

Example of GPIO Read and Write Operations

Example of GPIO Read and Write Operations

1. Environment Setup
2. Running the Program
3. Expected Results

The development board's `/app/40pin_samples/` directory contains pre-installed functional test code for various 40-pin functions, including GPIO input/output testing, PWM, I2C, SPI, UART, etc. All test programs are written in Python. Detailed information can be found in other modules of this chapter.

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

1. Environment Setup

Connect pin 37 to 3.3V or GND using a jumper wire to control its high and low voltage levels.

S100(P) RDK 40-Pin Function Comparison Table																
Multiplexing Function 3	Multiplexing Function 2	Multiplexing Function 1	Multiplexing Function 0	Function Description	S100(P) Pin Number	BCM Code	CVM Function Name	Physical Pin BOARD Encoding	CVM Function Name	BCM Code	S100(P) Pin Number	Function Description	Multiplexing Function 0	Multiplexing Function 1	Multiplexing Function 2	Multiplexing Function 3
				3V3 Power Signal			VDD_40PIN_3V3	1 2	VDD_PERI2_5V			5V Power Signal				
GPIO_PER16		UART2_TX	I2C5_SDA	I2C5 Data Signal	496	2	I2C5_SDA_3V3	3 4	VDD_PERI2_5V			5V Power Signal				
GPIO_PER15		UART2_RX	I2C5_SCL	I2C5 Clock Signal	495	3	I2C5_SCL_3V3	5 6	GND			Ground Signal				
GPIO_PER33			PCMO_MCLK	PCMO MCLK Signal	475	4	PCMO_MCLK_3V3	7 8	UART2_TX_3V3	14	496	UART Transmit Signal	I2C5_SDA	UART2_TX		GPIO_PER16
				Ground Signal			GND	9 10	UART2_RX_3V3	15	495	UART Receive Signal	I2C5_SCL	UART2_RX		GPIO_PER15
				40PIN_GPIO0 Signal	407	17	40PIN_GPIO0_3V3	11 12	PCMO_BCLK_3V3	18	476	PCMO BCLK Signal	PCMO_BCLK			GPIO_PER34
				40PIN_GPIO1 Signal	408	27	40PIN_GPIO1_3V3	13 14	GND			Ground Signal				
				40PIN_GPIO2 Signal	409	22	40PIN_GPIO2_3V3	15 16	40PIN_GPIO6_3V3	23	413	40PIN_GPIO6 Signal				
				3V3 Power Signal			VDD_40PIN_3V3	17 18	40PIN_GPIO7_3V3	24	414	40PIN_GPIO7 Signal				
				Ground Signal			GND	19 20	GND			Ground Signal				
GPIO_PER19		SPI0_MOSI	SPI0_MOSI	SPI0 MOSI Signal	499	10	SPI0_MOSI_3V3	19 20	GND			Ground Signal				
GPIO_PER20		SPI0_MISO	SPI0_MISO	SPI0 MISO Signal	500	9	SPI0_MISO_3V3	21 22	40PIN_GPIO8_3V3	25	415	40PIN_GPIO8 Signal				
GPIO_PER21		SPI0_SCLK	SPI0_SCLK	SPI0 SCLK Signal	501	11	SPI0_SCLK_3V3	23 24	SPI0_CS0_3V3	8	497	SPI0 CS0 Signal	SPI0_CS0			GPIO_PER17
				Ground Signal			GND	25 26	SPI0_CS1_3V3	7	498	SPI0 CS1 Signal	SPI0_CS1	UART3_RXD		GPIO_PER18
GPIO_CAM17		I2C4_SDA	I2C4_SDA	I2C4 Data Signal	473	0	I2C4_SDA_3V3	27 28	I2C4_SCL_3V3	1	472	I2C4 Clock Signal	I2C4_SCL			GPIO_CAM16
				40PIN_GPIO3 Signal	410	5	40PIN_GPIO3_3V3	29 30	GND			Ground Signal				
				40PIN_GPIO4 Signal	411	6	40PIN_GPIO4_3V3	31 32	GPIO_CAM_5_3V3	12	461	GPIO_CAM5 Signal	LPWM1_DOUT1			GPIO_CAM5
GPIO_CAM4		LPWM1_DOUT1	GPIO_CAM4	GPIO CAM4 Signal	460	13	GPIO_CAM_4_3V3	33 34	GND			Ground Signal				
GPIO_PER35		PCMO_FSYNC	PCMO_FSYNC	PCMO Data Sync Signal	477	19	PCMO_FSYNC_3V3	35 36	40PIN_GPIO9_3V3	16	416	40PIN_GPIO9 Signal				
				40PIN_GPIO5 Signal	412	26	40PIN_GPIO5_3V3	37 38	PCMO_DATA0_3V3	20	478	PCMO Data Signal	PCMO_DATA0			GPIO_PER36
				Ground Signal			GND	39 40	PCMO_DATA1_3V3	21	479	PCMO Data Signal	PCMO_DATA0			GPIO_PER37

2. Running the Program

Execute the `button_led.py` program to start the GPIO read and write 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 voltage levels of pin 37, you can change the output voltage level of pin 36.

```
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
```

