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(with **Example)**

Test Selenium Python on Real Devices and Browsers for accurate test results under real user conditions

September 3, 2024 21 min read

Why Choose Selenium Python? Python **How to Run Selenium Python Test? Best Practices Used**

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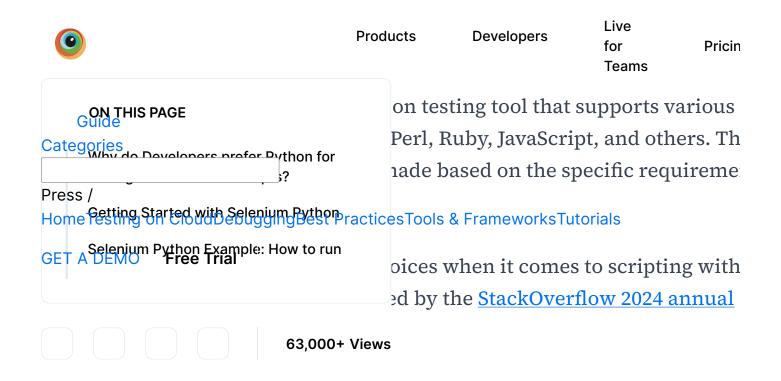
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Home > Guide > Selenium Python Tutorial (with Example)

Selenium Python Tutorial (with Example

New features are regularly added to web applications to boost user engagement. To ensure these updates work as intended and that the user

02/01/25, 14:18 1 of 31



Why do Developers prefer Python for writing Selenium Test Scripts?

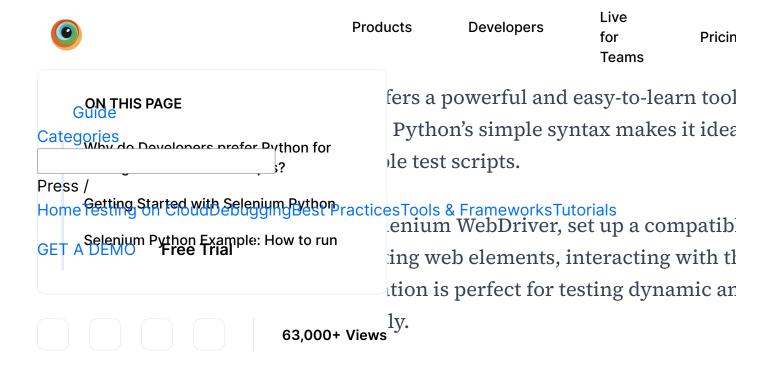
Developers prefer Python for writing Selenium test scripts because of its simplicity, readability, and ease of use. Python's clear and concise syntax allows for faster script development and easier maintenance, which is cru in testing scenarios.

Additionally, Python has a rich set of libraries and frameworks that complement Selenium, making it easier to handle complex tasks such as d manipulation, reporting, and integration with other tools.

Python's extensive community support and documentation also provide valuable resources for troubleshooting and improving test scripts. These factors make Python a popular choice for Selenium automation.

Getting Started with Selenium Python

Getting started with Selenium using Python involves setting up an



Selenium Python Example: How to run your first Test?

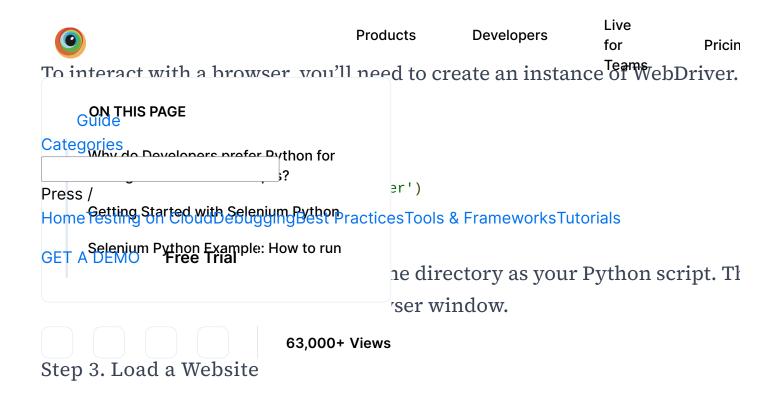
To run Selenium Python Tests here are the steps to follow:

Step 1. Import the Necessary Classes

First, you'll need to import the WebDriver and Keys classes from Selenium These classes help you interact with a web browser and emulate keyboard actions.

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

- webdriver: Allows you to control the browser.
- Keys: Lets you simulate keyboard key presses.



Use the .get() method to navigate to a website. This method waits for the pto load completely:

```
driver.get("https://www.python.org")
```

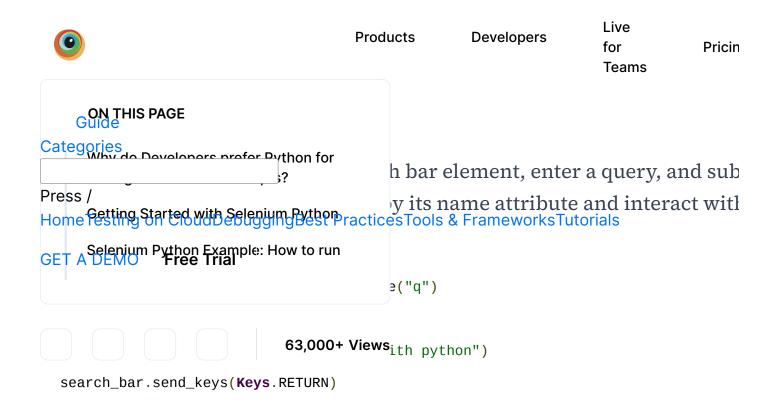
This will open Python's official website in the browser.

Step 4. Check the Page Title

Once the page is loaded, you can retrieve and print the page title to verify you're on the right page:

```
print(driver.title)
```

You should see:



As an explanation:

- find_element_by_name("q"): Finds the search bar element.
- clear(): Clears any existing text.
- send_keys("getting started with python"): Types the query into the sea bar.
- send_keys(Keys.RETURN): Simulates pressing the Return (Enter) key.

Step 6. Verify the Resulting URL

After submitting the search query, you can check the updated URL to conf the search results page:

```
print(driver.current_url)
```

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Here is the complete script for your first Selenium test in Python. Save this code in a file named selenium_test.py and run it using python selenium_test.py:

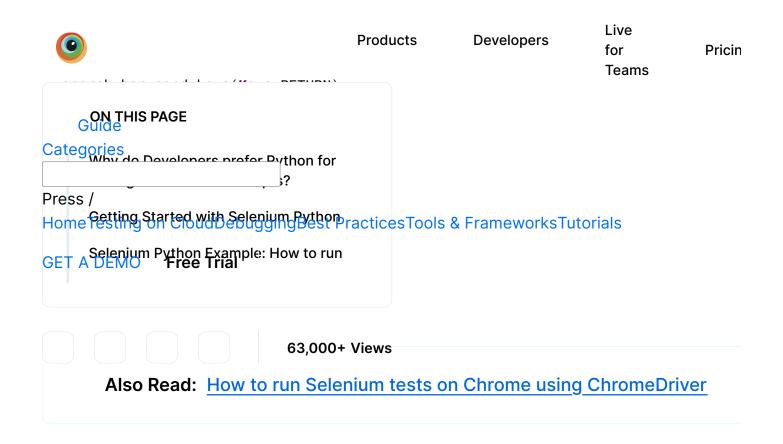
```
from selenium import webdriver
from selenium.webdriver.common.keys import Keys

# Create a new instance of the Chrome driver
driver = webdriver.Chrome('./chromedriver')

# Open the Python website
driver.get("https://www.python.org")

# Print the page title
print(driver.title)

# Find the search bar using its name attribute
search_bar = driver.find_element_by_name("q")
```



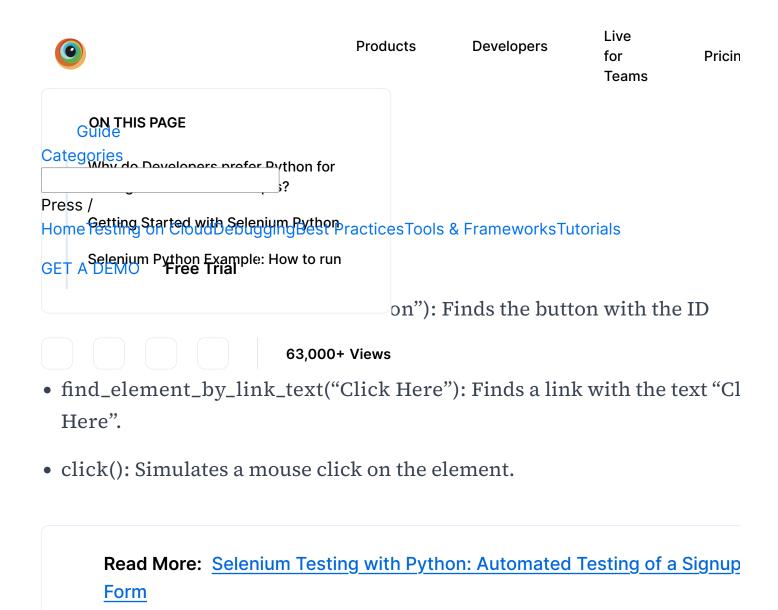
Interacting with Common Elements in Selenium

Selenium allows you to perform a variety of actions on web elements. You already touched upon entering input, here's how to interact with buttons, dropdowns:

Assuming you want to click a button with the ID "submit-button" after ent the input in the search bar:

```
# Locate the button by its ID attribute
button = driver.find_element_by_id("submit-button")
# Click the button
button.click()
```

If you need to click a link by its text:

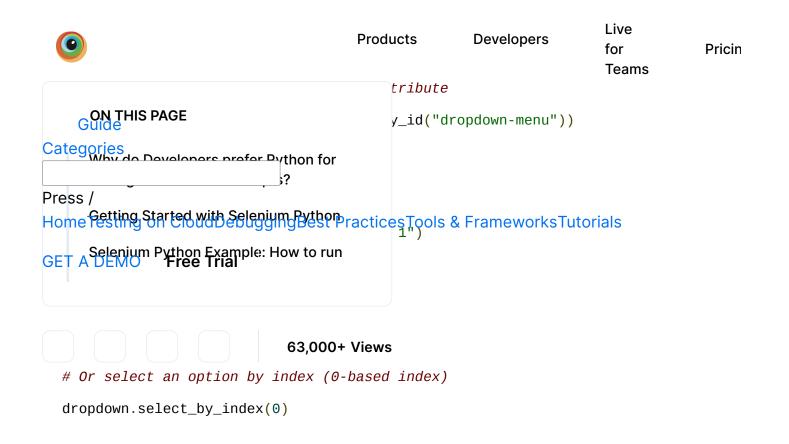


Though dropdowns are not present on this site, they are quite common for application testing

For dropdown menus, Selenium provides the Select class to handle option within <select> elements.

Example: Selecting an Option from a Dropdown

Assuming you have a dropdown menu with the ID "dropdown-menu":



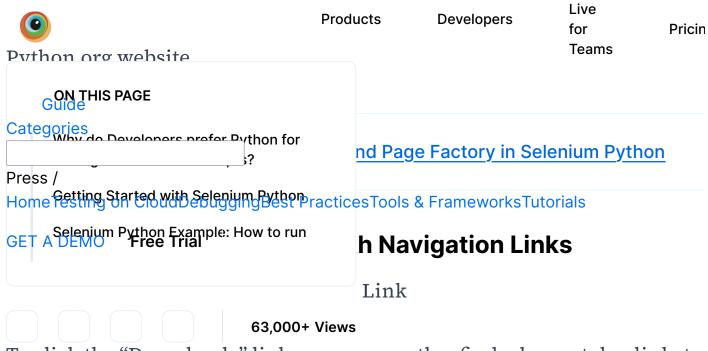
Explanation:

- Select(driver.find_element_by_id("dropdown-menu")): Creates a Select object for the dropdown menu.
- select_by_visible_text("Option 1"): Selects an option by its visible text.
- select_by_value("option1"): Selects an option by its value attribute.
- select_by_index(0): Selects an option by its index in the dropdown.

Navigate through HTML DOM Elements

The HTML Document Object Model (DOM) represents the structure of a we page as a tree of objects. Selenium allows you to interact with these elements using various locator strategies.

In our first test script, we have already used some of the methods used to



To click the "Downloads" link, you can use the .find_element_by_link_temethod, but here's how to use other locators to achieve the same, example using find_element_by_xpath:

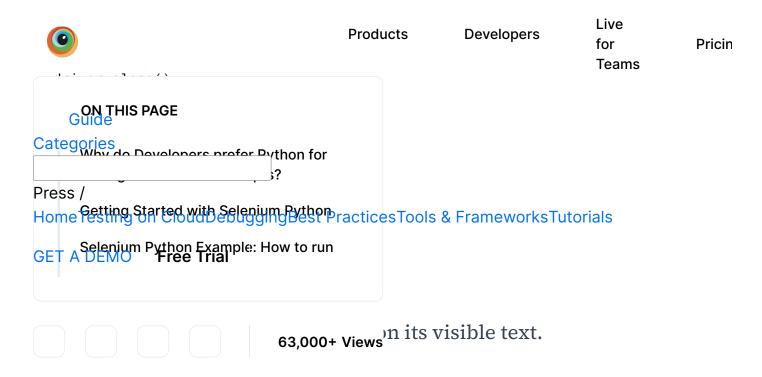
```
# Set up the WebDriver
driver = webdriver.Chrome('./chromedriver')

# Open the Python website
driver.get("https://www.python.org/")

# Locate the "Downloads" link using XPath
downloads_link = driver.find_element_by_xpath("//a[text()='Downloads']")

# Click the "Downloads" link
downloads_link.click()

# Optionally, print the current URL to confirm navigation
print(driver.current_url)
```



Step 2. Access and Interact with Header Sections

Example: Accessing the Main Header

To access the main header text, you can use different locators to find the header element.

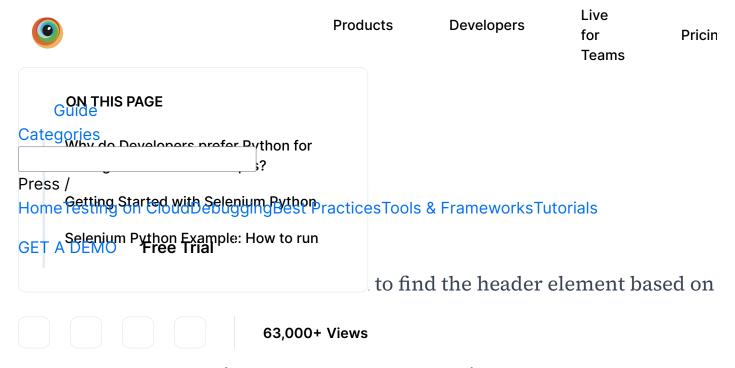
Using find_element_by_class_name:

from selenium import webdriver

```
# Set up the WebDriver
driver = webdriver.Chrome('./chromedriver')

# Open the Python website
driver.get("https://www.python.org/")

# Locate the header element using its class name
header = driver.find_element_by_class_name("introduction")
```



Step 3. Interact with Forms and Input Fields

Example: Filling Out and Submitting the Search Form

To interact with the search form, you can use the .find_element_by_name(method to locate the input field.

Using find_element_by_name:

from selenium import webdriver

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

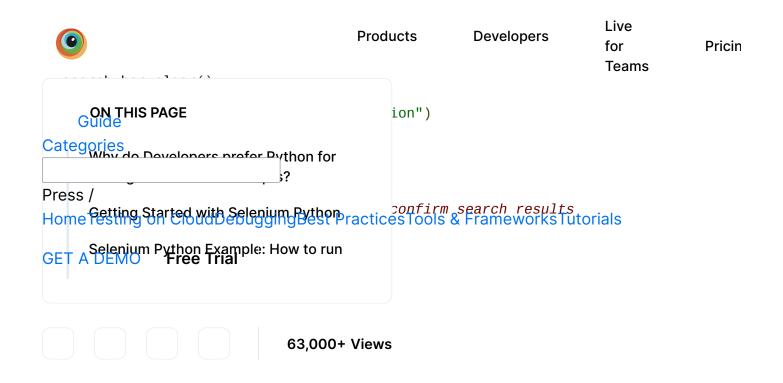
# Set up the WebDriver

driver = webdriver.Chrome('./chromedriver')

# Open the Python website

driver.get("https://www.python.org/")

# Locate the search bar using its name attribute
search_bar = driver.find_element_by_name("q")
```



Explanation:

• Name Attribute: find_element_by_name("q") locates the search input f by its name attribute.

Navigate through Windows and Frames

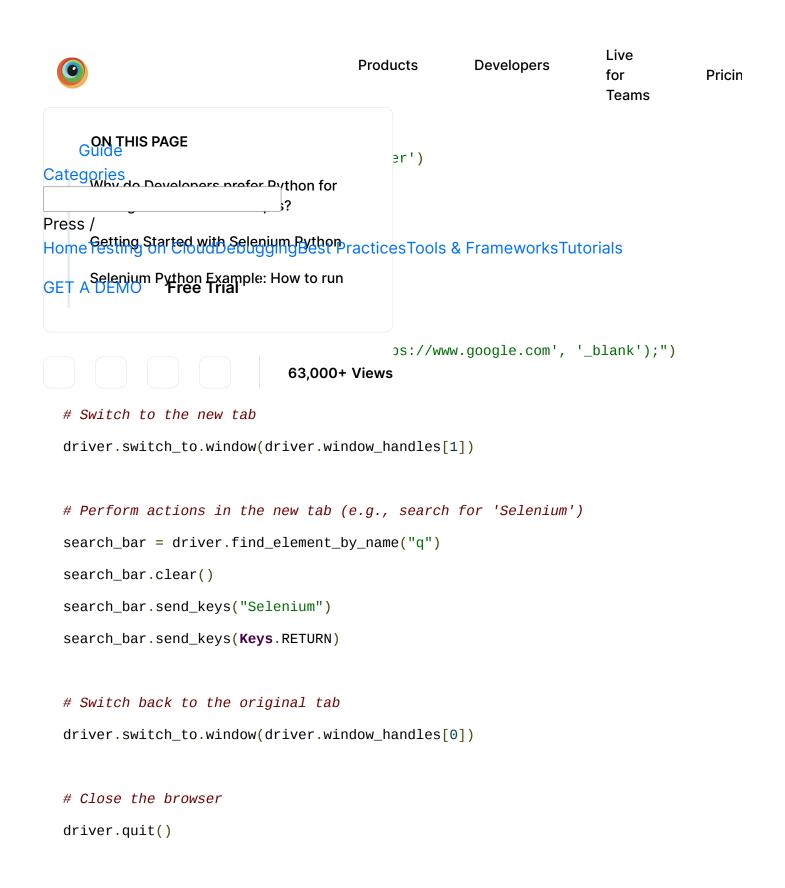
When working with multiple browser windows or tabs, or dealing with iframes (frames), you may need to switch contexts to interact with different elements.

Step 1. Handling Multiple Browser Windows or Tabs

Example: Switching Between Windows

To handle multiple browser windows or tabs:

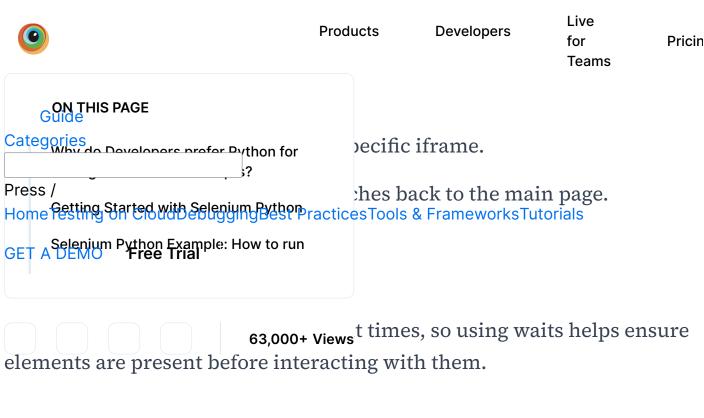
from selenium import webdriver



Explanation:

• window_handles: Retrieves a list of window handles. Switch to a specifi window using switch_to.window().

```
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  # Set up the WebDriver
  driver = webdriver.Chrome('./chromedriver')
  # Open the Python website
  driver.get("https://www.python.org/")
  # Example site with iframe (replace with an actual URL that contains iframes)
  driver.get("https://www.w3schools.com/html/html_iframe.asp")
  # Switch to the iframe using its name or ID
  driver.switch_to.frame("iframeResult")
  # Perform actions within the iframe
  print(driver.find_element_by_tag_name("h1").text)
  # Switch back to the default content
  driver.switch_to.default_content()
  # Close the browser
```



Step 1. Implicit Waits

Example: Using Implicit Waits

from selenium import webdriver

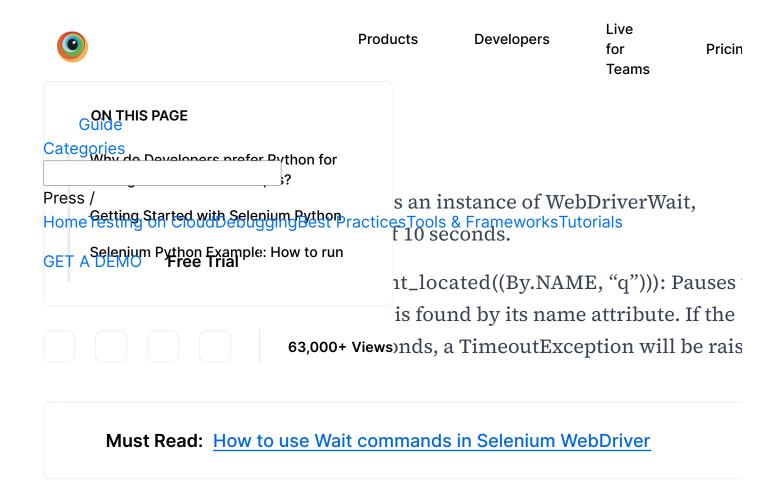
```
# Set up the WebDriver
driver = webdriver.Chrome('./chromedriver')

# Set implicit wait
driver.implicitly_wait(10) # seconds

# Open the Python website
driver.get("https://www.python.org/")

# Locate an element with implicit wait
search_bar = driver.find_element_by_name("q")
search_bar.send_keys("Python")
```

```
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  from selenium import webdriver
  from selenium.webdriver.common.by import By
  from selenium.webdriver.support.ui import WebDriverWait
  from selenium.webdriver.support import expected_conditions as EC
  # Set up the WebDriver
  driver = webdriver.Chrome('./chromedriver')
  # Open the Python website
  driver.get("https://www.python.org/")
  # Define WebDriverWait with a maximum wait time of 10 seconds
  wait = WebDriverWait(driver, 10)
  # Wait for the search bar to be present in the DOM
  search_bar = wait.until(EC.presence_of_element_located((By.NAME, "q")))
  # Perform actions on the search bar
  search_bar.send_keys("Python")
```



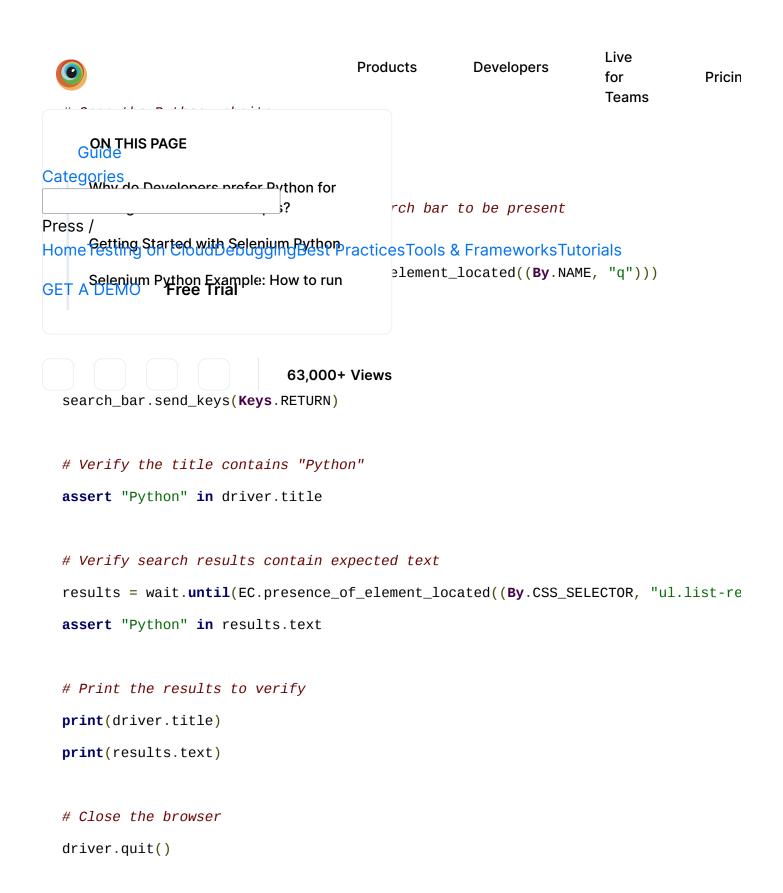
Assertions and Validations

To ensure that the application behaves as expected, you can use assertions validations.

Verifying Expected Conditions Using Assertions

Example: Verifying Page Title and Search Results

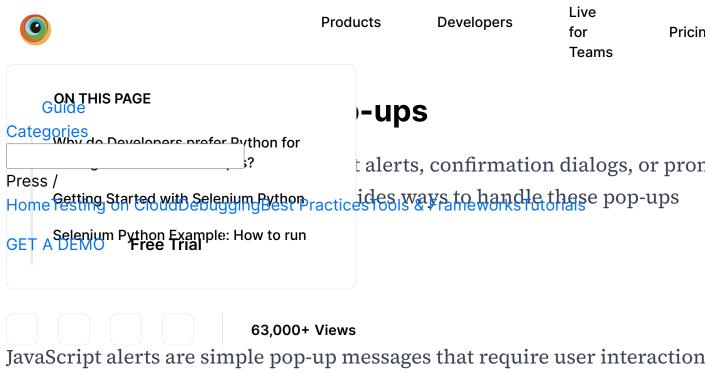
```
from selenium import webdriver
from selenium.webdriver.common.keys import Keys
from selenium.webdriver.support.ui import WebDriverWait
from selenium.webdriver.support import expected_conditions as EC
# Set up the WebDriver
```



Explanation:

 Assertions: Used to check if the conditions are met. For example, check the title or text of elements matches expected values.

from selenium import webdriver



JavaScript alerts are simple pop-up messages that require user interaction dismiss. Selenium allows you to interact with these alerts using the switch_to.alert() method.

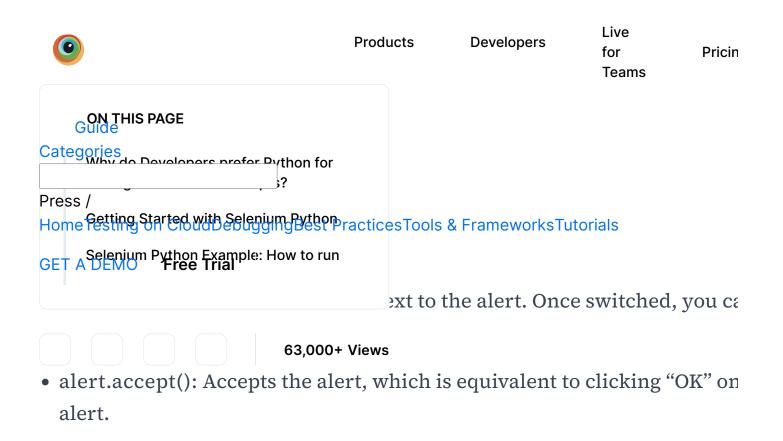
```
from selenium.webdriver.common.by import By
from selenium.webdriver.common.keys import Keys

# Set up the WebDriver
driver = webdriver.Chrome('./chromedriver')

# Open a website that triggers an alert (example URL)
driver.get("https://www.selenium.dev/selenium/docs/api/java/org/openqa/selenium/A

# Click a button that triggers an alert
trigger_alert_button = driver.find_element(By.ID, "alertButton") # Adjust locato
trigger_alert_button.click()

# Switch to the alert and accept it
alert = driver.switch_to.alert
```



Other Alert Actions:

- alert.dismiss(): Clicks "Cancel" on a confirmation dialog.
- alert.send_keys("text"): Sends text to a prompt dialog (if applicable).

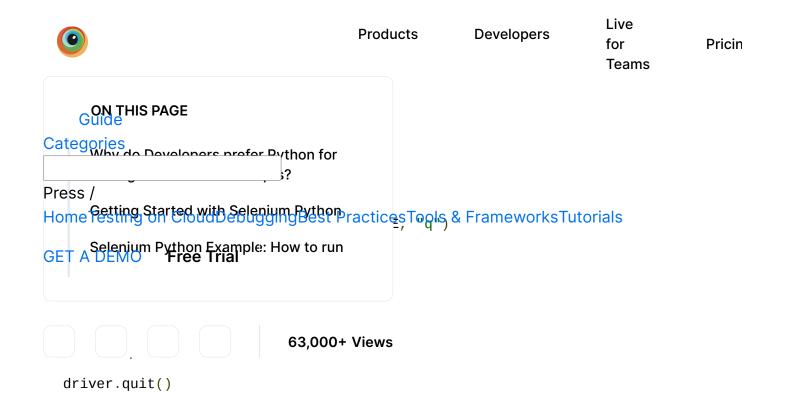
Cleanup and Teardown

Properly closing the browser session is crucial for releasing resources and ensuring that your automation script runs cleanly.

Properly Closing the Browser Session

Example: Closing the Browser

from selenium import webdriver



Explanation:

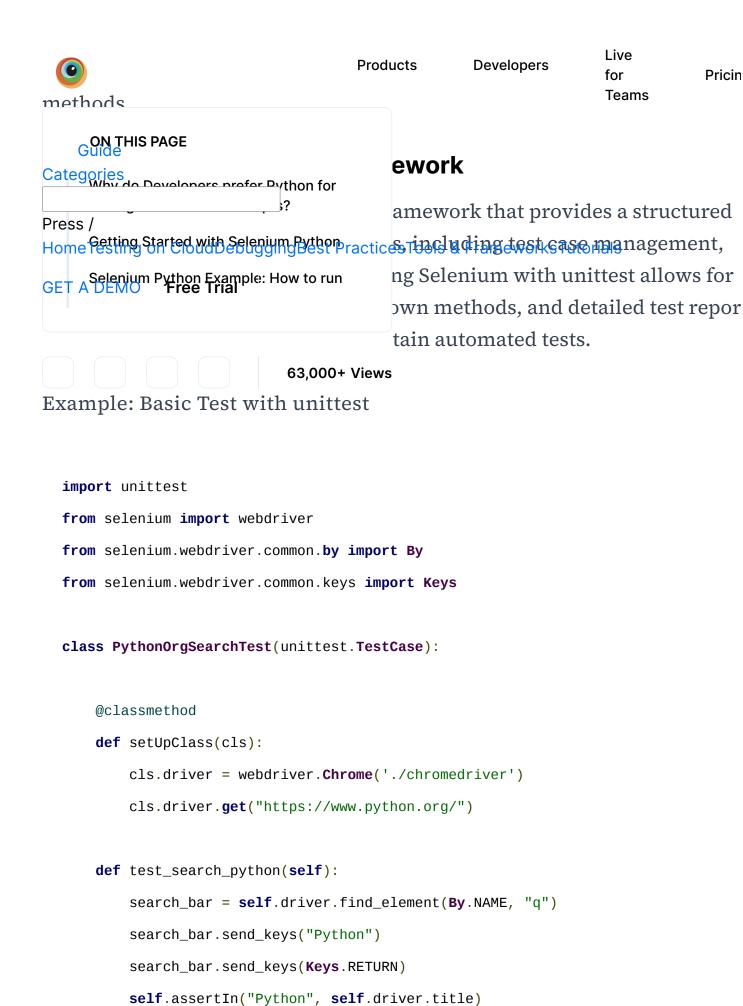
• driver.quit(): Closes all browser windows and ends the WebDriver sessi. This is the preferred method for cleanup as it ensures the browser procesterminated and resources are freed.

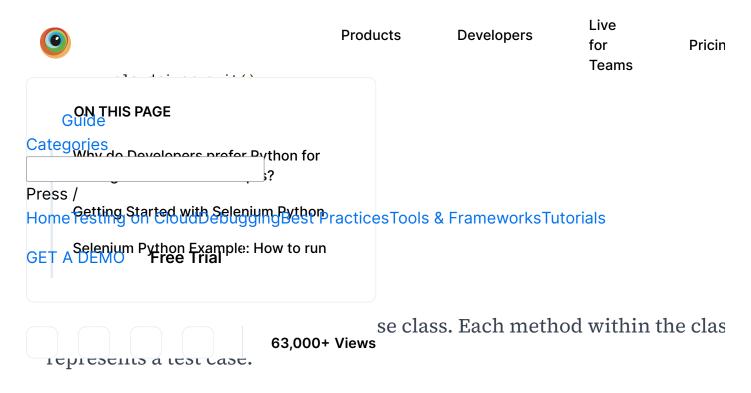
Alternative Methods:

• driver.close(): Closes the current window. If it's the only window open, will end the session. Use driver.quit() for complete cleanup.

Read More: How to Create and Use Action Class in Selenium Python

Testing Framework Integration





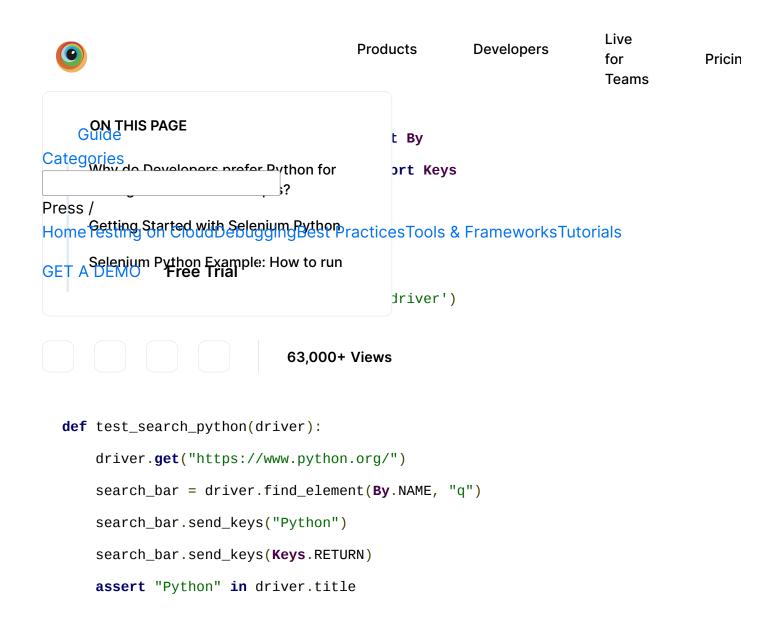
- setUpClass(): Initializes resources needed for the tests. Runs once befor test methods are executed.
- tearDownClass(): Cleans up resources. Runs once after all test methods completed.
- unittest.main(): Runs the tests and provides output in the console.

Read More: Top 8 Python Testing Frameworks in 2024

2. Integrate with pytest Framework

pytest is a powerful and flexible Python testing framework that simplifies writing tests with its rich feature set, including fixtures, parameterized test and detailed assertions. Integrating Selenium with pytest enhances test organization, facilitates advanced setup/teardown functionality, and generomprehensive test reports, improving test reliability and clarity.

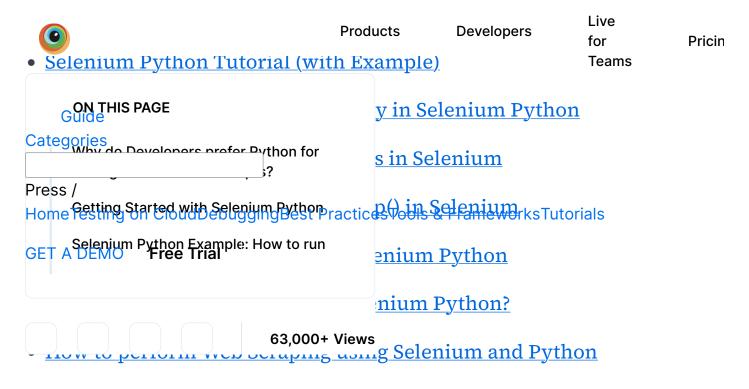
Example: Basic Test with pytest



Explanation:

- pytest.fixture(): Defines a fixture that sets up and tears down resources. scope="module" ensures the fixture is run once per module.
- yield: Provides the driver instance to the test function and performs cle after the test completes.
- assert: Checks that the condition is met. pytest will report the assertion failure if the

Run Selenium Python Tests on Real Devices



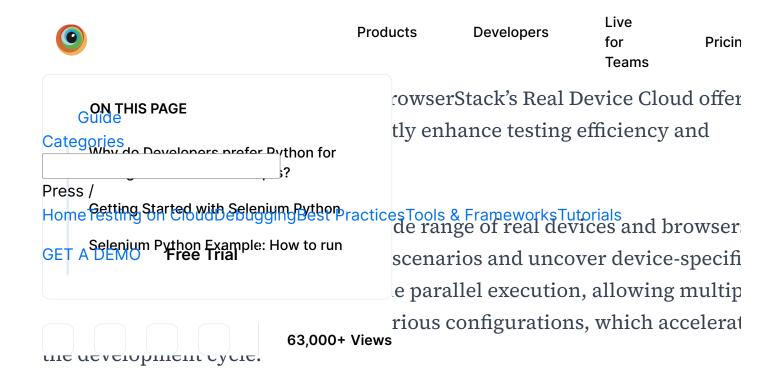
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- How to Press Enter without Element in Selenium Python?
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- Get Current URL in Selenium using Python: Tutorial

Best Practices using Selenium WebDriver with Python

Here are five best practices for using Selenium WebDriver with Python:

- 1. Use Explicit Waits: Prefer explicit waits over implicit waits to handle dynamic content. Explicit waits ensure that your script interacts with elements only when they are ready, reducing the chances of encountering timing issues.
- 2. Organize Tests with Frameworks: Integrate Selenium tests with testing

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Cross-platform testing on BrowserStack ensures consistent application performance across different environments. Additionally, it offers real-tin debugging features such as live logs, screenshots, and video recordings, w aid in quick troubleshooting.

Seamless integration with CI/CD pipelines further automates the testing process, enabling tests to run on every code change and providing immed feedback on application quality. Overall, BrowserStack Automate enables comprehensive, efficient, and reliable testing, fostering continuous development and deployment.

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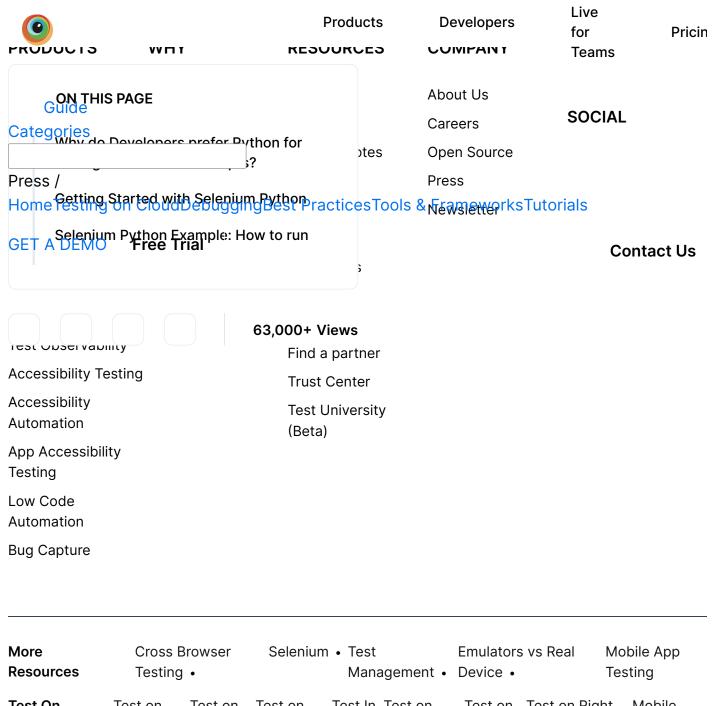
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