Circuit Simulation Project

https://esim.fossee.in/circuit-simulation-project

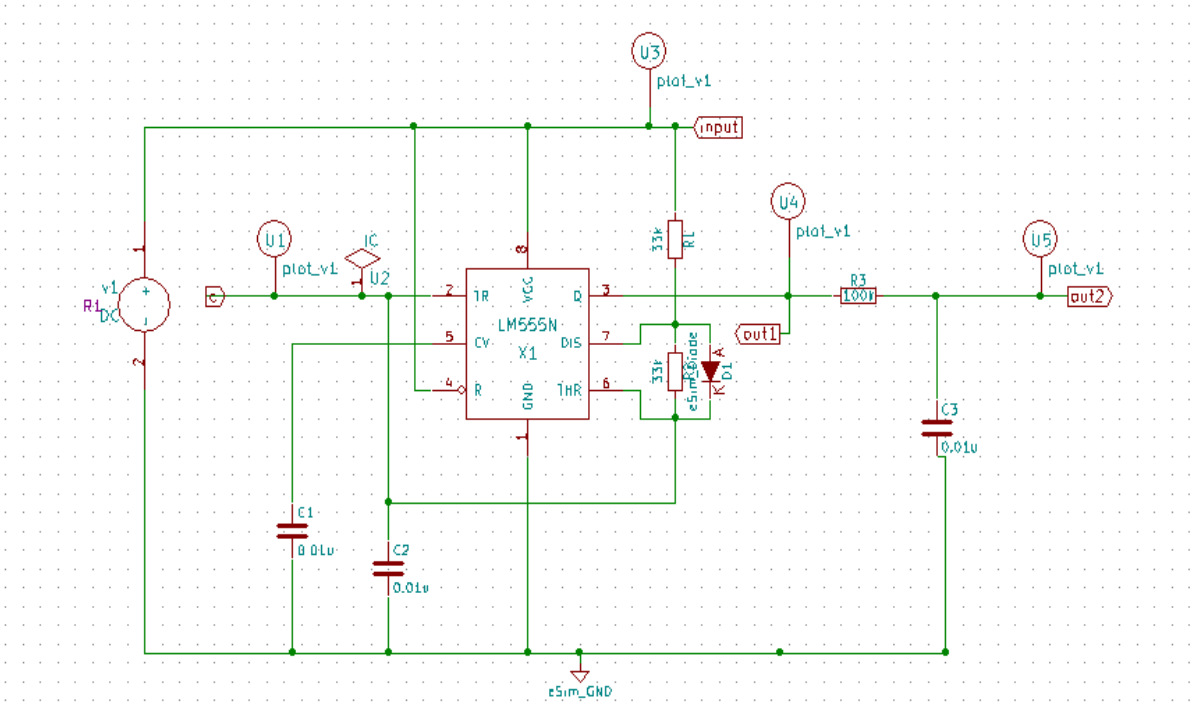
Name of the participant: Sumanto Kar

Title of the circuit: Triangular Wave Generator

Theory/Description: A 555 timer IC, 2 resistors and two capacitors make the triangle wave. The IC is connected in a 50% duty-cycle astable square-wave oscillator circuit.
The square-wave output is fed from pin 3 of the IC to an RC shaping circuit.

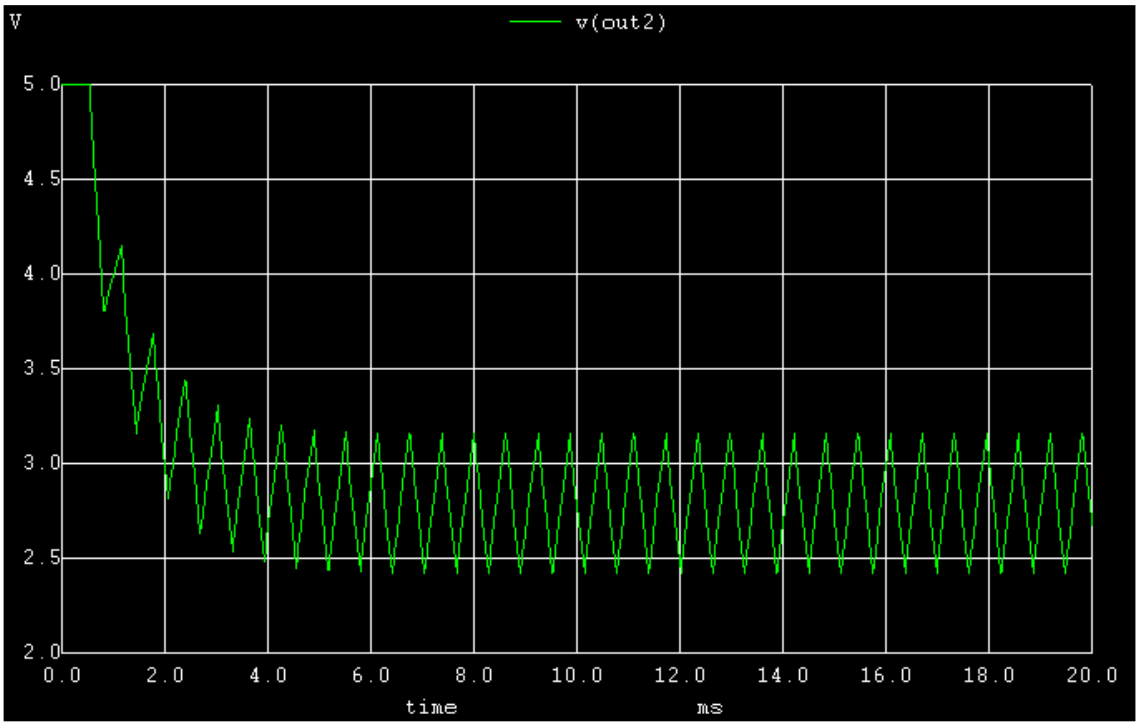
When the 555's square-wave output goes high, C2 begins to charge through R2 and the voltage across C2 increases as long as the output remains high. When the IC's output goes low again, C2 begins to discharge through R2 reducing the voltage C2 as long the output remains low. The resulting waveform across C2 takes the shape of a triangle. The best waveform linearity is obtained when R2 and C2 are made as large as possible.

Circuit Diagram(s):

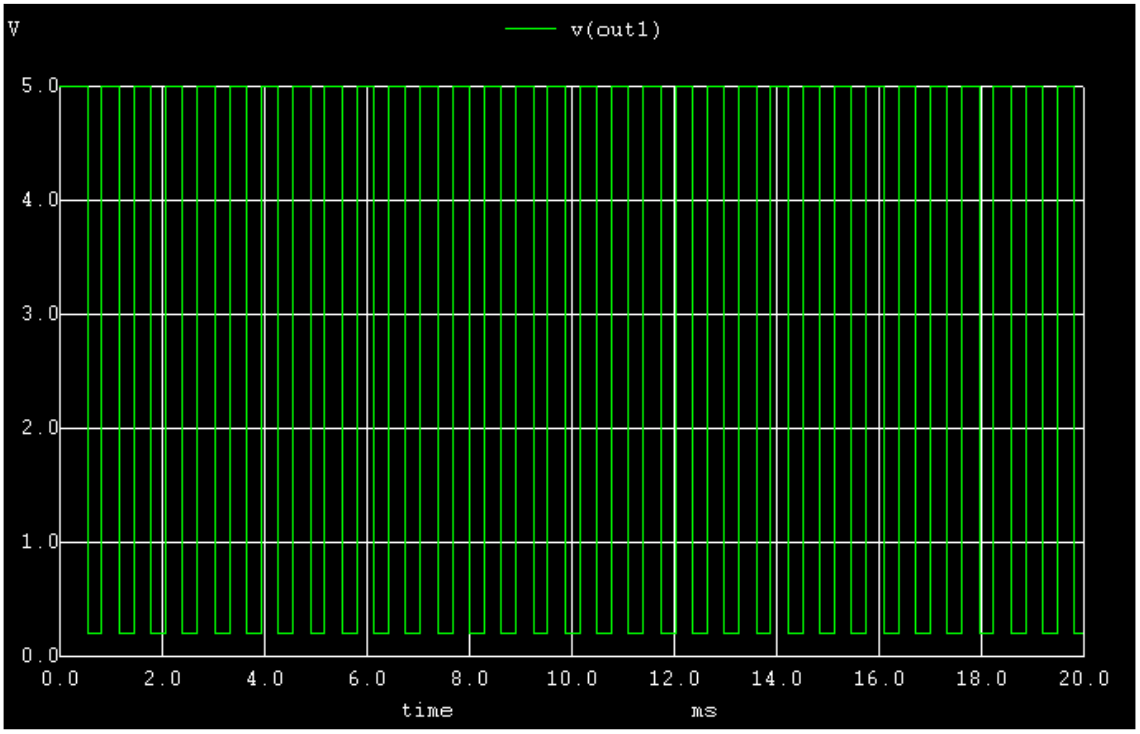


Results (Input, Output waveforms and/or Multimeter readings):

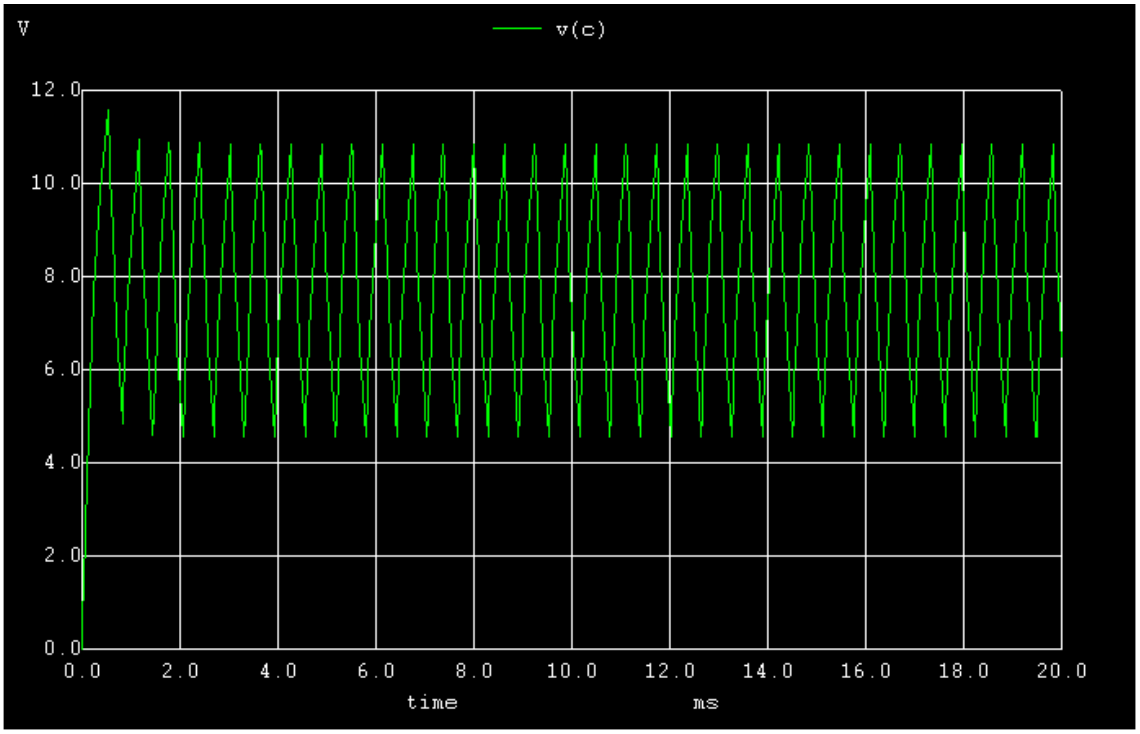
Ngspice Plots- Output Signal



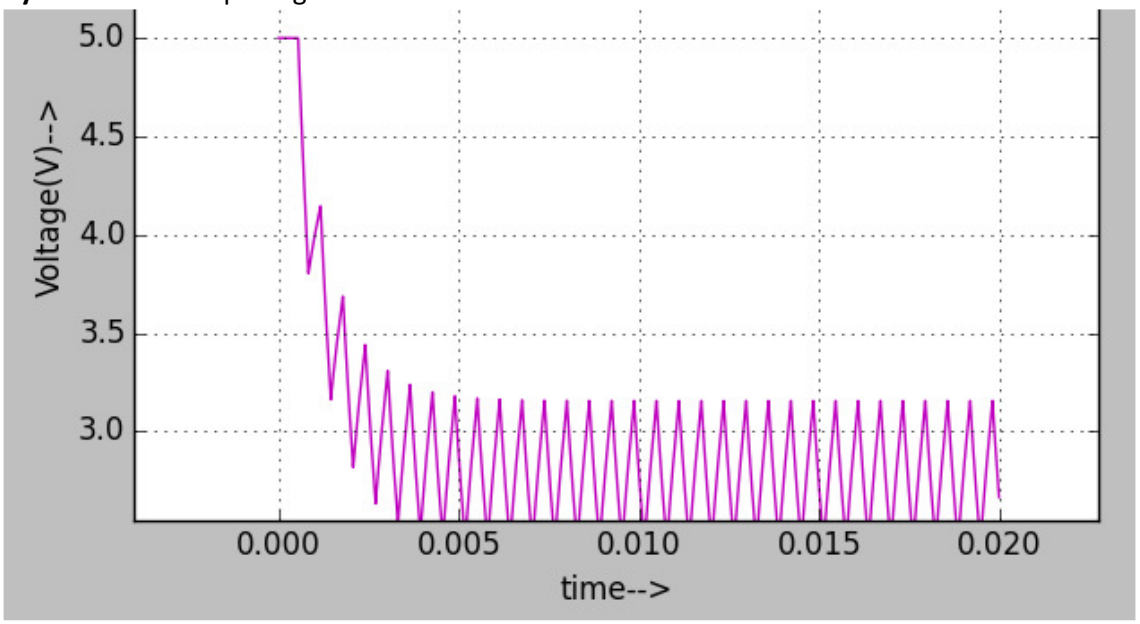
Ngspice Plots- Output signal at pin 3



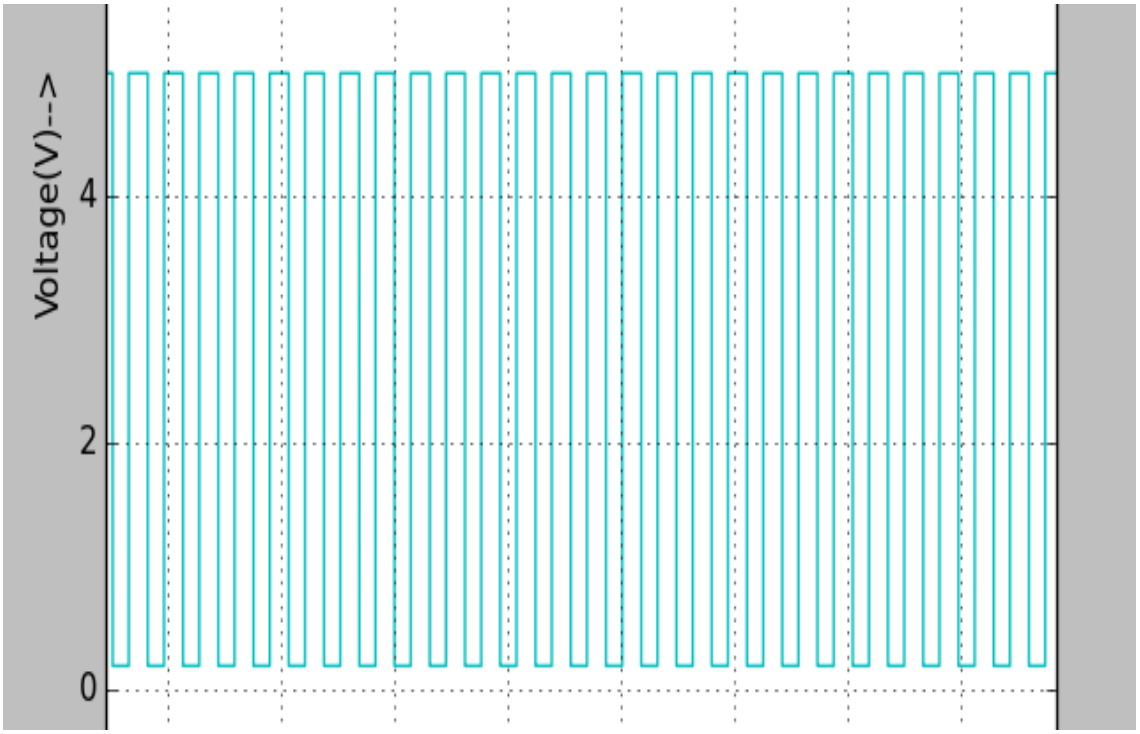
Ngspice Plots- Capacitor waveform at pin 2 and 6



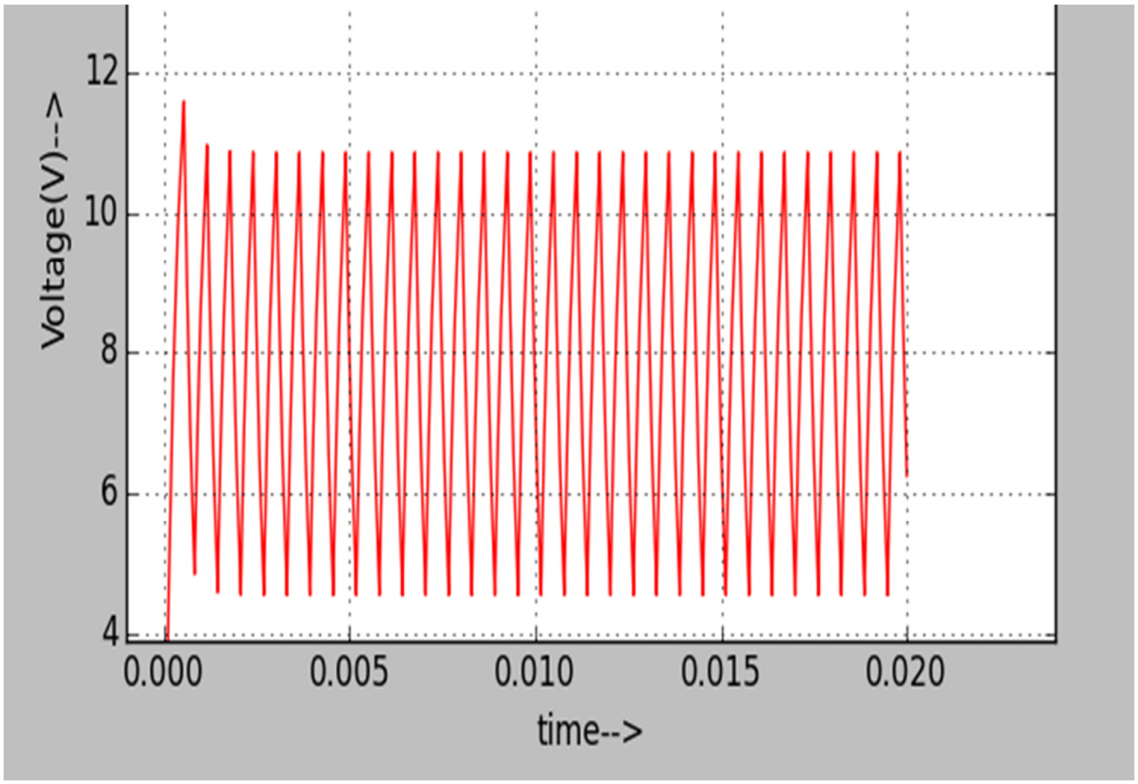
Python Plots- Output Signal



Python Plots- Output Signal at Pin 3



Python Plots- Capacitor waveform at pin 2 and 6



Source/Reference(s):

1) https://www.electroschematics.com/555-triangle-waveform-generator/
2) http://www.circuitstoday.com/saw-tooth-wave-generator-using-ne555/