



Software Testing and Quality Assurance

Name: Varennya Uchil

SAPID: 60004210121

Branch: Computer Engineering C2-2

Experiment No. 8

Aim: To study software Automation Testing tool Selenium for Setting Up the GUI Map

Theory:

Software Automation Testing is a method in which specialized tools are used to execute test cases automatically, validate application functionality, and compare actual outcomes with expected results. **Selenium** is one of the most popular open-source automation testing tools, widely used for testing web applications across different browsers and platforms.

Selenium is a suite of tools designed for automating web browsers. It includes:

- **Selenium WebDriver:** Allows programming scripts in languages like Python, Java, or C# to control browser actions.
- **Selenium IDE:** A Chrome/Firefox plugin for recording and playing back test cases.
- **Selenium Grid:** Allows parallel testing across multiple machines and environments.

GUI Mapping involves identifying and storing all GUI elements (like buttons, text fields, and links) of the application under test in a centralized way. This allows testers to refer to these elements using logical names in the test scripts, improving readability and maintainability.

In Selenium, GUI mapping is achieved by locating elements using selectors like:

- **ID**
- **Name**
- **Class Name**
- **Tag Name**
- **XPath**
- **CSS Selectors**

Benefits of GUI Mapping with Selenium

- Easier test script maintenance



- Improved test readability
- Reusability of locator definitions
- Supports regression and continuous testing pipelines

Code and Output:

```
from selenium import webdriver
from selenium.webdriver.common.by import By
from selenium.webdriver.common.keys import Keys
from selenium.webdriver.support.ui import WebDriverWait
from selenium.webdriver.support import expected_conditions as EC
import time
```

```
# Initialize the Chrome WebDriver
driver = webdriver.Chrome()
```

```
# Step 1: Open Wikipedia
driver.get("https://www.wikipedia.org/")
driver.maximize_window()
```

```
# Step 2: Wait for the search input box and enter "India"
search_input = WebDriverWait(driver, 10).until(
    EC.element_to_be_clickable((By.ID, "searchInput"))
)
search_input.send_keys("India", Keys.ENTER)
```

```
# Step 3: Wait for the article page to load
WebDriverWait(driver, 20).until(
    EC.title_contains("India")
)
```

```
# Optional: Print the title to verify
print("Page title is:", driver.title)
```

```
# Wait a few seconds to view the result (or for any screenshot)
time.sleep(10)
```

```
# Step 4: Close the browser
```



driver.quit()

Wikipedia, the free encyclopedia

en.wikipedia.org/wiki/Main_Page

Chrome is being controlled by automated test software.

WIKIPEDIA
The Free Encyclopedia

JOIN THE WIKIDATA CONTEST AND HELP IMPROVE GEOGRAPHICALLY LOCATED ITEMS IN 27 COUNTRIES AND REGIONS!
COORDINATE ME
MAY 2025

Main Page Talk Read View source View history Tools

Welcome to **Wikipedia**,
the free encyclopedia that anyone can edit.
117,298 active editors · 6,989,993 articles in English

From today's featured article
Kingdom Hearts: Chain of Memories is a 2004 action role-playing game that was developed by

In the news
In the Singaporean general election, the People's Action Party,

India - Wikipedia

en.wikipedia.org/wiki/India

Chrome is being controlled by automated test software.

WIKIPEDIA
The Free Encyclopedia

Search Wikipedia

Donate Create account Log in

India

304 languages

Article Talk Read View source View history Tools


From Wikipedia, the free encyclopedia


Coordinates: 21°N 78°E

This article is about the country. For other uses, see [India \(disambiguation\)](#).

India, officially the **Republic of India**,^{[1][21]} is a country in **South Asia**. It is the **seventh-largest** country by area; the most populous country from June 2023 onwards;^{[22][23]} and since its independence in 1947, the world's most populous democracy.^{[24][25][26]} Bounded by the **Indian Ocean** on the south, the **Arabian Sea** on the southwest, and the **Bay of Bengal** on the southeast, it shares land borders with **Pakistan** to the west;^[K] **China**, **Nepal**, and **Bhutan** to the

Republic of India
Bhārat Gaṇarājya


Flag


State emblem

Motto: *Satyameva Jayate* (Sanskrit)
"Truth Alone Triumphs"^[1]

Contents hide

- (Top)
- Etymology
- History
- Geography
- Biodiversity
- Politics and government
- Foreign, economic, and strategic relations
- Economy
- Demographics, languages, and religion
- Culture

Appearance hide



```
File Edit Selection View Go ... Search
EXPLORER
> NO FOLDER OPENED
> OUTLINE
> TIMELINE

gui_map_test.py
C:\Users\dell> del gui_map_test.py ...
20
21 # Step 3: Wait for the article page to load
22 WebDriverWait(driver, 10).until(
23     EC.title_contains("India")
24 )
25
26 # Optional: Print the title to verify
27 print("Page title is:", driver.title)
28
29 # Wait a few seconds to view the result (or for any screenshot)
30 time.sleep(5)
31
32 # Step 4: Close the browser
33 driver.quit()
34

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
Python Debug Console
PS C:\Users\dell> c.; cd 'c:\Users\dell'; & 'c:\Users\dell\AppData\Local\Programs\Python\Python313\python.exe' 'c:\Users\dell\.vscode\extensions\ms-python.debugpy-2025.6.0-win32-x64\bundle\libs\debugpy\launcher' '60980' '--' 'c:\Users\dell\gui_map_test.py'

DevTools listening on ws://127.0.0.1:60989/devtools/browser/584a8196-4aab-482a-9d85-5ad89fa91e8b
Page title is: India - Wikipedia
Created TensorFlow Lite XNNPACK delegate for CPU.
Attempting to use a delegate that only supports static-sized tensors with a graph that has dynamic-sized tensors (tensor#1 is a dynamic-sized tensor).
PS C:\Users\dell>
```

Observations:

Through this experiment, we observed seamless navigation to the Wikipedia website, successful maximization of the browser window and executing the sequence of actions to locate the search box, submit the search query for "India", and display the results before closing the browser window.

Conclusion:

In conclusion, setting up the **GUI Map using Selenium** is a critical best practice for building scalable and robust automation testing frameworks. It enhances the clarity and effectiveness of test scripts, especially in large-scale or frequently changing web applications.