

## Game Clock Design and User Manual

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The game clock is implemented with several timers and one button as external interrupt source. As more detailed interpretation is given in the source code as comment, the brief introduction is provided as follows:

### 1.Timer 0 :

This timer begin to count while the button is pushed down.If the button is pushed down for more than 5s, The timer\_reset\_handler will be invoked and the game will be reset or started.

Time to generate interrupt: 5s.

Interrupt handler: timer\_reset\_handler.

Result: reset or start the game.

### 2.Timer 1:

Count the each player's game time.Two variable save the time of each player and assign the T1MR0 with the value before counting.When the timer1 timeout, the timeout\_handler will be invoked and the game is over.

Time to generate interrupt: Whether timer\_player\_a or timer\_player\_b is 0;

Interrupt handler: timeout\_handler.

Result: beep and terminate the game.

### 3.Button linked with p2.10

Pressing on button drives the programme and every timer.When the button pressed, the Timer0 begin to count and Timer1 begin to count when the button is pressed or released in certain circumstance.The button\_handler is invoked when the button pushed.

Time to generate interrupt: when the button is pushed or released.

Interrupt handler: button\_handler.

Result: Timer 0 begin to count if the corresponding condition is meet.Timer 1 switch the value between two players timer if the corresponding condition is meet.

### User Manual:

1.Press the button for more than 5s to start the game and the time for the first player begin to count(Player\_A). The game will not begin if it's less than 5s but print the hint which tells the user to press more than 5s to begin the game.

2.Press the button to switch the user timer. The relevant information of player flag and remaining time will be printed on the terminal.

3.Press the button for more than 5s to reset the game during the game procedure. There will be a short beep when the timer is reset successfully and relevant information will be printed on the terminal.Once the game is reset, press the 5s to begin the game again.

4.When the game is timeout, there will be a long beep to indicate the end of the game and the timeout information will be printed. Press the button for more than 5s to restart the game.