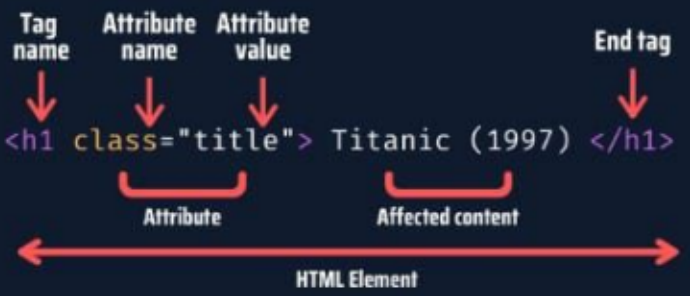
# Web Scraping Cheat Sheet

Web Scraping is the process of extracting data from a website. Before studying Beautiful Soup and Selenium, it's good to review some HTML basics first.

## HTML for Web Scraping

Let's take a look at the HTML element syntax.




This is a single HTML element, but the HTML code behind a website has hundreds of them.

**HTML code example**

```
<article class="main-article">
 <h1> Titanic (1997) </h1>
 <p class="plot"> 84 years later ... </p>
 <div class="full-script"> 13 meters. You ... </div>
</article>
```

The HTML code is structured with "nodes". Each rectangle below represents a node (element, attribute and text nodes)


- "Siblings" are nodes with the same parent.
- A node's children and its children's children are called its "descendants". Similarly, a node's parent and its parent's parent are called its "ancestors".
- it's recommended to find element in this order.
  a. ID
  b. Class name
  c. Tag name
  d. Xpath

## Beautiful Soup

### Workflow

```
Importing the libraries
 from bs4 import BeautifulSoup
 import requests

Fetch the pages
 result=requests.get("www.google.com")
 result.status_code #get status code
 result.headers #get the headers

Page content
 content = result.text

Create soup
 soup = BeautifulSoup(content,"lxml")

HTML in a readable format
 print(soup.prettify())

Find an element
 soup.find(id="specific_id")

Find elements
 soup.find_all("a")
 soup.find_all("a","css_class")
 soup.find_all("a",class_="my_class")
 soup.find_all("a",attrs={"class":
                          "my_class"})

Get inner text
 sample = element.get_text()
 sample = element.get_text(strip=True,
                           separator=' ')

Get specific attributes
 sample = element.get('href')
```

## XPath

We need to learn XPath to scrape with Selenium or Scrapy.

### XPath Syntax

An XPath usually contains a tag name, attribute name, and attribute value.

```
//tagName[@AttributeName="Value"]
```

Let's check some examples to locate the article, title, and transcript elements of the HTML code we used before.

```
//article[@class="main-article"]
//h1
//div[@class="full-script"]
```

### XPath Functions and Operators

XPath functions

```
//tag[contains(@AttributeName, "Value")]
```

XPath Operators: and, or

```
//tag[(expression 1) and (expression 2)]
```

### XPath Special Characters

| | |
|---|---|
| / | Selects the children from the node set on the left side of this character |
| // | Specifies that the matching node set should be located at any level within the document |
| . | Specifies the current context should be used (refers to present node) |
| .. | Refers to a parent node |
| * | A wildcard character that selects all elements or attributes regardless of names |
| @ | Select an attribute |
| () | Grouping an XPath expression |
| [n] | Indicates that a node with index "n" should be selected |