

A12: Series Resistors

1001-act12 Introduction to Electronics

Summary

This activity expands on the basic LED circuit created in act6 by demonstrating what happens to the LED when more resistors are added in series to the existing 1K.

What You Need

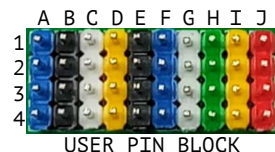
- JackBord
- JackBord TOP
- 10x 10cm Jumpers

Instructions

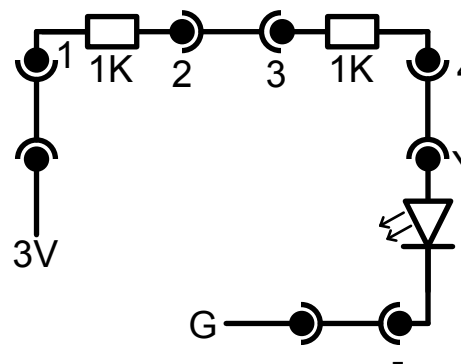
1. Making this circuit is simple. First, make sure that the JackBord TOP is already connected to the JackBord power pins and the two power LEDs are on (Check 1001-act5 if not). Turn off the JackBord.
2. Create the circuit from act6 and observe the brightness of the LED. Having done so, disassemble it and continue from step 3.
3. Take one jumper and connect any 3V pins on the TOP to pin 1 of the 1K resistors.
4. Connect pin 2 of the 1K resistors to pin 3 of the same.
5. Take another jumper and connect pin 4 of the 1K resistors to the Yellow LED on the TOP. The pin is labelled 'Y'.
6. Finally, use one more jumper to connect the corresponding '-' pin to one of the green ground pins on the TOP.
7. If done correctly, after turning on the JackBord, the yellow LED should turn on but be noticeably dimmer. This is because the resistance has just doubled. If it does not, check your connections and follow the steps again. Also compare your circuit to the pictures shown right.

NOTE

USER pins refer to the pins on the bottom half of the top. They are connected in columns of 4, but unconnected horizontally. They are referred to by grid reference. I.e. USER pin E2 refers to the second pin down in the E column.



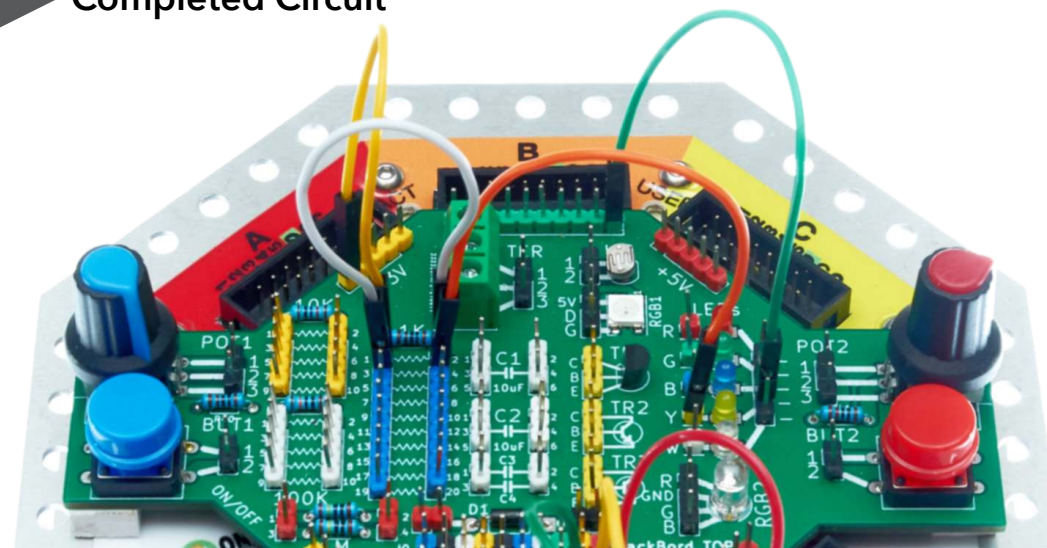
Circuit Diagram



TOP 3V pin	1K resistor pin 1
1K resistor pin 2	1K resistor pin 3
1K resistor pin 4	TOP LED pin Y
TOP LED - pin (Corresponding to white LED)	TOP Ground rail

The table above contains the connections in the circuit diagram. Simply connect a jumper from the left column pins to the corresponding right column pin in the same row.

Completed Circuit



Extension

- If we have 10 1K resistors in series, what single resistor on the TOP could we use to replace them so we have 10K?