Cameron Stanavige
CS490

1. The 12V DC power supply in your computer case is listed as a 300W power supply. How much current could it conceivably supply to a circuit?

25 amps

2. A 10 Ohm, 1/8 W carbon composition resistor is placed in a circuit. The voltage in the circuit drops 5V across it. What happens to the resistor?

The resistor heats up, smokes and eventually burns up and is useless.

3. Is it safe to put your index finger into one slot of a common household outlet, with the middle finger of the same hand in the other slot? How so?

Safe? No. It wouldn't kill you as the circuit you complete will just go accross your hand. It would still hurt and possibly cause damage to your hand though.

4. Answer the previous question but in this case it is the index finger of one hand and the index finger of the other hand.

Definitely not safe as this circuit would be completed by going all the way up one arm, across the chest, and back down the other arm. It would definitely hurt, and as this path goes through the heart, it could possibly be deadly as well.

5. Is this a true statement? Why or why not? Integrated circuits, our Intel Edison, and other packaged or well shielded electronic components cannot be damaged by picking them up with your fingers.

This is not a true statement. Primarily because your body can build up a charge that is high enought to fry a board or circuit if you were to touch it w/out discharging yourself first. Also, residue or oils left behind from your fingers when you touch something can be conductive and can cause a circuit to short out.

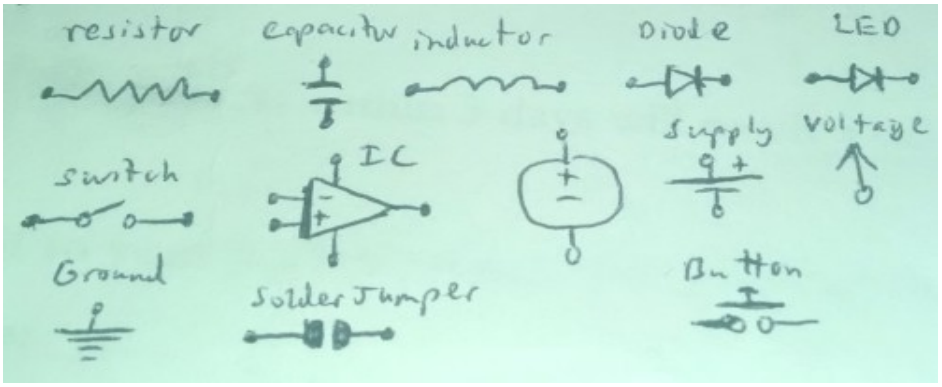
6. What happens if you install a resistor backwards in a circuit? What about a capacitor? Diode?

Installing a resistor backwards in a circuit will make no difference, a current can flow through it either direction the same. A capacitor is the same, makes no difference, unless it is a polarized capacitor. However, a diode only allows a current to flow one way. Thus installing a diode backwards will break the circuit, not allowing a current to flow through.

7. The accelerometer breakout board from Lab 2 has pins for VDD, GND, X, Y, Z and ST. What happens if you connect VDD to 3.3V but do not connect anything to GND?

Nothing will happen as this will not be a complete circuit.

8. Draw the symbols for the common circuit elements: resistor, capacitor, inductor, diode, LED, IC, switch, supply voltage, ground, solder jumper, button.



9. A single cell Polymer lithium ion battery (LiPo) typically produces what voltage? What current can they supply? (Varies, but what is common?) What instantaneous power is this?

A single cell LiPo typically produces 3.7V, but will do 4.2V at full charge. They can supply a current of 500mA. The instantaneous power of this is 1.85W.

10. If a single cell LiPo battery is listed as having capacity of 1000mAh, for how long could it power our Intel Edison? Do this twice, assuming the Edison is either at idle and then again assuming it is going full tilt computations.

At idle with wi-fi, the batter should last approximately 28.5 hours. According to a Googled benchmark, the Edison uses around 250mA at full tilt over wi-fi. At this pace, the battery would last about 4 hours.