GPIO readwrite operation

In the development board `/app/40pin_samples/` directory, a variety of 40PIN pin function test codes are preset, including gpio input/output test, PWM, I2C, SPI, UART and other tests. All test programs are written in Python language. For details, please refer to other modules in this chapter.

Taking `/app/40pin_samples/button_led.py` as an example, the program configures pin `37` as input, pin `36` as output, and controls the output state of pin `36` according to the input state of pin `37`.

1. Environment Preparation

Use a Dupont wire to connect pin 37 to 3.3v or GND to control its high and low levels.

RDX X5 Board 40Pin Table

Reuse function3	Reuse function2	Reuse function1	Reuse function 0	Function Description	X5 Pin Number	BCM Encoding	CVM Function	Physical Pin Board Encoding		CVM Function	BCM Encoding	X5 Pin Number	Function Description	Reuse function 0	Reuse function1	Reuse function2	Reuse function3
				3.3V power signal			VDD_3V3	1	2	VDD_5V			5V power signal				
	LSIO_GPIO0_11	SDA5	UART3_TXD	I2C0 data signal	387	2	I2C5_SDA	3	4	VDD_5V			5V power signal				
	LSIO_GPIO0_10	SCL5	UART3_RXD	I2C0 clock signal	389	3	I2C5_SCL	5	6	GND			GND signal				
		DSP_GPIO_09	DSP_MCLK1	I2S0 MCLK clock signal	420	4	I2S1_MCLK	7	8	UART_TXD	14	383	UART1 send signal	UART1_TXD		LSIO_GPIO0_5	
				GND signal			GND	9	10	UART_RXD	15	384	UART1 receive signal	UART1_RXD		LSIO_GPIO0_4	
	LSIO_GPIO0_1		UART7_TXD	GPIO17 signal	380	17	GPIO17	11	12	I2S1_BCLK	18	421	I2S1 BCLK clock signal	I2S1_BCLK	DSP_GPIO_10		
	LSIO_GPIO0_0		UART7_RXD	GPIO27 signal	379	27	GPIO27	13	14	GND			GND signal				
	LSIO_GPIO0_9		UART2_TXD	GPIO22 signal	388	22	GPIO22	15	16	GPIO23	23	382	GPIO23 signal	UART0_RTS	UART6_TXD	LSIO_GPIO0_3	
				3.3V power signal			VDD_3V3	17	18	GPIO24	24	402	GPIO24 signal	SPI2_MOSI	LSIO_GPIO0_23		LSIO_PWM_OUT3
	JTG_TDO	LSIO_GPIO0_19	SPI1_MOSI	SPI1 MOSI signal	398	10	SPI1_MOSI	19	20	GND			GND signal				
	JTG_TDI	LSIO_GPIO0_18	SPI1_MISO	SPI1 MISO signal	397	9	SPI1_MISO	21	22	GPIO25	25	387	GPIO25 signal	UART2_RXD		LSIO_GPIO0_8	
	JTG_TCK	LSIO_GPIO0_16	SPI1_SCLK	SPI1 CLK signal	395	11	SPI1_SCLK	23	24	SPI_CSN0	8	394	SPI1 SSN1 signal	SPI1_CSN1	LSIO_GPIO0_15	JTG_TMS	
				GND signal			GND	25	26	SPI_CSN1	7	396	SPI1 SSN0 signal	SPI1_CSN0	LSIO_GPIO0_17	JTG_TRSTN	
LSIO_PWM_OUT5		LSIO_GPIO1_8	SDA0	I2C3 clock signal	355	0	I2C0_SDA	27	28	I2C0_SCL	1	354	I2C0 signal	SCL0	LSIO_GPIO1_7		LSIO_PWM_OUT4
LSIO_PWM_OUT0		LSIO_GPIO0_20	SPI2_SCLK	GPIO5 signal	399	5	GPIO5	29	30	GND			GND signal				
LSIO_PWM_OUT1	TIME_SYNC2	LSIO_GPIO0_21	SPI2_SSN	GPIO6 signal	400	6	GPIO6	31	32	PWM6	12	356	PWM6 signal	SCL1	LSIO_GPIO1_9	TIME_SYNC1	LSIO_PWM_OUT6
LSIO_PWM_OUT7		LSIO_GPIO1_10	SDA1	PWM0 signal	357	13	PWM7	33	34	GND			GND signal				
		DSP_GPIO_11	I2S1_LRCK	I2S0 LRCK signal	422	19	I2S1_LRCK	35	36	GPIO16	16	381		UART0_CTS	UART6_RXD	LSIO_GPIO0_2	
LSIO_PWM_OUT2		LSIO_GPIO0_22	SPI2_MISO	GPIO26 signal	401	26	GPIO26	37	38	I2S1_SDIN	20	423	I2S1 DI signal	I2S1_DIN	DSP_GPIO_12		
				GND signal			GND	39	40	I2S1_SDOUT	21	424	I2S1 DO signal	I2S1_DOUT	DSP_GPIO_13		

2. How it works

Execute the `button_led.py` program to start the GPIO reading and writing program

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

3. Expected Results

By controlling the high and low levels of pin `37`, the output level value of pin `36` can be changed.

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