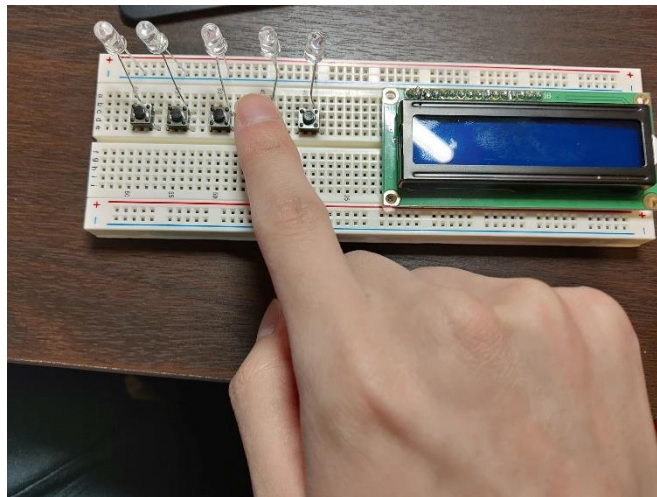# CS/EE 120B

Custom Project: Remember the light

Kai Wen Tsai
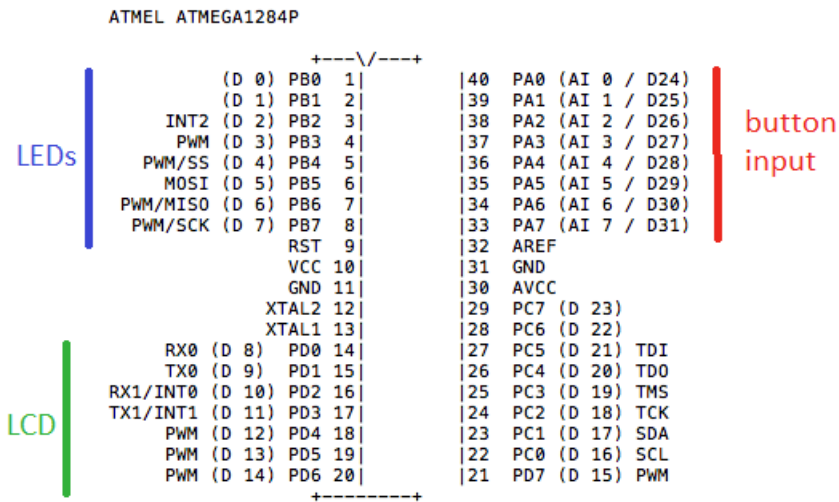Ktsai017
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Introduction

Remember the light is a memorizing game that require to player to remember the sequence of LED that light up. The game will show up with a sequence of lights. Based on the level, the sequence gets complicated as the level goes up. Failing to input the correct sequence will restart the game. If the winner wins the final level, the winner text shows in the LCD screen.

Components (Pin-out)

- **Inputs**
    - Many buttons
- **Outputs**
    - LCD screen that shows the level and winner text
    - LEDs to change the sequence based on level

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ATMEL ATMEGA1284P

                        +---\/---+
             (D 0) PB0  1|        |40  PA0 (AI 0 / D24)
             (D 1) PB1  2|        |39  PA1 (AI 1 / D25)
        INT2 (D 2) PB2  3|        |38  PA2 (AI 2 / D26)
         PWM (D 3) PB3  4|        |37  PA3 (AI 3 / D27)
      PWM/SS (D 4) PB4  5|        |36  PA4 (AI 4 / D28)
        MOSI (D 5) PB5  6|        |35  PA5 (AI 5 / D29)
    PWM/MISO (D 6) PB6  7|        |34  PA6 (AI 6 / D30)
    PWM/SCK  (D 7) PB7  8|        |33  PA7 (AI 7 / D31)
                   RST  9|        |32  AREF
                   VCC 10|        |31  GND
                   GND 11|        |30  AVCC
                 XTAL2 12|        |29  PC7 (D 23)
                 XTAL1 13|        |28  PC6 (D 22)
        RX0 (D 8)  PD0 14|        |27  PC5 (D 21) TDI
        TX0 (D 9)  PD1 15|        |26  PC4 (D 20) TDO
   RX1/INT0 (D 10) PD2 16|        |25  PC3 (D 19) TMS
   TX1/INT1 (D 11) PD3 17|        |24  PC2 (D 18) TCK
        PWM (D 12) PD4 18|        |23  PC1 (D 17) SDA
        PWM (D 13) PD5 19|        |22  PC0 (D 16) SCL
        PWM (D 14) PD6 20|        |21  PD7 (D 15) PWM
                        +--------+
```

LEDs

button input

LCD

Complexities/Build-upons

1. Using the LCD screen to display the winner text and level
2. Flash LEDS in random sequence
3. Count if user input buttons sequence is correct
4. Using time for random function
5. Count the pulse of each input
6. Restart program if fail/ or win
7. Use buzzer speaker to play a melody when user wins