

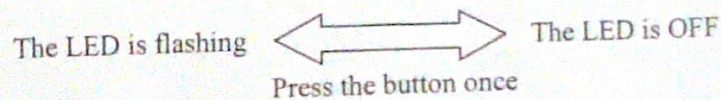
EIE3105 Quiz 2 (Interrupt Programming) (60 minutes)

Instructions:

1. You should open a new project for each question. The project name should be Quiz< version no.><question no.>, e.g., Quiz2BQ1.
2. At the beginning of your program file, you have to add a comment to show your student name and identity number, e.g., // Chan Tai Man, 01234567D.
3. This quiz carries four marks.

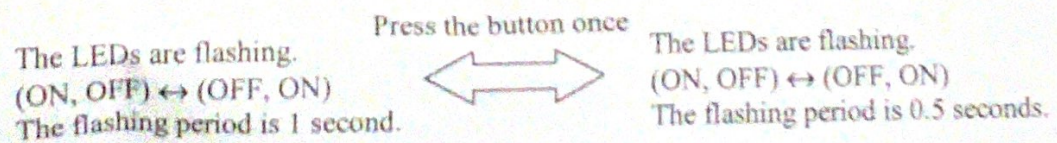
Question 1 (2 marks)

Build a hardware circuit and write a C program to complete the following task: Connect one **GREEN** LED to your Arduino UNO. Connect a button to an interrupt. Write a C program for the interrupt to control the LED. At the beginning, the LED flashes in every second (i.e., the LED is ON in one second and then OFF in another second). When the button is pressed (and then released), the microcontroller receives an interrupt and turns it **OFF**. When the button is pressed (and then released) again, the LED resumes flashing. Note that you must use the **interrupt** programming in the implementation. Moreover, you must use a **timer interrupt** in the timer programming.



Question 2 (2 marks)

Build a hardware circuit and write a C program to complete the following task: Connect two **GREEN** LEDs (say LED1 and LED2) to your Arduino UNO. Connect a button to an interrupt. Write a C program for the interrupt to control the flashing period of these two **GREEN** LEDs. Originally, they flash in every second (i.e., LED1 and LED2 are ON and OFF respectively in one second and then change to OFF and ON respectively in another second). When the button is pressed (and then released), the flashing period is changed from one second to 0.5 seconds (flash quickly). When the button is pressed (and then released) again, the flashing period is changed back from 0.5 seconds to one second. Note that you must use the **interrupt** programming in the implementation. Moreover, you must use a **timer interrupt** in the timer programming.



Note that:

1. Exclude the overhead due to the instructions in a loop in timer programming.
2. Using simple loops without timers or using built-in functions to count the delay is not acceptable.

- End -