Python Project: Week 2 Report

● Graded

Group

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View or edit group

Total Points

45 / 45 pts

Question 1

Workload Division

5 / 5 pts

✔ **– 0 pts** Correct

Question 2

Preliminary Comment

10 / 10 pts

✔ **– 0 pts** Correct

Question 3

Control the LED

25 / 25 pts

✔ **– 0 pts** Correct

Question 4

Integration with the Crawler

5 / 5 pts

✔ **– 0 pts** Correct

Questions assigned to the following page: 1, 2, and 3

Project Report - Week 2

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references
difficulties
Control the LED
The connection of LEDs to Pi
Class for LED control & How to determine which LED to control
Integration with the Crawler
How to differ importing the module from running directly

SI100B Project Report - GPIO

Please submit this report as a PDF file along with your code to receive full score of the project.

Workload Division

- 颜毅恒（yanyh1@shanghaitech.edu.cn）& 彭琬迪（pengwd@shanghaitech.edu.cn）:

  Study the documentations and figure out how to realize the requirements. Write the project report.

- 苏慧哲（suhzh@shanghaitech.edu.cn or vhtmscyo@gmail.com）:

  Write python program .

Preliminary Comment

references

- GPIO - Raspberry Pi Documentation
- gpiozero
- week2.pdf

difficulties

- One of the LEDs is broken.

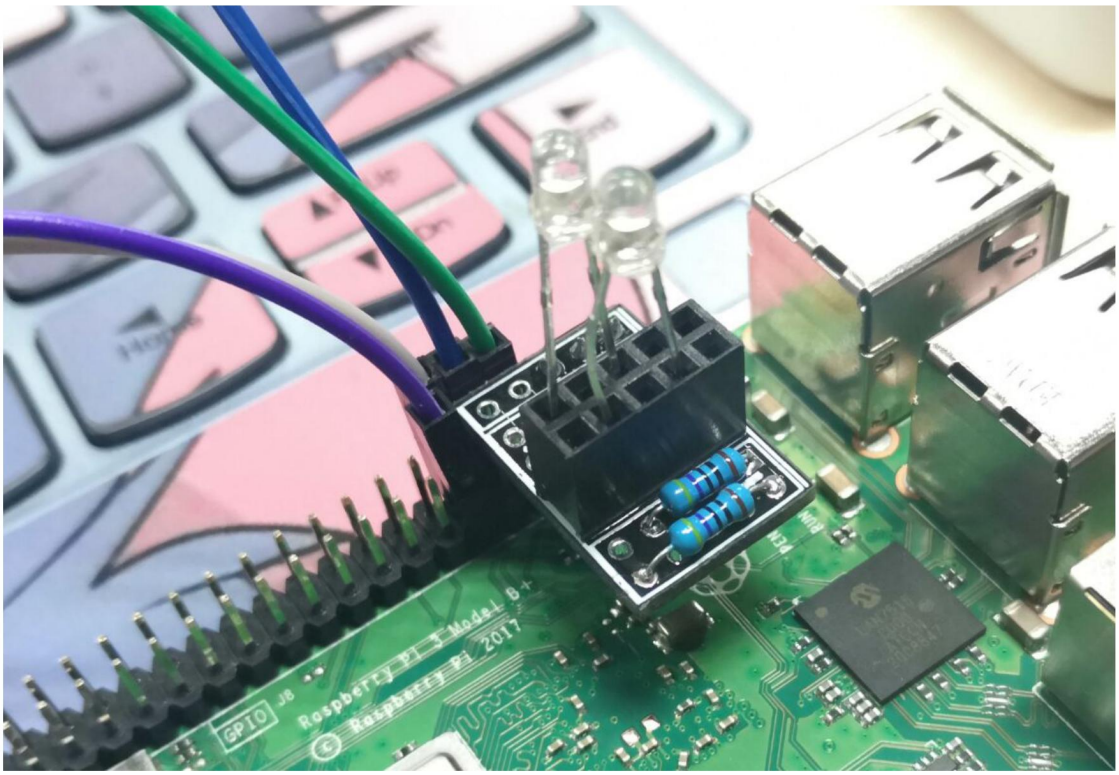
Control the LED

The connection of LEDs to Pi

Question assigned to the following page: 3

LEDs	GPIO pins
LED 0	GPIO 26
LED 1	GPIO 19
LED 2	GPIO 12
LED 3	GPIO 5

The picture of Pi is as follows:



Class for LED control & How to determine which LED to control

- Class `BaseController` is used to control the LEDs.
- We have a private member in the class called `__digit` that contains 4 PWMLED instances as a list to control different LEDs.

```
class BaseController:
    def __init__(self):
        kStich = [26, 19, 12, 5]
        self.__digit = [
            PWMLED(i, initial_value=0, frequency=120) for i in kStich
        ]

    def work_once(self, num):
        print("NUM:", num)
        if num == 0:
            for i in range(3):
                self.__digit[0].value = self.__digit[1].value = 1
                sleep(0.2)
                self.__digit[0].value = self.__digit[1].value = 0
```

```
                sleep(0.2)
```

Questions assigned to the following page: 3 and 4

```
        elif num > 15:
            for i in range(3):
                self.__digit[2].value = self.__digit[3].value = 1
                sleep(0.2)
                self.__digit[2].value = self.__digit[3].value = 0
                sleep(0.2)
        else:
            for i in range(4):
                self.__digit[i].value = num % 2
                num //= 2
```

Integration with the Crawler

How to differ importing the module from running directly

The value of `__name__` is set to `__main__` when the module is run as a main program and to the module's name when the module is imported by another module. We only need to check `if __name__ == '__main__'` to differ importing situation from running directly.

```
if __name__ == '__main__':
    import sys
    if len(sys.argv) > 1:
        kLatitude = float(sys.argv[1])
        kLongitude = float(sys.argv[2])
    else:
        kLatitude = 31.17940
        kLongitude = 121.59043
    crl = FlightAwareCrawler((kLatitude, kLongitude),
                             (kLatitude + 0.35, kLongitude - 0.35))
    state = State()
    for i in range(5):
        crl.spin(max_loop=1)
        state.spin(max_loop=1)
```