1. **Framework Selection:**

On this occasion, I selected Playwright for the following reasons:

* **Built-in Auto-Wait:** The framework automatically waits for locators to become visible and enabled within a defined time before failing.
* **Robust Locator Strategies:** It includes built-in strategies for locating elements using XPath, ARIA labels, roles, test IDs, and more.
* **Faster Performance:** It runs tests faster in browsers because it uses optimized protocols compared to other automation frameworks.
* **Asynchronous Methods:** It is built with async methods to help prevent common issues.
* **Native TypeScript Support:** Using TypeScript makes your code more maintainable and readable.
* **Cross-Browser Support**: Playwright natively supports Chromium, Firefox, and WebKit. This broad browser coverage ensures that your tests run consistently across all major browsers.
* **Multi-Language Support**: Playwright can be used with JavaScript, TypeScript, Python, C#, and Java.
* **Native Parallel execution**: Can use Parallel execution native, set the numbers of workers do you want to use to execute your tests.

**2**. **Test Case Design:**

**Preconditions:**

User has a browser like Chrome, Firefox.

The application is accessible at the <https://automationexercise.com/> .

The user is not logged in the page.

The user has valid data for filled and valid email that isn’t register in the page.

**Test Steps & Expected Results:**

1. Navigate to the homepage.
2. Click on "Products" in the navigation bar.
3. Select the third product by clicking it on the products page.
4. On the product detail page, capture the product name; fill the quantity field with a random number between 1 and 20.
5. Click "Add to Cart."
6. Click "View Cart" from the modal.
7. Click "Proceed to Checkout" from the cart page.
8. From the checkout modal, click "Register/Login."
9. On the login page, fill in the email and name fields using data and click "Sign Up."
10. Complete the signup form:
    1. Choose gender ("Mr.").
    2. Fill in the password.
    3. Select the day, month, and year of birth.
    4. Check the Newsletter and Special Offers options.
    5. Fill in personal details including first name, last name, company, address (street, address2), state, city, zip code, and mobile phone.
    6. Click "Create Account."
11. Click "Continue" on the account created page.
12. Click on "Cart" in the navigation bar.
13. Click "Proceed to Checkout" from the cart page.
14. In the checkout page, fill in a comment ("This is a test comment") and click "Place Order."
15. On the payment page, fill in the payment details:
    1. Name on Card.
    2. Card Number.
    3. CVV.
    4. Expiry Month and Expiry Year.
    5. Then click "Pay Now."
16. Click "Continue" on the payment done page.
17. Click on "Logout" in the navigation bar.

**Expected results:**

* A new user account is created and an order has been successfully placed.
* The test product with the selected quantity is present in the cart and order summary.
* The user session is terminated, and the login page is displayed after logout.