

# Musical Greeting Card

## ECE 312 - Lab 2 - D21 - Tuesday

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# **1 Brief Description**

## **2 Target Specifications**

1. The card shall use the Attiny2313A processor and the PS1420P02CT piezo buzzers.
2. The card shall start and end playing when the button is pressed.
3. The card shall operate on 3V.
4. The card shall be able to play two notes at once, in the first and fourth octaves.
5. The card must be able to play songs a minimum of 15 seconds in length.
6. The card shall be able to be easily reprogrammed in order to play different songs.

## **3 Schematic**

## **4 Firmware Plan**

```
main():
    initialize_gpio()
    initialize_timer()

    loop forever:
        if playing:
            play_beat()

        if not playing and button_is_pressed:
            delay(debounce_time)
            set flag playing
            enable_interrupts()

        if interrupt_button_press:
            reset flag playing
```

```

        play_rest()

// Will play rest of current beat then shut off
button_press_interrupt():
    disable_interrupts()
    set_flag_interrupt_button_press

// Plays one full beat
play_beat():
    if current_note_has_duration:
        keep_playing_note
    else:
        read_next_note
        play_note(next_note)
        current_note_duration —

delay(on_time)

if current_note_has_duration:
    keep_playing_note
else
    play_rest()

delay_rest_time

```

## 5 Parts Required

Partno. / Description	Number Required	Return
Attiny2313A	1	<input type="checkbox"/>
Piezoelectric Buzzer	2	<input type="checkbox"/>
Momentary Pushbutton	1	<input type="checkbox"/>