Selenium

Auto Mobile Robot

Exported on 06/07/2024

Table of Contents

1 Selenium 설치

1.1 Beautiful Soup 만으로 해결할 수 없는 것

- 접근할 웹 주소를 알수 없을 때
- 자바 스크립트를 사용하는 웹페이지의 경우
- 웹 브라우저로 접근하지 않으면 안될 때

1.2 Selenium

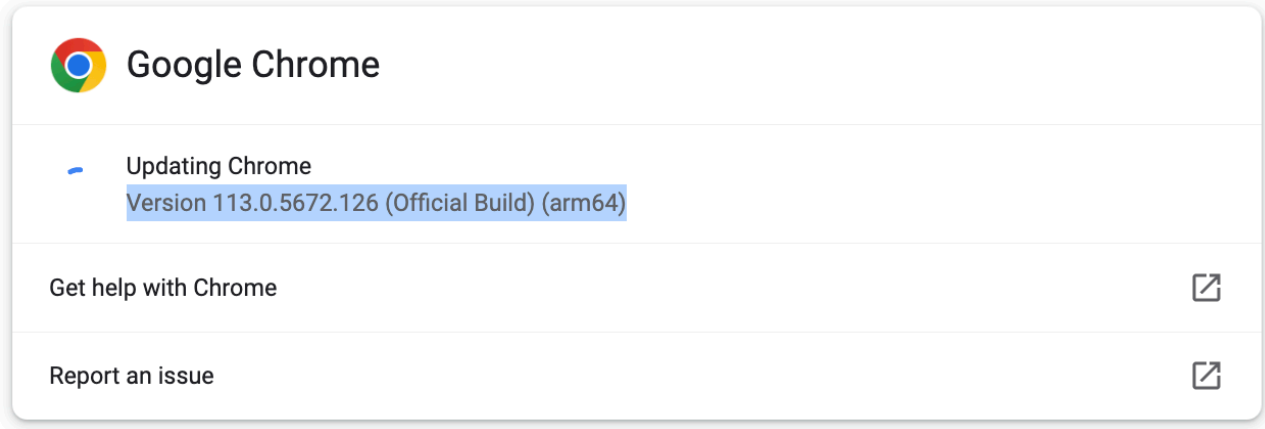
- 웹 브라우저를 원격 조작하는 도구
- 자동으로 URL을 열고 클릭하는 동작 등이 가능
- 스크롤, 문자 입력, 화번 캡쳐, 버튼 클릭 등

1.3 Selenium 을 사용하기 위해서는

- Python 모듈도 설치하고 크롬 브라우저와 크롬 드라이버가 필요하다.
- 우리는 이미 크롬 브라우저를 설치하여 사용중이다.

1.4 Chrome 브라우저 버전 확인

- Chrome > About Google Chrome



1.5 Chrome Driver 다운로드 페이지로 가서

https://chromedriver.chromium.org/downloads

1.6 Chrome 과 같은 버전의 링크를 클릭하고..

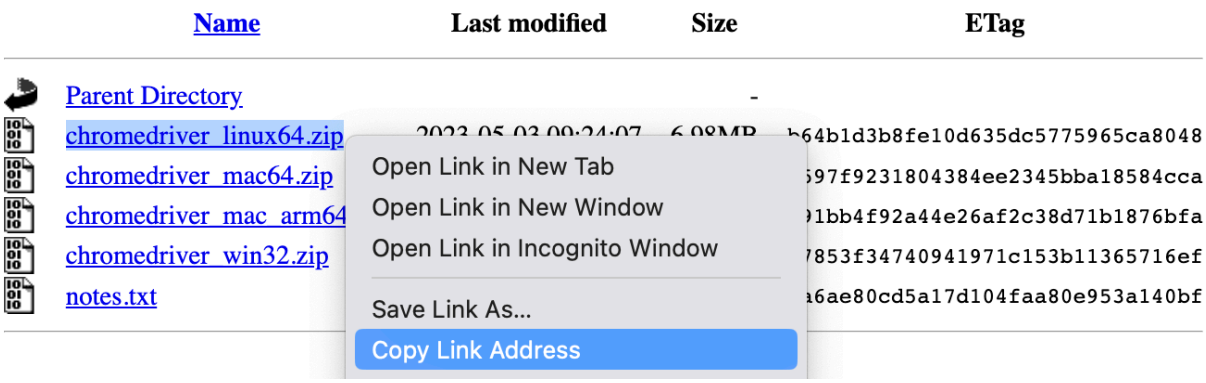
Current Releases

- If you are using Chrome version 114, please download ChromeDriver 114.0.5735.90
- If you are using Chrome version 113, please download ChromeDriver 113.0.5672.63
- If you are using Chrome version 112, please download ChromeDriver 112.0.5615.49
- For older version of Chrome, please see below for the version of ChromeDriver that supports it.

If you are using Chrome from Dev or Canary channel, please following instructions on the ChromeDriver Canary page.

For more information on selecting the right version of ChromeDriver, please see the Version Selection page.

1.7 chromedriver_linux64.zip 우클릭 후 링크 주소 복사



1.8 터미널에서 크롬 드라이버 파일을 다운로드 받고

wget https://chromedriver.storage.googleapis.com/113.0.5672.63/chromedriver_linux64.zip

```
noma@ubuntu:~$ wget https://chromedriver.storage.googleapis.com/106.0.5249.61/chromedriver_linux64.zip
--2022-10-13 03:37:55--  https://chromedriver.storage.googleapis.com/106.0.5249.61/chromedriver_linux64.zip
Resolving chromedriver.storage.googleapis.com (chromedriver.storage.googleapis.com)... 34.64.4.112, 2404:f340:10:1803::2010
Connecting to chromedriver.storage.googleapis.com (chromedriver.storage.googleapis.com)|34.64.4.112|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 6657315 (6.3M) [application/zip]
Saving to: ‘chromedriver_linux64.zip’

chromedriver_linux64.zip           100%[===================================================================>]   6.35M  9.62MB/s    in 0.7s

2022-10-13 03:37:56 (9.62 MB/s) - ‘chromedriver_linux64.zip’ saved [6657315/6657315]

noma@ubuntu:~$
```

1.9 압축 해제

unzip chromedriver_linux64.zip

rm chromedriver_linux64.zip

```
noma@ubuntu:~$ unzip chromedriver_linux64.zip
Archive:  chromedriver_linux64.zip
  inflating: chromedriver
noma@ubuntu:~$ ls
chromedriver  chromedriver_linux64.zip  Desktop  Documents  Downloads  Music  Pictures  Public  snap  Templates  venv  Videos  ws
noma@ubuntu:~$ rm chromedriver_linux64.zip
noma@ubuntu:~$ ls
chromedriver  Desktop  Documents  Downloads  Music  Pictures  Public  snap  Templates  venv  Videos  ws
noma@ubuntu:~$
```

1.10 잠깐.. 작업 폴더 점검

- driver 폴더도 추가

```
Last login: Fri Jun  2 02:18:08 on ttys003
noma@noma-macbook ~ % cd dev/eda
noma@noma-macbook eda % ls
data    src
noma@noma-macbook eda % mkdir driver
noma@noma-macbook eda % ls
data    driver  src
noma@noma-macbook eda %
```

1.11 크롬 드라이버 파일은 driver 폴더로 이동

```
noma@noma-macbook ~ % ls chromedriver
chromedriver
noma@noma-macbook ~ % cp chromedriver ~/dev/eda/driver
noma@noma-macbook ~ % ls ~/dev/eda/driver
chromedriver
noma@noma-macbook ~ %
```

1.12 이번에는 Selenium 설치

```
(eda) noma@noma-macbook dev % pip install selenium
Requirement already satisfied: selenium in /Users/noma/venv/eda/lib/python3.10/site-packages (4.9.1)
Requirement already satisfied: urllib3[socks]<3,>=1.26 in /Users/noma/venv/eda/lib/python3.10/site-pac
kages (from selenium) (2.0.2)
Requirement already satisfied: trio~=0.17 in /Users/noma/venv/eda/lib/python3.10/site-packages (from s
elenium) (0.22.0)
Requirement already satisfied: trio-websocket~=0.9 in /Users/noma/venv/eda/lib/python3.10/site-package
s (from selenium) (0.10.2)
Requirement already satisfied: certifi>=2021.10.8 in /Users/noma/venv/eda/lib/python3.10/site-packages
 (from selenium) (2023.5.7)
```

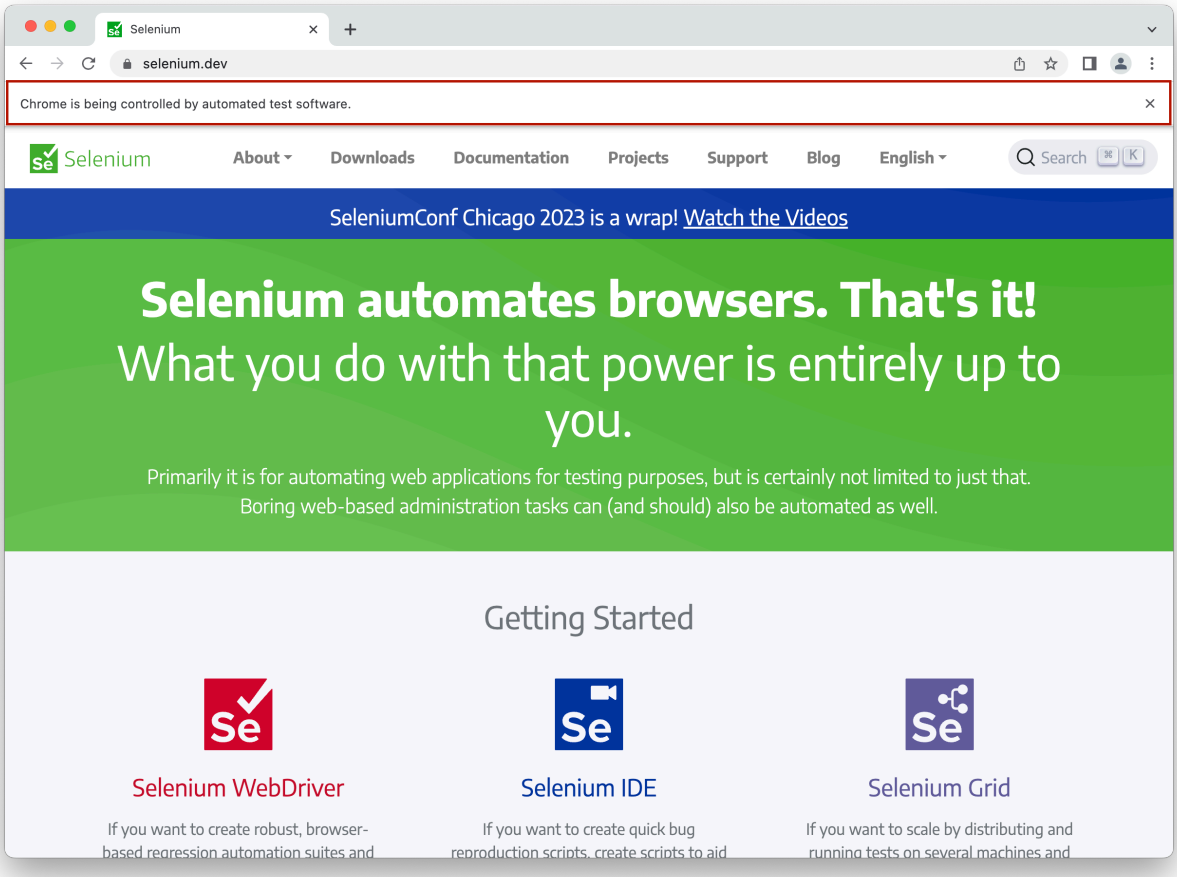
1.13 간단한 테스트 ..

```python
from selenium import webdriver
from selenium.webdriver.chrome.service import Service

driver = webdriver.Chrome(service=Service("../driver/chromedriver"))
driver.get("https://www.selenium.dev/")
```

✓ 2.2s Python

1.14 결과 확인

- 브라우저가 아래와 같이 실행되고 크롬 상단 부분에 'Chrome 이 자동화된 테스트 소프트웨어에 의해 제어되고 있습니다.' 라는 문구를 확인할 수 있다.



1.15 사용이 끝나면 반드시 닫아주자.

```
driver.close()
```

✓ 0.1s Python

2 Selenium 맛보기

2.1 브라우저 주의

- 구글 개발자툴로 구조를 분석하기 위한 브라우저와
- 셀레니움으로 자동 실행된 브라우저를 잘 구분하자

2.2 일단 다시 페이지를 열고

```python
from selenium import webdriver
from selenium.webdriver.chrome.service import Service

driver = webdriver.Chrome(service=Service("../driver/chromedriver"))
driver.get("https://www.selenium.dev/")
```

✓ 2.2s Python

2.3 URL 가져오기

```python
driver.current_url
```

Python

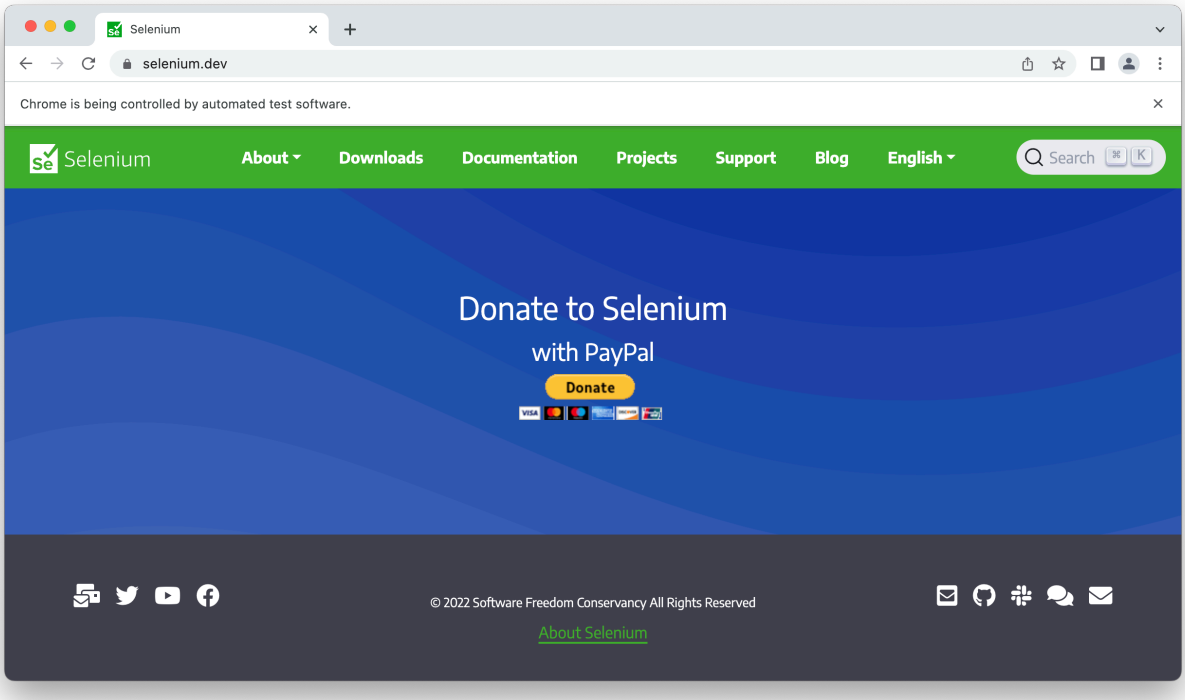
```
'https://www.selenium.dev/'
```

2.4 맨 밑으로 스크롤

- 스크롤 가능한 페이지 높이 : ***document.body.schrollHeight***

```python
driver.execute_script("window.scrollTo(0, document.body.scrollHeight)")
```

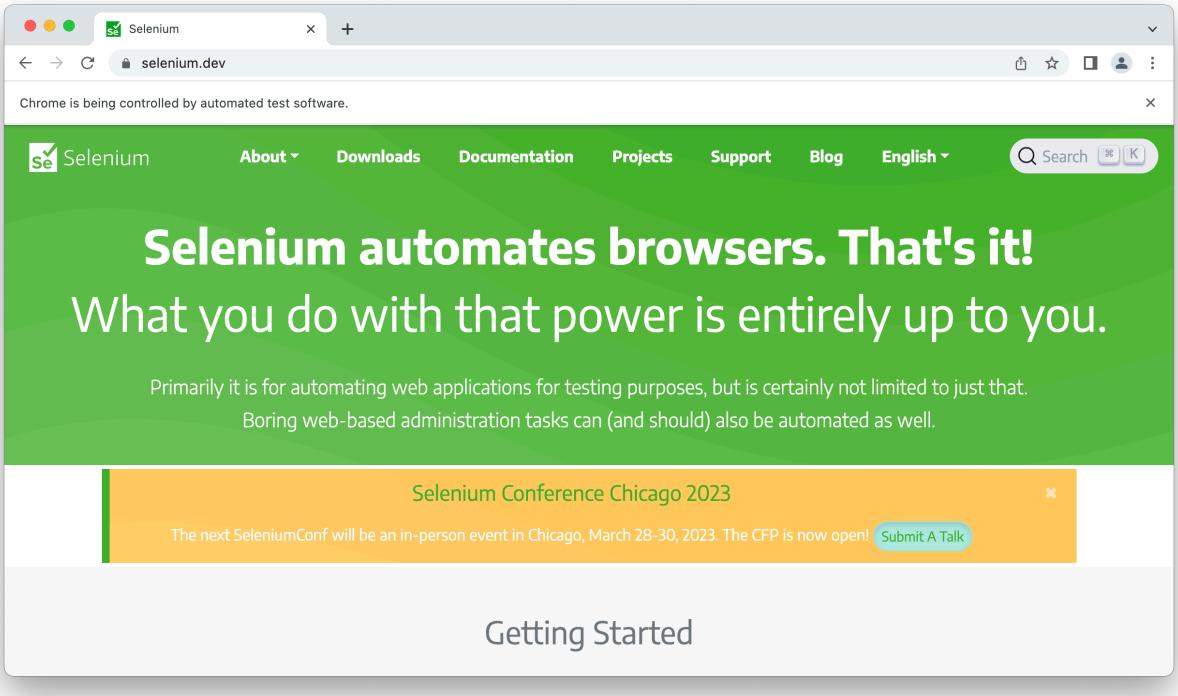
✓ 0.0s Python



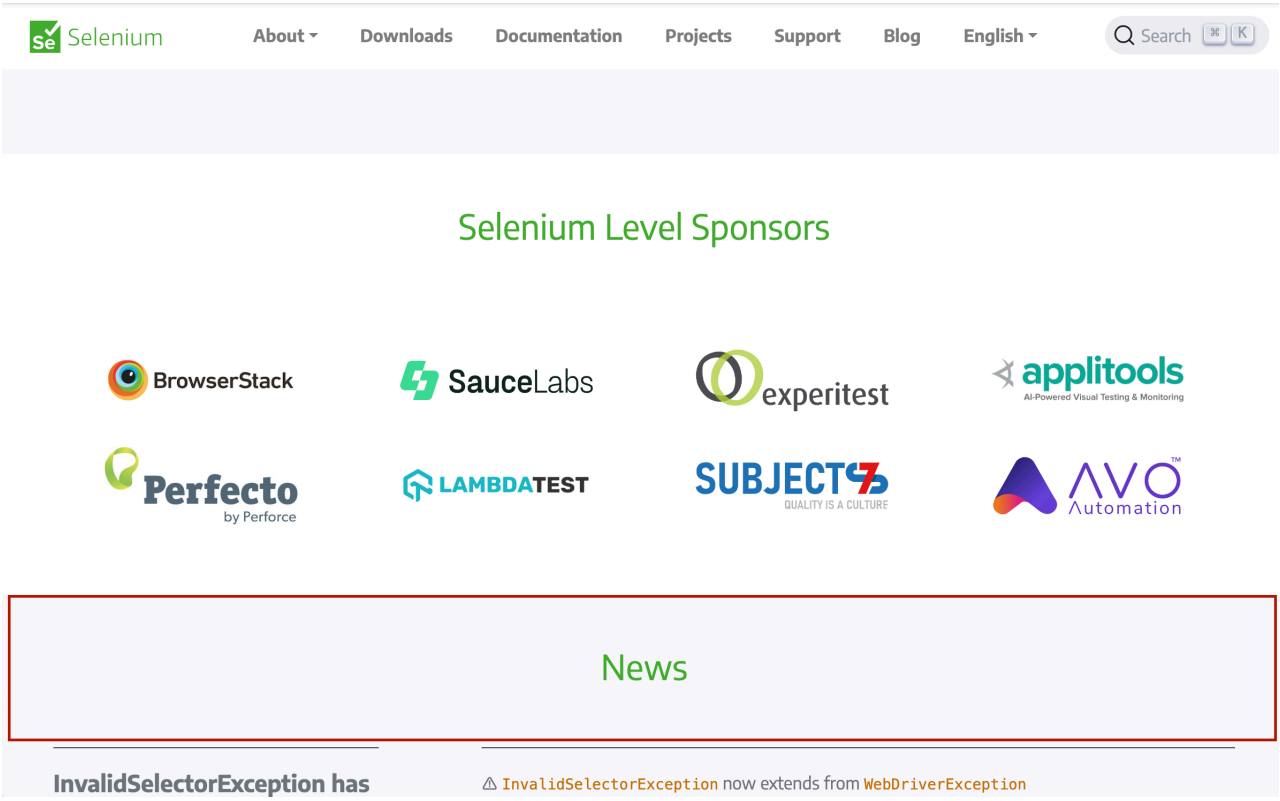
2.5 맨 위로 스크롤

```
driver.execute_script("window.scrollTo(0, 0)")
```

✓ 0.0s Python

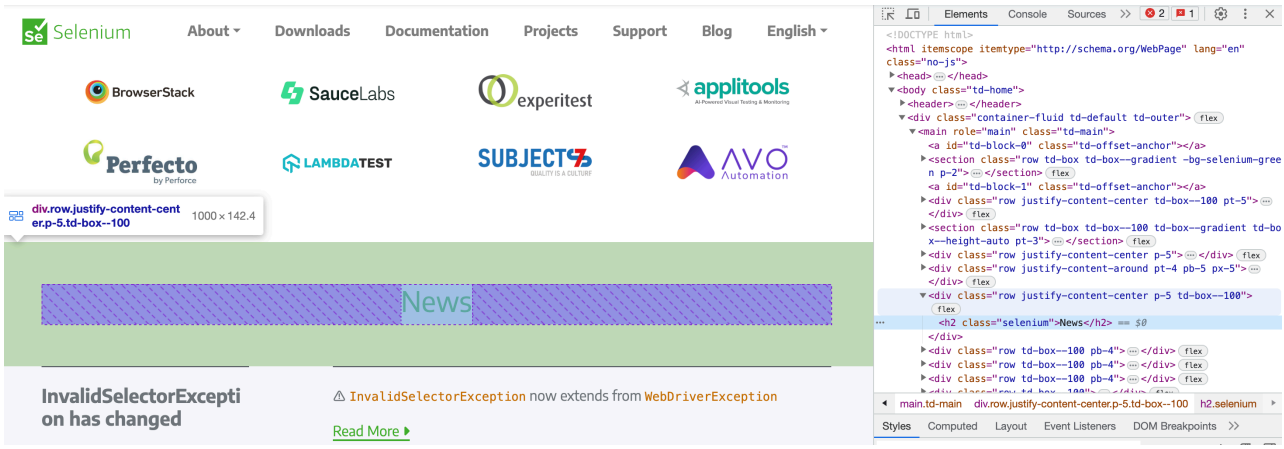


2.6 특정 Element 로 이동하려면



2.7 일단 위치를 찾고

```
<div class="d-flex justify-content-center p-5 td-box--100">
<h2 class="selenium">News</h2>
</div>
```



2.8 확인 - find_element

```python
from selenium.webdriver.common.by import By

element = driver.find_element(By.CLASS_NAME, "d-flex justify-content-center p-5 td-box--100")
```

Python

```
NoSuchElementException                  Traceback (most recent call last)
Cell In[34], line 3
      1 from selenium.webdriver.common.by import By
----> 3 element = driver.find_element(By.CLASS_NAME, "d-flex justify-content-center p-5 td-box--100")
```

2.9 아.. 공백

```python
from selenium.webdriver.common.by import By

element = driver.find_element(By.CLASS_NAME, "d-flex.justify-content-center.p-5.td-box--100")
```

Python

2.10 다시 확인

```python
from selenium.webdriver.common.by import By

element = driver.find_element(By.CLASS_NAME, "d-flex.justify-content-center.p-5.td-box--100")
print(element.get_attribute('innerHTML'))
```

Python

```
<h2 class="selenium">News</h2>
```

2.11 자식 엘리먼트의 TEXT

```python
from selenium.webdriver.common.by import By

element = driver.find_element(By.CLASS_NAME, "d-flex.justify-content-center.p-5.td-box--100")
child = element.find_element(By.CLASS_NAME, "selenium")

print(child.text)
```

Python

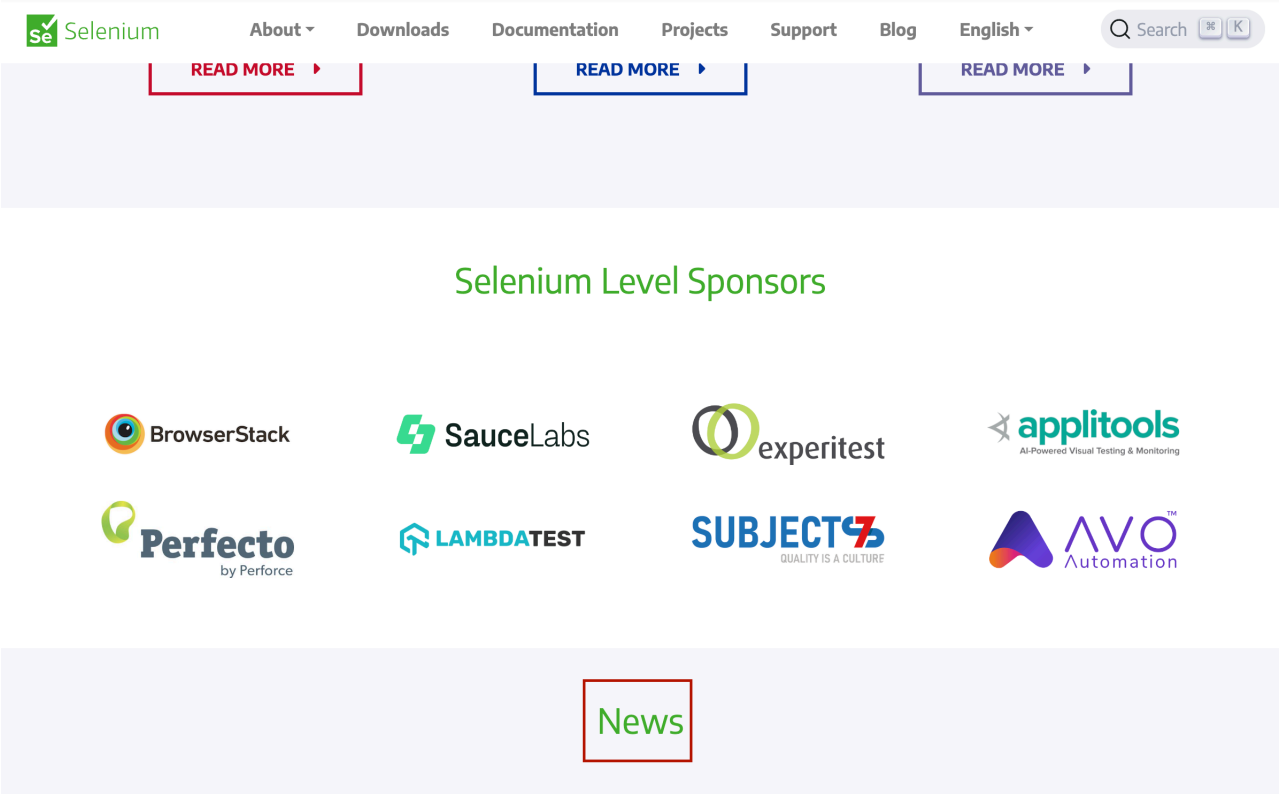
```
News
```

2.12 다시.. News 로 스크롤

```python
driver.execute_script("arguments[0].scrollIntoView(false);", child)
```

✓ 0.0s Python

2.13 겨우 보임. ㅋ



2.14 웹페이지의 스크린 샷도 저장할 수 있다

```
driver.save_screenshot("../data/image_01.png")
```

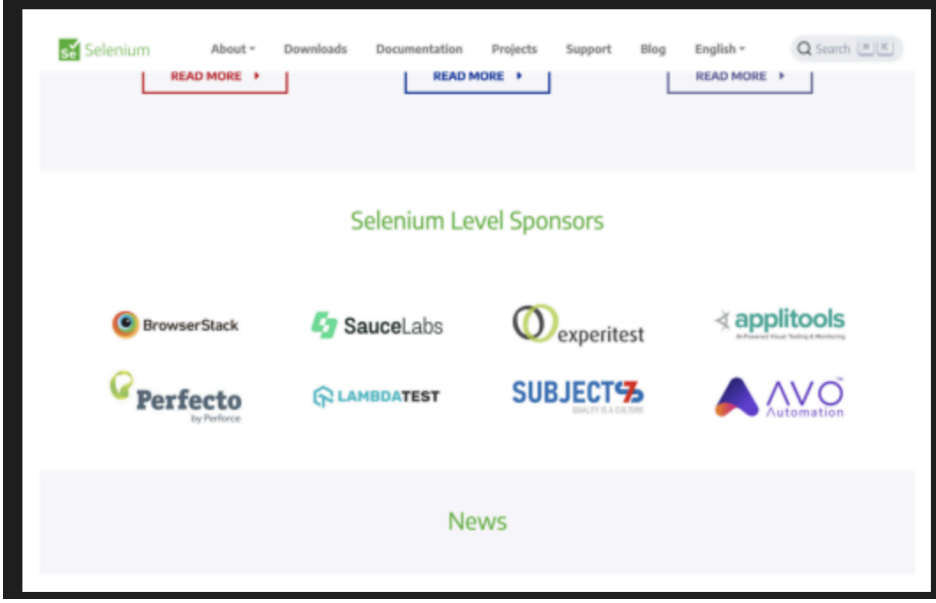
✓ 0.2s Python

```
True
```

2.15 확인

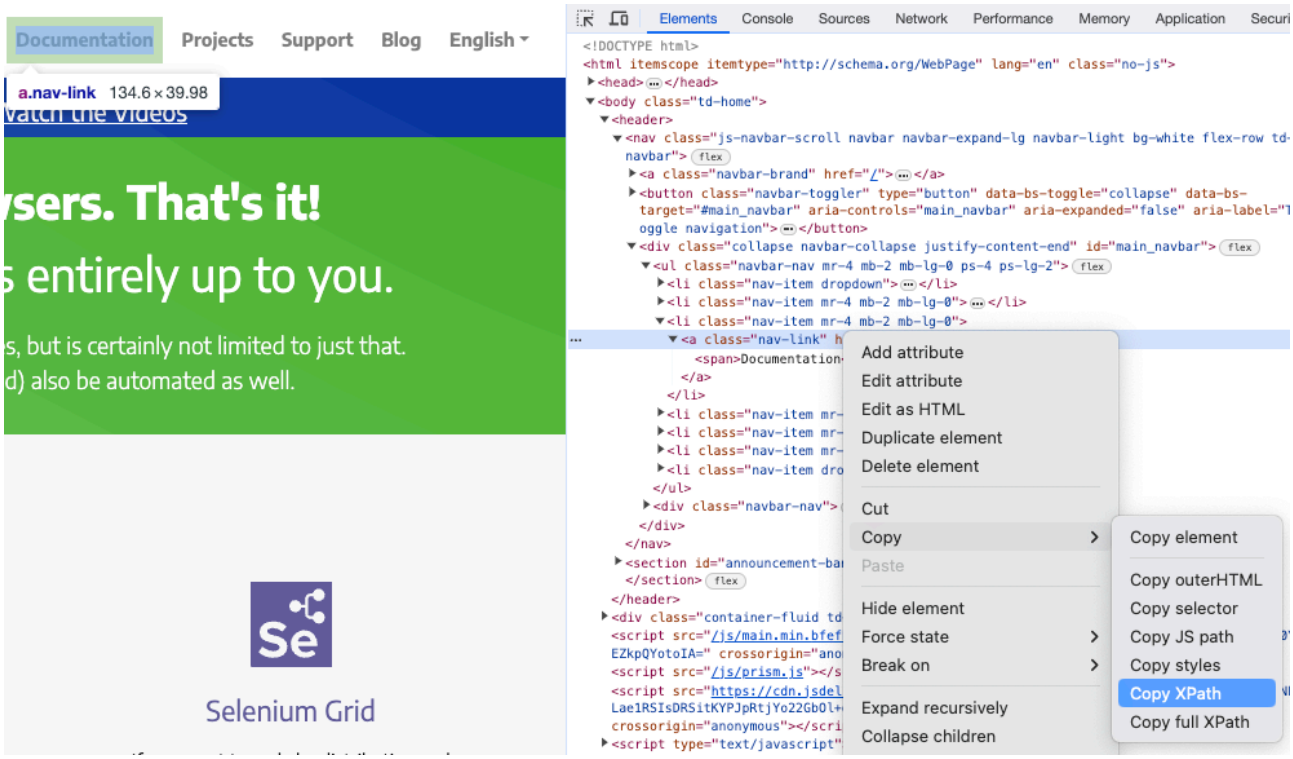
```
from matplotlib import pyplot as plt
from matplotlib import image as mpimg

image = mpimg.imread("../data/image_01.png")
plt.imshow(image)
plt.axis('off')
plt.show()
```

✓ 0.3s Python



2.16 XPath

- Full XPATH - 절대 경로
- XPATH - 상대 경로

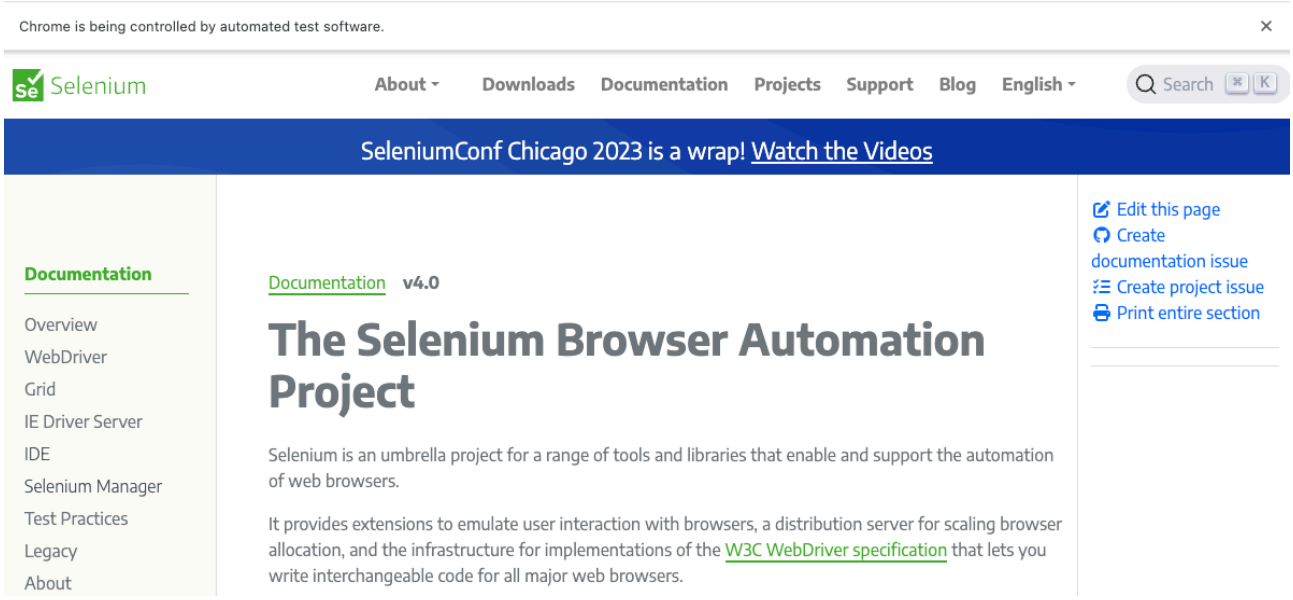


2.17 클릭!

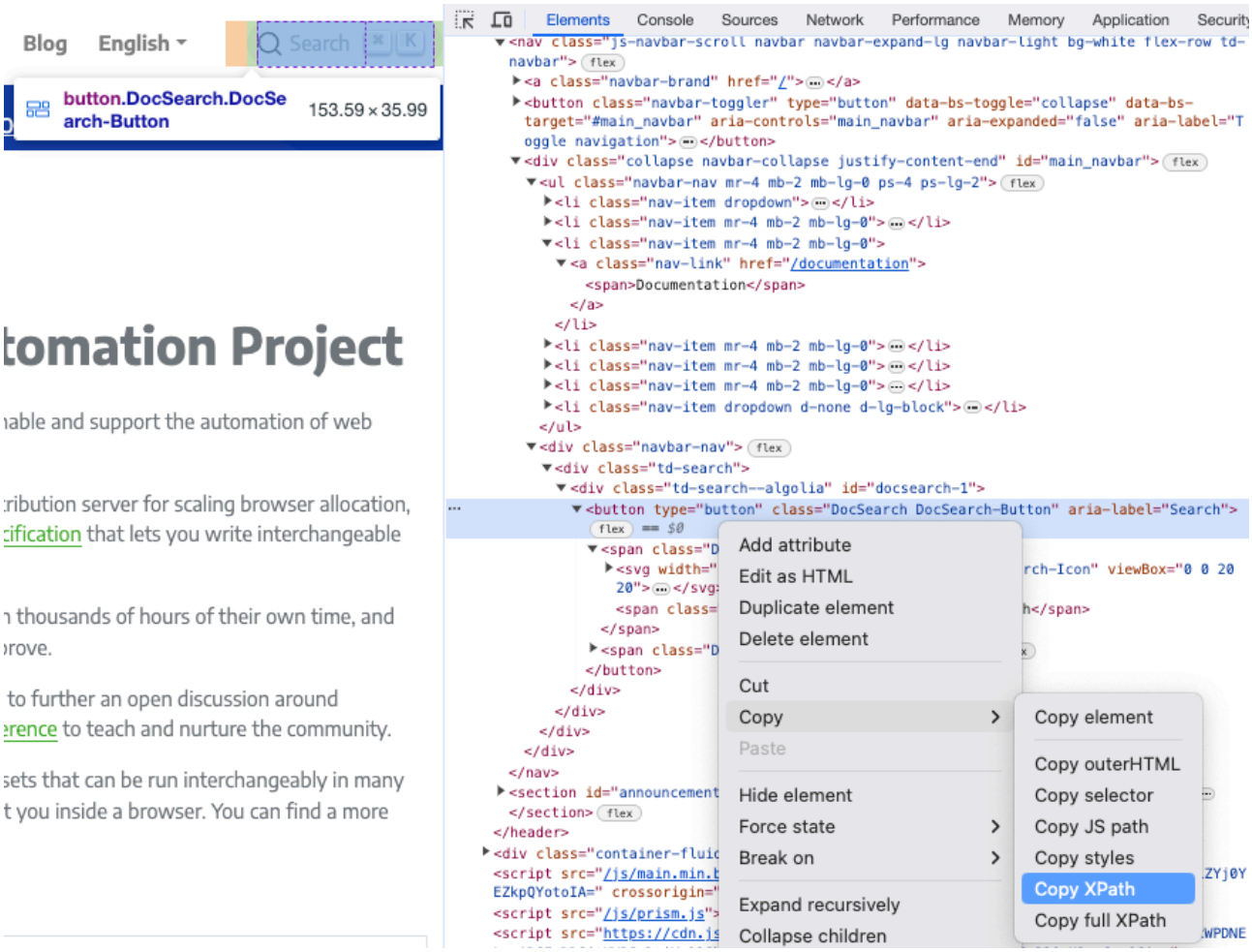
- Documentation 을 XPath 로 찾아서 클릭할수있다.

```
doc_link = driver.find_element(By.XPATH, '''//*[@id="main_navbar"]/ul/li[3]/a''')
doc_link.click()
```

✓ 0.6s Python



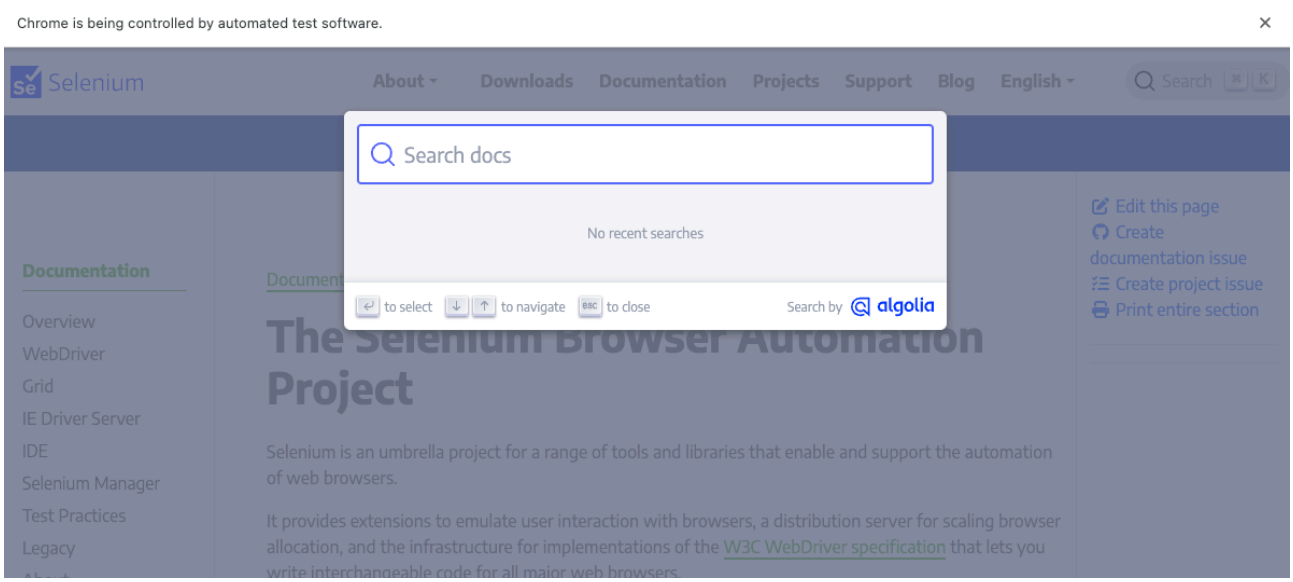
2.18 Search 버튼을 찾아서 - XPATH



2.19 Search 버튼 클릭

```python
search_btn = driver.find_element(By.XPATH, '''//*[@id="docsearch-1"]/button''')
search_btn.click()
```

✓ 0.0s Python

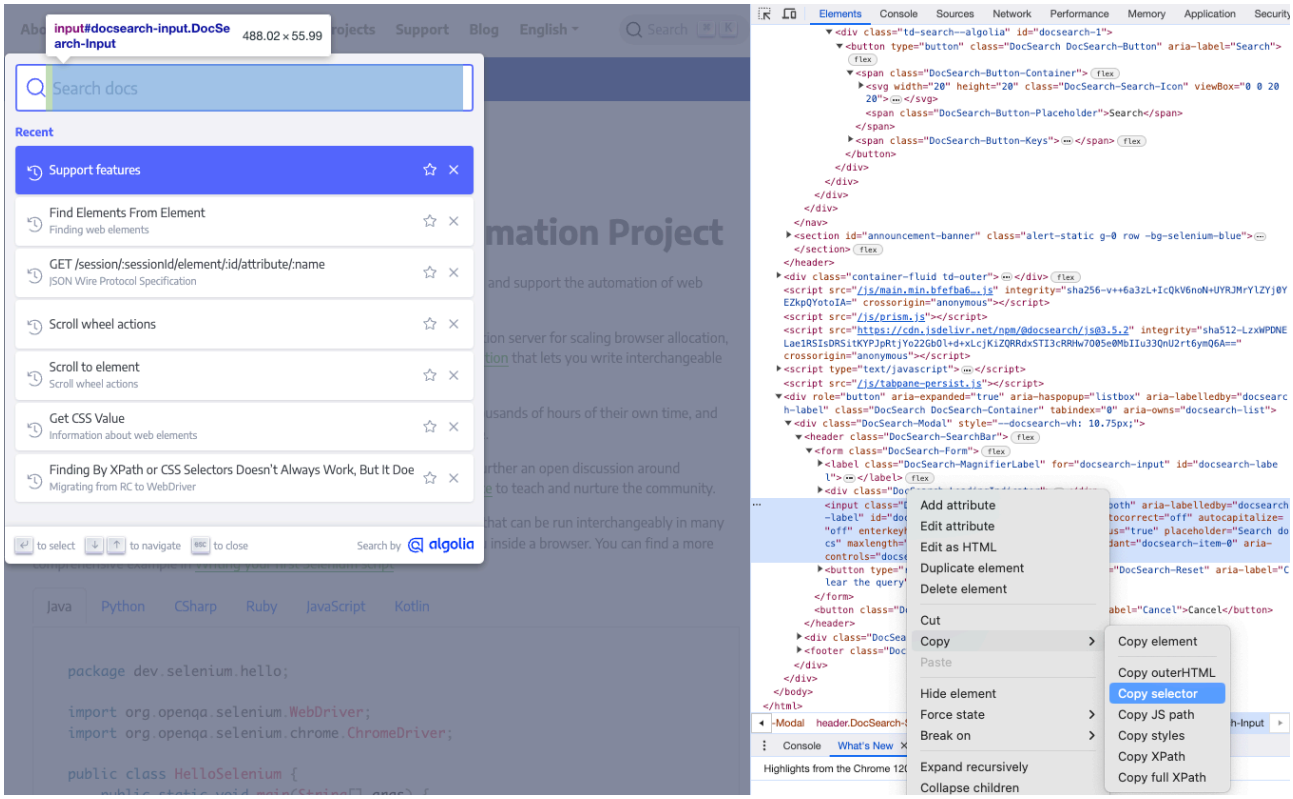


2.20 검색어 입력창을 찾고 - CSS Selector

- HTML 에서 특정 요소를 선택하여 스타일을 적용하는데, 이때 선택을 해주는 요소

```python
from selenium.webdriver.common.keys import Keys

search_doc = driver.find_element(By.CSS_SELECTOR, "#docsearch-input")
```

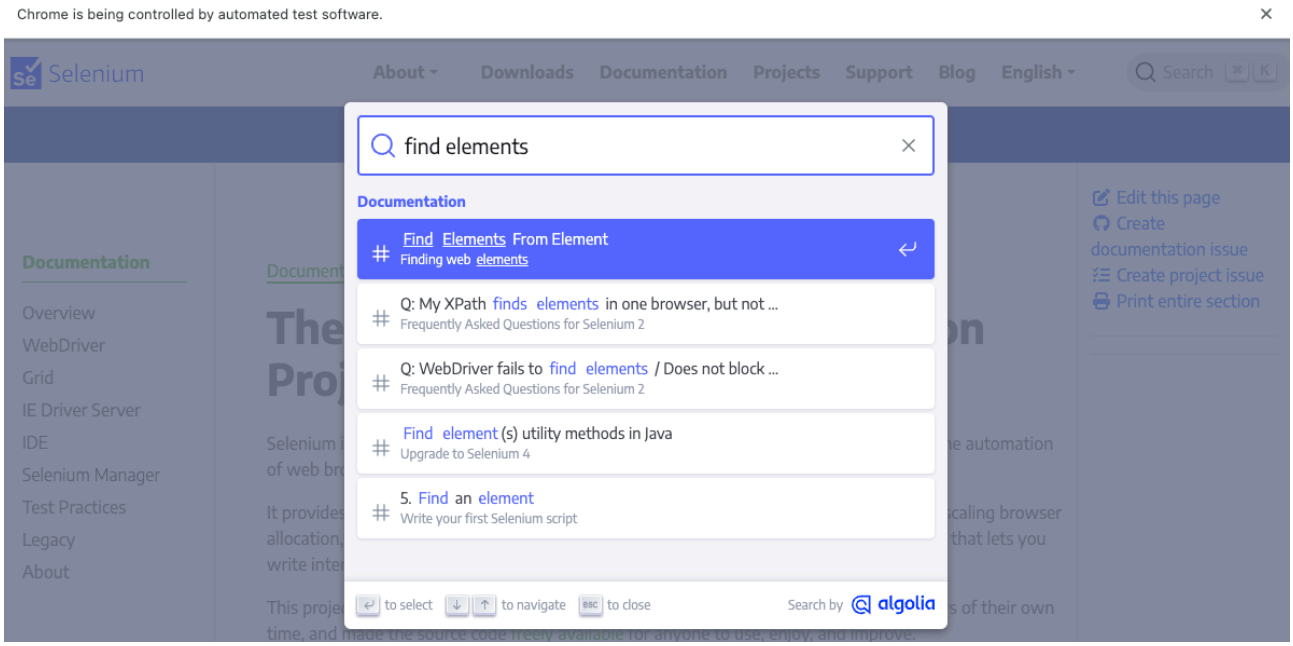
Python



2.21 검색어도 타이핑 해보자 - send_keys

```
from selenium.webdriver.common.keys import Keys

search_doc = driver.find_element(By.CSS_SELECTOR, "#docsearch-input")
search_doc.send_keys('find elements')
```

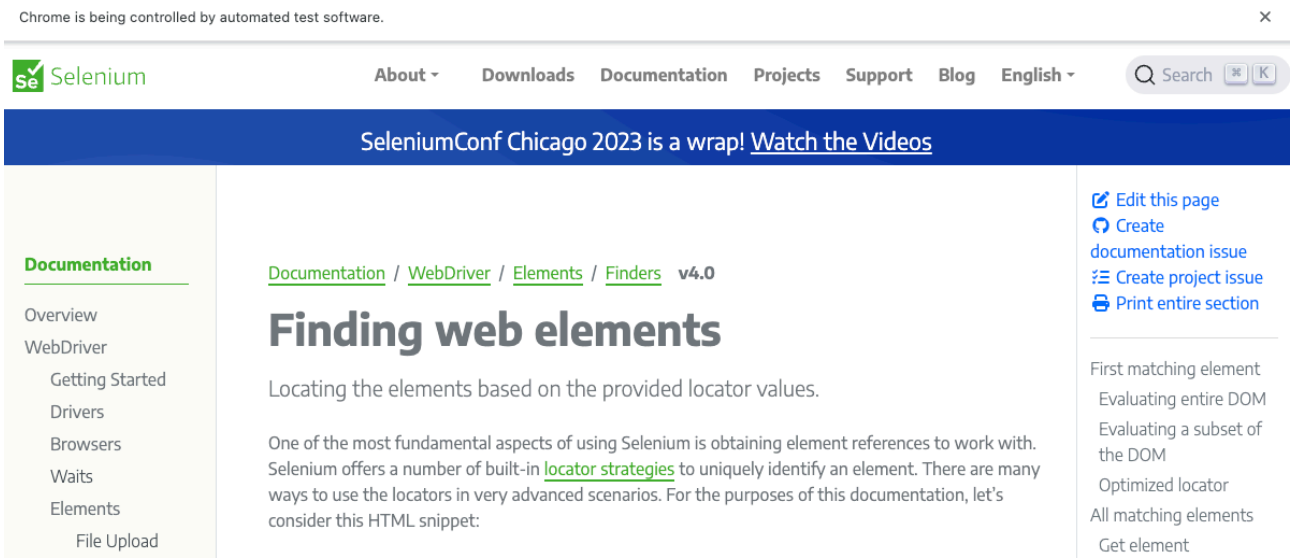
✓ 0.1s Python



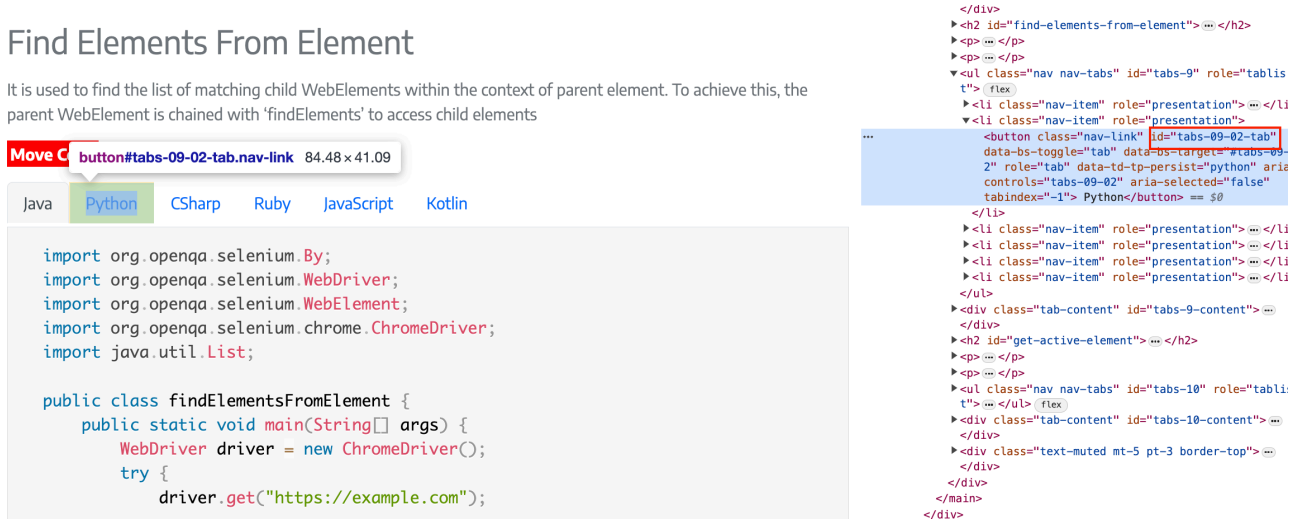
2.22 엔터도 쳐야지 - Keys.ENTER

```
search_doc.send_keys(Keys.ENTER)
```

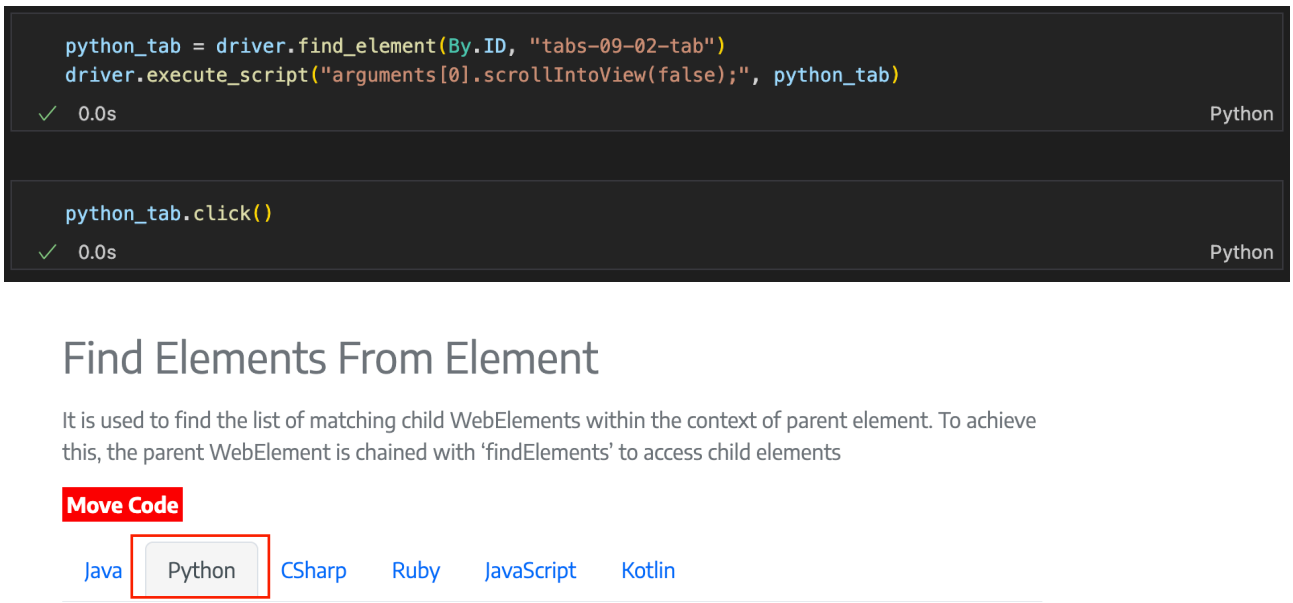
✓ 0.5s Python



2.23 우린 Python 예제가 필요하니까



2.24 이번에는 ID 로 가져와서 클릭 - By.ID[1]



1 http://By.ID

2.25 예제를 찾아서

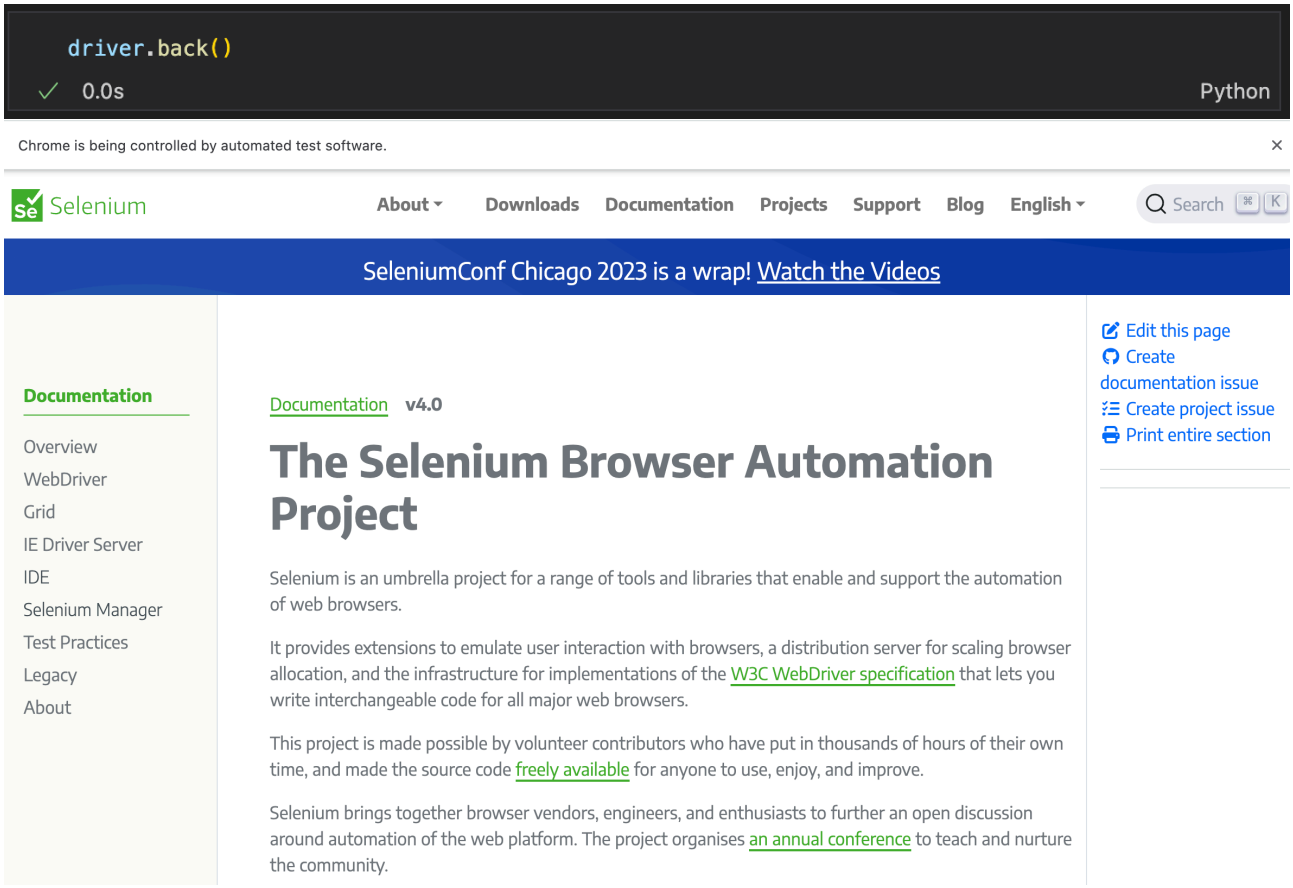
2.26 출력도 해보자

```
    python_panel = driver.find_element(By.ID, "tabs-09-02")
    python_code = python_panel.find_element(By.TAG_NAME, "code")

    print(python_code.text)
```

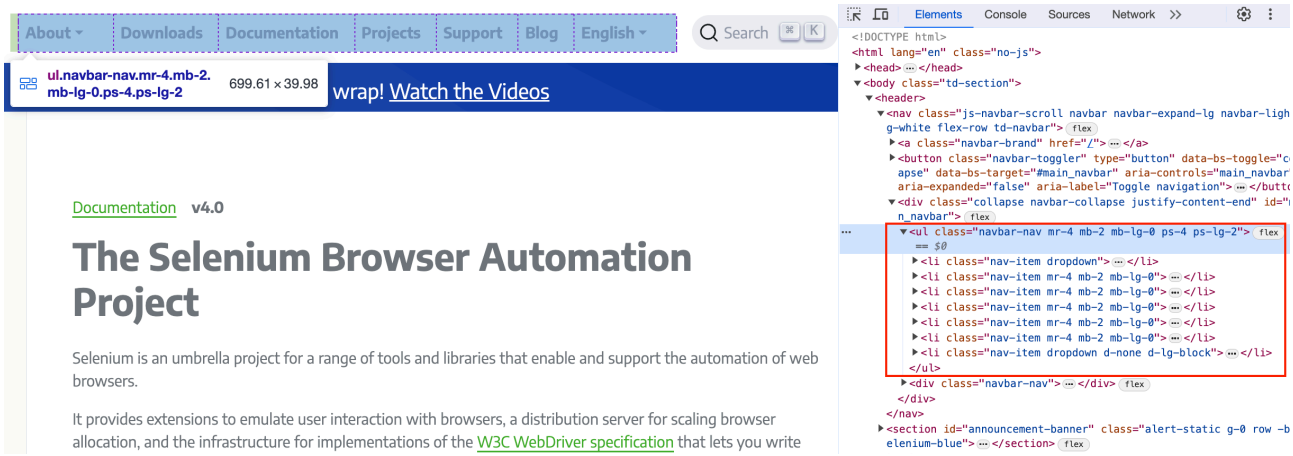
✓ 0.0s Python

```
from selenium import webdriver
from selenium.webdriver.common.by import By

driver = webdriver.Chrome()
driver.get("https://www.example.com")

    # Get element with tag name 'div'
element = driver.find_element(By.TAG_NAME, 'div')

    # Get all the elements available with tag name 'p'
elements = element.find_elements(By.TAG_NAME, 'p')
for e in elements:
    print(e.text)
```

2.27 다시 이전 페이지로 이동하고 - back()



2.28 이번엔 메뉴 목록을 찾아서



2.29 메뉴 목록을 가져오자 - find_elements

```
menu = driver.find_element(By.ID, "main_navbar")
li_list = menu.find_elements(By.TAG_NAME, "li")
for idx, li in enumerate(li_list):
    print("[ " + str(idx) + " ] ==================================")
    print(li.get_attribute('innerHTML'))
```

✓ 0.0s Python

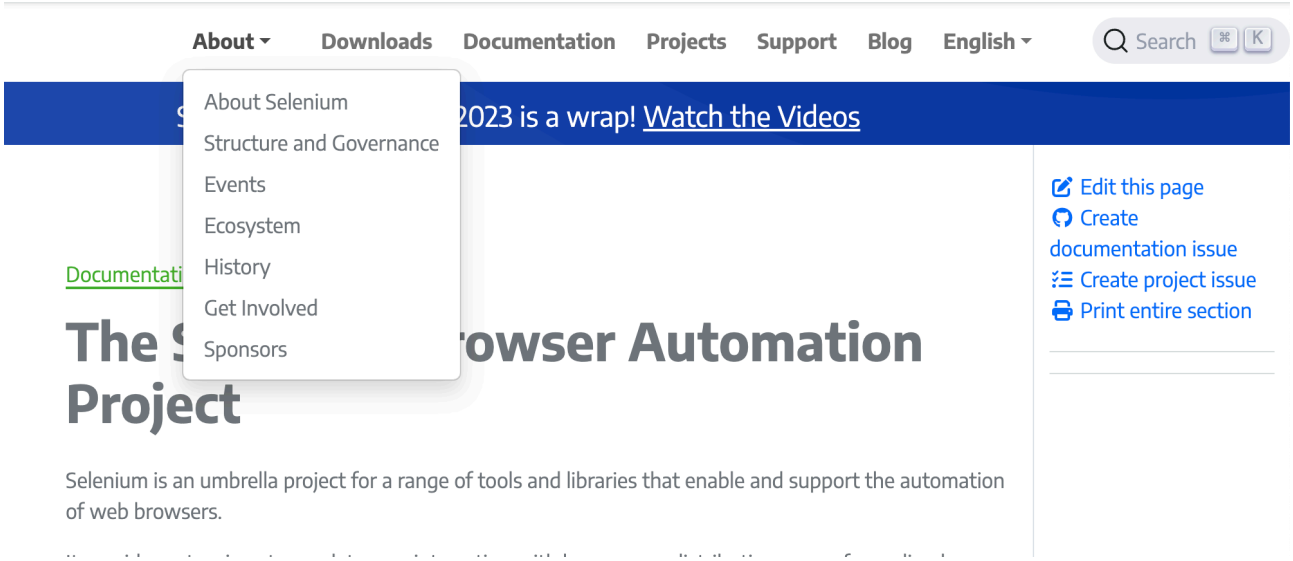
```
[ 0 ] ==================================
<a class="nav-link dropdown-toggle" href="#" id="navbarDropdown" role="button" data-bs-toggle
<a class="dropdown-item" href="/project">Structure and Governance</a>
<a class="dropdown-item" href="/events">Events</a>
<a class="dropdown-item" href="/ecosystem">Ecosystem</a>
<a class="dropdown-item" href="/history">History</a>
<a class="dropdown-item" href="/getinvolved">Get Involved</a>
<a class="dropdown-item" href="/sponsors">Sponsors</a></div>
[ 1 ] ==================================
<a class="nav-link" href="/downloads"><span>Downloads</span></a>
[ 2 ] ==================================
```

2.30 About 의 DropDown 메뉴 리스트

```
about = li_list[0]
about.click()
link_list = about.find_elements(By.CLASS_NAME, "dropdown-item")
for link in link_list:
    print(link.text)
```

✓ 0.0s Python

```
About Selenium
Structure and Governance
Events
Ecosystem
History
Get Involved
Sponsors
```



2.31 그중 History

```
history = about.find_element(By.LINK_TEXT, "History")
print(history.text)
```

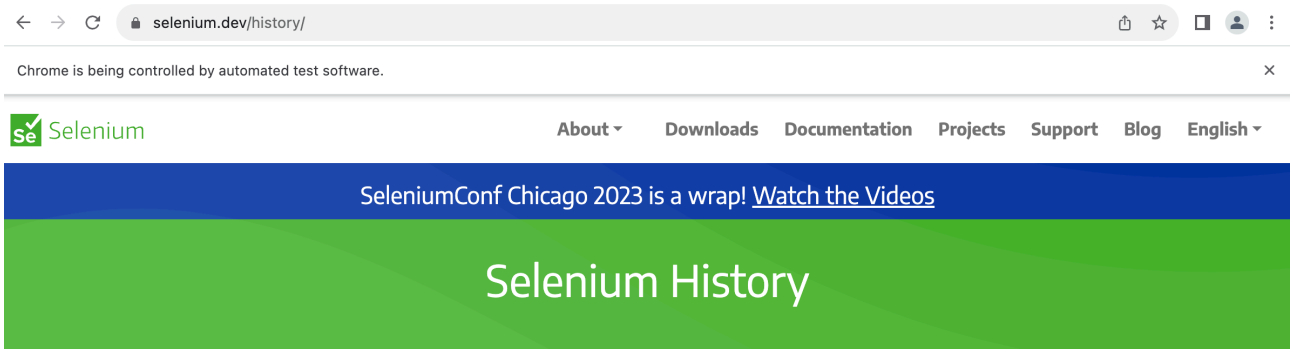
✓ 0.0s Python

```
History
```

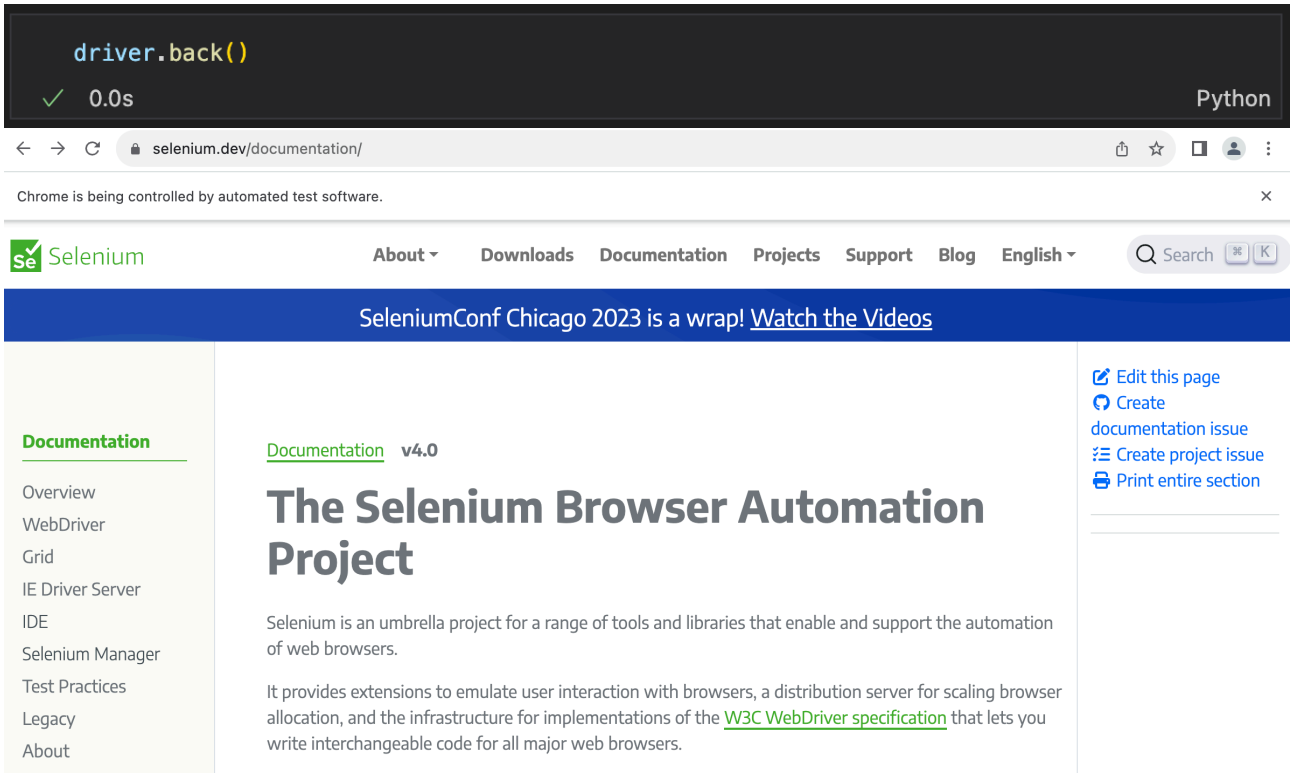
2.32 클릭하면 이동한다.

```
history.click()
```

✓ 0.0s Python


selenium.dev/history/
Chrome is being controlled by automated test software.
Selenium
About
Downloads
Documentation
Projects
Support
Blog
English
SeleniumConf Chicago 2023 is a wrap! Watch the Videos
Selenium History
The story starts in 2004
The story starts in 2004 at ThoughtWorks in Chicago, with Jason Huggins building the Core mode as "JavaScriptTestRunner" for the testing of an internal Time and Expenses application (Python, Plone). Automatic testing of any applications is core to ThoughtWork's style, given the Agile leanings of this consultancy. He has help from Paul Gross and Jie Tina Wang. For them, this was a day job.
Jason started demoing the test tool to various colleagues. Many were excited about its immediate and intuitive visual feedback, as well as its potential to grow as a reusable testing framework for other web applications.

2.33 다시 돌아와서

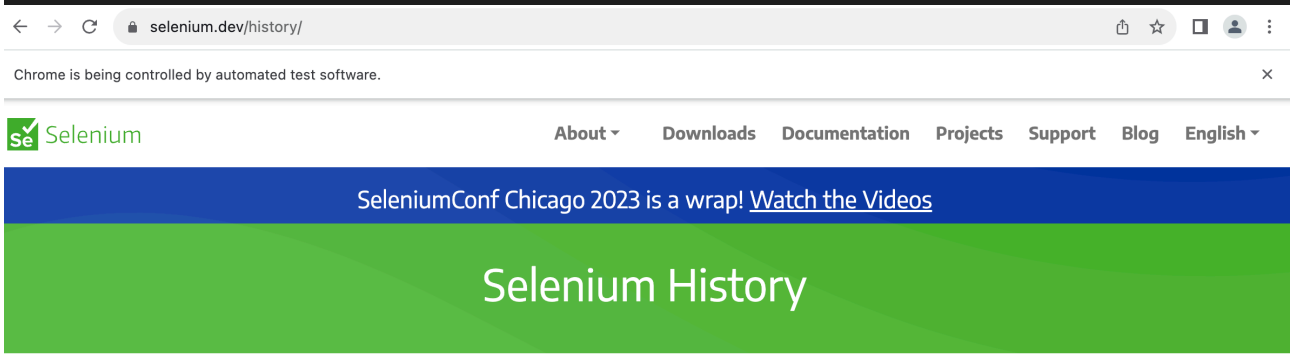

driver.back()
0.0s
Python
selenium.dev/documentation/
Chrome is being controlled by automated test software.
Selenium
About
Downloads
Documentation
Projects
Support
Blog
English
Search
SeleniumConf Chicago 2023 is a wrap! Watch the Videos
Documentation
Overview
WebDriver
Grid
IE Driver Server
IDE
Selenium Manager
Test Practices
Legacy
About
Documentation v4.0
The Selenium Browser Automation Project
Selenium is an umbrella project for a range of tools and libraries that enable and support the automation of web browsers.
It provides extensions to emulate user interaction with browsers, a distribution server for scaling browser allocation, and the infrastructure for implementations of the W3C WebDriver specification that lets you write interchangeable code for all major web browsers.
Edit this page
Create documentation issue
Create project issue
Print entire section

2.34 이제 여러가지를 연속으로 - Action Chain

- Action Chain - 마우스, 키보드 입력 등 연속 동작 실행
- About 메뉴를 클릭하고, History 를 클릭해보자

```python
from selenium.webdriver import ActionChains
import time

actions = ActionChains(driver)
actions.click(about)
actions.click(history)
actions.perform()
```

✓ 0.6s Python



The story starts in 2004

The story starts in 2004 at ThoughtWorks in Chicago, with Jason Huggins building the Core mode as "JavaScriptTestRunner" for the testing of an internal Time and Expenses application (Python, Plone). Automatic testing of any applications is core to ThoughtWork's style, given the Agile leanings of this consultancy. He has help from Paul Gross and Jie Tina Wang. For them, this was a day job.

Jason started demoing the test tool to various colleagues. Many were excited about its immediate and intuitive visual feedback, as well as its potential to grow as a reusable testing framework for other web applications.

2.35 Selenium 에서 Attribute 값은 어떻게? - get_attribute

```python
    driver.back()

    about = li_list[0]
    link_list = about.find_elements(By.CLASS_NAME, "dropdown-item")
    for link in link_list:
        print(link.get_attribute("href"))
```

✓ 0.0s Python

```
https://www.selenium.dev/about
https://www.selenium.dev/project
https://www.selenium.dev/events
https://www.selenium.dev/ecosystem
https://www.selenium.dev/history
https://www.selenium.dev/getinvolved
https://www.selenium.dev/sponsors
```

2.36 현재 페이지의 HTML 가져오기

- Selenium 으로 원하는 페이지로 이동한 이후 이전처럼 BeautifulSoup 으로 작업해도 된다.

```python
    from bs4 import BeautifulSoup

    page = driver.page_source
    soup = BeautifulSoup(page, "html.parser")
    print(soup.prettify())
```

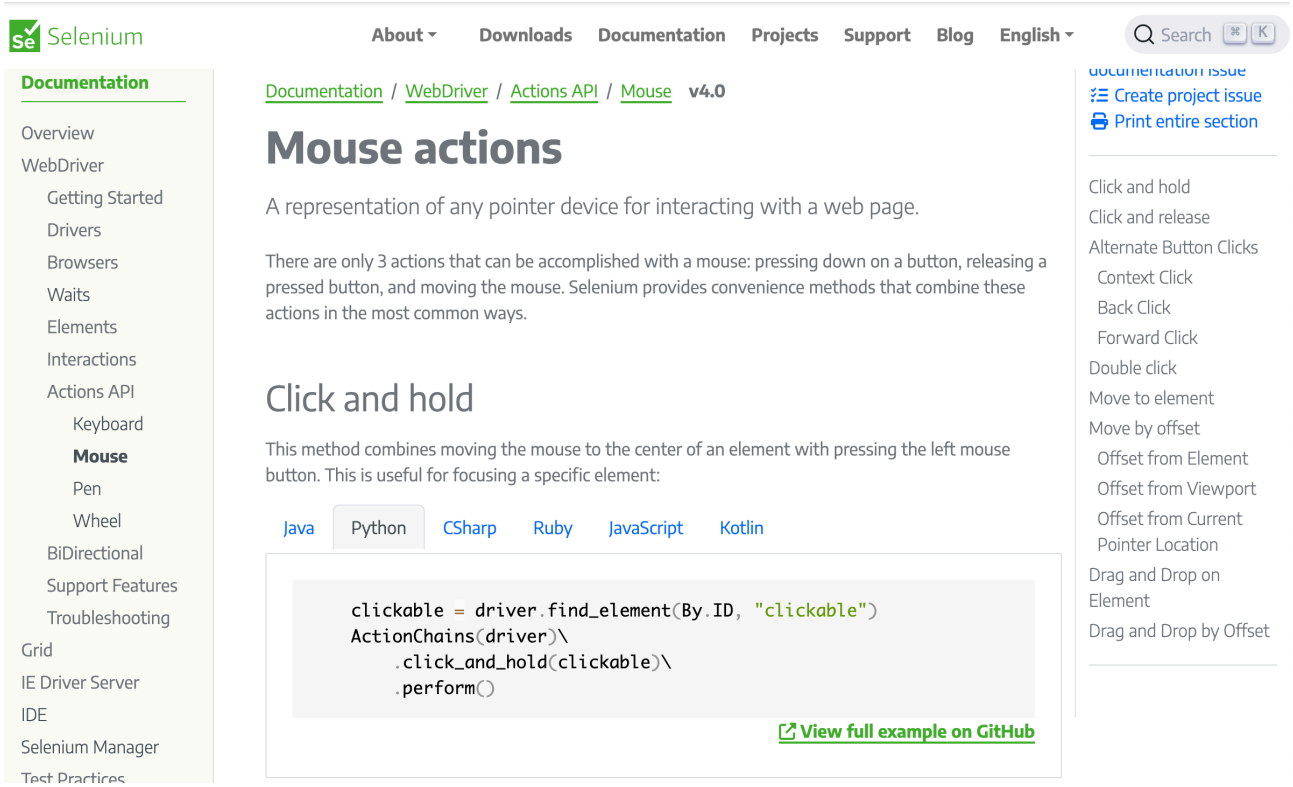
✓ 0.1s Python

```
<html class="no-js" lang="en">
 <head>
  <meta charset="utf-8"/>
  <meta content="width=device-width,initial-scale=1,shrink-to-fit=no" name="viewport"/>
  <link href="/documentation/_print/" rel="alternate" type="text/html"/>
  <meta content="index, follow" name="robots"/>
  <link href="/favicons/favicon.ico" rel="shortcut icon"/>
  <link href="/favicons/apple-touch-icon-180x180.png" rel="apple-touch-icon" sizes="180x180",
  <link href="/favicons/favicon-16x16.png" rel="icon" sizes="16x16" type="image/png"/>
  <link href="/favicons/favicon-32x32.png" rel="icon" sizes="32x32" type="image/png"/>
  <link href="/favicons/android-36x36.png" rel="icon" sizes="36x36" type="image/png"/>
  <link href="/favicons/android-48x48.png" rel="icon" sizes="48x48" type="image/png"/>
```

2.37 이걸 다 외워야하나?

- 예제 코드까지 볼수있어요. 필요할때 뒤적뒤적...

https://www.selenium.dev/documentation/



2.38 잊지말고 종료~

- close() vs quit()

```
driver.close()
```

✓ 0.1s Python