SOFTWARE QUALITY ASSURANCE
PROFESSIONAL PROGRAM

DECLARATION

I declare that this is my own work, and this assignment does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any other university or Institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text. Also, I hereby grant to Sri Lanka Institute of Information Technology, the nonexclusive right to reproduce and distribute my dissertation, in whole or in part in print, electronic or other medium. I retain the right to use this content in whole or part in future works (such as articles or books).

Name	Student ID	Signature
Imbulana Liyanage Duhithu Sakuni Imbulana	IT/SQAP/23/28/0007	Duhithu Sakuni

Table 1:Student details

Table of Contents

Figures

Tables

1. INTRODUCTION

Software testing is a method of testing whether the actual software product is as expected requirements and ensuring that the software product is error-free. There are two types of tests: Manual testing and Automation testing. Manual software testing is the human quality assurance engineers test the quality of newly developed software without using anything automatic tools. Automated testing is the method of testing software products with specific tools and frameworks to minimize human intervention and maximize quality. Purpose both types of testing are to identify defects or defects and ensure that the product is defect-free. As software quality assurance engineers need to learn about test automation and manual testing. In this assignment, we can gain knowledge about test automation and manual testing. For that we use the "Swag Labs" open-source web portal. (https://www.saucedemo.com/v1/index.html)

We can visit "Swag labs". The purpose of this assignment is to apply the knowledge that we gain from the Software Quality Assurance Professional program. We can think this is an example of a reai-world scenario.

Resource	Description
Laptop	Intel(R) Core(TM) i3-7100U CPU @ 2.40GHz 2.40 GHz
Web Browser	Chrome
Operating System	Windows
Internet	SLT Fiber

Table 2:Resources

Test Tools

Artifact	Tool
Test case design	Mind maps
Test Automation	Java, TestNG, Selenium
Diagram drawing	Draw.io
Integrated development environment	IntelliJ IDEA Community Edition 2024.3.2.2

Table 3:Test Tools

OBJECTIVES

In this assignment we basically focused about how to develop java basis automation testing code to test a website.

✓ First, we should implement a test automation code for Login page with all test scenarios.
✓ Verify the product page
✓ Open the side menu and close it
✓ Add to the cart and remove it
✓ Product Cart - Verify the Product Image, Product Name, Product Description, Product Price with dollar sign.
✓ Add to the cart and remove it in cart - Verify the Product Image, Product Name, Product Description, Product Price with dollar sign and click the Remove button
✓ Check out with the clicking Finish – Add the delivery details, check the total price formula
✓ Check out with the clicking Cancel – Add the delivery details, check the total price formula
✓ Finish with thank you - Order a product, fill the delivery information, check the total price formula, get the thank you message

3. METHODOLOGY

3.1. System overview

Figure 1:System overview diagram

3.2. Flow diagrams

3.2.1. Login
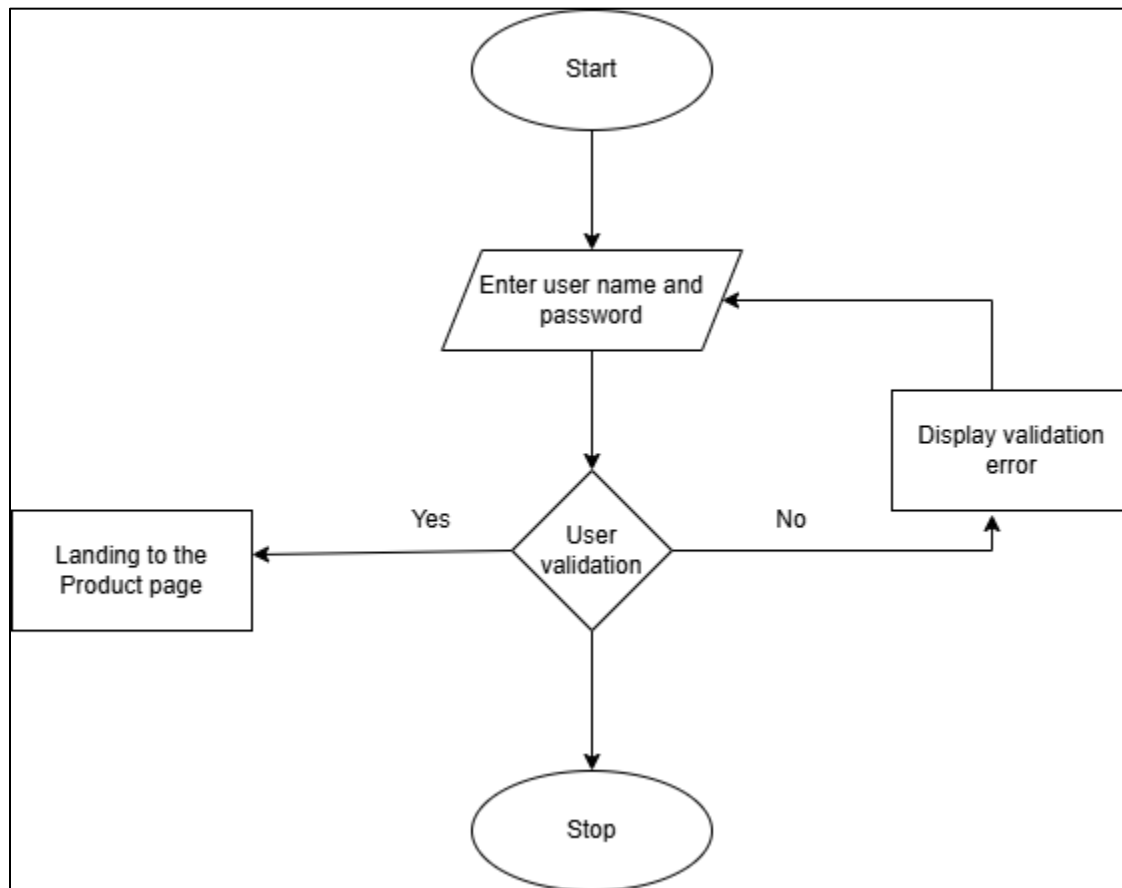

Figure 2:Login Flow Diagram
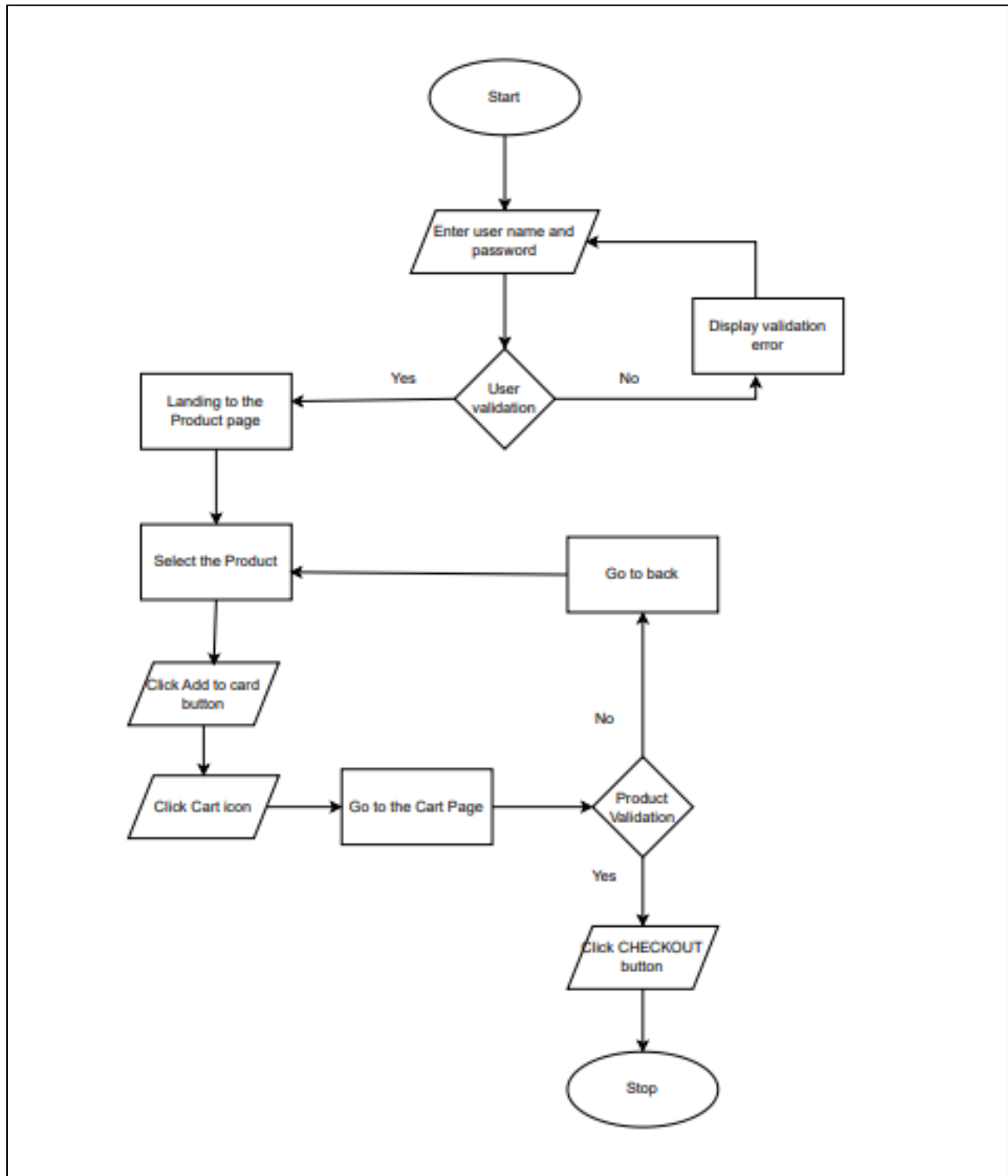
3.2.2. Select the Product to the Cart

Figure 3:Select the Product to the Cart
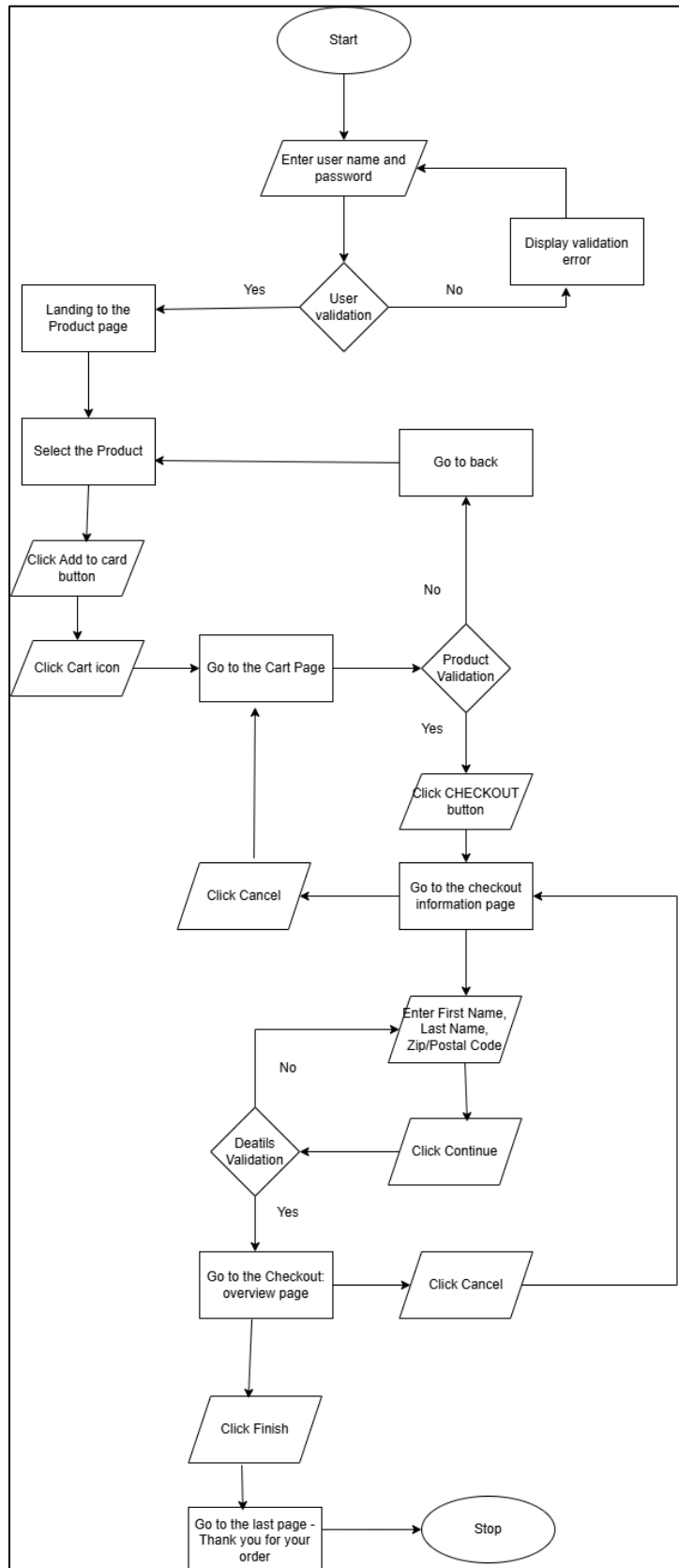
3.2.3. Oder a product

```
                              ┌─────────┐
                              │  Start  │
                              └────┬────┘
                                   │
                                   ▼
                          ╱────────────────╲
                         ╱ Enter user name  ╲◄──────────────┐
                         ╲  and password    ╱                │
                          ╲────────┬───────╱                 │
                                   │                    ┌──────────────┐
                                   │                    │   Display    │
                                   │                    │  validation  │
                                   ▼                    │    error     │
                            ◇─────────◇                 └──────┬───────┘
              Yes          ╱   User    ╲      No                │
        ┌─────────────────◄   validation ►─────────────────────┘
        │                  ╲            ╱
        ▼                   ◇──────────◇
  ┌──────────────┐
  │ Landing to the│
  │ Product page  │
  └──────┬───────┘
         │
         ▼
  ┌──────────────┐                    ┌──────────────┐
  │ Select the   │◄───────────────────│  Go to back  │
  │  Product     │                    └──────┬───────┘
  └──────┬───────┘                           │
         │                                   │ No
         ▼                                   │
  ╱──────────────╲                    ◇─────────────◇
  │ Click Add to  │                  ╱   Product     ╲
  │ card button   │                  ╲  Validation   ╱
  ╲──────┬───────╱                    ◇─────────────◇
         │                              ▲       │
         ▼                              │       │ Yes
  ╱──────────────╲   ┌──────────────┐   │       ▼
  │ Click Cart    │──►│ Go to the    │──┘  ╱──────────────╲
  │ icon          │   │ Cart Page    │     │ Click CHECKOUT│
  ╲──────────────╱   └──────┬───────┘     │   button      │
                            ▲             ╲──────┬───────╱
                            │                    │
                    ╱───────┴──────╲      ┌──────────────┐
                    │ Click Cancel  │◄────│ Go to the     │◄──────────┐
                    ╲──────────────╱      │ checkout       │           │
                                          │ information page│          │
                                          └──────┬────────┘           │
                                                 │                     │
                                                 ▼                     │
                                          ╱──────────────╲             │
                                          │ Enter First   │            │
                                          │ Name, Last     │            │
                                          │ Name, Zip/     │            │
                                          │ Postal Code    │            │
                                          ╲──────┬───────╱             │
                    ◇─────────────◇              │                     │
             No    ╱   Deatils     ╲      ╱──────────────╲             │
        ┌─────────◄   Validation    ◄─────│ Click Continue│           │
        │          ╲               ╱      ╲──────────────╱             │
        │           ◇─────────────◇                                    │
        │                  │ Yes                                       │
        │                  ▼                                           │
        │          ┌──────────────┐      ╱──────────────╲             │
        │          │ Go to the     │─────►│ Click Cancel  │────────────┘
        │          │ Checkout:      │     ╲──────────────╱
        │          │ overview page  │
        │          └──────┬────────┘
        │                 │
        │                 ▼
        │          ╱──────────────╲
        │          │ Click Finish  │
        │          ╲──────┬───────╱
        │                 │
        │                 ▼
        │          ┌──────────────┐      ┌─────────┐
        │          │ Go to the last│─────►│  Stop   │
        │          │ page - Thank  │      └─────────┘
        │          │ you for your  │
        │          │ order         │
        │          └──────────────┘
```

Figure 4:Order a Product

4. TEST CASES

4.1.1. Login

4.1.1.1. Valid Login

Test Case No	TC001
Priority	High
Test Case Description	Verify that a user can log in successfully with valid credentials.
Pre-Condition	Load the **SauceDemo** login page: https://www.saucedemo.com/v1/index.html
Test Steps	1. Load the login page 2. Enter valid username: standard_user and valid password: secret_sauce
Expected Result	1. The login page should be displayed 2. The user should be logged in successfully and redirected to the products page
Test Data	User name: standard_user Password: secret_sauce
Actual Output	User logged in successfully.
Status (Pass/Fail)	Pass

Table 4:Valid Login

4.1.1.2. Invalid Login (Wrong Username)

Test Case No	TC002
Priority	High
Test Case Description	Verify that login fails when an incorrect username is entered with a valid password.
Pre-Condition	Load the SauceDemo login page.
Test Steps	1. Load the login page 2. Enter invalid username: invalid_user and valid password: secret_sauce
Expected Result	1. The login page should be displayed 2. Error message should appear: "Epic sadface: Username and password do not match any user in this service"
Test Data	Invalid Username: invalid_user Valid Password: secret_sauce
Actual Output	Error message displayed as expected.

Status (Pass/Fail)	Pass

Table 5:Invalid Login (Wrong Username)

4.1.1.3. Invalid Login (Wrong Password)

Test Case No	TC003
Priority	High
Test Case Description	Verify that login fails when a correct username is entered with an incorrect password.
Pre-Condition	Load the SauceDemo login page.
Test Steps	1. Load the login page 2. Enter valid username: standard_user and invalid password: wrong_password
Expected Result	1. The login page should be displayed 2. Error message should appear: "Epic sadface: Username and password do not match any user in this service"
Test Data	Valid Username: standard_user Invalid Password: wrong_password
Actual Output	Error message displayed as expected.
Status (Pass/Fail)	Pass

Table 6:Invalid Login (Wrong Password)

4.1.1.4. Login with Empty Credentials

Test Case No	TC004
Priority	High
Test Case Description	Verify that login fails when both username and password fields are left empty.
Pre-Condition	Load the SauceDemo login page.
Test Steps	1. Load the login page 2. Click the Login button without entering a username or password
Expected Result	1. The login page should be displayed 2. Error message should appear: "Epic sadface: Username is required"
Test Data	Username: (Empty) Password: (Empty)
Actual Output	Error message displayed as expected.
Status (Pass/Fail)	Pass

Table 7:Login with Empty Credentials

4.1.2. Verify product page

Test Case No	TC005
Priority	High
Test Case Description	Verify that the user is successfully navigated to the Product Page after logging in with valid credentials.
Pre-Condition	Load the **SauceDemo** login page: https://www.saucedemo.com/v1/index.html
Test Steps	1. Load the login page 2. Enter valid username: standard_user and valid password: secret_sauce 3. Click on the Login button 4. Verify the URL of the redirected page 5. Verify that the Product Page elements are displayed
Expected Result	1. The login page should be displayed 2. Credentials should be accepted 3. The user should be redirected to the Product Page: https://www.saucedemo.com/v1/inventory.html 4. The URL should be https://www.saucedemo.com/v1/inventory.html 5. The product list should be visible, and the page should contain a title "Products"
Test Data	Valid Username: standard_user Valid Password: secret_sauce
Actual Output	The user should be logged in successfully and redirected to the Product Page (https://www.saucedemo.com/v1/inventory.html).
Status (Pass/Fail)	Pass

Table 8: Verify Product Page

4.1.2. Open the side menu and close it

Test Case No	TC006
Priority	Medium
Test Case Description	Verify that the user can successfully open and close the side menu after logging in.
Pre-Condition	The user is logged in and on the **Product Page**: https://www.saucedemo.com/v1/inventory.html
Test Steps	1. Click on the **Menu** button in the top-left corner 2. Verify that the side menu is visible 3. Click on the **Close (X) button** or click outside the menu
Expected Result	1. The side menu should open, displaying options like "All Items," "About," "Logout," and "Reset App State" 2. The menu should be displayed on the left side of the screen 3. The side menu should close, and the user should return to the Product Page
Test Data	N/A
Actual Output	Side menu opened and closed successfully.
Status (Pass/Fail)	Pass

Table 9:Open the side menu and close it

4.1.4. Add to the cart and remove it

Test Case No	TC007
Priority	High
Test Case Description	Verify that the user can successfully add a product to the cart and remove it.
Pre-Condition	The user is logged in and on the **Product Page**: https://www.saucedemo.com/v1/inventory.html
Test Steps	1. Identify a product (e.g., "Sauce Labs Backpack") on the Product Page 2. Click on the **"Add to cart"** button for the selected product 3. Click on the **cart icon** at the top right 4. Click on the **"Remove"** button next to the product 5. Verify that the cart is empty
Expected Result	1. The product should be visible with an "Add to cart" button 2. The button should change to "Remove", and the cart icon should update with **1 item** 3. The cart page should open, displaying the added product 4. The product should be removed from the cart 5. The cart page should display "Your cart is empty"
Test Data	N/A
Actual Output	Product added and removed from the cart successfully.
Status (Pass/Fail)	Pass

Table 10:Add to the cart and remove it

4.1.5. Product Cart - Verify the Product Image, Product Name, Product Description, Product Price with dollar sign.

Test Case No	TC008
Priority	High
Test Case Description	Verify that the product details (image, name, description, and price with the dollar sign) are displayed correctly in the cart.
Pre-Condition	The user is logged in and on the Product Page: https://www.saucedemo.com/v1/inventory.html A product has been added to the cart.
Test Steps	1. Click on the **cart icon** at the top right 2. Verify that the **product image** is displayed next to the product name 3. Verify that the **product name** is displayed 4. Verify that the **product description** is displayed (if available) 5. Verify that the product price is displayed with the dollar sign
Expected Result	1. The cart page should open, displaying the added product 2. The product image should match the displayed product on the Product Page 3. The product name should be visible (e.g., "Sauce Labs Backpack") 4. The description should appear under the product name 5. The price should be visible in the format (e.g., $29.99)
Test Data	Product Name: Sauce Labs Backpack (or any available product) Product Price: $29.99 (or actual price for the selected product)
Actual Output	Product details (image, name, description, price with dollar sign) displayed correctly in the cart.
Status (Pass/Fail)	Pass

Table 11:Product Cart - Verify the Product Image, Product Name, Product Description, Product Price with dollar sign.

4.1.6. Add to the cart and remove it in cart - Verify the Product Image, Product Name, Product Description, Product Price with dollar sign and click the Remove button

Test Case No	TC009
Priority	High
Test Case Description	Verify that the user can add a product to the cart, remove it, and check the product details such as image, name, description, and price with the dollar sign.
Pre-Condition	The user is logged in and on the Product Page: https://www.saucedemo.com/v1/inventory.html
Test Steps	1. Identify a product (e.g., "Sauce Labs Backpack") on the Product Page 2. Click on the **"Add to cart"** button for the selected product 3. Verify that the **product image** is displayed correctly 4. Verify that the **product name** is visible 5. Verify that the **product description** is visible (if available) 6. Verify that the **product price** is displayed with the dollar sign 7. Click on the **Remove** button next to the product in the cart 8. Verify that the cart is now empty
Expected Result	1. The product should be visible with an "Add to cart" button 2. The button should change to "Remove", and the cart icon should update with **1** item 3. The cart page should open, displaying the added product 4. The product image should match the displayed product on the Product Page 5. The product name should be displayed (e.g., "Sauce Labs Backpack") 6. The product description should be displayed 7. The price should be displayed in the format (e.g., $29.99) 8. The product should be removed from the cart 9. The cart page should display "Your cart is empty"

Test Data	Product Name: Sauce Labs Backpack (or any available product) Product Price: $29.99 (or actual price for the selected product)
Actual Output	Product added to the cart and removed successfully. Product details (image, name, description, price) displayed correctly.
Status (Pass/Fail)	Pass

Table 12:Add to the cart and remove it in cart - Verify the Product Image, Product Name, Product Description, Product Price with dollar sign and click the Remove button

4.1.7. Check out with the clicking Finish – Add the delivery details, check the total price formula

Test Case No	TC010
Priority	High
Test Case Description	Verify that the user can successfully check out, enter delivery details, and ensure the total price is calculated correctly.
Pre-Condition	The user is logged in and on the Product Page: https://www.saucedemo.com/v1/inventory.html At least one product has been added to the cart.
Test Steps	1. Click on the **cart icon** at the top right 2. Click on the **"Checkout"** button 3. Enter **First Name**, **Last Name**, and **Zip/Postal Code** in the required fields 4. Click the **"Continue"** button 5. Verify the product details (Image, Name, Description, Price) 6. Verify the total price calculation formula: **Total Price = Item Total + Tax** 7. Click on the **"Finish"** button
Expected Result	1. The cart page should open, displaying the added product(s) 2. The checkout information page should open 3. The form should accept the input 4. The checkout overview page should open 5. The correct product details should be displayed 6. The displayed total should match the expected calculation

	7. The order should be successfully placed, and a confirmation message should appear ("Thank you for your order!")
Test Data	First Name: Duhithu Last Name: Sakuni Zip Code: 001 Product Name: Sauce Labs Backpack Product Price: $29.99 Tax Calculation: System-generated
Actual Output	Order placed successfully. Total price formula validated correctly.
Status (Pass/Fail)	Pass

Table 13:Check out with the clicking Finish – Add the delivery details, check the total price formula

4.1.8. Check out with the clicking Finish – Add the delivery details, check the total price formula

Test Case No	TC011
Priority	High
Test Case Description	Verify that the user can navigate to the checkout page, enter delivery details, check the total price formula, and cancel the checkout process successfully.
Pre-Condition	The user is logged in and on the Product Page: https://www.saucedemo.com/v1/inventory.html At least one product has been added to the cart.
Test Steps	1. Click on the **cart icon** at the top right 2. Click on the **"Checkout"** button 3. Enter **First Name**, **Last Name**, and **Zip/Postal Code** in the required fields 4. Click the **"Continue"** button 5. Verify the product details (Image, Name, Description, Price) 6. Verify the total price calculation formula: **Total Price = Item Total + Tax** 7. Click on the **"Cancel"** button instead of "Finish" 8. Verify that the checkout process was not completed
Expected Result	1. The cart page should open, displaying the added product(s)

	2. The checkout information page should open
	3. The form should accept the input
	4. The checkout overview page should open
	5. The correct product details should be displayed
	6. The displayed total should match the expected calculation
	7. The user should be redirected back to the Product Page or Cart Page
	8. The order should not be placed, and the cart should remain unchanged
Test Data	First Name: Duhithu Last Name: Sakuni Zip Code: 001 Product Name: Sauce Labs Backpack Product Price: $29.99 Tax Calculation: System-generated
Actual Output	User successfully canceled checkout, and the cart remained unchanged.
Status (Pass/Fail)	Pass

Table 14:Check out with the clicking Finish – Add the delivery details, check the total price formula

4.1.9. Finish with thank you - Order a product, fill the delivery information, check the total price formula, get the thank you message

Test Case No	TC012
Priority	High
Test Case Description	Verify that the user can successfully place an order by filling in delivery details, verifying the total price calculation, and receiving a confirmation message.
Pre-Condition	The user is logged in and on the Product Page: https://www.saucedemo.com/v1/inventory.html At least one product has been added to the cart.
Test Steps	1. Click on the **cart icon** at the top right
	2. Click on the **"Checkout"** button
	3. Enter **First Name**, **Last Name**, and **Zip/Postal Code** in the required fields
	4. Click the **"Continue"** button
	5. Verify the product details (Image, Name, Description, Price)
	6. Verify the total price calculation formula:

	Total Price = Item Total + Tax 7. Click on the **"Finish"** button 8. Verify that the confirmation message "Thank you for your order!" is displayed
Expected Result	1. The cart page should open, displaying the added product(s) 2. The checkout information page should open 3. The form should accept the input 4. The checkout overview page should open 5. The correct product details should be displayed 6. The displayed total should match the expected calculation 7. The order should be successfully placed 8. The thank-you message should appear, confirming order completion
Test Data	First Name: Duhithu Last Name: Sakuni Zip Code: 001 Product Name: Sauce Labs Backpack Product Price: $29.99 Tax Calculation: System-generated
Actual Output	Order placed successfully. Thank-you message displayed.
Status (Pass/Fail)	Pass

Table 15:Finish with thank you - Order a product, fill the delivery information, check the total price formula, get the thank you message

5. ISSUES

Issues	Mitigation
Time management	Worked according to the planned schedule.
Requirement identification	Refer assessment few times and refer lecture recordings.
Lack of knowledge with automation script coding	Refer lecture materials, tutorial points, and YouTube videos.

Table 16:ISSUES

6. REFERENCES

1. "https://www.guru99.com/selenium-tutorial.html," [Online].
2. "https://www.javatpoint.com/selenium-tutorial," [Online].
3. "https://www.javatpoint.com/testng-tutorial," [Online].
4. "https://chat.openai.com/"[online]