

1. Draw a Mind Map or draft test cases for given requirements

The HR Management application allows HR to log in with a valid username and password.

TC Id	Test Objectives	Precondition	Steps	Expected Results A	Actual Results
TC01	Admin can log into the system by providing a valid user name and password	User need to navigate to the "actiPLANS" login page. Url - https://demo.actiplans.com/login.do	01: Enter "admin" as the user name. 02: Enter the "manager" as the password. 03: Click on the Login button.	The user navigates to the actiPLANS dashboard.	
TC02	Admin can't log in to the system by providing	User needs to navigate to the "actiPLANS"	01: Enter "admin" as the user	Display an error message "Username	

	a valid user name but an invalid password	login page. Url - https://demo.actiplans.com/login.do	name. 02: Enter the "amod12" as the password. 03: Click on the Login button.	or Password is invalid. Please try again."	
TC03	Admin can't log in to the system by providing an invalid user name but a valid password	User needs to navigate to the "actiPLANS" login page. Url - https://demo.actiplans.com/login.do	01: Enter "pathi23" as the user name. 02: Enter the "manager" as the password. 03: Click on the Login button.	Display an error message "Username or Password is invalid. Please try again."	
TC04	Admin can't log in to	The user needs to	01: Enter "Lakshman	Display an error	

	the system by providing invalid user names and passwords.	navigate to the "actiPLANS" login page. Url - https://demo.actiplans.com/login.do	" as the user name. 02: Enter "hulzi4" as the password. 03: Click on the Login button.	message "Username or Password is invalid. Please try again."	
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The HR once logged into the system successfully can be able to look into Employee profiles

TC Id	Test Objectives	Precondition	Steps	Expected Results A	Actual Results
TC05	Admin user can check all the profiles related to the employee of the company.	Users need to navigate to the "actiPLANS" login page. Url - https://demo	01: Click on the "Users" icon on the top menu bar on the actiPLANS page.	Display the "User List"	

		.actiplans.com/login.do Then need to log in to the system using a valid username and password.			
TC06	Admin needs to have the facility to change the approved person of each employee.	Logged in admin needs to move the "Users" page. Needs to switch the account setting section.	01: Click on the name of the "Approved By" column 02: select the approvals by clicking the checkboxes. 03: Click on the "Apply" button	Display the approval/s name on the relevant cell of the selected employee.	
TC07	Admin can maintain the account	Logged-in admin needs to move the	01: Click on the type of the	If the account needs to be	

	status of on each employee	<p>"Users" page.</p> <p>Needs to switch to the account setting section.</p>	<p>"Account" to change the status. (The status of the newly added user is "Enabled" in the default mode. Admin can change it to "Disabled" by clicking on the current status.)</p>	<p>enabled: the Account cell of the selected employee displays the status "Enables" using the green color font.</p> <p>If the account needs to be disabled: the Account cell of the selected employee displays the status "Disabled" using the red color font</p>	
TC08	Admin can check the employee profile	Logged-in admin needs to move the "Users"	01: Click on the name of the required	Pop-up screen displays the employee's	

	information	page. Needs to switch to the account setting section.	user.	"Account Information" including "First Name", "Middle Initials", "Last name", "User Name", and "Email".	
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The HR once logged into the system successfully can be able to review leaves reports of the employee

TC Id	Test Objectives	Precondition	Step	Expected Results A	Actual Results
TC09	Admin user can be checked the requested leaves by the employee	Users need to navigate to the "actiPLANS" login page. Url - https://demo.	01: Need to select the "Leave Time Request" section.	Display the list of "Leave Time Requests" by the employee.	

		actiplans.com/login.do Then need to log in to the system using a valid username and password. Then need to click on the "Leave Management" icon at the top of the menu bar.			
TC010	Admin users approve the request by an employee	Users need to navigate to the "actiPLANS" login page. Url - https://demo.actiplans.com/login.do Then need to	01: Move to the cell where the waiting for approval leaves are available with respect to a particular employee 02: Click on the check box	Display the leave status as "Approved" with the approved date and the approvals name.	

		<p>log in to the system using a valid username and password.</p> <p>Then need to click on the "Leave Management" icon at the top of the menu bar.</p> <p>Finally needs to select the "Leave Time Request" section.</p> <p>To approve a leave there must be available leaves under the status of "Waiting to Approval".</p>	<p>next to the "Waiting for approval" column.</p> <p>03: Click on the "Approve" button.</p>		
TC11	Admin users	Users need to	01: Move to	Display	

	<p>reject the leave requested by an employee</p>	<p>navigate to the "actiPLANS" login page.</p> <p>Url - https://demo.actiplans.com/login.do</p> <p>Then need to log in to the system using a valid username and password.</p> <p>Then need to click on the "Leave Management" icon at the top of the menu bar.</p> <p>Finally needs to select the "Leave Time Request" section.</p>	<p>the cell where the waiting for approval leaves are available with respect to a particular employee</p> <p>02: Click on the check box at the last column of the particular user and then needs to click the button "Reject request"</p> <p>03: Enter the reason as "invalid request"</p> <p>03: Click on the Reject button</p>	<p>the leave status as "Rejected" with the rejected date and the approvals name.</p>	
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The HR once logged into the system successfully can be able to review the attendance reports of the employee and approve and reject them.

TC Id	Test Objectives	Precondition	Step	Expected Results A	Actual Results
TC12	Admin users can view the "Time track" of a particular employee for the current month.	<p>Users need to navigate to the "actiPLANS" login page.</p> <p>Url - https://demo.actiplans.com/login.do</p> <p>Then need to log in to the system using a valid username and password.</p> <p>Then need to</p>	<p>01: Need to click on the View Time-Track</p> <p>02: Needs to select the user in the given space calls "View Time Track for ____".</p> <p>03: Check the default</p>	Needs to display the time track of the selected employee in a graph	

		<p>and switch to the "actTIME".</p> <p>Under the actTIME section needs to select the "Time-Track"</p>	<p>time selected is limited to the current month.</p>		
TC13	<p>Admin users can Approve the "Time track" of a particular employee for a week-related current month.</p>	<p>Users need to navigate to the "actiPLANS" login page.</p> <p>Url - https://demo.actiplans.com/login.do</p> <p>Then need to log in to the system using a valid username and password.</p> <p>Then need to</p>	<p>01: Need to check on the particular week related to the one employee Time tracking using the checkbox at the last column of the row.</p> <p>02: Then click on the</p>	<p>Time Track related to the particular user must approve</p> <p>Need to display the "revoke" button to undo the action.</p>	

		<p>switch to the "actTIME".</p> <p>Under the actTIME section needs to select the "Time-Track"</p> <p>Need to move to the "Approve Time Track," section</p>	Approve button on the top of the same column.		
TC14	Admin users can Reject the "Time track" of a particular employee for a week related current month.	<p>Users need to navigate to the "actiPLANS" login page.</p> <p>Url - https://demo.actiplans.com/login.do</p> <p>Then need to log in to the system</p>	<p>01: Need to check on the particular week related to the one employee Time tracking using the checkbox at the last</p>	<p>Time Track related to the particular user must reject</p> <p>Need to display the "revoke" button to undo the action.</p>	

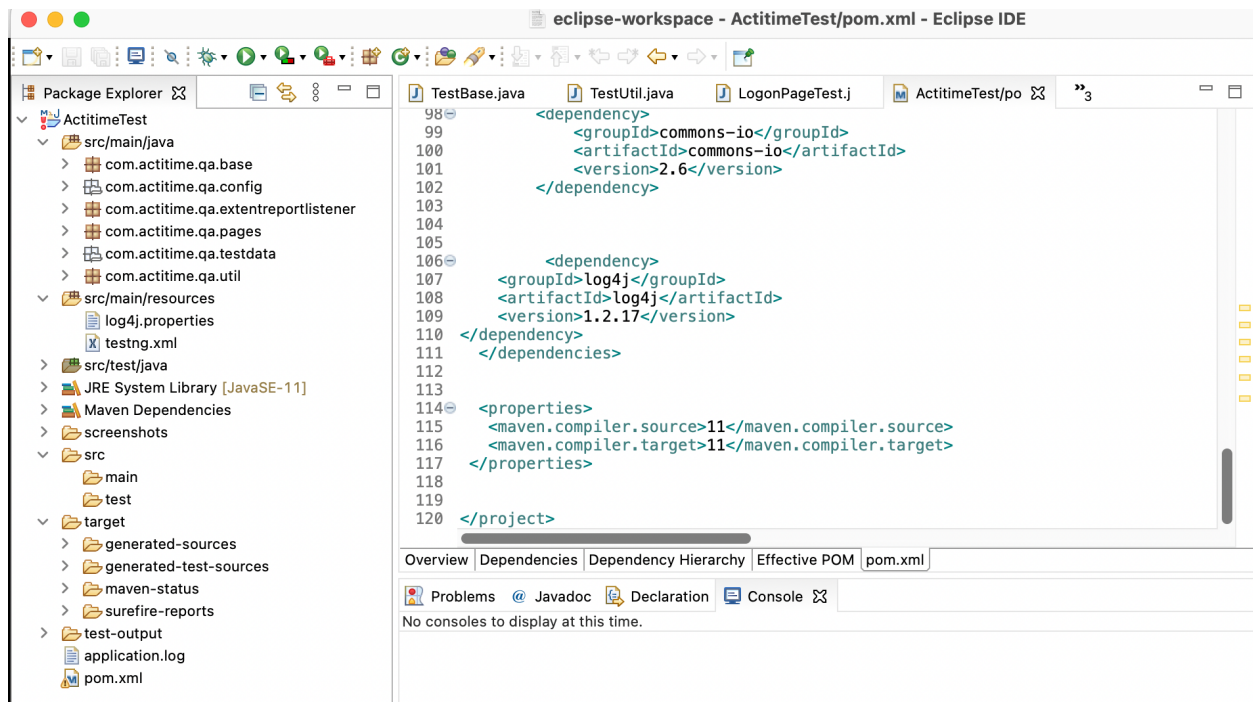
		<p>using a column of valid the row.</p> <p>username and password.</p> <p>02: Then click on the Reject button on at the top of the same column.</p> <p>Under the actTIME section needs to select the "Time-Track"</p> <p>03: Provide the comment as "Invalid data"</p> <p>Need to move to the "Approve Time Track" section</p> <p>04: Click on the "Reject" button.</p>		
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2. Build Hybrid Test Framework -- Page Object Model + Data Driven framework +TestNG & Maven Project Structure

Here I have used Eclipse as the main platform (JAVA IDE) and the Selenium web driver for the GUI test automation. Below are the other used technologies and tools.

- Maven as the build automation tool.
- TestNG is the test unit framework.
- Apache POI API as an API to read and write the test data in Excel.
- Log4j as the logging API
- TestNG Reports to get the result on the dashboard.

Under the Page Object Model, we maintain separate Java classes for each and every webpage that we are going to test. Same maintenance Java class for each UI page to test.



Dependencies

Dependencies are listed in the pom.xml file in the project with their version and IDs. These dependencies are already inbuilt with the Maven Dependency, no need to install and attach each dependency to the project as we are using the Maven projects.

Selenium

```
<dependency>
  <groupId>org.seleniumhq.selenium</groupId>
  <artifactId>selenium-java</artifactId>
  <version>3.141.59</version>
</dependency>
```

TestNG

```
<dependency>
  <groupId>org.testng</groupId>
  <artifactId>testng</artifactId>
  <version>6.14.3</version>
  <scope>compile</scope>
</dependency>
```

Apache.poi

```
<dependency>
  <groupId>org.apache.poi</groupId>
  <artifactId>poi</artifactId>
  <version>3.16-beta2</version>
</dependency>
```

```
<dependency>
  <groupId>org.apache.poi</groupId>
  <artifactId>poi-ooxml</artifactId>
  <version>3.9</version>
</dependency>
```

```
<dependency>
  <groupId>org.apache.poi</groupId>
  <artifactId>poi-ooxml-schemas</artifactId>
  <version>3.9</version>
</dependency>
```

Logi4j

```
<dependency>
  <groupId>log4j</groupId>
  <artifactId>log4j</artifactId>
  <version>1.2.17</version>
</dependency>
```

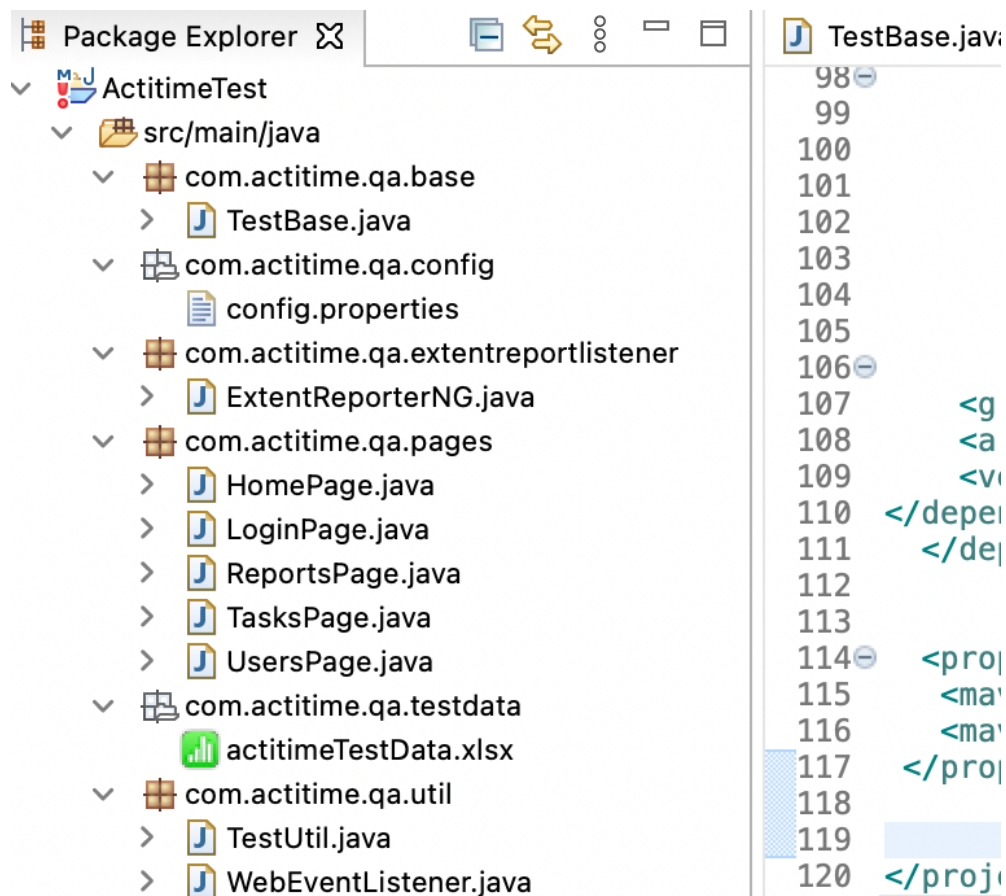
Common io

```
<dependency>
  <groupId>commons-io</groupId>
  <artifactId>commons-io</artifactId>
  <version>2.6</version>
</dependency>
```


3. Create the corresponding packages for -- Scripting

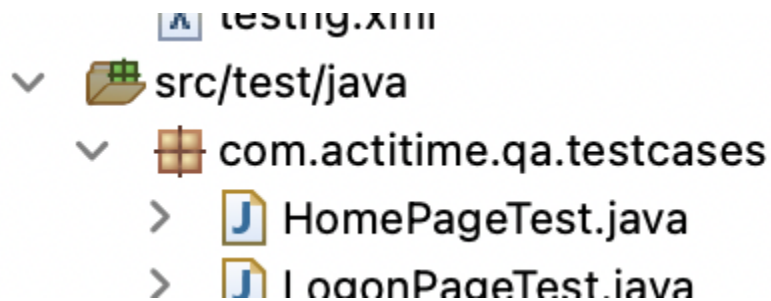
Created package structure.

- Page Layer: Creating and storing the test object description using Page Factory - Framework. At this level it is only defined the 5 pages, this is the current stage it has executed tests only for these pages. But with new requirements, this page section will be added more pages. Inside the page, it is coded the functions which are going to test related to that page. So there needs to be a separate classes for each page that is going to test according to this framework.



Created Tess layer structure

- Test Layer: Multiple test cases using TestNG annotations - Framework



Configuration

- Configuration files: to store environment variables in .properties file like URL, The Default username and passwords, browser instances, etc. - Framework

Next it is going to set the configurations for the executions by providing attributes and values to the config.properties file under the path /ActitimeTest/src/main/java/com/actitime/qa/config.properties

Apart from it s willing to insert the common configuration in places where it needs to be to implement under this package.



Test Base

- Prerequisite of initializing the drivers, properties, etc.
 - Framework

Create the Testbase package inside the package base. It sets the properties to execute the test program by initializing the chrome driver. TeseBase is the function where it inherits the both page layer and the test layer of the program. Same in this Testbase function it set the browser for the driver with the data taken from the config.properties file. Furthermore, it provided the path for the chrome driver. This Testbase function accomplishes almost required basic data to handle the test execution and this will be extended by the page classes as well as the test classes where it creates separate to perform the testing.

```

public class TestBase {

    public static WebDriver driver;
    public static Properties properties;

    public static EventFiringWebDriver e_driver;
    public static WebEventListener eventListener;

    public TestBase() {

        try {
            properties = new Properties();
            FileInputStream iprop = new FileInputStream(System.getProperty("user.dir")+ "/src/main/java/com/"
                + "actitime/qa/config/config.properties");
            properties.load(iprop);
        } catch (FileNotFoundException e) {
            e.printStackTrace();
        } catch (IOException e) {
            e.printStackTrace();
        }
    }

    public static void initialization(){

String browserName = properties.getProperty("browser");

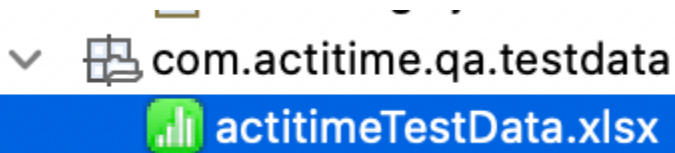
        if(browserName.equals("chrome")){
            System.setProperty("webdriver.chrome.driver", System.getProperty("user.dir")+ "chromedriver");
            driver = new ChromeDriver();
        }
    }
}

```

Test data files

Test data files: Excels, My SQL DB, Property file

Inside the test data package, it has maintained the excel sheet to manage the data required for the testing. Apart from Excel, we can use other tools like MySql DB, and Property file for the required data.



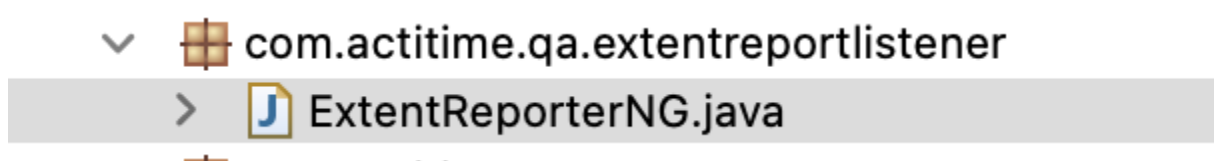
View	Zoom	Add Category	Pivot Table	Insert	Table	Chart
+	Users					

userName	Password			
admin	manager			
trainee	trainee			

Reports

- Reports using HTML, XML, Extent Reports, etc.- Framework

It has created another listener to report generation and it has added to the extentreportlistener.



```

package com.actitime.qa.extentreportlistener;
import java.io.File;

public class ExtentReporterNG implements IReporter {
    private ExtentReports extent;

    public void generateReport(List<XmlSuite> xmlSuites, List<ISuite> suites,
        String outputDirectory) {
        extent = new ExtentReports(outputDirectory + File.separator
            + "Extent.html", true);

        for (ISuite suite : suites) {
            Map<String, ISuiteResult> result = suite.getResults();

            for (ISuiteResult r : result.values()) {
                ITestContext context = r.getTestContext();

                buildTestNodes(context.getPassedTests(), LogStatus.PASS);
                buildTestNodes(context.getFailedTests(), LogStatus.FAIL);
                buildTestNodes(context.getSkippedTests(), LogStatus.SKIP);
            }

            extent.flush();
            extent.close();
        }

        private void buildTestNodes(IResultMap tests, LogStatus status) {
            ExtentTest test;

            if (tests.size() > 0) {
                for (ITestResult result : tests.getAllResults()) {
                    test = extent.startTest(result.getMethod().getMethodName());

                    test.setStartedTime(getTime(result.getStartMillis()));
                    test.setEndedTime(getTime(result.getEndMillis()));

                    for (String group : result.getMethod().getGroups())

```

Utilities

Utilities: to store screenshots, generic functions, common utilities, emails, etc.

This is the function to export data in Excel files.

```

public class TestUtil extends TestBase {

    public static long PAGE_LOAD_TIMEOUT = 40;
    public static long IMPLICIT_WAIT = 40;

    public void switchToFrame(String frameName) {

        driver.switchTo().frame(frameName);

    }

    public static String TESTDATA_SHEET_PATH = System.getProperty("user.dir") + "/src/main/java/com/actitime/qa/testdata/actitimeTest

    static Workbook book;
    static Sheet sheet;
    static JavascriptExecutor js;

    public void switchToFrame() {
        driver.switchTo().frame("mainpanel");
    }

    public static Object[][] getTestData(String sheetName) {
        FileInputStream file = null;
        try {
            file = new FileInputStream(TESTDATA_SHEET_PATH);
        } catch (FileNotFoundException e) {
            e.printStackTrace();
        }
    }
}

```

Using the below function it sets to take screenshots at the end of each test. Under the utility, we can enhance this testing program to trigger sending mail on test results. Same can include other common utilities under this section.

```

75 public static void takeScreenshotAtEndOfTest() throws IOException {
76     File scrFile = ((TakesScreenshot) driver).getScreenshotAs(OutputType.FILE);
77     String currentDir = System.getProperty("user.dir");
78     FileUtils.copyFile(scrFile, new File(currentDir + "/screenshots/" + System.currentTimeMillis() + ".png"));
79 }
80 }
81

```

Using the web even lister it is possible to get the current execution web elements and details about the parameters that we have used and the xpath we are trying to reach etc.

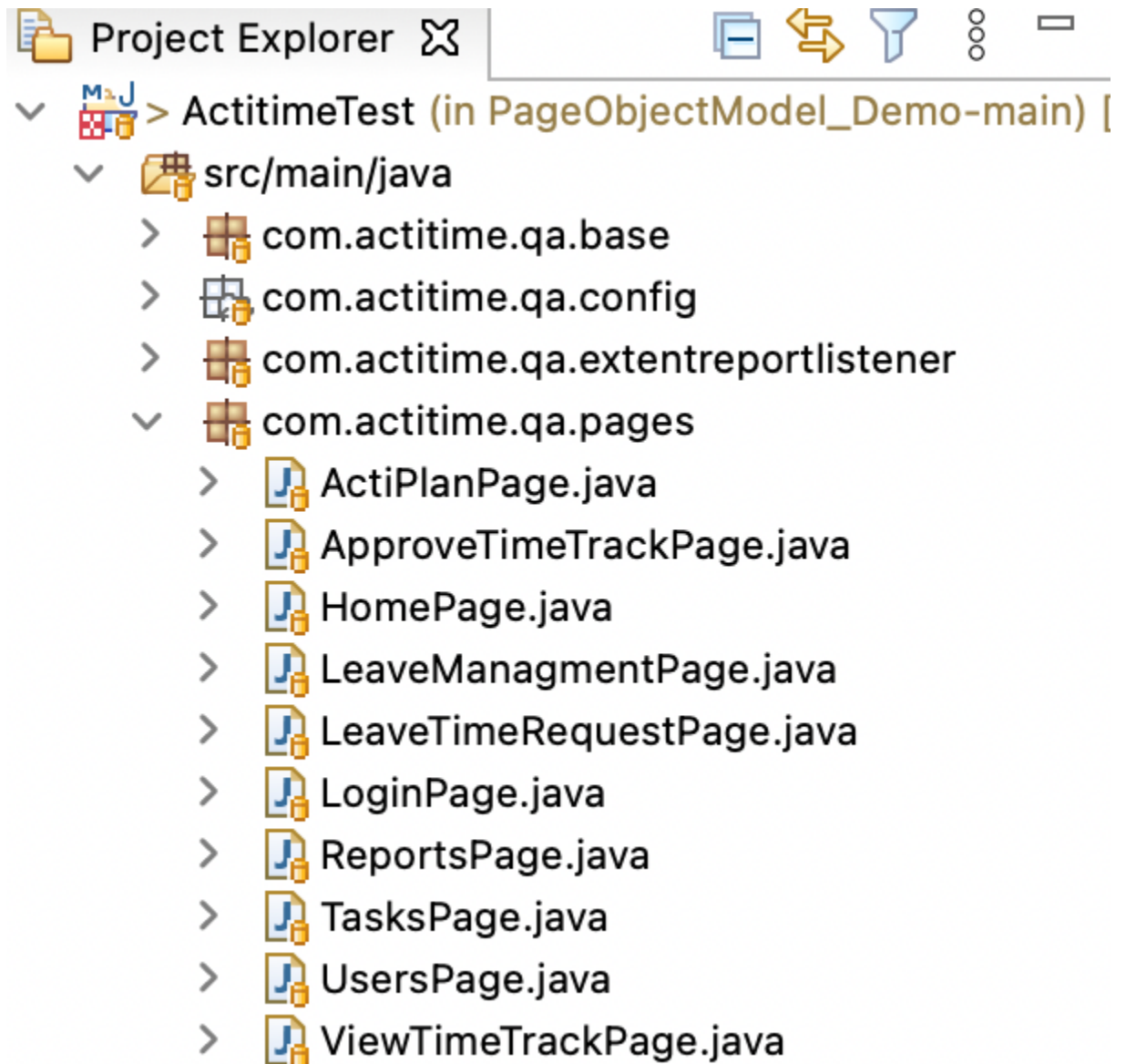
```

2
3⊕ /***** PURPOSE *****/
10
11⊕ import java.io.IOException;
20
21
22
23 public class WebEventListener extends TestBase implements WebDriverEventListener {
24
25⊖ public void beforeNavigateTo(String url, WebDriver driver) {
26     System.out.println("Before navigating to: '" + url + "'");
27 }
28
29⊖ public void afterNavigateTo(String url, WebDriver driver) {
30     System.out.println("Navigated to:'" + url + "'");
31 }
32
33⊖ public void beforeChangeValueOf(WebElement element, WebDriver driver) {
34     System.out.println("Value of the:" + element.toString() + " before any changes made");
35 }
36
37⊖ public void afterChangeValueOf(WebElement element, WebDriver driver) {
38     System.out.println("Element value changed to: " + element.toString());
39 }
40
41⊖ public void beforeClickOn(WebElement element, WebDriver driver) {
42     System.out.println("Trying to click on: " + element.toString());
43 }
44
45⊖ public void afterClickOn(WebElement element, WebDriver driver) {
46     System.out.println("Clicked on: " + element.toString());
47 }
48
49⊖ public void beforeNavigateBack(WebDriver driver) {
50     System.out.println("Navigating back to previous page");
51 }
52
53⊖ public void afterNavigateBack(WebDriver driver) {
54     System.out.println("Navigated back to previous page");
55 }

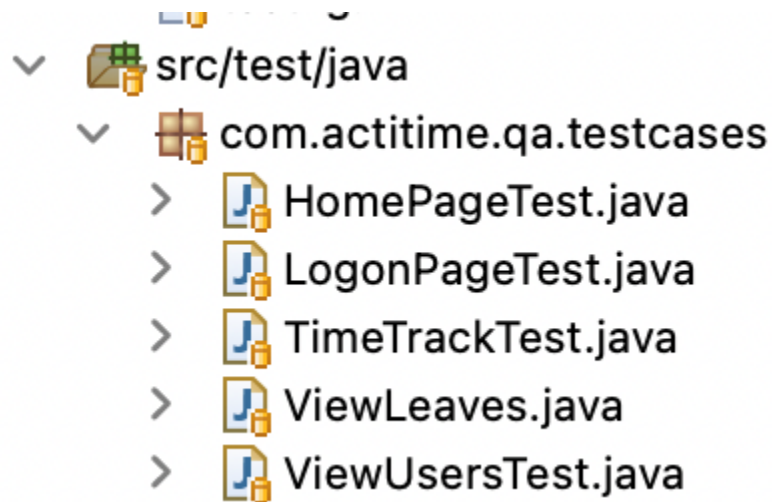
```


4. **Execute Automation Scripts** Multiple times by capturing screen images of failed test cases by fetching the data from DB, excel, and property files.

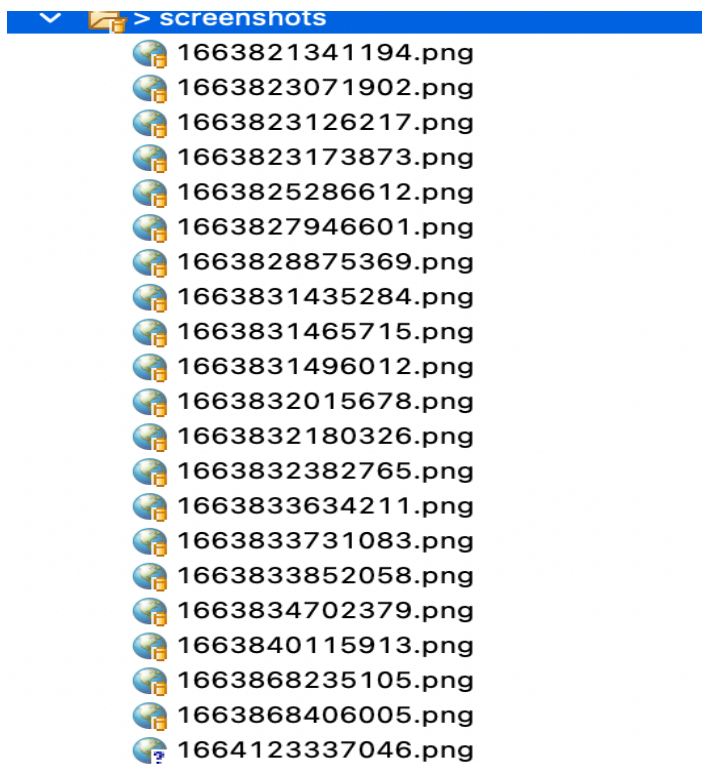
Below shows the class structure for the pages that are going to execute the test cases mentioned above.



These are the Test pages where it executes the testing logic.



These are the errors found while executing test cases. They are configured to save on the "screenshots" folder.



This is the test output with the extent reports, and it saves in the "test-output" Extent.html file.

Link to reports -

leaveManagementPage LoadedTest	Pass
rejectLeaveRequest	Pass
approveLeaveRequest	Pass
LoginTestInvalid	Pass
LoginTestInvalid	Pass
loginPageLogoTest	Pass
LoginTestInvalid	Pass
approveTimeTrack	Pass

viewUsersTable	Pass
changeStatus	Pass
viewAccountInfo	Pass
homePageLogoTest	Pass
leaveRequestsPageLoadedTest	Pass
changeApprovedAdmin	Pass
LoginTest	Pass
homePageTaskLinkTest	Pass
LoginTest	Pass
viewTimeTrackTest	Pass
rejectTimeTrack	Fail

Link to report -

<https://github.com/AmdPathirana/ASA-actiPLAN-/tree/main/test-output>

5. Able to capture all the logs using log4j

```
Starting ChromeDriver 105.0.5195.52 (412c95e518836d8a7d97250d62b29c2ae6a26a85-refs/branch-heads/5195@{#853}) on port 13130
Only local connections are allowed.
Please see https://chromedriver.chromium.org/security-considerations for suggestions on keeping ChromeDriver safe.
ChromeDriver was started successfully.
Sep 25, 2022 9:59:53 PM org.openqa.selenium.remote.ProtocolHandshake createSession
INFO: Detected dialect: W3C
Before navigating to: 'https://demo.actitime.com/login.do'
Navigated to: 'https://demo.actitime.com/login.do'
Trying to find Element By : By.xpath: //div[@class='atLogoImg']
Found Element By : By.xpath: //div[@class='atLogoImg']
Starting ChromeDriver 105.0.5195.52 (412c95e518836d8a7d97250d62b29c2ae6a26a85-refs/branch-heads/5195@{#853}) on port 18446
Only local connections are allowed.
Please see https://chromedriver.chromium.org/security-considerations for suggestions on keeping ChromeDriver safe.
ChromeDriver was started successfully.
Sep 25, 2022 10:00:15 PM org.openqa.selenium.remote.ProtocolHandshake createSession
INFO: Detected dialect: W3C
Before navigating to: 'https://demo.actitime.com/login.do'
Navigated to: 'https://demo.actitime.com/login.do'
Trying to find Element By : By.xpath: //input[@name='username']
Found Element By : By.xpath: //input[@name='username']
Trying to find Element By : By.xpath: //input[@type='password'and @name='pwd']
Found Element By : By.xpath: //input[@type='password'and @name='pwd']
Trying to find Element By : By.xpath: //a[@id='loginButton']
Found Element By : By.xpath: //a[@id='loginButton']
Trying to click on: [[ChromeDriver: chrome on MAC (5e7f9c05bbd017a7a18f09465851afeb)] -> xpath: //a[@id='loginButton']]
Clicked on: [[ChromeDriver: chrome on MAC (5e7f9c05bbd017a7a18f09465851afeb)] -> xpath: //a[@id='loginButton']]
Trying to find Element By : By.xpath: //div[@id='logo_at']
Found Element By : By.xpath: //div[@id='logo_at']
```

```
Starting ChromeDriver 105.0.5195.52 (412c95e518836d8a7d97250d62b29c2ae6a26a85-refs/branch-heads/5195@{#853}) on port 25910
Only local connections are allowed.
Please see https://chromedriver.chromium.org/security-considerations for suggestions on keeping ChromeDriver safe.
ChromeDriver was started successfully.
Sep 25, 2022 10:01:40 PM org.openqa.selenium.remote.ProtocolHandshake createSession
INFO: Detected dialect: W3C
Before navigating to: 'https://demo.actitime.com/login.do'
Navigated to: 'https://demo.actitime.com/login.do'
Trying to find Element By : By.xpath: //input[@name='username']
Found Element By : By.xpath: //input[@name='username']
Trying to find Element By : By.xpath: //input[@type='password'and @name='pwd']
Found Element By : By.xpath: //input[@type='password'and @name='pwd']
Trying to find Element By : By.xpath: //a[@id='loginButton']
Found Element By : By.xpath: //a[@id='loginButton']
Trying to click on: [[ChromeDriver: chrome on MAC (8b4e125a69dfa69623546f33c0996b34)] -> xpath: //a[@id='loginButton']]
Clicked on: [[ChromeDriver: chrome on MAC (8b4e125a69dfa69623546f33c0996b34)] -> xpath: //a[@id='loginButton']]
Trying to find Element By : By.xpath: //*[id="ErrorsTable"]/tbody/tr/td[2]/table/tbody/tr/td/span
Found Element By : By.xpath: //*[id="ErrorsTable"]/tbody/tr/td[2]/table/tbody/tr/td/span
Starting ChromeDriver 105.0.5195.52 (412c95e518836d8a7d97250d62b29c2ae6a26a85-refs/branch-heads/5195@{#853}) on port 37352
Only local connections are allowed.
Please see https://chromedriver.chromium.org/security-considerations for suggestions on keeping ChromeDriver safe.
ChromeDriver was started successfully.
Sep 25, 2022 10:02:05 PM org.openqa.selenium.remote.ProtocolHandshake createSession
INFO: Detected dialect: W3C
Before navigating to: 'https://demo.actitime.com/login.do'
Navigated to: 'https://demo.actitime.com/login.do'
Trying to find Element By : By.xpath: //input[@name='username']
Found Element By : By.xpath: //input[@name='username']
Trying to find Element By : By.xpath: //input[@type='password'and @name='pwd']
Found Element By : By.xpath: //input[@type='password'and @name='pwd']
Trying to find Element By : By.xpath: //a[@id='loginButton']
Found Element By : By.xpath: //a[@id='loginButton']
Trying to click on: [[ChromeDriver: chrome on MAC (4ed96b751571352eebd0f8ca682f6e94)] -> xpath: //a[@id='loginButton']]
Clicked on: [[ChromeDriver: chrome on MAC (4ed96b751571352eebd0f8ca682f6e94)] -> xpath: //a[@id='loginButton']]
Trying to find Element By : By.xpath: //*[id="ErrorsTable"]/tbody/tr/td[2]/table/tbody/tr/td/span
Found Element By : By.xpath: //*[id="ErrorsTable"]/tbody/tr/td[2]/table/tbody/tr/td/span
```

6. GitHub to store all the source code and any perform pushing and pulling operations

Link to GitHub repository -

<https://github.com/AmdPathirana/ASA-actiPLAN->