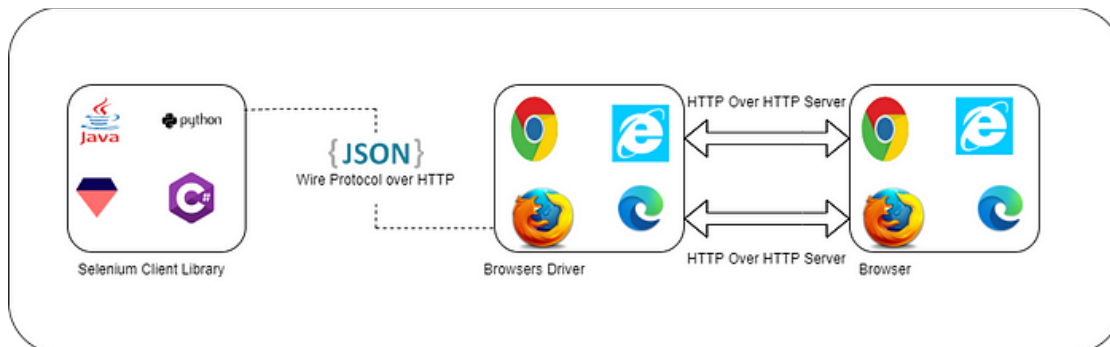


Architectures of Selenium and Playwright

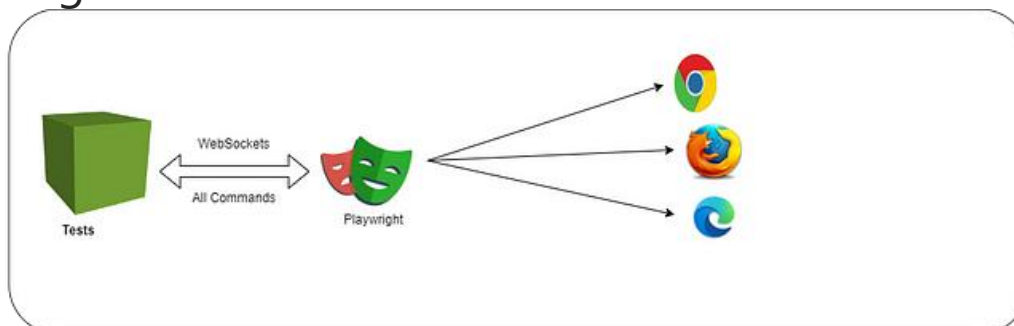
Selenium Architecture:



Selenium architecture

Selenium works on the HTTP connection protocol. It means after you trigger the test, the complete Selenium code written by us (Client) will be converted to JSON format. Generated JSON is sent to the browser driver (Server) through HTTP protocol.

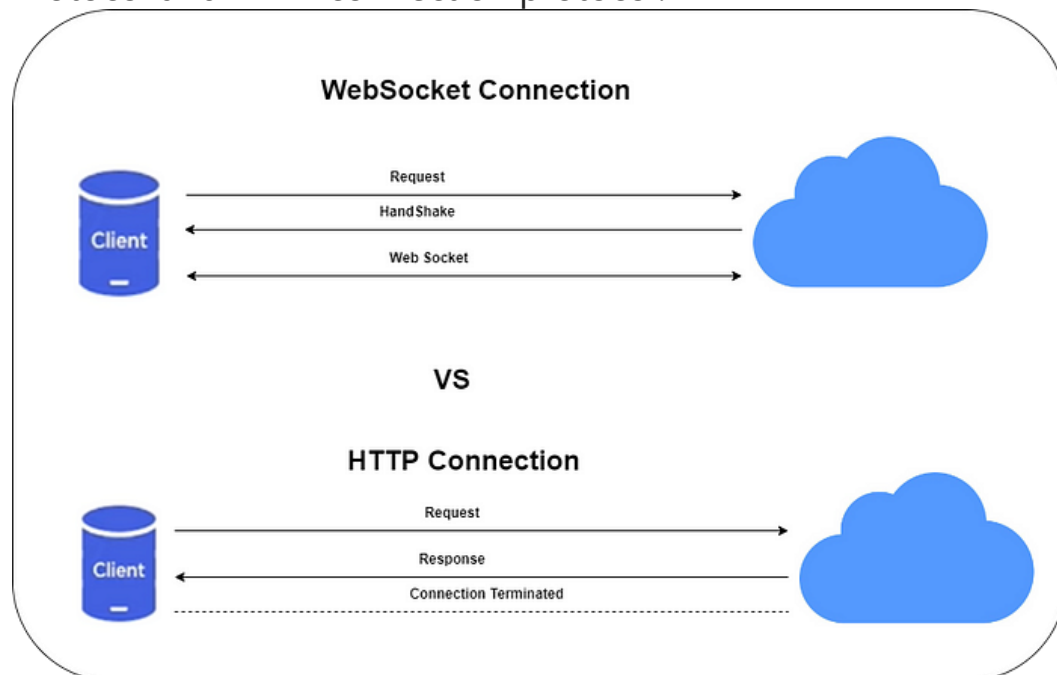
Playwright Architecture:



Playwright architecture

While Playwright works on Web socket connection protocol, it means once you will trigger the test, the code will be converted into JSON format and will be sent to the server using Web socket protocol.

So now we will see the difference between Web socket connection Protocol and HTTP connection protocol:



HTTP VS Web Sockets Connection Diagram

Selenium sends each command as a separate HTTP request and receives JSON responses. So, every action, such as opening the browser, clicking an element, or sending keys in a text box, is sent as a separate HTTP request. Additionally, after completion of every request, the connection between server and client will be terminated, which needed to be re-established for the next request.

Connection termination after every request result in slower execution which introduces a layer of flakiness.

Playwright, on the other hand, communicates all requests through a single Web socket connection, which stays in place until test execution is completed. This reduces the points of failure and allows commands to be sent quickly on a single connection.

Conclusion

From the architecture diagram, we got a clear idea that Selenium needs to establish a connection before each request, so there are possibilities that some of the requests can take more time to establish the connection which results in flakiness. Whereas Playwright connects through a web socket due to which the connection will be maintained until the completion of all the test case executions which makes Playwright a more stable tool as compared to Selenium.