

## 111 學年度上學期 11110EE 240100 Microprocessor system Lab2

- ◆ **Exp. Date : 10/4 Tue.**
  - ◆ Please follow the instructions in each part, and ask the TAs to check and register after completing the check point (1.1 ~ 3.2)
  - ◆ If you have any question in experiment, you can ask TAs or discuss with classmates.
  - ◆ Please refer to lecture slides of Lab2, or you can also check the information online.
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### ● Part 1 Question

Please refer to the content of the lecture and answer the question down below

1.1 : The attached picture is a picture of a 7-segment display marquee using the mobile phone's continuous shooting function. Please observe the phenomenon that the LED light is afterimages and become blurred in the picture. Try to explain the reason for this phenomenon. You can also take pictures with your phone in the second part to see what you get.



### ● Part 2 Experiment Lab2

In this experiment, the 8051 controls the 7-segment display and the dot matrix module to achieve displaying specific number string or picture, and make a marquee.

Source codes are already attached in the folder, you can try to write the code by yourself, or use it directly, and see the result.

2.1 : Connect the wires between 8051 and 7-segment display, execute the number sequence of marquee functions in "seven\_segment.c". You can refer to the lecture slides for the appearance of execution.

2.2 : Connect the wires between 8051 and dot matrix module, execute the picture of marquee functions in "matrix.c". You can refer to the lecture slides for the appearance of execution.

### ● Part 3 Practice

Please refer to the content of the lecture and the source code of the second part, then design a firmware, let 8051 control MAX7219 to complete the function down below.

3.1 : Make a short straight line run around the boundaries of the 7-segment display, moving one segment clockwise every half second. The attached picture is the boundary of the 7-segment display (the red part is the boundary).



3.2 : Design a progress bar in quarters shown below. When the progress bar is finished, it will display 100%. (100 display on the first matrix, % display on the second matrix)

