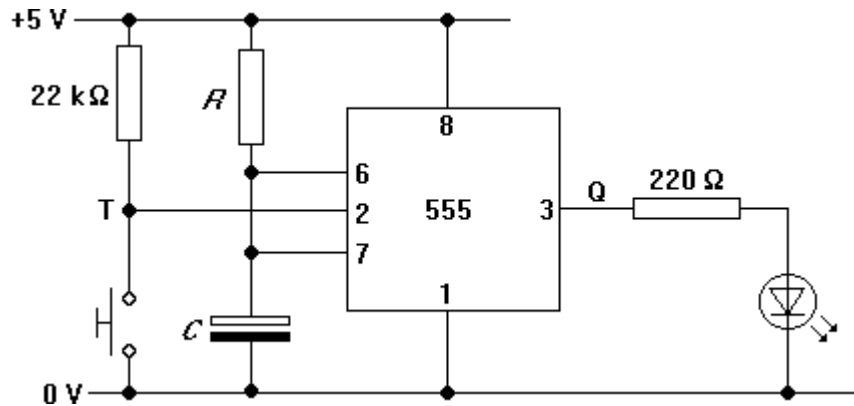


The 555 timer

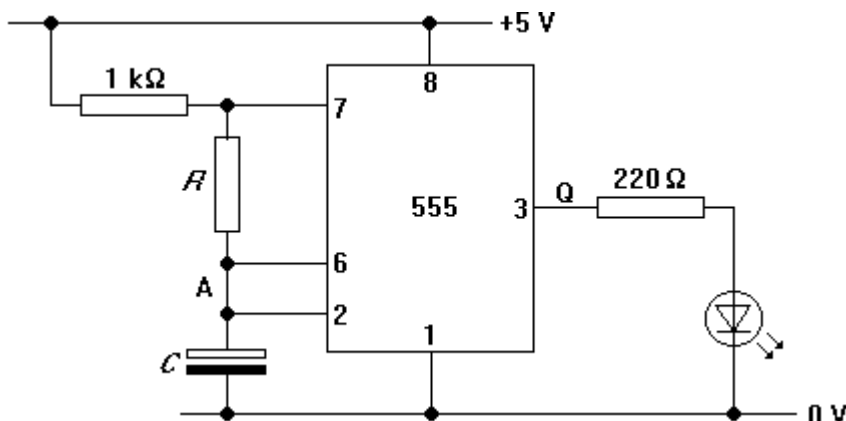
1. Assemble the circuit shown below. It employs a 555 timer i.c. as a monostable. Have $R = 100\text{ k}\Omega$ and $C = 100\text{ }\mu\text{F}$ to start with.



2. If all is well, the LED should glow for about 10 s when the switch is briefly pressed. Use voltmeters to find out what happens to the voltages at T and Q when the system is triggered.
3. For each of the values of the time constant RC shown in the table, measure the time T for which the LED glows after the switch is pressed. Is $T = 1.1RC$?

R in $\text{k}\Omega$	C in μF	T in s
220	10	
470	10	
100	100	
220	100	

4. Now rearrange the components to make the 555 timer into an astable oscillator, as shown below. Have $R = 220\text{ k}\Omega$ and $C = 10\text{ }\mu\text{F}$ to start with. If all is well, the output Q should oscillate with a period of about 3 s.



5. Measure the period T for a range of different values of R and C . How well does the formula $T = 1.4RC$ predict the values for the period? How small can you make the value of R before the formula doesn't work?