Lesson 2 GPIO Pin Input Reading

1. GPIO Pin Introduction

GPIO (General Purpose Input/Output) port is a set of pins on the master of electronic devices used to send and receive electronic signals. You can connect these pins to external hardware devices to achieve functions for external communication, external hardware control, or external hardware data collection.

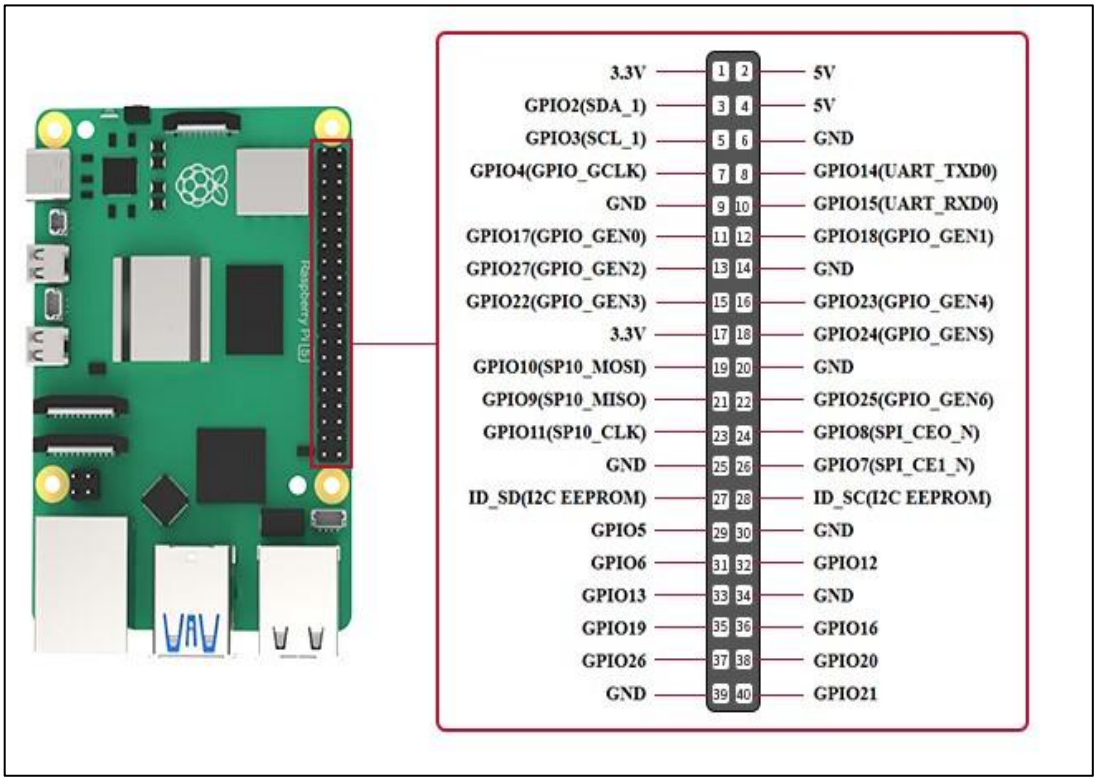
2. Input Introduction

GPIO input detects each pin's voltage level status, which is classified as either high or low. A high level represents the presence of voltage represented by the numerical symbol "1", and a low level typically refers to GND represented by the numerical symbol "0".

3. Raspberry Pi 5 GPIO Pin Introduction

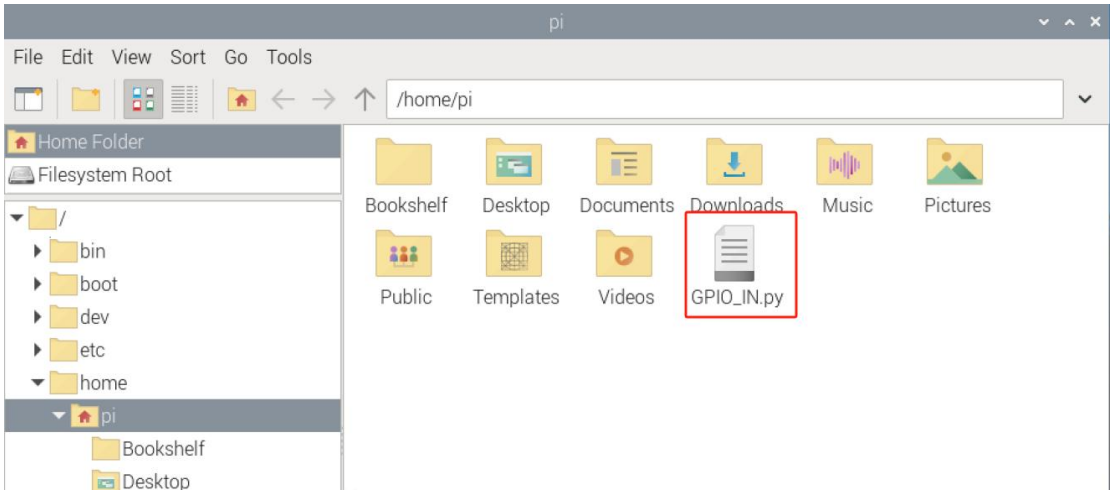
Raspberry Pi 5 features a 40-pin header that allows for easy use with a variety of expansion boards. GPIOD library can control these GPIO pins to read, write, interrupt, PWM, etc.

The distribution diagram of the GPIO pins is as follows:



4. Input Reading

1) Import the program file “GPIO_IN.py” into the home directory of the Raspberry Pi 5 system.



2) Press “Ctrl+Alt+T” to open the command line terminal and enter the “sudo python3 GPIO_IN.py” command, then press “Enter” to execute the

program.

3) After executing the program, it prints the input data of pin17. A voltage input will be represented as “1”, while no voltage input will be represented as “0”. Press “Ctrl+C” to stop running the program.

5. Program Analysis

```
import gpiod

chip = gpiod.Chip('gpiochip0')

line = chip.get_line(17)

line.request(consumer='gpio_input',type=gpiod.LINE_REQ_DIR_IN)

try:
    while True:
        value = line.get_value()
        print(f'GPIO Line 17 value: {value}')

finally:
    line.release()
    chip.close()
```

1) Import the necessary modules.
2) Initialize the GPIO controller and set the required GPIO port.
3) Use the “line.get_value()” method to read the status of GPIO pin17.
4) Release the GPIO port and close the GPIO controller at the end.