

Gurukula: Test Automation Project Report

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1. Introduction:

Gurukula is a Java based web application which is a system under test (SUT). 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.

2. Scope of Testing

1. Automation Testing – Regression
 - All basic and repeatable scenarios should be automated to create a full regression automation suite.
2. Functional Testing –
 - Manual testing and exploratory tests should be performed to discover new defects in SUT.
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]

3. Test Automation Approach

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

- ❖ **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.
- ❖ **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.
- ❖ **Test Strategy:** In test strategy, I have selected the test automation framework and tools as of following:
 - Selenium WebDriver v3.141.59
 - TestNG v6.9.9
 - JDK 1.8
 - IDE- Eclipse Version: Luna Service Release 2 (4.4.2)
- ❖ **Test Script Development:** During this phase below approach is used.
 - OOPS concepts are used to make code reusable, modular, extendible, readable and understandable.

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- Data driven approach is used to develop this framework.
- Configuration file is used to adjust the parameters easily.
- Cross browser support is provided for Firefox and Chrome browsers.

- ❖ **Test Case Execution:** In this phase, I have used testing.xml file to execute test scripts.
 - ModuleWiseTest.xml – It is a module wise test configuration which runs one test at a time.
 - Regression.xml - It is a full regression suite which runs in parallel.
- ❖ **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.

4. Test Deliverables

4.1. Test Modules

Module ID	Module Name	Number of Scenario	Number of Test Case Automated	Test Automation % achieved	Number of Defects
Guru1	Login Management	5	12	11	5
Guru2	Registration	4	22	22	4
Guru3	Accounts	5	22	20	5
Guru4	Branch	7	22	16	5
Guru5	Staff	7	16	12	5

4.2 Test Scenario automation feasibility report

Scenario ID	Scenario	Automation/Manual
Guru1_TS01	Verify Application is up and running	Automation
Guru1_TS02	Verify Valid Login - Positive case	Automation
Guru1_TS03	Verify Invalid Login - Negative case	Automation
Guru1_TS04	Verify Reset password functionality	Automation
Guru1_TS05	Verification of Automatic Login functionality	Manual
Guru2_TS01	Verify Register a new user	Automation
Guru2_TS02	Verify Password Strength in Registration screen	Automation
Guru2_TS03	Verify User Registration error message	Automation
Guru2_TS04	Verify Registration button enablement	Automation
Guru3_TS01	Verify change in user Settings	Automation
Guru3_TS02	Verify change user password	Automation
Guru3_TS03	Verify Password Strength in change password screen	Automation
Guru3_TS04	Verify Field Error messages on Settings page	Automation
Guru3_TS05	Verify Invalidation of session	Automation/Manual
Guru4_TS01	Verify new branch creation	Automation

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Guru4_TS02	Verify error messages during branch creation	Automation
Guru4_TS03	Verify editing of branch	Automation
Guru4_TS04	Verify deletion of branch	Automation
Guru4_TS05	Verify search functionality and usage of wild card on Branch Page	Manual
Guru4_TS06	Verification of pagination links on branch screen	Manual
Guru4_TS07	Verification of pagination links on branch screen	Automation
Guru5_TS01	Verify new staff creation	Automation
Guru5_TS02	Verify error messages during staff creation	Automation
Guru5_TS03	Verify editing of staff	Automation
Guru5_TS04	Verify deletion of staff	Automation
Guru5_TS05	Verify staff view button functionality	Automation
Guru5_TS06	Verify search functionality and usage of wild card on Staff Page	Manual
Guru5_TS07	Verification of pagination links on staff screen	Manual

4.3 Defect Logging Sheet

Defect ID	Title	Severity	Module
1	Password change functionality not working	Critical	Guru1
2	Registration of new user is not possible.	Critical	Guru2
3	User is not able to make any changes in their profile	Critical	Guru3
4	Staff can be created without association with subject	Critical	Guru4
5	Creation of same Staff and Branch pair allowed	Critical	Guru5
6	Forgot Password Functionality not working	High	Guru1
7	No Max length Check for username and password field on Login Screen but max character is 50 during registration	High	Guru1
8	Auto Login checkbox is disabled but still user is logged in	High	Guru1
9	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.	High	Guru2
10	Session is valid even after invalidating	High	Guru3
11	User Agent/Session information is not captured for Internet Explorer Browser	High	Guru3
12	Special characters are acceptable for FirstName and LastName field of Settings page.	High	Guru3
13	Partial Search is not working on Staff page and Branch page	High	Guru4
14	Pagination is not available on Branch Page	High	Guru4
15	During Query Search on Staff page Branch Field is not populating	High	Guru5
16	Not Internationalized fields – Not Supporting UNICODE characters	Medium	Guru2
17	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	Medium	Guru2

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18	User Agent information is not correct – when logged in using chrome it shows Mozilla, Safari and Chrome	Medium	Guru3
19	Wild card on Search field is not working correctly for * query textbox on Branch and Staff screen	Medium	Guru4
20	“This field is required to be at least 0 characters.” Error is not possible to simulate on Create new staff dialog box	Medium	Guru4
21	Pagination fields are displayed and working weird for search results. Clicking Next shows extra result and clicking on Previous resets filter.	Medium	Guru5
22	Creating Branches is easy by using enter key but in Staff page it is not working, Tabbing is not correct.	Medium	Guru5
23	Sorting of ID field is random (neither in asc nor in dsc order) on both Branch and Staff screen	Medium	Guru5

5. Scripts and code

Source code is available on below github link.

<https://github.com/SharmaInder/Gurukula>

Steps to execute the automation framework

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

6. Test Coverage

Automation

- All basic functionalities offered by different SUT modules are covered with this automation framework.
- Positive test and Negative tests are also covered by automation framework.
- Boundary value tests and equivalence partitioning test design methods are used.
- Fields maxlength, regular expression and error message are also covered
- Business End to end cases are also covered with the this framework.

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2. Manual Test

- Pagination on branch page and staff page are checked.
- Query search tests are done for branch and staff screens.
- Query search using wildcards are also performed for both branch and staff screens.
- Automatic login functionality is checked along with the sessions.
- Session page tests are performed.
- Default value tests and Error message validation tests are performed.

- a. Copy paste functionality is checked.
- b. Tabbing functionality is checked
- c. Cross

7. Test Summary

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

1. Execution overview:

Modules	Passed	Failed
Guru1_Login	11	1
Guru2_Registration	18	4
Guru3_Accounts	14	5
Guru4_Branch	16	0
Guru5_Staff	12	0
Total	71	10

Pass percentage: 85.65

Failed percentage: 12.35%

Comments- Console output from the last regression

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Gurukula Regression Automation Suite

Total tests run: 81, Failures: 10, Skips: 0

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Execution time : 100 seconds