**1. Login Page Test Cases**

**Positive Test Cases:**

1. **Valid login credentials**
   * **Test Case**: Verify that a user can log in successfully with valid credentials.
   * **Steps**:
     + Open SauceDemo homepage.
     + Enter a valid username (e.g., standard\_user).
     + Enter a valid password (e.g., secret\_sauce).
     + Click the "Login" button.
   * **Expected Result**: User should be redirected to the product page successfully.

**Negative Test Cases:**

1. **Invalid username and valid password**
   * **Test Case**: Verify that an error message is displayed when an invalid username is used with a valid password.
   * **Steps**:
     + Enter an invalid username (e.g., invalid\_user).
     + Enter a valid password (secret\_sauce).
     + Click the "Login" button.
   * **Expected Result**: Error message Username and password do not match any user in this service should be displayed.
2. **Valid username and invalid password**
   * **Test Case**: Verify that an error message is shown when a valid username is used with an invalid password.
   * **Steps**:
     + Enter a valid username (standard\_user).
     + Enter an invalid password (wrong\_password).
     + Click the "Login" button.
   * **Expected Result**: Error message Username and password do not match any user in this service should be displayed.
3. **Blank username and password**
   * **Test Case**: Verify that an error message is displayed when the username and password fields are left blank.
   * **Steps**:
     + Leave both fields blank.
     + Click the "Login" button.
   * **Expected Result**: Error message Username is required should be displayed.

**Edge Case:**

1. **Valid credentials with leading/trailing spaces**
   * **Test Case**: Verify that the login works when valid credentials have leading/trailing spaces.
   * **Steps**:
     + Enter standard\_user (with leading/trailing spaces).
     + Enter secret\_sauce (with leading/trailing spaces).
     + Click the "Login" button.
   * **Expected Result**: User should be redirected to the product page (trimming of spaces should occur).

**2. Product Page Test Cases**

**Positive Test Cases:**

1. **Add a product to the cart**
   * **Test Case**: Verify that a user can add a product to the shopping cart.
   * **Steps**:
     + Log in as standard\_user.
     + Click "Add to cart" for a product (e.g., Sauce Labs Backpack).
     + Open the shopping cart.
   * **Expected Result**: The selected product should be listed in the cart.
2. **Sort products by price (Low to High)**
   * **Test Case**: Verify that the product sorting functionality works correctly.
   * **Steps**:
     + Log in as standard\_user.
     + Select "Price (low to high)" from the sorting dropdown.
   * **Expected Result**: Products should be sorted in ascending order of price.

**Negative Test Cases:**

1. **Add an unavailable product to the cart**
   * **Test Case**: Verify that the user is unable to add a product that is marked as out of stock (if any).
   * **Steps**:
     + Log in as standard\_user.
     + Try adding a product that may be out of stock (if available in future versions).
   * **Expected Result**: Error message or unavailable button should prevent adding the product.

**Edge Case:**

1. **Add maximum allowed items to the cart**
   * **Test Case**: Verify the behavior when adding the maximum number of allowed products to the cart.
   * **Steps**:
     + Log in as standard\_user.
     + Add multiple items to the cart until the maximum limit is reached (if there is one).
   * **Expected Result**: Ensure all items are added or the system handles limits gracefully.

**3. Shopping Cart Test Cases**

**Positive Test Cases:**

1. **Remove an item from the cart**
   * **Test Case**: Verify that an item can be removed from the shopping cart.
   * **Steps**:
     + Add a product to the cart.
     + Open the cart and click the "Remove" button for the product.
   * **Expected Result**: The product should be removed from the cart.
2. **Proceed to checkout**
   * **Test Case**: Verify that the user can proceed to the checkout page.
   * **Steps**:
     + Add a product to the cart.
     + Click the cart icon, then click "Checkout."
   * **Expected Result**: The user should be redirected to the checkout information page.

**Negative Test Cases:**

1. **Proceed to checkout with an empty cart**
   * **Test Case**: Verify that the user cannot proceed to checkout if the cart is empty.
   * **Steps**:
     + Log in as standard\_user.
     + Without adding any products, attempt to proceed to checkout.
   * **Expected Result**: Checkout should not proceed, or an error message should be displayed.

**Edge Case:**

1. **Add items to cart, log out, and log in again**
   * **Test Case**: Verify that the cart is emptied after logging out and logging back in.
   * **Steps**:
     + Log in as standard\_user.
     + Add products to the cart.
     + Log out and log back in.
     + Check the cart.
   * **Expected Result**: The cart should be empty after logging out and logging back in.

**4. Checkout Page Test Cases**

**Positive Test Cases:**

1. **Complete a purchase with valid details**
   * **Test Case**: Verify that a user can complete the purchase process with valid details.
   * **Steps**:
     + Add items to the cart and proceed to checkout.
     + Enter valid details (First Name, Last Name, Postal Code).
     + Click "Continue" and then "Finish."
   * **Expected Result**: The order should be completed, and a confirmation message should be displayed.

**Negative Test Cases:**

1. **Checkout with missing required fields**
   * **Test Case**: Verify that the user cannot proceed with missing required information.
   * **Steps**:
     + Proceed to checkout.
     + Leave one or more fields blank (e.g., leave Postal Code empty).
   * **Expected Result**: Error message should appear, prompting the user to fill out all fields.

**Edge Case:**

1. **Enter extremely long strings for user details**
   * **Test Case**: Verify how the system handles extremely long input data.
   * **Steps**:
     + Enter a very long string for the First Name, Last Name, or Postal Code.
     + Try to continue with the purchase.
   * **Expected Result**: Either the input field should restrict the character count, or an error should appear if the input is too long.