

# ELEC 3662 CALCULATOR PROJECT

## Description

The calculator has the following functions:

- Can execute floating-point calculations
- Perform multiple operand calculations with correct operator precedence.
- Displays "CASIO" Start-up graphics.
- Shifts the display when more than 16 inputs have been entered.
- Print the answer on the second line of the display.
- Can seamlessly perform multiple cautions one after the other.
- Rubout the last character or delete the entire entry.

The calculator protects against the following invalid inputs and displays "syntax error" if one is entered:

- Having no inputs and pressing equals
- Entering two or more of the same operators in a row. Apart from double minus. Triple minus can't be entered.
- Minus can't lead any operators but can lead a decimal point.
- Minus can't trail decimal point.
- Only one operator is entered.
- The first input can't be an operator apart from minus.
- The last input can't be an operator.

I have separated the device dependent code into its own file.

## Schematic

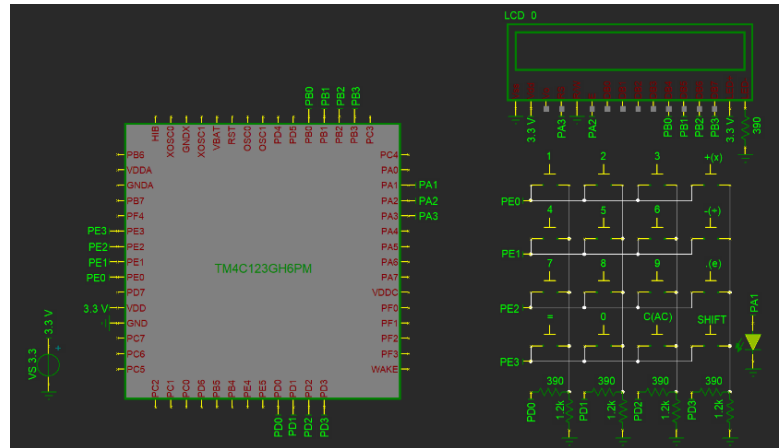
The schematic diagram below uses jumper connections to avoid entanglement. have made the following additions to the circuit diagram:

- The LED next to the shift push button is connected to PA1. It lights up if shift is enabled.
- Added hotkeys to the push buttons. This means the pushbuttons can be pressed with keys on my computer keyboard.
- I have also built the circuit in the offline version of TINA V12. This enables smooth simulation of the calculator for testing the code before it is uploaded to TM4C123G Launchpad development board.

Things to Note:

- Contrast adjustment of the LCD is not supported in TINA. Therefore the 10 kΩ potentiometer has not included to simplify the schematic diagram.

*Schematic Diagram*



## Flow Chart

