INTERNSHIP PROJECT REPORT

PHPTRAVELS

Functional Testing using Selenium WebDriver

Prepared by

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Internship Project Topic	Functional Testing using Selenium WebDriver
Name of the Organization	TCS iON
Name of the Industry Mentor	Debashis Roy
Name of the Institute	ICT Academy of Kerala

Start Date	End Date	Total Effort (hrs.)	Project Environment	Tools used
30-06-2023	12-08-2023	30	Local machine with installed softwares	Macbook Pages, Macbook Numbers, Eclipse IDE, Selenium, TestNG, Maven

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1.Acknowledgement

First and foremost, I want to thank Almighty God for giving me the stamina to complete this internship successfully.

I want to sincerely thank Debashis Roy, our business mentor, and the other mentors for their cooperation and assistance throughout the internship. I also want to thank TCS iON for giving me the chance to gain actual work experience with your company.

My sincere gratitude to my family, friends, and the ICT Academy of Kerala for their assistance in seeing this assignment through to completion.

2.Abstract

The testing project focuses on the website of a travel agency (PHP TRAVELS) and performs a variety of tests, including usability, functionality, and broken link checks. This testing is done using automated technologies. I gained academic understanding of software testing throughout the entire testing process, which also provided me with the chance to put that knowledge into practise and get actual testing experience. The testing procedure opened the way for people to learn by sharing and discussion.

3.Objective

- To learn and apply theoretical knowledge in a real life scenario.

- Perform automated functional testing on the site phptravels.net

- Design the functional testing project using java-based Selenium WebDriver API.

- Perform end to end functional testing on all the web elements.

- To prepare test documents (Test design, Test scenario, Test case, defect log) based on the Use Cases.

4.Introduction

4.1Overview of Website

The aim of the project is to perform automated functional testing of the website https://www.phptravels.net using java based Selenium WebDriver API.

PHPTRAVELS is an online booking software for travel businesses. It helps travel agencies manage their business online, providing them a fully-working online booking system.

This is a PHP & MySQL software aimed at running booking business and travel agency website.The application has the multilingual script where users can search apartment availability in 50+ languages, as well as multi-currency possibility.

This platform offers many effective features, such as availability check, booking for a specific period, billing, reporting, payments, calendars, coupons, and more. All of them are accessible via a simple central interface.The booking engine of

PHPTRAVELS is customisable and includes billing, reports and invoicing. The system supports major payment gateways, including VISA, PayPal and others.

There are separate accounts for customers and for travel agents, and customisable software script according to specific business requirements

The different modules in this project are:

1. Customer Front- End

 2. Agent Front-t End

 3. Admin Back- End

 4. Supplier Back-end

4.2 Website Installation

The PHPTRAVELS website do not require any installation

3. Module Description

4.3.1Customer Front-End

- Check user login with valid/invalid credentials.

- Displays the link My Bookings to view the booking details

- Displays the link Add Funds to make payment using various options

- Displays the link My Profile with profile details

- Update address of user from test case

- Check bookings and view display voucher

- Payment of USD 50 using PayPal

4.3.2 Agent Front-End

- Check user login with valid/invalid credentials.

- Displays the link My Bookings to view the booking details

- Displays the link Add Funds to make payment using various options

- Displays the link My Profile with profile details

- Displays the link Logout

- Displays the links Home, Hotels, Tours, Blogs, Visa, Flights, Offers

- Search by Hotels by City option

- Update the USD to INR for the account.

4.3.3 Admin Back- End

- Check user login with valid/invalid credentials

- Test the link of Booking and then display the invoice where payment is successful.

- Delete a record that is having booking status as Cancelled.

- Change the booking status from "Pending" to "Confirmed" and verify the count in dashboard.

- Check whether the "Website" link is working and verify if it is redirecting to a different page.

4.3.4 Supplier Back –End

- Check user login with valid/invalid credentials.

- Check the dashboard overview and the text sales overview and summary.

- Test whether it displays Revenue breakdown

- Change the booking status from 'Pending' to 'Confirmed' and verify the count in dashboard

- Check whether the modules 'Flight', 'Visa', 'Tours', 'Bookings' are displayed and can be clicked.
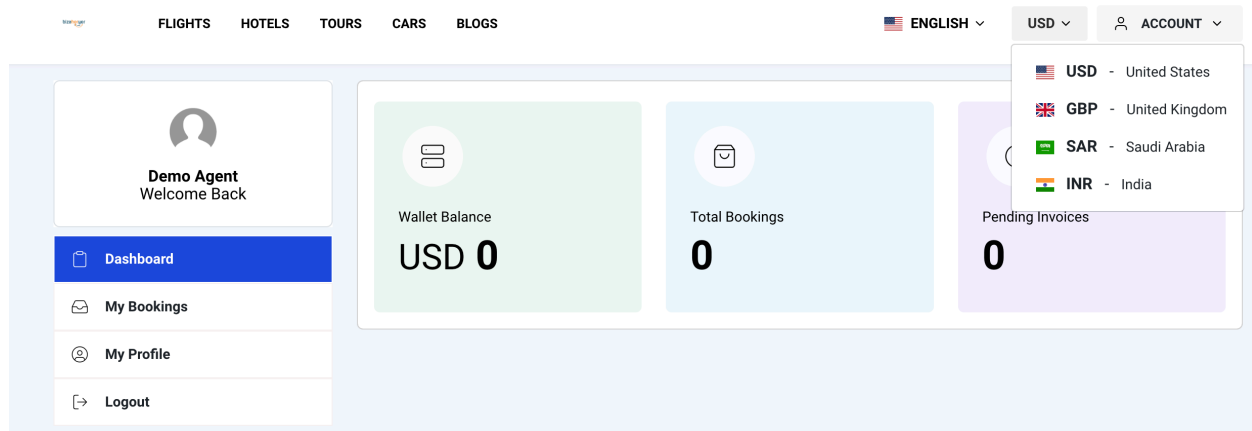
4. Screenshots

Customer booking Invoice

Agent Denomination Conversion

Admin Dashboard
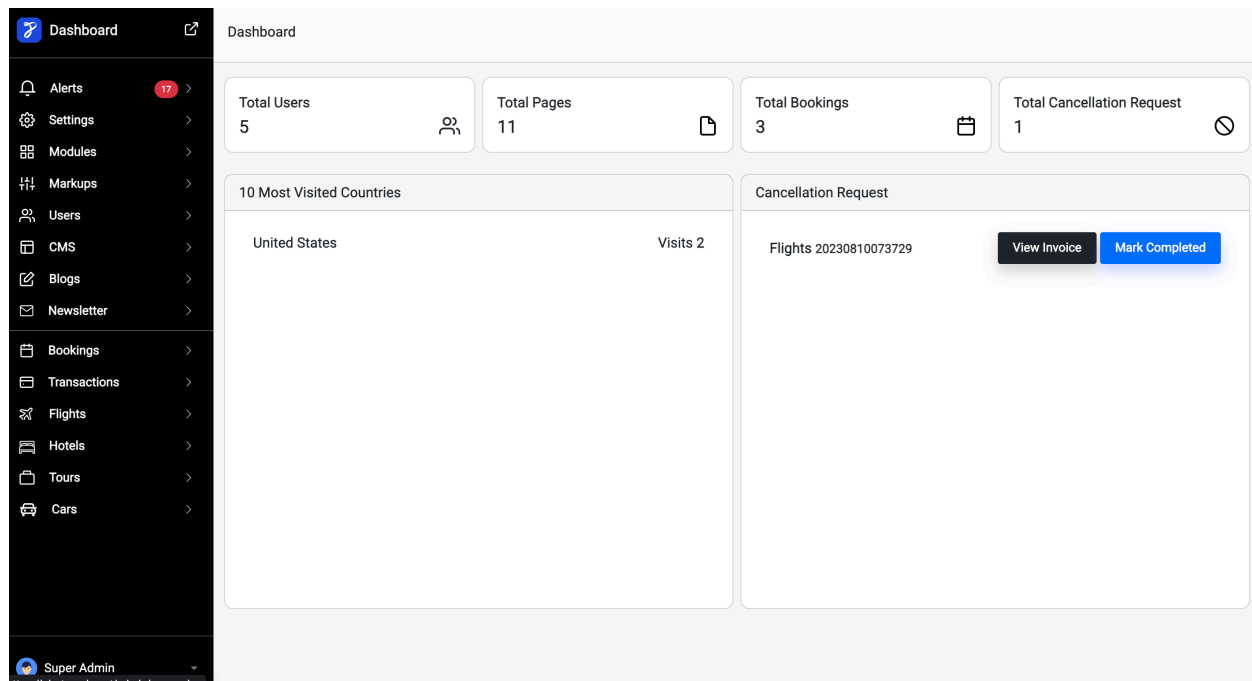
5.SoftwareTesting

Software testing is the process of verifying and validating whether a software or application is bug-free, meets the technical requirements as guided by its design and development, and meets the user requirements effectively and efficiently by handling all the exceptional and boundary cases. Testing identifies errors, gaps or missing requirements in contrast to actual requirements. It involves execution of software/system components using manual or automated tools to evaluate one or more properties of interest.

Software Testing can be broadly classified into two types:
  * **Manual testing**
  * **Automation testing**

<u>Manual Software Testing</u>

Manual testing is carried out by a tester manually without the use of any kind of automation tool. It can identify visible and hidden defects. It may require great effort and time, but the result will be bug-free software. Testers use test plans, test cases, or test scenarios to test software to ensure the completeness of testing. It also includes exploratory testing, as testers explore the software to identify errors in it.

Automation Testing of Software

Automation testing involves the use of special automation tools and requires a huge investment of money and resources. Here, testers handle test scripts

and return the result automatically. Test suites are recorded by using tools, and these can be played again by the testers as per the requirement. No human intervention is required for automation testing. It increases the test coverage, improves accuracy, and saves time and money when compared to manual testing.

5.1 Types of testing:
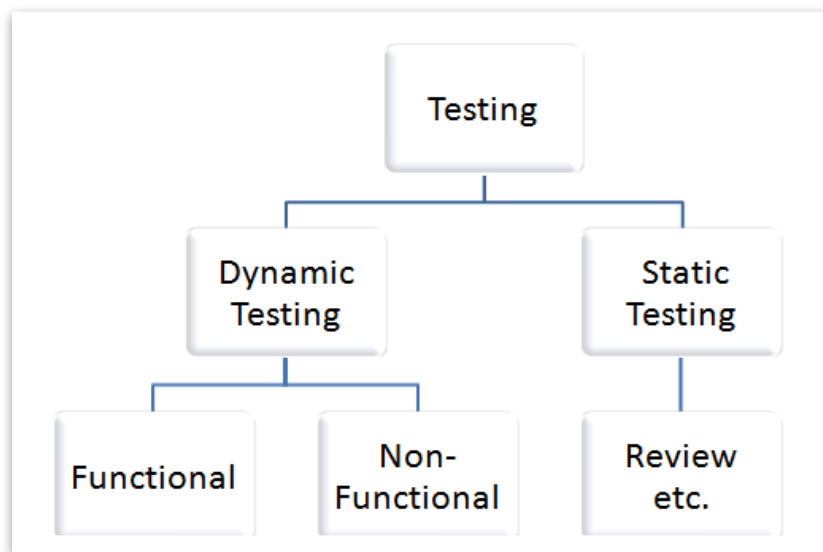
5.1.1 Static testing

Static testing is process which checks the application without executing the code. It is a verification process. Some of the essential activities are done under static testing such as business requirement review, design review, code walkthroughs, and the test documentation review. Static testing can be done manually or with the help of tools to improve the quality of the application by finding the error at the early stage of development.

5.1.2 Dynamic testing

Dynamic testing is testing, which is done when the code is executed at the run time environment. It is a validation process where functional testing [unit,

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integration, and system testing] and non-functional testing [user acceptance testing] are performed.

5.2 Testing of Website

Website testing is checking your website for potential bugs before its made live and is accessible to general public. It checks for functionality, usability, security, compatibility, performance of the web application or website.

6.Test Approach

A test approach defines how testing would be performed, what steps need to be undergone to accomplish a task. In the Test Strategy and Planning phase, we analyse the requirements. It will be a single time activity for the entire program. Whereas in the Execution phase we analyse the requirements, prepare test cases, execute it and make the bug fixes etc. This will be repeated in all cycles. Test cases, test scenarios etc. are used to ensure completeness of testing. Automated Functional testing will be carried out on the various modules.
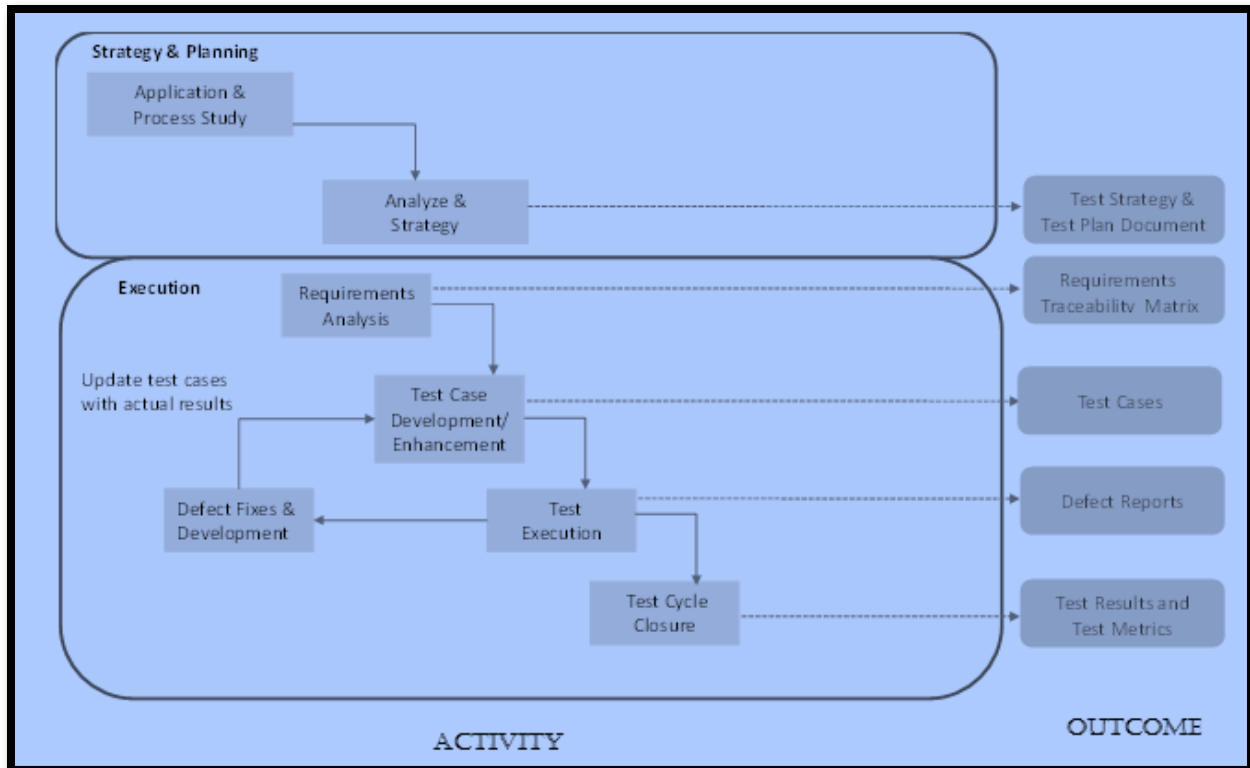
6.1 Tools

The different automated tools used in the testing of the website are as below:

6.1.1 Selenium

Selenium is an open source tool that automates web browsers in different platforms. It is a single interface which allows to write scripts in different programming languages like Java, Python, C# etc. Selenium WebDriver is the most important component of Selenium Tool's suite.
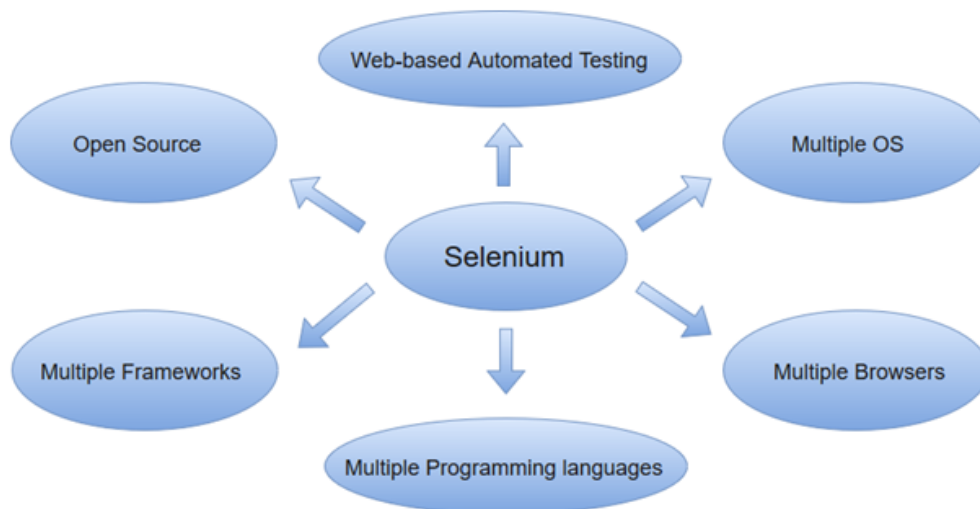
WebDriver has a built-in implementation of Firefox driver (Gecko Driver). For other browsers, you need to plug-in their browser specific drivers to communicate and run the test. Most commonly used WebDriver's include:

- Google Chrome Driver
- Internet Explorer Driver
- Opera Driver
- Safari Driver

Selenium WebDriver- Architecture

Selenium WebDriver API provides communication facility between languages and browsers. The following image shows the architectural representation of Selenium WebDriver.
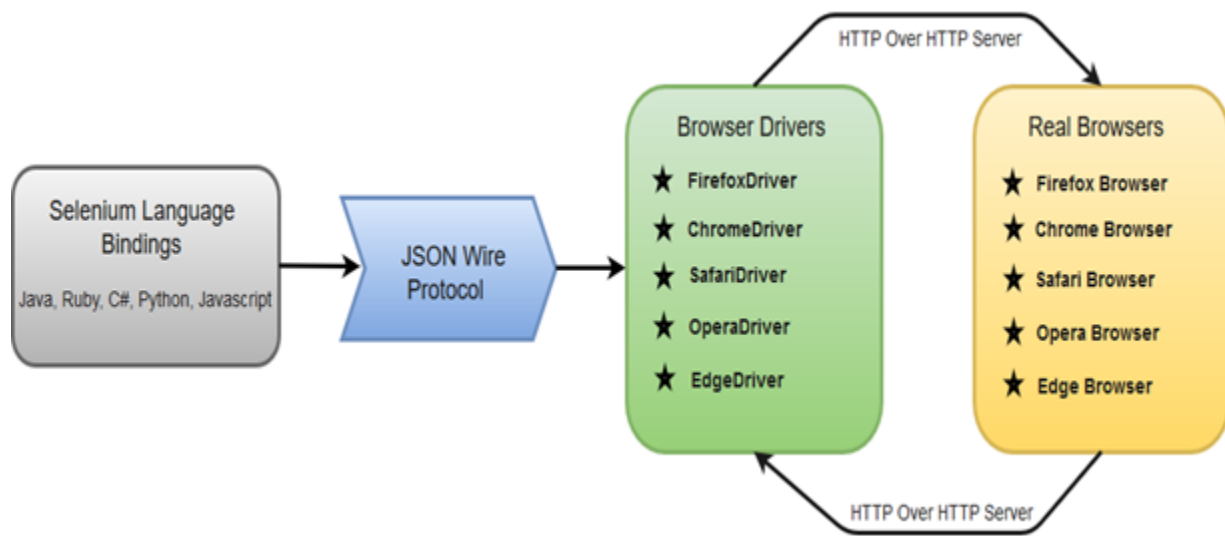
There are four basic components of WebDriver Architecture:

- Selenium Language Bindings

- JSON Wire Protocol

- Browser Drivers

- Real Browsers

Selenium Language Bindings / Selenium Client Libraries

Selenium developers have built language bindings/Selenium Client Libraries in order to support multiple languages. For instance, if you want to use the browser driver in java, use the java bindings. All the supported language bindings can be downloaded from the official website (https://www.seleniumhq.org/download/#client-drivers) of Selenium.

JSON Wire Protocol

JSON (JavaScript Object Notation) is an open standard for exchanging data on web. It supports data structures like object and array. So, it is easy to write and read data from JSON. To learn more about JSON, visit https://www.javatpoint.com/json-tutorial

JSON Wire Protocol provides a transport mechanism to transfer data between a server and a client. JSON Wire Protocol serves as an industry standard for various REST web services. To learn more about Web Services, visit https://www.javatpoint.com/web-services-tutorial

6.1.2 Browser Drivers

Selenium uses drivers, specific to each browser in order to establish a secure connection with the browser without revealing the internal logic of browser's functionality. The browser driver is also specific to the language used for automation such as Java, C#, etc.

6.1.3 Maven

Maven is a built automation tool from Apache Software Foundation and is commonly used to handle Java projects. These days it is commonly used to manage project dependencies and the whole lifecycle of any project which can include code generation, compilation , testing, validation, packaging etc. Maven uses the concepts of the project object model (POM) and enables the user to cut down several steps followed in the build process.

Maven simplifies does mainly following tasks.

1. It makes a project easy to build

2. It provides uniform build process (maven project can be shared by all the maven projects)

3. It provides project information (log document, cross referenced sources, mailing list, dependency list, unit test reports etc.)

4. It is easy to migrate for new features of Maven

Apache Maven helps to manage

- Builds
- Documentation
- Reporting
- SCMs
- Releases
- Distribution

Maven pom.xml

POM is an acronym for Project Object Model. The pom.xml file contains information of project and configuration information for the maven to build the project such as dependencies, build directory, source directory, test source directory, plugin, goals etc.

Maven reads the pom.xml file, then executes the goal.

Maven Lifecycle

There is a lifecycle that every Maven in Selenium build follows.The crucial goals are clean, install, and test.

Maven Clean

Maven Clean is used to clean the target folder. This is where the previous build's files, libraries, reports, output files, etc., are saved. The command to execute this is 'mvn -clean'.

Maven Install

Maven Install is used to install all the dependencies and create the deployment file. After this, it will run the test.

Maven Run

Maven Run will simply run the test without creating any deployment file.

6.1.4 TestNG

TestNG is an automation testing framework which creates test report in a proper format. It can be easily integrated with Maven, Jenkins etc. Annotations used here are easy to understand. TestNG provides you full control over the test cases and the execution of the test cases.TestNG framework eliminates the limitations of the older framework by providing more powerful and flexible test cases with help of easy annotations, grouping, sequencing and parametrising.
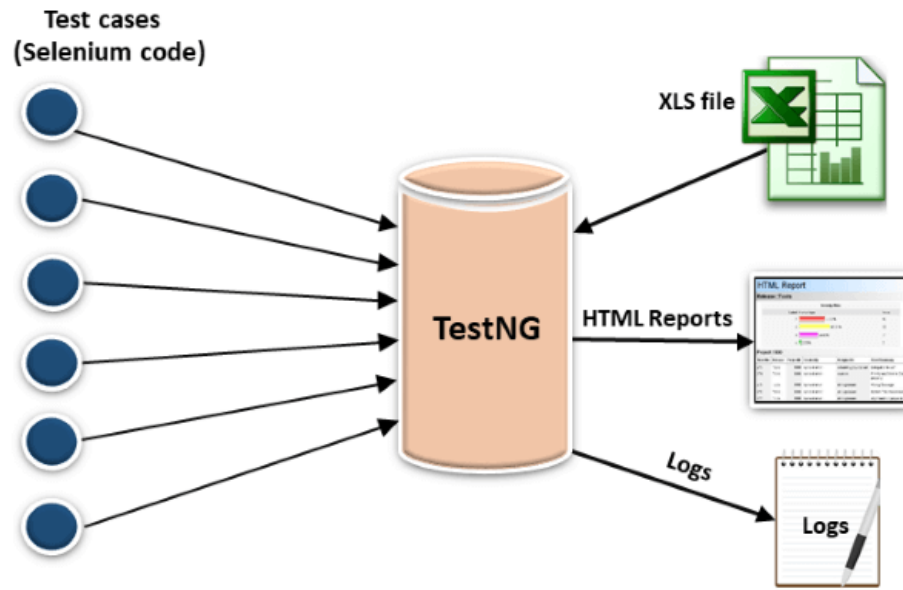
- In TestNG, annotations are easier to understand than Junit.

- It produces the HTML reports for implementation.

- It also generates the Logs.

- In TestNG, there is no constraint available such as @beforeclass and @afterclass which is present in Junit.

- TestNG does not extend any class. TestNG framework allows you to define the test cases where each test case is independent of other test cases.

- Parallel execution of test cases, i.e., running multiple test cases is only possible in the TestNG framework.

6.1.5 Eclipse

Eclipse is an IDE(Integrated Development Environment) for developing applications using Java and other languages. We can add plugins to IDE to extend the functionality. It works on major platforms like Windows, Mac OS, Linux etc.

7.Test Summary

7.1Types of testing done on the website.

7.1.1Functionality Testing

It is performed to test the functionalities of each feature on the website. We check the links in webpages are working correctly and make sure that there are no broken links. Forms are tested for scripting checks (If a user does not fill a mandatory field in a form an error message is shown.) Test negative scenarios such that when a user executes an unexpected step, appropriate error message is displayed .Manual and automated testing is performed.

7.1.2 Usability Testing

Website is checked for usability features like consistency and visibility of menus, buttons, links across different web pages. Basically performed to ensure that how easily the user can use the system.

7.2Outcomes expected

With this website testing,I try to understand different types of errors, scenarios in which these errors are created, the guidelines which are not met while creating websites.

7.3 Test Results

Test cases planned	76
Test cases executed	76
Test cases passed	55
Test cases failed	21
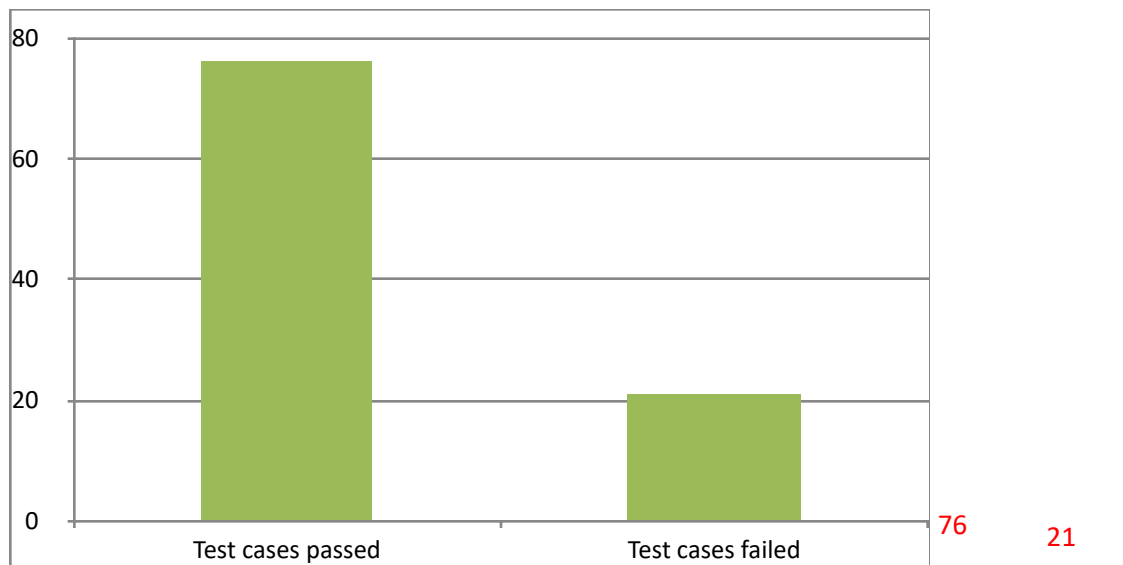
8.System Configurations

8.1Hardware Specification

OS: MacOS Ventura 13.4.1 (c)

Working Internet Connection(WiFi)

8.2 Software Specification

JDK with JRE

IDE: Eclipse

Web browser: Chrome,Firefox

Cloud repository: GitHub

Database: Local Storage

Automation Test tools: Selenium with Java,TestNG, Maven

9.Description of Internship

The students of ICT Academy of Kerala are given an opportunity to do the TCS iON Remote Internship of 125 hours as part of the Certified Specialist in Software Testing course. Through this internship, students get a chance to explore the practical world under the guidance of industry mentors of TCS iON.

As part of the internship, we have to go through the Customer Front End, Agent Front End, Admin Back End and Supplier Back End modules of the site phptravels.net and perform automated functional testing of the various tasks

using Selenium WebDriver API. Various reports namely Test Design, Test Scenario, Test Design have to be created. Defects found need to be captured in Defect Log.

10.Internship Activities

- Completed the Pre Assessment Test.

- Watching various videos provided in the welcome kit so that we can adhere to the various guidelines.

- Interacting with friends and mentors regarding the project using Digital discussion board.

- Submission of daily reports to keep an eye on daily activities.

- Checking the events space in the Dashboard to know more about the upcoming events.

- Checking for the industry mentor's post in Digital Discussion Room.

- Read and understand various project tasks shared in Industry Project.

- Self learning the various concepts using references shared.

- Learned about Selenium WebDriver, test plan, test case, test scenario etc.

- Learned about installation of Java, Eclipse, Browser driver.

- Tried logging into the different modules of phptravels.net with the various credentials shared and clicked on the links to find out the working as part of doing exploratory testing.

- Prepared Test design, Test Scenario, Test case, Defect log documents as part of project deliverables.

- Learned about WebElements and how to locate it.

- Learned about Wait and Action class

- Prepared automation scripts for 4 modules

- Submitted Interim project report 1 and 2.

- Learned about Assertions and Window handles.

- Learned to create project using Maven page object model.

- Captured the video on execution of various automated scripts.

- Shared the test docs(Test design, test scenario, test case, defect log), project report, test summary report ,automation scripts(code),video of running the scripts via GitHub.

11.Challenges and Opportunities

TCS iON A remote internship is a fantastic way to pick up practical experience quickly and easily. Even though I was having trouble getting the project off the ground, the reference materials and self-study helped me prepare to deal with problems that arise in the real world. Writing automation scripts for various modules was made easier by the variety of examples on numerous websites.

Even though the procedure was really beneficial for learning, I had a significant problem obtaining the login for the supplier back-end. I never encountered that logon because it consistently displayed a 404 not found problem. Additionally, not all of the requirements have been put into practise.

12. Research and Learnings

This document was produced as a part of the TCS iON Remote Internship RIO-125.This was done to investigate the practical side of the functional testing project test life cycle and put it into practise in a real-world situation. My understanding of software testing's fundamentals was aided by the reference links offered and online self-study. I learned how to prepare the test documents in order to move forward and reach my goals. I was able to install softwares quickly thanks to the shared documentation. My understanding of Selenium's fundamentals and ability to implement its many features was aided by the coding samples on numerous websites employing Selenium with Java. By looking through the Selenium Page Factory and Page Object Model documentation, I was able to understand Page Object Model and Page Factory settings in Selenium by browsing the internet.

13. Conclusion

This is the first step in learning how to apply our theoretical understanding to a situation from real life. The testing procedure opened the way for people to learn by sharing and discussion. I was able to conduct study on new subjects using the internet, learn enough information, and put it into practise in order to get the results I needed.

14. Link to code and executable file

https://github.com/AnwayaAnu/Anwaya_PK_PhpTravels_ProjectTCS_iON.git

15.Bibliography

15.1. Weblinks

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