

Resources / Labs (/COMP9321/22T1/resources/72107) / Week 5 (/COMP9321/22T1/resources/72111)
/ Flask RESTX

Flask RESTX

Prerequisites:

REST (Representational State Transfer) is an architecture, which allows developers to build lightweight and scalable web services. REST services allow heterogeneous systems communicate together using JSON objects. It is assumed that you will install and take a look at the following packages in python before heading to activities:

- flask-restx (<https://flask-restx.readthedocs.io/en/latest/installation.html#installation>)
- (<http://flask.pocoo.org/>) pandas (<https://pandas.pydata.org/>)

You do not need to learn how to create a flask web application (e.g. Jinja2 is not necessary).

For testing your RESTful APIs, you will need to be familiar with

- Swagger doc (<https://swagger.io/>)

All of the following activities will be based on the *Book dataset* (Download the CSV file (https://github.com/mysilver/COMP9321-Data-Services/blob/master/Week4_Visualization/Books.csv))

Activity-1: Get a Book by its ID

Description : In this activity, you need to read the CSV file using panda, and provide a RESTful API which returns a Book instance from the dataset by its ID.

Steps :

1. Create a flask-restx application (<https://flask-restx.readthedocs.io/en/latest/quickstart.html>)
2. Read the dataset using Pandas as a global variable
3. Drop the unnecessary columns as you did in Week 3's Lab(Activity-1)
Likewise apply all cleansing techniques in the same Lab (Activity-2)
(<https://webcms3.cse.unsw.edu.au/COMP9321/18s2/resources/19959>)
4. Set the index of the loaded dataframe to be the "Identifier" column (https://pandas.pydata.org/pandas-docs/stable/generated/pandas.DataFrame.set_index.html) ; this will help us to find books with their ids
5. Replace the spaces in the column names (<https://stackoverflow.com/questions/41476150/removing-space-from-dataframe-columns-in-pandas>)
6. Create a Resource class and implement its "get" method:
The given method must accept "id" as an input and return the book matching the id by querying the dataframe (<https://pandas.pydata.org/pandas-docs/version/0.22/generated/pandas.DataFrame.query.html>) or by index (<https://pandas.pydata.org/pandas-docs/version/0.23/generated/pandas.DataFrame.loc.html>) . The response must be a JSON.
When there is no book matching the id, the method must return a proper message and HTTP response code (https://en.wikipedia.org/wiki/List_of_HTTP_status_codes) .
7. Run the application and browse <http://127.0.0.1:5000/> (<http://127.0.0.1:5000/>) to test the endpoint. The given URL will show an automatically generated swagger doc for your application; you can use the

swagger doc to test your API

(https://www.tutorialspoint.com/flask/flask_http_methods.htm)



(<https://github.com/mysilver/COMP9321-Data->

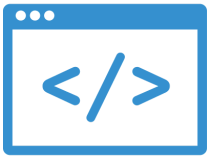
[Services/blob/master/Week5_Flask/activity_1.py](#))

Activity-2: Removing a Book by its ID

Description : Add another endpoint to the service to let users delete rows from the dataset.

Steps :

1. Make a copy of your code from the previous activity
2. Add a new method called delete to your resource class
Inside the new function, delete the given book by its id (<https://pandas.pydata.org/pandas-docs/stable/generated/pandas.DataFrame.drop.html>) , and return a proper message indicating that the given id has been removed
When there is no book matching the id, the method must return a proper message and HTTP response code. (<https://pandas.pydata.org/pandas-docs/stable/generated/pandas.DataFrame.drop.html>)
3. Run the application and browse <http://127.0.0.1:5000/> (<http://127.0.0.1:5000/>) to test the endpoint. Test your API to see if it works properly.



(<https://github.com/mysilver/COMP9321-Data->

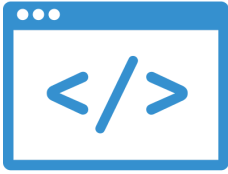
[Services/blob/master/Week5_Flask/activity_2.py](#))

Activity-3:Update Book Information

Description : Add another endpoint to the service to let users update book details.

Steps :

1. Make a copy of your code from the previous activity
2. Add a new method called "put" to your resource class:
By convention, "put" requests are used to update the details of resources; that is why in this activity, you need to add a method called "put" to your resource class.
3. Using the expect() (<https://flask-restx.readthedocs.io/en/latest/swagger.html#the-api-expect-decorator>) decoder, specify an example payload for the endpoint
4. Check if the given book identifier exists, (<https://stackoverflow.com/questions/23549231/check-if-a-value-exists-in-pandas-dataframe-index#23549599>) and return a proper message if it does not exist
5. Get the payload (<https://stackoverflow.com/questions/20001229/how-to-get-posted-json-in-flask#20001283>) of request
6. Iterate over the key-values of the payload and update the dataframe
Return error messages if the input includes unexpected keys
7. Run the application and browse <http://127.0.0.1:5000/> (<http://127.0.0.1:5000/>) to test the endpoint. Test your API to see if it works properly.



([https://github.com/mysilver/COMP9321-Data-](https://github.com/mysilver/COMP9321-Data-Services/blob/master/Week5_Flask/activity_3.py)

[Services/blob/master/Week5_Flask/activity_3.py](#))

Resource created [2 months ago \(Monday 14 February 2022, 01:13:43 PM\)](#), last modified [about a month ago \(Monday 14 March 2022, 01:23:18 PM\)](#).

Comments

[Q \(/COMP9321/22T1/forums/search?forum_choice=resource/73145\)](/COMP9321/22T1/forums/search?forum_choice=resource/73145)

[\(/COMP9321/22T1/forums/resource/73145\)](/COMP9321/22T1/forums/resource/73145)

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[Maher Mesto \(/users/z5272300\)](/users/z5272300) [about a month ago \(Sun Mar 20 2022 22:39:56 GMT+0800 \(China Standard Time\)\)](#)

I'm trying to run Lab5 on cse machine but I'm getting the below message:

```
* Serving Flask app "Lab5Activity1" (lazy loading)
* Environment: production
  WARNING: Do not use the development server in a production environment.
  Use a production WSGI server instead.
* Debug mode: on
Traceback (most recent call last):
  File "Lab5Activity1.py", line 48, in <module>
    app.run(debug=True)
  File "/usr/lib/python3/dist-packages/flask/app.py", line 943, in run
    run_simple(host, port, self, **options)
  File "/usr/local/lib/python3.7/dist-packages/werkzeug/serving.py", line 991, in run_simple
    s.bind(server_address)
OSError: [Errno 98] Address already in use
```

does anyone know how to solve this?

Reply



[May Altulyan \(/users/z5131400\)](/users/z5131400) [about a month ago \(Mon Mar 21 2022 11:50:34 GMT+0800 \(China Standard Time\)\)](#)

use this command in your terminal to know what another process listening on the port :
sudo lsof -i :5000

Example:

1]

\$ sudo lsof -i :5000

COMMAND PID USER FD TYPE DEVICE SIZE/OFF NODE NAME

python3.7 11980 z513

then

2]

\$ kill 11980

Reply



Gordon Chen (/users/z5161163) [about a month ago \(Sun Mar 20 2022 23:45:00 GMT+0800 \(China Standard Time\)\)](#)

the port number 5000 is already been used by a current process. Maybe you forget to terminate the previous api?

Reply



Daria Schumm (/users/z5295018) [about a month ago \(Sun Mar 20 2022 07:11:04 GMT+0800 \(China Standard Time\)\)](#)

What is the use of book_model in activity-3/4?

Reply



Gordon Chen (/users/z5161163) [about a month ago \(Sun Mar 20 2022 23:34:02 GMT+0800 \(China Standard Time\)\)](#), last modified [about a month ago \(Sun Mar 20 2022 23:34:19 GMT+0800 \(China Standard Time\)\)](#)

1) Check that the json received doesn't have any extra suspicious keys (e.g. {"virus": "trojan"})

2) For Swagger Documentation via api.expect()

<https://flask-restx.readthedocs.io/en/latest/swagg...> (<https://flask-restx.readthedocs.io/en/latest/swagger.html#the-api-expect-decorator>)

Reply



Zhenyu Yin (/users/z5378532) [about a month ago \(Fri Mar 18 2022 18:42:59 GMT+0800 \(China Standard Time\)\)](#), last modified [about a month ago \(Fri Mar 18 2022 18:44:45 GMT+0800 \(China Standard Time\)\)](#)

Hi, I am confused how to run the part3 in the code below

```
@api.expect(book_model)
def put(self, id):
    if id not in df.index:
        api.abort(404, "Book {} doesn't exist".format(id))

    # get the payload and convert it to a JSON
    book = request.json
    # print(book)

    # Book ID cannot be changed
    if 'Identifier' in book and id != book['Identifier']:
        return {"message": "Identifier cannot be changed".format(id)}, 400

    # Update the values
    for key in book:
        if key not in book_model.keys():
            # unexpected column
            return {"message": "Property {} is invalid".format(key)}, 400
        df.loc[id, key] = book[key]

    # df.append(book, ignore_index=True)
    return {"message": "Book {} has been successfully updated".format(id)}, 200
```

Because If the id is not in df.index, the code abort in part 1.

If the id is not in book['Identifier'], the code abort in part 2.

However, I find the `book` is

Curl

```
curl -X 'PUT' \
  'http://127.0.0.1:5000/books/0' \
  -H 'accept: application/json' \
  -H 'Content-Type: application/json' \
  -d '{
    "Flickr_URL": "string",
    "Publisher": "string",
    "Author": "string",
    "Title": "string",
    "Date_of_Publication": 0,
    "Identifier": 0,
    "Place_of_Publication": "string"
  }'
```

Request URL

the book['Identifier'] is 0, is not in df.index. So ==

Reply



Gordon Chen (/users/z5161163) [about a month ago \(Sun Mar 20 2022 23:42:57 GMT+0800 \(China Standard Time\)\)](#)

Check the Identifier in Books.csv. Remember, you are not adding a new book - you are updating it instead.

Reply



Jonathan Wong (/users/z3375329) [about a month ago \(Fri Mar 18 2022 17:42:41 GMT+0800 \(China Standard Time\)\)](#)

Hi all,

I'm running the sample solution for activity 1, however when I open my browser its just blank? Anyone else have the same issue or know what I can do to resolve this?

I have installed both flask and flask_restx.

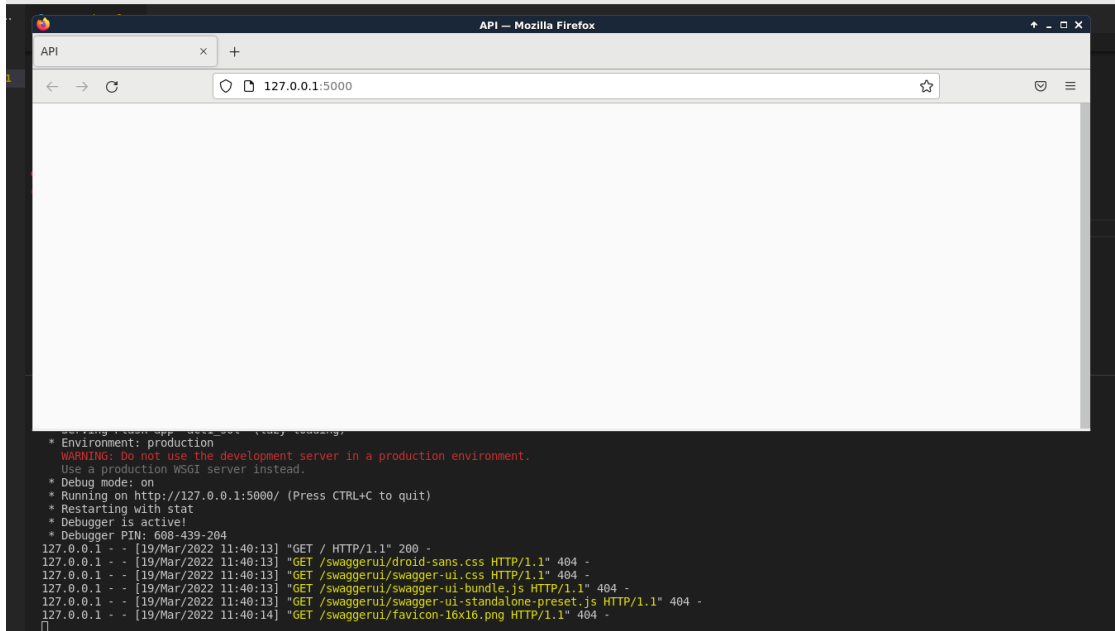
Thanks!

Reply



Jonathan Wong (/users/z3375329) [about a month ago \(Sat Mar 19 2022 11:41:14 GMT+0800 \(China Standard Time\)\)](#), last modified [about a month ago \(Sat Mar 19 2022 11:41:48 GMT+0800 \(China Standard Time\)\)](#)

FYI this is what I get



```

* Environment: production
  WARNING: Do not use the development server in a production environment.
  Use a production WSGI server instead.
* Debug mode: on
* Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
* Restarting with stat
* Debugger is active!
* Debugger PIN: 608-439-204
127.0.0.1 - - [19/Mar/2022 11:40:13] "GET / HTTP/1.1" 200 -
127.0.0.1 - - [19/Mar/2022 11:40:13] "GET /swaggerui/droid-sans.css HTTP/1.1" 404 -
127.0.0.1 - - [19/Mar/2022 11:40:13] "GET /swaggerui/swagger-ui.css HTTP/1.1" 404 -
127.0.0.1 - - [19/Mar/2022 11:40:13] "GET /swaggerui/swagger-ui-bundle.js HTTP/1.1" 404 -
127.0.0.1 - - [19/Mar/2022 11:40:13] "GET /swaggerui/swagger-ui-standalone-preset.js HTTP/1.1" 404 -
127.0.0.1 - - [19/Mar/2022 11:40:14] "GET /swaggerui/favicon-16x16.png HTTP/1.1" 404 -

```

Reply



Matthew Notarangelo (/users/z5116928) [about a month ago \(Mon Mar 21 2022 18:54:29 GMT+0800 \(China Standard Time\)\)](#), last modified [about a month ago \(Tue Mar 22 2022 09:48:44 GMT+0800 \(China Standard Time\)\)](#)

I'm having the same problem. Did you receive a solution to this?

EDIT: For anyone wondering, I managed to fix this by reinstalling flask and flask-restx

Reply



Md Abdullah Al Mamun (/users/z5390254) [about a month ago \(Sat Mar 19 2022 12:00:12 GMT+0800 \(China Standard Time\)\)](#), last modified [about a month ago \(Sat Mar 19 2022 12:00:49 GMT+0800 \(China Standard Time\)\)](#)

This is what I see when run act-1.

Reply



Maher Mesto (/users/z5272300) [about a month ago \(Fri Mar 18 2022 14:19:48 GMT+0800 \(China Standard Time\)\)](#)

How can I download book.csv file without downloading the entire repository.

Reply



Gordon Chen (/users/z5161163) [about a month ago \(Sun Mar 20 2022 23:27:36 GMT+0800 \(China Standard Time\)\)](#), last modified [about a month ago \(Sun Mar 20 2022 23:27:48 GMT+0800 \(China Standard Time\)\)](#)

View Raw and it will link to the text file

Reply



Daria Schumm (/users/z5295018) about a month ago (Thu Mar 17 2022 19:04:07 GMT+0800 (China Standard Time))

In the sample solution there are two versions of return:

```
api.abort(404, "Book {} doesn't exist".format(id))
return {"message": "Identifier cannot be changed".format(id)}, 400
```

Can those be used interchangeably? Can the first one be replaced by something like

```
return {"error": "Book does't exist."}, 404
```

Reply



Gordon Chen (/users/z5161163) about a month ago (Sun Mar 20 2022 23:27:06 GMT+0800 (China Standard Time))

Both do the same things as it terminates/returns before it does any processing (e.g. update the book which it shouldn't). Only difference is the response given back.

```
api.abort() -> {"message": "Book 209 doesn't exist. You have requested this URI [/books/209] but did you mean /books/<int:id> ?"}
```

```
return{} -> {"error": "Book does't exist."}
```

<https://flask-restplus.readthedocs.io/en/stable/er...> (<https://flask-restplus.readthedocs.io/en/stable/errors.html>)

Reply



Daria Schumm (/users/z5295018) about a month ago (Tue Mar 22 2022 16:04:16 GMT+0800 (China Standard Time))

Is there a way to customise api.abort message? I have tried setting up - app . config['ERROR_404_HELP'] = False - as recommended somewhere, but does not work...

Reply



Gordon Chen (/users/z5161163) about a month ago (Tue Mar 22 2022 16:13:24 GMT+0800 (China Standard Time))

can you give an example?

Reply



Daria Schumm (/users/z5295018) about a month ago (Tue Mar 22 2022 16:21:28 GMT+0800 (China Standard Time))

For example:

```
api.abort(404, "Some error message") will still return {"message": "Some error message. You have requested this URI [/books/209] but did you mean /books/<int:id> ?"}
```

The second part of the text is not being removed when setting custom message.

Reply



Maher Mesto (/users/z5272300) [about a month ago \(Wed Mar 23 2022 12:32:59 GMT+0800 \(China Standard Time\)\)](#)

I'm facing the same problem. have you sorted out or not yet?

Reply



Daria Schumm (/users/z5295018) [about a month ago \(Wed Mar 23 2022 15:59:31 GMT+0800 \(China Standard Time\)\)](#)

I haven't. I just went with something like this:

```
return {"error": "Book does't exist."}, 404
```

Reply



Maher Mesto (/users/z5272300) [about a month ago \(Wed Mar 23 2022 19:43:01 GMT+0800 \(China Standard Time\)\)](#), last modified [about a month ago \(Wed Mar 23 2022 19:43:29 GMT+0800 \(China Standard Time\)\)](#)

try to add this "app.config['ERROR_404_HELP'] = False" before api = Api(app).

it worked for me.

Reply