Space APIs the Final Frontier

Lab Objective

The objective of this lab is to play around with the import statement in Python, get some exposure to JSON, and learn how web APIs work. "It's lonely out in space," which is why we should track who is out there. In this lab you'll use a web service to determine those people currently aboard the International Space Station (ISS).

The datasets used in this lab are very much accurate and in real-time.

Lab Procedure

0. A web service has an address (url) just like a web page does. Instead of returning HTML for a web page it returns data. Open (http://api.open-notify.org/astros.json) in a web browser.
1. Take a moment to study our list of JSON-ized space heroes on the International Space Station. Way to go humanity!
2. You'll find JSON uses some new naming, but you'll recognize the structure. It's dictionaries, key:value pairs, lists, strings, and integers. If you've been paying attention in Python class, JSON should be very clear. What is a bit tricky is that JSON *looks* identical to Pythonic data structures, but it isn't. It's JSON. So, we'll need to convert it.
3. Open a new command window.
4. Let's stay in the habit of organizing our work. For now, make `/home/student/mycode/iss/` a directory.

   ```
   student@beachhead:~$ mkdir ~/mycode/iss/
   ```

5. Move to the `/home/student/mycode/iss` directory.

   ```
   student@beachhead:/$ cd ~/mycode/iss/
   ```

6. Open your new script:

   ```
   student@beachhead:~/mycode/iss$ vim ride_iss.py
   ```

7. Write the following script:

   ```
   #!/usr/bin/python3
   """Alta3 || Tracking ISS"""

   import urllib.request
   import json

   ## Define URL
   MAJORTOM = 'http://api.open-notify.org/astros.json'

   def main():

       ## Call the webservice
       groundctrl = urllib.request.urlopen(MAJORTOM)

       ## put fileobject into helmet
       helmet = groundctrl.read()

       ## decode json to python data structure
       helmetson = json.loads(helmet.decode('utf-8'))

       ## display our pythonic data
       print("\n\nConverted python data")
       print(helmetson)

       print('\n\nPeople in Space: ', helmetson['number'])
       people = helmetson['people']
       print(people)
   ```

```
main()
```

8. You should be left with a list of dictionaries. You job is to print out the data in the following fashion.

```
People in space: 4
Eddie Kopra on the ISS
James Peake on the ISS
Yuri Kopra on the ISS
Buzz Aldrin on the ISS
```

9. Be sure to use the key 'name' and key 'craft' when you print() the above data.
10. Save the program when you're done as `/home/student/mycode/iss/ride_iss.py`
11. Make sure your program works. If it doesn't, debug!
12. If you're tracking your code in GitHub, issue the following commands:
    - `cd ~/mycode`
    - `git add *`
    - `git commit -m "Learning to track ISS"`
    - `git push origin master`