

0x15. API

PythonScriptingBack-endAPI

- By: Sylvain Kalache, co-founder at Holberton School
- Weight: 1
- Ongoing second chance project - started Oct 17, 2022 6:00 AM, must end by Oct 20, 2022 6:00 AM
- An auto review will be launched at the deadline

In a nutshell...

- **Auto QA review:** 0.0/21 mandatory
- **Altogether: 0.0%**
 - Mandatory: 0.0%
 - Optional: no optional tasks

Background Context

Old-school system administrators usually only know Bash and that is what they use to build their scripts. While Bash is perfectly fine for a lot of things, it can quickly get messy and not efficient compared to other programming languages. The new generation of system administrators, usually called SREs, are pretty much regular software engineers but instead of building products, they are managing systems. And one of the big differences with their predecessors is that they know more than just Bash scripting.

One popular way to expose an application and dataset is to use an API. Often, they are the public facing part of websites and micro-services so that allow outsiders to interact with them – access and modify their data. In this project, you will access employee data via an API to organize and export them to different data structures.

This is a perfect example of a task that is not suited for Bash scripting, so let's build Python scripts.

Resources

Read or watch:

- [Friends don't let friends program in shell script](#)
- [What is an API](#)
- [What is an API? In English, please](#)
- [What is a REST API](#)
- [What are microservices](#)
- [PEP8 Python style - having a clean code respecting style guide is really appreciated in the industry](#)

Learning Objectives

At the end of this project, you are expected to be able to explain to anyone, **without the help of Google**:

General

- What Bash scripting should not be used for
- What is an API
- What is a REST API
- What are microservices
- What is the CSV format
- What is the JSON format
- Pythonic Package and module name style
- Pythonic Class name style
- Pythonic Variable name style
- Pythonic Function name style
- Pythonic Constant name style
- Significance of CapWords or CamelCase in Python

Copyright - Plagiarism

- You are tasked to come up with solutions for the tasks below yourself to meet with the above learning objectives.
- You will not be able to meet the objectives of this or any following project by copying and pasting someone else's work.
- You are not allowed to publish any content of this project.
- Any form of plagiarism is strictly forbidden and will result in removal from the program.

Requirements

General

- Allowed editors: `vi`, `vim`, `emacs`
- All your files will be interpreted/compiled on Ubuntu 14.04 LTS using `python3` (version 3.4.3)
- All your files should end with a new line
- The first line of all your files should be exactly `#!/usr/bin/python3`
- **Libraries imported in your Python files must be organized in alphabetical order**
- A `README.md` file, at the root of the folder of the project, is mandatory
- Your code should use the `PEP 8` style
- All your files must be executable
- The length of your files will be tested using `wc`
- All your modules should have a documentation (`python3 -c 'print(__import__("my_module").__doc__)'`)

- You must use `get` to access to dictionary value by key (it won't throw an exception if the key doesn't exist in the dictionary)
- Your code should not be executed when imported (by using `if __name__ == "__main__":`)

Tasks

0. Gather data from an API

mandatory

Score: 0.0% (Checks completed: 0.0%)

Write a Python script that, using this [REST API](#), for a given employee ID, returns information about his/her TODO list progress.

Requirements:

- You must use `urllib` or `requests` module
- The script must accept an integer as a parameter, which is the employee ID
- The script must display on the standard output the employee TODO list progress in this exact format:
 - First line: `Employee EMPLOYEE_NAME is done with tasks(NUMBER_OF_DONE_TASKS/TOTAL_NUMBER_OF_TASKS):`
 - `EMPLOYEE_NAME`: name of the employee
 - `NUMBER_OF_DONE_TASKS`: number of completed tasks
 - `TOTAL_NUMBER_OF_TASKS`: total number of tasks, which is the sum of completed and non-completed tasks
 - Second and N next lines display the title of completed tasks: `TASK_TITLE` (with 1 tabulation and 1 space before the `TASK_TITLE`)

Example:

```
sylvain@ubuntu$ python3 0-gather_data_from_an_API.py 2
Employee Ervin Howell is done with tasks(8/20):
distinctio vitae autem nihil ut molestias quo
voluptas quo tenetur perspiciatis explicabo natus
aliquam aut quasi
veritatis pariatur delectus
nemo perspiciatis repellat ut dolor libero commodi blanditiis omnis
repellendus veritatis molestias dicta incidunt
excepturi deleniti adipisci voluptatem et neque optio illum ad
totam atque quo nesciunt

sylvain@ubuntu$ python3 0-gather_data_from_an_API.py 4
Employee Patricia Lebsack is done with tasks(6/20):
```

```

odit optio omnis qui sunt
doloremque aut dolores quidem fuga qui nulla
sint amet quia totam corporis qui exercitationem commodi
sequi dolorem sed
eum ipsa maxime ut
tempore molestias dolores rerum sequi voluptates ipsum consequatur
sylvain@ubuntu$
sylvain@ubuntu$ python3 0-gather_data_from_an_API.py 4 | tr " " "S" | tr "\t" "T"
EmployeeSPatriciaSLebsackSisSdoneSwithStasks(6/20):
TSoditSoptioSomnisSquiSsunt
TSdoloremqueSautSdoloresSquidemSfugaSquiSnulla
TSsintSametSquiaStotamScorporisSquiSexercitationemScommodi
TSsequiSdoloremSsed
TSeumSipsaSmaximeSut
TStemporeSmolestiasSdoloresSrerumSsequiSvoluptatesSipsumSconsequatur
sylvain@ubuntu$

```

Repo:

- GitHub repository: `alx-system_engineering-devops`
- Directory: `0x15-api`
- File: `0-gather_data_from_an_API.py`

Done? Help Check your code QA Review

1. Export to CSV

mandatory

Score: 0.0% (Checks completed: 0.0%)

Using what you did in the task #0, extend your Python script to export data in the CSV format.

Requirements:

- Records all tasks that are owned by this employee
- Format must be: `"USER_ID", "USERNAME", "TASK_COMPLETED_STATUS", "TASK_TITLE"`
- File name must be: `USER_ID.csv`

Example:

```

sylvain@ubuntu$ python3 1-export_to_CSV.py 2
sylvain@ubuntu$ cat 2.csv

```

```
"2","Antonette","False","suscipit repellat esse quibusdam voluptatem incidunt"
"2","Antonette","True","distinctio vitae autem nihil ut molestias quo"
"2","Antonette","False","et itaque necessitatibus maxime molestiae qui quas velit"
"2","Antonette","False","adipisci non ad dicta qui amet quaerat doloribus ea"
"2","Antonette","True","voluptas quo tenetur perspiciatis explicabo natus"
"2","Antonette","True","aliquam aut quasi"
"2","Antonette","True","veritatis pariatur delectus"
"2","Antonette","False","nesciunt totam sit blanditiis sit"
"2","Antonette","False","laborum aut in quam"
"2","Antonette","True","nemo perspiciatis repellat ut dolor libero commodi blanditiis
omnis"
"2","Antonette","False","repudiandae totam in est sint facere fuga"
"2","Antonette","False","earum doloribus ea doloremque quis"
"2","Antonette","False","sint sit aut vero"
"2","Antonette","False","porro aut necessitatibus eaque distinctio"
"2","Antonette","True","repellendus veritatis molestias dicta incidunt"
"2","Antonette","True","excepturi deleniti adipisci voluptatem et neque optio illum a
d"
"2","Antonette","False","sunt cum tempora"
"2","Antonette","False","totam quia non"
"2","Antonette","False","doloremque quibusdam asperiores libero corrupti illum qui om
nis"
"2","Antonette","True","totam atque quo nesciunt"
sylvain@ubuntu$
```

Repo:

- GitHub repository: [alx-system_engineering-devops](#)
- Directory: [0x15-api](#)
- File: [1-export_to_CSV.py](#)

Done? Help Check your code QA Review

2. Export to JSON

mandatory

Score: 0.0% (Checks completed: 0.0%)

Using what you did in the task #0, extend your Python script to export data in the JSON format.

Requirements:

- Records all tasks that are owned by this employee
- Format must be: `{ "USER_ID": [{"task": "TASK_TITLE", "completed": TASK_COMPLETED_STATUS, "username": "USERNAME"}, {"task": "TASK_TITLE", "completed": TASK_COMPLETED_STATUS, "username": "USERNAME"}, ...]}`
- File name must be: `USER_ID.json`

Example:

```
sylvain@ubuntu$ python3 2-export_to_JSON.py 2
sylvain@ubuntu$ cat 2.json
{"2": [{"task": "suscipit repellat esse quibusdam voluptatem incidunt", "completed": false, "username": "Antonette"}, {"task": "distinctio vitae autem nihil ut molestias quo", "completed": true, "username": "Antonette"}, {"task": "et itaque necessitatibus maxime molestiae qui quas velit", "completed": false, "username": "Antonette"}, {"task": "adipisci non ad dicta qui amet quaerat doloribus ea", "completed": false, "username": "Antonette"}, {"task": "voluptas quo tenetur perspiciatis explicabo natus", "completed": true, "username": "Antonette"}, {"task": "aliquam aut quasi", "completed": true, "username": "Antonette"}, {"task": "veritatis pariatur delectus", "completed": true, "username": "Antonette"}, {"task": "nesciunt totam sit blanditiis sit", "completed": false, "username": "Antonette"}, {"task": "laborum aut in quam", "completed": false, "username": "Antonette"}, {"task": "nemo perspiciatis repellat ut dolor libero commodi blanditiis omnis", "completed": true, "username": "Antonette"}, {"task": "repudiandae totam in est sint facere fuga", "completed": false, "username": "Antonette"}, {"task": "earum doloribus ea doloremque quis", "completed": false, "username": "Antonette"}, {"task": "sint sit aut vero", "completed": false, "username": "Antonette"}, {"task": "porro aut necessitatibus eaque distinctio", "completed": false, "username": "Antonette"}, {"task": "repellendus veritatis molestias dicta incidunt", "completed": true, "username": "Antonette"}, {"task": "excepturi deleniti adipisci voluptatem et neque optio illum ad", "completed": true, "username": "Antonette"}, {"task": "sunt cum tempora", "completed": false, "username": "Antonette"}, {"task": "totam quia non", "completed": false, "username": "Antonette"}, {"task": "doloremque quibusdam asperiores libero corrupti illum qui omnis", "completed": false, "username": "Antonette"}, {"task": "totam atque quo nesciunt", "completed": true, "username": "Antonette"}]}
```

Repo:

- GitHub repository: `alx-system_engineering-devops`
- Directory: `0x15-api`
- File: `2-export_to_JSON.py`

Done? Help Check your code QA Review

3. Dictionary of list of dictionaries

mandatory

Score: 0.0% (Checks completed: 0.0%)

Using what you did in the task #0, extend your Python script to export data in the JSON format.

Requirements:

- Records all tasks from all employees
- Format must be:

```
{ "USER_ID": [ {"username": "USERNAME", "task": "TASK_TITLE", "completed": TASK_COMPLETED_STATUS}, {"username": "USERNAME", "task": "TASK_TITLE", "completed": TASK_COMPLETED_STATUS}, ... ], "USER_ID": [ {"username": "USERNAME", "task": "TASK_TITLE", "completed": TASK_COMPLETED_STATUS}, {"username": "USERNAME", "task": "TASK_TITLE", "completed": TASK_COMPLETED_STATUS}, ... ] }
```
- File name must be: `todo_all_employees.json`

Example:

```
sylvain@ubuntu$ python3 3-dictionary_of_list_of_dictionaries.py
```

```
sylvain@ubuntu$ cat todo_all_employees.json
```

```
{ "1": [{"username": "Bret", "task": "delectus aut autem", "completed": false}, {"username": "Bret", "task": "quis ut nam facilis et officia qui", "completed": false}, {"username": "Bret", "task": "fugiat veniam minus", "completed": false}, {"username": "Bret", "task": "et porro tempora", "completed": true}, {"username": "Bret", "task": "laboriosam mollitia et enim quasi adipisci quia provident illum", "completed": false}, {"username": "Bret", "task": "qui ullam ratione quibusdam voluptatem quia omnis", "completed": false}, {"username": "Bret", "task": "illo expedita consequatur quia in", "completed": false}, {"username": "Bret", "task": "quo adipisci enim quam ut ab", "completed": true}, {"username": "Bret", "task": "molestiae perspiciatis ipsa", "completed": false}, {"username": "Bret", "task": "illo est ratione doloremque quia maiores aut", "completed": true}, {"username": "Bret", "task": "vero rerum temporibus dolor", "completed": true}, {"username": "Bret", "task": "ipsa repellendus fugit nisi", "completed": true}, {"username": "Bret", "task": "et doloremque nulla", "completed": false}, {"username": "Bret", "task": "repellendus sunt dolores architecto voluptatum", "completed": true}, {"username": "Bret", "task": "ab voluptatum amet voluptas", "completed": true}, {"username": "Bret", "task": "accusamus eos facilis sint et aut voluptatem", "completed": true}, {"username": "Bret", "task": "quo laboriosam deleniti aut qui", "completed": true}, {"username": "Bret", "task": "dolorum est consequatur ea mollitia in culpa", "completed": false}, {"username": "Bret", "task": "molestiae ipsa aut voluptatibus pariatur dolor nihil", "completed": true}, {"username": "Bret", "task": "ullam nobis libero sapiente ad optio sint", "completed": true}], "2": [{"username": "Antonette", "task": "suscipit repellat esse quibusdam voluptatem incidunt", "completed": false}, {"username": "Antonette", "task": "distinctio vitae autem nihil ut molestias quo", "completed": true}, {"username": "Antonette", "task": "et itaque necessitatibus maxime molestiae qui quas velit", "completed": false}, {"username": "Antonette", "task": "adipisci non ad dicta qui amet quaerat doloribus ea", "completed": false}, {"username": "Antonette", "task": "voluptas quo tenetur perspiciatis explicabo natus", "completed": true}, {"username": "Antonette", "task": "aliquam aut quasi", "completed": true}, {"username": "Antonette", "task": "veritatis pariatur delectus", "completed": true}, {"username": "Antonette", "task": "nesciunt totam sit blanditiis sit", "completed": false}, {"username": "Antonette", "task": "laborum aut in quam", "completed": false}, {"username": "Antonette", "task": "nemo perspiciatis repellat ut dolor libero commodi blanditiis omnis", "completed": true}, {"username": "Antonette", "task": "repudiandae totam in est sint facere fuga", "completed": false}, {"username": "Antonette", "task": "earum doloribus ea doloremque quis", "completed": false}, {"username": "Antonette", "task": "sint sit aut vero", "completed": false}, {"username": "Antonette", "task": "porro aut necessitatibus eaque distinctio", "completed": false}, {"username": "Antonette", "task": "autem non doloribus eligendi autem", "completed": false}, {"username": "Antonette", "task": "inventore et consectetur qui quia repellendus quia", "completed": false}, {"username": "Antonette", "task": "est distinctio enim repellendus culpa illum qui sed", "completed": false}, {"username": "Antonette", "task": "omnis est dicta reiciendis quo", "completed": false}, {"username": "Antonette", "task": "voluptatibus perferendis et", "completed": false}]} 
```

```
ame": "Antonette", "task": "repellendus veritatis molestias dicta incidunt", "completed": true}, {"username": "Antonette", "task": "excepturi deleniti adipisci voluptatem et neque optio illum ad", "completed": true}, {"username": "Antonette", "task": "sunt cum tempora", "completed": false}, {"username": "Antonette", "task": "totam quia non", "completed": false}, {"username": "Antonette", "task": "doloremque quibusdam asperiores libero corrupti illum qui omnis", "completed": false}, {"username": "Antonette", "task": "totam atque quo nesciunt", "completed": true}], "3": [{"username": "Samantha", "task": "aliquid amet impedit consequatur aspernatur placeat eaque fugiat suscipit", "completed": false}, {"username": "Samantha", "task": "rerum perferendis error qui a ut eveniet", "completed": false}, {"username": "Samantha", "task": "tempore ut sint quis recusandae", "completed": true}, {"username": "Samantha", "task": "cum debitis quis accusamus doloremque ipsa natus sapiente omnis", "completed": true}, {"username": "Samantha", "task": "velit soluta adipisci molestias reiciendis harum", "completed": false}, {"username": "Samantha", "task": "vel voluptatem repellat nihil placeat corporis", "completed": false}, {"username": "Samantha", "task": "nam qui rerum fugiat accusamus", "completed": false}, {"username": "Samantha", "task": "sit reprehenderit omnis quia", "completed": false}, {"username": "Samantha", "task": "ut necessitatibus aut maiores debitis officia blanditiis velit et", "completed": false}, {"username": "Samantha", "task": "cupiditate necessitatibus ullam aut quis dolor voluptate", "completed": true}, {"username": "Samantha", "task": "distinctio exercitationem ab doloribus", "completed": false}, {"username": "Samantha", "task": "nesciunt dolorum quis recusandae ad pariatur ratione", "completed": false}, {"username": "Samantha", "task": "qui labore est occaecati recusandae aliquid quam", "completed": false}, {"username": "Samantha", "task": "quis et est ut voluptate quam dolor", "completed": true}, {"username": "Samantha", "task": "voluptatum omnis minima qui occaecati provident nulla voluptatem ratione", "completed": true}, {"username": "Samantha", "task": "deleniti ea temporibus enim", "completed": true}, {"username": "Samantha", "task": "pariatur et magnam ea doloribus similique voluptatem rerum quia", "completed": false}, {"username": "Samantha", "task": "est dicta totam qui explicabo doloribus qui dignissimos", "completed": false}, {"username": "Samantha", "task": "perspiciatis velit id laborum placeat iusto et aliquam odio", "completed": false}, {"username": "Samantha", "task": "et sequi qui architecto ut adipisci", "completed": true}], "4": [{"username": "Karianne", "task": "odit optio omnis qui sunt", "completed": true}, {"username": "Karianne", "task": "et placeat et tempore aspernatur sint numquam", "completed": false}, {"username": "Karianne", "task": "doloremque aut dolores quidem fuga qui nulla", "completed": true}, {"username": "Karianne", "task": "voluptas consequatur qui ut quia magnam nemo esse", "completed": false}, {"username": "Karianne", "task": "fugiat pariatur ratione ut asperiores necessitatibus magni", "completed": false}, {"username": "Karianne", "task": "rerum eum molestias autem voluptatum sit optio", "completed": false}, {"username": "Karianne", "task": "quia voluptatibus voluptatem quos similique maiores repellat", "completed": false}, {"username": "Karianne", "task": "aut id perspiciatis voluptatem iusto", "completed": false}, {"username": "Karianne", "task": "doloribus sint dolorum ab adipisci itaque dignissimos aliquam suscipit", "completed": false}, {"username": "Karianne", "task": "ut sequi accusantium et mollitia delectus sunt", "completed": false}, {"username": "Karianne", "task": "aut velit saepe ullam", "completed": false}, {"username": "Karianne", "task": "praesentium facilis facere quis harum voluptatibus voluptatem eum", "completed": false}, {"username": "Karianne", "task": "sint amet quia totam corporis qui exercitationem commodi", "completed": true}, {"username": "Karianne", "task": "expedita tempore nobis eveniet laborum maiores", "completed": false}, {"username": "Karianne", "task": "occaecati adipisci est possimus totam", "completed": false}, {"username": "Karianne", "task": "sequi dolore sed", "completed": true}, {"username": "Karianne", "task": "maiores aut nesciunt delectus exercitationem vel assumenda eligendi at", "completed": false}, {"username": "Karianne", "task": "reiciendis est magnam amet nemo iste recusandae impedit quaerat", "completed": false}, {"username": "Karianne", "task": "eum ipsa maxime ut", "completed": true}, {"username": "Karianne", "task": "consequatur molestias dignissimos molestias vero suscipit", "completed": false}]]
```



```
ne", "task": "tempore molestias dolores rerum sequi voluptates ipsum consequatur", "
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ut impedit", "completed": false}, {"username": "Elwyn.Skiles", "task": "qui consecet
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sylvain@ubuntu$

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Repo:

- GitHub repository: [alx-system_engineering-devops](#)
- Directory: [0x15-api](#)
- File: [3-dictionary_of_list_of_dictionaries.py](#)