***Gurukula* *Test* *Automation Framework & Approach:***

To automate the Gurukula application, I have used the below tools/technologies.

1. **Java and Selenium WebDriver:** Java and Selenium Web Driver is used to write the automation scripts for gurukula application.
2. **Junit:** Junit framework is used to write the test cases, preparing test suite and created rule to take screenshot and log error messages whenever test case is failed.
3. **Log4j:** Log4j is used to log the information and errors during executing the scripts.
4. **Apache POI:** Required test data is maintained in the excel sheet. By using apache POI, we can read the test data from excel sheet.
5. **Ant:** I have created build.xml to compile and run the Junit test cases. And also it will generate test report with all the details.
6. **JavaDoc:** Ihave added javadoc for all the utilities, so that anyone can understand the framework very easily.
7. **Properties file:** I have created “**GeneralProperties**” properties file to maintain “Application URL, Login username, Login password and browser type”.

browsertype=chrome for chrome browser

browsertype=firefox for firefox browser

browsertype= internetexplorer for IE browser

I have used Junit framework to write the selenium test cases. I have created three packages to maintain the Web Element identification details (Page Object Model), test utilities and test cases.

Please find the high level details of packages created in the framework as below.

1. **com.gurukula.elements :**

I have created separate classes for each page to maintain all web elements with their id or name or xpath etc. in this package.

This approach will give the following advantages.

1. Code readability is increased
2. We can reuse the same element in multiple places (Reusability is increased)
3. Code maintenance is easy, if any element ids are changed in the future, we can directly go to that particular class and update it in one place instead of modifying in multiple places.
4. **com.gurukula :**

I have created separate interfaces and classes for each page/module and written utilities for all the functionalities in this package.

And also framework related classes like SeleniumFramework, DumScreenShot and ReadDataFromExcel are created in this package.

1. **com.gurukula.test:**

Created automation test cases and test suite for gurukula application in this package.

**Build Folder:**

All compiled classes and test execution report is generated in Build folder. HTML test report is generated for all the tests, for failed tests and for errors separately.

**Screenshots Folder**:

Screenshot will be taken at the failed step and will be stored in Screenshots folder

**Selenium Jars Folder:**

All the required jars are maintained in the selenium jars folder.

**Test Data:**

Required test data for all the test cases are maintained in the excel sheet in the Test Data folder

***Test Cases:***

I have automated the following test scenarios.

1. Verify user is able to create a new account in Gurukula application (Failed Issue #1)
2. Verify user is able to modify the account details (Failed Issue #2)
3. Verify user is able to create a new branch with valid details
4. Verify user is able to edit branch details
5. Verify user is able to delete the existing branch
6. Verify user is able to view the branch details
7. Verify user is able to query the branches with branch id or name
8. Verify user is able to create a new staff with valid details
9. Verify user is able to edit staff details
10. Verify user is able to delete the existing staff
11. Verify user is able to view the staff details
12. Verify user is able to query the staff with staff Id or staff name.
13. Verify user is able to navigate to next page, last page, previous and first page in the staff page

I did not automate the below scenario as pagination is not available in the branch page

1. Verify user is able to navigate to next page, last page, previous and first page in the staff page

**Configure Project in Eclipse:**

As GIT is not allowing to upload files whose file size is more than 25 MB, I have divided Gurukula test project in to 3 files and uploaded.

Please do the following steps to run the test cases from eclipse or by using ant.

1. Download “Gurukula.zip”,”selenium jars.zip” and “selenium-server-standalone-2.53.0.jar” from GIT and unzip those folders.
2. Copy selenium-server-standalone-2.53.0.jar to selenium jars folder
3. Create Gurukula project in eclipse and copy selenium jars folder to Gurukula project and also add those jars as dependant jars.

***Test Execution:***

1. Launch the Gurukula application from command prompt
2. Provide the application url, username, password and browser type in the **GeneralProperties** properties file
3. Provide the required test data in the “**GurukulaAutomationTestData.xlsx**” sheet in the Test Data folder
4. Open the command prompt and change directory to your project configured in eclipse
5. Type ant and enter. It will execute the ant targets in the order and report will be generated once execution is completed. Test Report will be available in the build-> junitreport in the test project folder (all-tests.html).
6. For the failed test case, screenshots will be available in the Screenshots folder.

**Note**: I have executed the above test cases on Firefox and chrome browser.

***Issues Observed:***

I have found the following issues during automating the Gurukula application.

**Issue #1:**

**Summary:**

Unable to create a new account for Gurukula application

**Steps To Reproduce:**

1. Launch the Gurukula application
2. Click on “Register a new account” link
3. Enter the valid data in all the fields and click on Register button
4. Verify that a new account is created

**Test Data:**

|  |  |  |
| --- | --- | --- |
| **LoginName** | **EmailId** | **NewPassword** |
| Subba | [subba.nc07@gmail.com](mailto:subba.nc07@gmail.com) | [Test@980](mailto:Test@980) |

**Actual Result:**

The following error message has been displayed after clicking on “Register” button

**“The Registration failed! Please try again later.”**

**Expected Result:**

New account should be registered with the given login details.

**Issue #2:**

**Summary:**

Unable to edit the account details in Gurukula application

**Steps To Reproduce:**

1. Login to Gurukula application
2. Click on Account -> Settings link displayed in the top right of the page
3. Modify the data displayed in the First Name, Last Name and e-mail fields and click on Save button
4. Verify that above modified data is saved

**Test Data:**

|  |  |  |
| --- | --- | --- |
| **First Name** | **Last Name** | **Email Id** |
| Subba | reddy | [abc@gmail.com](mailto:abc@gmail.com) |

**Actual Result:**

The following error message is displayed after clicking on Save button

**“An error has occurred! Settings could not be saved.”**

**Expected Result:**

The modified account data should be saved successfully.

**Issue #3:**

**Summary:**

As per the field pattern, space is not considering as valid character at staring end ending of the branch name while creating a new branch and editing branch details.

**Steps To Reproduce:**

1. Login to Gurukula application with valid credentials.
2. Click on Entities -> Branch
3. Click on Create a new Branch button
4. Enter the space as starting and ending character of the name of the Branch and verify that the message displayed below the Name field ex: ( te a ) here length is 5

**Test Data:**

|  |  |  |
| --- | --- | --- |
| **User Name** | **Password** | **Branch Name** |
| Admin | admin | te a |

**Actual Result:**

1. Space at starting and ending of the branch name is not considering as a character. Hence the incorrect error message is displaying as **“This field is required to be at least 5 characters”**
2. As space is not considering the valid character at starting and ending of the branch name, the displayed regular expression is incorrect **“This field should follow pattern ^[a-zA-Z\s]\*$.**

**Expected Result:**

The regular expression pattern should be changed as “^[a-zA-Z][a-zA-Z\s]\*[a-zA-Z]$”

**Note:** Same behavior is observed while editing branch details also.

**Issue #4:**

**Summary:**

As per the field pattern, space is not considering as valid character at staring of the staff name while creating a new staff and editing staff details.

**Steps To Reproduce:**

1. Login to Gurukula application with valid credentials.
2. Click on Entities -> Staff
3. Click on Create a new Staff button
4. Enter the space at starting character of name of the Staff and verify that the message displayed below the Name field.

**Test Data:**

|  |  |  |
| --- | --- | --- |
| **User Name** | **Password** | **Staff Name** |
| Admin | admin | tea |

**Actual Result:**

1. As space is not considering the valid character at starting of the staff name, the displayed regular expression is incorrect **“This field should follow pattern ^[a-zA-Z\s**]\*$.”

**Expected Result:**

The regular expression pattern should be changed as “^[a-zA-Z][a-zA-Z\s]\*$”

**Note:** Same behavior is observed while editing staff details also.

**Issue #5:**

Staff users whose name contains space are displayed in the search results when the gurukula war file is re-launched from command prompt.

And also Name and Branch fields are blank when we **view** the above staff users (“subba a” and “subba b”).

**Steps To Reproduce:**

1. Run gurukula war file from command prompt and login to Gurukula application with valid credentials
2. Click on Entities -> Staff displayed in the top right of the page.
3. Create two staff users with name contains space (ex: subba a, subba b)
4. Create one staff user without any spaces in the name(ex: subba)
5. Logout from application
6. Run gurukula war file from command prompt and Launch the application from browser
7. Login to Gurukula application with valid credentials
8. Click on Entities -> Staff displayed in the top right of the page.
9. Enter the search value i.e. “subba” in the query field and click on search a staff button
10. Verify that the search results displayed in the table.

**Test Data:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **User Name** | **Password** | **Staff Name1** | **Staff Name2** | **Staff Name3** |
| Admin | admin | branch a | branch b | branch |

**Actual Result:**

1. Staff users whose name contains space are displayed in the search results. (Here only “subba a” and “subba b” are displayed but “subba” is not displayed).
2. Name and Branch fields are blank when we **view** the above staff users (“subba a” and “subba b”).

**Expected Result:**

No staff users should be displayed when gurukula war file is re-launched from command prompt.

**Issue #6:**

Branches whose name contains space are displayed in the search results when the gurukula war file is re-launched from command prompt.

And also Name and Code fields are blank when we **view** the above branches (“branch a” and “branch b”) by clicking on View button.

**Steps To Reproduce:**

1. Run gurukula war file from command prompt and login to Gurukula application with valid credentials
2. Click on Entities -> Branch displayed in the top right of the page.
3. Create two branches with name contains space (ex: branch a, branch b)
4. Create one branch without any spaces in the name(ex: branch)
5. Logout from application
6. Run gurukula war file from command prompt and Launch the application from browser
7. Login to Gurukula application with valid credentials
8. Click on Entities -> Branch displayed in the top right of the page.
9. Enter the search value i.e. “branch” in the query field and click on search a staff button
10. Verify that the search results displayed in the table.

**Test Data:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **User Name** | **Password** | **Branch Name1** | **Branch Name2** | **Branch Name3** |
| Admin | admin | branch a | branch b | branch |

**Actual Result:**

1. Branches whose name contains space are displayed in the search results. (Here only “branch a” and “branch b” are displayed but “branch” is not displayed).
2. Name and Code fields are blank when we **view** the above Branches (“branch a” and “branch b”) by clicking on View button.

**Expected Result:**

No Branches should be displayed when gurukula war file is re-launched from command prompt.

**Issue #7:**

Page navigation links (<<, <, >, >>) are not displayed on the Branches page.

**Steps To Reproduce:**

1. Login to Gurukula application with valid credentials
2. Click on Entities -> Branch displayed in the top right of the page
3. Verify that page navigation links( <<,<,>,>>) are available

**Test Data:**

|  |  |
| --- | --- |
| **User Name** | **Password** |
| Admin | Admin |

**Actual Result:**

Page navigation links (<<, <, >, >>) are not displayed on the Branches page.

**Expected Result:**

Page navigation links (<<, <, >, >>) should be displayed on the Branches page.