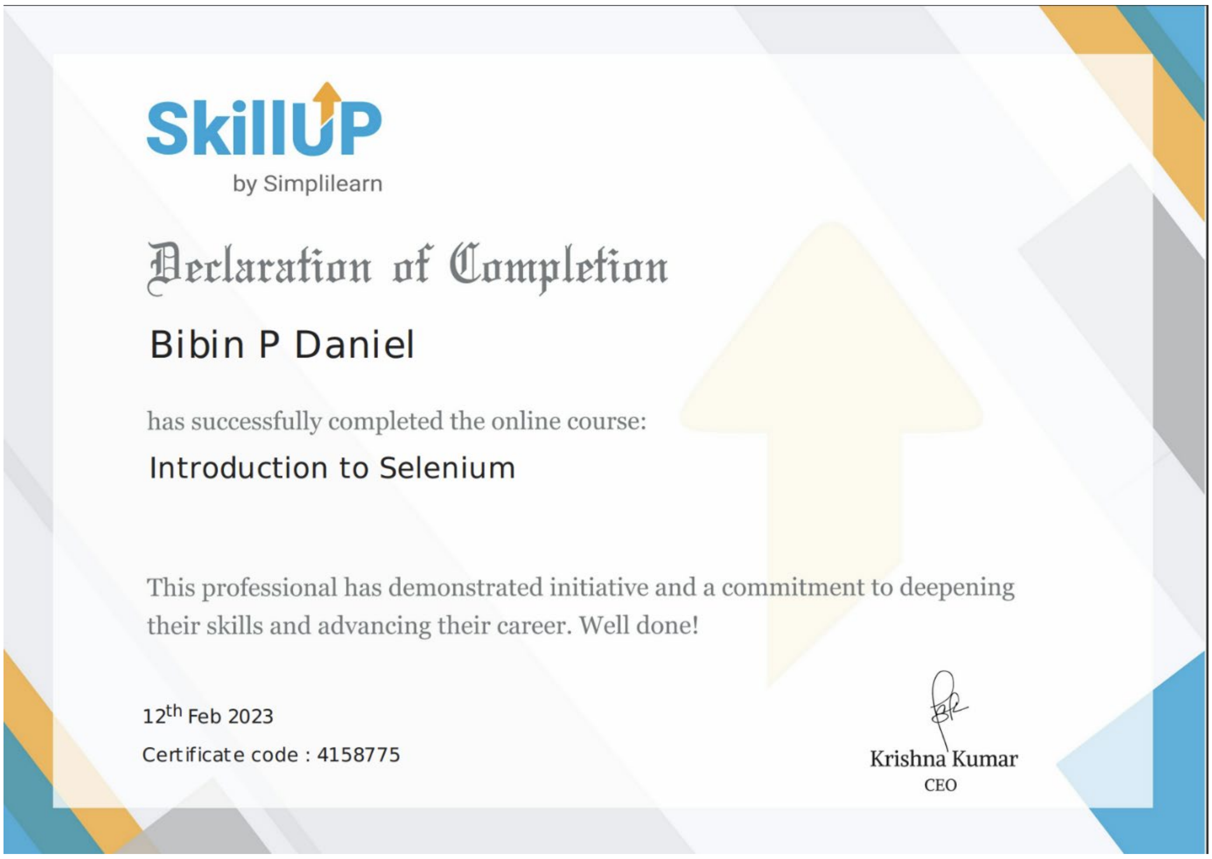
ASSIGNMENT

INTRODUCTION TO SOFTWARE ENGINEERING

Name:Bibin P Daniel

RollNO:24

CERTIFICATE



SkillUP
by Simplilearn

Declaration of Completion

Bibin P Daniel

has successfully completed the online course:

Introduction to Selenium

This professional has demonstrated initiative and a commitment to deepening their skills and advancing their career. Well done!

12th Feb 2023

Certificate code : 4158775

[illegible]

Krishna Kumar
CEO

Selenium

Selenium is an open-source, automated, and valuable testing tool that all web application developers should be aware of. A test performed using Selenium is usually referred to as Selenium automation testing. However, Selenium is not just a single tool but a collection of tools, each catering to different Selenium automation testing needs. In this tutorial you will learn all about Selenium and the various types of Selenium automation testing tools.

What makes Selenium Such a Widely Used Testing Tool?

1. Selenium is easy to use since it is primarily developed in JavaScript
2. Selenium can test web applications against various browsers like Firefox, Chrome, Opera, and Safari
3. Tests can be coded in several programming languages like Java, Python, Perl, PHP, and Ruby
4. Selenium is platform-independent, meaning it can deploy on Windows, Linux, and Macintosh
5. Selenium can be integrated with tools like JUnit and TestNG for test management

Selenium Integrated Development Environment (IDE)

Developed by Shinya Kasatani in 2006, Selenium IDE is a browser extension for Firefox or Chrome that automates functionality. Typically, IDE records user interactions on the browser and exports them as a reusable script.

IDE was developed to speed up the creation of automation scripts. It’s a rapid prototyping tool and can be used by engineers with no programming knowledge whatsoever.

IDE ceased to exist in August 2017 when Firefox upgraded to a new Firefox 55 version, which no longer supported Selenium IDE. Applitools rewrote the old Selenium IDE and released a new version in 2019. The latest version came with several advancements.

Selenium Remote Control (RC)

Paul Hammant developed Selenium Remote Control (RC). Before we dive into RC, it’s important to know why RC came to be in the first place.

Initially, a tool called Selenium-Core was built. It was a set of JavaScript functions that interpreted and executed Selenese commands using the browser's built-in JavaScript interpreter. Selenium-Core was then injected into the web browser.

Selenium RC is a server written in Java that makes provision for writing application tests in various programming languages like Java, C#, Perl, PHP, Python, etc. The RC server accepts commands from the user program and passes them to the browser as Selenium-Core JavaScript commands.

Selenium WebDriver

Developed by Simon Stewart in 2006, Selenium WebDriver was the first cross-platform testing framework that could configure and control the browsers on the OS level. It served as a programming interface to create and run test cases.

Unlike Selenium RC, WebDriver does not require a core engine like RC and interacts natively with browser applications. WebDriver also supports various programming languages like Python, Ruby, PHP, and Perl, among others, and can be integrated with frameworks like TestNG and JUnit for test management.

- Selenium test script - Selenium test script is the test code written in any programming language be it Java, Perl, PHP, or Python that can be interpreted by the driver.
- JSON Wire Protocol - JSON Wire Protocol provides a transport mechanism to transfer data between a server and a client. JSON Wire Protocol serves as an industry standard for various web services.
- Browser drivers - Selenium uses drivers specific to each browser to establish a secure connection with the browser.
- Browsers - Selenium WebDriver supports various web browsers to test and run applications on.

Selenium Grid

Patrick Lightbody developed a grid with the primary objective of minimizing the test execution time. This was facilitated by distributing the test commands to different machines simultaneously. Selenium Grid allows the parallel execution of tests on different browsers and different operating systems. Grid is exceptionally flexible and integrates with other suite components for simultaneous execution.

The Grid consists of a hub connected to several nodes. It receives the test to be executed along with information about the operating system and browser to be run on and picks a node that conforms to the requirements (browser and platform), passing the test to that node. The node now runs the browser and executes the selenium commands within it.

What is Selenium IDE?

Shinya Kasatani developed Selenium Integrated Development Environment (IDE) in 2006 as a Firefox plugin that helps create tests. IDE is an easy-to-use interface that records user interactions on the browser and exports them as a reusable script.

Selenium IDE is part of the Selenium suite and was developed to speed up the creation of automation scripts. It's a rapid prototyping tool and can be used by engineers with no programming knowledge whatsoever.

Advancements with New Selenium IDE

In 2017, Firefox upgraded to a new Firefox 55 version, which no longer supported Selenium IDE. Since then, the original version of Selenium IDE ceased to exist. However, Applitools rewrote the old Selenium IDE and released a new version recently.

This new version comes with several new advancements:

- Support for both Chrome and Firefox
- Improved locator functionality
- Parallel execution of tests using Selenium command line runner
- Provision for control flow statements
- Automatically waits for the page to load
- Supports embedded JavaScript code-runs
- IDE has a debugger which allows step execution, adding breakpoints
- Support for code exports

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Selenium WebDriver Architecture

- Selenium test script - Selenium test script is the test code written in any of the mentioned programming languages that are interpreted by the driver
- JSON Wire Protocol - JSON Wire Protocol provides a transport mechanism to transfer data between a server and a client. JSON Wire Protocol is the industry standard for various web services
- Browser drivers - Selenium uses drivers, specific to each browser to establish a secure connection with the browser
- Browsers - Selenium WebDriver supports multiple web browsers to test and run applications on.

What is XPath?

XPath is a Selenium technique that is used to navigate through the HTML structure of a webpage. It is a syntax or language that makes finding elements on a webpage possible using XML path expression.

In Selenium automation, there may be times when elements cannot be found with general locators like ID, name, class, etc. And this is when XPath is used to locate those elements on the webpage. XPath in Selenium may be used on both XML and HTML documents.

What Is chrome Driver?

A chrome Driver is a separate executable or a standalone server that Selenium WebDriver uses to launch Google Chrome. Here, a WebDriver refers to a collection of APIs used to automate the testing of web applications.

Initializing the object of Chrome Driver is possible with the help of this command:

WebDriver driver = new ChromeDriver

Why Use a Chrome Driver?

As Google Chrome dominates the browser market, the use of a chrome Driver becomes a must. Selenium WebDriver uses the chrome Driver to communicate test scripts with Google Chrome. It is used to navigate between web pages and provide input to the same.

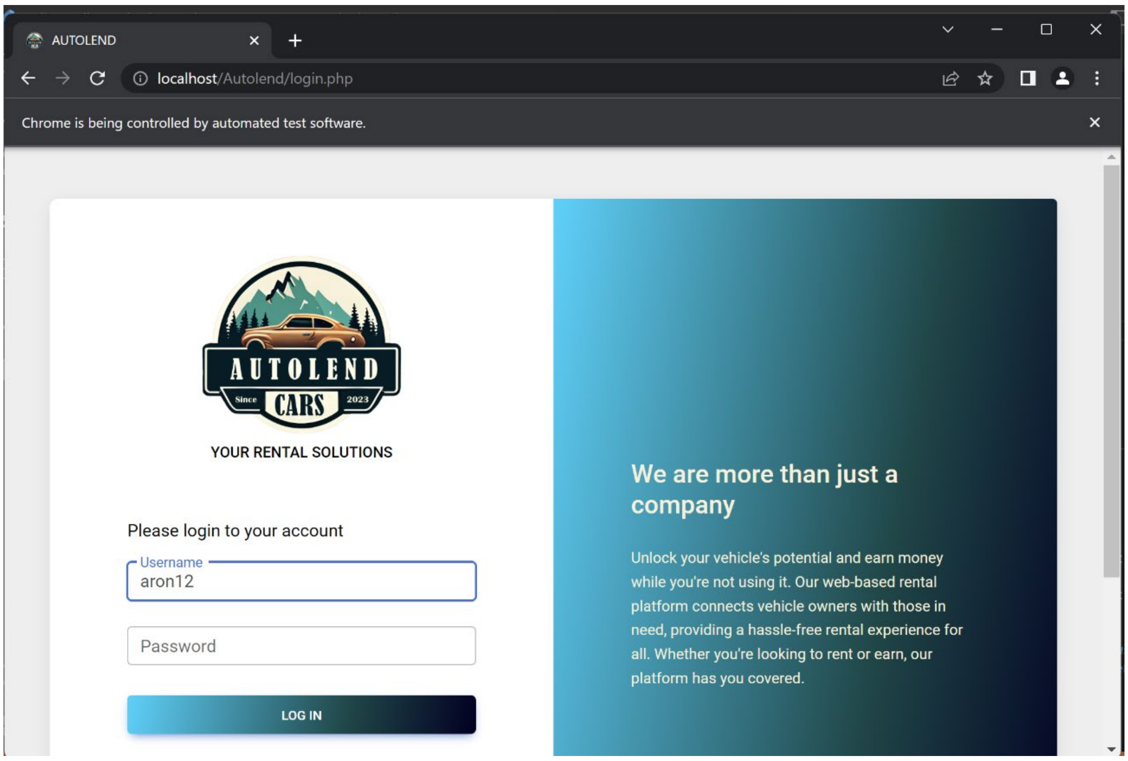
Selenium Test

Login page:

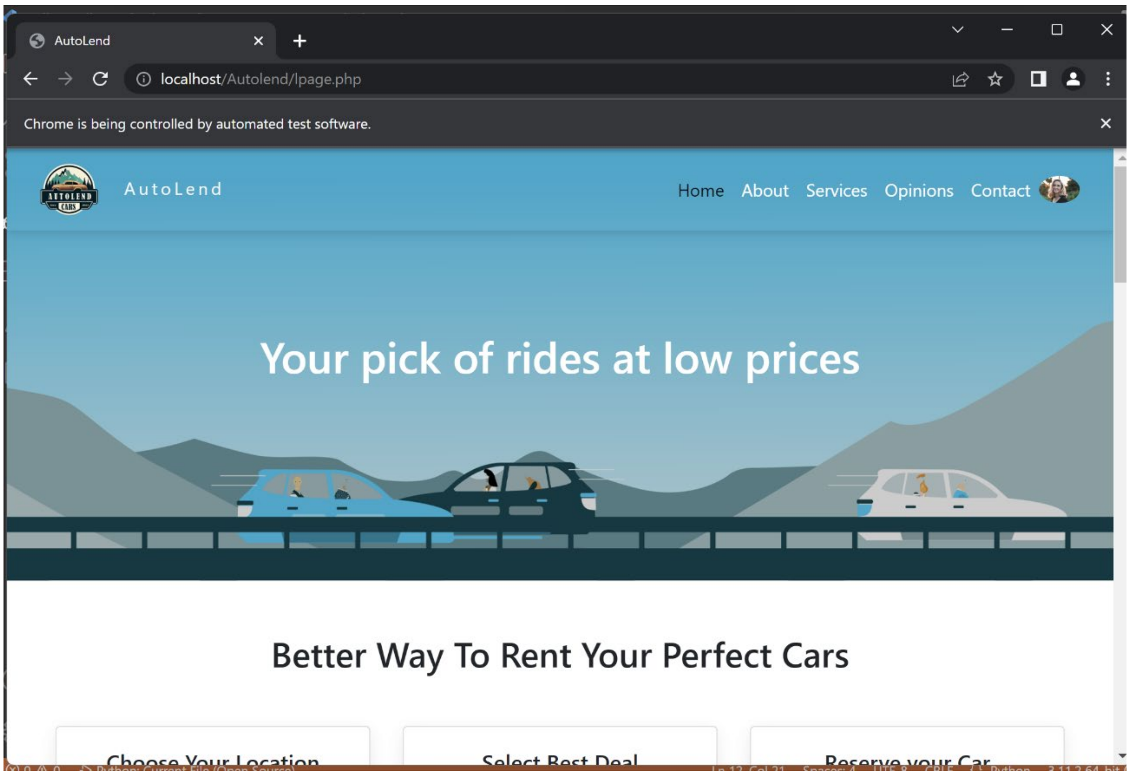
```
from selenium import webdriver
from selenium.webdriver.common.by import By
from selenium.webdriver.common.keys import Keys
from time import sleep

# set up the driver
driver = webdriver.Chrome()

# navigate to the login page
driver.get("http://localhost/Autolend/login.php")

# enter the username
username_input = driver.find_element(By.ID, "form2Example11")
username_input.send_keys("aron12")
sleep(2)
# enter the password
password_input = driver.find_element(By.ID, "form2Example22")
password_input.send_keys("ARon@123")
sleep(2)

# submit the form
submit_button = driver.find_element(By.ID, "subbtn")
submit_button.click()
sleep(4)
welcome_message = driver.find_element(By.XPATH,
"//small[contains(text(),'AutoLend')]").text
if(welcome_message=='AutoLend'):
    print("tested success")
else:
    print("testing failed")
```

```
# close the browser window
driver.quit()
```

output screens:


AUTOLEND
localhost/Autolend/login.php
Chrome is being controlled by automated test software.
AUTOLEND CARS
Since 2023
YOUR RENTAL SOLUTIONS
Please login to your account
Username
aron12
Password
LOG IN
We are more than just a company

Unlock your vehicle's potential and earn money while you're not using it. Our web-based rental platform connects vehicle owners with those in need, providing a hassle-free rental experience for all. Whether you're looking to rent or earn, our platform has you covered.

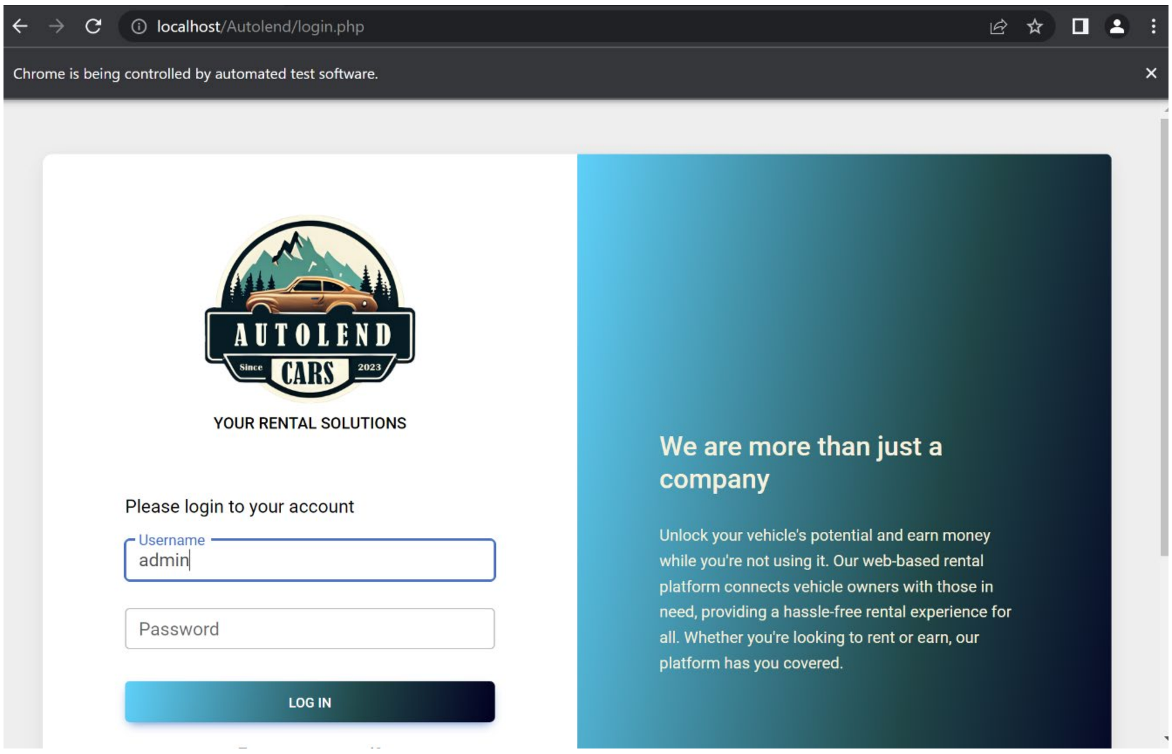

AutoLend
localhost/Autolend/lpage.php
Chrome is being controlled by automated test software.
AutoLend
Home
About
Services
Opinions
Contact
Your pick of rides at low prices
Better Way To Rent Your Perfect Cars
Choose Your Location
Select Best Deal
Reserve your Car

User activate and block user:

```python
from selenium import webdriver
from selenium.webdriver.common.by import By
from selenium.webdriver.common.keys import Keys
from time import sleep
from selenium.webdriver.common.action_chains import ActionChains

# set up the driver
driver = webdriver.Chrome()

# navigate to the login page
driver.get("http://localhost/Autolend/login.php")

# enter the username
username_input = driver.find_element(By.ID, "form2Example11")
username_input.send_keys("admin")
sleep(3)
# enter the password
password_input = driver.find_element(By.ID, "form2Example22")
password_input.send_keys("admin")
sleep(2)
# submit the form
submit_button = driver.find_element(By.ID, "subbtn")
submit_button.click()

admin_link = driver.find_element(By.LINK_TEXT, "Users")
admin_link.click()

# wait for the new page to load
driver.implicitly_wait(10)

# verify that the current URL is the admin-cars.php page
assert "admin-users.php" in driver.current_url

rows = driver.find_elements(By.XPATH, "//table[@id='mytable']/tbody/tr")

# iterate over each row and click on the toggle-status link
for row in rows:
    sleep(2)
    toggle_link = row.find_element(By.CSS_SELECTOR, "a.toggle-status")
    toggle_link.click()

    # wait for the page to load after clicking the link
    driver.implicitly_wait(10)

# wait for the page to load after clicking the links
driver.implicitly_wait(10)
```

```
sleep(5)

# close the browser window
driver.quit()
```

Output screens:



localhost/Autolend/login.php

Chrome is being controlled by automated test software.

AUTOLEND CARS Since 2023

YOUR RENTAL SOLUTIONS

Please login to your account

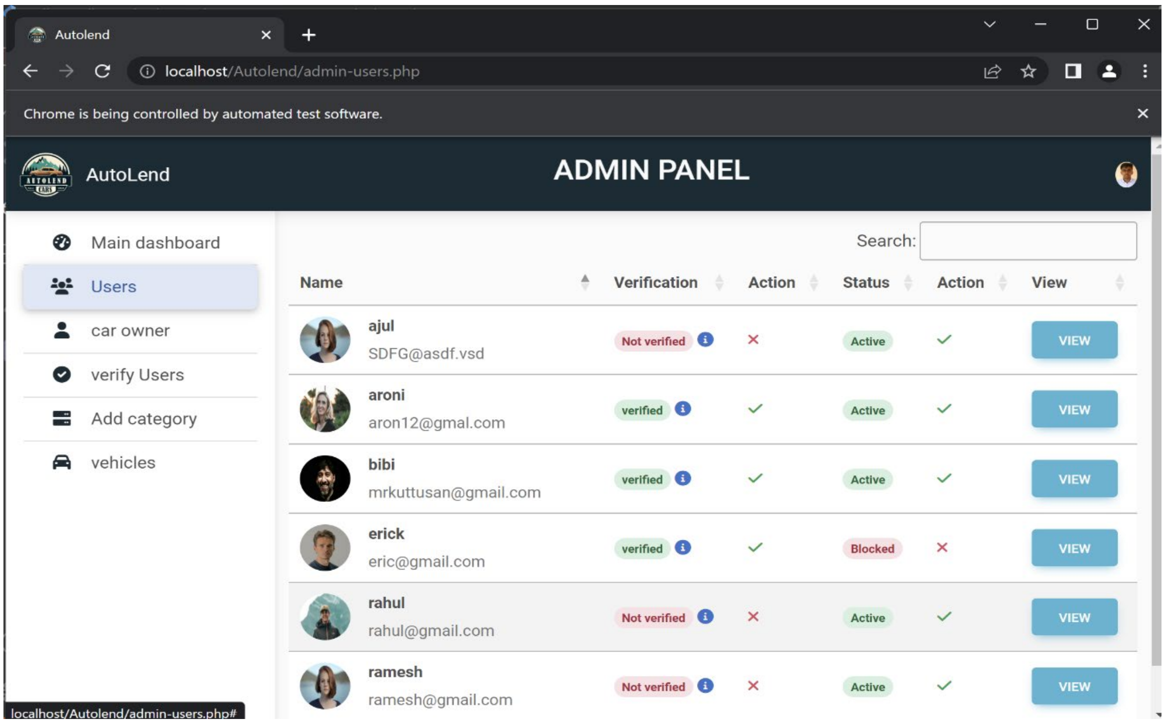
Username: admin

Password

LOG IN

We are more than just a company

Unlock your vehicle's potential and earn money while you're not using it. Our web-based rental platform connects vehicle owners with those in need, providing a hassle-free rental experience for all. Whether you're looking to rent or earn, our platform has you covered.



Autolend

localhost/Autolend/admin-users.php

Chrome is being controlled by automated test software.

AutoLend

ADMIN PANEL

Search:

Name	Verification	Action	Status	Action	View
ajul SDFG@asdf.vsd	Not verified	✗	Active	✓	VIEW
aroni aron12@gmal.com	verified	✓	Active	✓	VIEW
bibi mrkuttusan@gmail.com	verified	✓	Active	✓	VIEW
erick eric@gmail.com	verified	✓	Blocked	✗	VIEW
rahul rahul@gmail.com	Not verified	✗	Active	✓	VIEW
ramesh ramesh@gmail.com	Not verified	✗	Active	✓	VIEW

localhost/Autolend/admin-users.php#