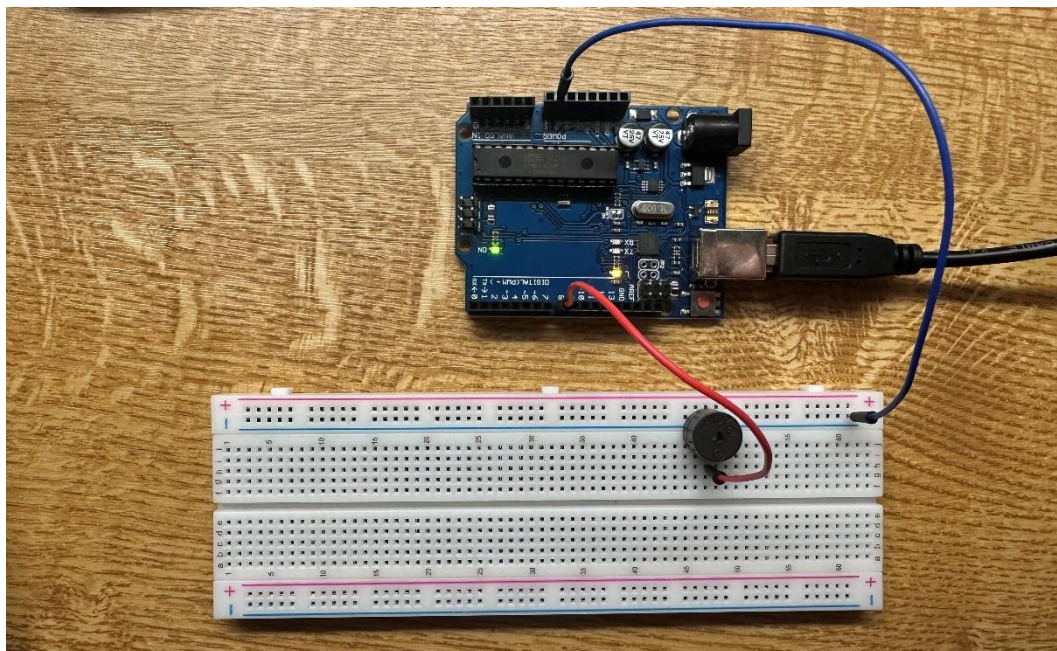
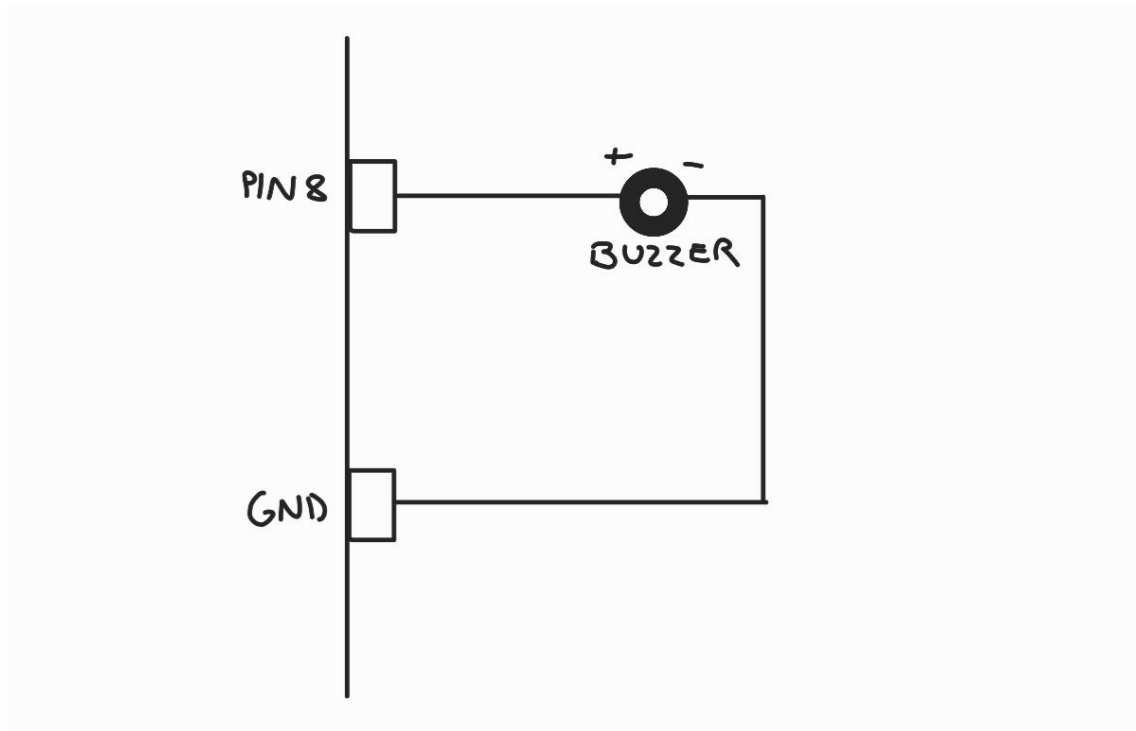


CIRCUIT DIAGRAM



SOURCE CODE

```
#define NOTE_C 261
#define NOTE_D 294
#define NOTE_E 329
#define NOTE_F 349
#define NOTE_G 392
#define NOTE_A 440
#define NOTE_B 493
#define NOTE_HIGH_C 523

#define OUTPUT_PIN 8
#define DURATION 1000

void setup() {
    pinMode(OUTPUT_PIN, OUTPUT);
    Serial.begin(9600);
}

void loop() {

    char input = Serial.read();
    switch (input) {
        case 'C':
            playTone(NOTE_C, DURATION);
            break;
        case 'D':
            playTone(NOTE_D, DURATION);
            break;
        case 'E':
            playTone(NOTE_E, DURATION);
            break;
        case 'F':
            playTone(NOTE_F, DURATION);
            break;
        case 'G':
            playTone(NOTE_G, DURATION);
            break;
        case 'A':
            playTone(NOTE_A, DURATION);
            break;
        case 'B':
            playTone(NOTE_B, DURATION);
            break;
        case 'H':
            playTone(NOTE_HIGH_C, DURATION);
            break;
        case ' ':
    }
```

```

        // Space character represents a period of silence
        delay(DURATION/4);
        break;
    default:
        // Ignore unsupported characters
        break;
    }
}

void playTone(int note, int duration) {
    int period = 1000000 / note;

    for (int i = 0; i < duration * 1000; i += period) {
        digitalWrite(OUTPUT_PIN, HIGH);
        delayMicroseconds(period/2);
        digitalWrite(OUTPUT_PIN, LOW);
        delayMicroseconds(period/2);
    }
}

/*
 * Melody for "Happy Birthday"
 * Copy one line at a time into the Serial monitor as the buffer
is not big enough.
 * Note: There's a mistake in the melody; it should be Bb
instead of B.
 *
 * Example input for "Happy Birthday":
 * ->C C DDD CCC FFF EEEEEEE C C DDD CCC GGG FFFFFFFF
 * ->C C HHH AAA FFF EEE DDD B B AAA FFF GGG FFFFFFFF
 */

```

NOTES AND OBSERVATIONS

Depending on the value assigned to DURATION, the notes do not sound at all; I don't know what is causing this issue. Otherwise, the program works correctly.