

[個人實驗報告]hw3 I2C

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github link: https://github.com/shex2016/embeddingSysHw4Ble/tree/master/hw3_i2c

一、I2C: rpi vs Arduino

[觀察]define 0x04 SLAVE_ADDRESS :

這個在arduino上會寫到Wire.begin(SLAVE_ADDRESS)，目的為指定Arduino 的I2C排線為slave角色。

二、ADXL

看看ADXL345的datasheet就可以知道他有很多register可以設定，列舉程式碼中c語言的設定如下：

```
20 // Select Bandwidth rate register(0x2C)
21 // Normal mode, Output data rate = 200 Hz(0x14)
22 char config[2]={0};
23 config[0] = 0x2C;
24 config[1] = 0x14;
25 write(file, config, 2);
26 // Select Power control register(0x2D)
27 // Auto-sleep disable(0x08)
28 config[0] = 0x2D;
29 config[1] = 0x08;
30 write(file, config, 2);
31 // Select Data format register(0x31)
32 // Self test disabled, 4-wire interface, Full resolution, range = +/-2g(0x08)
33 config[0] = 0x31;
34 config[1] = 0x08;
35 write(file, config, 2);
```

REGISTER MAP

Table 19.

Address		Name	Type	Reset Value	Description
Hex	Dec				
0x00	0	DEVID	R	11100101	Device ID
0x01 to 0x1C	1 to 28	Reserved			Reserved; do not access
0x1D	29	THRESH_TAP	R/W	00000000	Tap threshold
0x1E	30	OFSX	R/W	00000000	X-axis offset
0x1F	31	OFSY	R/W	00000000	Y-axis offset
0x20	32	OFSZ	R/W	00000000	Z-axis offset
0x21	33	DUR	R/W	00000000	Tap duration
0x22	34	Latent	R/W	00000000	Tap latency
0x23	35	Window	R/W	00000000	Tap window
0x24	36	THRESH_ACT	R/W	00000000	Activity threshold
0x25	37	THRESH_INACT	R/W	00000000	Inactivity threshold
0x26	38	TIME_INACT	R/W	00000000	Inactivity time
0x27	39	ACT_INACT_CTL	R/W	00000000	Axis enable control for activity and inactivity detection
0x28	40	THRESH_FF	R/W	00000000	Free-fall threshold
0x29	41	TIME_FF	R/W	00000000	Free-fall time
0x2A	42	TAP_AXES	R/W	00000000	Axis control for single tap/double tap
0x2B	43	ACT_TAP_STATUS	R	00000000	Source of single tap/double tap
0x2C	44	BW_RATE	R/W	00001010	Data rate and power mode control

其中像是作業要求的Output data rate = 200 Hz，根據上圖，就要在圖中最後一行標出的0x2c register寫0x14進去。這些設定算是操控adxl需要花些心思查資料的部份。

二、心得感想

這次我學會了如何查元件的datasheet來更改我要的參數，也體會樂如何把rpi跟arduino兩種平台以I2C相接，算是把上課知識實際操作一遍了，真是獲益良多！