

1. microcontroller กับ microprocessor 3 ข้อ

Microcontroller (MCU)

- contain a processor core, memory, and some peripherals
- Microcontrollers are designed for embedded applications

Microprocessors

- used in personal computers
- general purpose applications
- consisting of various discrete chips

2. ทำไมถึงต้องมี debouncing

a mechanical contact between the two surfaces would cause a bounce. (The same idea when dropping a ball to the floor. The ball may bounce few times before stopping at the floor.) The push-button switch also cause a bounce when it is being pressed. From an oscilloscope, the bounce is observed as Illustration. If a program does not carefully avoid the bounce, we may easily observe multiple clicks from only one physical click.

A way to avoid reading multiple clicks from a single click is called debounce

3. เขียน functionality ของ timer มา 3 ข้อ

(I Think, this may be some answers)

- General-purpose timers are used in any application for output compare (timing and delay generation), one-pulse mode, input capture (for external signal frequency measurement), sensor interface (encoder, hall sensor)...
- Advanced timers : these timers have the most features. In addition to general purpose functions, they include several features related to motor control and digital power conversion applications: three complementary signals with deadtime insertion, emergency shut-down input.
- One or two channel timers : used as general-purpose timers with a limited number of channels.
- One or two channel timers with complementary output : same as previous type, but having a deadtime generator on one channel. This allows having complementary signals with a time base independent from the advanced timers.
- Basic timers have no input/outputs and are used either as timebase timers or for triggering the DAC peripheral.
- Low-power timers are simpler than general purpose timers and their advantage is the ability to continue working in low-power modes and generate a wake-up event.
- High-resolution timers are specialized timer peripherals designed to drive power conversion in lighting and power source applications. It is however also usable in other fields that require very fine timing resolution. AN4885 and AN4449 are practical examples of high-resolution timer use.

4. ให้รับ string ไม่เกิน 64 ตัว ผ่าน UART แล้วเมื่อเจอ \r ให้ส่งกลับเป็น reversed string ที่ต่อด้วย \r\n (“ABC\r ” -> “CBA\r\n”)