**Test Plan for Youth Building Savings Tariff Calculator**

**1. Objective**

The objective of this test plan is to validate the functionality, accuracy, and usability of the Youth Building Savings Tariff Calculator. The testing will ensure that the calculator correctly computes deposits, interest, premiums, capital gains tax, and total assets while providing an accurate loan entitlement estimate.

**2. Scope**

The test plan covers the following features:

* Selection of deposit frequency (monthly, quarterly, every six months, yearly, one-time)
* Input of the desired savings amount
* Enabling/disabling the dynamic savings option
* Calculation of sum of deposits, premiums, interest, taxes, and account fees
* Display of maximum and minimum calculation results
* Correspondence of savings account interest rate per annum
* Loan entitlement projection after specified durations
* PDF download functionality

**3. Test Items**

The following components will be tested:

1. **Deposit Option Selection** – Ensure all frequency options function correctly.
2. **Savings Amount Input** – Validate that users can input various amounts within valid ranges.
3. **Dynamic Savings Option** – Verify correct interest increase when enabled.
4. **Calculation Accuracy** – Cross-check system calculations against expected values.
5. **Interest Rate Application** – Confirm correct interest rate mapping to different savings amounts.
6. **PDF Download Feature** – Ensure correct generation and format of downloadable results.
7. **UI/UX Functionality** – Validate responsiveness, accessibility, and error handling.

**4. Test Approach**

The testing methodology includes:

* **Functional Testing**: Verify each calculator feature works as expected.
* **Boundary Testing**: Enter extreme values (e.g., minimum and maximum deposits).
* **Negative Testing**: Input invalid or missing values and check for proper handling.
* **Performance Testing**: Ensure calculations and PDF generation complete within acceptable response times.
* **Usability Testing**: Evaluate user interface clarity, ease of use.

**5. Risks & Assumptions**

**Risks:**

* Potential incorrect interest calculations leading to misleading savings estimates.
* Delays in PDF generation impacting user experience.
* Browser compatibility issues affecting calculator usability.
* Edge case scenarios (e.g., very high savings input) leading to unexpected behavior.

**Assumptions:**

* Users will enter valid numeric values in the savings input field.
* The system handles tax and fees according to predefined rules.
* Interest rates and premiums are predefined and not dynamic beyond provided options.

**6. Test Environment**

* **Browsers**: Chrome, Firefox, Edge
* **Devices**: Desktop
* **OS**: Windows

**7. Test Cases Overview**

1. **Verify deposit option selection updates UI correctly.**
2. **Check calculations for different savings amounts.**
3. **Validate results with and without dynamic savings option.**
4. **Ensure capital gains tax and management fees are applied correctly.**
5. **Test different interest rate scenarios.**
6. **Confirm loan entitlement estimates match expected values.**
7. **Ensure PDF download provides correct data in structured format.**
8. **Check for error messages on invalid input.**
9. **Verify UI behavior on different screen sizes.**
10. **Test edge cases such as maximum savings input.**

**8. Acceptance Criteria**

* The calculator must produce accurate savings and loan estimates.
* The UI must correctly reflect selected options and input values.
* PDF download must contain correct and formatted data.
* The system should handle invalid inputs gracefully.
* Performance should meet defined response time thresholds.

**9. Test Case Design**

**Positive Test Cases:**

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| --- | --- | --- | --- | --- | --- |
| **Test Case ID** | **Description** | **Input** | **Expected Output** | **Pre-Conditions** | **Post-Conditions** |
| TC01 | Verify correct calculation with monthly deposit | €100 per month | Correct sum, interest, tax applied | User selects 'Monthly' option | Results displayed correctly |
| TC02 | Verify correct calculation with quarterly deposit | €300 per quarter | Correct sum, interest, tax applied | User selects 'Quarterly' option | Results displayed correctly |
| TC03 | Verify correct calculation with every six months deposit | €600 every six months | Correct sum, interest, tax applied | User selects 'Every six months' option | Results displayed correctly |
| TC04 | Verify correct calculation with yearly deposit | €1200 per year | Correct sum, interest, tax applied | User selects 'Yearly' option | Results displayed correctly |
| TC05 | Verify correct calculation with one-time deposit | €7200 one-time | Correct sum, interest, tax applied | User selects 'One-time' option | Results displayed correctly |
| TC06 | Check PDF download functionality | Click 'Download PDF' | Correctly formatted PDF | Calculation completed | PDF file generated |
| TC07 | Validate dynamic savings option impact | Enable dynamic option | Increased balance due to 5% increase | Option enabled | Display reflects updated values |
| TC08 | Validate correct interest rate application | Various savings amounts | Correct interest applied | User enters valid amounts | Display reflects correct interest |
| TC09 | Ensure loan entitlement projection is accurate | Input valid savings data | Correct entitlement estimate | User enters valid deposit values | Displayed loan entitlement is accurate |
| TC10 | Verify maximum deposit limit | €13,888 per month | System accepts input and calculates correctly | User enters maximum allowed deposit | No errors, results displayed |
| TC11 | Verify minimum deposit limit | €30 per month | System accepts input and calculates correctly | User enters minimum allowed deposit | No errors, results displayed |
| TC12 | Verify calculations with different tax rates | Different tax rate conditions | Correct tax applied | User selects various tax scenarios | Results reflect correct tax rate |
| TC13 | Verify calculations with different account fees | Different fee structures | Correct fees applied | Various account management fee conditions | Fees are deducted correctly |

**2. Negative Test Cases**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Test Case ID | Description | Input | Expected Output | Pre-Conditions | Post-Conditions |
| TC14 | Enter non-numeric savings amount | 'abc' | Error message displayed | N/A | User prompted to enter valid input |
| TC15 | Enter special characters in savings amount | '@!#' | Error message displayed | N/A | User prompted to enter valid input |
| TC16 | Test negative deposit amount | -50 | Error message displayed | N/A | User prevented from proceeding |
| TC17 | Test deposit below minimum limit | €10 per month | Error message displayed | N/A | User prompted to enter valid deposit |
| TC18 | Test deposit above maximum limit | €20,000 per month | Error message displayed | N/A | User prevented from proceeding |
| TC19 | Attempt PDF download without calculation | Click 'Download' before input | Error message displayed | N/A | User notified to complete input first |
| TC20 | Test extremely high deposit amount | €1,000,000 | System handles input correctly | User enters maximum amount | No crashes or incorrect results |
| TC21 | Verify missing input handling | Empty deposit field | Error message displayed | N/A | User must enter a valid amount |
| TC22 | Verify behavior with slow network | Simulate slow connection | System handles delay gracefully | User submits form with slow connection | No crashes, error handling displayed |