

# Data Representation

## Lab 06.01: Use Python to access Server

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In this lab we are going to use Python to access the server we used in week05 via the API.

Action	Method	URL	Sample params	Sample return
Get all	GET	/cars	none	{ cars:[ {...},{...},{...} ] }
Find by id	GET	/cars/ <i>reg</i>	none	{car: { "reg":"12 D 1234", "make":"Fiat", "model":"Punto", "price":3000 } }
Create	POST	/cars	{ "reg":"12 D 1234", "make":"Fiat", "model":"Punto", "price":3000 }	{ "reg":"12 D 1234", "make":"Fiat", "model":"Punto", "price":3000 }
Update	PUT	/cars/ <i>reg</i>	{ "price":3000 }	{ "reg":"12 D 1234", "make":"Fiat", "model":"Punto", "price":3000 }
delete	DELETE	/cars/ <i>reg</i>	none	{ "done":true }

To do this you must make sure that your server is running

```
python b_restserver.py
* Serving Flask app "b_restserver" (lazy loading)
* Environment: production
  WARNING: This is a development server. Do not use it in a production deployment.
  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: 388-436-605
```

1. Write a python program that will get all the cars from the server (using the API).
  - a. The program should output the returned json to the screen.

```
import requests

url = "http://127.0.0.1:5000/cars"

response = requests.get(url)
data = response.json()

#output to console
print (data)
```

- b. The program should output all the cars individually to the screen.

```
for car in data["cars"]:
    print (car)
```

- c. The program should write the returned JSON neatly to a file.

```
import json

#other code

#save this to a file
filename = 'cars.json'
if filename:
    # Writing JSON data
    with open(filename, 'w') as f:
        json.dump(data, f, indent=4)
```

- d. The program should write the cars to an EXCEL file.

```
from xlwt import *
#other code
# write to excel file
w = Workbook()
ws = w.add_sheet('cars')
row = 0;
ws.write(row,0,"reg")
ws.write(row,1,"make")
ws.write(row,2,"model")
ws.write(row,3,"price")
row += 1
for car in data["cars"]:
    ws.write(row,0, car["reg"])
    ws.write(row,1,car["make"])
    ws.write(row,2,car["model"])
    ws.write(row,3,car["price"])
    row += 1
w.save('cars.xls')
```

2. Write a python program that creates a car on the server by using the API

```
import requests
import json

dataString = {'reg':'08 C 1234','make':'Ford','model':'Galaxy','price':12324}
url = 'http://127.0.0.1:5000/cars'

response = requests.post(url, json=dataString)

print (response.status_code)
```

3. Write a python program that updates a car on the server using the API.

```
import requests
import json

dataString = {'make':'Ford','model':'Kuga'}
url = 'http://127.0.0.1:5000/cars/test'

response = requests.put(url, json=dataString)

print (response.status_code)
print (response.text)
```

4. Write a python program that deletes a car from the server using the API.

```
import requests

url = 'http://127.0.0.1:5000/cars/08%20C%201234'
response = requests.delete(url)
print (response.status_code)
print (response.text)
```

### Challenge read from github:

5. Create a spread sheet that gets all the users that are following me (datarepresentationcourseware) and outputs the users login and repos URL to a spreadsheet.
  - a. Get the list from the the github API and output to the console (messy)
  - b. Then output it to a file neatly

```
import requests, json

#url = "https://api.github.com/users?since=100"
url = "https://api.github.com/users/andrewbeattycourseware/followers"
response = requests.get(url)
data = response.json()
#print(data)

#Get the file name for the new file to write
filename = 'githubusers.json'
with open(filename, 'w') as f:
    json.dump(data, f, indent=4)
```

- c. Now you have to work out how you would write this to excel