Electronics Design Principles

Voltage Controlled Oscillator (VCO)

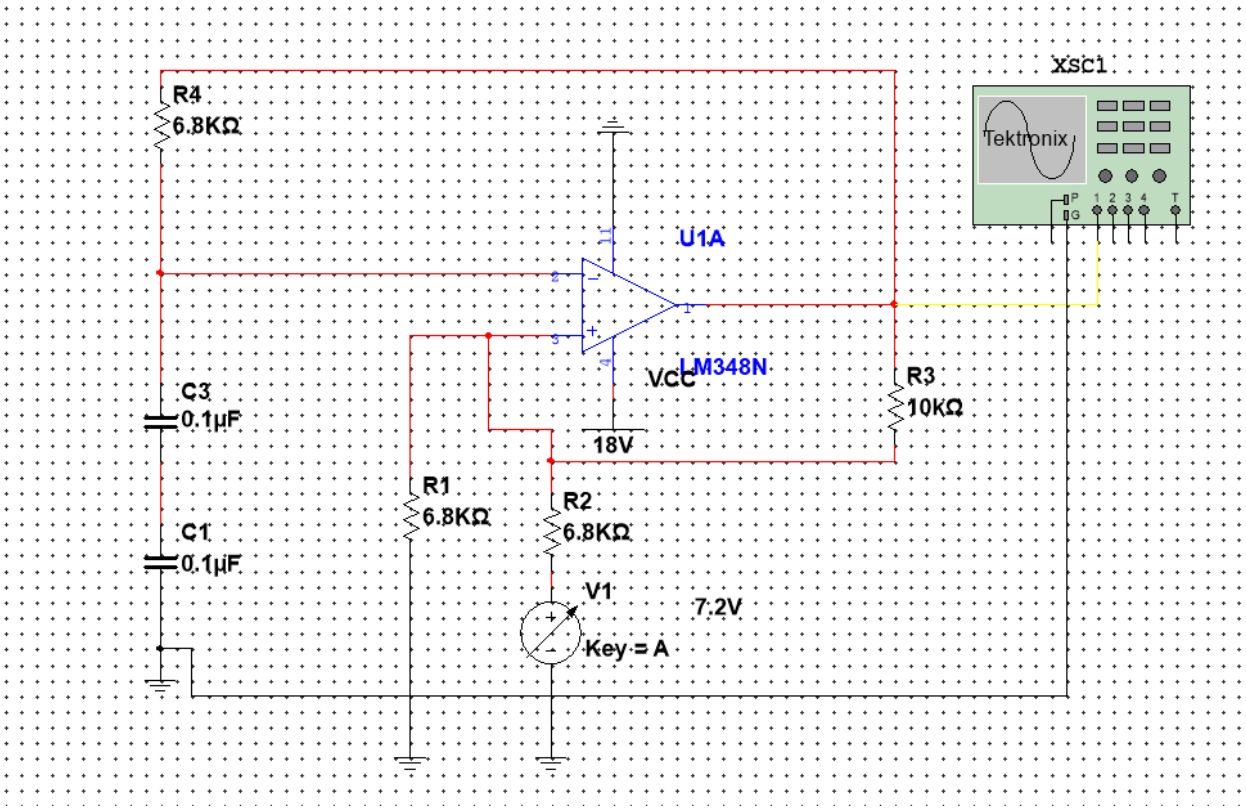
Name: Rajkaran Singh Grewal
Student No: 8882386
Student Email: rgrewal2386@conestogac.on.ca

Object:

Design and build a Voltage Controlled Oscillator (VCO)

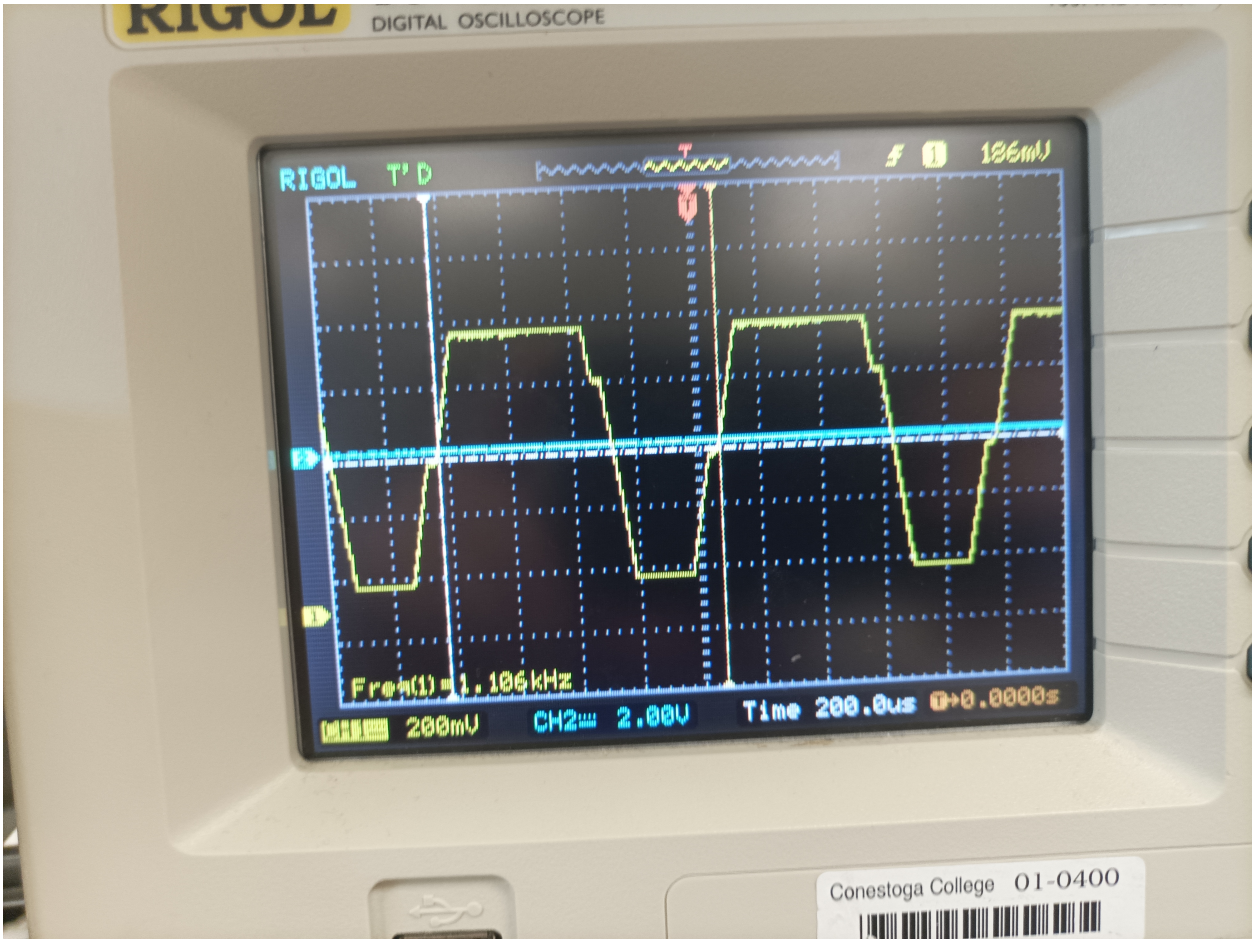
Equipment: Oscilloscope, power supply, capacitors, resistors, LM348M op amp, wires, breadboard.

Schematic:



Output:

Case 1:
V = 6.43V



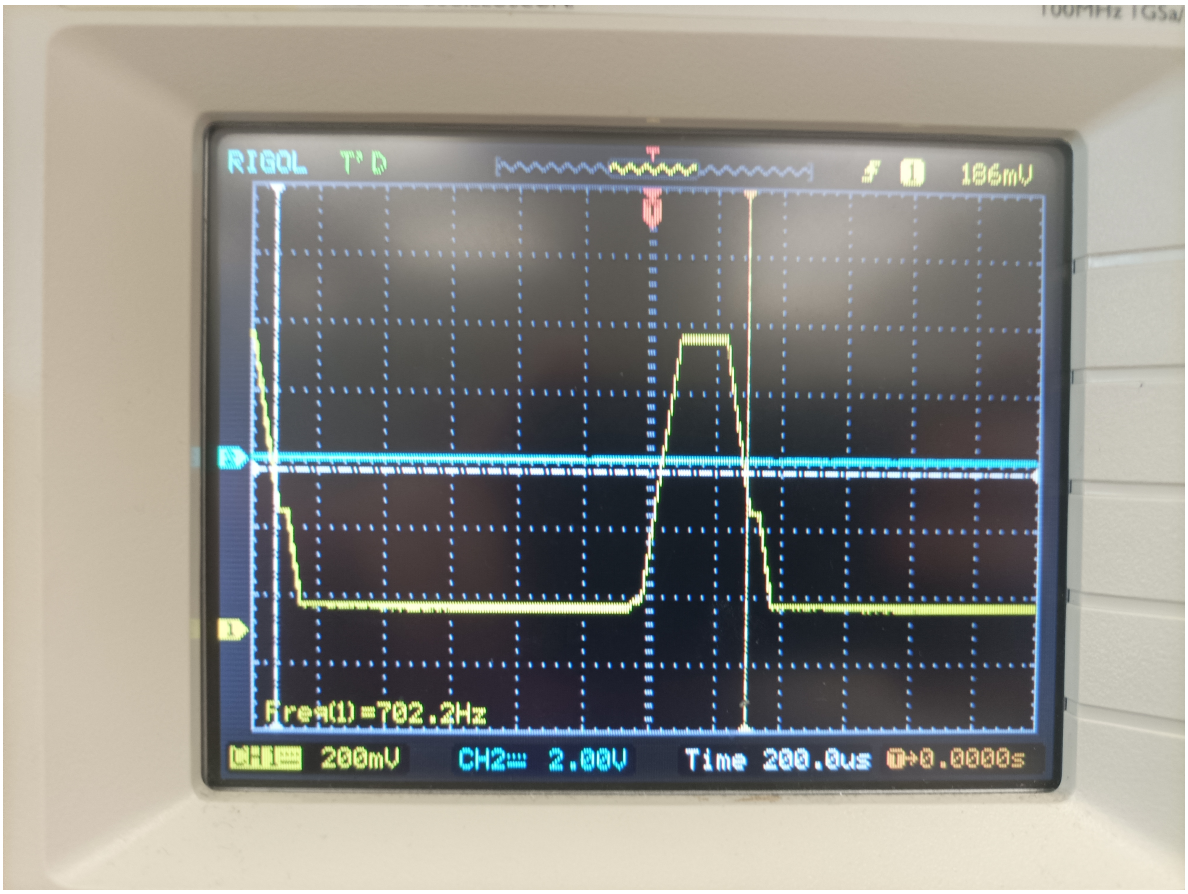
Real Values

Type	CH1
Freq	1.106kHz
Period	904.16us

Multisim Value

Type	CH1
Freq	1.41kHz
Period	720us

Case 2:
V = 1.12V



Real Value

Type	CH1
Freq	702.2Hz
Period	12.00ms

Multisim Value

Type	CH1
Freq	750Hz
Period	13.3ms

Input:

Case 1:

V = 6.43V

Case 2:

V = 1.12V

Observations:

From the observation we can see that the more controlled voltage is sent to the voltage controlled oscillator the increase in the frequency will become.

Theory Vs Practical:

If we look at the values from multisim and the actual values from the oscilloscope we can see that the values we get are not totally exact has the values we get from the oscilloscope are smaller than that we received from multisim.

Conclusions:

We can finally conclude that by increasing the controlled voltage through the positive terminal of the oscilloscope, we get a increase in the frequency. However with the decrease of the controlled voltage we get a lower frequency. Also the values in the real world do not truly match the values with the multisim and the range of difference gets higher with the lower the controlled voltage we applied.