

HACKING YOUR FIXFEST LANYARD

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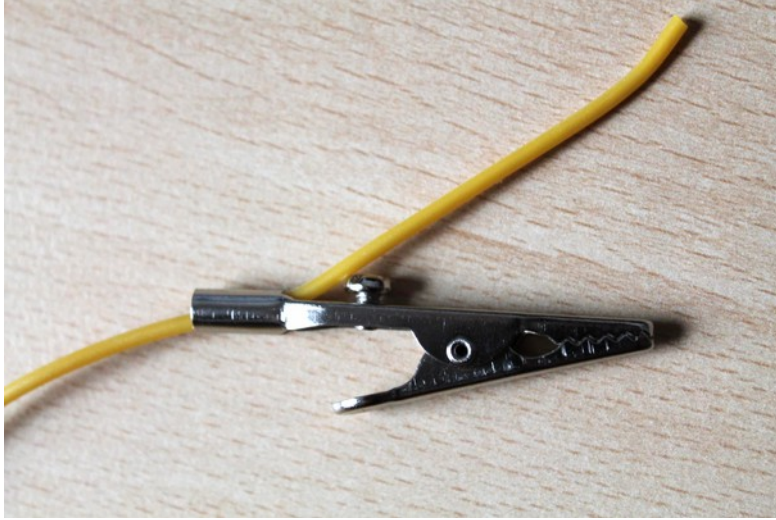
Customise the lanyard length

You will need:



- Tool/s to cut and strip wire
- Screwdriver
- Your lanyard!

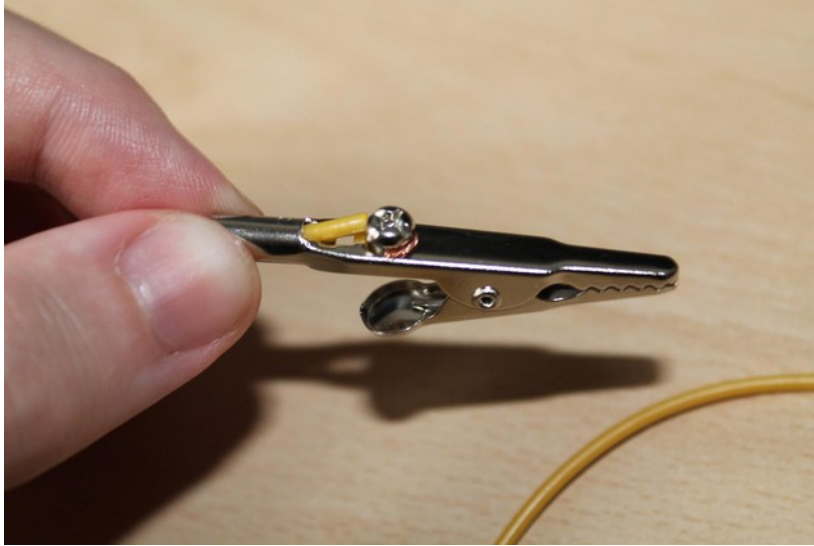
1. Work out how long your lanyard need to be – this is best done by wearing it and holding one end at the height you would like the lanyard to end.
2. Cut the wire at this location, leaving a little (~1cm) excess length for attaching to the crocodile clip.
3. Remove the existing, offcut piece of wire from its crocodile clip by loosening the screw a little. Leave the screw loose to insert the new wire loop later.
4. Thread the remaining lanyard wire through the stem of the crocodile clip and out of the small hole by the screw.



5. Strip around 1cm of insulation from the wire and twist the strands so they hold together. Bend the wire into a loop, keeping the strands from spreading out.



6. Hook the wire loop around the screw's shaft and tighten the screw. Tighten it just enough to grab the wire – no excessive force necessary.



7. Attach your festival booklet or ID and enjoy your perfectly customised lanyard!



Summarising:

1. Cut the lanyard to the length you need.
2. Loosen the screw and remove the offcut wire from the crocodile clip.
3. Thread the remaining wire end through the crocodile clip stem and strip around 1cm of insulation.
4. Twist the wire into a loop and secure it using the screw on the crocodile clip.
5. Enjoy!

Adding a resistor for discharging capacitors

Many household appliances and mains devices have capacitors, which can carry charge. (The only battery-powered devices that tend to have highly-charged capacitors are compact cameras and camera flashes.) Capacitors must be responsibly discharged otherwise they pose real risks. Luckily, you can hack your lanyard to help you do this safely and teach others to do the same.

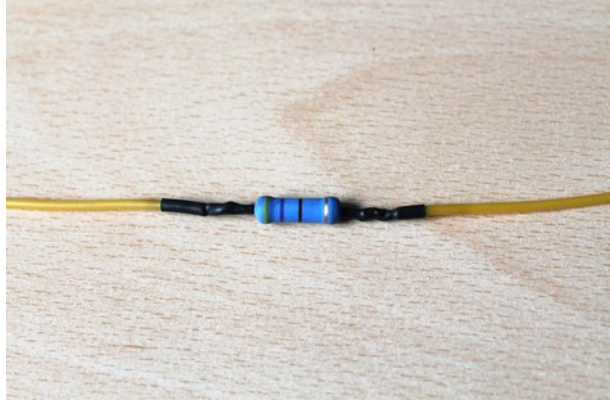
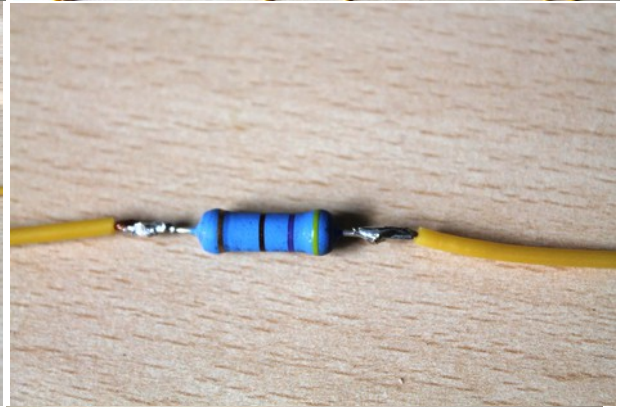
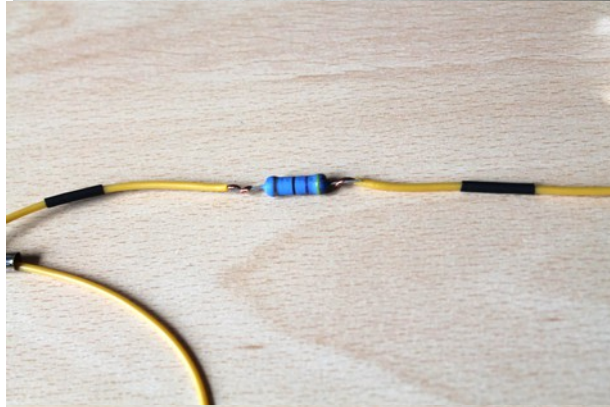
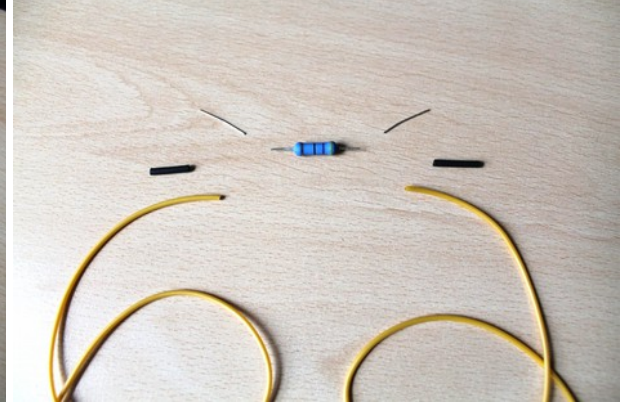
You will need:



- Tool/s to cut and strip wire
- Screwdriver
- Suitable resistor (20k-100k Ohm, 5W rating is a good choice for up to 230V)
- Soldering iron and solder
- Heatshrink tubing to insulate the resistor leads
- Your lanyard!

1. Cut the lanyard where you want to insert the resistor – in the middle is good!
2. Slide a short length of heatshrink tubing onto both exposed ends of the lanyard wire – 1.5cm is good.
3. Strip around 0.5-1cm of insulation from each wire end and twist the strands together.
4. Clip the resistor leads to around 0.5-1cm long.
5. Wrap the lanyard wire ends around the resistor leads, keeping them tight enough to fit the heatshrink over later.
6. Solder the lanyard wire to the resistor leads, looking for good solder flow and coverage for a strong join.
7. Slide the heatshrink tubing up and over the solder joins to insulate them. Lightly heat the tubing with a lighter, matches or hot air gun to make it shrink and stick over the joins.

8. Use your new discharge cable to safely prepare capacitors before repair work!



Using the discharge resistor:

SAFETY FIRST: Voltages over around 25V can do real harm, so inspect and measure your circuit. Fit your crocodile clips with insulating sleeves if working with high voltages.



1. Locate the positive and negative terminals of the capacitor to be discharged
2. Attach or hold one clip to the negative (cathode, marked with "-") pin of the capacitor
3. Touch the other clip to the positive (anode, marked with "+") pin of the capacitor. Take care not to short the two pins together by letting the crocodile clips touch.
4. Hold the wires in place for 30-60 seconds, remove them and measure the voltage.
Repeat steps 1-3 if necessary until the capacitor's voltage is low (below 5V is good)

Hot tip: If the crocodile clips are too large to reach just one pin on the capacitor, clip a short length of wire into their jaws and use this wire to reach the contact points!

Hot science factoid: This device works by allowing the energy in the capacitor to be dissipated as heat - hence the bulky, high-wattage resistor. Current flows from the more positive terminal of the capacitor, down the wire and through the resistor, back into the negative terminal. As this current creates heat, the voltage of the capacitor drops because it is storing less charge.