

Lab 1 Report

Materials:

- 1) Raspberry Pi 3 Model B+
- 2) 2x red LED's
- 3) 2x 220 Ω resistors
- 4) 3x female-to-male jumper cables

Board and Circuit:



Fig. 1: Raspberry Pi w/ jumper cables. Orange connected to GPIO17, red connected to GPIO18, & brown connected to GND.

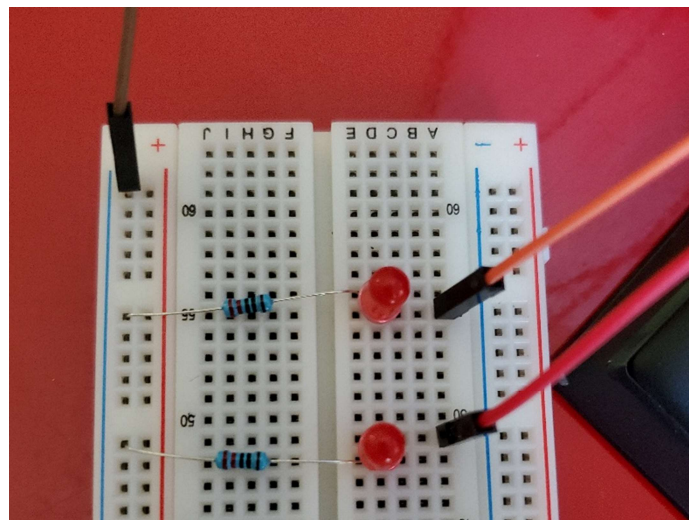


Fig. 2: Testing breadboard

Python Script:

```
import RPi.GPIO as GPIO
import time

# GPIO numbering
GPIO.setmode(GPIO.BCM)

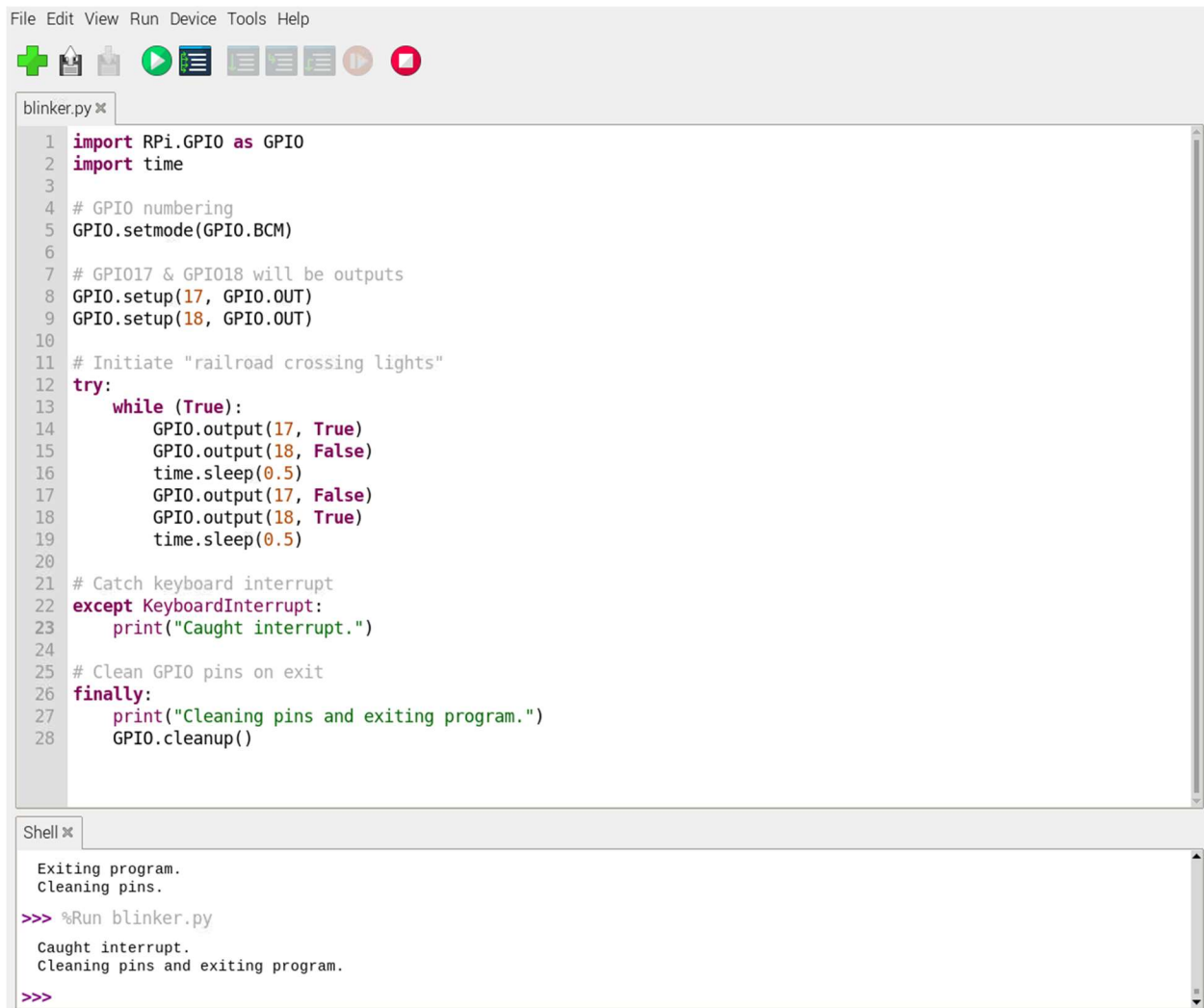
# GPIO17 & GPIO18 will be outputs
GPIO.setup(17, GPIO.OUT)
GPIO.setup(18, GPIO.OUT)

# Initiate "railroad crossing lights"
try:
    while (True):
        GPIO.output(17, True)
        GPIO.output(18, False)
        time.sleep(0.5)
        GPIO.output(17, False)
        GPIO.output(18, True)
        time.sleep(0.5)

# Catch keyboard interrupt
except KeyboardInterrupt:
    print("Caught interrupt.")

# Clean GPIO pins on exit
finally:
    print("Cleaning pins and exiting program.")
    GPIO.cleanup()
```

Thonny Screen Capture:



The screenshot shows the Thonny IDE interface. The top menu bar includes File, Edit, View, Run, Device, Tools, and Help. Below the menu is a toolbar with icons for file operations and execution. The main editor window displays a Python script named `blinker.py` with the following code:

```
1 import RPi.GPIO as GPIO
2 import time
3
4 # GPIO numbering
5 GPIO.setmode(GPIO.BCM)
6
7 # GPIO17 & GPIO18 will be outputs
8 GPIO.setup(17, GPIO.OUT)
9 GPIO.setup(18, GPIO.OUT)
10
11 # Initiate "railroad crossing lights"
12 try:
13     while (True):
14         GPIO.output(17, True)
15         GPIO.output(18, False)
16         time.sleep(0.5)
17         GPIO.output(17, False)
18         GPIO.output(18, True)
19         time.sleep(0.5)
20
21 # Catch keyboard interrupt
22 except KeyboardInterrupt:
23     print("Caught interrupt.")
24
25 # Clean GPIO pins on exit
26 finally:
27     print("Cleaning pins and exiting program.")
28     GPIO.cleanup()
```

The bottom Shell window shows the output of the program's execution:

```
Exiting program.
Cleaning pins.

>>> %Run blinker.py

Caught interrupt.
Cleaning pins and exiting program.

>>>
```