

Lab – 3 Datasheet

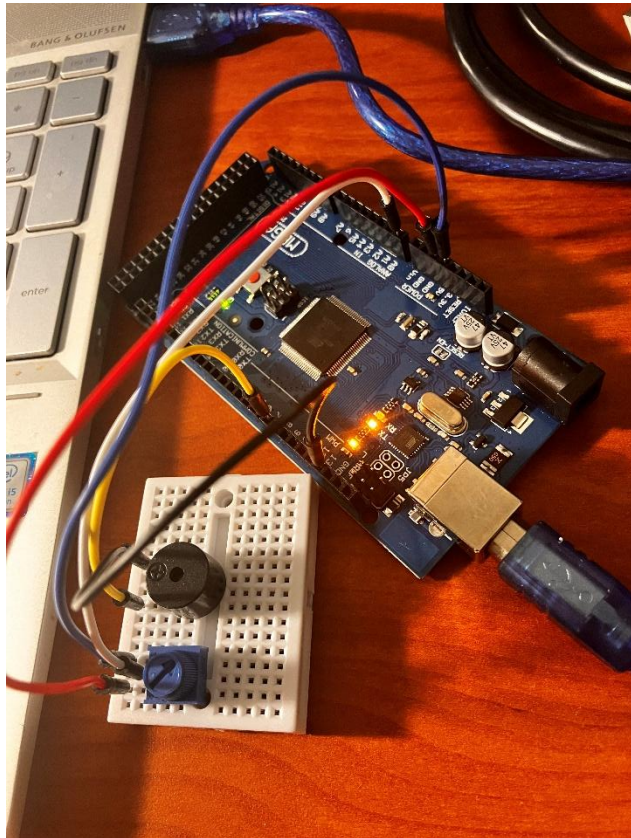
CpE 4010: Sensors, Actuators and Integration

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From procedure 3a:

Insert your picture of your modified circuit here:



From procedure 5:

Insert the screenshot of your IDE code window here:

```

1  int buzzer = 8;           // Digital IO pin for the buzzer
2  int potPin = A0;          // Analog input pin for the potentiometer
3  int frequency;            // Variable to store the frequency
4
5  void setup() {
6      pinMode(buzzer, OUTPUT); // Set buzzer pin as output
7      Serial.begin(9600);      // Initialize Serial Monitor at 9600 baud
8  }
9
10 void loop() {
11     // Read potentiometer value (0 to 1023) and map it to 60-10000 Hz range
12     int potValue = analogRead(potPin);
13     frequency = map(potValue, 0, 1023, 60, 10000);
14
15     // Calculate delay in microseconds for the given frequency
16     int delayTime = 1000000 / (2 * frequency); // Half-period delay in microseconds
17
18     // Output the sound
19     digitalWrite(buzzer, HIGH);
20     delayMicroseconds(delayTime);
21     digitalWrite(buzzer, LOW);
22     delayMicroseconds(delayTime);
23
24     // Print the current frequency to the Serial Monitor
25     Serial.print("Frequency is ");
26     Serial.print(frequency);
27     Serial.println(" Hz");
28
29     delay(100); // Optional: Add a small delay to avoid flooding the Serial Monitor
30 }
31

```

From procedure 6:

Insert your screenshot of Serial Monitor window displaying several frequency messages here:

```
19      digitalWrite(buzzer, HIGH);  
Output  Serial Monitor x  
Message (Enter to send message to 'Arduino Mega or Mega 2560' on 'COM6')  
Frequency is 4675 Hz  
Frequency is 4665 Hz  
Frequency is 4655 Hz  
Frequency is 4393 Hz  
Frequency is 3771 Hz  
Frequency is 3081 Hz  
Frequency is 2285 Hz  
Frequency is 1187 Hz  
Frequency is 837 Hz  
Frequency is 283 Hz  
Frequency is 60 Hz  
Frequency is 60 Hz  
Frequency is 60 Hz  
Frequency is 60 Hz  
Frequency is 60 Hz  
Frequency is 740 Hz  
Frequency is 1362 Hz  
Frequency is 1974 Hz  
Frequency is 2877 Hz  
Frequency is 3713 Hz  
Frequency is 4451 Hz  
Frequency is 4811 Hz  
Frequency is 4743 Hz  
Frequency is 4568 Hz  
Frequency is 3276 Hz  
Frequency is 2547 Hz  
Frequency is 1799 Hz  
Frequency is 1089 Hz  
Frequency is 468 Hz  
Frequency is 196 Hz  
Frequency is 244 Hz  
Frequency is 613 Hz  
Frequency is 1274 Hz  
Frequency is 2042 Hz  
Frequency is 3042 Hz  
Frequency is 3655 Hz  
Frequency is 3781 Hz  
Frequency is 3878 Hz  
Frequency is 3839 Hz  
Frequency is 3830 Hz  
Frequency is 3830 Hz  
Frequency is 3830 Hz  
Frequency is 3830 Hz  
F
```

Conclusions:

Simple lab just took a minute for some odd reason because the board wasn't being recognized by the COM port. Overall its nice to see the previous potentiometer lab carries over to this one.