實習題目－2
LED燈條控制

溫進坤

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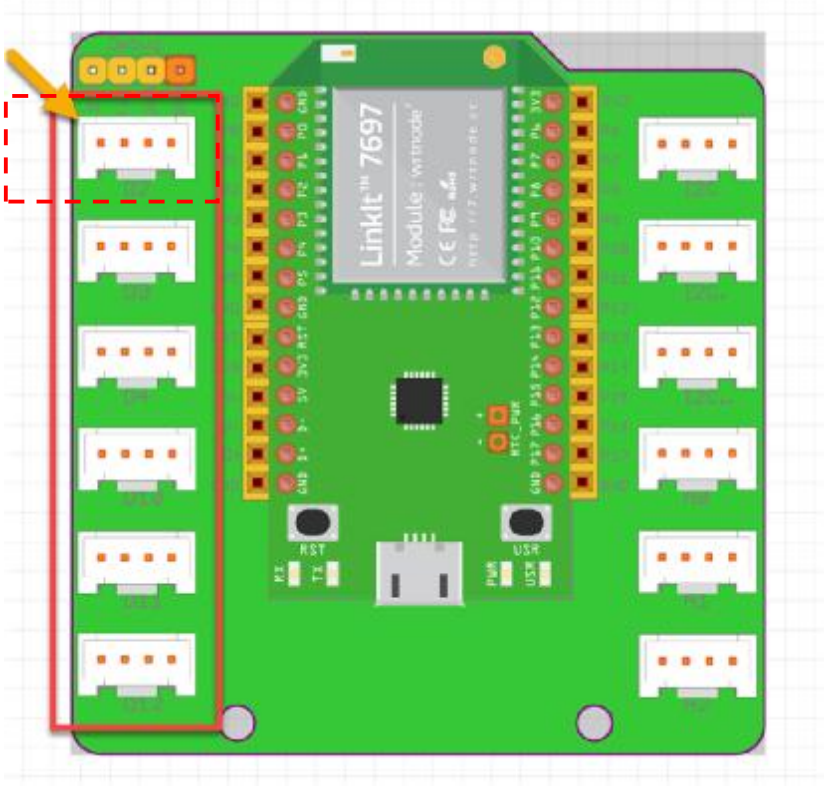
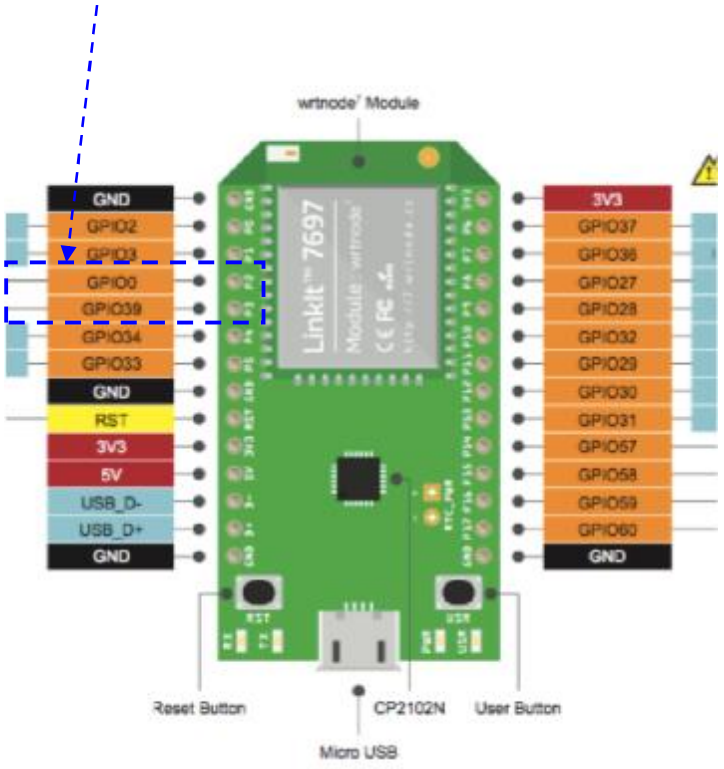
題目功能

1. 開機後LED BAR 全熄滅
2. 每按下一次USR BUTTON後，LED BAR依序增加一條顯示，同時COM Port送出 “LED BAR = xxxx \r\n” 字串。(xxxx為十進制的MY9221寫入值，Bit0對應第1條紅色LED..Bit9對應第10條黃色LED)
3. 當LED BAR全亮後，再按下USR BUTTON，LED BAR 則回復成顯示第一條。

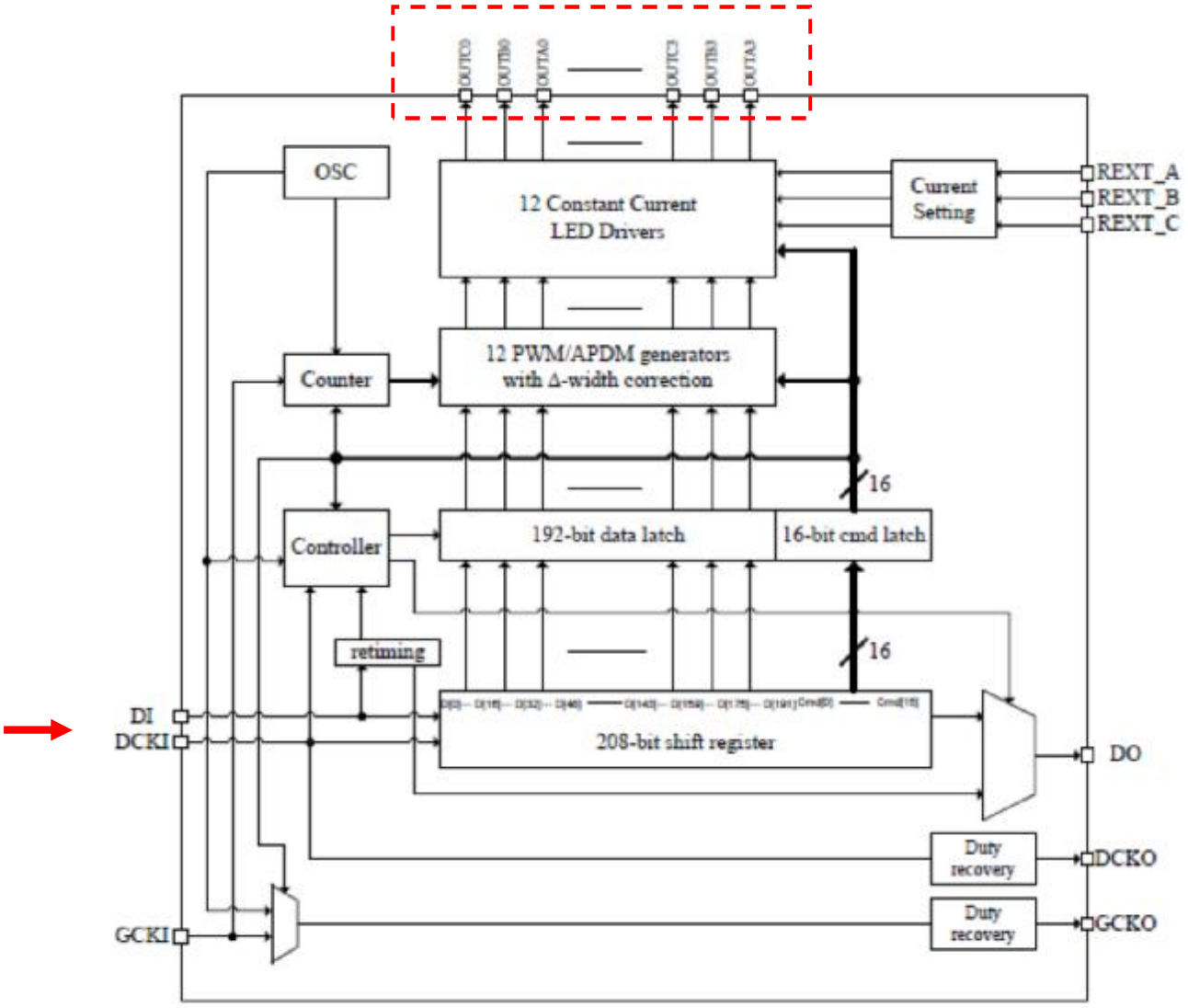
GPIO Define

- LED BAR V2.0插在擴充板D2位置
- LED BAR DATA pin -> GPIO0
- LED BAR CLK Pin -> GPIO39

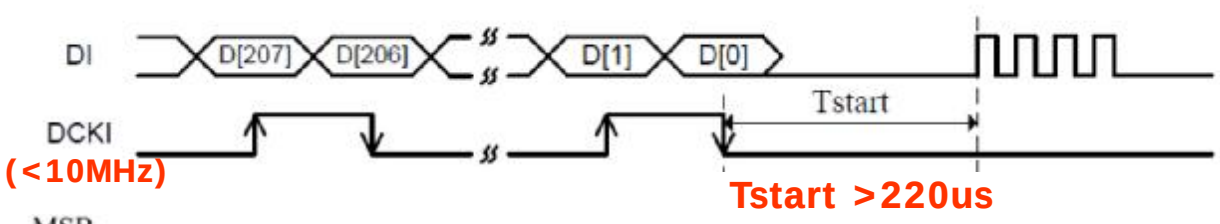




MY9221 Block Diagram

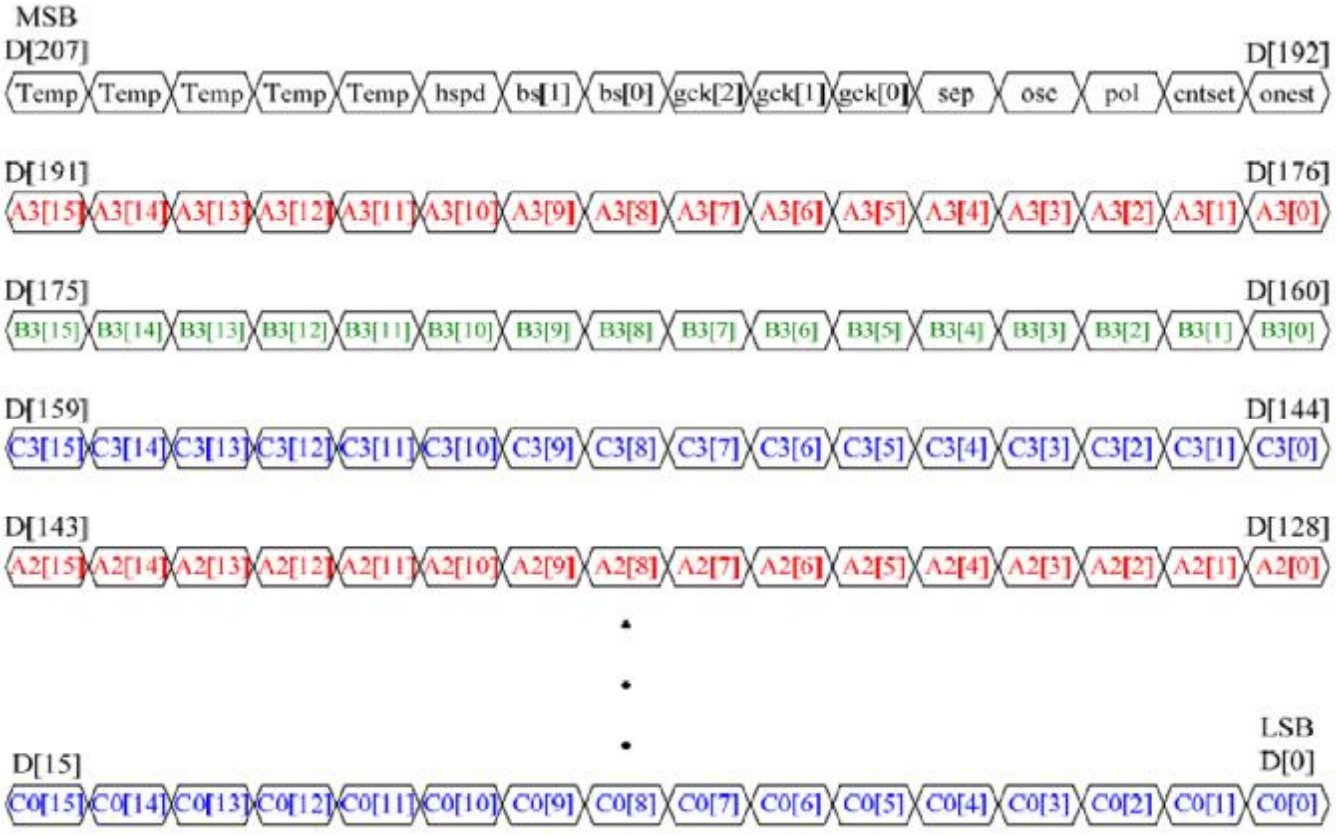


MY9221 Control Waveform



16-bit command data and 12x16-bit PWM data. (Total: 208-bit)

xx : 00 or FF



CMD:0x0000

LED1:0x00xx

LED2:0x00xx

LED3:0x00xx

LED4:0x00xx

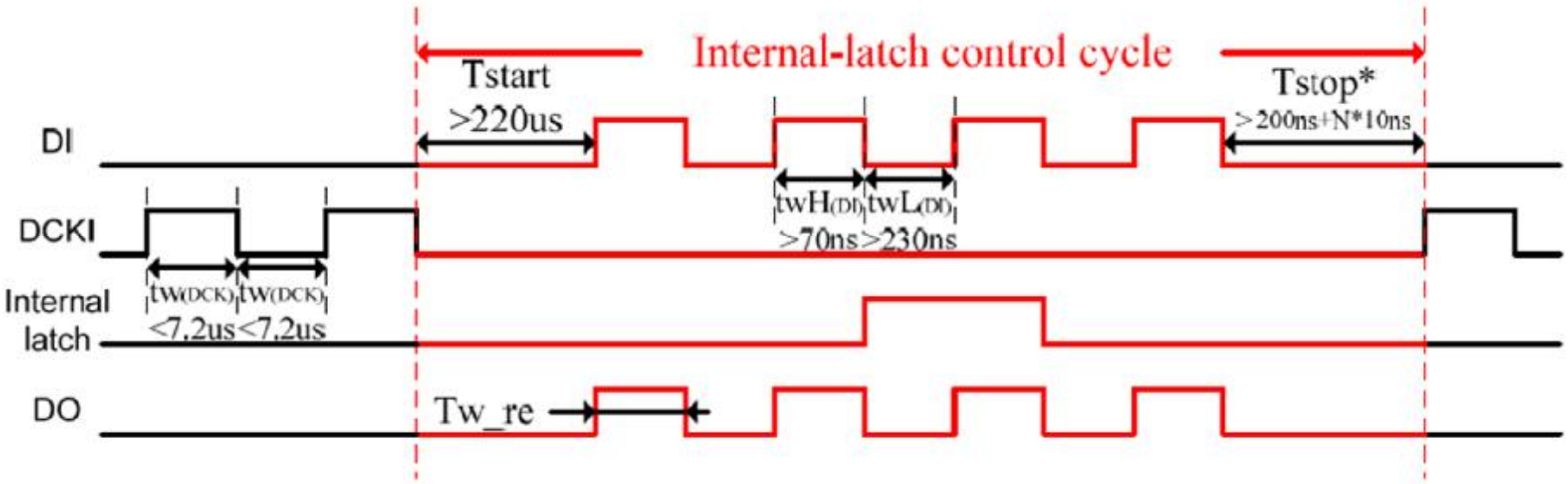
LED12:0x00xx

MY9221 Control Waveform ..

Internal-latch control cycle timing diagram

- **The steps to trigger internal-latch function are shown below:**
- **1. After whole given serial data are shifted into shift register, keeping DCKI at a fixed level**
- **(no matter "high" or "low") for more than 220us. (Tstart > 220us)**
- **2. Send 4 DI pulses (twH(DI)>70ns, twL(DI)> 230ns, Tstop*)**
- **3. Data is loaded into the latch register at 2nd falling edge of DI pulse**

*Tstop (min.) for cascade application must > "200ns + N*10ns"
(N is the cascade number of drivers)



計分方式

1. 程式完成後請助教確認功能是否正確，並給予完成順序號。
2. 檢查後立即將主程式(main.c)上傳至Moodle[繳交作業]，並在檔名依序寫上實習題目號碼、完成順序號。(檔名:main.c.Lab_2_No_xx)
3. 計分標準依完成順序及程式內容給分，若發現程式有互相抄襲狀況，該兩人分數皆為0分。

參考資料

- http://labs.mediatek.com/api/mt7687/
- LinkIt SDK for 7697 API Reference Manual.html
- LinkIt_for_RTOS_Get_Started_Guide.pdf
- MY9221_DS_1.0.pdf
- https://docs.labs.mediatek.com/linkit-7697-blocklyduino/b05-grove-led-12880247.html