Generic Libraries

What is Generic components in Automation Framework?

➔it's one of the automation framework components which is common for all the application

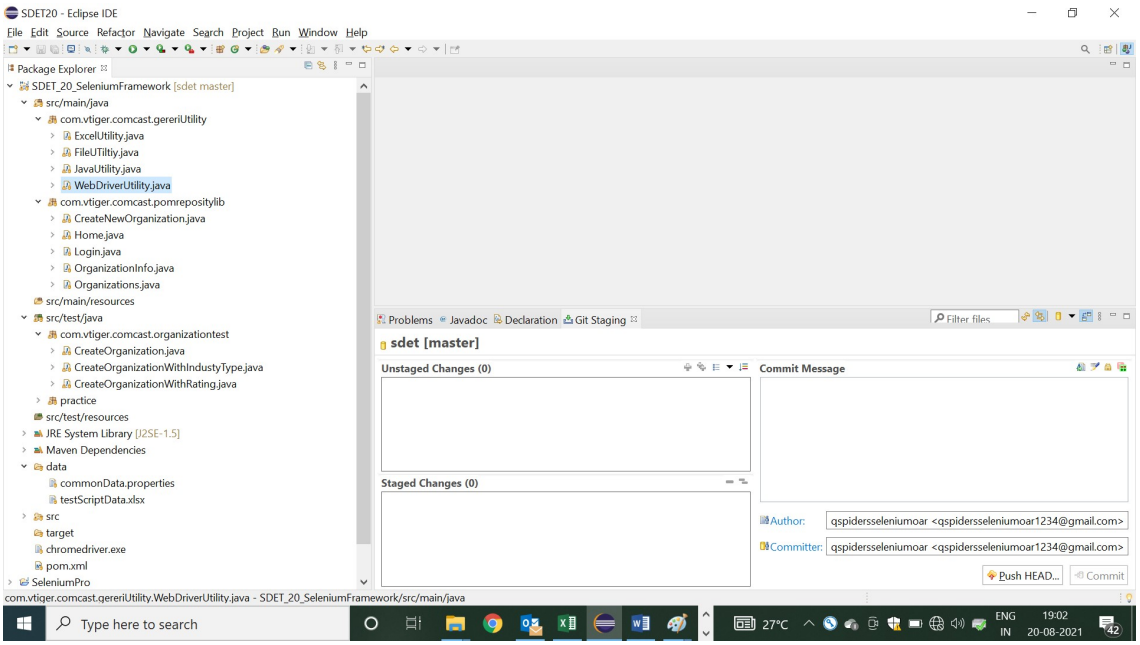
➔its collection of generic class contains reusable methods / libraries

➔The methods which can be used to any application is called Generic/common methods

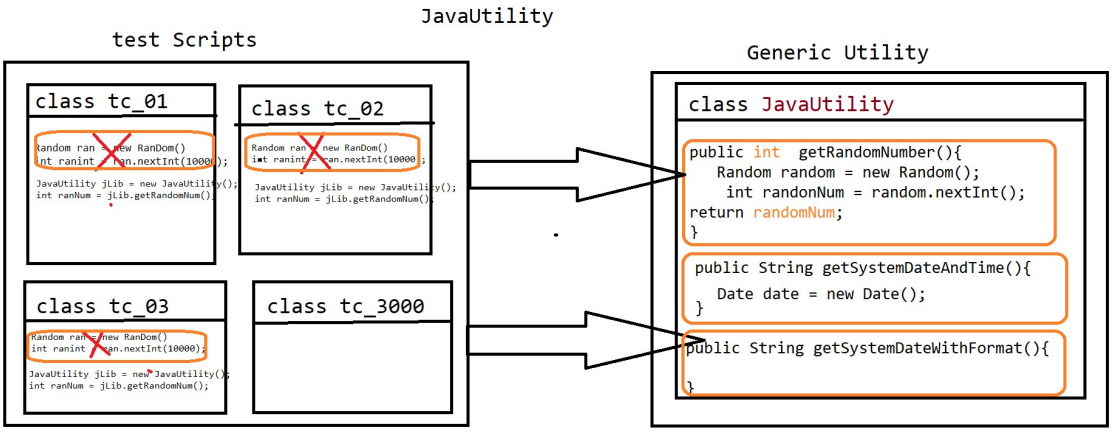
What is the advantages of Generic components?

- ⇨ Reusability of code
- ⇨ Code Optimization
- ⇨ Test script development is faster
- ⇨ Test scripts Code readability
- ⇨ Generic libraries are common to all automation projects
- ⇨ Avoid duplicate Code
- ⇨ no need to remember the syntax every time , just create once & use multiple times

Generic Utility Structure in Automation Project



1. Java Utility Libraries



➔Java Utility is one class in generic component, which contain java specific methods which can be used across the test Scripts / Application

➔ its contains several generic reusable methods like

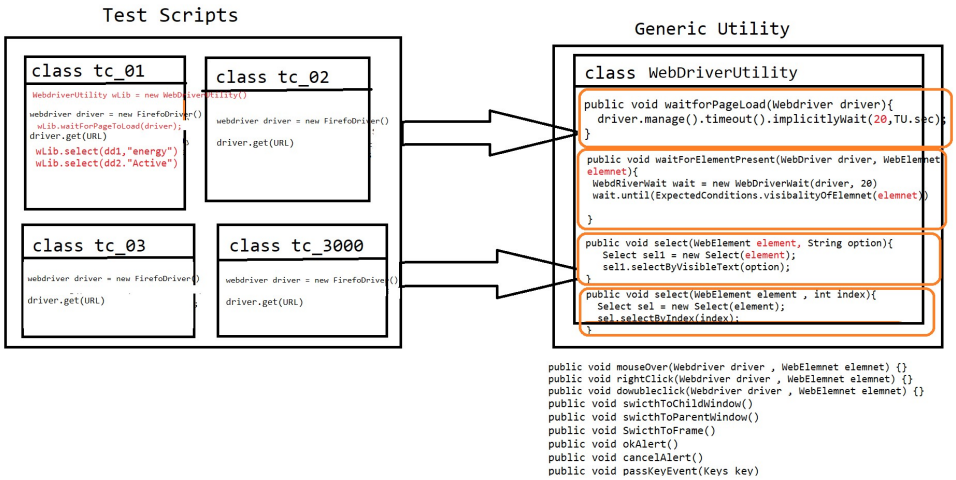
- ⇨ getRandomNum() : it's used to generate random number for every invocation
- ⇨ getSystemDate() : it's used to generate system date and time

==========Code==========

```
package com.vtiger.comcast.gereriUtility;

	import java.awt.Robot;
	import java.awt.event.KeyEvent;
	import java.util.Date;
	import java.util.Random;

	/**
	 *  this class contains java specific generic libraries
	 * @author Deepak
	 *
	 */
	public class JavaUtility {

		/**
		 *   its used to generate the integer RanDom number with in the boundary of 0 to 10000
		 * @return intData
		 */
		public int getRanDomNumber() {
			Random ranDom = new Random();
			int ranDomNum = ranDom.nextInt(10000);
			return ranDomNum;
		}

		/**
		 * its used to get the current System date & time
		 * @return
		 */
		public String getSystmeDate() {
			Date date = new Date();
			String systemDateAndTime = date.toString();
			return systemDateAndTime;
		}
		/**
```

```
		 * its used to get the current System date with YYYY-MM-DD format
		 * @return
		 */
		public String getSystmeDate_YYYY_MM__DD() {
				Date date = new Date();
				String systemDateAndTime = date.toString();
				System.out.println(systemDateAndTime);
				String[] arr = systemDateAndTime.split(" ");
	String DD = arr[2];
	String YYYY = arr[5];
	int MM = date.getMonth()+1;

	String finalFromat = YYYY+"-"+MM+"-"+DD;
				return finalFromat;
		}

  /**
   * used to pass Virtual Key to OS
   * @throws Throwable
   */
  public void pressVurtualEnterKey() throws Throwable {

		Robot rc=new Robot();
		rc.keyPress(KeyEvent.VK_ENTER);
		rc.keyRelease(KeyEvent.VK_ENTER);
  }

}
```

2. WebDriver Utility Libraries :



- ⇨ WebdriverUtility is a Generic class , which contains webdriver specific reusable actions like
- ⇨ waitForPageToLoad()
- ⇨ waitForElement()
- ⇨ select()
- ⇨ accpertAlert()
- ⇨ cancelAlert() .Etc

==========Code==========

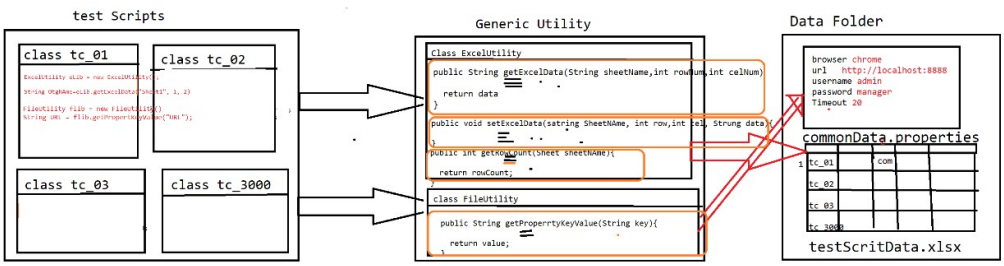
```
package com.vtiger.comcast.gereriUtility;

import java.awt.AWTException;
import java.awt.Robot;
import java.awt.event.KeyEvent;
import java.io.File;
import java.io.IOException;
import java.util.Iterator;
import java.util.Set;
import java.util.concurrent.TimeUnit;

import org.openqa.selenium.JavascriptExecutor;
import org.openqa.selenium.Keys;
import org.openqa.selenium.OutputType;
import org.openqa.selenium.TakesScreenshot;
import org.openqa.selenium.WebDriver;
import org.openqa.selenium.WebElement;
import org.openqa.selenium.interactions.Actions;
import org.openqa.selenium.support.ui.ExpectedConditions;
import org.openqa.selenium.support.ui.Select;
import org.openqa.selenium.support.ui.WebDriverWait;

import com.google.common.io.Files;
```

```
/**
 * This class contains webdriver specific generic methods
 * Deepak
 */

public class WebDriverUtility {

		/**
		 * this method wait for 20 sec for page loading
		 * @param driver
		 */
  public void waitUntilPageLoad(WebDriver driver)
  {
			driver.manage().timeouts().implicitlyWait(20, TimeUnit.SECONDS);

  }

  /**
   * This method wait for the element to be visible
   * @param driver
   * @param element
   *
   */
  public void waitForElementVisibility(WebDriver driver,WebElement element)
  {
			WebDriverWait wait = new WebDriverWait(driver, 20);
			wait.until(ExpectedConditions.visibilityOf(element));
  }
  /**
   * This method wait for the element to be clicked , its custom wait created to avoid elemenInterAceptable Exception
   * @param element
   * @throws throwable
   *
   */

  public void waitAndClick(WebElement element) throws InterruptedException
  {
			int count = 0;
    while(count<20) {
				try {
				   element.click();
				   break;
				}catch(Throwable e){
						Thread.sleep(1000);
						count++;
				}
    }

  }
  /**
   * this methods enables user to handle dropdown using visible text
   * @param element
   * @param option
   */

  public void select(WebElement element, String option)
  {
			Select select=new Select(element);
			select.selectByVisibleText(option);

  }

  /**
   * this methods enables user to handle dropdown using index
   * @param element
   * @param index
```

```
 */

public void select(WebElement element, int index)
{
	Select select=new Select(element);
	select.selectByIndex(index);
}

/**
 * This method will perform mouse over action
 * @param driver
 * @param element
 */

public void mouseOver(WebDriver driver,WebElement element)
{
	Actions act = new Actions(driver);
	act.moveToElement(element).perform();

}

/**
 * This method performs right click operation
 * @param driver
 * @param element
 */
public void rightClick(WebDriver driver,WebElement element)
{
	Actions act = new Actions(driver);
	act.contextClick(element).perform();
}

/**
 * This method helps to switch from one window to another
 * @param driver
 * @param partialWinTitle
 */
public void switchToWindow(WebDriver driver, String partialWinTitle)
{
	Set<String> window = driver.getWindowHandles();
	Iterator<String> it = window.iterator();
	while(it.hasNext())
	{
		String winId=it.next();
		String title=driver.switchTo().window(winId).getTitle();
    if(title.contains(partialWinTitle))
    {
        break;
    }

	}

}
/**
 * Accept alert
 * @param driver
 */

public void acceptAlert(WebDriver driver)
{
	driver.switchTo().alert().accept();
}

/**
 * Cancel Alert
 * @param driver
```

```
 */
public void cancelAlert(WebDriver driver)
{
	driver.switchTo().alert().dismiss();
}
/**
 * This method used for scrolling action in a webpage
 * @param driver
 * @param element
 */
public void scrollToWebElement(WebDriver driver, WebElement element) {
	JavascriptExecutor js=(JavascriptExecutor)driver;
	int y= element.getLocation().getY();
	js.executeScript("window.scrollBy(0,"+y+")", element);
}


public void switchFrame(WebDriver driver,int index) {
	driver.switchTo().frame(index);
}

public void switchFrame(WebDriver driver,WebElement element) {
	driver.switchTo().frame(element);
}

public void switchFrame(WebDriver driver,String idOrName) {
	driver.switchTo().frame(idOrName);
}

public void takeScreenshot(WebDriver driver, String screenshotName) throws Throwable {
	TakesScreenshot ts=(TakesScreenshot)driver;
	File src=ts.getScreenshotAs(OutputType.FILE);
	File dest=new File("./screenshot/"+screenshotName+".PNG");
	Files.copy(src, dest);
}

/**
 * pass enter Key appertain in to Browser
 * @param driver
 */
public void passEnterKey(WebDriver driver) {
	Actions act = new Actions(driver);
	act.sendKeys(Keys.ENTER).perform();
}


}
```

3. Excel Utility libraries



- ⇨ As per the rule of automation, data should not be hardcoded with in the test scripts, so that to get the data from external file like Excel & .propertes file We go for ExcelUtility & FileUtlity
- ⇨ Excel Utility class is developed using apache Poi libraries, which is used to read the data from Excel
- ⇨ FileUtility is used to get the data from .properties file

==========Code==========

```
package com.vtiger.comcast.gereriUtility;

import java.io.FileInputStream;
import java.io.FileOutputStream;

import org.apache.poi.ss.usermodel.Cell;
import org.apache.poi.ss.usermodel.Row;
import org.apache.poi.ss.usermodel.Sheet;
import org.apache.poi.ss.usermodel.Workbook;
import org.apache.poi.ss.usermodel.WorkbookFactory;
/**
 * its developed using Apache POi libraries , which used to handle Microsoft Excel sheet
 * @authorDeepak
 *
 */
publicclass ExcelUtility {
        /**
         *  its used read the data from excel base don below arguments
         * @param sheetName
         * @param rowNum
         * @param celNum
         * @return Data
         * @throws Throwable
         */
        public String getDataFromExcel(String sheetName , introwNum, intcelNum) throws Throwable {
                FileInputStream fis  = new FileInputStream("./data/testScriptData.xlsx");
                Workbook wb = WorkbookFactory.create(fis);
                Sheet sh = wb.getSheet(sheetName);
                Row row = sh.getRow(rowNum);
                String data = row.getCell(celNum).getStringCellValue();
                wb.close();
                returndata;
        }
        /**
         * used to get the last used row number on specified Sheet
         * @param sheetName
         * @return
         * @throws Throwable
         */
        publicint getRowCount(String sheetName) throws Throwable {
```

```
                FileInputStream fis  = new FileInputStream("./data/testScriptData.xlsx");
                Workbook wb = WorkbookFactory.create(fis);
                Sheet sh = wb.getSheet(sheetName);
                wb.close();
                returnsh.getLastRowNum();
        }

        publicvoid setDataExcel(String sheetName , introwNum, intcelNum ,String data) throws Throwable
{
                FileInputStream fis  = new FileInputStream("./data/testScriptData.xlsx");
                Workbook wb = WorkbookFactory.create(fis);
                Sheet sh = wb.getSheet(sheetName);
                Row row = sh.getRow(rowNum);
                Cell cel = row.createCell(celNum);
                cel.setCellValue(data);
                FileOutputStream fos = new FileOutputStream("./data/testScriptData.xlsx");
                wb.write(fos);
                wb.close();

        }
}
```

==========Code==========

```
package com.vtiger.comcast.gereriUtility;

import java.io.FileInputStream;
importjava.io.IOException;
importjava.util.Properties;

/**
 *
 * @authorDeepak
 *
 */
publicclass FileUTiltiy {
        /**
         * its used to read the data from commonData.properties File based on Key which you pass as an
argument
         * @param key
         * @throws Throwable
         */
public String getPropertyKeyValue(String key) throws Throwable {
         FileInputStream fis = new FileInputStream("./data/commonData.properties");
        Propertiespobj = newProperties();
        pobj.load(fis);
         String value = pobj.getProperty(key);
                returnvalue;

    }
}
```

==========Sample Test Using Generic Utility=======

```
package com.vtiger.comcast.organizationtest;

importjava.util.Random;
importjava.util.concurrent.TimeUnit;

importorg.openqa.selenium.By;
import org.openqa.selenium.WebDriver;
importorg.openqa.selenium.WebDriverException;
importorg.openqa.selenium.WebElement;
import org.openqa.selenium.chrome.ChromeDriver;
importorg.openqa.selenium.interactions.Actions;

import com.vtiger.comcast.gereriUtility.ExcelUtility;
import com.vtiger.comcast.gereriUtility.FileUTiltiy;
import com.vtiger.comcast.gereriUtility.JavaUtility;
import com.vtiger.comcast.gereriUtility.WebDriverUtility;
import com.vtiger.comcast.pomrepositylib.CreateNewOrganization;
import com.vtiger.comcast.pomrepositylib.Home;
import com.vtiger.comcast.pomrepositylib.Login;
import com.vtiger.comcast.pomrepositylib.OrganizationInfo;
```

```
import com.vtiger.comcast.pomrepositylib.Organizations;

publicclass CreateOrganization {

	publicstaticvoid main(String[] args) throws Throwable {

	/*Object Creation for Lib*/
		JavaUtility jLib = new JavaUtility();
		WebDriverUtility wLib = new WebDriverUtility();
		FileUTiltiy fLib = new FileUTiltiy();
		ExcelUtility eLib = new ExcelUtility();

		intrandomInt = jLib.getRanDomNumber();

		/*common Data*/
		String USERNAME = fLib.getPropertyKeyValue("username");
		String PASSWORD = fLib.getPropertyKeyValue("password");
		String URL = fLib.getPropertyKeyValue("url");
		String BROWSER = fLib.getPropertyKeyValue("browser");

		/*test script Data*/
		String orgName = eLib.getDataFromExcel("Sheet1", 1, 2) + randomInt;

		/* Navigate to app*/
		WebDriver driver = new ChromeDriver();
		wLib.waitUntilPageLoad(driver);
driver.get(URL);

/* step 1 : login */
	Login loginPage = new Login(driver);
loginPage.loginToApp(USERNAME, PASSWORD);

/*step 2 : navigate to organization*/
	Home homePage = new Home(driver);
homePage.getOrganizationLnk().click();

/*step 3 : navigate to "create new organization"page by click on "+" image */
	Organizations orgPage = new Organizations(driver);
orgPage.getCreateOrgImg().click();

/*step 4 : create organization*/
	CreateNewOrganization cno = new CreateNewOrganization(driver);
cno.createOrg(orgName);

/*step 5 : verify the successful msg with org name*/
	OrganizationInfo orginfoPage = new OrganizationInfo(driver);
	String  actSuccesfullMg =  orginfoPage.getSuccesfullMsg().getText();
if(actSuccesfullMg.contains(orgName)) {
	System.out.println(orgName + "==>created successfully");
	}else {
	System.out.println(orgName + "==> not created successfully");

	}
/*step 6 : logout*/
homePage.logout();
	}

}
```