**Loan Amortization Calculator**

**Test Plan**

**CMSC 495 6381 Current Trends and Projects in Computer Science (2208)**

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**Revision History**

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| **Revision** | **Date** | **Name(s) of Editor** | **Description** |
| 1.0 | 09/05/2020 | James Lisle | Original Document |
| 1.1 | 09/29/2020 | James Lisle | Updated Test Cases with actual results |
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**Purpose**

The intent of this document is to outline a strategy for: identifying all required testing scenarios, determining required testing resources, scheduling the execution of all testing scenarios, analyzing the results, and refactoring the application as required so that the Loan Amortization Calculator can be delivered to production on October 13th 2020.

**Objectives**

This document describes the plan for testing the Loan Amortization Calculator. This Test Plan will encompass the following elements to fulfill this objective:

* Identify all facets of the Loan Amortization Calculator to be tested
* Test case creation for each facet identified including the expected result for each test case
* Resource requirements
* Testing tools
* Test Execution Cycle: test case execution, results aggregation, defect discovery and identification, defect tracking, and defect resolution
* Testing Schedule

**Testing Scope**

The testing scope for the Loan Amortization Calculator will include use cases for expected application function, environmental dependencies, JRE version compatibility, and minimum hardware configurations scenarios.

**Testing Scenarios**

* Application Usability Tests

GUI allows the user to select the variable to calculate and provides the required fields for entering the three required values to complete the calculation

GUI gives the user the option of including an amortization schedule with the entered loan scenario

GUI provides a button for submitting the loan scenario to the Loan Amortization Service

GUI provides a button for resetting all values displayed on the screen

GUI provides the user with the ability to exit the application

* Application Validation Tests

GUI validates data as numeric

GUI validates formula components as being greater than 0.

GUI validates that 3 of 4 variables are provided.

* Application Validation Tests
* Test case for calculating loan amount
* Test case for calculating loan payment
* Test case for calculating loan interest rate
* Test case for calculating loan term
* End to End Connectivity Test
* Test case for Loan Amortization Calculator Timeout
* End to End Performance Test
* Establish end to end average call time
* Environmental dependencies – JRE installed, Connectivity to Service, Service Availability
* JRE version Compatibility
* Test application with all versions of JRE starting with 8
* Minimum Hardware Requirements
* Test application on assorted hardware running Windows, Mac OS X, Linux OSs

**Test Cases**

Loan Amortization Calculator Client Scenarios

1. Happy Path Test Cases
2. Single test case for calculating each variable type w/o Amortization Schedule
3. Single test case for calculating each variable type with Amortization Schedule
4. Unhappy Path Test Cases
5. Boundary Validations (negative values, term, pmt, amt, rate > 0)
6. Connectivity to Service

Loan Calculation Service Test Scenarios

1. Happy Path Test Cases
2. Single test case for calculating each variable type w/o Amortization Schedule
3. Single test case for calculating each variable type with Amortization Schedule
4. Unhappy Path Test Cases
   1. Boundary Validations (negative values, term, pmt, amt, rate > 0)

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|  | **Loan Amount** | **Loan Payment** | **Loan Rate** | **Loan Term** | **Data**  **Inputs** | **Expected**  **Results** | **Actual**  **Results** |
| **Loan amount** | **P** | **1250.00** | **5.375%** | **360 months** |  |  |  |
| **Loan payment** | **45000** | **A** | **4.75%** | **60 months** |  |  |  |
| **Loan Rate** | **60000** | **600** | **R** | **36 months** |  |  |  |
| **Loan Term** | **24950** | **699.50** | **7.25%** | **n** |  |  |  |
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**Testing Tools**

1. Client

* Loan Amortization Calculator Client
* Swing Testing Toolkit Automation

1. Service

* Loan Amortization Calculator Client – scenario testing
* SoapUI Client – scenario testing
* JMeter – performance testing

**Resource Requirements**

* 3 computers running with minimum hardware requirements of 4GM memory, 1GB free disc space, connectivity to the internet.
* Client application installed on computer
* Service application install on Heroku Cloud Environment

**Test Execution Cycle**

* Test Case Execution
* Test Case Execution Result & Analysis
* Defect Identification & Tracking
* Defect Resolution

**Testing Schedule**

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| --- | --- |
| Target Date | Target Activity |
| 9/8/2020 | Create Test Plan |
| 9/8/2020-9/29/2020 | Create Test Cases, Install testing tools, Define Defect Discover, Reporting, and Resolution Process |
| 9/22/2020-10/13/2020 | Execute Test Plan, Defect Resolution, Refactor as required, Retest |