**Test Plan Document**

ECE 206L

Test Plan Document

**Requirements:**

1. Results will be displayed after various digits (0-9) and operations (+, - , / , \* , = , C, delete) are selected.
   1. 10 digit button display, 0-9

**Test:** Press each button and review each result on the display panel to verify proper functionality.

* 1. Able to handle floating points.

**Test:** Enter decimal values and confirm the panel displays them clearly.

* 1. Able to handle integers

**Test:** Enter integer values and confirm the panel displays them clearly.

* 1. Able to handle negative numbers

**Test:** Select an operation that will display a negative result and verify the result is displayed as a negative number.

* 1. Include button that when pushed will multiply the value displayed by negative one, thus displaying a negative value.

**Test:** Select a number (integer or float), and then select the negative button. Verify that a negative number is now displayed on the panel.

* 1. Needs to be able to have multiple digits selected (at least one and at most 9) and concatenated so that an increasing number appears.

**Test:** Select numerous strings of digits, for example: enter 1738592, or 12345, etc. Verify the panel can handle a string.

* 1. However, if two operators are selected, such as multiplication and division, the last function replaces the first.

**Test:** Try different combinations of sequential operations.

**Test 1:** Enter any number, for instance “1”, then an operator, “\*”. Following that operation, select another symbol, “/”, and confirm that the division symbol is now in place of the multiplication.

**Test 2:** To ensure it works in all cases, we should do this same procedure, but with other operations, i.e. 2 is selected, +, then -, and the “-” replaces the addition symbol. We will go through all combinations of operators for verification.

* 1. The sum of two operands will be displayed after the addition function is selected; no specific order necessary.

**Test:** Try various experiments to confirm addition property of calculator.

**Test 1:** integers - 2+5=7

**Test 2:** floats - 1.5+3.4=4.9

**Test 3:** both - 6.0+9.9=15.9

* 1. The difference of two operands will be displayed after the subtraction function is selected; order necessary: larger number first, operator, smaller number last. However, if smaller number is first, operator is selected, and larger number is last, a negative number will be displayed.

**Test:** Try multiple subtraction experiments to confirm subtraction property of calculator.

**Test 1:** integers - 5 - 2 = 3

**Test 2:** floats - 1.5 - 0.5 = 1

**Test 3:** both - 2 - 1.5 = 0.5

**Test 4:** negatives - 2 - -3 = 5

* 1. The product of two operands will be displayed after the multiplication function is selected; no specific order necessary.

**Test:** Try multiple multiplication experiments to confirm multiplication property of calculator.

**Test 1:** integers - 2 \* 5 = 10

**Test 2:** floats - 1.5 \* 0.5 = 0.75

**Test 3:** both - 1.5 \* 2 = 3

**Test 4:** negatives - 2 \* - 3 = -6

* 1. The quotient of two operands will be displayed after the division function is selected; order not necessary, but will decide whether a whole number or a floating point is displayed.

**Test:** Select a number followed by an operation and another number.

**Test 1:** 25/5=5

**Test 2:** ⅔ = 0.666

**Test 3:** 3/2 = 1.5

**Test 4:** 1.5/1.5 = 1

* 1. When the clear button © is selected, the screen will display zero.

**Test:** Select numerous digits, then select the clear button. Verify the display shows 0.

* 1. An error message needs to be able to be displayed (ERR)

**Test:** Perform an operation that will produce an error, for instance dividing a smaller digit by a larger as described above. Verify the calculator displays ERR.

* 1. Back (delete) button available if user makes a mistake. This will erase the last digit or operator that was entered.

**Test:** Select numerous digits, then select the delete button. Verify the digit is erased.

1. The program needs to be able to resize and fit on Mac, Windows, and Linux OS.

**Test:** Test and confirm that the program is adaptable to all operating systems by using the program on various computers.

1. Infinite Solutions (dividing by 0) will result in “Na”.

**Test:** Verify that the panel displays “Na” when dividing by 0

**Test 1:** 5 / 0 = NA