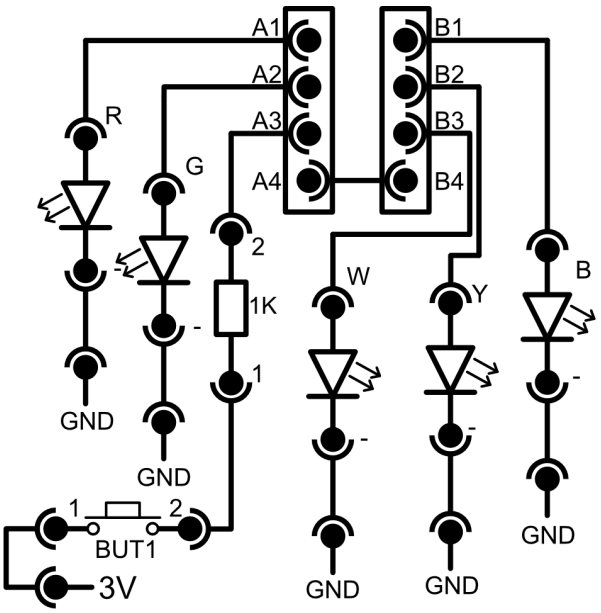
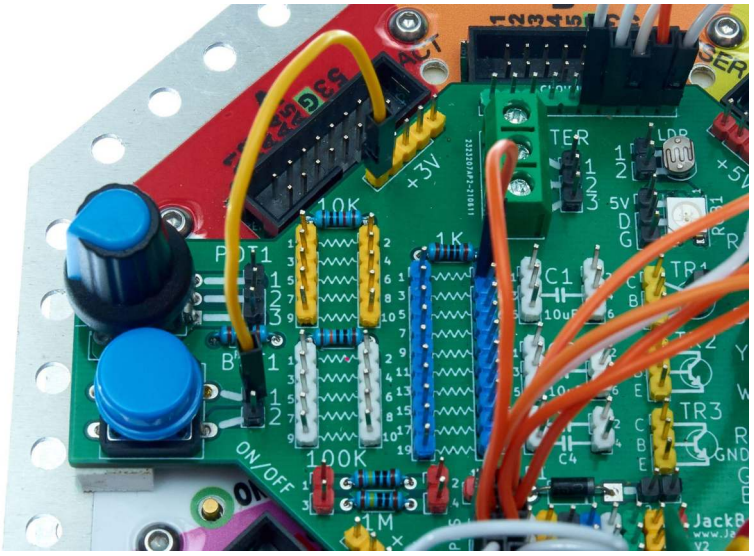
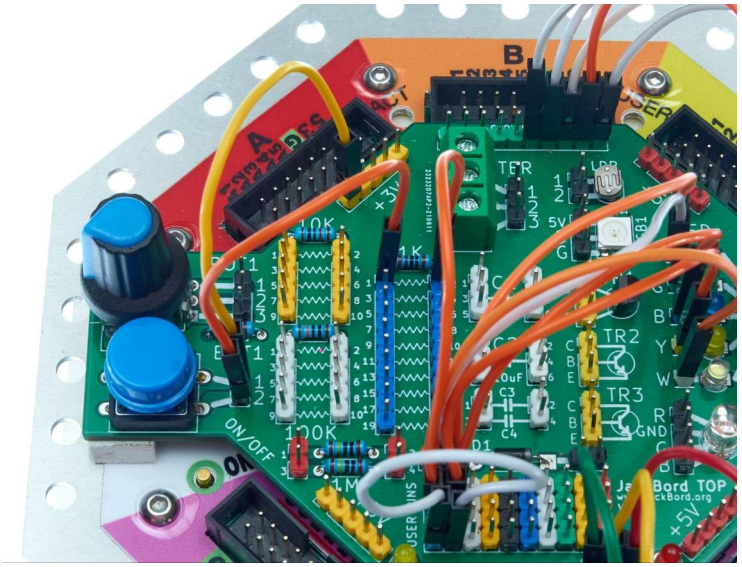
1001-act10 Introduction to Electronics

Activity	Use a Switch to Control the 5 LED Rainbow
Student Guide	1001-act10-stg Use a Switch to Control the 5 LED Rainbow: Student Guide tmt3Nngj
Teacher Guide	1001-act10-tcg Use a Switch to Control the 5 LED Rainbow: Teacher Guide tmt3Nngi
Summary	Build a circuit that allows one of the buttons on the TOP to control all 5 LEDs at the same time. We will only use one series resistor.
Principals Covered	• A switch works by bringing to wires or conductors together so the electricity can flow • Pins joined together can be used to connect many different parts of a circuit together • Jumpers can be used to join the USER pins and allow 6 parts of the circuit to be connected together
Learning Outcomes	• Understand how a switch works • Be able to add more LEDs onto the same switch • The USER pins can be used to join many things in a circuit together • Higher voltage means more power and the LEDs get brighter
Achievement Standards	
Equipment	Each student will need: • 1 x JackBord • 1 x JackBord TOP • 20 x 10cm jumper wires
Preparation	• Check the JackBords are charged
Instructions	**1. Circuit Diagram:**  This is the circuit of the rainbow with a switch. The first thing is the 3V supply on the top left which powers the rainbow. This is followed by the push button switch, when this is pressed the rainbow will light up. There are two push button switches on the TOP on the far left and right. This is followed by a 1K resistor after which we have the two sets of USER pins. The USER pins allow the one resistor to feed the 5 LEDs at the same time. The LEDs are shown at the bottom. **2. Build the Rainbow Circuit from Activity no 9** Build the rainbow circuit from activity 9. Confirm that all 5 LEDs light when the power is turned on.

	3. Remove the 3V Power Jumper and Connect the Button Once you have built the activity 9 circuit, remove the jumper and connect the 3V power line to pin 1 of the left button, BUT1, on the TOP. The result should look like this.  The button is the round blue circle on the lower left and the yellow jumper is connected to pin 1. **4. Connect a Jumper from the Button to the 1K Resistor** Use a jumper to connect pin 2 of the BUT1 button and pin 1 of the 1K resistor as shown below.  **5. Turn on the JackBord** Once you have checked your circuit, turn on the JackBord and press the button. If all is well the 5 LEDs should light up. If only some light, try using the 5V power. The reason you may need more power to get all of the LEDs to light is because there are some variations in production of the LEDs and some may need a little more power to work than others. In some cases all of the LEDs might light up fine in which case 3V is fine.
Notes	
Extension	