

Automated Web Testing

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Анотація

У даній статті подано основну інформацію про тестування програмного забезпечення. Представлено основні види тестування програмного забезпечення. Також проаналізовано основні види тестування веб-додатків, а також необхідність використання Selenium. Поставлено задачу для подальшого дослідження.

Ключові слова: тестування, програмування, помилка, тест-комплект, тест-кейс, ручне (мануальне) тестування, автоматизація, Selenium.

Abstract

This article contains general information relating to software testing. The basic types of software testing are introduced. Also it was analyzed the main types of web applications testing, and it was analyzed the necessity for using Selenium. It was determined the task for the further investigation.

Keywords: testing, programming, mistake, test suite, test case, manual testing, automation, Selenium.

Software testing is an investigation conducted to provide stakeholders with information about the quality of the product or service under test. Test techniques include, but are not limited to, the process of executing a program or application with the intent of finding software bugs (errors or other defects). It involves the execution of a software component or system component to evaluate one or more properties of interest. In general, these properties indicate the extent to which the component or system under test:

- meets the requirements that guided its design and development,
- responds correctly to all kinds of inputs,
- performs its functions within an acceptable time,
- is sufficiently usable,
- can be installed and run in its intended environments, and
- achieves the general result its stakeholders desire [1].

Software testing is very important because of the following reasons:

- software testing is really required to point out the defects and errors that were made during the development phases,
- it's essential since it makes sure of the Customer's reliability and their satisfaction in the application,
- it is very important to ensure the Quality of the product. Quality product delivered to the customers helps in gaining their confidence,
- testing is necessary in order to provide the facilities to the customers like the delivery of high quality product or software application which requires lower maintenance cost and hence results into more accurate, consistent and reliable results,
- testing is required for an effective performance of software application or product,
- it's important to ensure that the application should not result into any failures because it can be very expensive in the future or in the later stages of the development,
- it's required to stay in the business.

Test suite and test case are the general notions used at the process of software testing. A test case in software engineering normally consists of a unique identifier, requirement references from a design specification, preconditions, events, a series of steps (also known as actions) to follow, input, output, expected result, and actual result. These steps can be stored in a word processor document, spreadsheet, database, or other common repository. The most common term for a collection of test cases is a test suite.

Software testing can be performed manually or automatically. Manual testing is the oldest and most rigorous type of software testing. Manual testing requires a tester to perform manual test operations on the test software without the help of Test automation. Repetitive manual testing can be difficult to perform on large software applications or applications having very large dataset coverage. There is no complete substitute for manual testing [2].

Test automation is the use of software to control the execution of tests, the comparison of actual outcomes to predicted outcomes, the setting up of test preconditions, and other test control and test reporting functions. Commonly, test automation involves automating a manual process already in place that uses a formalized testing process. Another important aspect of test automation is the idea of partial test automation, or automating parts but not all of the software testing process. Testing tools can help automate tasks such as product installation, test data creation, GUI interaction, problem detection (consider parsing or polling agents equipped with oracles), defect logging, etc [3].

Automated software testing is becoming more and more important for many software projects in order to automatically verify key functionality, test for regressions and help teams run a large number of tests in a short period of time. With the growing number of web-based applications this is changing, however, as verifying and testing web-based interfaces is easier and there are various tools that help with this, including free open source projects. The most popular tools for automated testing of web applications: Selenium, Watir, Windmill, Ranorex, SoapUI, Sahi, Tellurium. After researches it was selected Selenium for this work.

Selenium is a portable software testing framework for web applications. Selenium provides a record/playback tool for authoring tests without learning a test scripting language (Selenium IDE). It also provides a test domain-specific language (Selenese) to write tests in a number of popular programming languages, including Java, C#, Groovy, Perl, PHP, Python and Ruby. The tests can then be run against most modern web browsers. Selenium deploys on Windows, Linux, and Macintosh platforms. It is open-source software, released under the Apache 2.0 license, and can be downloaded and used without charge [4].

Selenium let you automate some parts of the testing process. You can execute the same tests on different web sites. It allows you to save a vast amount of time. My work is based on writing Selenium scripts and executing them on similar types of web application. This method makes the software testing process faster and versatile.

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