111 學年度上學期 11110EE 240100 Microprocessor system Lab5

- **Exp. Date：10/25 Tue.**
- **Please follow the instructions in each part, and ask the TAs to check and register after completing the check point(1.1~3.1)**
- **If you have any question in experiment, you can ask TAs or discuss with classmates.**
- **Please refer to lecture slides of Lab5, or you can also check the information online.**

- **Part1 Question**

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

1.1 : Please try to explain what is the function of the timer in UART.

- **Part2 Example**

This lab is UART transmitter & receiver, please download the source codes on the google cloud and check the result after execution.

2.1：Please find another classmate, 2 people as a group. One of you burn transmitter.cas transmitter, and the other burn receiver.v as receiver. The transmitter one push the 4 buttons beside led, and the 7-segment display connected to the receiver will display the corresponding numbers. Try to realize how it works like that.

- **Part3 Practice**

Please reference the sessions and source code of Part2. Try to design and implement the askings of Practice. (You can check the executed result from google cloud)

3.1 : Please integrate the code of transmitter and receiver in Part2. Try to let your hardware has both function of transmitter and receiver at the same time.

(1) Description : The 4 buttons beside led from left to right represents 1 to 4 respectively. Everyone can define any 7 numbers as your own key (each number is limited from 1 to 4). And complete the game : Guessing Key!

(2) Example： The key in Practice video is 1312234.

First, while pressing 1, since the first number of the key is also 1, the MSB of 7-segment display is 1, meaning the number guessed is correct. In the mean time, the 7^{th} bit of 7-segmet display will show 1.

Then keep going on. Assuming your next press is 2, due to the 2^{nd} key number is 3, the MSB of 7-segment display is 0, meaning guessing a wrong number. On the other hand, if the next press is 3, the 2^{nd} key number is 3, too. Therefore, the MSB of 7-segment display is 1, representing that your guess is correct. And the 6^{th} bit of 7-segmet display will show 3. Keep this way until guess the right key.

Note :

1. When you are done, you can find someone else and play the GuessKey game together. But demo just need to be alone.
2. Please connect P3_0 to P3_1 which mentioned on page 8 of lab5 ppt (Tx, Rx connects with each other).