Quality Engineering - Test Automation Trends' 2020 and Beyond

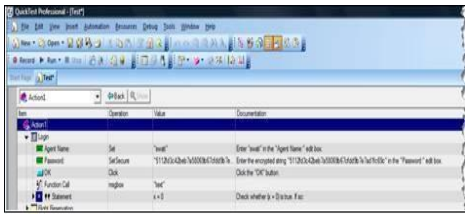
Every year, we are being introduced to new test automation frameworks, testing tools, test runners, libraries, methodologies, test management, repositories and more. This blog focuses on present day practices in test automation, trends and technologies evolutions in test automation, whether it be commercial off-the-shelf tools or the multifaceted test automation frameworks. By aligning test automation with aggressive Agile/DevOps, this blog will throw a light on the new claims of innovations and opportunities that can be felt in quality engineering today .

A brief look at past: Looking at journey so far in test automation, At early days, 2008-09, we were heavily relied on UI automation using keywords driven frameworks using Junit,Fitnesse etc. Test automation was considered to automate function tests and replace manual tester through developing a robot kind of flows by set of tools. I am remember that we had a series of commercial set of automation tools like silk Test, Quick Test Pro, QTP etc.

Silk Test

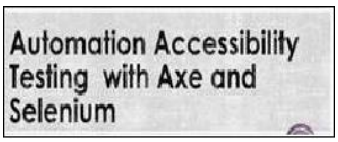
QTP

Quick Test Pro.



That was the time, we were highly relying in building UI test automation through only commercial tools. Then we saw some open emerging open source libraries and that's point of time, selenium came in picture and it changed the picture a little bit. Selenium gave a platform to automation engineers to create innovative automotive test solutions for application automation testing. It enabled us to mould these open source libraries to provide support for developing QA oriented test automation/organization frameworks. Robot automation framework is very interesting and great example of implementations of QA driven automation frameworks. Then we evolved with DSL based frameworks which were influenced from development architecture like MVC, spring etc. At above the same time, we saw the emergence practices of TDD and BDD and then we came with idea of cucumber which instantly became very popular and we found with cucumber that it is very easy to write comprehensive and fluent automated tests which can be understand by anyone very easily. People implemented it with java in their domain specific based frameworks as top of it. Now we keep making and adding more maturity with test automation, a test automation frameworks which are not just capable to automate web application but also capable to automating API/web services, mobile based testing, and database testing etc. So overall, people developed a mature test automation framework which is capable to test different aspect of application/system. Alongside, we also added capabilities for continuous integrations. Development team adopted practices for CI which inferred us, can QA team actually invoke automated tests in existing CI/CD pipelines and so that build check in can be tested before deploying to next level of environments/servers. We can also find selenium web driver different language bindings including java, ruby, python, JS and C# .

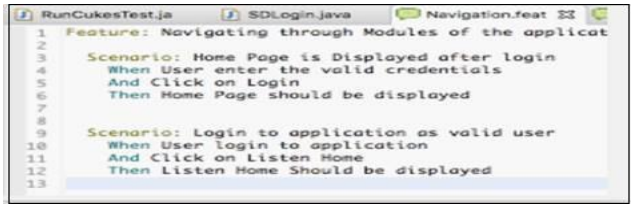
Current Test Challenges/ Solutions/Where Are Test Automation Today : If you look upon application now a days, most of applications are multi-tiered which have variations in terms of interfaces. Interfaces like web app accessible through web browser, mobile native apps which is accessible at android and IOS devices and possible integrated with third party plugins or application through API's. At this point of time, we have developed comprehensive and generic enough test automation framework which can be used to automate different aspect or variations of application. Even people didn't stop here, they keep adding more capabilities with testing automation frameworks which could perform along with functional test automation like layout testing, security testing, accessibility testing.



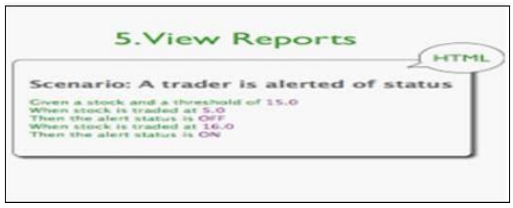
We are still facing some challenges in test automation. We all know that we are in the stage of working in agile faster sprints, shorten cycles and DevOps followed by organizations so that product could release as soon as possible to market and chain of feedback can be used to improve the quality of products. So with need of hours and faster sprints, It demands test and automate the new features with short span of time and maintaining, executing regression suite to check any regression impact on existing features in application. The need of hour is actually able to do test automation in faster sprints fashion or in sprint of development so that new automated test can be used for acceptance of stories or features at same sprint but we find less amount of time to achieve it due to aggressive agile/ devOps practices. The challenges also come with long regression suite as they are flaky tests in nature so we have to keep working on them to keep stabilize and robust in nature.

As of now, SDET ,automation consultant and automation test engineers have moved towards with BDD based automation frameworks using Cucumber, jbehave, Mocha etc. depending in which language we are building our automated tests. These essential helped us to write effective and comprehensive tests which can be easily understand by developers, product owner, managers, customers etc.

Cucumber



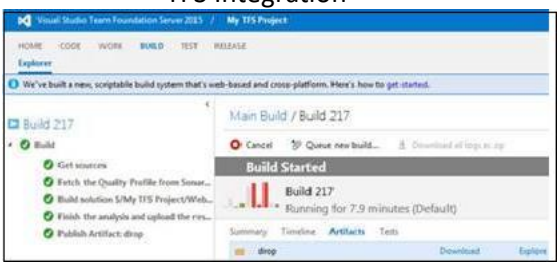
JBehave



The next thing, we have made ensured that our test automation frameworks have direct integration with test management tools like JIRA zephyr, TFS, and cloud test management etc. It helped us to publish test results on test management application where projects other artifacts are also available and where we can establish a better traceability of automation output with the product requirements. We have successfully achieved integration of automation test suite in continuous integration/Deployment where builds are tested though automated tests before going to next level to servers so we all are available support in test automation frameworks in order to align with CI/CD infrastructure. Test Automation is now frequently used in context of automating a project's deployment pipeline which we are referring as DevOps, leveraging automation and tools to quickly build, test, deploy and promotes changes though environments to eventually deploy in to production.

JIRA Integration

TFS Integration



Emerging trends/Upcoming Test Automation: So now we are seeking emerging trends in test automation. Selenium 4 is going to release soon and testing automation engineers are the people who are waiting for this major update. Agile test automation is going to one main trend in future and this is only possible by incorporating test automation in agile workflow and achieving a right balance among development, manual and automation testing.

Along with, People have begun to move with cloud- based test automation where we receive support for end to end test automation activities. Cloud platform (Like AWS, AzureDevops , Digital Oscan etc.) provides a supportive infrastructure where automation test engineer find test management, code repository, CI/CD, sauce labs, defect tracking tool, technology stack with in single ecosystem. Automation test developer are looking forward to deploy automated tests execution in containerized environment like docker, Kubernetes etc. The implementation of AI & ML is going very crucial in test automaton practices. People are still in the way how the test automation can take the advantages by including AI & ML in respective automation projects.