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Web Application Automation using Selenium

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Abstract:Software testing is a necessary technique to locate defects and to increase any of the software application quality. Now lot of applications is being created in internet which are executed in a internet browser. Web functions are turning into an extra complicated, so that it becomes hard to take a look physically. It might extend time and cost. So we are in need of automation testing to check out equipment elevated day by day. Selenium is a web application testing tool which is an open source .These equipment are extensively used for checking out the functionality of website developed for variety of purposes . In this project we test the web application using selenium c#. Testing is the precedence modules in the purchasing a website. Initially test planning created based on the testing a website. Test design and test method made by test diagram information. Before developing take a look at scripts the scope of testing need to be documented clearly. Atlast writing scripts based totally on the precedence then textual content execution and reporting carried out step by step.

Keywords : Software testing,Automation,Testing,Manual Testing,Selenium,Selenium Webdriver,Test cases,test instance.

I. INTRODUCTION

Software automated testing is a manner of execution of a software with the aim of discovering mistakes in code. It is the system of evaluating a gadget or device issue via guide automated ability to confirm that it satisfies special necessities or to pick out variations between anticipated and genuine results. Selenium is a transportable software program checking out framework for any net applications. Selenium donates record-recap equipment for verifying the assessments besides gaining knowledge of a check scripting language such as Selenium IDE. Selenium is a series of a variety of software program equipment every with a specific method to aid check automation. Selenium Quality Assurance Engineers focal point on the one or two equipment that most meet the desires of their task, however analyzing all these equipment will supply you many special picks for drawing close specific check automation issues.

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The entire trying out suite of equipment which is handy outcomes in a prosperous set of trying out features especially geared to the wants of trying out of internet applications. These operations are definitely acceptable which offers many preferences in locating the User Interface factors and evaluating predicted check consequences towards authentic behaviour of an application.

Software Testing might be a process, that involves the execution of any software application and identifying the mistakes and bugs in that application so that the end result will be a defect-free software. Quality of any software program can solely be recognized thru capability of trying out. Through the development of science round the world, there improved the quantity ofvalidating and verification methods and techniques to check the software program earlier than it goes to manufacturing and off path to market. Automation Testing has made its affect in the checking out process. Now-a-days, most of the software program trying out is carried out with the automation equipment which now not solely lessens the wide variety of humans working round that software program however additionally the mistakes that can be escaped thru the eyes of the tester. Automation checking out carries take a look at instances which makes the work effortless to seize one of a kind eventualities and keep them. Therefore, software program automation checking out procedure performs a necessary function in the software program trying out success. This learn about goals in understanding one-of-a-kind sorts of software program testing, software program trying out strategies and equipment and to evaluate guide trying out versus automation testing. One of Selenium's vital function is the guide for executing one's assessments on more than one browser platforms. Automation of software program checking out is the procedure of growing a application that intimates the guide take a look at processing steps in any of the programming language. With the assist of different exterior automation helper tool. It is the method of automating the guide trying out steps. Testing Engineers have to put into effect and run a application to check the Software Under Test . In different words, it is growing toolkits to take a look at the already carried out supply code. Developing the software and take a look at scripts are each improvement tasks, the first one is for the improvement of the utility itself and the different is for growing the scripts that will be used to take a look at the application. One way to make sure machine accountability is to substantially check the system. Since software program is a gadget issue it requires a trying out manner also. The common checking out method advantages from the strengths of each guide and automatic testing; Support for regression testing: any mechanically generated exams that find bugs can be saved in the identical layout as guide checks and saved in a regression trying out database; The measures of insurance (code, dataflow, specification)

will be computed for the guide and automatic assessments as a whole; The interface is stored regular and simple: Auto Test solely requires a person to specify the lessons that he wishes to test. Test automation is necessary in fast-paced agile improvement environments. The predominant intention is to pace up check execution cycles and to limit the effort concerned in walking exams manually. Took take a look at automation one step similarly and utilized check era to a GUI-based utility developed in a massive enterprise task.

II. TYPES OF TESTING

A. Manual Testing

Manual testing is an activity which is performed by testing persons. Manual testing requires a tester so that to test the function guide check operations without the assist of Test automation .Manual Testing is a process where in a tester often writes the test plans. A test case is a set of conditions that are written for the applications and tester run all the test cases to verify the proper functionality of the software.Manual testing requires the tester to possess a sure set of qualities; to be patient, observant, speculative, creative, innovative, open-minded, resourceful, opinionated, and skilful. In order to completely check that all the necessities of an software are met, there have to be at least take a look at all instances for every requirement. Manual testing helps out to find out defects associated to the usability trying out and GUI area. Any new software have to be manually examined earlier than its trying out can be automated. Manual testing requires greater effort, however is essential to test automation feasibility. Manual testing may not need the prior knowledge about the testing tool.

B. Automation Testing

Automation Testing is nothing but executing the test instances where personal persence is not required. It makes use of exceptional software program to write and execute test instances to examine the proper result with the envisioned outcome. Once tests have been automated, they can be run shortly and repeatedly. Automated software program testing is the pleasant way to make bigger the effectiveness, effectivity and quality of software program testing. Automation testing might require large quantity of funding for buying the software program and compatible hardware resources.Automation testing improves the accuracy which saves the time of the tester and organization's cost. Automation testing is first-class suitable in the surroundings where the necessities are often altering and large quantity of regression testing is required to be performed. Automation testing is exceptional ideal in the surroundings the place there are fundamental test instances that are to be done repeatedly. It will increase the satisfactory of testing structure and reduces the future upkeep cost. Various advantages of Automation checking out are quick run of test case. Reusable test instances are made and these test instances are reliable, complete and Programmable.The important difference between Manual testing and the Automated testing is that Automation testing is desirable for the surroundings where the Repetitive work is greater (e.g., strolling regression tests, re-entering the identical check data, and checking towards coding standards). Also, manual testing is high-quality desirable for the surroundings where the requirement modifications continuously.

III. IMPLEMENTATION

For testing any kind of application there are many varieties of testing tools and types which can be used to test it.In selenium there are four types of components that is used to test an application,they are:

- Selenium Ide
- Selenium RC
- Selenium webdriver
- Selenium Grid

Mostly selenium webdriver is been used to detect the errors in application.Selenium webdriver can be implemented in any of the available and existing browers , the ohly thing is that we have to add the jar files of the brower that we are going to use for testing the particular application.In this any of the programming languages can be used like c#,java,etc,.The structure of selenium webdriver is not so complimented like selenium RC.Multi-browser testing including improved functionality for browsers which are not well supported by Selenium Remote control .Selenium WebDriver makes directly calls to the browser using each browser's native support for automation. This helps in enhancing the test cases with programming techniques to cover all the required checks and test scenarios.

In Selenium automation, if the elements are no longer observed via the common locators like id, class, name, etc. then XPath is used to discover an component on the internet web page .XPath is designed to enable the navigation of XML documents,with the reason of deciding on individual elements, attributes, or some different phase of an XML report for any particular processing.

Syntax = //tagname[@attribute='Value']

A. Absolute XPath

It is the direct way to discover the element, however the drawback of the absolute XPath is that if there are any adjustments made in the direction of the element then that XPath gets failed.The key attribute of XPath is that it starts with the single ahead slash(/) , which means you can select the component from the root node.The benefit of the use of absolute is, it identifies the element very fast.

B. Relative XPath

A relative xpath is one where the path begins from the node of your choise - it does not want to begin from the root node.

It starts with Double forward slash(//).

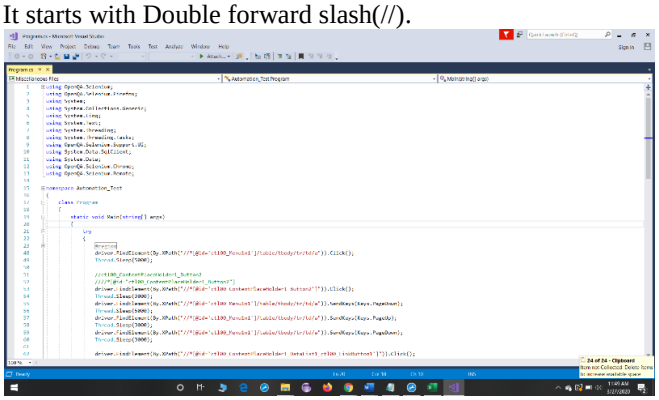

Fig. 1. Example of locating web elements using Xpath.

C. Testing Activities

Software testing is a lot greater that simply executing the test instances and in a similar way test automation is no longer restricted to automating only the test execution.

D. Designing Test Cases

Functional tests and acceptance tests are designed by the test engineers for any system requirements and formal test design methods like equivalence partitioning and boundary value analysis. Designing an accurate test cases is no longer convenient and it is one of the primary capabilities of a expert test engineer ought to possess.There are also many methods to automate the test design process. Expected outcomes for tests can occasionally be generated robotically by using so known as oracles, external trusted entities which can be queried for predicted results. Often an oracle is some present system, however they can additionally be created simply for trying out purposes. In model based totally trying out the system is modeled in such a element that test cases can be derived automatically from the model.

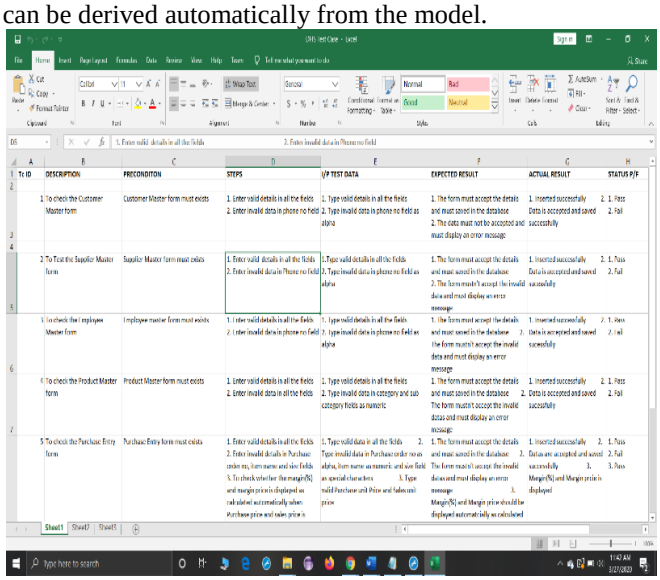

Fig. 2. Example of test cases.

E. Executing Test Cases and Analysing Results

After test instances have been designed and created they can be carried out and outcomes can be verified. Test cases are repeatedly executed when any new version of the examined system is made available. Automating the regression tests or at least an exemplary subset of them, frequently referred to as smoke tests, can make test execution and result evaluation is notably quicker.

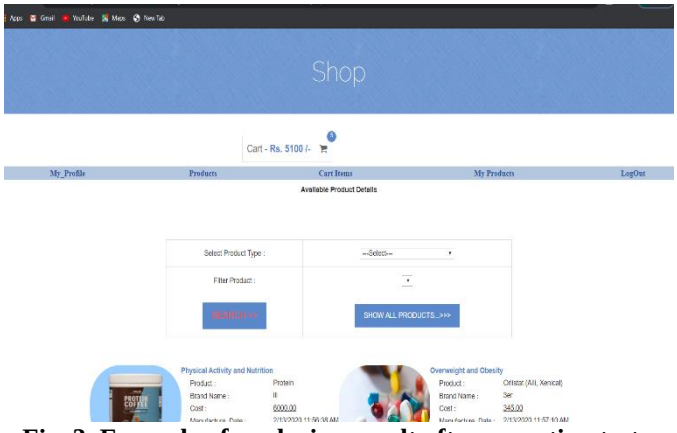

Fig. 3. Example of analyzing result after executing test cases.

F. Reporting Test Results

After test engineers have ran their test cases they record their findings to the project crew and management. If test execution is absolutely automatic it makes experience to automate additionally reporting. It probably is no longer a proper concept to send all test reports automatically to managers' mail bins however if a test record is created automatically test engineers do no longer want to spend time gathering records from test logs and elsewhere..

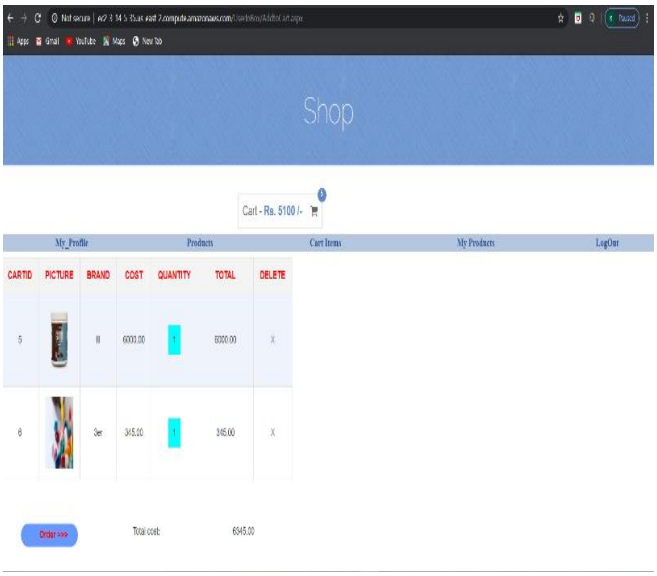

Fig. 4. Example of reporting the results.

IV. CONCLUSION

Software testing is an vital approach for the enhancement and high-quality of a software program. A right way to minimize time and value which is additionally to generate remarkable look at all the testcases. A few instances and examples are regarded in this study and they are only which are used to supply a clear clarification involving Testing techniques. Also newly proposed automation techinque to test out the framework to check the in particular based features works precise as it was once based totally completely on selenium webdriver. In order to take a seem at the web software program proposed. Automation framework actually reduces the time which is required to write the test cases and prolong the pass through share of test cases. It moreover reduces demanding workload of tester. By the utilization of this framework one can generate the customized take a seem at evaluations and moreover analyze the failures the utilization of screenshots of failed test cases. tester can keep the all archives from central place. This framework is very recommended for dynamically altering internet applications. The automation takes a appear at scripts are reachable to apprehend the use of this framework. In this way automation framework helps agency to test internet features efficiently.

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