Detailed Note on Installation and Working of Selenium with Python

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1. Introduction to Selenium

Selenium is an open-source automation tool for web applications. It supports multiple browsers (Chrome, Firefox, etc.) and programming languages (Java, Python, C#). Here, we focus on **Python**.

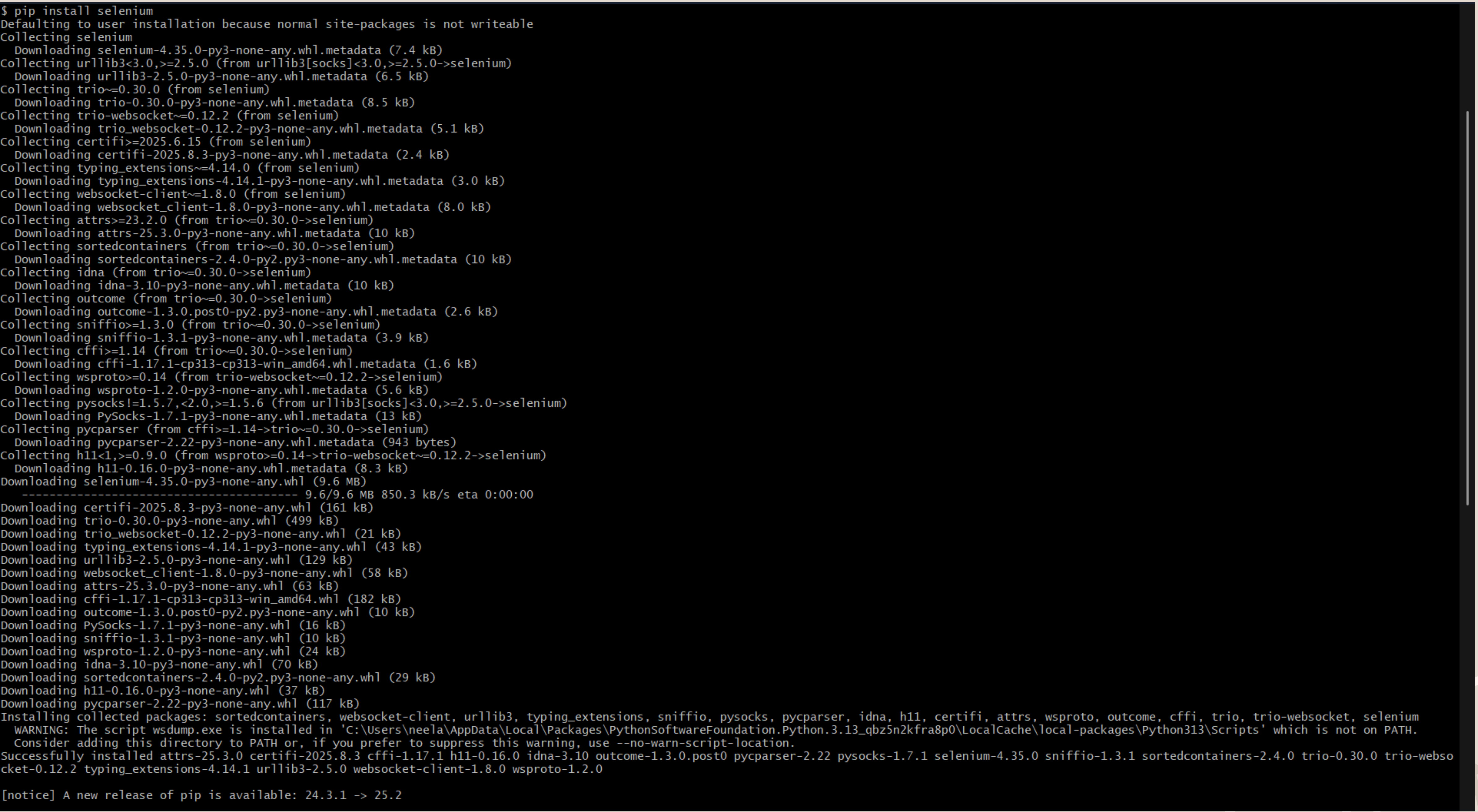
2. Installation Steps

- **Prerequisites**
  • Python 3.6 or higher
  • Microsoft Edge (Chromium) browser installed
  • pip package manager

- **Installation Steps**

1. **Install Selenium Package**

• bash
pip install selenium

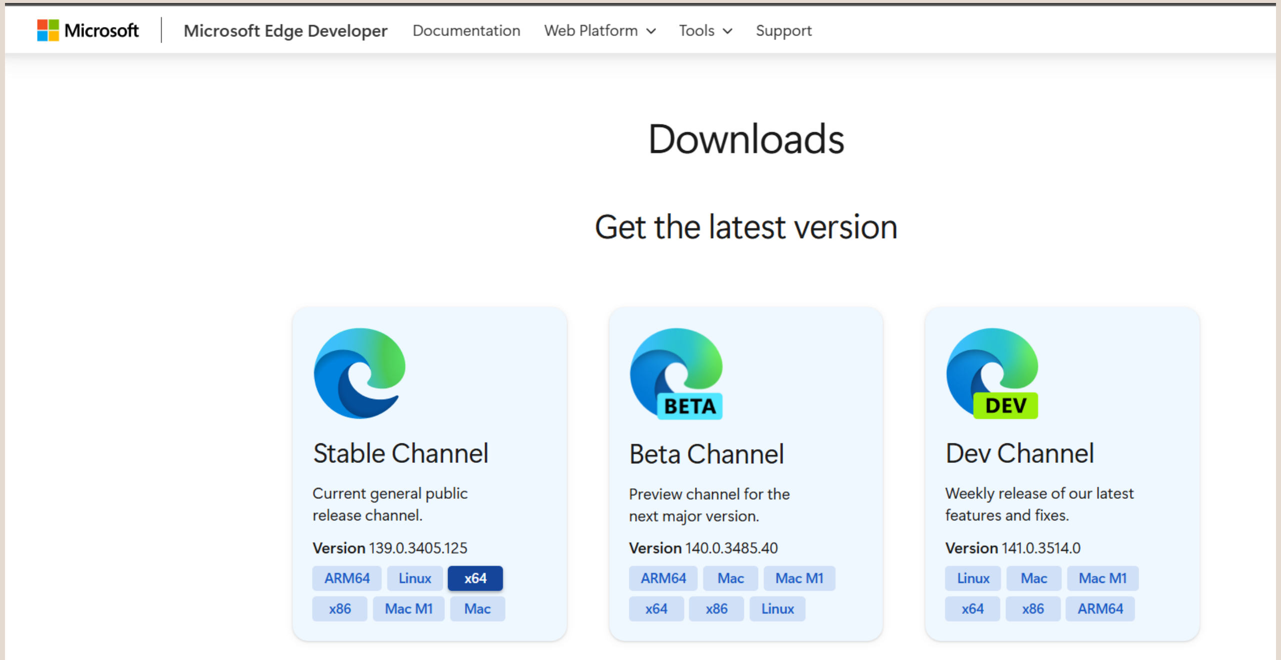


```
$ pip install selenium
Defaulting to user installation because normal site-packages is not writeable
Collecting selenium
  Downloading selenium-4.35.0-py3-none-any.whl.metadata (7.4 kB)
Collecting urllib3<3.0,>=2.5.0 (from urllib3[socks]<3.0,>=2.5.0->selenium)
  Downloading urllib3-2.5.0-py3-none-any.whl.metadata (6.5 kB)
Collecting trio~=0.30.0 (from selenium)
  Downloading trio-0.30.0-py3-none-any.whl.metadata (8.5 kB)
Collecting trio-websocket~=0.12.2 (from selenium)
  Downloading trio_websocket-0.12.2-py3-none-any.whl.metadata (5.1 kB)
Collecting certifi>=2025.6.15 (from selenium)
  Downloading certifi-2025.8.3-py3-none-any.whl.metadata (2.4 kB)
Collecting typing_extensions~=4.14.0 (from selenium)
  Downloading typing_extensions-4.14.1-py3-none-any.whl.metadata (3.0 kB)
Collecting websocket-client~=1.8.0 (from selenium)
  Downloading websocket_client-1.8.0-py3-none-any.whl.metadata (8.0 kB)
Collecting attrs>=23.2.0 (from trio~=0.30.0->selenium)
  Downloading attrs-25.3.0-py3-none-any.whl.metadata (10 kB)
Collecting sortedcontainers (from trio~=0.30.0->selenium)
  Downloading sortedcontainers-2.4.0-py2.py3-none-any.whl.metadata (10 kB)
Collecting idna (from trio~=0.30.0->selenium)
  Downloading idna-3.10-py3-none-any.whl.metadata (10 kB)
Collecting outcome (from trio~=0.30.0->selenium)
  Downloading outcome-1.3.0.post0-py2.py3-none-any.whl.metadata (2.6 kB)
Collecting sniffio>=1.3.0 (from trio~=0.30.0->selenium)
  Downloading sniffio-1.3.1-py3-none-any.whl.metadata (3.9 kB)
Collecting cffi>=1.14 (from trio~=0.30.0->selenium)
  Downloading cffi-1.17.1-cp313-cp313-win_amd64.whl.metadata (1.6 kB)
Collecting wsproto>=0.14 (from trio-websocket~=0.12.2->selenium)
  Downloading wsproto-1.2.0-py3-none-any.whl.metadata (5.6 kB)
Collecting pysocks!=1.5.7,<2.0,>=1.5.6 (from urllib3[socks]<3.0,>=2.5.0->selenium)
  Downloading PySocks-1.7.1-py3-none-any.whl.metadata (13 kB)
Collecting pycparser (from cffi>=1.14->trio~=0.30.0->selenium)
  Downloading pycparser-2.22-py3-none-any.whl.metadata (943 bytes)
Collecting h11<1,>=0.9.0 (from wsproto>=0.14->trio-websocket~=0.12.2->selenium)
  Downloading h11-0.16.0-py3-none-any.whl.metadata (8.3 kB)
Downloading selenium-4.35.0-py3-none-any.whl (9.6 MB)
   ---------------------------------------- 9.6/9.6 MB 850.3 kB/s eta 0:00:00
Downloading certifi-2025.8.3-py3-none-any.whl (161 kB)
Downloading trio-0.30.0-py3-none-any.whl (499 kB)
Downloading trio_websocket-0.12.2-py3-none-any.whl (21 kB)
Downloading typing_extensions-4.14.1-py3-none-any.whl (43 kB)
Downloading urllib3-2.5.0-py3-none-any.whl (129 kB)
Downloading websocket_client-1.8.0-py3-none-any.whl (58 kB)
Downloading attrs-25.3.0-py3-none-any.whl (63 kB)
Downloading cffi-1.17.1-cp313-cp313-win_amd64.whl (182 kB)
Downloading outcome-1.3.0.post0-py2.py3-none-any.whl (10 kB)
Downloading PySocks-1.7.1-py3-none-any.whl (16 kB)
Downloading sniffio-1.3.1-py3-none-any.whl (10 kB)
Downloading wsproto-1.2.0-py3-none-any.whl (24 kB)
Downloading idna-3.10-py3-none-any.whl (70 kB)
Downloading sortedcontainers-2.4.0-py2.py3-none-any.whl (29 kB)
Downloading h11-0.16.0-py3-none-any.whl (37 kB)
Downloading pycparser-2.22-py3-none-any.whl (117 kB)
Installing collected packages: sortedcontainers, websocket-client, urllib3, typing_extensions, sniffio, pysocks, pycparser, idna, h11, certifi, attrs, wsproto, outcome, cffi, trio, trio-websocket, selenium
  WARNING: The script wsdump.exe is installed in 'C:\Users\neela\AppData\Local\Packages\PythonSoftwareFoundation.Python.3.13_qbz5n2kfra8p0\LocalCache\local-packages\Python313\Scripts' which is not on PATH.
  Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-warn-script-location.
Successfully installed attrs-25.3.0 certifi-2025.8.3 cffi-1.17.1 h11-0.16.0 idna-3.10 outcome-1.3.0.post0 pycparser-2.22 pysocks-1.7.1 selenium-4.35.0 sniffio-1.3.1 sortedcontainers-2.4.0 trio-0.30.0 trio-webso
cket-0.12.2 typing_extensions-4.14.1 urllib3-2.5.0 websocket-client-1.8.0 wsproto-1.2.0

[notice] A new release of pip is available: 24.3.1 -> 25.2
```

2. Install Microsoft Edge WebDriver

- Download from: https://developer.microsoft.com/en-us/microsoft-edge/tools/webdriver/
- Ensure the driver version matches your Edge browser version
  Add the driver to your system PATH or place it in your project directory
- *Alternative*: Use webdriver-manager for automatic driver management:
- bash
  pip install webdriver-manager



Microsoft | Microsoft Edge Developer Documentation Web Platform Tools Support

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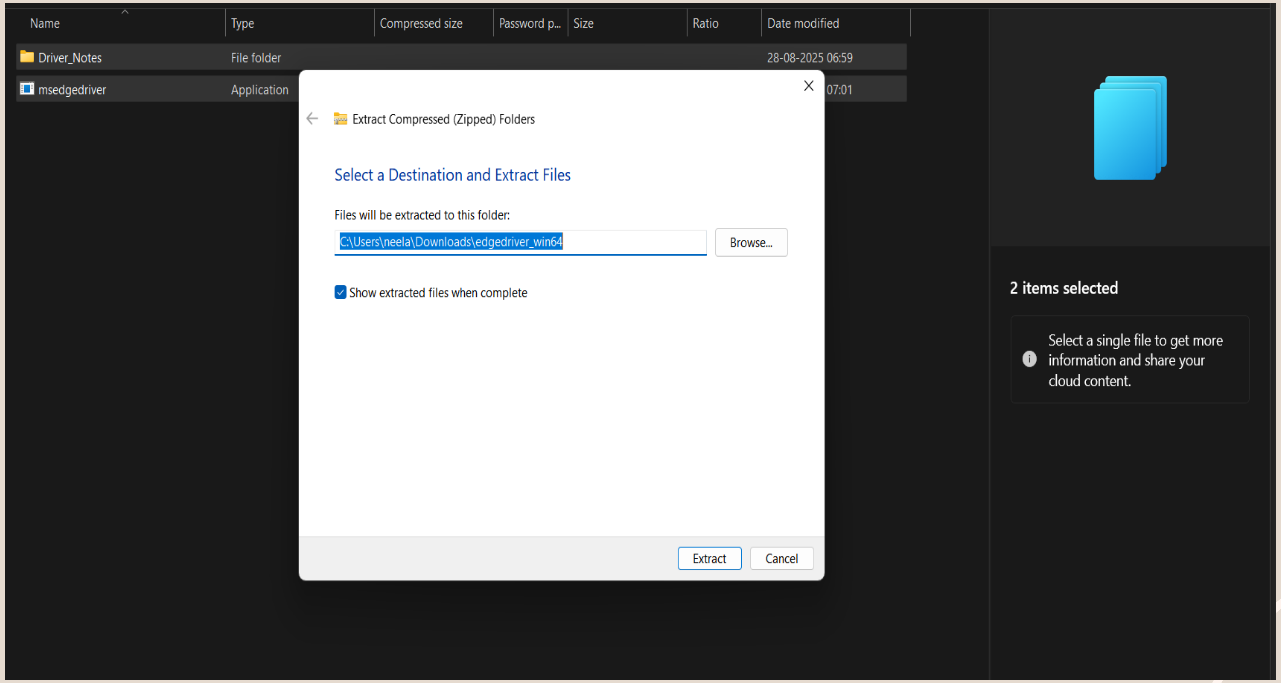
ARM64 Mac Mac M1 x64 x86 Linux

Dev Channel

Weekly release of our latest features and fixes.

Version 141.0.3514.0

Linux Mac Mac M1 x64 x86 ARM64



Name	Type	Compressed size	Password p...	Size	Ratio	Date modified
Driver_Notes	File folder					28-08-2025 06:59
msedgedriver	Application					07:01

Extract Compressed (Zipped) Folders

Select a Destination and Extract Files

Files will be extracted to this folder:

C:\Users\neela\Downloads\edgedriver_win64

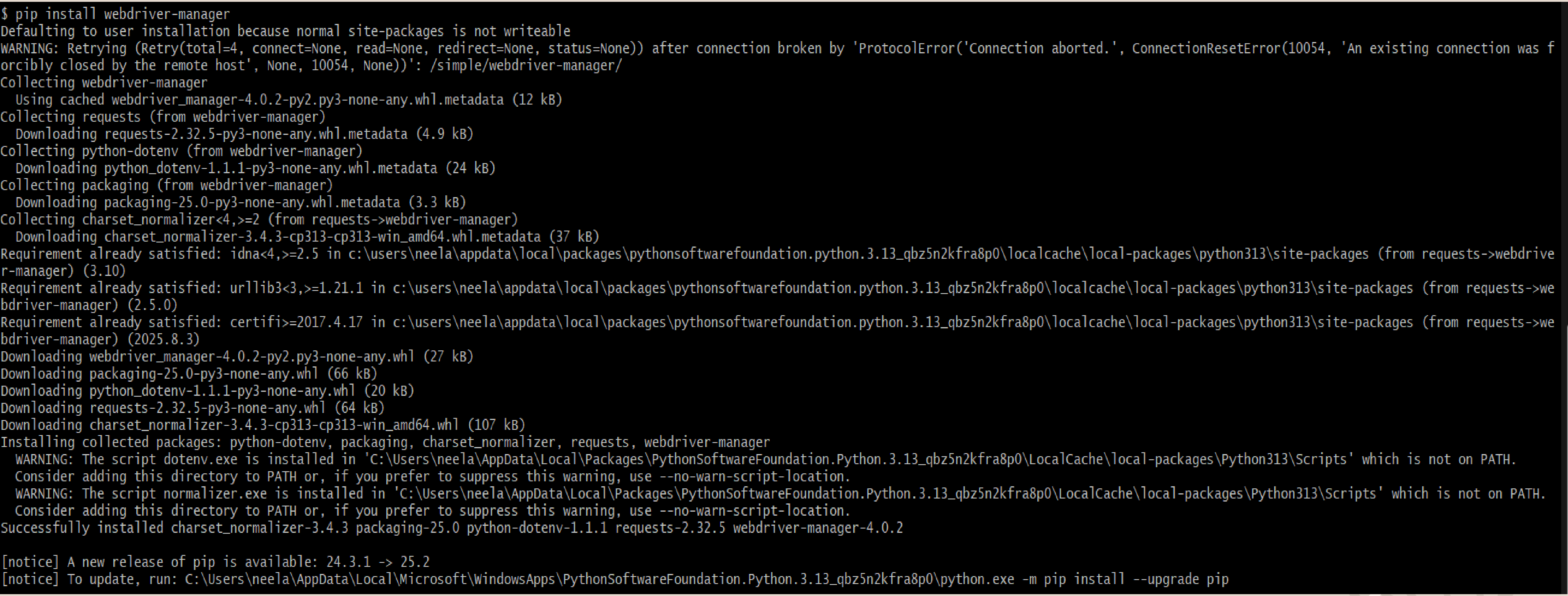
Browse...

☑ Show extracted files when complete

Extract Cancel

2 items selected

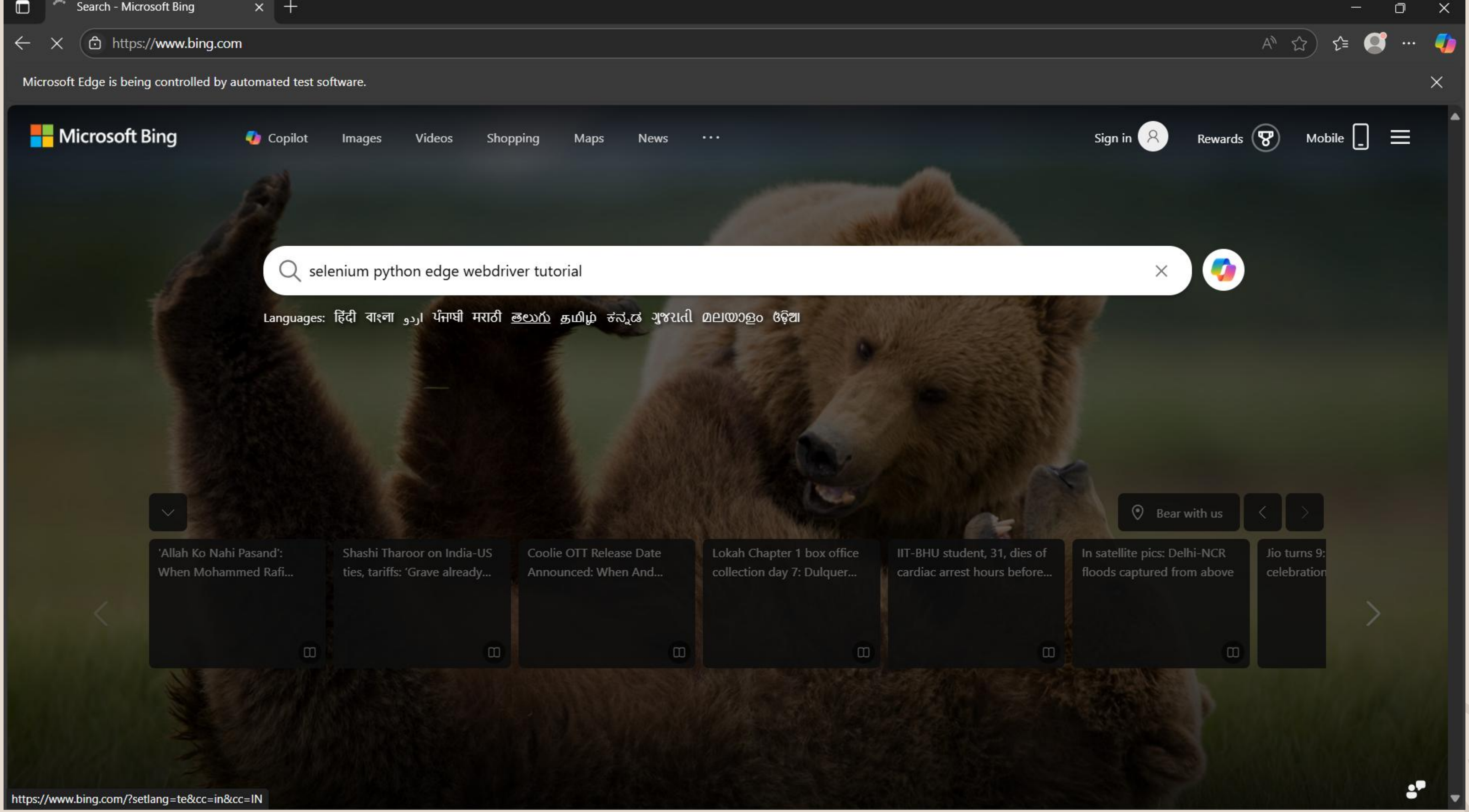
Select a single file to get more information and share your cloud content.



```
$ pip install webdriver-manager
Defaulting to user installation because normal site-packages is not writeable
WARNING: Retrying (Retry(total=4, connect=None, read=None, redirect=None, status=None)) after connection broken by 'ProtocolError('Connection aborted.', ConnectionResetError(10054, 'An existing connection was f
orcibly closed by the remote host', None, 10054, None))': /simple/webdriver-manager/
Collecting webdriver-manager
  Using cached webdriver_manager-4.0.2-py2.py3-none-any.whl.metadata (12 kB)
Collecting requests (from webdriver-manager)
  Downloading requests-2.32.5-py3-none-any.whl.metadata (4.9 kB)
Collecting python-dotenv (from webdriver-manager)
  Downloading python_dotenv-1.1.1-py3-none-any.whl.metadata (24 kB)
Collecting packaging (from webdriver-manager)
  Downloading packaging-25.0-py3-none-any.whl.metadata (3.3 kB)
Collecting charset_normalizer<4,>=2 (from requests->webdriver-manager)
  Downloading charset_normalizer-3.4.3-cp313-cp313-win_amd64.whl.metadata (37 kB)
Requirement already satisfied: idna<4,>=2.5 in c:\users\neela\appdata\local\packages\pythonsoftwarefoundation.python.3.13_qbz5n2kfra8p0\localcache\local-packages\python313\site-packages (from requests->webdrive
r-manager) (3.10)
Requirement already satisfied: urllib3<3,>=1.21.1 in c:\users\neela\appdata\local\packages\pythonsoftwarefoundation.python.3.13_qbz5n2kfra8p0\localcache\local-packages\python313\site-packages (from requests->we
bdriver-manager) (2.5.0)
Requirement already satisfied: certifi>=2017.4.17 in c:\users\neela\appdata\local\packages\pythonsoftwarefoundation.python.3.13_qbz5n2kfra8p0\localcache\local-packages\python313\site-packages (from requests->we
bdriver-manager) (2025.8.3)
Downloading webdriver_manager-4.0.2-py2.py3-none-any.whl (27 kB)
Downloading packaging-25.0-py3-none-any.whl (66 kB)
Downloading python_dotenv-1.1.1-py3-none-any.whl (20 kB)
Downloading requests-2.32.5-py3-none-any.whl (64 kB)
Downloading charset_normalizer-3.4.3-cp313-cp313-win_amd64.whl (107 kB)
Installing collected packages: python-dotenv, packaging, charset_normalizer, requests, webdriver-manager
  WARNING: The script dotenv.exe is installed in 'C:\Users\neela\AppData\Local\Packages\PythonSoftwareFoundation.Python.3.13_qbz5n2kfra8p0\LocalCache\local-packages\Python313\Scripts' which is not on PATH.
  Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-warn-script-location.
  WARNING: The script normalizer.exe is installed in 'C:\Users\neela\AppData\Local\Packages\PythonSoftwareFoundation.Python.3.13_qbz5n2kfra8p0\LocalCache\local-packages\Python313\Scripts' which is not on PATH.
  Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-warn-script-location.
Successfully installed charset_normalizer-3.4.3 packaging-25.0 python-dotenv-1.1.1 requests-2.32.5 webdriver-manager-4.0.2

[notice] A new release of pip is available: 24.3.1 -> 25.2
[notice] To update, run: C:\Users\neela\AppData\Local\Microsoft\WindowsApps\PythonSoftwareFoundation.Python.3.13_qbz5n2kfra8p0\python.exe -m pip install --upgrade pip
```

```
from selenium import webdriver
from selenium.webdriver.common.keys import Keys
from selenium.webdriver.common.by import By
from selenium.webdriver.edge.service import Service
from webdriver_manager.microsoft import EdgeChromiumDriverManager
from selenium.webdriver.edge.options import Options

# Setup Edge driver with automatic management
service = Service(r"C:/Users/neela/Downloads/edgedriver_win64/msedgedriver.exe")

# Configure Edge options
edge_options = Options()
edge_options.use_chromium = True

# Ensure we're using Chromium-based Edge
edge_options.add_argument("--start-maximized")# Start browser maximized

# Initialize the Edge driver
driver = webdriver.Edge(service=service, options=edge_options)

try:
    # Navigate to Bing
    driver.get("https://www.bing.com”)
```

```
•  # Locate the search box and perform a search
•     search_box = driver.find_element(By.NAME, "q")
•     search_box.send_keys("Selenium Python Edge WebDriver")
•     search_box.send_keys(Keys.RETURN)

•     # Wait for results to load
•     driver.implicitly_wait(20)

•     # Print the page title
•     print("Page title:", driver.title)

•     # Print the first result title
•     first_result = driver.find_element(By.CSS_SELECTOR, "h2 a")

•     print("First result:", first_result.text)

• finally:
•     # Close the browser
•     driver.quit()
```



Search - Microsoft Bing
https://www.bing.com
Microsoft Bing
Copilot
Images
Videos
Shopping
Maps
News
Sign in
Rewards
Mobile
Languages: हिंदी বাংলা اردو ਪੰਜਾਬੀ मराठी తెలుగు தமிழ் ಕನ್ನಡ ગુજરાતી മലയാളം ଓଡ଼ିଆ
Bear with us
'Allah Ko Nahi Pasand': When Mohammed Rafi...
Shashi Tharoor on India-US ties, tariffs: 'Grave already...
Coolie OTT Release Date Announced: When And...
Lokah Chapter 1 box office collection day 7: Dulquer...
IIT-BHU student, 31, dies of cardiac arrest hours before...
In satellite pics: Delhi-NCR floods captured from above
Jio turns 9: celebration
https://www.bing.com/?setlang=te&cc=in&cc=IN

Microsoft Edge is being controlled by automated test software.

selenium python edge webdriver tutorial

```
Page title: Search - Microsoft Bing
First result: Selenium WebDriver Python - Learn Python From Scratch
```

4. Explanation:

- **Imports**: Modules for WebDriver, keypress simulations, and element location.
- **Driver Setup**: **webdriver-manager** handles ChromeDriver installation.
- **Navigation**: **driver.get()** opens the URL.
- **Element Interaction:**

  find_element(By.NAME, "q") locates the search box.
  send_keys() types the query and submits with **Keys.RETURN**.
- **Output**: Prints the page title after search.
- **Cleanup**: **driver.quit()** closes the browser.

5. Conclusion

- Selenium with Python automates browser interactions efficiently. The installation involves setting up the Selenium package and browser drivers, while the API provides intuitive methods for web automation. The example demonstrates a basic search workflow, which can be extended for complex testing scenarios.