

ASSIGNMENT-2

Automated GUI-based testing

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INTRODUCTION

In this assignment, the website <https://store.steampowered.com/> has been automated using selenium and JUnit 4. This report also involves the list of the feature requirements which have been specified with the user stories and the acceptance criteria, followed by the time measurements of the executed test cases and a discussion. Steam is a video game digital distribution service by Valve. It also provides the user with installation and automatic updating of games, and community features such as friends lists and groups, cloud storage, and in-game voice and chat functionality.

FEATURE REQUIREMENTS

The following are the feature requirements for the website <https://store.steampowered.com/> which is to be automated. The user stories along with the acceptance criteria are as shown below.

1. User authentication

- USER STORY: As a user I want to have a login system to access my personal information and to use the website functionalities.
- ACCEPTANCE CRITERIA: The website needs to have a login system which allows the user to enter the username and password. If the login is successful with the right credentials, then the user will have access to his/her personal account on the website and can use the website functionalities.

2. Search for games

- USER STORY: As a user I want to search for games available on the website.
- ACCEPTANCE CRITERIA: The user is able to search for a specific name by typing in the name of the game in the search bar and the search results of that game appear on the screen.

3. Change language

- USER STORY: As a user I want to change the language in which I want to view the website in.
- ACCEPTANCE CRITERIA: The user can change the language by clicking on the language settings and selecting the desired language on the website.

4. Update profile and themes

- USER STORY: As a user I want to update my profile and themes on the website.
- ACCEPTANCE CRITERIA: The user update his/her profile or change theme by clicking on the 'edit profile' option in the profile settings and selecting a theme colour of choice.

5. Adding item to cart

- USER STORY: As a user I want to add desired game on to my cart.
- ACCEPTANCE CRITERIA: The user first searches for the product and selects a product, then clicks on 'add to cart' button. Then the item is added onto the cart.

6. Add friends

- USER STORY: As a user I want add friends to play with on the website.
- ACCEPTANCE CRITERIA: The user selects the 'Friends' option in the profile settings and clicks on add friends. Then user is allowed to search for a friend's profile and the click on the friend's profile in the search results and select the 'Add as friend' option. Then the friend is added onto the friend's list.

7. Customer support

- USER STORY: As a user I want to get customer support for troubleshooting or getting a refund for a game on the website.
- ACCEPTANCE CRITERIA: The user clicks on the 'Support' button on the home page and clicks on 'Games and softwares' , then a list of troubleshooting options appear on the screen from which the user get support from.

8. View new and trending games

- USER STORY: As a user I view the latest and trending games on the website.
- ACCEPTANCE CRITERIA: The user clicks on ‘browse’ button and selects ‘new and trending’ option, then all the latest games appear on the screen.

9. Show product preferences

- USER STORY: As a user I want to filter the product preferences to be included in my store on the website.
- ACCEPTANCE CRITERIA: The user clicks on the profile settings and clicks on the ‘preferences button’. Then a list of categories and types of products appear where the user selects according to which are to be included in the store.

10. Community activity

- USER STORY: As a user I want to select a workshop on the community activity.
- ACCEPTANCE CRITERIA: The user clicks on the community button and selects the required workshop which appears on the website.

TIME MEASUREMENTS

The total development time of the test suite is 2 hours. The execution time of each test case is as shown in the table below.

FEAUTURE	EXECUTION TIME
User authentication	4.939s
Search for games	9.483s
Change language	9.484s
Update profile and themes	16.003s
Adding item to cart	13.650s
Add friends	15.758s
Customer support	7.815s
View new and trending games	7.004s

Show product preferences	13.352s
Community activity	8.076s

SCREENSHOT OF SUCCESSFUL TEST EXECUTION

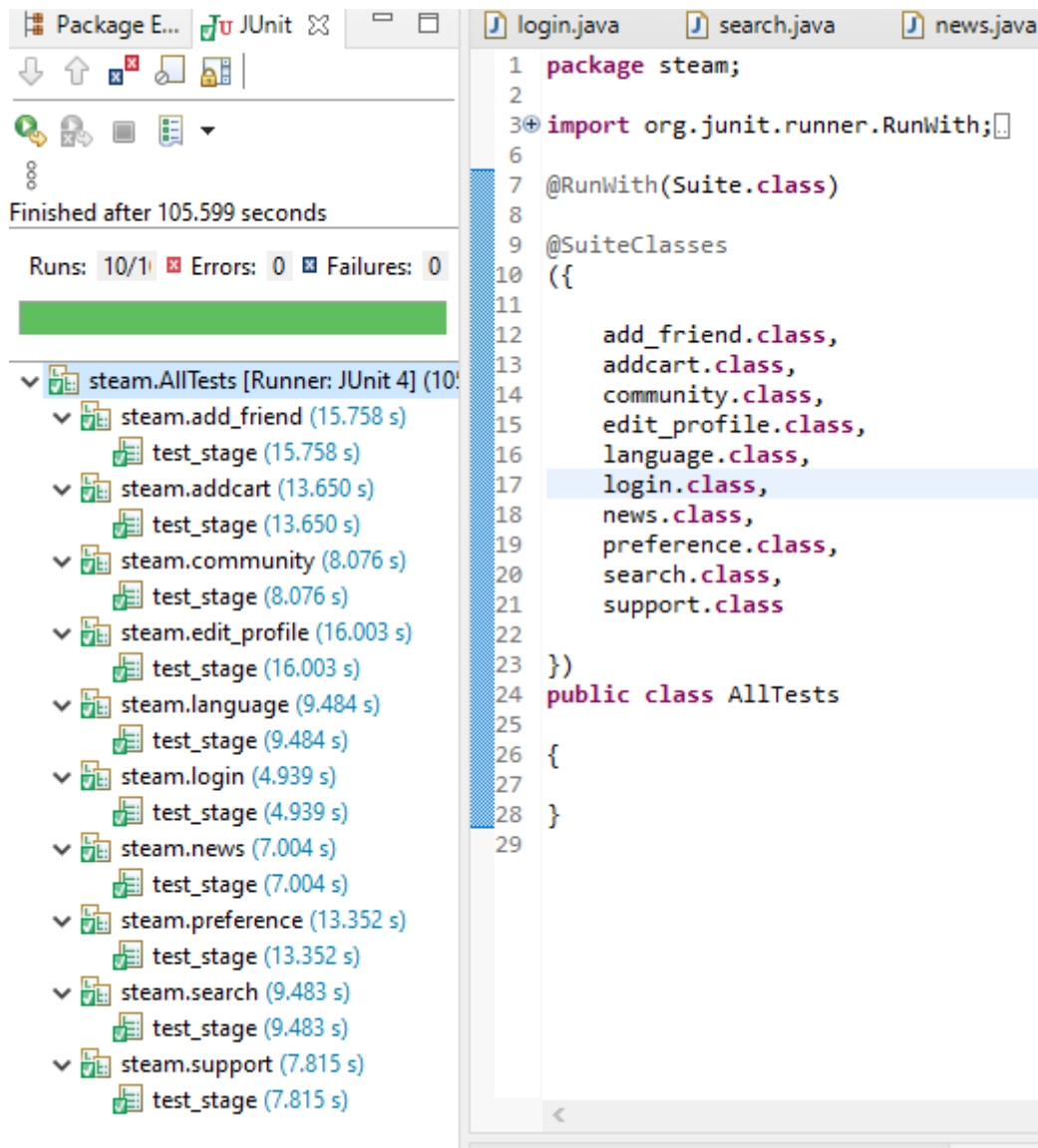


Figure 0-1 Screenshot of successful execution of test suite

DISCUSSION

In terms of automated software testing practices, I believe that my test suite is of good quality for the following reasons:

- The user stories along with the acceptance criteria have been decided in the initial stage.
- The user stories help to understand the feature requirement in the user's perspective.
- The acceptance criteria for each user story is mentioned as it is the measure of successful implementation and gives insights about the definition of done for each test case.
- Selenium was chosen to automate the testing as it is open source, supports different programming languages and operating systems.
- Selenium also provides support across multiple web browsers. In this assignment, I used Google Chrome.
- All the test cases were written in a format including the setup, run and teardown stages, where the `setup()` method is called before the invocation of each test method in a given class and the `teardown()` method is called after the invocation of each test method in given class.
- The test cases have been written in the test-driven methodology using JUnit 4 framework.
- All the test cases and entire test suite were executed successfully.
- To increase the reliability, the test suite is isolated i.e., it contains tests that run without impacting other tests in the suite.
- The test suite is maintainable as it can accommodate changes in the test cases without disturbing the other test cases.

In the comparison of the scripting and record and replay style of testing, each style has its own share of pros and cons, an ideal test plan is the one where tests are executed in parallel.

- The test suite is script-based and automated using selenium.
- The test scripts using selenium framework are used to achieve the best 'code coverage metrics', i.e., the test code can be used to test even the boundary scenarios along with normal test scenarios.
- The maintainability of the test suite and the code is more compared to the record and replay style of testing as it can accommodate changes and updates in the code and makes it more reusable and maintainable.

- The script-based is best suited for creating test suites/test cases in a more robust manner.
- The modification of the test cases is easy with scripting.
- The only disadvantage with the scripting compared to record and replay style of testing is that it takes a lot of time to script and to learn the commands of the programming language as well as the selenium commands.