

CS 453: Application Lifecycle Management
Homework 4
Due: 26.04.2022 23:59
(No late submissions are allowed)

Testing software products is a crucial step of any development life cycle. With advances in technology, it is possible to automatically perform some portion of this procedure. In this assignment, you will work with some advanced automated testing tools: Selenium, Wiremock, and Mocha.

Part I [40 points]:

In this part, you need to use Selenium to test an authentication page developed by you.

a) First, you need to develop a web page based on HTML and Javascript (jQuery) to perform preliminary checks for an authentication page. Your page should contain four different components.

1. A message box to show error messages.
2. Two different inputs to enter email and password.
3. A button to perform login (Do all the checks)

On the page, after hitting the login button following checks should be performed:

1. Check if the email is in the email format. You can easily find regex on the web to evaluate if a string is an email.
2. Check if the password confirms our criteria which are:
 - a. consists only numbers, letters, and '+', '@'
 - b. Is longer than 8 characters.
 - c. Contains at least one upper case letter.
 - d. Contains at least one lowercase letter.
 - e. Contains at least one number.

If any of the above criteria are not met by the entered inputs, the page should show an error message indicating the error. If all inputs meet all the above criteria, a message indicating that the inputs are correct should be assigned to the message box.

To develop this part, you are only allowed to use HTML, and using any web framework other than that is not allowed. You can use CSS to decorate your web page, but the appearance is not important and does not contribute to this assignment grade.

b) After developing the web page, you need to use Selenium automated framework to test all of the specified criteria. In this part, you are not allowed to use Selenium programming API and should use its available IDEs to record a test session. Firefox Selenium plugin is the recommended IDE for this assignment. Still, you can use plugins for other browsers or open-source standalone IDEs.

For each criterion, you need to develop one failure and one successful test case (You are not allowed to test all criteria at once) and record your test session. To check if your web page is working correctly, you need to check if the expected message appears in the message box. Also, choose meaningful names for your test case to be traceable.

PART II [60 points]:

In this part, you need to use Selenium programming API for your web page.

a) Extend the web page you developed in PART I to send an HTTP Post request to an imaginary authentication API on an arbitrary web address to verify if the user can log in or not. This request should be sent after the login button is clicked and all criteria are met. You need to place entered inputs in the request body in JSON format to send the request.

b) Next, you need to use Wiremock to mock the imaginary API and Selenium standalone to test your web page functionality.

Your Wiremock implementation should return success only for email: "admin@admin.com" and password: "@Dmin1234" and failure for all other inputs.

Your Selenium test should consist of 5 test cases for failure login and one for successful login. You need to check if the login was successful or not by checking if the expected text appears on the message box.

For this part, you are supposed to use the Mocha testing framework, Selenium WebDriver, and Wiremock. Also, to send HTTP requests you need to use JQuery.

Submission

To submit your assignment, you need to write a comprehensive report about the commands you used for your recorded test session and how you set up the Wiremock for the programming API part. In addition, you need to submit all your codes, including Selenium recorded project and mocha tests. You have to put all files in an archive file and submit them to Moodle.

Important Note

All work on assignments must be done individually. The point of the assignments is for you to research and learn important concepts that you will use throughout your career. You may not copy your answers in whole or in part from someone else or the sources you have used. You may not discuss your solution with others. If you need detailed help, please ask your TA.

Students caught cheating or plagiarizing on assignments will be subject to disciplinary action without any exceptions. Do not forget that it is much easier to explain a poor grade to others than to explain a cheating conviction.