

# Test Automation Framework using Webdriverio based on Page Object Model

ANIL KULKARNI<sup>[1]</sup>, SYEDA SANA NAUSHEEN<sup>[2]</sup>

<sup>1</sup>Assistant Professor, Department of Computer Science and Engineering, GNDEC College, Bidar, Karnataka (India)

<sup>2</sup>4th Semester M.Tech Student, Department of Computer Science and Engineering, GNDEC College, Bidar, Karnataka (India)

\*\*\*

**Abstract** – Software is today utilized in more as well as unexpected manners in comparison to any other instance. Typically, a software engineer experience a precise series to construct up to software follows a specified particular. This cycle, affirmation, as well as approval (V and V), guarantee to software adjust to its meticulous as well as the consumers at last acquire what they request. Program test is one of the measures to use during Verification as well as Validation. Present-day software organization is confronting mounting desires of nature of their things however extra limited conveyance instance, which influence the entire progression measure. The test cycle, occurring at all degree of improvement confirm to item meet the prerequisites as well as anticipated superiority. This cycle is habitually done physically, which is exorbitant, tedious as well as mistake inclined. Mechanized test is planned as an answer pro this as it preserve raise the test recurrence, giving faster criticism to engineers, as well as might run without human association. Software quality is a meticulous possessions which determine what sort of standard program ought to encompass. In a software venture, superiority is key factor of attainment as well as decay of software linked association. Numerous explore encompass been refined through respect to program quality. Software linked association keep strategy presented via Capability Maturity Model Integration (CMMI) to realize enormous quality software. Quality is isolated keen on three elementary layer which be Software Quality Assurance (SQA), Software Quality Plan (SQP) as well as Software Quality Control (SQC).

**Key Words:** Automation Framework, Web driverio, Software Quality Assurance (SQA), Software Quality Plan (SQP), Software Quality Control (SQC), Capability Maturity Model Integration (CMMI).

## 1. INTRODUCTION

Automated software testing of web application has become a basic part of Software expansion Activities in a persistent DevOps atmosphere. Where these robotized test assume a noteworthy function in persistent integration as well as reliable conveyance as a main aspect of DevOps measure Subsequently it turn out to be a lot of essential to a encompass hearty superiority Engineering Process as well as Tools to provide an effectual method of compose, overseeing, executing as well as investigate these robotized test in plus notice channel pro test outcome detail pro constant criticism

this resolve permit us to coordinate the rapidity of software enhancement. This is accomplished via structure a vigorous plus effective computerization system. We be building an Automation structure via joining combination ability of WebdriverIO as well as Page Object Model (POM) plan design.

This Automation Framework gives subsequent preference:

- \* Easy to set up (WebdriverIO Integration efficacy).
- \* Commerce intelligible test (Cucumber).
- \* Enlarged repeatability plus reusable.
- \* Seamless assimilation through revealing plus cloud test instrument (Allure as well as Saucelab).
- \* Easy to compose test (WebdriverIO custom orders).
- \* Easy to execute (WebdriverIO Configs).
- \* Easy to keep up (POM plus Cucumber).

## 1.1 RELATED WORK

Behavioral Driven Development (BDD) test utilize characteristic lingo to portray the "idyllic conduct" of structure to preserve be professed via the engineer, analyzer plus the consumer. It is a blend as well as refinement of works on originate as of TDD as well as ATDD. It depict practice in a solitary credentials to is straightforwardly accessible to space specialist, analyzers as well as engineers pro civilizing correspondence. It center around actualizing just those practice, which contribute most legally to commerce outcome pro upgrading the situation.

By utilize the conventional automation approach, as well as whenever specified a outline report of automated test to commerce investigators, at to tip it is ensure to the report would be met through an empty articulation. This make it dubious to reveal the test be accurate—do they harmonize the prerequisite as well as, if this alter, what test necessitate to alter to mirror this? The entire thought behind BDD is to invent test in plain English, depict the practice of what you be annoying. The principle prefer position of this is to test mirror the consumer stories as well as commerce prerequisites of application. Accordingly, the outcome shaped can be perused via a non-specialized individual, e.g., a venture bear, an area master, a commerce canvasser, as well as test preserve be approved alongside the prerequisites pro superior operational efficiency. In automation of any UI utilize Selenium, Too countless copied code is utilized. Copied code might be bringing about via

copied usefulness plus this resolve outcome in copied exploitation of finders. On the off possibility to some finder resolve convert, you necessitate to stroll through the entire test code to modify finders where vital. By utilize the page object replica we preserve make non-weak test code plus lessen otherwise wipe out copy test code. Close to of it improve the comprehensibility as well as permit us to make intelligent credentials. We preserve likewise construct test through less keystroke. A usage of page object replica preserve be accomplished via isolating the deliberation of test object plus the test contents.

Allure Framework is a flexible lightweight multi-language test report apparatus to not just show a brief depiction of what encompass be try in a ideal web report structure, yet permit everybody captivating an interest in enhancement series to eliminate limit of valuable statistics as of regular effecting of test. From the dev/qa perspective Allure information abbreviate normal deformity lifecycle: test disappointment preserve be alienated on bug plus broken test, likewise logs, steps, apparatus, connections, timings, history as well as incorporations through TMS as well as bug-global position frameworks preserve be calculated, so the steadfast engineers as well as analyzers resolve encompass all statistics nearby. From the director perspective Allure provide a reasonable 'higher perspective' of what highlights encompass be tenable, where deformity be group, how the timetable of execution look like as well as numerous other helpful things. Seclusion plus extensibility of Allure ensure so as to you resolve constantly encompass the option to tweak amazing to construct Allure suit you enhanced. Enhancing Ci/Cd pro incessant test - Codebase improvement incessant test start through Testable Code As more associations grasp Continuous Integration (CI) as well as Continuous Delivery (CD) as an apparatus to deliver application faster, numerous locate to there be assorted alternatives to consider when making this innovative movement. Nonetheless, whilst there is huge idea sited keen on how progression practice resolve alter, not numerous group consider how CI/CD resolve modify the manner in which they test the code to they make. This specific dissertation is last in an arrangement sketch out dissimilar themes enhancement associations, everything being identical, ought to consider whilst upgrading their cycle pro CI/CD, as well as how they narrate explicitly to test. This basic bit of your deceitful method preserve impact the nature of your application, yet in adding how rapidly you preserve convey them to your consumers. Pro some group, these contemplation preserve productively symbolize the decide moment your CI/CD activities.

## 1.2 SYSTEM DESIGN

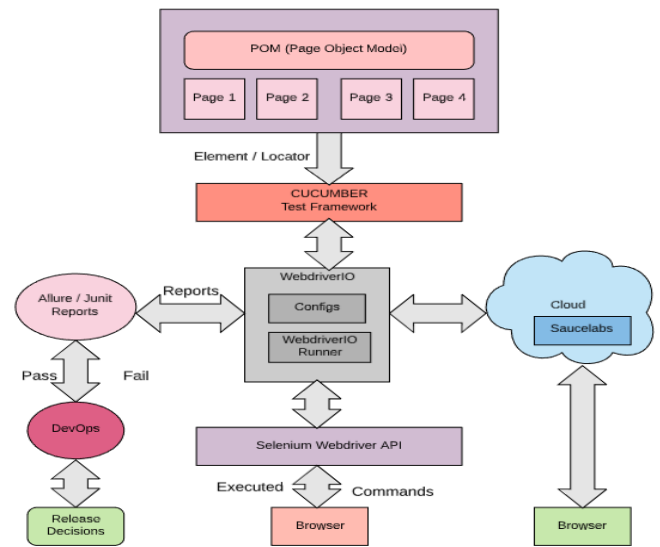


Fig 1: System Architecture

The system architecture parts are described in given figure

## 2. IMPLEMENTATION DETAILES

### 2.1 Modules

1. Web driverIO
2. Design pattern in test automation framework (Page object Model)
3. Cucumber Automation Tool

#### 1. Web driverIO

WebdriverIO is an open source test utility pro node.js. It make it too simple to invent selenium test by JavaScript in your numeral one BDD or TDD structure. Lets you manage a program or a versatile application through only a couple outline of code. Your test code resolve look basic, solid as well as easy to peruse. The coordinated test jogger permit you to invent offbeat guidelines in a concurrent manner through the aim to you don't encompass to think about how to engender a Promise to abstain as of dashing situation.

WebdriverIO is a cover approximately selenium Webdriver, it give an brilliant utility which causes setting to up of a structure easy via permit you to decide unit test, announce instruments faultlessly as well as furthermore permit you to consequently introduce administration pro associate through program as well as cloud test stage like Saucelabs. WebdriverIO uphold dexterity through unit test apparatus like Cucumber, Mocha as well as Reporting devices resembling Allure, Junit information as well as permit to construct numerous setup pro cross program test.

## 2. Design pattern in test automation framework (Page object Model)

POM is a plan design which is normally utilize in Selenium pro Automating the Test Cases. This plan instance preserve be utilize through any sort of system like watchword driven, Data-driven, hybrid structure, etc. The Page object is an thing arranged class which go about as an interface pro page of your Application beneath test. Page class contains web mechanism as well as technique to assist through web mechanism. Whilst automating the experiment, we construct the object of these Page Classes as well as relate through web mechanism via vocation the technique for these classes.

## 3. Cucumber Automation Tool

Cucumber underpins Behavior Driven Development (BDD). It is utilize to compose commerce decipherable test which fill in as a living information pro structure being work, as the test be linked to commerce necessity. It offer to compose test in a straightforward manner which every partners like designer, quality corroboration architect as well as item the executive preserve lacking much of a stretch comprehend.

- Cucumber upholds assorted dialect pro compose test gherkin design, pro this task we resolve utilize Cucumber.js.
- Tool to execute plain content useful portrayal as automated test.
- Runs automated acknowledgment test on Web application.
- Language to Cucumber comprehend is classify "Gherkin".
- Cucumber Test is written in a file call Feature.
- Feature document contain rundown of test situation.
- Each line in a circumstances is call step which be characterize through the assistance of "Given", "When", "At to tip" "And" watchword.
- Step description is where the automation code be poised pro steps.
- Steps in element document be legitimately planned to step definition.
- Step description is a square of code poised through any of program dialect, pro instance, Java otherwise Ruby.
- Gherkin is a lot of syntax decide to make plain content planned enough pro Cucumber to comprehend.

## 2.2. Experimental results

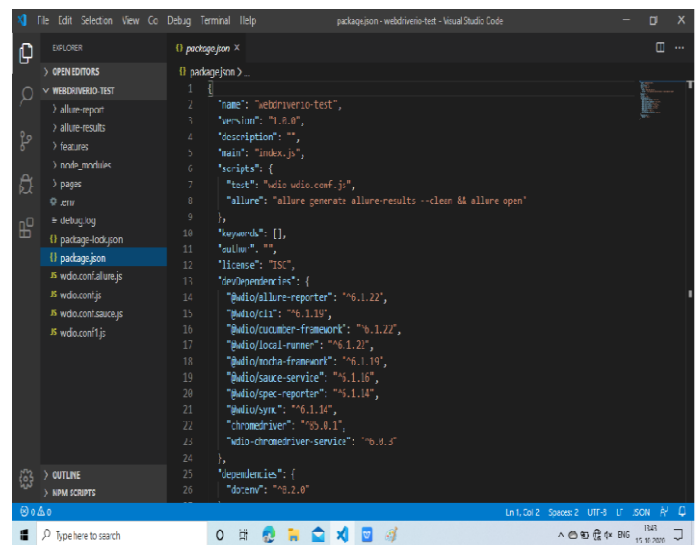


Fig2: Package.json in which dependency as well as libraries is used, npm i install all libraries.

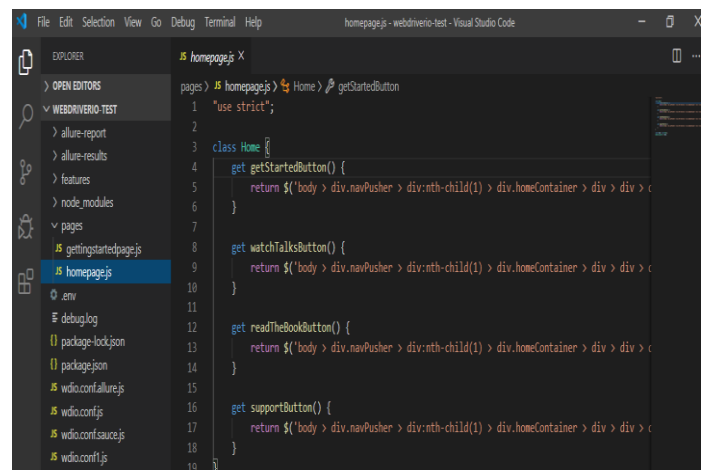


Fig3: homepage.js has linked locators as well as functions of navigationsteps.js feature file.

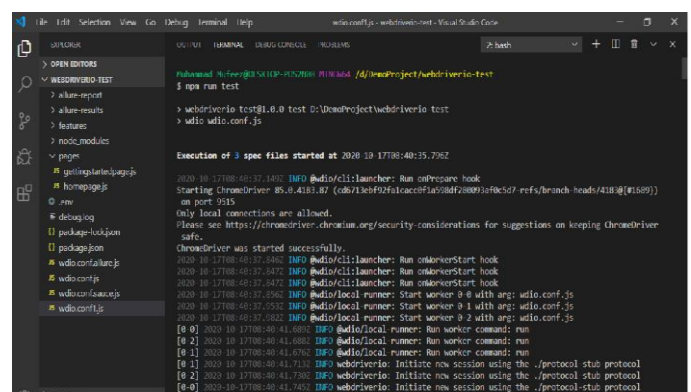


Fig4: Terminal in which we give commands as well as run test, when we provide "npm run test" command it resolve run test plus show execution command log.

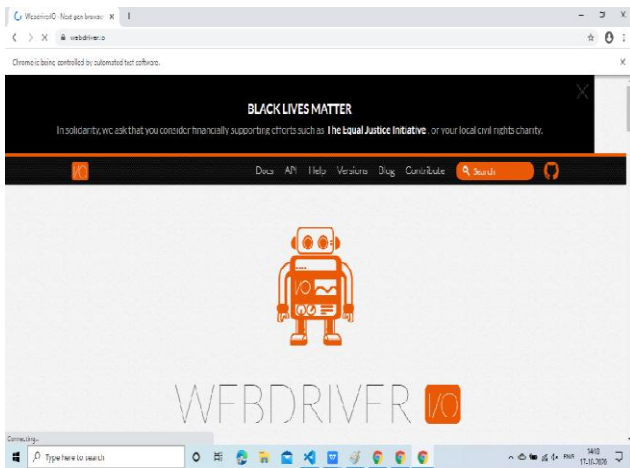


Fig 5: Automation testing after giving command to run test it open webdriverIO page in chrome. It show test script as well as test cases be successfully accepted when it open page in chrome one via one.

### 3. CONCLUSIONS

Automation Framework be set up in snappy instance utilize WebdriverIO, through a simple to utilize organizer structure pro automation scripting through Minimal Maintenance utilize Page Object replica Design through Cucumber as well as commerce agreeable detail through Allure. Page Object replica is a Design Pattern which have gotten conventional in Selenium Test Automation. It is usually utilize plan design in Selenium pro civilizing test upkeep as well as decreasing code replication. Page object model (POM) preserve be utilize in any sort of system, pro instance, calculated, information driven, catchphrase driven, half plus half structure plus so on A page object is an item arranged class to fills in as an interface to a page of your Application under Test (AUT). The test at to tip utilize the technique pro this page object class at whatever tip they encompass to collaborate by the User Interface (UI) of to page. The benefit is to it. if UI alter pro page, the test themselves don't have to change; just the code within the page object desires to alter Therefore, all progression to assist to novel UI is situated in one spot.

### REFERENCES

[1] Arish Arbab is a Software Engineer at HCL Singapore Pte Limited, having expertize on Agile GUI/API Automation methodologies.

[2] Nishmitha G.C 1 , Dr. H.D. Phaneendra2 M.Tech, 4 thSem, The National Institute of Engineering College, Mysore, India1 Professor, Dept. of Computer Science & Engineering, The National Institute of Engineering College, Mysore, India2 Abstract:

[3] Allure Framework <https://docs.qameta.io/allure/>

[4] CI/CD Using Automated Tests <https://saucelabs.com/resources/white-papers/optimizing-ci-cd-for-continuous-testing-codebase-improvements>

[5] White Paper Flexible Approach to Test Automation through Measureable ROI Madan Mohan Reddy B Santosh Kumar CH

[6] Hybrid Keyword/Data-Driven Framework Summary <https://qaconsultants.com/download-pdf/>

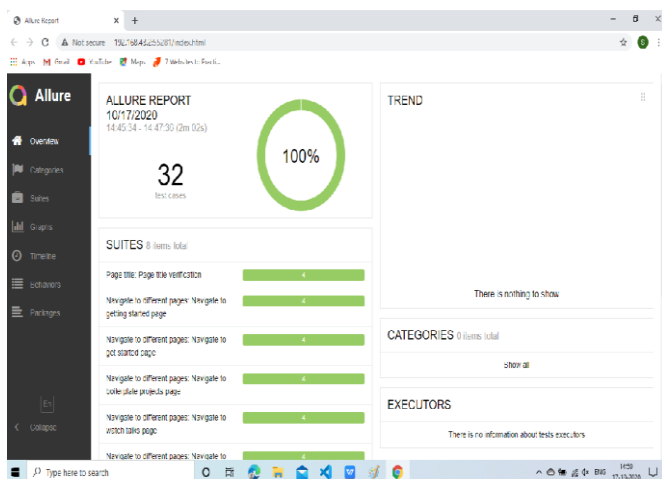


Fig6: Allure report: We are using allure report which show indication of project in which how many test cases be passed as well as failed.

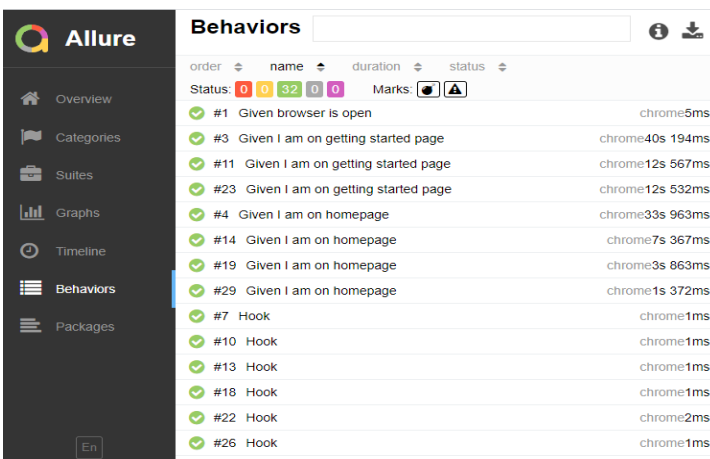


Fig7: Behaviours show which test cases take how much instance to pass.