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CPE 406

Homework 1

October 12, 2021

Assignment Description (Including Statement of Purpose):

In this lab what we connected 3 resistors, an LED, and a button to a circuit to pins 17 and 18. We had to use GPIO pins to connect the pi to the circuit board. We had to code for when the button is pressed and then released, the LED will blink, then after pressing the button the second time and releasing the LED turns off and does not come back on.

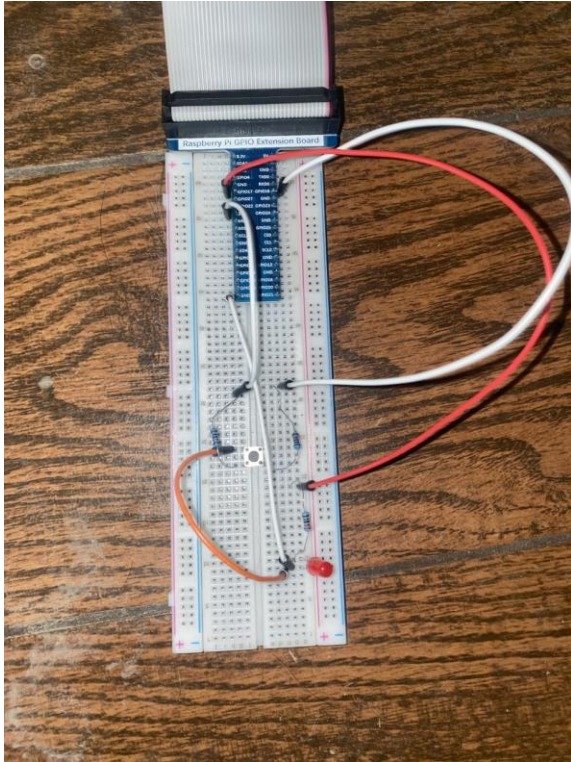
Problems Encountered:

My main problem at first was figuring out which resistor was which. I bought the knock off brand of the starter kit and it had blue resistors instead of the traditional tan. My other problem was that my pi would turn off when I put the GPIO pins into the circuit board. It was weird. My last problem I encountered was how to have the LED turn on after releasing the button not just pressing it.

Lesson Learned:

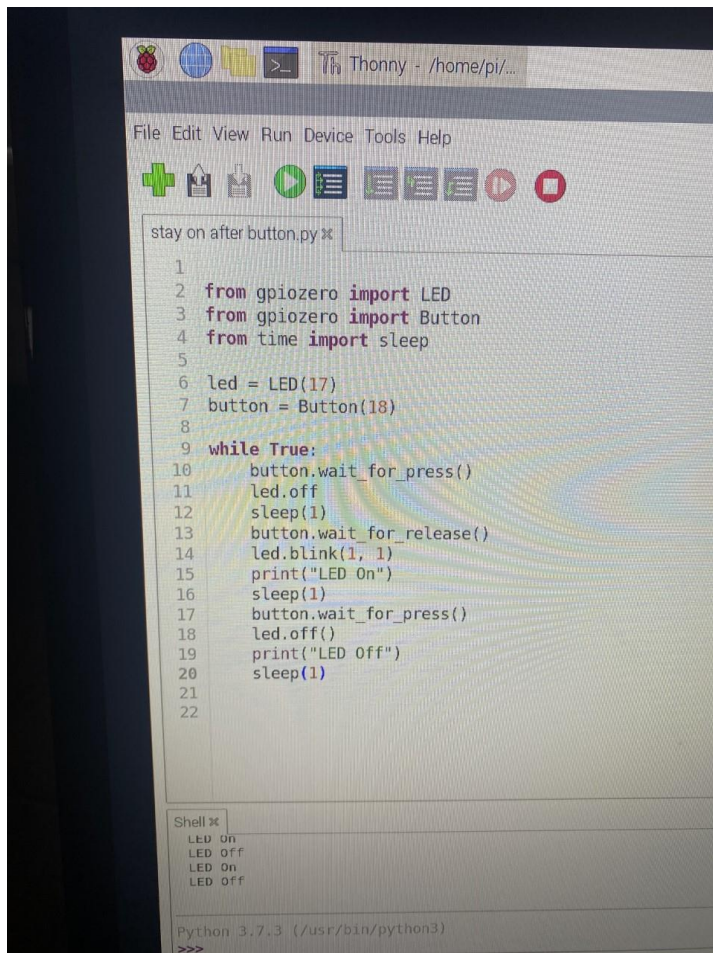
In this lab I learned a different couple of things. First one remembering how to set up my pi again (have not since CS 219) and getting comfortable with how everything works. Next, I learned how to code more python programs. I think more courses should teach it especially when it's a powerful language to use. The main thing I learned was how to make LEDs not be triggered when you press it. The last thing I learned was how to use the import GPIO pins between the circuit and the pi. I feel more comfortable with the pi and circuits after this lab.

Description of Completed Project (Including Source Code):



In the figure above I have the circuit for this lab. I had a 220k-ohm resistor connected to the LED. Had two 10k-ohm resistors where both connected to separate sides of the button. Which then wires went from the 3.3v power source and the other to pin 18. Pin 17 was assigned for the 220k-ohm resistor. Ground was connected the LED. It was a simple circuit, very cool though.

Below I have my source code and explanation of it:



```
File Edit View Run Device Tools Help

stay on after button.py »

1
2 from gpiozero import LED
3 from gpiozero import Button
4 from time import sleep
5
6 led = LED(17)
7 button = Button(18)
8
9 while True:
10     button.wait_for_press()
11     led.off
12     sleep(1)
13     button.wait_for_release()
14     led.blink(1, 1)
15     print("LED On")
16     sleep(1)
17     button.wait_for_press()
18     led.off()
19     print("LED Off")
20     sleep(1)
21
22

Shell »
LED On
LED Off
LED On
LED Off

Python 3.7.3 (/usr/bin/python3)
>>>
```

In the above figure I have my source code that I used for this lab. I used the from gpiozero import method for the LED, Button, and sleep. As mentioned above the LED was connected to pin 17 and the button was connected to pin 18. I used a while true statement for my functions. The first thing was to assign to LED to stay off when pressing, but then when the button is released the LED will blink one second one on and one second off repeatedly without stopping. It will print when the LED is off and on every time. Now when I press the button the 2nd time (while the LED is blinking) and let go the LED will turn off and not turn back on. I am not sure if my code is allowed to stay on after the 2nd time I press it, but if I needed to terminate the code, I would put "exit()" at the end of the code to ensure the program stops.