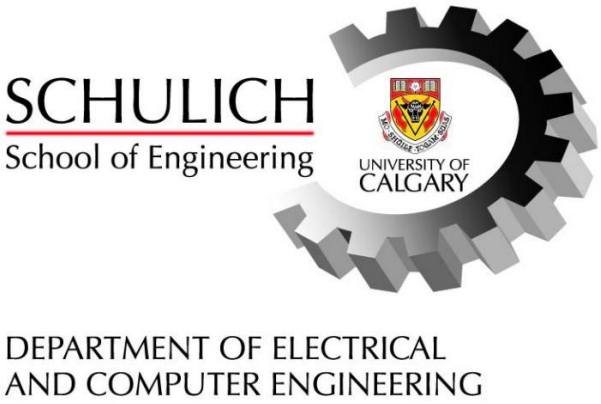
Multimeter

Application Project 2



DEPARTMENT OF ELECTRICAL
AND COMPUTER ENGINEERING

ENEL 511 - Embedded System Interfacing

Lab B02 Group 10 Members:

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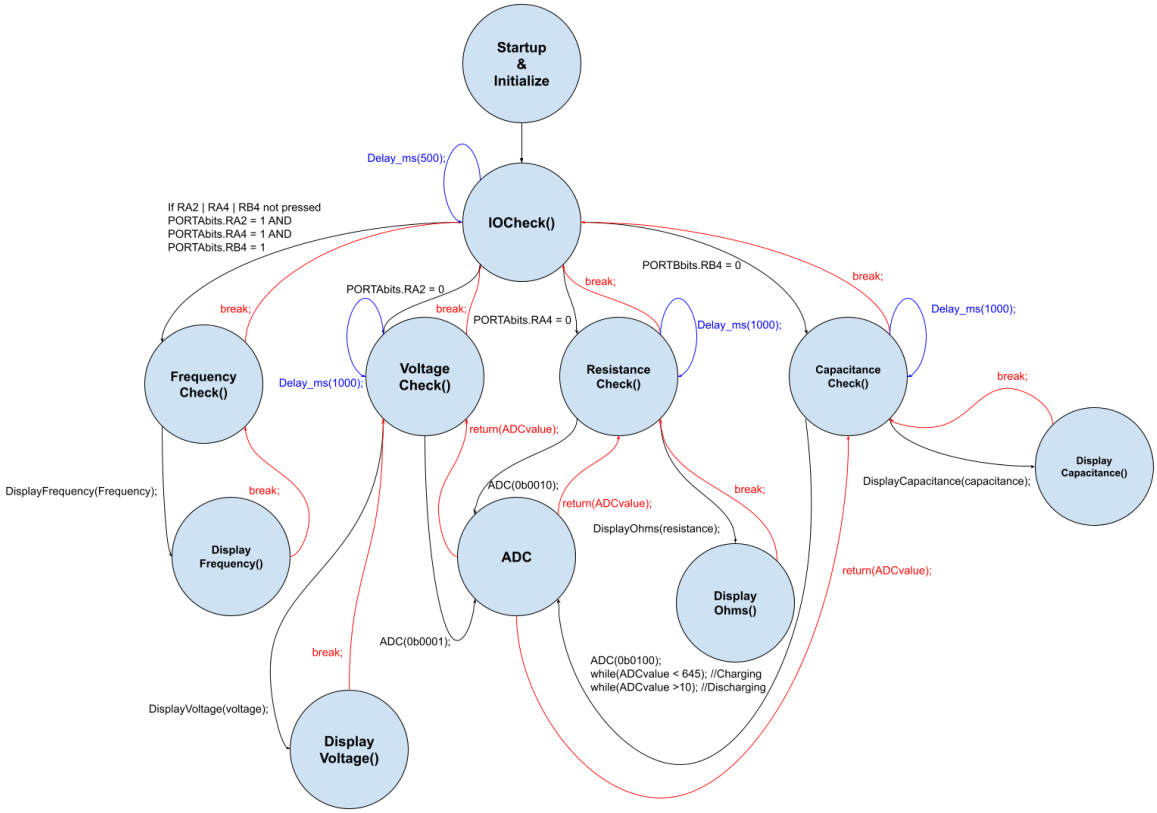
State Diagram



Mathematical Formulas

Voltmeter: $V = ADCvalue * Vres$

$ADCvalue$: $ADCBUF$ ($From\ ADC\ pin\ 8$), $Vres$: 0.00313 (V)

Ohmmeter: $R_2 = R_1 * \frac{1}{(\frac{Vin}{Vout}-1)}$

$R_1 = 1000\ \Omega$, $Vin = 3.25V$, $Vout = ADCvalue * Vres$

$ADCvalue$: $ADCBUF$ ($From\ ADC\ pin\ 15$), $Vres$: 0.00313 (V)

Capacitance: $C = \frac{\tau}{R}$

τ: $Time\ constant$ ($time\ taken\ to\ charge\ capacitor$), R: $Resistance$ ($1000\ \Omega$)

$The\ above\ equation\ is\ true\ when\ \tau = RC$

$Vo\ (\tau = RC) = 0.63 * Vref$

$Vout = ADCvalue * Vres$, $Vref = 3.25V$

$ADCvalue$: $ADCBUF$ ($From\ ADC\ pin\ 5$)

Maximum/Minimum Limits

Voltage:	Max: 3.25 V	Min: 0 V
Resistance:	Max: ~50,000 Ω	Min: >0 Ω
Capacitance:	Max: 470μF	Min: 1nF
Frequency:	Max: 6387 Hz	Min: 255.5 Hz

Workload

1. Justin Nguyen
    a. Tested microcontroller code
    b. Helped with programming logic
2. Dan Tran
    a. Tested microcontroller code
    b. Primary logic development
3. Nathan Tham
    a. Tested microcontroller code
    b. State Diagram
    c. Record video