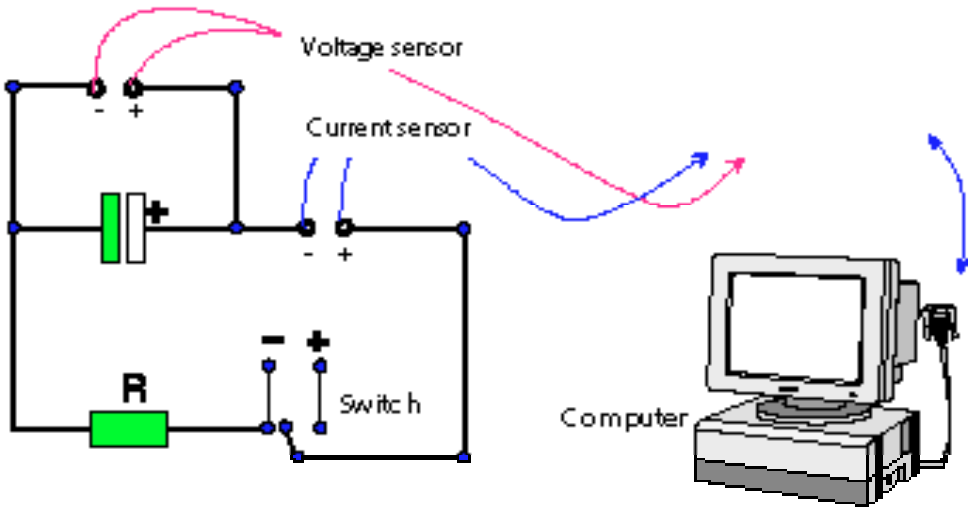
Capacitor charge and discharge



The voltage & current of a capacitor are measured as it charges and discharges. Sensors allow a graph to be plotted as this happens. The effect of different values of the capacitor and resistor can easily be explored.

Apparatus

1000 mF capacitor, 1kΩ resistor, power supply, switch, leads, voltage and current sensors, interface. You may need to 'bias' the voltage to get your readings on screen.

Setting up

Connect the current sensor to socket 1, and the voltage sensor to socket 2.

If the sensors are adjustable set a 100mA range on the current sensor and a 10V range on the voltage sensor. Some systems recognise the sensors you attach automatically, in others you do this yourself.

Recording the data

Record for 1 minute. Charge the capacitor and when charged, move the switch to allow it to discharge.

Using the results

Describe the graph you see.

What does the graph tell you about the way a capacitor discharges?

What factors affect this?

Save your data on disc and print the graph.