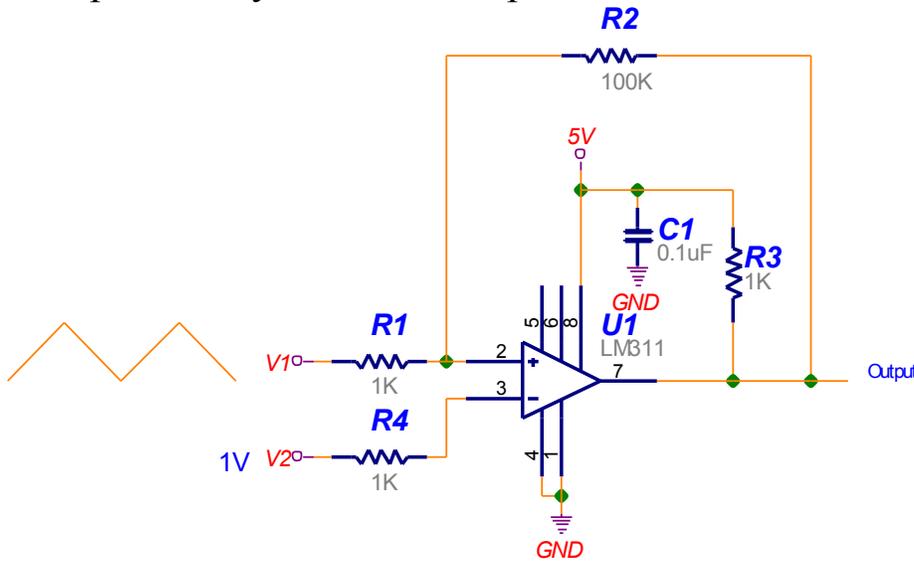


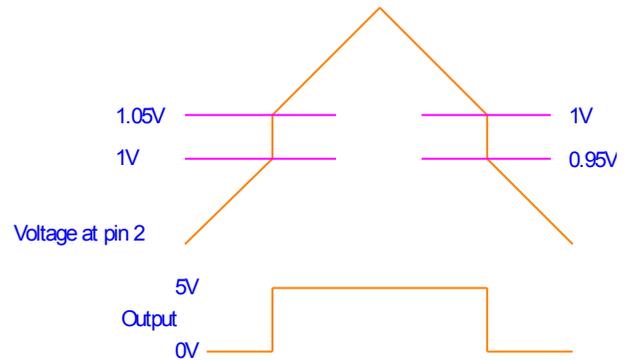
Comparator Hysteresis Example:



Like the demo done in class, V1 is a ramp provided by the function generator. The ramp goes between 0 & 4V. V2 is a constant 1V therefore the inverting input is a constant 1V. 1% of the difference between the input and output voltage is fed back to the positive input to keep the output from oscillating when V1 and V2 are at the same voltage.

Initially V1 is at zero volts so the output is zero.

Because the output is zero the voltage at pin 2 will be about 1% less than the ramp voltage at V1 (hysteresis = $R1/R2 * (V_{in} - V_{out})$). As the ramp voltage increases the voltage on pin 2 will increase. Once pin 2 reaches the same voltage as pin 3 the output will go high (V1 = 1.01V, pin 2 = 1V). The voltage at pin 2 jumps from 1V to 1.05V, (1.01V + 1% of (5V output – 1V input)). This ensures that the inputs don't linger at the same voltage and keeps the output from oscillating. When the ramp is decreasing V1 must be 0.96V for pin 2 to reach 1V. The voltage at pin 2 jumps from 1V to 0.95V (0.96V + 1% of (0V output – 1V input)).



Note: The hysteresis is 50mv (1% of the 5V output swing).