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### References

# 要求

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## 首先为何要打牌?

我们原本需要学会做到这三步, 以用硬件虚拟化技术 控制网络设备。

这里面的第一步, 要求熟悉网络中的API的使用方法, 于是引入了这个打牌的游戏作为homework, 不断请求并从服务器获取结果, 来理解网络中API的使用方法, 为Step 2, Step 3打基础、

1. [Step 1: Learn the basics of the APIC-EM REST API](#)

2. [Step 2: Generate and use a new service ticket](#)
3. [Step 3: Use network device-related APIs](#)

## Poker-with-API

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Implement the code given in <http://thinkpython2.com/code> (Card.py and PokerHand.py) using <https://deckofcardsapi.com/>.

## Todos

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- Download the required files or create them in this repo.
- Comment on the design in this readmefile.
- Rewrite the basic classes in Card.py using <https://deckofcardsapi.com/>
- Modify PokerHand.py to accommodate the changes you made
- <https://greenteapress.com/thinkpython2/html/thinkpython2019.html> has two exercise 2 and 3 for PokerHand.py,
- Can you make a playable game of poker with a automated dealer and few players?

## Prerequisites

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- Familiarity with REST APIs and JSON.
- Basic proficiency with Python or a similar high-level programming language.

To study these topics, complete the [Coding 101: REST API Basics Lab](#).

You will make API calls to an APIC-EM controller. By default, these labs use the [Cisco DevNet Sandbox's](#) APIC-EM controller at <https://sandboxapicem.cisco.com/>.

## Python API Note-INWK

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- [duanlianda.blog.csdn.net](https://duanlianda.blog.csdn.net)

## 几个重要的连接

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- 测试代码用到的网站 Deck of Cards-----官方网站: <https://deckofcardsapi.com/>
- 增加JSON结果的可读性 <https://codebeautify.org/jsonviewer>

## 一些重要的操作

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从本地向服务器发送get请求，并得到反馈。

```
import requests
r = requests.get('https://api.github.com/events')
r.text
```

如果返回的是JSON报文

```
>>> import requests

>>> r = requests.get('https://api.github.com/events')
>>> r.json()
```

这个时候拿到的是一个字典

如果这个URL返回的是图片

```
from PIL import Image
from io import BytesIO

i = Image.open(BytesIO(r.content))
```

## 赌徒的基本素养： Deck of Cards API\*\*

### 洗牌 Shuffle the Cards

Add **deck\_count** as a **GET or POST** parameter to define the number of Decks you want to use. Blackjack typically uses 6 decks. The default is 1.

使用者需要将deck\_count作为发送GET或者POST协议的其中一个参数，这个参数在拼接http报文的时候会被放在连接的最后，这里给出参数为1的时候的拼接结果

```
https://deckofcardsapi.com/api/deck/new/shuffle/?deck_count=1
```

此时可以得到一个结果：

```
{"success": true, "deck_id": "0y05kmosn3gn", "remaining": 52, "shuffled": true}
```

## 抓一张牌 Draw a Card:

The count variable defines how many cards to draw from the deck. Be sure to replace deck\_id with a valid deck\_id. We use the deck\_id as an identifier so we know who is playing with what deck. After two weeks, if no actions have been made on the deck then we throw it away.

要想画出一张牌，需要下面这个链接：

```
https://deckofcardsapi.com/api/deck/⟨deck_id⟩/draw/?count=2
```

count：想画出几张牌

⟨deck\_id⟩：这个地方是这副牌在服务器上的身份，如果连续两周没有活动，这个身份会失效  
使用一个身份的玩家的操作同一副牌。

TIP: replace ⟨deck\_id⟩ with "new" to create a shuffled deck and draw cards from that deck in the same request.

我们可以通过将参数⟨deck\_id⟩替换为new来得到一副新的牌。

以上代码的返回结果\*（已经替换了⟨deck\_id⟩）

```
{ "success": true, "deck_id": "0y05kmosn3gn", "cards": [ { "code": "KH", "image": "https://deckofcardsapi.com/static/img/KH.png", "images": { "svg": "https://deckofcardsapi.com/static/img/KH.svg", "png": "https://deckofcardsapi.com/static/img/KH.png" }, "value": "KING", "suit": "HEARTS" }, { "code": "8C", "image": "https://deckofcardsapi.com/static/img/8C.png", "images": { "svg": "https://deckofcardsapi.com/static/img/8C.svg", "png": "https://deckofcardsapi.com/static/img/8C.png" }, "value": "8", "suit": "CLUBS" } ], "remaining": 50 }
```

## 重新洗牌 Reshuffle the Cards

Don't throw away a deck when all you want to do is shuffle. Include the deck\_id on your call to shuffle your cards. Don't worry about reminding us how many decks you are playing with.

一个⟨deck\_id⟩代表你正在玩一副指定的牌。如果仅仅是要洗牌，没有必要扔掉一副牌。

可以保留着一副牌，并洗牌。这样就类似避免了一个玩家要重新进入游戏才能洗牌的尴尬。

```
https://deckofcardsapi.com/api/deck/⟨deck_id⟩/shuffle/
```

和之前的命令一样，把http请求放进浏览器里，会得到如下的输出：

```
{
  "success": true,
  "deck_id": "3p40paa87x90",
  "shuffled": true,
  "remaining": 52
}
```

## 一副全新的牌 A Brand New Deck

要获得一副全新的牌：

```
https://deckofcardsapi.com/api/deck/new/
```

Open a brand new deck of cards. A-spades, 2-spades, 3-spades... followed by diamonds, clubs, then hearts.

NEW (Oct 2019): Add `jokers_enabled=true` as a GET or POST parameter to your request to include two Jokers in the deck.

```
{
  "success": true,
  "deck_id": "3p40paa87x90",
  "shuffled": false,
  "remaining": 52
}
```

## 拿到一副牌的一部分 A Partial Deck

```
https://deckofcardsapi.com/api/deck/new/shuffle/?
cards=AS,2S,KS,AD,2D,KD,AC,2C,KC,AH,2H,KH
```

If you want to use a partial deck, then you can pass the card codes you want to use using the `cards` parameter. Separate the card codes with commas, and each card code is a just a two character case-insensitive string:

1. The value, one of A (for an ace), 2, 3, 4, 5, 6, 7, 8, 9, 0 (for a ten), J (jack), Q (queen), or K (king);
2. The suit, one of S (Spades), D (Diamonds), C (Clubs), or H (Hearts).

In this example, we are asking for a deck consisting of all the aces, twos, and kings.

在例子中，我们拿出了所有的Aces，2，和King

Response:

```
{
  "success": true,
  "deck_id": "3p40paa87x90",
  "shuffled": true,
  "remaining": 12
}
```

## 加桩 Adding to Piles

```
https://deckofcardsapi.com/api/deck/⟨deck_id⟩/pile/⟨pile_name⟩/add/?
cards=AS,2S
```

Piles can be used for discarding, players hands, or whatever else. Piles are created on the fly, just give a pile a name and add a drawn card to the pile. If the pile didn't exist before, it does now. After a card has been drawn from the deck it can be moved from pile to pile.

Note: This will not work with multiple decks.

google 翻译:

堆可以用于丢弃，玩家的手或其他任何东西。即时创建桩，只需给桩起一个名称并向桩中添加抽奖牌即可。如果该桩以前不存在，那么现在就存在。从一副牌中抽出一张卡片后，就可以将其从一堆移到另一堆。

注意：这不适用于多个卡座。

```
{
  "success": true,
  "deck_id": "3p40paa87x90",
  "remaining": 12,
  "piles": {
    "discard": {
      "remaining": 2
    }
  }
}
```

## 随机桩 Shuffle Piles

Note: This will not work with multiple decks.

```
https://deckofcardsapi.com/api/deck/<<deck_id>>/pile/<<pile_name>>/shuffle/
```

## Response:

```
{
  "success": true,
  "deck_id": "3p40paa87x90",
  "remaining": 12,
  "piles": {
    "discard": {
      "remaining": 2
    }
  }
}
```

## 把桩中的牌列出 Listing Cards in Piles

```
https://deckofcardsapi.com/api/deck/<<deck_id>>/pile/<<pile_name>>/list/
```

Note: This will not work with multiple decks.

Reponse:

```
{
  "success": true,
  "deck_id": "d5x0uw65g416",
  "remaining": "42",
  "piles": {
    "player1": {
      "remaining": "3"
    },
    "player2": {
      "cards": [
        {
          "image": "https://deckofcardsapi.com/static/img/KH.png",
          "value": "KING",
          "suit": "HEARTS",
          "code": "KH"
        },
        {
          "image": "https://deckofcardsapi.com/static/img/8C.png",
          "value": "8",
          "suit": "CLUBS",
          "code": "8C"
        }
      ]
    }
  }
}
```

```
    ],  
    "remaining": "2"  
  }  
},  
}
```

## 画出桩中的牌Drawing from Piles

```
https://deckofcardsapi.com/api/deck/⟨deck_id⟩/pile/⟨pile_name⟩/draw/?  
cards=AS  
https://deckofcardsapi.com/api/deck/⟨deck_id⟩/pile/⟨pile_name⟩/draw/?  
count=2  
https://deckofcardsapi.com/api/deck/⟨deck_id⟩/draw/bottom/
```

Specify the cards that you want to draw from the pile. The default is to just draw off the top of the pile (it's a [stack](#)). Or add the bottom parameter to the URL to draw from the bottom.

指定要从堆中抽出的牌。默认设置是仅从堆的顶部抽出（它是一个堆栈）。或将底部参数添加到要从底部绘制的URL。

Reponse:

```
{  
  "success": true,  
  "deck_id": "3p40paa87x90",  
  "remaining": 12,  
  "piles": {  
    "discard": {  
      "remaining": 1  
    }  
  },  
  "cards": [  
    {  
      "image": "https://deckofcardsapi.com/static/img/AS.png",  
      "value": "ACE",  
      "suit": "SPADES",  
      "code": "AS"  
    }  
  ]  
}
```

## REST & API



- **REST** stands for **RE**presentational **S**tate **T**ransfer
- An **API** is an **A**pplication **P**rogramming **I**nterface

## Objectives

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This lab teaches a number of things about REST APIs:

- Understand REST API concepts.
- Learn the basics of consuming REST APIs.
- Learn the standard verbs for REST APIs.
- Understand JSON and XML Payloads.
- Practical examples using REST APIs.

## APIC-EM APIs with Python

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### 基本操作

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- **POST** creates data.
- **GET** reads (retrieves) data.
- **PUT** updates data.

- **DELETE** deletes data.

## GET

To get data, a Python script issues a GET request, such as:

```
import requests
url = "https://fqdn-Or-IPofController/api/v1/api_itself"
response = requests.get(url,verify=False)
# verify=False means not verifying the SSL certificate
```

## POST

To create data, a Python script issues a POST request, such as:

```
import requests
import json

json_obj = {
    "key": "value"
}
url = "https://fqdn-Or-IPofController/api/v1/api_itself"
# need to specify content type -json- for POST request #
headers = {'content-type': 'application/json'}
response = requests.post(url, json.dumps(json_obj),
headers=headers,verify=False)
```

## PUT

To modify data, a Python script issues a PUT request, such as:

```
import requests
import json

json_obj = {
    "key": "value_to_change"
}
url = "https://fqdn-Or-IPofController/api/v1/api_itself"
# need to specify content type -json- for PUT request #
headers = {'content-type': 'application/json'}
response = requests.put(url, json.dumps(json_obj),
headers=headers,verify=False)
```

## DELETE

To delete data, a Python request issues a DELETE request, such as:

```
import requests
url = "https://fqdn-Or-IPofController/api/v1/api_itself"
response = requests.delete(url,verify=False)
```

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## 实战笔记

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### from future import print\_function用法

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阅读代码的时候会看到下面语句：

```
from __future__ import print_function
```

在python2.x的环境是使用下面语句，则第二句语法检查通过，第三句语法检查失败

```
1 from __future__ import print_function
2 print('you are good')
3 print 'you are good'
```

所以以后看到这个句子的时候，不用害怕，只是把下一个新版本的特性导入到当前版本！

## REST API status CODE

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Status Code	Status Message	Meaning
200	OK	All looks good
201	Created	New resource created
400	Bad Request	Request was invalid
401	Unauthorized	Authentication missing or incorrect
403	Forbidden	Request was understood but not allowed
404	Not Found	Resource not found
500	Internal Server Error	Something wrong with the server
503	Service Unavailable	Server is unable to complete request

注意如果是500打头的出了错误一定是服务器那边的问题

## Python - 两个列表(list)组成字典(dict)

```
# -*- coding: utf-8 -*-

keys = ['a', 'b', 'c']
values = [1, 2, 3]
dictionary = dict(zip(keys, values))
print dictionary

"""
输出:
{'a': 1, 'c': 3, 'b': 2}
"""
```

## 把一个图片放到网页上

我们可以用 `<img>` 元素来把图片放到网页上。它是一个空元素（它不需要包含文本内容或闭合标签），最少只需要一个 `src`（一般读作其全称 *source*）来使其生效。`src` 属性包含了指向我们想要引入的图片的路径，可以是相对路径或绝对URL，就像 `<a>` 元素的 `href` 属性一样。

**注意：**在继续之前，你应该阅读[快速入门URL和路径](#)来复习一下相对和绝对URL。

举个例子来看，如果你有一幅文件名为 `dinosaur.jpg` 的图片，且它与你的 HTML 页面存放在相同路径下，那么你可以这样嵌入它：

```

```

如果这张图片存储在和 HTML 页面同路径的 `images` 文件夹下（这也是Google推荐的做法，利于[SEO/索引](#)），那么你可以采用如下形式：

```

```

以此类推。

**注意：**搜索引擎也读取图像的文件名并把它们计入SEO。因此你应该给你的图片取一个描述性的文件名：`dinosaur.jpg` 比 `img835.png` 要好。

你也可以像下面这样使用绝对路径：

```

```

但是这种方式是不被推荐的，这样做只会使浏览器做更多的工作，例如重新通过 DNS 再去寻找 IP 地址。通常我们都会把图片和 HTML 放在同一个服务器上。备选文本

下一个我们讨论的属性是 `alt`，它的值应该是对图片的文字描述，用于在图片无法显示或不能被看到的情况。例如，上面的例子可以做如下改进：

```

```

测试 `alt` 属性最简单的方式就是故意拼错图片文件名，这样浏览器就无法找到该图片从而显示备选的文本。如果我们将上例的图片文件名改为 `dinosooooor.jpg`，浏览器就不能显示图片。

未完待续。 。 。 。 。 。 。 。 。 。 。

# References

[1] <https://deckofcardsapi.com/> 官方说明

[2] <https://developer.cisco.com/learning/tracks/devnet-beginner/network-programmability/apic-em-basic/step/1>

[3] <https://developer.cisco.com/learning/labs/what-are-rest-apis/step/1>

[4] <https://zhuanlan.zhihu.com/p/28641474>

[5] [https://blog.csdn.net/caroline\\_wendy/article/details/47060459](https://blog.csdn.net/caroline_wendy/article/details/47060459)

[6] <https://requests.readthedocs.io/en/master/user/quickstart/>

[7] [https://developer.mozilla.org/zh-CN/docs/Learn/HTML/Multimedia\\_and\\_embedding/Images\\_in\\_HTML](https://developer.mozilla.org/zh-CN/docs/Learn/HTML/Multimedia_and_embedding/Images_in_HTML)