

2.10 GPIO read write

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In the `/app/40pin_samples/` directory of the development board, various functional testing codes for 40PIN pins are pre-set, including input/output testing for gpio, PWM, I2C, SPI, UART, and other tests. All test programs are written in Python language.

Taking `/app/40pin_samples/button_1ed.py` as an example, this program configures pin 38 as input and pin 36 as output, and controls the output state of pin 36 based on the input state of pin 38.

1. Preparation

Connect `pin 38` to 3.3V or GND using a DuPont wire to control its high and low voltage levels.

RDX X3 Board 40Pin Table														
Reuse function 2	Reuse function 1	Reuse function 0	Function Description	X3 Pin Number	BCM Encoding	CVM Function	Physical Pin Board Encoding	CVM Function	BCM Encoding	X3 Pin Number	Function Description	Reuse function 0	Reuse function 1	Reuse function 2
			3.3V power signal			VDD_3V3	1	2	VDD_5V		5V power signal			
		I2C0_SDA	I2C0 data signal	9	2	I2C0_SDA	3	4	VDD_5V		5V power signal			
		I2C0_CLK	I2C0 clock signal	8	3	I2C0_SDC	5	6	GND		GND signal			
		I2S0_MCLK	I2S0 MCLK clock signal	101	4	I2S0_MCLK	7	8	UART_TXD	14	111	UART3 send signal	UART3_TXD	
			GND signal			GND	9	10	UART_RXD	15	112	UART3 receive signal	UART3_RXD	
PWM7	SPI2_MOSI	I2C2_CLK	GPIO17 signal	12	17	GPIO17	11	12	I2S0_BCLK	18	102	I2S0 BCLK clock signal	I2S0_BCLK	
PWM8	SPI2_MISO	I2C2_SDA	GPIO27 signal	13	27	GPIO27	13	14	GND			GND signal		
			GPIO22 signal	30	22	GPIO22	15	16	GPIO23	23	27	GPIO23 signal		
			3.3V power signal			VDD_3V3	17	18	GPIO24	24	22	GPIO24 signal	PWM1	
	SPI1_MOSI		SPI1 MOSI signal	6	10	SPI1_MOSI	19	20	GND			GND signal		
	SPI1_MISO		SPI1 MISO signal	7	9	SPI1_MOSI	21	22	GPIO25	25	29	GPIO25 signal		
	SPI1_SCLK		SPI1 CLK signal	3	11	SPI1_SCLK	23	24	SPI1_CSN	8	5	SPI1 CS signal	SPI1_CSN	
			GND signal			GND	25	26	GPIO7	7	28	GPIO7 signal		
	SPI2_CSN	I2C3_SDA	I2C3 clock signal	15	0	I2C3_SDA	27	28	I2C3_SCL	1	14	I2C3 signal	I2C3_SCL	SPI2_SCLK
	LPWM3		GPIO5 signal	119	5	GPIO5	29	30	GND			GND signal		
	LPWM2		GPIO6 signal	118	6	GPIO6	31	32	PWM4	12	25	PWM4 signal	PWM4	
PWM0			PWM0 signal	4	13	PWM0	33	34	GND			GND signal		
		I2S0_LRCK	I2S0 LRCK signal	103	19	I2S0_LRCK	35	36	GPIO16	16	20	GPIO16 signal		
	LPWM1		GPIO26 signal	117	26	GPIO26	37	38	I2S1_SDIO	20	108	I2S1_SDIO signal	I2S1_SDIO	
			GND signal			GND	39	40	I2S0_SDIO	21	104	I2S0_SDIO signal	I2S0_SDIO	

2. Run mode

Execute the `button_1ed.py` program to start GPIO read-write programs.

```
sunrise@ubuntu:~$ cd /app/40pin_samples/
sunrise@ubuntu:/app/40pin_samples$ sudo python3 ./button_1ed.py
```

3. Result

By controlling the high and low levels of `pin 38`, the output level of `pin 36` can be changed.

```
sunrise@ubuntu:/app/40pin_samples$ sudo python3 ./button_1ed.py
Starting demo now! Press CTRL+C to exit
Outputting 0 to Pin 36
Outputting 1 to Pin 36
Outputting 0 to Pin 36
```

```
sunrise@ubuntu:/app/40pin_samples$ sudo python3 ./button_led.py
Starting demo now! Press CTRL+C to exit
Outputting 1 to Pin 36
Outputting 0 to Pin 36
Outputting 1 to Pin 36
Outputting 0 to Pin 36
Outputting 1 to Pin 36
Outputting 0 to Pin 36
Outputting 1 to Pin 36
Outputting 0 to Pin 36
Outputting 1 to Pin 36
```