Test automation of web-applications developed on Sitecore Content Management System

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Abstract

Currently, software test automation is developing rapidly, since it becomes more and more important for businesses to know exactly whether the application's concrete version is of high quality to deliver it to the end users. Content management system (CMS) is used as a basic technology on large projects, since it provides an ability to set up appropriate content for different web-site versions fast. As a result, it is important to optimize the testing process of a software product developed based on the Sitecore CMS in order to accelerate testing, exclude human factors, release human resources and increase test coverage.

Keywords: test automation, content management system, test automation tools

1 Introduction

The type and size of a project are a few amongst the most important criterions used to select technologies for development and testing of web sites. Moreover, the project's difficulty, development speed, specialists hiring costs, existence of available tools for development, agility of applied solutions, project's development tendencies, detailed documentation creation, application support costs, ability to run application on different platforms, or to integrate with other solutions etc. are also considered as significant influences on technologies selection.

Nowadays, the use of frameworks (existing environments for developers with debugged and tested templates and tools) and CMS designed to organize websites, other information resources on the Internet, or individual computer networks are powerful testing tools for created websites. In general, CMS is used as a ready-made solution where a content manager only should customize the content, but based on the framework, anyone can create an own CMS for the specific business need of the project. One of such systems is Sitecore CMS. Sitecore CMS uses the ASP.NET platform and runs IIS (Internet Information Services), which opens many opportunities for web application development and testing [2].

2 Overview

The work addresses the issues of optimizing web site testing processes using test automation frameworks and Sitecore CMS tools. In its turn, the main question covered in the paper are connected with determination of the most appropriate tools needed for development of flexible and fast framework with automated scripts that will have to test and specify the quality of the end product continuously.

3 Decision

According to the selected technologies, there was conducted an analysis of the most effective testing tools. C# programming language, Visual Studio 2017 development tool, Selenium Web Driver as UI tool, SpecFlow BDD tool, Sitecore API library were tools and programming language were selected to create the test framework for feature capabilities testing with the participation of content manager.

The test framework architecture developed after the issue analysis contains the following modules and layers:

- Core is the framework module specifies web driver configuration, web driver and web element extensions, various configuration classes, custom wrapper classes over waiters, etc.;
- SpecFlow Tests is a test layer that contains the '.feature' files and the implementation steps for them;
- Test Model is a framework module that consists of several layers. The first one is a Page Object layer that helps to encapsulate the work of individual page elements, reduces the size of the code written and makes it easy to maintain it (if, for example, the design of one of the pages is rewritten, only the relevant class describing this page should be changed). The second one is a Page Fragment layer that contains classes describing the components placed on pages;
- Service module contains classes responsible for interacting with page elements, as well as classes that are responsible for assertions. This layer maps business logic with pages, and page components described in Test Model. Therefore, such an approach makes it easier to map steps described as humanized phrases with test methods written as code in programming language;

- Sitecore layer is responsible for interacting with the Sitecore API, which is required to test the correctness of an application's content-side functionality.

To optimize the process of continuous testing, the concept of continuous integration and delivery (CI/CD) is implemented as a conveyor, which allows running different types of tests at each stage (integration aspect) and finish it with code deployment to the actual product, which end users receive (delivery part) [3]. At the same time, a dedicated CI server organizes a service that includes obtaining a code from the repository, project drafting, tests run, finished project deployment to the test environment, and reports generating and sending. Jenkins Open Source Continuous Integration tool was selected to configure CI/CD processes, supporting real-time code testing and individual changes to the codebase reporting.

4 Conclusion

Test automation is an integral part of testing constantly developing and delivering web-applications based on content management systems such as Sitecore.

In its turn, it is very important to select the correct tools to conduct fast and productive testing of a particular version of the application.

Visual Studio 2017, C# programming language, Selenium Web Driver, SpecFlow, and Sitecore API library are the most suitable tools that can help to build architecture of test automation framework and develop fast and stable test scripts.

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