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| 112 2 嵌入式作業系統分析與實作 Lab Report | | | |
| Lab Date: | 3/21 | Lab No: | Lab 1 |
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| Q1 簡述這次lab實驗內容:  MultiTasking  Two tasks: one for LED controlling, the other for Button handling  Using Inter-Task Communication (ITC) mechanism  LED-task has 2 states (S1, S2)  S1 (紅綠LED輪流)：  First, only Green LED lights up for 2 seconds,  and then only Red LED lights up for 2 seconds,  and then switches back to the Green LED, then RED, and so on  S2 (橘色LED)：  Only Orange LED is blinking (1 second ON, 1 second OFF, …)  Button-task: If the button is pressed, the LED-task will switch to the other state (And execute from the start point of that state) | | | |
| Q2 簡述這次lab遇到的困難或是完成心得:  如何debounce和用16 bits來當作bool。  Button Bounce：當你按下或釋放一個物理按鈕時，按鈕的電子接觸可能不會立即穩定在其最終狀態。  參考Code 片段:  bool debounce() {  state = (state<<1) | digitalRead(btn) | 0xfe00;  return (state == 0xff00);  }  iteration = 1 時，按下按鈕得到 1 ，這時state是0000 0000 0000 0001  iteration = 2 ~ 10，按鈕bounce，每個iteration可能得到0或1  設iteration = 10時，state是 0000 0010 1101 0011  iteration = 11，開始穩定，buttonState == 0000 0101 1010 0110  iteration = 12，state == 0000 1011 0100 1100  iteration = 13，state == 0001 0110 1001 1000  iteration = 14，state == 0010 1101 0011 0000  iteration = 15，state == 0101 1010 0110 0000  iteration = 16，state == 1011 0100 1100 0000  iteration = 17，state == 0110 1001 1000 0000  iteration = 18，state == 1101 0011 0000 0000  當iteration = 18，state (1101 0011 0000 0000) 做 | 0xFE00 會得到 1111 1111 0000 0000，這時(state == 0xFF00) 才會成立，代表已經穩定了 | | | |
| Q3 其他(optional):  Hardware Debounce:   1. 電容器 2. RC電路   Software Debounce:   1. 延遲計數：在軟體中實施一個計數器或計時器，當按鈕被按下或釋放時開始計數。只有在計數達到一個特定值之後，才被認為按鈕操作是穩定的。 2. 狀態機   主要function:  GPIO\_PinState HAL\_GPIO\_ReadPin(GPIO\_TypeDef\* GPIOx, uint16\_t GPIO\_Pin);  void HAL\_GPIO\_WritePin(GPIO\_TypeDef\* GPIOx, uint16\_t GPIO\_Pin, GPIO\_PinState PinState);  void HAL\_GPIO\_TogglePin(GPIO\_TypeDef\* GPIOx, uint16\_t GPIO\_Pin); | | | |
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