Tech Talk: Webscraping Crash Course

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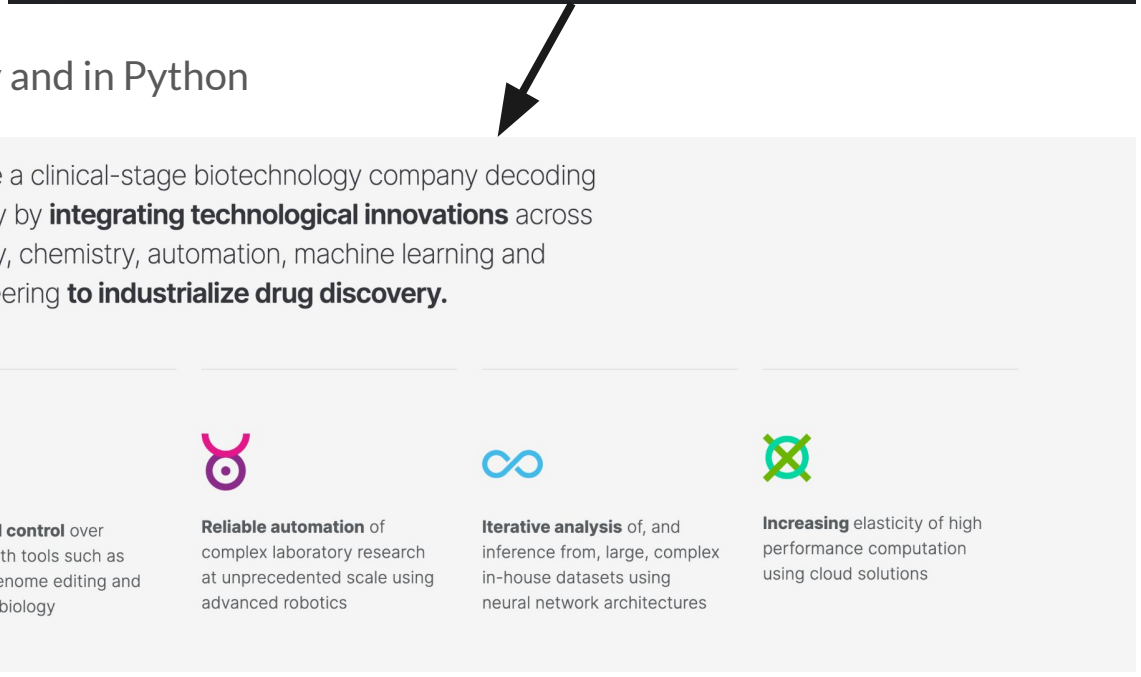
Webscraping

- Webscraping is data extraction from websites
- It can be either manual or be automated
- Why am **I** talking about this?
- Why am I talking about **this**?
    - Valuable skill to have
    - Benefits for data scientists
    - Benefits for engineers

Basic Tools

- (HTTP) Requests - Generally and in Python
- Pandas - Python
- HTML

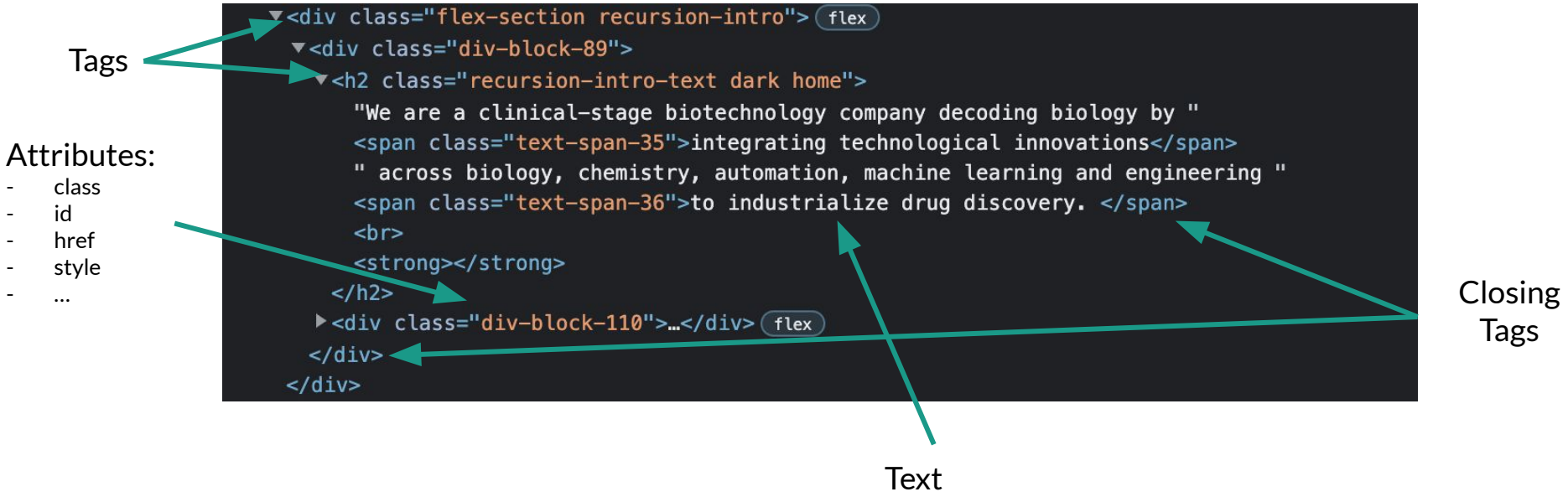
```
<div class="flex-section recursion-intro">flex
  <div class="div-block-89">
    <h2 class="recursion-intro-text dark home">
      "We are a clinical-stage biotechnology company decoding biology by "
      <span class="text-span-35">integrating technological innovations</span>
      " across biology, chemistry, automation, machine learning and engineering "
      <span class="text-span-36">to industrialize drug discovery. </span>
      <br>
      <strong></strong>
    </h2>
    <div class="div-block-110">…</div>flex
  </div>
</div>
```



HTTP Requests

- Hypertext Transfer Protocol
- Requests contain headers and parameters
  - “Take a letter as example: the text written on the sheet is the PAYLOAD, while the stamp is the headers. Headers needs to delivery [sic] the letter, but does not contain the message inside (payload).” SO
- Responses contain the status code, along with the body of the response
- Multiple Types of Requests:
  - GET
  - POST
  - PUT
  - DELETE

HTML Breakdown



Our favorite HTML Tag

```
<table>
  <tr>
    <th>Month</th>
    <th>Savings</th>
  </tr>
  <tr>
    <td>January</td>
    <td>$100</td>
  </tr>
  <tr>
    <td>February</td>
    <td>$80</td>
  </tr>
</table>
```

Month	**Savings**
January	$100
February	$80

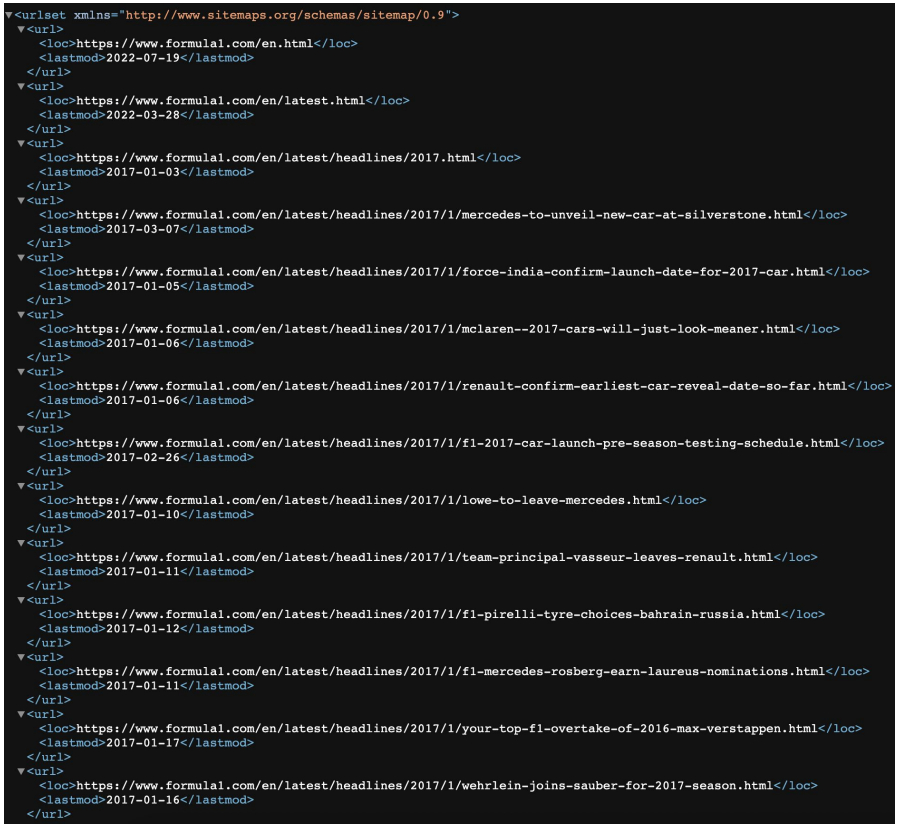
Formula 1 Website

2022 Driver Standings

POS	DRIVER	NATIONALITY	CAR	PTS
1	Max Verstappen	NED	RED BULL RACING RBPT	233
2	Charles Leclerc	MON	FERRARI	170
3	Sergio Perez	MEX	RED BULL RACING RBPT	163
4	Carlos Sainz	ESP	FERRARI	144
5	George Russell	GBR	MERCEDES	143
6	Lewis Hamilton	GBR	MERCEDES	127
7	Lando Norris	GBR	MCLAREN MERCEDES	70
8	Esteban Ocon	FRA	ALPINE RENAULT	56
9	Valtteri Bottas	FIN	ALFA ROMEO FERRARI	46
10	Fernando Alonso	ESP	ALPINE RENAULT	37

Mid level tools

- Websites vary greatly in complexity and the data isn't always a table
- Requests
- BeautifulSoup4
    - Leverage the structure of the website
    - HTML or XML



Dynamic Pages

- Pages that update their content or don’t receive all of the content at once
- Selenium
- Other tools/hacks

Applying this to Recursion

Drugbank + GeneCards

Honorable Mentions (Tools/Concepts)

- XML
- Postman

If I forget to mention them or don't get to them:

- XPath
- Frames

Code available here