**Problem 1**: A lamp is not turning on in your living room. Describe the process of how you would figure out why the lamp is not working.

Preface: Even though I like problem solving, let’s pretend like it’s my Sunday off and the last thing I want to do is chores around the house. Because of this I want to spend the least amount of time possible fixing this light. To do that I’m going to have to start with the quickest and most simple tests and rule those solutions out before working my way up to the more complex and time consuming fixes.

**Step One:** Where is the outage? What is the cause?

The cause of the outage must be somewhere between the light switch and the filament of the light bulb. I will break this down to three possible locations of the issue: The wall (including the wall switch, power supply and the outlet), the lamp (including the power cord and the light switch) and finally the light bulb itself. I will start with checking out the wall, since I’m already standing at the wall switch, and will continue down the wires all the way to the filament.

**Part A**: The Wall

First I will flip the switch a couple more times to make sure I didn’t accidentally give it a ‘half-switch’ the first time. Light’s still not turning on. Next in the chain would be the power supply. A quick glance towards the kitchen lights shows me that the power supply to the house is still working, which rules out the power supply. I now need to walk to the outlet to give it a good check. Before leaving the wall switch and walking to the outlet I will intentionally leave the wall switch in the “on” position, which will be important later in this part.

Thirty seconds in and I’m kneeling at the outlet. There are 2 possible problems that could reveal themselves at the site of the outlet: The outlet itself might not be working, or the cord might not be fully plugged in to the outlet. I can already see that the cord is mostly plugged in, but to rule out this solution I will fully unplug it and replace it fully. There’s still no light. Maybe the problem is in the outlet itself? One way to check to see if the outlet is working is to grab another working lamp from the house and plug it in to the suspect outlet. I will find a lamp in the house that is turning on, walk it over to the suspect outlet, plug it in and turn it on. This time, the light turns on! This tells us that the problem is NOT within the wall location – the insides of the wall are all working.

**Part B:** The Light Bulb

Now we can check to see if the problem is located in the light bulb. I am already a step ahead since I have a working lamp with a working light bulb sitting right next to the suspect lamp and light bulb in question. By swapping the light bulbs I will be able to tell if the outage problem could be caused by the suspect light bulb. I will plug in the suspect bulb in to the working lamp. There is light! This tells me that the suspect light bulb does indeed work. This also tells me that the cause of the outage is located somewhere in the lamp.

**Part C:** The Lamp

There are two possible places the break in the chain could be: In the cord or in the lamp switch. First I will replace the light bulbs to their original locations and return the working lamp to its spot. Back at the not-working-lamp I will flip the lamp switch (not to be confused with the wall switch) a few times back and forth, leaving it in the ‘on’ position. Still no light. This tells us that the only possible location of the problem is in the lamp’s cord.

To check for a short in the cord, with the lamp plugged in tightly, I jiggle the cord around a bit. As I jiggle the cord, the light flickers on and off. This tells me that there is in fact a short in the cord. I keep jiggling the cord, but move smaller parts of it at once to see if I can find a more localized area of the short. I found that the short was located immediately off the back of the plug because if that area bends back and forth the light turns on and off.

**Step 2**: The Fix

I have a couple options for a fix: Fix the cord or get a new lamp. Since I’m broke and changing careers, I opted for a cheap fix over buying a new lamp. And since I’ve never fixed a power cord before, I need to get online and find some quick DIY fixes for power cords or lamp cords. I found that the easiest way to fix the lamp would be to buy a power cord with plug side already attached to one end and a light bulb attachment on the other end. With some lamps you can just disassemble the lamp, take out the old cord and simply replace the entire thing. The other option would be to buy a power cord and splice the wiring, and use a generous amount of duct tape to seal the mess up.

**Step 3:** Check The Work

Once I’m all done splicing wires I plug the lamp back in. The light turns on! I jiggle the cord around a bit – it doesn’t flicker, it just stays on! Just for fun I flip the lamp switch off and on a few times to enjoy my handiwork and problem solving skills. After cleaning up my mess, I can get back to my Sunday off and reward my craftiness by cracking a beer and turning on the Broncos game.