

Designing test automation framework for regression testing

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Abstract—Test automation is essential in fast-paced agile development environments for testing. The basic objective of this project is to minimize the repetitive task that takes place in manual testing while automated does the job in a single process. A framework proposes to provide generic functionality of software where application changes a framework and reuses it. With test framework improves the function of reusability of test environment. It uses very tools and algorithms to provide software platform. The test uses in the way of verification and validation software application. Test framework is a software platform to testing process. The framework provides the user with various benefits that help them to develop, execute and report the automation test scripts efficiently. Automated testing is all about comparing your expected results for how a program should function with how it actually functions testing is usually suitable to regression testing, which implies re-running test cases in order to validate modified software and to ensure that new errors have not been introduced into previously tested software.

Keywords—Test automation, regression testing, framework, BDD, Spec Flow, Gherkin

frameworks for System/Integration testing of application under test.

Hence goal of Test Automation Interface is to simplify the process of mapping tests to business criteria without coding coming in the way of the process. There interface process is expected to improve the efficiency and flexibility of maintaining test scripts.

I. INTRODUCTION

Since framework is an integrated system that sets the rules of automation of a specific product and system actually integrates the function libraries, test data sources, object details and various reusable modules. Its components act as small building blocks which need to be assembled to represent a business process. Where framework provides the basis of test automation and simplifies the effort of automation. Briefly assumptions, concepts and tools that a benefit in providing support for automated software testing is the low cost for maintenance. Incase if change to any test case then only the test case file needs to be updated and the driver Script and startup script will remain the same. Ideally, there is no need to update the scripts in case of changes to the application.

Perhaps it has a provision that platforms provide a single workspace for incorporating multiple testing tools and

II. LITERATURE REVIEW

As per the researches it has been described that testing can show the presence of faults but it cannot prove that there is no any single fault remaining. The system testing is the responsibility of a separate team. By using interface testing we can minimize defects in the interface. It provides a function of software to which it allows the business to appreciate and understand the risk of software implementation.

Also examined the role of automated software testing against manual testing. The main result of the research paper is that for developing and providing a system aimed for the cloud is effective with agile development process and has described a

simple practitioner-oriented framework for experimentally assessing the effectiveness of two or more testing techniques in a testing project. This study experimentally evaluated and compared the effectiveness of two important and frequently used testing techniques, viz., decision testing and all-paths testing. Attempts to assess the influence of software development methodologies, software testing techniques and relevant parameters for their applicability conditions so as to help software developers and testers making a proper choice. Agile software methodologies will be best suited technique for software development project.

III. METHODOLOGY:

The method that is being used in this framework is of agile method is an approach to software development under which requirements and solutions evolve through the collaborative effort of self-organizing and cross-functional teams and their customers/end users. Also advocates adaptive planning, evolutionary development, early delivery, and continual improvement, and it encourages rapid and flexible response to change. is a practice that promotes continuous iteration of development and testing throughout the software development lifecycle of the project. Moreover agile method here

We have used another pattern called POM.

Initially it is a design pattern which has become popular in test automation for enhancing test maintenance and reducing code duplication. A page object is an object-oriented class that serves as an interface to a page of your AUT Page Factory is an extension to page objects that are used when we need to initialize the web elements that are defined on the page object. Where it can define the web elements by using annotation with the help of page factory.

- Tools & Technologies:

C# is designed for Common Language Infrastructure (CLI), which consists of the executable code and runtime environment that allows use of various high-level languages on different computer platforms and architectures.

- **Selenium:** Selenium is an open source tool which is used for automating the tests carried out on web browsers. And we preferred Selenium automation tool because it is free and open source and Multiple programming languages support

The above diagram states that how well the method works in a particular format where it consist of data repository the place where data gets stored and followed by that we have excel file where the outcomes are displayed

Also the steps that form different scenarios with specifications where it describes about feature files and test scenario

In BDD we create a set of test scenarios to achieve the particular result and gherkin is a language that is being used for this framework.

Classes of automated tests describes the UI element

The different tools that are being used is of selenium and web driver

IV. RESULTS

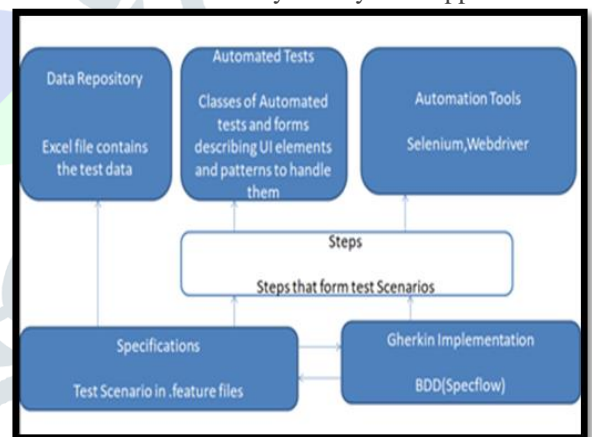
As per the below graph it indicates each of the working modules where it shows the percentage of how each of them works better in its process

- **BDD (Spec flow):** Behavioural-driven development (BDD) is a software development process and an extension to test-driven development (TDD) To assist the BDD process, there are several tools available depending on the programming language being used. In performance with Java and Ruby there is Cucumber, and in C# we have Spec flow. helps bridge the communications gap between the development team and relevant Stakeholders. Spec flow works with feature files, which starts with the description of the functionality being tested, and a list of relevant scenarios and their steps These feature files will usually reside within the Test Automation Solution. They will equally be version controlled just like the source code, hence, they can serve as a form of living documentation which can be executed, and will be always up to date. Besides if application changes test execution will fail and will need to be updated.

- **Gherkin**

To assist the BDD process, a form of DSL (domain-specific language) written in simple language e.g. English, French etc. can be used. Briefly software behavior can be described without the implementation details.

Simple statements containing the business requirement can be written in Gherkin Syntax. Scenarios are generated from the requirements and are converted executable tests to be used to validate the functionality of a System Application



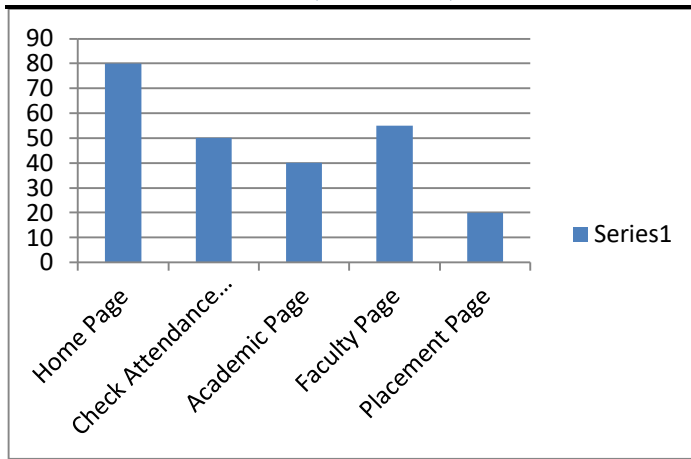


Fig: Validation of website

Generally the graph explains about the project where it validates each of the working site so that for a user it is easier to understand and work accordingly.

Here the graph has been defined particular pages where Home page that is beginning of site where it shows around an 80 percentage. Followed by check attendance academic, faculty, placement has showed a variation in the graph so this would help a tester or a user to understand easily How well the system works in a procedure. It is actually framework where a user can use it as per the requirement

V. DRAWBACKS

The major drawback we can talk about in automated testing is Debugging the test script is major issue. Although even if any error is present in the test script, sometimes it may lead to deadly consequences. Test maintenance is costly in case of playback methods and of test data files is difficult, if the test script tests more screens. The feature of proficiency is required to write the automation test scripts. But when it comes to a comparison between manual testing and automation testing automation testing works better as it is more reliable and performed by tools or scripts If automated checks keep failing because of the issues other than genuine bugs, they can raise false alarms. Automated checks can break because a minor UI change was implemented, or a service is down or there are network issues which are not relevant to the application under test but could impact the automated checks. It describes about test automation” with the function of Testing and once they have the tools to automate the testing, they want to “automate all the tests” and get rid of so called manual testers or QAs

VI. CONCLUSION

Testing is the most critical part of the Software Development Life cycle, because it is something upon which the final delivery of the product is dependent. It is actually time consuming and an intensive process, therefore, enhanced techniques and innovative methodologies are requisite. This makes Automated Testing and other various Test Metrics implementation bit difficult before and during the testing process. Basically it can enhance the existing testing methods, both for time effectiveness as well as for efficient and reliable final product which not only meets the specified requirements but also provides with maximum operational efficiency. In future the testers can use the framework whenever it is required as it is a reusable library.

VII. REFERENCES

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