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THE BEST FRAMEWORK FOR QA AUTOMATION TESTING: ADVANTAGES AND DISADVANTAGES OF ROBOT FRAMEWORK

Abstract. Nowadays quality assurance automation testing has a lot of frameworks which help to develop quality automation test cases. Currently most developers or manual testers want to start develop automation test cases and they do not know which the best framework to learn. We are interesting to focus in one framework and find all advantages and disadvantages of this framework. This paper contains all full information about Robot framework in test environment. Seven criteria's help to find positive and negative sides of this framework. With using Robot framework in automation test case we can improve all manual tests.

Keywords: Frameworks, Robot framework, automation test, manual test.

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Аңдатпа. Қазіргі уақытта сапаны қамтамасыз етуді автоматтандыруды тестілеуде сапаны автоматтандыру сынақ жағдайларын жасауға көмектесетін көптеген құрылымдар бар. Қазіргі уақытта көптеген әзірлеушілер немесе қолмен тестілеушілер автоматтандыру сынақ жағдайларын әзірлеуді бастауды қалайды және олар қай құрылымды үйренуге болатынын білмейді. Бізді бір шеңберге шоғырландырып, осы шеңбердің барлық артықшылықтары мен кемшіліктерін табу қызықты. Бұл құжат сынақ ортасындағы робот құрылымы туралы толық ақпаратты қамтиды. Жеті критерий осы шеңбердің оң және теріс жақтарын табуға көмектеседі. Автоматтандыру сынақ жағдайында Robot құрылымын пайдалану арқылы біз барлық қолмен сынақтарды жақсарта аламыз.

Түйін сөздер: Frameworks, Robot Framework, автоматтандыру тесті, қолмен тест.

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Аннотация. В настоящее время тестирование автоматизации обеспечения качества имеет множество структур, которые помогают разрабатывать тестовые сценарии автоматизации качества. В настоящее время большинство разработчиков или ручных тестировщиков хотят начать разработку тестовых примеров автоматизации и не знают, какой фреймворк лучше всего изучить. Нам интересно сосредоточиться на одном фреймворке и выявить все достоинства и недостатки этого фреймворка.

Этот документ содержит всю полную информацию о среде роботов в тестовой среде. Семь критериев помогают найти положительные и отрицательные стороны этой структуры. Используя Robot framework в тестовом примере автоматизации, мы можем улучшить все ручные тесты.

Ключевые слова: фреймворки, фреймворк роботов, автоматическое тестирование, ручное тестирование.

I. Introduction

Today's days we have a lot of opportunities to work in the QA (quality assurance) area. This area growing every day and we can divide QA into two groups: manual and automation. Automation QA have many frameworks which help to build good automated test cases. The general research purpose is to find good framework which help to all people who want to become automation QA developer. The importance of this topic is that we will take one framework and show all advantages and disadvantages in the QA area. The key concept of this research understand that can we say that Robot framework is the best framework in the automation QA area. We have different research papers about QA area and they focused in the different parts of QA. Some papers explain about using manual tests and automations tests, and others papers explain about different types of frameworks based on computer languages. [4] This paper focuses on advantages and disadvantages of one framework which give more detail information than other papers. Papers with similar topic in the QA area just show us one part of topic, we will show from different parts. In this paper we will focus on one framework with detail information, positive and negative sides, and why we should use this Robot framework in automation QA area. The remainder of this paper is structured as follows: In the section 2 we will have methods for this topic. Section 3 presents results and discussion of this framework and Section 4 gives us conclusion. Finally, Section 5 presents references and last section gives abstract.

II. Methods

This section shows which method we used for understand how Robot framework work in real project environment.

For finding positive and negative sides of Robot framework we created criteria's: a) Ease of use; b) Code writing; c) Parallel execution; d) Logging and failure analysis; e) Flexibility; f) Framework design; g) Resource availability; [3] Then, we created test environment for making automation tests. In this environment we tested web application, mobile application, database and services.

For checking first criteria a) Ease of use, we analyzed structure of Robot framework and it showed that Robot framework is a keyword driven framework that was developed in Python, and for creating tests you need to use and know keywords that are inside this framework without recourse to programming. If developer in QA area know basic programming language, this developer can

easy switch to this framework. We can say that Robot framework in this criteria have positive side.

For b) Code writing, we took Java TestNG framework and Robot framework and wrote simple login automation test case. We found that in TestNG you need to write some extra lines which have nothing to do with your business side. In Robot framework you write only as much as you need for your automation. Standard login page code did not be more than 7 lines. In this case Robot have positive side.

For c) Parallel execution, we need to run many test cases in the same time for saving time. In Robot framework is possible, we used pabot and selenium grid for run test cases in parallel. It is positive effect for the best framework.

For d) Logging and failure analysis, in the automation test main role for building good test cases we need to focus on logging and failure because it gives us main information about tests. In Robot framework we have neat and clean logs and reports. Also, it comes with screenshots. In this criteria have positive side.

For e) Flexibility, if we have complex test case where we should make complex coding work in the Robot framework, you cannot do it because Robot framework do not have complex things. For example: Nested loops. In this case Robot framework have negative side.

For f) Framework design, we cannot do it because Robot framework is a readily available framework. And we can have said that in this criteria have advantage side.

For g) Resource availability, it is hard to find developer who know and work on Robot framework. And this framework is not popular and you will have some problem in finding more information about this framework. It is disadvantage effect for this Robot framework.

III. Results and Discussion

We have find advantages and disadvantages of Robot framework and we can say that this framework is the best framework who want to become QA automation developer in QA area. The purpose of this research is a proof that Robot framework have a lot of positive sides which making this framework the best framework in QA area automation. We make automation tests under a real situation in test environment. We tested all seven criteria's and have good results about Robot framework.

We used test environment and Table 1 show the result of each platforms we created automation tests.

Platform	Quantity of automation tests
Web pages(User Interface)	250
Mobile	100

API, Services	130
Database	100

Table 1. Quantity of automation tests for platforms

As the results we found main structure of Robot framework. (see Figure 1) Also, we tested all seven criteria's: a) Ease of use; b) Code writing; c) Parallel execution; d) Logging and failure analysis; e) Flexibility; f) Framework design; g) Resource availability; And we found that Robot framework have 5 advantages and 2 disadvantages by our criteria's. From this results we can say that this framework has more advantages and it became the best framework.

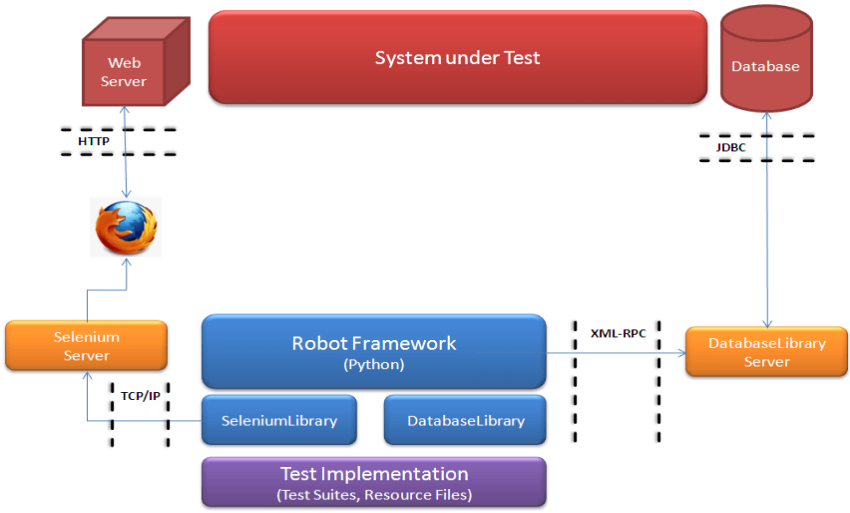

Figure 1: Main structure of Robot Framework.

Also, we expected these results that this framework will have a lot of positive because Robot framework is open source automation framework and you can easy understand the structure of this framework.

Previous similar research papers show different frameworks and different results but in this research we focused in one framework and make full information about Robot framework. [2]

In the future, we can say that this framework can be modify and update from new future versions, and we will find another positive and negative sides. Also, may be in the future we can find new framework with all positive sides.

IV. Conclusion

This work extends the best framework in QA area, we have a lot of choices in automation frameworks. Some frameworks preferable for advanced developers, another for started developers, but all frameworks we can compare to each other by some criteria's which will be used in real test environment. And

we can choose one framework that will be the best framework from different sides.

In methods section we tested Robot framework by seven criteria's and found that this framework has more advantages than disadvantages. This framework allows keyword driven testing [5] and it requires only basic knowledge of programing. In other words, almost every one of the project team in a quality assurance company can use it. [1] This product performs with web, mobile, database and services support. Also, this framework has high quality reports with screenshots. In disadvantages sides: we cannot write complex code and this framework is not so famous like others frameworks.

In future work we can compare with others famous frameworks to find more results about positive and negative sides in real test environment.

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