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Gurukula

Test Automation Project Report

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GURUKULA TEST AUTOMATION PROJECT

Introduction

Gurukula is a Java based web application which is a system under test (SUT) for this automation project. The aim of this project is to test the SUT and discover maximum number of defects. In addition to this build an automation framework for the SUT which can increase the efficiency of the regression and discover some more defects.

Scope of Testing

1. Functional Testing - System testing
    - Manual testing and exploratory tests should be performed to discover new defects in SUT.
2. Automation Testing – Regression
    - All basic and repeatable scenarios should be automated to create a full regression automation suite.
3. Non-Functionality- Usability, Cross browser
    - Usability tests and cross browser tests should be performed to verify the compatibility of SUT on major browsers [Google Chrome 67.0 and Firefox 56.0]

Test Automation Approach

For an efficient testing of system under test, below approach is applied and used.

1. **Introduction with SUT:** In this phase I have gone through the requirements and spent some time learning the application under test and doing some exploratory tests.
2. **Automation Feasibility Analysis**: In this phase, I have performed the feasibility check of automation and identified the use cases which were suitable candidate for automation.
3. **Test Strategy:** In test strategy, I have selected the test automation framework and tools as of following:
    a. Selenium WebDriver v3.13
    b. TestNG v6.14.3
    c. JDK 1.8
    d. IDE- Eclipse Oxygen.2
    e. Build tool - Maven
    f. SCM- git and github for repo
4. **Environment Set up:** In this phase I deployed the gurukula.war file using Apache Tomcat 9.0 and set up the test environment.

5. **Test Script Development:** In this phase, I started a Java maven project and used PageFactory design pattern to create the object repository for the system under test.
   a. Separated Page Classes from the test classes for neat and simple design.
   b. OOPS concepts are used to make code reusable, modular, extendible, readable and understandable.
   c. Data driven approach is used to develop this framework
   d. Configuration file is used to adjust the parameters easily.
   e. Cross browser support is provided for Firefox and Chrome browsers.
6. **Test Case Execution:** In this phase, I have used testing.xml file to execute test scripts.
   a. ModuleWiseTest.xml – It is a module wise test configuration which runs one test at a time.
   b. Regression.xml - It is a full regression suite which runs parallelly.
7. **Test Result Generation and Analysis:** This is the last phase and in this phase, I analyzed the output of test cases and the test reports generated by TestNG testing framework and created a defect log sheet.

Test Deliverables

1. Test Modules

Module ID	Module Name	Number of Scenario	Number of Test Case	Automated Test	Automation % achieved	Number of Defects
M1	Login Management	5	14	12	86%	5
M2	User Registration	4	22	22	100%	4
M3	Accounts Management	5	22	20	91%	5
M4	Branch Management	7	22	16	73%	5
M5	Staff Management	7	16	12	75%	5

2. Test Scenario automation feasibility report

Scenario ID	Scenario Name	Automation / Manual
M1_TS01	Verify Application is up and running	Automation
M1_TS02	Verify Valid Login - Positive case	Automation
M1_TS03	Verify Invalid Login - Negative case	Automation
M1_TS04	Verify Reset password functionality	Automation
M1_TS05	Verification of Automatic Login functionality	Manual
M2_TS01	Verify Register a new user	Automation
M2_TS02	Verify Password Strength in Registration screen	Automation
M2_TS03	Verify User Registration error message	Automation
M2_TS04	Verify Registration button enablement	Automation
M3_TS01	Verify change in user Settings	Automation
M3_TS02	Verify change user password	Automation
M3_TS03	Verify Password Strength in change password screen	Automation
M3_TS04	Verify Field Error messages on Settings page	Automation
M3_TS05	Verify Invalidation of session	Automation/Manual
M4_TS01	Verify new branch creation	Automation

M4_TS02	Verify error messages during branch creation	Automation
M4_TS03	Verify editing of branch	Automation
M4_TS04	Verify deletion of branch	Automation
M4_TS05	Verify branch view button functionality	Automation
M4_TS06	Verify search functionality and usage of wild card on Branch Page	Manual
M4_TS07	Verification of pagination links on branch screen	Manual
M5_TS01	Verify new staff creation	Automation
M5_TS02	Verify error messages during staff creation	Automation
M5_TS03	Verify editing of staff	Automation
M5_TS04	Verify deletion of staff	Automation
M5_TS05	Verify staff view button functionality	Automation
M5_TS06	Verify search functionality and usage of wild card on Staff Page	Manual
M4_TS07	Verification of pagination links on staff screen	Manual

3. Defect Logging Sheet

Defect ID	Defect Title	Severity	Module	Author	Status
1	Registration of new user is not possible.	1-Critical	M2	nchoudhary	New
2	Forgot Password Functionality not working	2-High	M1	nchoudhary	New
3	User is not able to make any changes in their profile	1-Critical	M3	nchoudhary	New
4	Password change functionality not working	1-Critical	M1	nchoudhary	New
5	Creation of same Staff and Branch pair allowed	1-Critical	M5	nchoudhary	New
6	Session is valid even after invalidating	2-High	M3	nchoudhary	New
7	During Query Search on Staff page Branch Field is not populating	2-High	M5	nchoudhary	New
8	Partial Search is not working on Staff page and Branch page	2-High	M4	nchoudhary	New
9	Pagination fields are displayed and working weird for search results. Clicking Next shows extra result and clicking on Previous resets filter.	3-Medium	M5	nchoudhary	New
10	Pagination is not available on Branch Page	2-High	M4	nchoudhary	New
11	Not Internationalized fields – Not Supporting UNICODE characters	3-Medium	M2	nchoudhary	New
12	Creating Branches is easy by using enter key but in Staff page it is not working, Tabbing is not correct.	3-Medium	M5	nchoudhary	New
13	Wild card on Search field is not working correctly for * query textbox on Branch and Staff screen	3-Medium	M4	nchoudhary	New
14	Sorting of ID field is random (neither in asc nor in dsc order) on both Branch and Staff screen	3-Medium	M5	nchoudhary	New
15	User Agent information is not correct – when logged in using chrome it shows Mozila, Safari and Chrome	3-Medium	M3	nchoudhary	New
16	User Agent/Session information is not captured for Internet Explorer Browser	2-High	M3	nchoudhary	New

17	No Max length Check for username and password field on Login Screen but max character is 50 during registration	2-High	M1	nchoudhary	New
18	Max length error message says no more than 50 character for email field on Registration Screen but actual error is displayed only after 100 character.	2-High	M2	nchoudhary	New
19	Auto Login checkbox is disabled but still user is logged in	2-High	M1	nchoudhary	New
20	Error message text is not correct and not possible to create for confirmation password “Password should begin with an alphabet and should contain a number and a special character.” during registration of new user	3-Medium	M2	nchoudhary	New
21	Special characters are acceptable for FirstName and LastName field of Settings page.	2-High	M3	nchoudhary	New
22	“Your password cannot be longer than 50 characters.” is displayed after 55 character on Change password screen.	3-Medium	M1	nchoudhary	New
23	Staff can be created without association with subject.	1-Critical	M4	nchoudhary	New
24	“This field is required to be at least 0 characters.” Error is not possible to simulate on Create new staff dialog box	3-Medium	M4	nchoudhary	New

4. Scripts and code

Test automation source code is available on below github link.

https://github.com/nitish90choudhary/GurukulaTest

Steps to execute the automation framework

1. Clone the above github repository on your local machine.
2. Open the test automation project in any ide (for example Eclipse)
   a. Pre-requisite: JDK1.8
3. Start the system under test either using Tomcat or using *java -jar gurukula-0.0.1-SNAPSHOT.war*
4. Verify the url of the application and check with browser if application is up and running.
5. Open the config.properties file set app.url parameter to the actual test application URL and save the file.
6. There are two TestNG file under folder **testNGconf**
   a. Regression.xml - It is a full regression suite which will runs parallelly. → Right click and run as TestNG
   b. ModuleWiseTest.xml – It is a module wise test configuration which runs one test at a time.
7. After successful run check the **test-output** folder for the test execution report.

Test Coverage

1. **Automation**
    a. All basic functionalities offered by different SUT modules are covered with this automation framework.
    b. Positive test and Negative tests are also covered by automation framework.
    c. Boundary value tests and equivalence partitioning test design methods are used.
    d. Fields maxlength, regular expression and error message are also covered with this automation framework.
    e. Business End to end cases are also covered with the this framework.
2. **Manual Test**
    a. Pagination on branch page and staff page are checked.
    b. Query search tests are done for branch and staff screens.
    c. Query search using wildcards are also performed for both branch and staff screens.
    d. Automatic login functionality is checked along with the sessions.
    e. Session page tests are performed.
    f. Default value tests and Error message validation tests are performed.
3. **Usability Test**
    a. Copy paste functionality is checked.
    b. Tabbing functionality is checked
    c. Cross browser functionality is checked- on chrome and firefox.

Test Summary

This section includes the summary of testing activity performed for the Gurukula web application:-

1. **Execution overview:**

Modules	Passed	Failed
M1_Login	**10**	**2**
M2_Registration	**18**	**4**
M3_Accounts	**14**	**6**
M4_Branches	**16**	**0**
M5_Staff	**12**	**0**
Total	**70**	**12**

Pass percentage: 85.37%

Failed percentage: 14.6%

2. Defect Overview

Severity	Defect Count
1-Critical	**5**
2-High	**10**
3-Medium	**9**

3. Comments- Console output from the last regression

```
==============================================
Gurukula Automation Suite
Total tests run: 82, Failures: 11, Skips: 0
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Execution time : 245 seconds
```