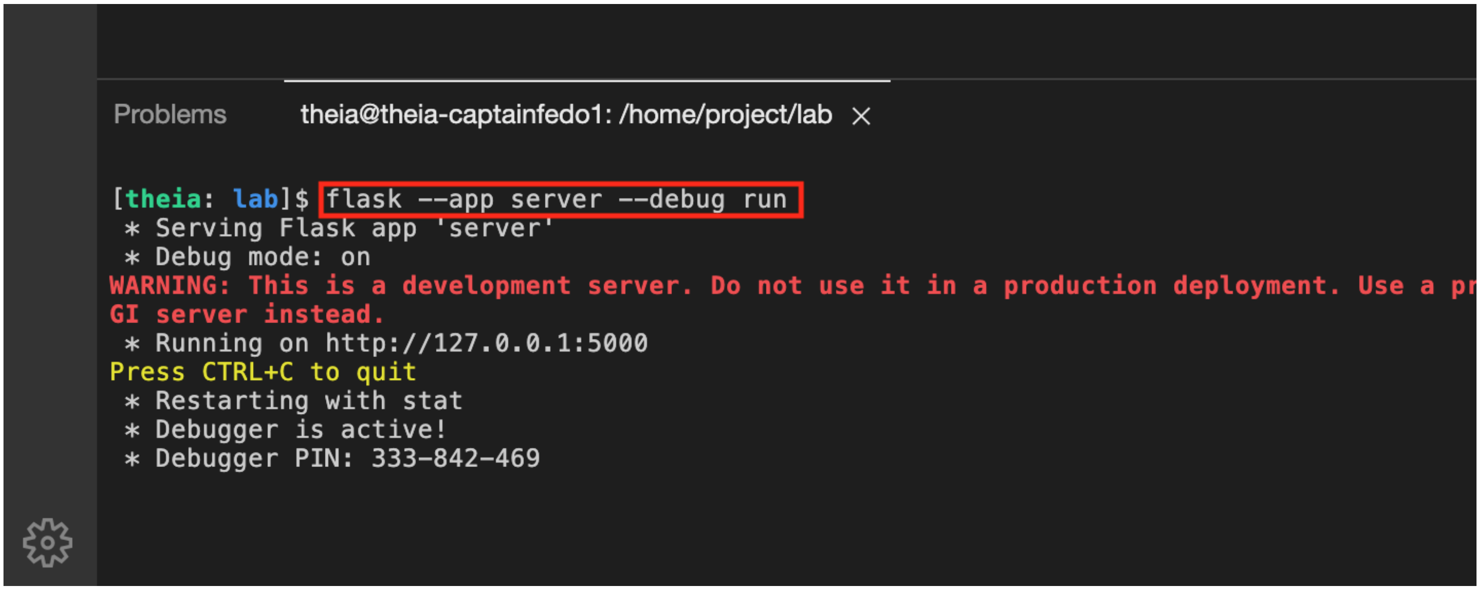
Copied!

Recall that the above code creates a Flask server and adds a home endpoint “/“ that returns the string **hello world**. You will now add more code to this file in this lab.

As a recap, use the following command to run the server from the terminal:

```
flask --app server --debug run
```

Copied! Executed!



```
[theia: lab]$ flask --app server --debug run
 * Serving Flask app 'server'
 * Debug mode: on
WARNING: This is a development server. Do not use it in a production deployment. Use a pr
GI server instead.
 * Running on http://127.0.0.1:5000
Press CTRL+C to quit
 * Restarting with stat
 * Debugger is active!
 * Debugger PIN: 333-842-469
```

You should now use the CURL command with `localhost:5000/`. Note that the terminal is running the server. You can use the `Split Terminal` button to split the terminal and run the following command in the second tab.

```
curl -X GET -i -w '\n' localhost:5000
```

Copied! Executed!

Optional

If working in the terminal becomes difficult because the command prompt is long, you can shorten the prompt using the following command:

```
export PS1="[\[\033[01;32m\]\u\[\033[00m\]: \[\033[01;34m\]\W\[\033[00m\]]\$ "
```

Copied! Executed!

Step 1: Set response status code

In the last part, you saw Flask automatically sends an `HTTP 200 OK` successful response when you sent back a message. However, you can also set the return status explicitly. Recall that there are two ways to do this, as discussed in the video:

1. Send a tuple back with the message
2. Use the **make_response()** method to create a custom response and set the status

Your Tasks

1. Send custom HTTP code back with a tuple.

   You will reuse the `server.py` file you worked on in the last part. Create a new method named `no_content` with the `@app.route` decorator and URL of `/no_content`. The method does not have any arguments. Return a tuple with the JSON message `No content found`.

▼ Click here for a hint.

You can use the following skeleton code as a start:

```
{insert @app decorator}
def {insert method name}():
    """return 'No content found' with a status of 204

    Returns:
        string: No content found
        status code: 204
    """
    return ({insert dictionary here}, {insert HTTP code here})
```

Copied!

You can test the endpoint with the following CURL command:

```
curl -X GET -i -w '\n' localhost:5000/no_content
```

Copied! Executed!

You should see an output similar to the following. Note the status of `204` and the Content-Type of `application/json`. Note that even though you returned a JSON message, it is not sent back to the client as `204`. By default, nothing is returned.

```
HTTP/1.1 204 NO CONTENT
Server: Werkzeug/2.2.2 Python/3.7.16
Date: Wed, 28 Dec 2022 19:49:18 GMT
```

```
Content-Type: application/json
Connection: close
```

Copied!

2. Send custom HTTP code back with the `make_response()` method.

   Create a second method named `index_explicit` with the `@app.route` decorator and a URL of `/exp`. The method does not have any arguments. Use the `make_response()` method to create a new response. Set the status to 200.

▼ Click here for a hint.

Import the Flask class from the flask module
Import the make_response method from the flask module.

```
{insert @app decorator}
def {insert method name here}:
    """return 'Hello World' message with a status code of 200

    Returns:
        string: Hello World
        status code: 200
    """
    resp = make_response({insert ditionary here})
    resp.status_code = {insert status code here}
    return resp
```

Copied!

You can test the endpoint with the following CURL command:

```
curl -X GET -i -w '\n' localhost:5000/exp
```

Copied! Executed!

You should see an output similar to the one given below. Note the status of `200`, Content-Type of `application/json`, and JSON output of `{"message": "Hello World"}`:

```
HTTP/1.1 200 OK
Server: Werkzeug/2.2.2 Python/3.7.16
Date: Wed, 28 Dec 2022 19:55:46 GMT
Content-Type: application/json
Content-Length: 31
Connection: close

{
  "message": "Hello World"
}
```

Copied!

Solution

Double-check that your work matches the following solution.

▼ Click here for the answer.

```
from flask import Flask, make_response
app = Flask(__name__)

@app.route("/")
def index():
    return "hello world"

@app.route("/no_content")
def no_content():
    """return 'no content found' with a status of 204

    Returns:
        string: no content found with 204 status code
    """
    return ({"message":"No content found"}, 204)

@app.route("/exp")
def index_explicit():
    """return 'Hello World' message with a status code of 200

    Returns:
        string: Hello World
        status code: 200
    """
    resp = make_response({"message":"Hello World"})
    resp.status_code = 200
    return resp
```

Copied!

Step 2: Process input arguments

It is common for clients to pass arguments in the URL. You will learn how to process arguments in this lab. The lab provides a list of people with their id, first name, last name, and address information in an object. Normally, this information is stored in a database, but you are using a hard coded list for your simple use case. This data was generated with Mockaroo.

The client will send in requests in the form of `http://localhost:5000?q=first_name`. You will create a method that will accept a first_name as the input and return a person with that first name.

▼ Click here to copy the data into the file.

Copy the following list to the `server.py` file:

```
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```

```
from flask import Flask, make_response
app = Flask(__name__)

data = [
    {
        "id": "3b58aade-8415-49dd-88db-8d7bce14932a",
        "first_name": "Tanya",
        "last_name": "Slad",
        "graduation_year": 1996,
        "address": "043 Heath Hill",
        "city": "Dayton",
        "zip": "45426",
        "country": "United States",
        "avatar": "http://dummyimage.com/139x100.png/cc0000/ffffff",
    },
    {
        "id": "d64efd92-ca8e-40da-b234-47e6403eb167",
        "first_name": "Ferdy",
        "last_name": "Garrow",
        "graduation_year": 1970,
        "address": "10 Wayridge Terrace",
        "city": "North Little Rock",
        "zip": "72199",
        "country": "United States",
        "avatar": "http://dummyimage.com/148x100.png/dddddd/000000",
    },
    {
        "id": "66c09925-589a-43b6-9a5d-d1601cf53287",
        "first_name": "Lilla",
        "last_name": "Aupol",
        "graduation_year": 1985,
        "address": "637 Carey Pass",
        "city": "Gainesville",
        "zip": "32627",
        "country": "United States",
        "avatar": "http://dummyimage.com/174x100.png/ff4444/ffffff",
    },
    {
        "id": "0dd63e57-0b5f-44bc-94ae-5c1b4947cb49",
        "first_name": "Abdel",
        "last_name": "Duke",
        "graduation_year": 1995,
        "address": "2 Lake View Point",
        "city": "Shreveport",
        "zip": "71105",
        "country": "United States",
        "avatar": "http://dummyimage.com/145x100.png/dddddd/000000",
    },
    {
        "id": "a3d8adba-4c20-495f-b4c4-f7de8b9cfb15",
        "first_name": "Corby",
        "last_name": "Tettley",
        "graduation_year": 1984,
        "address": "90329 Amoth Drive",
        "city": "Boulder",
        "zip": "80305",
        "country": "United States",
        "avatar": "http://dummyimage.com/198x100.png/cc0000/ffffff",
    }
]
```

Copied!

Let's confirm that the data has been copied to the file. Copy the following code into the **server.py** file to create an end point that returns the person's data to the client in JSON format.

```
@app.route("/data")
def get_data():
    try:
        if data and len(data) > 0:
            return {"message": f"Data of length {len(data)} found"}
        else:
            return {"message": "Data is empty"}, 500
    except NameError:
        return {"message": "Data not found"}, 404
```

Copied!

The above code simply checks if the variable `data` exits. If it does not, the `NameError` is raised and an `HTTP 404` is returned. If data exists and is empty, an `HTTP 500` is returned. If data exists and is not empty, an `HTTP 200` success message is returned.

Run a CURL command to confirm you get the success message back:

```
curl -X GET -i -w '\n' localhost:5000/data
```

Copied! Executed!

Expected result:

```
HTTP/1.1 200 OK
Server: Werkzeug/2.2.2 Python/3.7.16
Date: Wed, 28 Dec 2022 20:51:56 GMT
Content-Type: application/json
Content-Length: 42
Connection: close

{
  "message": "Data of length 5 found"
}
```

Copied!

Your Tasks

Create a method called `name_search` with the `@app.route` decorator. This method should be called when a client requests for the `/name_search` URL. The method will not accept any parameter, however, will look for the argument `q` in the incoming request URL. This argument holds the first_name the client is looking for. The method returns:

- Person information with a status of `HTTP 400` if the first_name is found in the data
- Message of `Invalid input parameter` with a status of `HTTP 422` if the argument `q` is missing from the request
- Message of `Person not found` with a status code of `HTTP 404` if the person is not found in the data

Hint

Ensure you import the `request` module from Flask. You will use this to get the first name from the HTTP request.

```
from flask import request
```

Copied!

You can use the following code as your starting point:

▼ Click here for a hint.

```
{insert @app.route decorator}
def {insert method name here}():
    """find a person in the database

    Returns:
        json: person if found, with status of 200
        404: if not found
        422: if argument q is missing
    """
    query = {insert code to get argument q here}

    if not query:
        return {insert missing q message here}, {insert status code here}

    # this code goes through data and looks for the first_name
    for person in data:
        if query.lower() in person["first_name"].lower():
            return person

    return {insert person not found message here}, {insert status code here}
```

Copied!

You can test the endpoint with the following CURL command. Ensure that the server is running in the terminal as in the previous steps.

```
curl -X GET -i -w '\n' "localhost:5000/name_search?q=Abdel"
```

Copied! Executed!

You should see an output similar to the one given below. Note the status of `200`, Content-Type of `application/json`, and JSON output of person with first name **Abdel**:

```
HTTP/1.1 200 OK
Server: Werkzeug/2.2.2 Python/3.7.16
Date: Wed, 28 Dec 2022 21:14:31 GMT
Content-Type: application/json
Content-Length: 295
Connection: close

{
  "address": "2 Lake View Point",
  "avatar": "http://dummyimage.com/145x100.png/dddddd/000000",
  "city": "Shreveport",
  "country": "United States",
  "first_name": "Abdel",
  "graduation_year": 1995,
  "id": "0dd63e57-0b5f-44bc-94ae-5c1b4947cb49",
  "last_name": "Duke",
  "zip": "71105"
}
```

Copied!

Next, test that the method returns `HTTP 422` if the argument `q` is missing:

```
curl -X GET -i -w '\n' "localhost:5000/name_search"
```

Copied! Executed!

You should see an output similar to the one given below. Note the status of `422`, Content-Type of `application/json`, and JSON output of `Invalid input parameter`:

```
HTTP/1.1 422 UNPROCESSABLE ENTITY
Server: Werkzeug/2.2.2 Python/3.7.16
Date: Wed, 28 Dec 2022 21:16:07 GMT
Content-Type: application/json
Content-Length: 43
Connection: close

{
  "message": "Invalid input parameter"
}
```

Copied!

Finally, let's test the case where the first_name is not present in our list of people:

```
curl -X GET -i -w '\n' "localhost:5000/name_search?q=qwerty"
```

Copied! Executed!

You should see an output similar to the one given below. Note the status of `404`, Content-Type of `application/json`, and JSON output of `Person not found`:

```
HTTP/1.1 404 NOT FOUND
Server: Werkzeug/2.2.2 Python/3.7.16
Date: Wed, 28 Dec 2022 21:17:28 GMT
Content-Type: application/json
Content-Length: 36
Connection: close

{
  "message": "Person not found"
}
```

Copied!

Solution

Double-check that your work matches the following solution. There are other ways to implement this solution as well.

▼ Click here for the answer.

```
@app.route("/name_search")
def name_search():
    """find a person in the database

    Returns:
        json: person if found, with status of 200
        404: if not found
        422: if argument q is missing
    """
    query = request.args.get("q")

    if not query:
        return {"message": "Invalid input parameter"}, 422

    for person in data:
        if query.lower() in person["first_name"].lower():
            return person

    return ({"message": "Person not found"}, 404)
```

Copied!

Step 3: Add dynamic URLs

An important part of back-end programming is creating APIs. An API is a contract between a provider and a user. It is common to create RESTful APIs that can be called by the front end or other clients. In a REST based API, the resource information is sent as part of the request URL. For example, with your resource or persons, the client can send the following request:

```
GET http://localhost/person/unique_identifier
```

Copied!

This request asks for a person with a unique identifier. Another example is:

```
DELETE http://localhost/person/unique_identifier
```

Copied!

In this case, the client asks to delete the person with this unique identifier.

Your Tasks

You are asked to implement both of these endpoints in this exercise. You will also implement a `count` method that returns the total number of persons in the `data` list. This will help confirm that the two methods GET and DELETE work, as required.

Task 1: Create GET /count endpoint

1. Create **/count** endpoint.

   Add the `@app.get()` decorator for the `/count` URL. Define the count function that simply returns the number of items in the `data` list.

   ▼ Click here for a hint.

   Use the **len()** method to return the number of items in the **data** list.

```
@app.route("/count")
def count():
    try:
        return {"data count": {insert code to find length of data}}, {return 200 HTTP code}
    except NameError:
        return {"message": "data not defined"}, {return 500 HTTP code}
```

Copied! Executed!

Test the **count** method by calling the endpoint.

```
curl -X GET -i -w '\n' "localhost:5000/count"
```

Copied! Executed!

You should see an ouput with the number of items in the data list.

```
HTTP/1.1 200 OK
Server: Werkzeug/2.2.2 Python/3.7.16
Date: Sat, 31 Dec 2022 22:41:35 GMT
Content-Type: application/json
Content-Length: 22
Connection: close

{
  "data count": 5
}
```

Copied!

Task 2: Create GET /person/id endpoint

1. Implement the **GET** endpoint to ask for a person by id.

   Create a new endpoint for `http://localhost/person/unique_identifier`. The method should be named `find_by_uuid`. It should take an argument of type UUID and return the person JSON if found. If the person is not found, the method should return a 404 with a message of **person not found**. Finally, the client (curl) should only be able to call this method by passing a valid UUID type id.

   ▼ Click here for a hint.

   - use the type:name syntax to only allow callers to pass in a valid UUID.
   - comparing uuid with string returns False. Make sure you convert UUID into str when comparing with the id attribute of the person.

```
@app.route("/person/<type:var_name>")
def find_by_uuid(var_name):
    for person in data:
        if person["id"] == str(var_name):
            return person
    return {"message": {insert not found message here}}, 404
```

Copied! Executed!

Test the **/person/uuid** URL by calling the endpoint.

```
curl -X GET -i localhost:5000/person/66c09925-589a-43b6-9a5d-d1601cf53287
```

Copied! Executed!

You should see an ouput with the person and HTTP code of 200.

```
HTTP/1.1 200 OK
Server: Werkzeug/2.2.2 Python/3.7.16
Date: Sat, 31 Dec 2022 22:48:32 GMT
Content-Type: application/json
Content-Length: 294
Connection: close

{
  "address": "637 Carey Pass",
  "avatar": "http://dummyimage.com/174x100.png/ff4444/ffffff",
  "city": "Gainesville",
  "country": "United States",
  "first_name": "Lilla",
  "graduation_year": 1985,
  "id": "66c09925-589a-43b6-9a5d-d1601cf53287",
  "last_name": "Aupol",
  "zip": "32627"
}
```

Copied!

If you pass in an invalid UUID, the server should return a 404 message.

```
curl -X GET -i localhost:5000/person/not-a-valid-uuid
```

Copied! Executed!

You should see an error in the output with a code of 404. Flask automatically returns HTML, you will change the HTML in the next part of the lab to return JSON by default on all errors, including 404.

```
HTTP/1.1 404 NOT FOUND
Server: Werkzeug/2.2.2 Python/3.7.16
Date: Sat, 31 Dec 2022 22:50:52 GMT
Content-Type: text/html; charset=utf-8
Content-Length: 207
Connection: close

<!doctype html>
<html lang=en>
<title>404 Not Found</title>
<h1>Not Found</h1>
<p>The requested URL was not found on the server. If you entered the URL manually, please check your spelling and try again.</p>
```

Copied!

Finally, pass in a valid UUID that does not exist in the data list. The method should return a 404 with a message of **person not found**.

```
curl -X GET -i localhost:5000/person/11111111-589a-43b6-9a5d-d1601cf51111
```

Copied! Executed!

You should see a JSON response with an HTTP code of 404 and a message of **person not found**.

```
HTTP/1.1 404 NOT FOUND
Server: Werkzeug/2.2.2 Python/3.7.16
Date: Sat, 31 Dec 2022 22:52:24 GMT
Content-Type: application/json
Content-Length: 36
Connection: close

{
  "message": "person not found"
}
```

Copied!

Task 3: Create DELETE /person/id endpoint

1. Implement the **DELETE** endpoint to delete a person resource.

   Create a new endpoint for DELETE `http://localhost/person/unique_identifier`. The method should be named `delete_by_uuid`. It should take in an argument of type UUID and delete the person from the **data** list with that id. If the person is not found, the method should return a 404 with a message of **person not found**. Finally, the client (curl) should call this method by passing a valid UUID type id.

   ▶ Click here for a hint.

   Test the DELETE **/person/uuid** URL by calling the endpoint.

```
curl -X DELETE -i localhost:5000/person/66c09925-589a-43b6-9a5d-d1601cf53287
```

   Copied! Executed!

   You should see an ouput with the id of the person deleted and a status code of 200.

```
HTTP/1.1 200 OK
Server: Werkzeug/2.2.2 Python/3.7.16
Date: Sat, 31 Dec 2022 23:00:17 GMT
Content-Type: application/json
Content-Length: 56
Connection: close

{
  "message": "66c09925-589a-43b6-9a5d-d1601cf53287"
}
```

   Copied!

   You can now use the **count** endpoint you added earlier to test if the number of persons has reduced by one.

```
curl -X GET -i localhost:5000/count
```

   Copied! Executed!

   You should see the count returned reduced by one.

```
HTTP/1.1 200 OK
Server: Werkzeug/2.2.2 Python/3.7.16
Date: Sat, 31 Dec 2022 23:06:55 GMT
Content-Type: application/json
Content-Length: 22
```

```
Connection: close

{
  "data count": 4
}
```

Copied!

If you pass an invalid UUID, the server should return a 404 message.

```
curl -X DELETE -i localhost:5000/person/not-a-valid-uuid
```

Copied! Executed!

You should see an error in the output with a code of 404. Flask automatically returns HTML, and we will change the HTML in the next part of the lab to return JSON by default on all errors, including 404.

```
HTTP/1.1 404 NOT FOUND
Server: Werkzeug/2.2.2 Python/3.7.16
Date: Sat, 31 Dec 2022 23:05:09 GMT
Content-Type: text/html; charset=utf-8
Content-Length: 207
Connection: close

<!doctype html>
<html lang=en>
<title>404 Not Found</title>
<h1>Not Found</h1>
<p>The requested URL was not found on the server. If you entered the URL manually please check your spelling and try again.</p>
```

Copied!

Finally, pass in a valid UUID that does not exist in the data list. The method should return a 404 with a message of **person not found**.

```
curl -X DELETE -i localhost:5000/person/11111111-589a-43b6-9a5d-d1601cf51111
```

Copied! Executed!

You should see a JSON response with an HTTP code of 404 and a message of **person not found**.

```
HTTP/1.1 404 NOT FOUND
Server: Werkzeug/2.2.2 Python/3.7.16
Date: Sat, 31 Dec 2022 23:05:43 GMT
Content-Type: application/json
Content-Length: 36
Connection: close

{
  "message": "person not found"
}
```

Copied!

Solution

Double-check that your work matches the following solution.

▼ Click here for the answer.

```
@app.route("/count")
def count():
    try:
        return {"data count": len(data)}, 200
    except NameError:
        return {"message": "data not defined"}, 500

@app.route("/person/<uuid:id>")
def find_by_uuid(id):
    for person in data:
        if person["id"] == str(id):
            return person
    return {"message": "person not found"}, 404

@app.route("/person/<uuid:id>", methods=['DELETE'])
def delete_by_uuid(id):
    for person in data:
        if person["id"] == str(id):
            data.remove(person)
            return {"message":f"{id}"}, 200
    return {"message": "person not found"}, 404
```

Copied!

Step 4: Parse JSON from Request body

Let's create another RESTful API. The client can send a `POST` request to `http://localhost:5000/person` with the person detail JSON as the body. The server should parse the request for the body and then create a new person with that detail. In your case, to create the person, simply add to the `data` list.

Your Tasks

Create a method called `add_by_uuid` with the `@app.route` decorator. This method should be called when a client requests with the `POST` method for the `/person` URL. The method will not accept any parameter but will grab the person details from the JSON body of the POST request. The method returns:

- person id if the person was successfully added to data; HTTP 200 code
- message of `Invalid input parameter` with a status of `HTTP 422` if the json body is missing

Hint

Ensure you import the `request` module from Flask. You will use this to get the first name from the HTTP request.

```
from flask import request
```

Copied!

You can use the following code as your starting point. In production code, you will put in some logic to validate the JSON coming in. You would not want to store any random data coming from a client. You can omit this validation for your simple use case.

▼ Click here for a hint.

```
@app.route("/person", methods=['{insert HTTP method here}'])
def {insert method name here}():
    new_person = {insert code to get json from request here}
    if not new_person:
        return {"message": "Invalid input parameter"}, {insert HTTP code here}
    # code to validate new_person ommited
    data.append(new_person)
    return {"message": f"{new_person['id']}"}, {insert HTTP code here}
```

Copied!

You can test the endpoint with the following CURL command. Ensure that the server is running in the terminal as in the previous steps.

```
curl -X POST -i -w '\n' \
  --url http://localhost:5000/person \
  --header 'Content-Type: application/json' \
  --data '{
        "id": "4e1e61b4-8a27-11ed-a1eb-0242ac120002",
        "first_name": "John",
        "last_name": "Horne",
        "graduation_year": 2001,
        "address": "1 hill drive",
        "city": "Atlanta",
        "zip": "30339",
        "country": "United States",
        "avatar": "http://dummyimage.com/139x100.png/cc0000/ffffff"
}'
```

Copied! Executed!

You should see an output similar to the one given below. Note the status of `200`, Content-Type of `application/json`, and JSON output of person with the first name **Abdel**:

```
HTTP/1.1 200 OK
Server: Werkzeug/2.2.2 Python/3.7.16
Date: Sun, 01 Jan 2023 23:14:34 GMT
Content-Type: application/json
Content-Length: 56
Connection: close

{
  "message": "4e1e61b4-8a27-11ed-a1eb-0242ac120002"
}
```

Copied!

You can also test the case where you send an empty JSON to the enpoint by using the following command:

```
curl -X POST -i -w '\n' \
  --url http://localhost:5000/person \
  --header 'Content-Type: application/json' \
  --data '{}'
```

Copied! Executed!

The server should return a code of 422 with a message of `Invalid input parameter`.

```
HTTP/1.1 422 UNPROCESSABLE ENTITY
Server: Werkzeug/2.2.2 Python/3.7.16
Date: Sun, 01 Jan 2023 23:15:54 GMT
Content-Type: application/json
Content-Length: 43
Connection: close

{
  "message": "Invalid input parameter"
}
```

Copied!

Solution

Double-check that your work matches the following solution. There is more than one way to implement this solution. Note that you also check if the list `data` exists in the solution and returns a 500 if it does not.

▼ Click here for the answer.

```
@app.route("/person", methods=['POST'])
def add_by_uuid():
    new_person = request.json
    if not new_person:
        return {"message": "Invalid input parameter"}, 422
    # code to validate new_person ommited
    try:
        data.append(new_person)
    except NameError:
        return {"message": "data not defined"}, 500

    return {"message": f"{new_person['id']}"}, 200
```

Copied!

Step 5: Add error handlers

In this final part of the lab, you will add application level global handlers to handle errors like 404 (not found) and 500 (internal server error). Recall from the video that Flask makes it easy to handle these global error handlers using the errorhandler() decorator.

If you make an invalid request to the server now, Flask will return an HTML page with the 404 error. Something like this:

Command:

```
curl -X POST -i -w '\n' http://localhost:5000/notvalid
```

Copied! Executed!

Response:

```
HTTP/1.1 404 NOT FOUND
Server: Werkzeug/2.2.2 Python/3.7.16
Date: Sun, 01 Jan 2023 23:21:54 GMT
Content-Type: text/html; charset=utf-8
Content-Length: 207
Connection: close

<!doctype html>
<html lang=en>
<title>404 Not Found</title>
<h1>Not Found</h1>
<p>The requested URL was not found on the server. If you entered the URL manually, please check your spelling and try again.</p>
```

Copied!

This is great, but you want to return a JSON response for all invalid requests.

Your Tasks

Create a method called `api_not_found` with the `@app.errorhandler` decorator. This method will return a message of `API not found` with an HTTP status code of `404` whenever the client requests a URL that does not lead to any endpoints defined by the server.

Hint

Use the `@app.errorhandler` decorator and pass in the HTTP code of `404`.

You can use the following code as your starting point:

▼ Click here for a hint.

```
{insert errorhandler decorator here}({insert error code here})
def {insert method name here}(error):
    return {"message": "{insert error message here}"}, {insert error code here}
```

Copied!

You can test the endpoint with the following CURL command. Ensure that the server is running in the terminal, as in the previous steps.

```
curl -X POST -i -w '\n' http://localhost:5000/notvalid
```

Copied! Executed!

You should see an output similar to the one below. Note the status of `404`, Content-Type of `application/json`, and JSON output message of **API not found**:

```
HTTP/1.1 404 NOT FOUND
Server: Werkzeug/2.2.2 Python/3.7.16
Date: Sun, 01 Jan 2023 23:25:35 GMT
Content-Type: application/json
Content-Length: 33
Connection: close

{
  "message": "API not found"
}
```

Copied!

Note that the server no longer returns HTML but JSON as required.

Solution

Double-check that your work matches the solution below. There is more than one way to implement this solution.

▼ Click here for the answer.

```
@app.errorhandler(404)
def api_not_found(error):
    return {"message": "API not found"}, 404
```

Copied!

Author(s)

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Other Contributor(s)

Change Log

Date	Version	Changed by	Change Description
2023-02-01	0.5	SH	QA pass
2023-01-23	0.4	CF	Initial Lab