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**CSC221 ADVANCED Python Programming**

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LAB11 - HTTP REQUESTS WITH PYTHON

# Objectives

In this lab assignment, students will learn:

* How to write HTTP API Requests with Python
* How to parse data from the Response Object returned by the Server

**PRE-REQs:** Python requests & json libraries must be installed.

# Instructions

I recommend you create a (new) folder for this week’s lab, for example **Lab11**. This will help you keep your work organized throughout the semester and make it easy to find your work for this course.

This lab is made up of two (2) parts within in a single Jupyter Notebook file.

Download files:

* **Lab11-PythonRESTAPIRequests.ipynb** ~ template Jupyter notebook for this lab

#### PART A

Part A follows “most” of the online tutorial ***Python: Using Web APIs Tutorial | HTTP Requests,*** *Joe James (Feb 26, 2019)*. The tutorial is presented by *Joe James* and is recorded on YouTube.

**URL: https://youtu.be/ChwSD5e0Qs0**

You will watch the video (13min 30sec) then run the code provided:

The tutorial walks you through various steps instructions and includes the code and a brief explanation of each step. You need to understand **Part A** because it will be used as a model for the coding required for **Part B**.

#### PART B

Part B requires you to write HTTP Request & Response code (very similar to what was done in Part A) to access information using a REST API provided by Marvel (Comics).

You will need to register for an Account to **Get a KEY** to use the REST API.

Please see the **Addendum** section at the end of the lab for directions with screen captures showing the process – it is quite simple and you get the KEYs almost immediately.

Refer back to the code in Part A, as needed, then read and complete the instructions (**in blue**) contained within the Jupyter notebook file. Place your code in the marked cells [# INSERT CODE FOR …].

Be sure to re-run all the cells at the end of each assignment to check for syntax errors and correct them. **(Kernel-> Restart & Run All)**.Use this **Run All** command throughout your assignments to sync up the code and remove problems.

# Submitting Assignment

Once you have successfully completed the lab, upload (submit) file:

* **Lab11-PythonRESTAPIRequests.ipynb**

via Blackboard for grading.

# Grading rubric

Total points = 100

30 points ~ Tutorial (PART A)

70 points ~ Tutorial (PART B)

20: GET character hulk

10: PRETTIFY hulk response (JSON)

10: GET hulk “id”

10: GET hulk “description”

10: GET hulk “items”

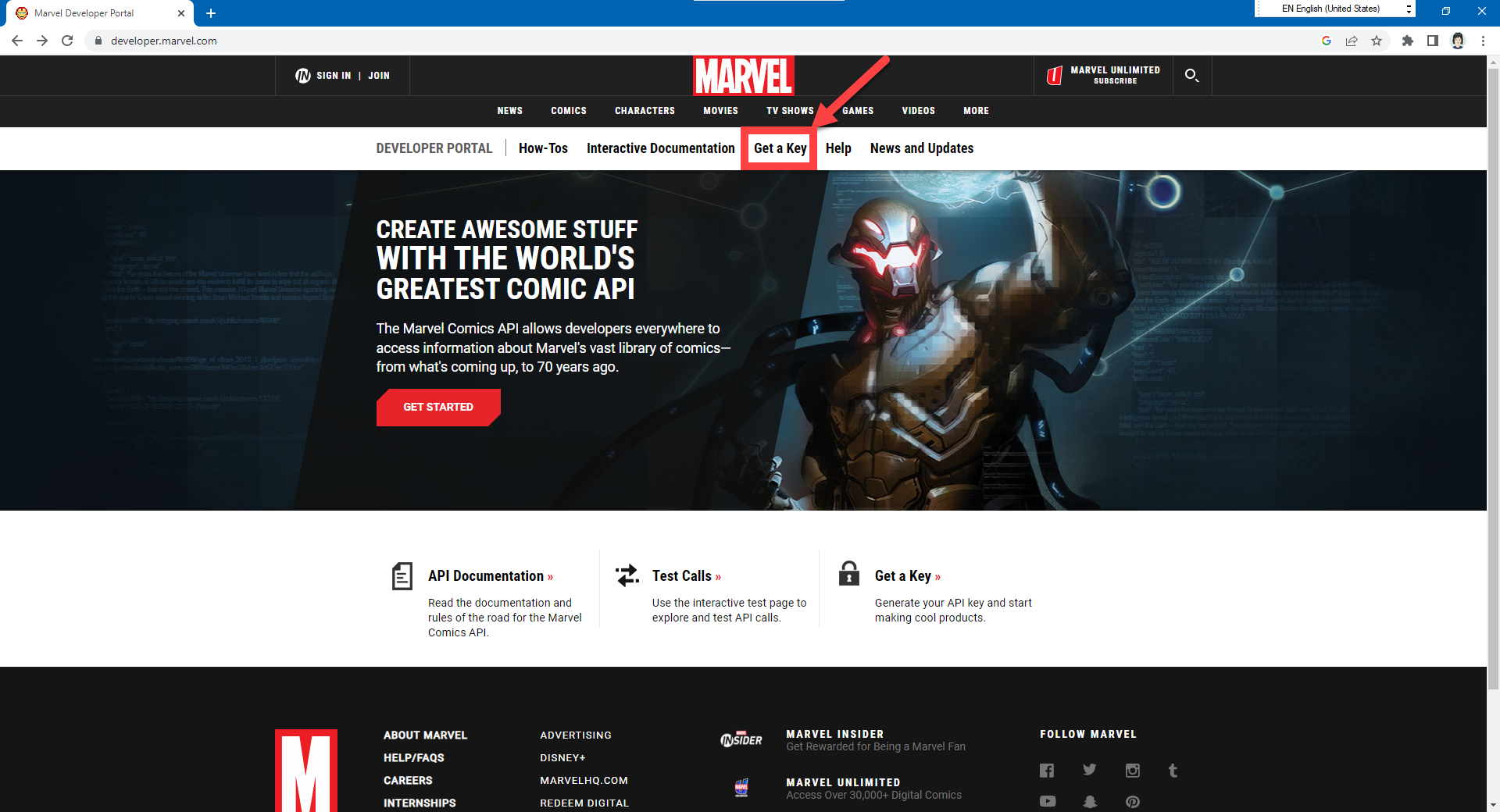
10: GET hulk “thumbnail” values

# ADDENDUM – GET A KEY

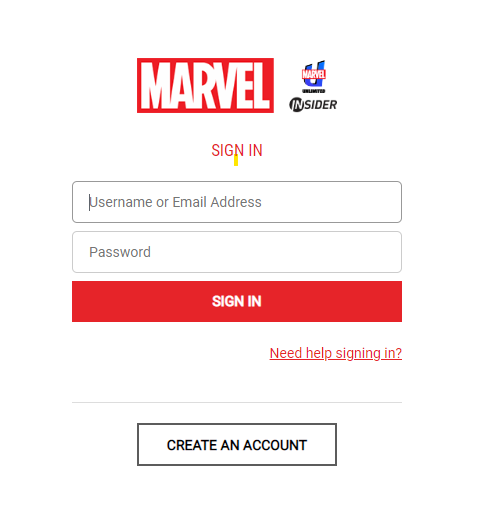
Almost every REST API nowadays requires some sort of Authentication Key to limit access to the REST API – even if it is considered Public and/or Free. This is to keep programs/bots/users from bombarding the sites with 1,000’s of requests over-and-over again.

To get your Public & Private Keys for the **Marvel Comic API,** do the following:

1. Go to the [Marvel Developer Portal](https://developer.marvel.com/) website. [URL https://developer.marvel.com/ ]
2. Click on the **Get a Key** link on the DEVELOPER PORTAL menu bar



1. Click on **CREATE AN ACCOUNT**



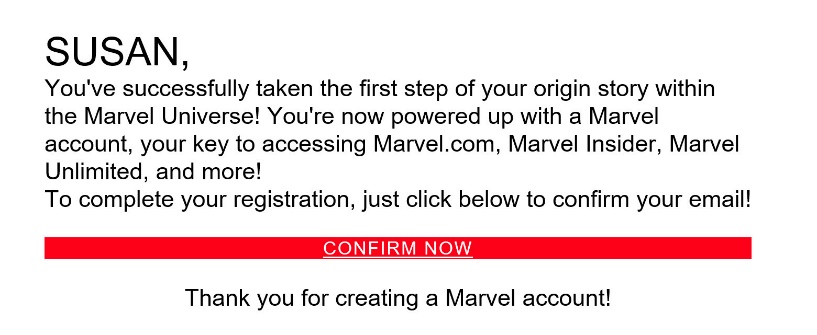
1. Fill in name, email, password & birthdate … then click **CREATE ACCOUNT**

Note: I would un-check the 2 “*Yes, I would like to receive…*” boxes but that’s up to you.

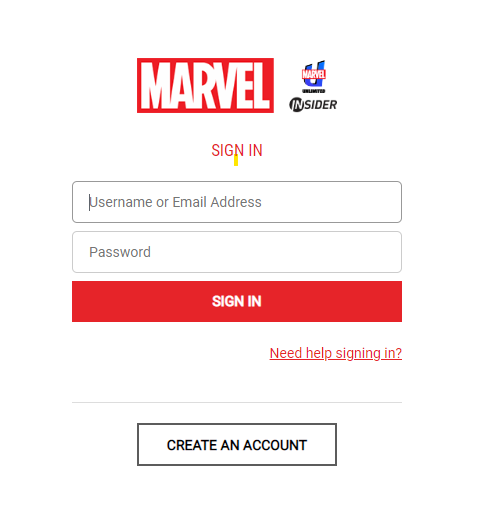
Graphical user interface, text, application, email

Description automatically generated

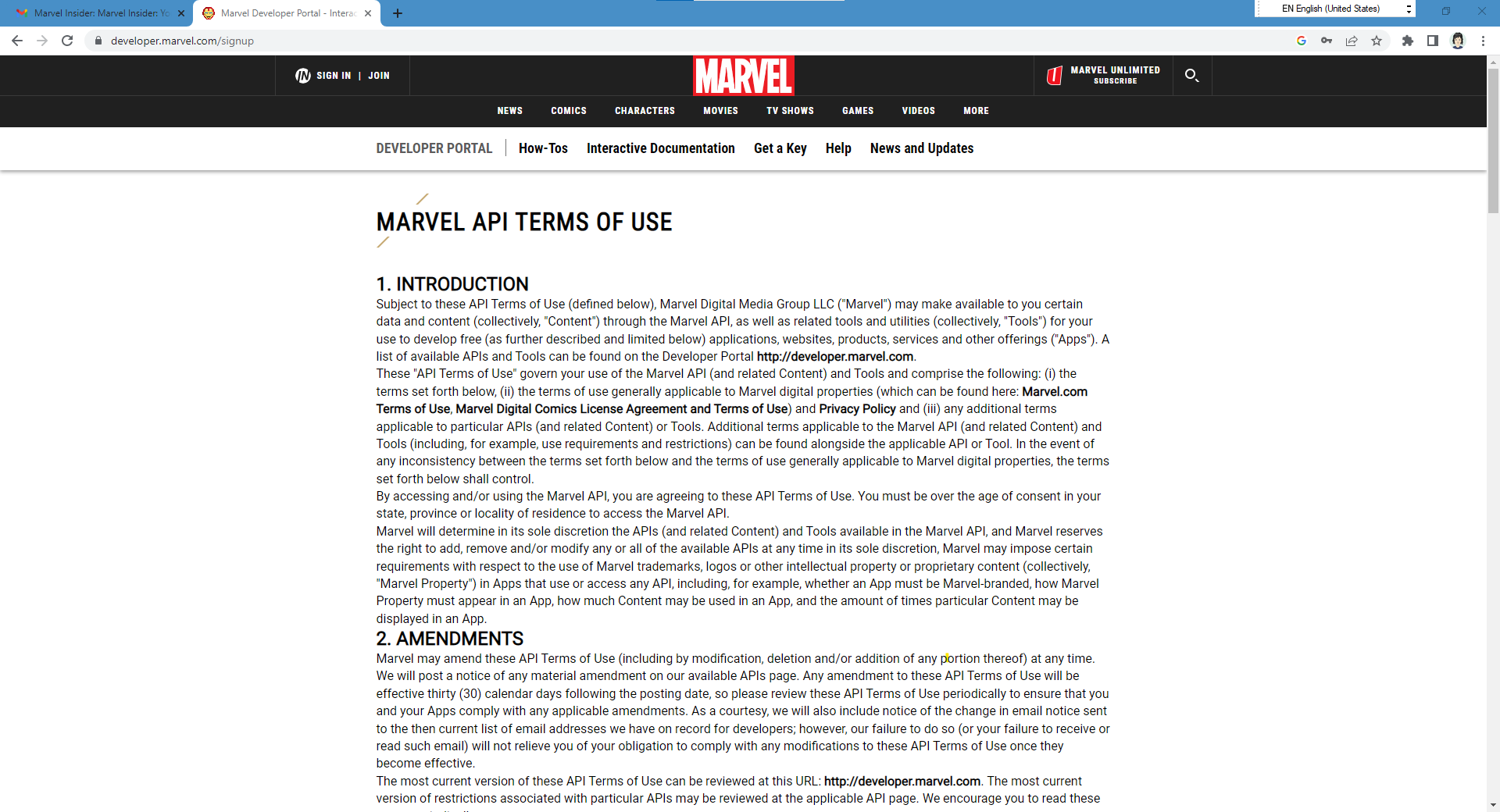
**Note**: You should receive a “verify your email” email. It will look something like this …

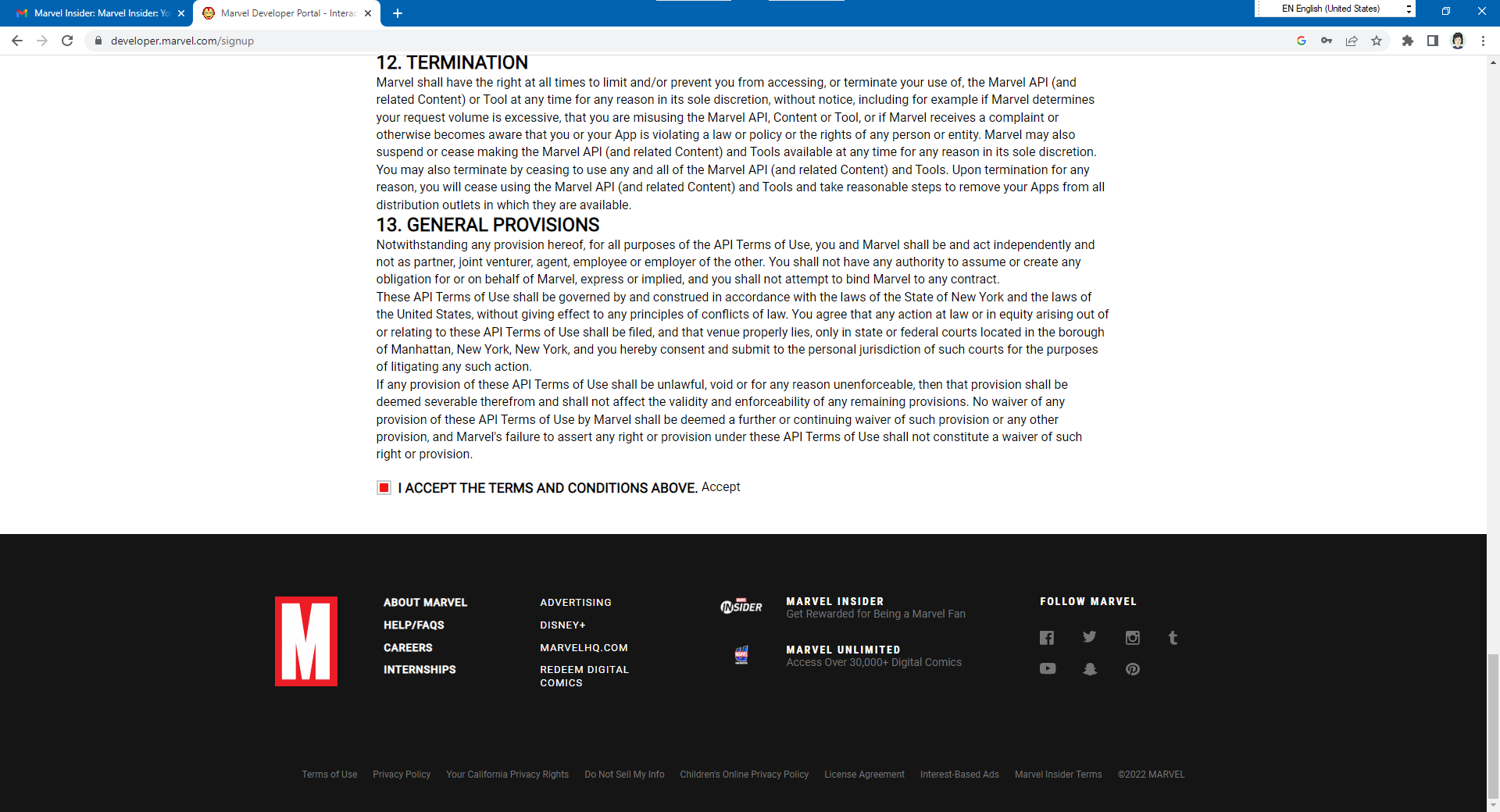


1. Go back to the SIGN IN screen and sign in …

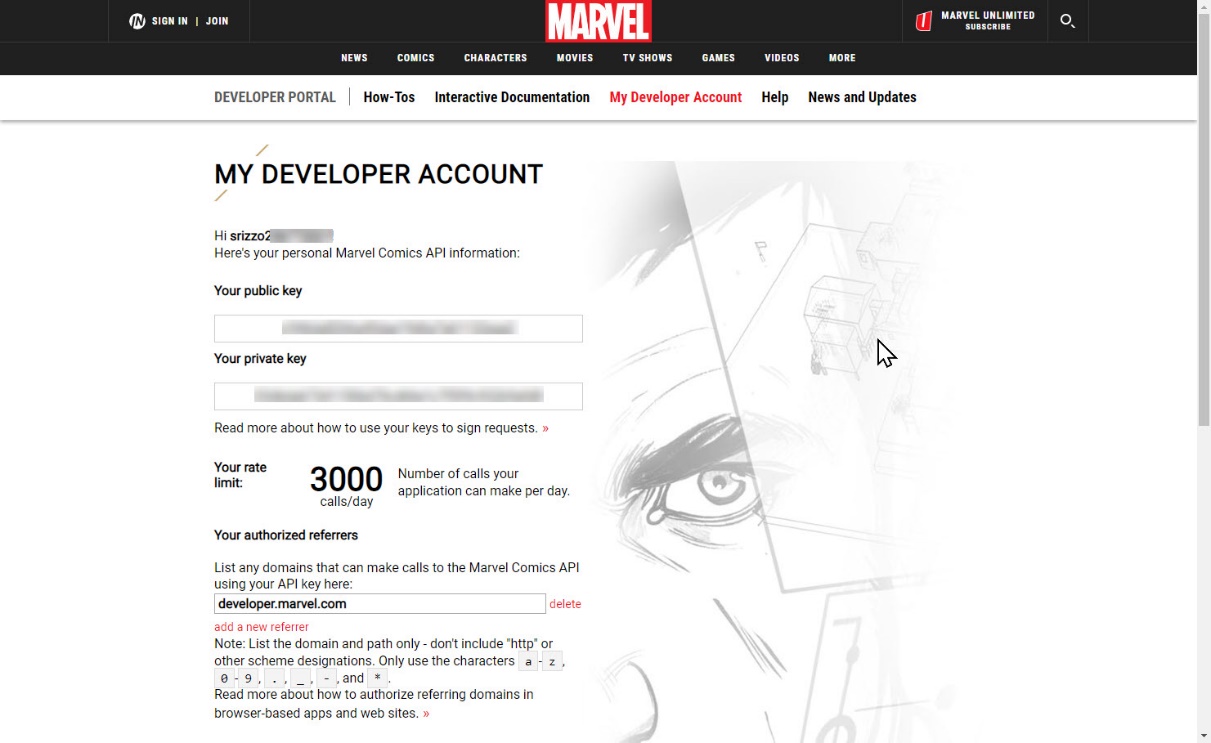


1. You should get sent to the **MARVEL API TERMS OF USE** page. You will need to scroll to the bottom to get to the **[ ] I ACCEPT THE TERMAS AND CONDITIONS ABOVE** checkbox. Select the checkbox & you will see the “Accept” appear. Click on “Accept”.

…



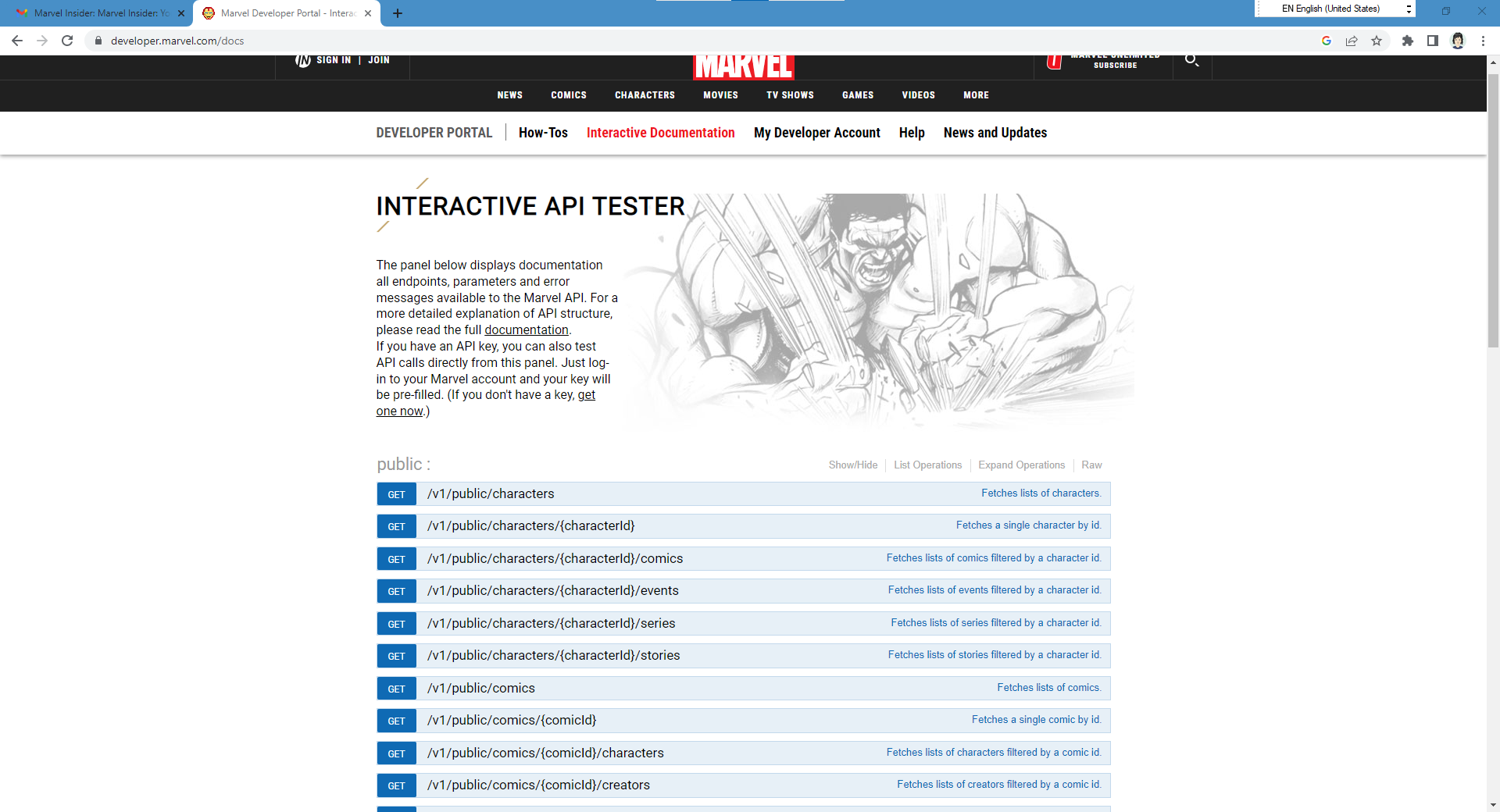
1. You will then be presented with the following screen showing your **Keys** (public & private). Save a screen capture so you don’t forget them – although I do believe if you click on Get a Key again later, the same screen will display.



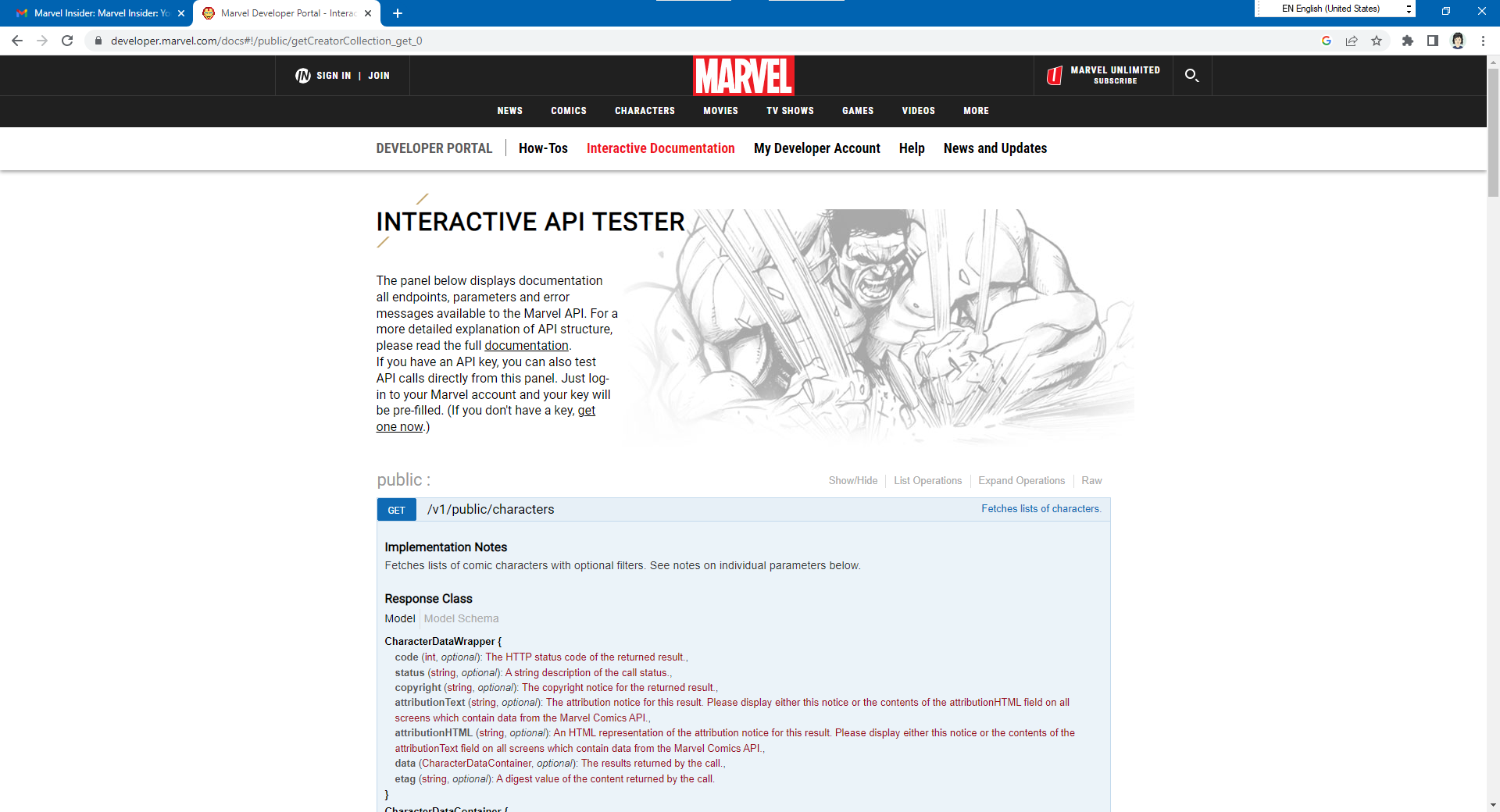
1. At this point, click on the **Interactive Documentation** link.



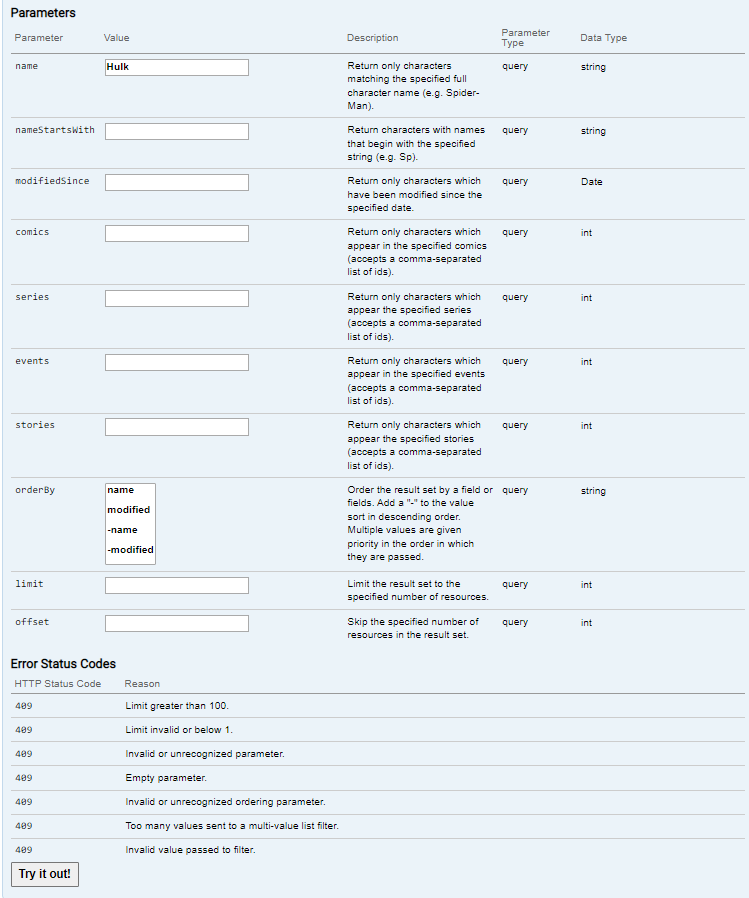
1. This will take you to the **INTERACTIVE API TESTER** page … which allows you to “play” with the REST APIs using a GUI interface.



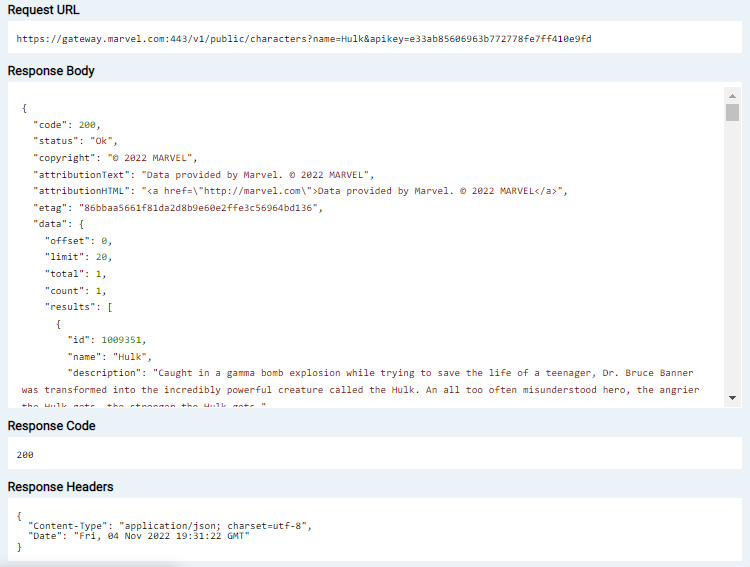
1. Give the interface a quick trial run … click on the first API [ **GET /v1/public/characters** ]. This opens to display instructions showing how to use the API.



In addition, if you scroll down the page, you’ll find the “interactive” section which allows you to enter values and run the REST API commands directly from the webpage. Enter **Hulk** in the **name** field, then click the **Try it out!** button.



The **Request URL** generated, the **Response Body** (JSON), the **Response Code** and the **Response Headers** will be displayed immediately under the **Try it out!** button. Take a look at the JSON in the **Response Body.** Scroll thru the JSON and see what you can find …

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Feel free to play with this and/or use this to test out the code you’ll need to create for the Lab code in Jupyter Notebook.

Pay special attention to the Request URLs generated, for example:

[https://gateway.marvel.com:443/**v1/public/characters**?name=Hulk&apikey=*xxxxxxxxxxxxxxxxxxxxxxxxxx*](https://gateway.marvel.com:443/v1/public/characters?name=Hulk&apikey=xxxxxxxxxxxxxxxxxxxxxxxxxx)

* /v1/public/characters ~ this is the REST API GET request being issued
* ?name=Hulk ~ is how you specify the name query parameter
* &apikey ~ is how you include your Public Key in the request