**Manual Test Cases**

Test Case 1: Valid Input

Steps:

Select a country with a VAT scheme (e.g., France).

Choose a valid VAT rate for the selected country (e.g., 20%).

Enter a net amount (e.g., €100.00).

Expected Result:

The gross amount (€120.00) and VAT amount (€20.00) are displayed.

Test Case 2: Negative Input

Steps:

Select a country with a VAT scheme (e.g., France).

Choose a valid VAT rate for the selected country (e.g., 20%).

Enter a negative net amount (e.g., -€100.00).

Expected Result:

An error message is displayed stating that negative input is not allowed.

Test Case 3: Input exceeding precision

Steps:

Select a country with a VAT scheme (e.g., France).

Choose a valid VAT rate for the selected country (e.g., 20%).

Enter a net amount with more than 2 decimal places (e.g., €100.123).

Expected Result:

An error message is displayed stating that the amount cannot have more than 2 decimal places.

Test Case 4: Missing Mandatory Field

Steps:

Select a country with a VAT scheme (e.g., France).

Leave the VAT rate field empty.

Enter a net amount (e.g., €100.00).

Expected Result:

An error message is displayed stating that the VAT rate is mandatory.

Test Case 5: Entering Gross Amount

Steps:

Select a country with a VAT scheme (e.g., France).

Choose a valid VAT rate for the selected country (e.g., 20%).

Enter a gross amount (e.g., €120.00).

Expected Result:

The net amount (€100.00) and VAT amount (€20.00) are displayed.

Test Case 6: Entering VAT Amount

Steps:

Select a country with a VAT scheme (e.g., France).

Choose a valid VAT rate for the selected country (e.g., 20%).

Enter a VAT amount (e.g., €20.00).

Expected Result:

The net amount (€100.00) and gross amount (€120.00) are displayed.

Test Case 7: Valid Input - Calculate Net and VAT from Gross Amount

Precondition: User is on the VAT calculator page.

Steps:

Select a country (e.g., Germany).

Choose a valid VAT rate for the selected country (e.g., 19%).

Enter a Gross amount (e.g., 119.00).

Expected Result:

The Net amount is calculated correctly (e.g., 100.00).

The VAT amount is calculated correctly (e.g., 19.00).

The results are displayed with 2 decimal places.

Test Case 8: Valid Input - Calculate Gross and VAT from Net Amount

Precondition: User is on the VAT calculator page.

Steps:

Select a country (e.g., France).

Choose a valid VAT rate for the selected country (e.g., 20%).

Enter a Net amount (e.g., 100.00).

Expected Result:

The Gross amount is calculated correctly (e.g., 120.00).

The VAT amount is calculated correctly (e.g., 20.00).

The results are displayed with 2 decimal places.

Test Case 9: Valid Input - Calculate Gross and Net from VAT Amount

Precondition: User is on the VAT calculator page.

Steps:

Select a country (e.g., Italy).

Choose a valid VAT rate for the selected country (e.g., 22%).

Enter a VAT amount (e.g., 22.00).

Expected Result:

The Gross amount is calculated correctly (e.g., 122.00).

The Net amount is calculated correctly (e.g., 100.00).

The results are displayed with 2 decimal places.

Test Case 10: Invalid Input - Negative Amount

Precondition: User is on the VAT calculator page.

Steps:

Select a country (e.g., Spain).

Choose a valid VAT rate for the selected country (e.g., 21%).

Enter a negative Gross amount (e.g., -100.00).

Expected Result:

An error message is displayed: "Amount cannot be negative."

Test Case 11: Invalid Input - Amount > 999,999,999

Precondition: User is on the VAT calculator page.

Steps:

Select a country (e.g., UK).

Choose a valid VAT rate for the selected country (e.g., 20%).

Enter a Gross amount (e.g., 1,000,000,000.00).

Expected Result:

An error message is displayed: "Amount cannot exceed 999,999,999."

Test Case 12: Missing Mandatory Fields

Precondition: User is on the VAT calculator page.

Steps:

Do not select a country.

Do not choose a VAT rate.

Enter a Gross amount (e.g., 100.00).

Expected Result:

An error message is displayed: "Please select a country and VAT rate."

**Test Cases for Automation**

Test Case A: Calculate Net and VAT from Gross Amount

Why Automate? This is a common use case for travelers verifying receipts. Automating it ensures consistent and accurate calculations.

Automation Steps:

Navigate to the VAT calculator page.

Select a country (e.g., Germany).

Choose a VAT rate (e.g., 19%).

Enter a Gross amount (e.g., 119.00).

Verify the Net amount is 100.00.

Verify the VAT amount is 19.00.

Test Case B: Error Handling for Negative Input

Why Automate? Negative inputs are invalid and should be handled gracefully. Automating this ensures the error message is always displayed.

Automation Steps:

Navigate to the VAT calculator page.

Select a country (e.g., France).

Choose a VAT rate (e.g., 20%).

Enter a negative Gross amount (e.g., -100.00).

Verify the error message: "Amount cannot be negative."

Automated Test Cases with Java+Selenium+Cucumber

Maven project with the following dependencies:

Selenium WebDriver

Cucumber Java

JUnit or TestNG

WebDriverManager (optional, but recommended for easy browser driver management)

Feature File (VATCalculation.feature)

**Bug Reporting Example**

Bug: When entering a net amount exceeding 999,999,999 (e.g., €1,000,000,000), the calculator does not handle the large number and displays an unexpected result.

How to Report:

Report the bug to the Calkoo development team through their ticketing system or designated channel.

Provide a clear description of the bug, including steps to reproduce and expected behavior.

Include screenshots or recordings (if possible) to illustrate the issue.

Mention the browser and operating system used during testing.

Open Questions for Clarification

VAT Rate Selection: How does the user select a valid VAT rate? Is there a dropdown menu with pre-defined rates for each country, or can the user enter a custom rate?

Error Handling: What specific error messages are displayed for different error scenarios (e.g., negative input, exceeding precision)?

Bug Reporting Example

Bug Title: Incorrect VAT calculation for Gross amount input.

Steps to Reproduce:

Select a country (e.g., Germany).

Choose a VAT rate of 19%.

Enter a Gross amount of 119.00.

Expected Result:

Net amount: 100.00

VAT amount: 19.00

Actual Result:

Net amount: 99.99

VAT amount: 19.01

Severity: High

Priority: High

Environment: Chrome v95, Windows 10

Attachments: Screenshot of the incorrect calculation.

Open Questions for Clarification

Question: Are there any specific rounding rules for the calculated amounts (e.g., round up, round down, or round to nearest)?

Clarification Needed: This is important to ensure the calculations align with the business rules.

Question: Are there any restrictions on the number of decimal places for the input amounts?

Clarification Needed: The acceptance criteria mention output precision but not input precision.

Question: Should the calculator handle multiple currencies, or is it limited to a single currency (e.g., EUR)?

Needed Clarification: This affects the scope of the calculator.