

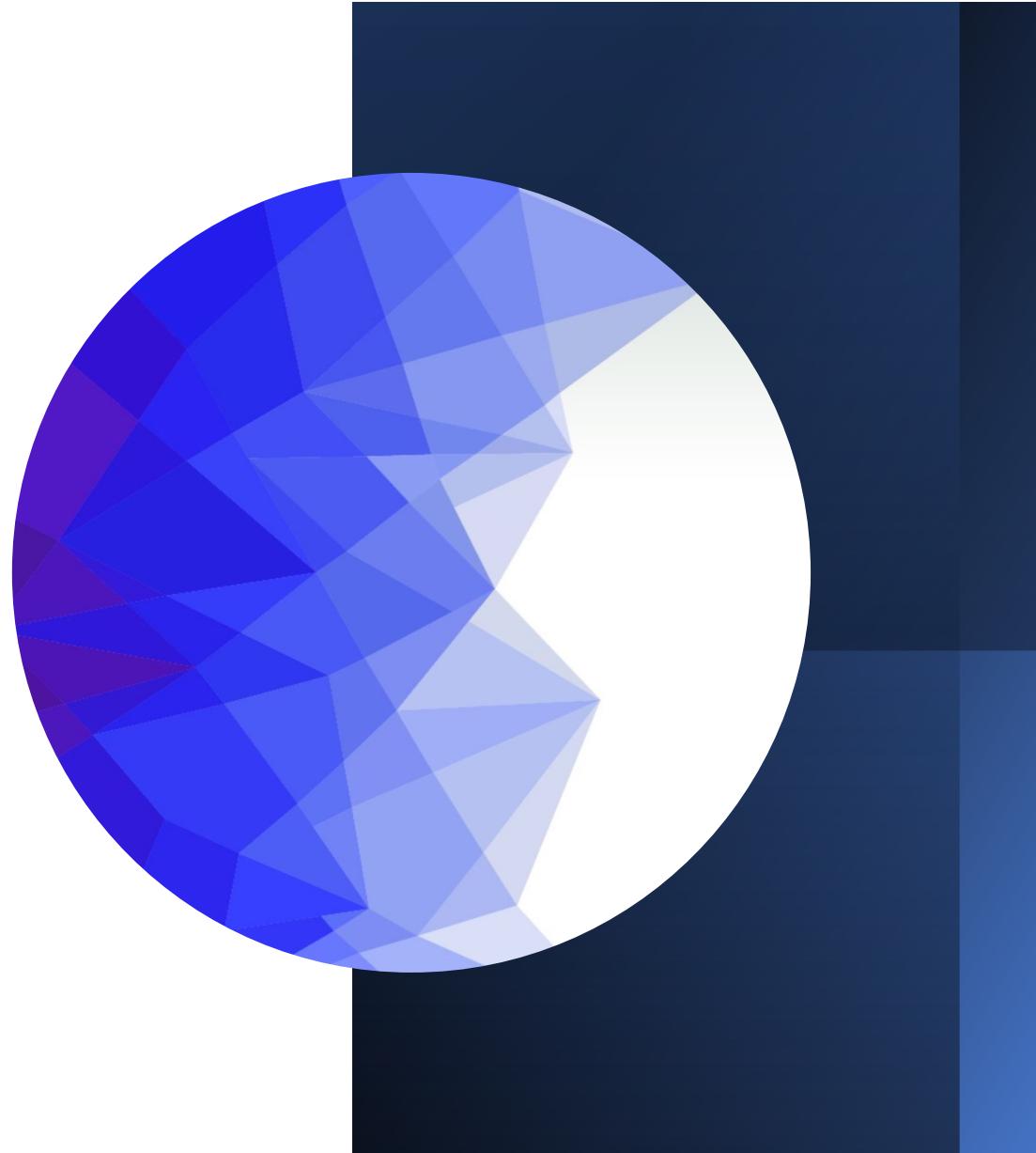
ECE3520 Lab Session 15&16:

Blink LEDS with External Interrupt

Play Sound with Timer Interrupt

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Step1: Lab Preparation

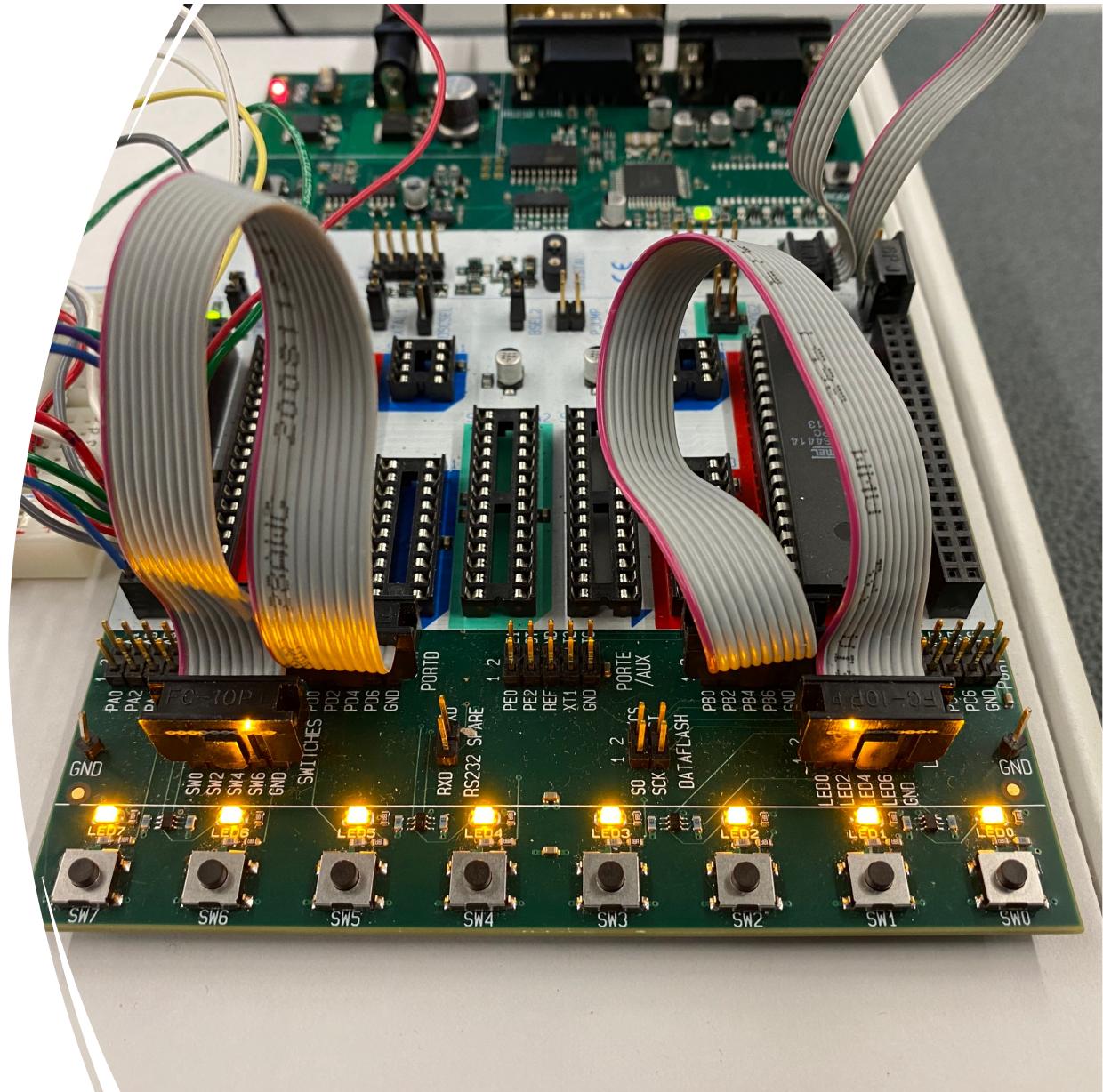
- Lab15: Write First C program for STK500
 - Modify the earlier ‘blinky’ program
 - Blinks LEDs in the following way
 - Normally, blinks at 0.5 second interval for given light pattern
 - Initially, the pattern is all turned-on, all turned off (0xFF)
 - At the press of the button controls INT0, it changes patterns:
0x0F, 0x33, 0x55, 0x18, 0x81, 0x99, 0xC3, 0xFF
 - Use external interrupt 0 (INT0) and program memory for tables

Step2: Lab Preparation

- Lab16: Write Second C program
 - Play 800 Hz sound (square wave with 50% duty cycle)
 - Give details how to calculate necessary parameters for the given clock frequency
- Modify the program in Part 1 to generate four notes ($C4=262\text{ Hz}$, $D4=293\text{ Hz}$, $E4=330\text{Hz}$, $F4=349\text{Hz}$) when pressing four switches

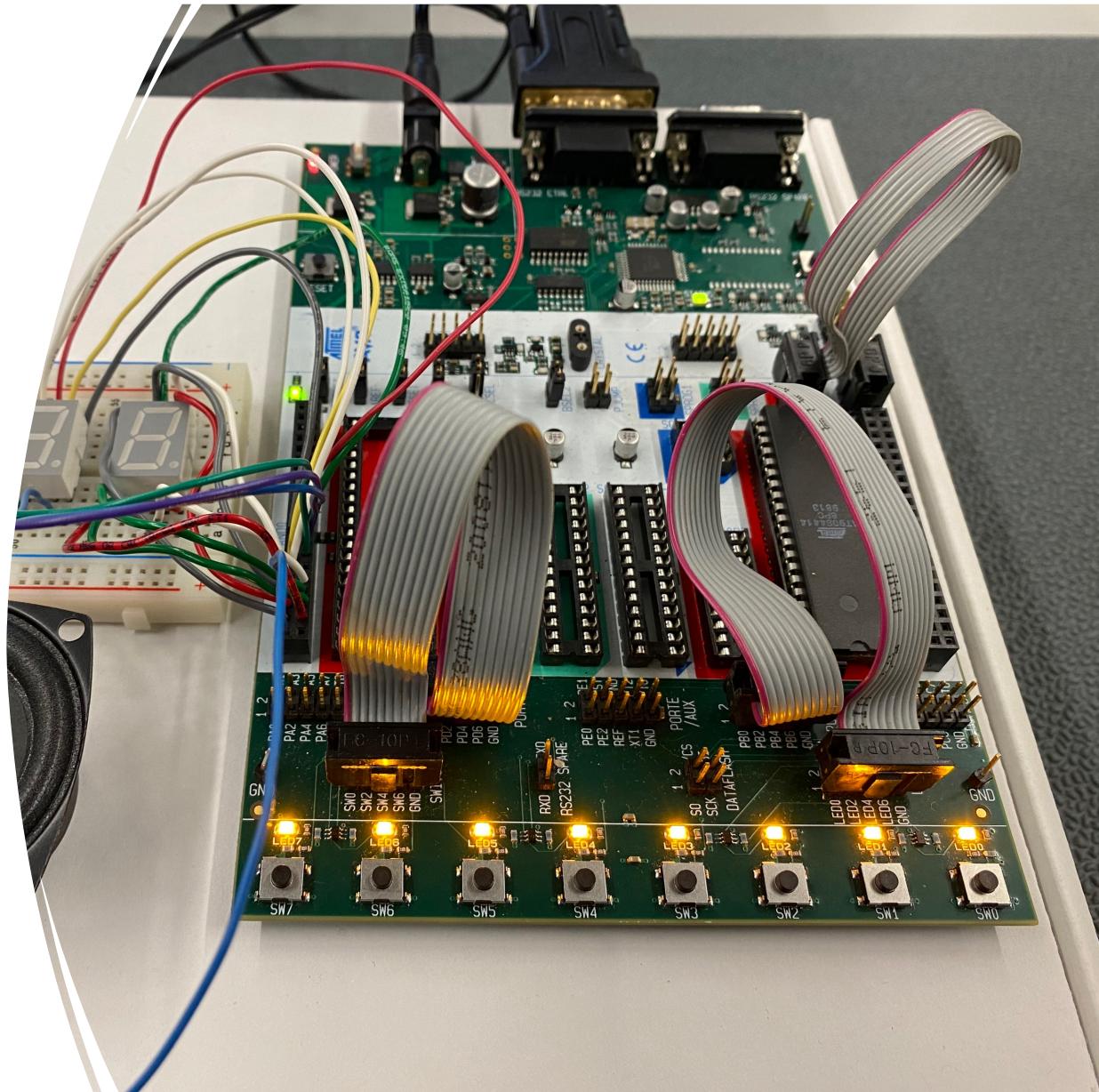
Step3: Configure Experiment

- Set up the STK500 board as in Experiment 4
- Write programs for AT90S4414 using C language
- Download the Hex files onto board after compiling your C code



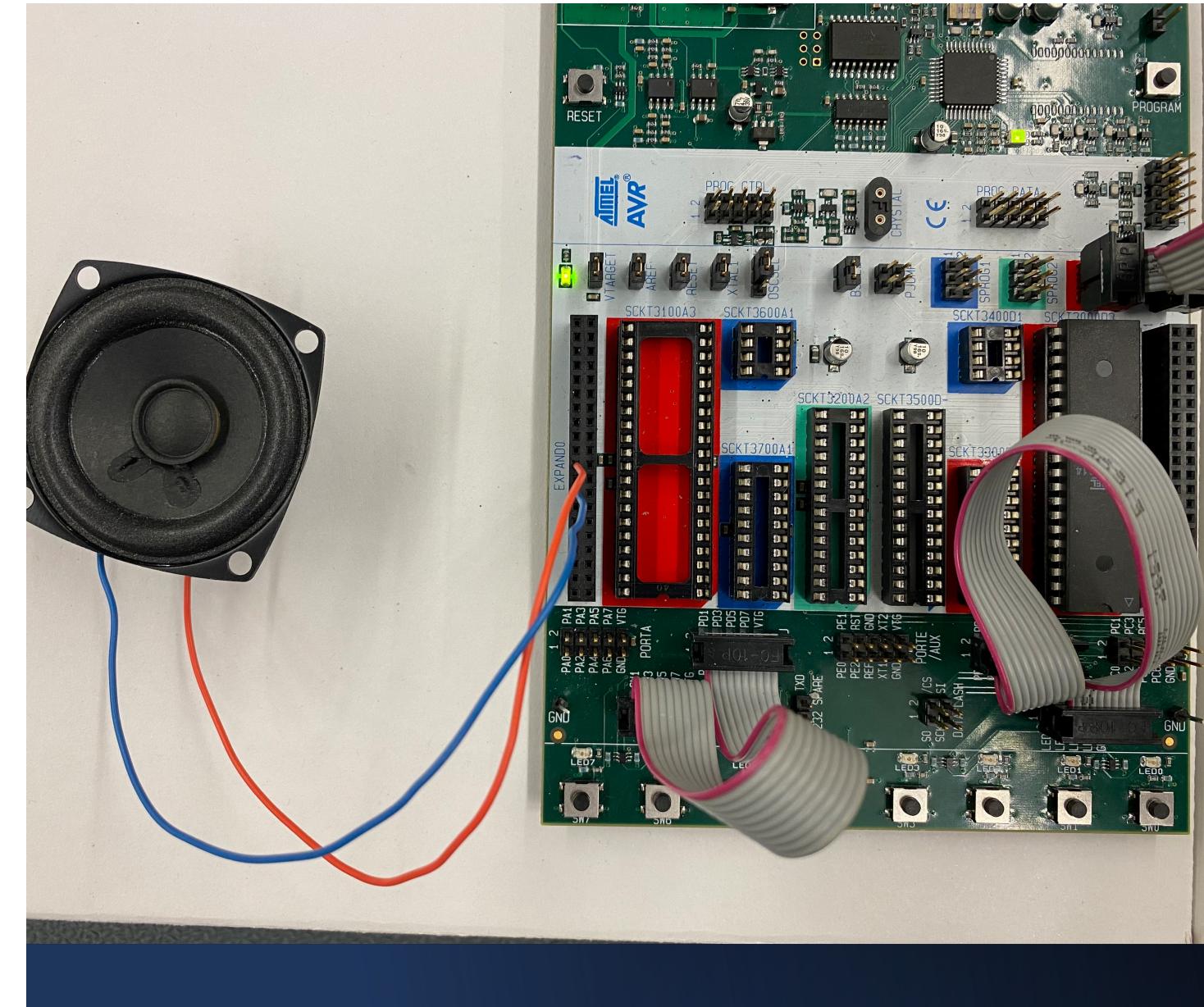
Step4: Test and Observe Patterns of LEDs Blinking

- Test if your program works correctly



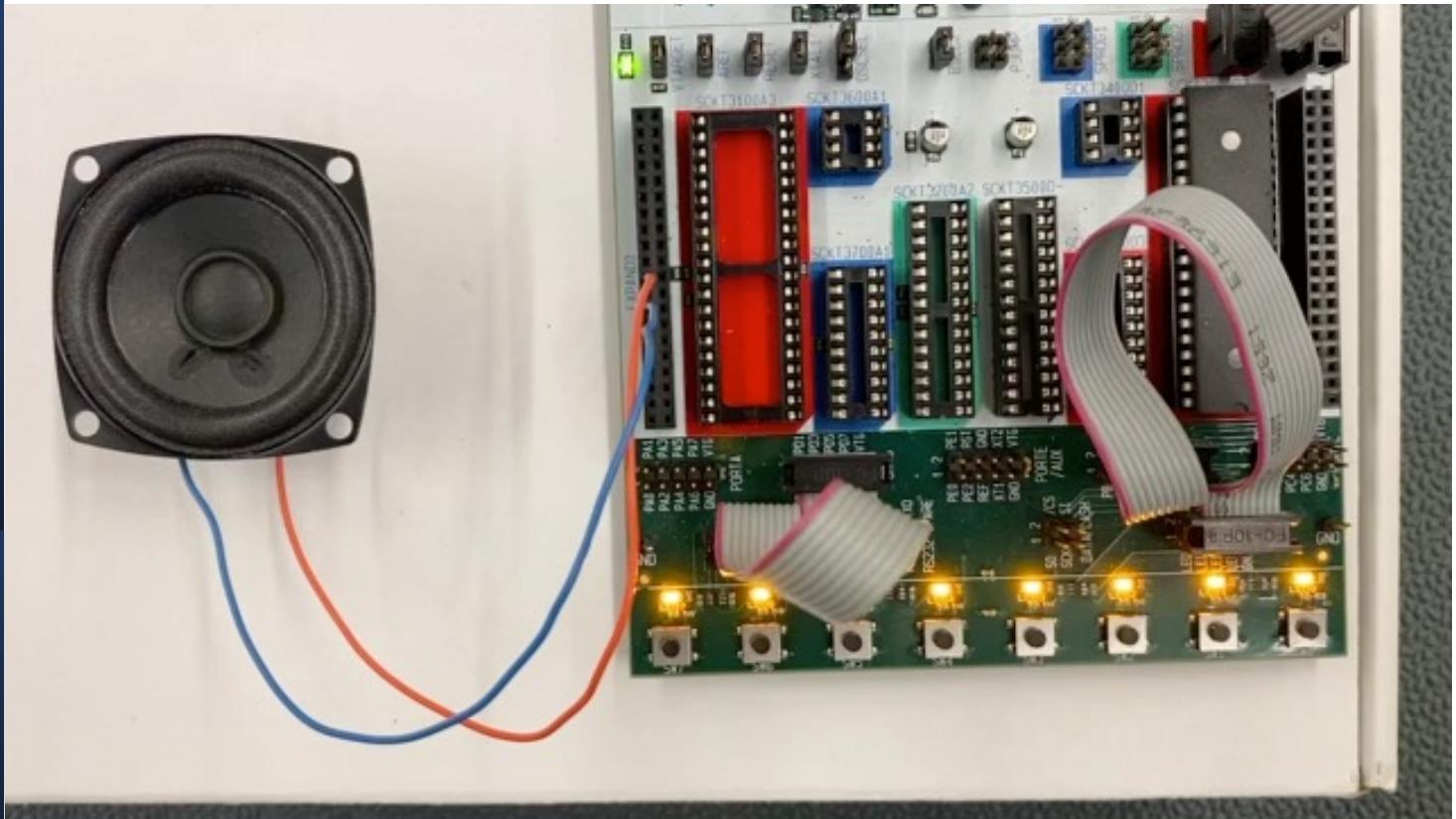
Step5: Test and Observe Playing Sound on Speaker

- Test if your program works correctly



Step6: Demo Video for LEDs Blinking Patterns

- Please reference the video after you finished the experiment.



Step7: Demo Video for Playing Sound on Speaker

- Please reference the video after you finished the experiment.

