An introduction to Web Scraping with Python and Azure Functions

with

Welcome!

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Hello!

I am Daniela Miranda

and I'm here because I'm passionate about Data

Agenda

1- Web Scraping (generating output)

2- Blob Storage (storing the output)

3- Wordcloud (convert output into a wordcloud)

pebble
create more value

Web Scraping

- Common uses
- Benefits
- How to scrape data from a website?
- Scrapy
- Where to store the output?

Common uses

Price comparison

Email address gathering

Research and development

Is web scraping legal? A guide for 2021: https://www.linkedin.com/pulse/web-scraping-legal-guide-2021-tony-paul/?trk=read_related_article-card_title

Benefits

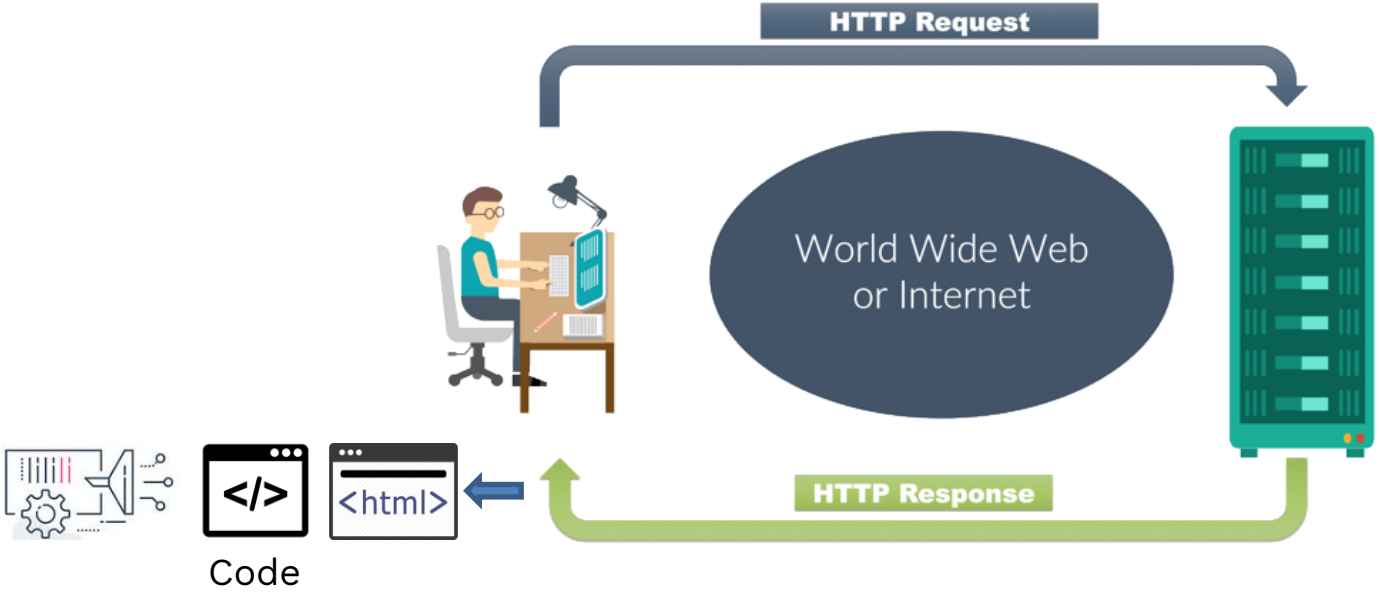
From the business point of view:

- To achieve automation
- Acquisition of insights
- Unique and rich datasets

From python point of view:

- Easy to use
- Community support
- Several options for web scraping

How to scrape data from a website?



How to scrape data from a website?

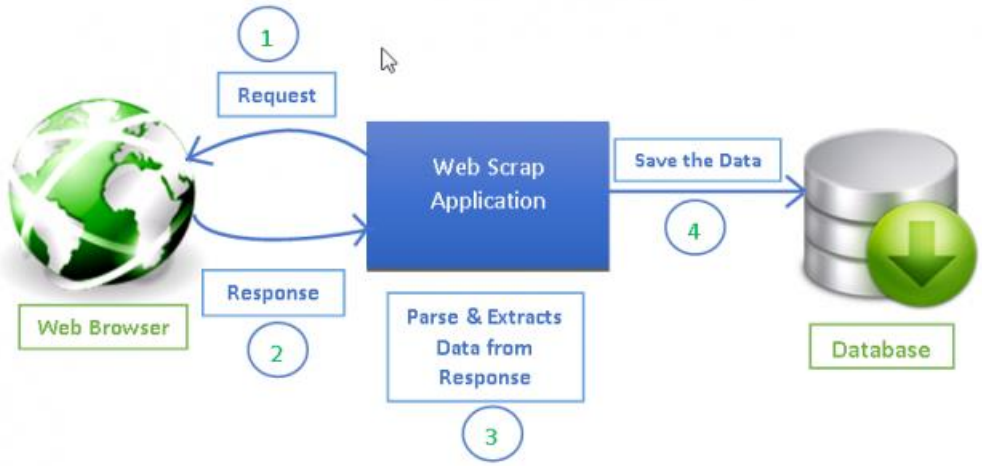
1. Find the URL that you want to scrape → Food recipes
2. Inspecting the Page
3. Find the data you want to extract
4. Write the code
5. Run the code and extract the data
6. Store the data in the required format

How to do it automatically and in a robust way?

Scrapy
Python Library

Scrapy

- A framework for extracting, processing, and storing web data
- Initial release in June 2008

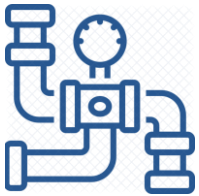


Scrapy

Main components:

Spiders

Items



Pipelines

Settings

Middlewares

Scrapy – Hands on

Pre-requisites:

1. Python installed (Check requirements.txt in GitHub repository)
2. Code Editor of preference. Recommended for today: VSCode

Outline:

1. Page to scrape: Food recipes
2. Goal: Get the list of dish names of British cuisine

Demo Time (1)

Task:
Pick 5 cuisines of your preference and crawl the recipe names from all of them

Storing

- Text file on local machine
- Store it on a Database

What if you are a DS and work on a team. You want your other teammates to see your scraped data. How?

OneDrive

Azure

Queue Storage

Table Storage

Blob Storage

File Storage

Disk Storage

What is a Blob storage?

- Blob storage is optimized for storing massive amounts of unstructured data. Unstructured data is data that doesn't adhere to a particular data model or definition, such as text or binary data.

Blob Storage creation – Hands on

Pre-requisites:

1. Create your azure account here
2. Create a storage account
3. Create blob container

Outline:

1. Create input and output folders
2. Upload our text file to input folder

Demo Time (2)

We will create a storage account and input/output folders via Azure Portal

Wordcloud: Azure Functions

- What is a Wordcloud?
- How to generate a Wordcloud using Azure Functions?

Microsoft Azure

Azure functions

- serverless, lightweight, language independent

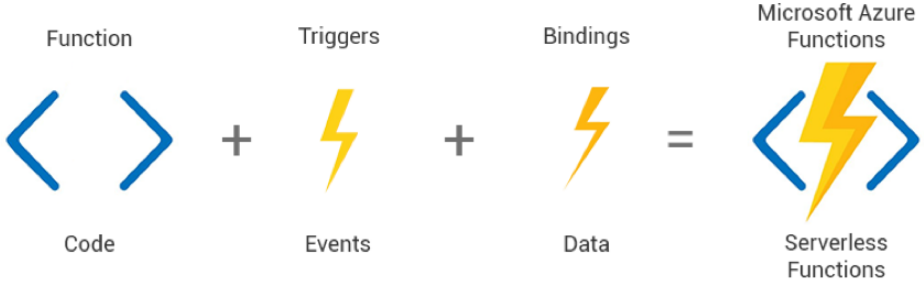
“Azure functions allows you to implement you systems logic into readily available blocks of code, these code blocks are called functions.”

Azure functions in depth: https://github.com/pyladiesams/Azure-functions-beginner-mar2020

Azure Functions

2 additional components of the function: Triggers and Bindings

- Triggers: determines the way the function will execute
- Bindings: determines the input and output of my function



Azure Functions

Triggers

Events

- Blob storage trigger

Bindings

Data

- Text file input

TXT

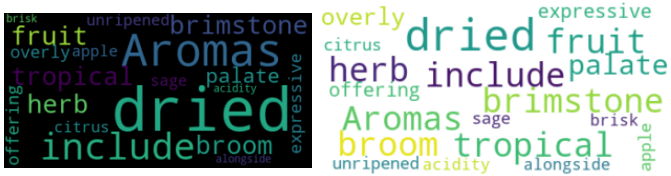
Scrapy
Python Library

What is a Wordcloud?

- Collection of clusters of words
- WordCloud is a technique to visualize which words are the most frequent among the given text.

How to generate a Wordcloud?

- Extract the text from file in input folder
- Create and generate a wordcloud image:
  - Split the text in tokens
  - Remove repetitive words
  - Count word frequency
  - The words with higher frequency will be shown in a bigger size
- Save the image in output folder



Wordcloud using Azure Functions– Hands on

Pre-requisites:

1. VSCode
2. Microsoft Azure Storage Explorer
3. Azure Functions Core Tools
4. Python Extension for VSCode
5. Azure Functions Extension for VSCode
6. Azurite Extension for VSCode

Outline:

1. Create local project
2. Create code for wordcloud generation
3. Run the function locally
4. Publish the project to Azure
5. Run the function in Azure

Demo Time (3)

Tasks:

- Make sure your function is triggered by .txt files and generates .png files
- Clean up your text to get more relevant results

Useful resources

- Scrapy documentation: https://scrapy.org/
- Azure documentation: https://docs.microsoft.com/en-gb/learn/modules/fundamental-azure-concepts/
- Azure functions for beginner – Pyladies: https://github.com/pyladiesams/Azure-functions-beginner-mar2020
- Azure function – Microsoft documentation: https://docs.microsoft.com/en-us/azure/azure-functions/create-first-function-vs-code-python
- Wordcloud tutorial: https://www.datacamp.com/community/tutorials/wordcloud-python

Questions?

Thank you!

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