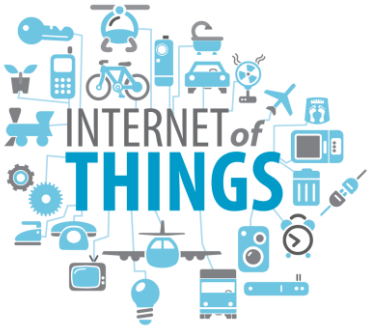
UNIVERSITY OF SCIENCE - VNUHCM
Faculty of Information Technology

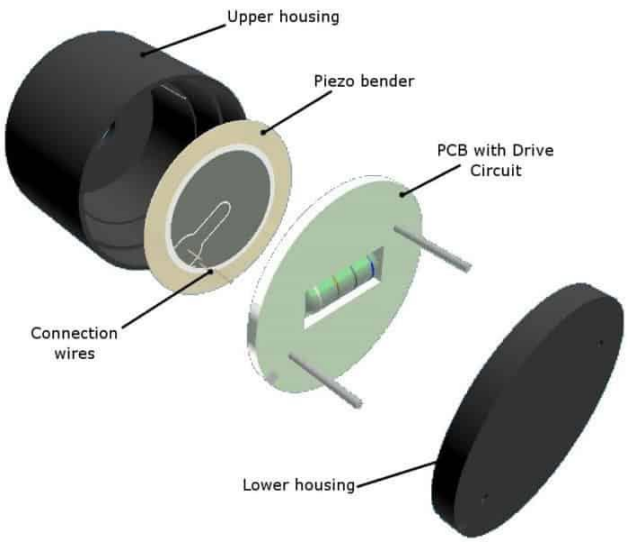
INTERNET OF THINGS

1.5

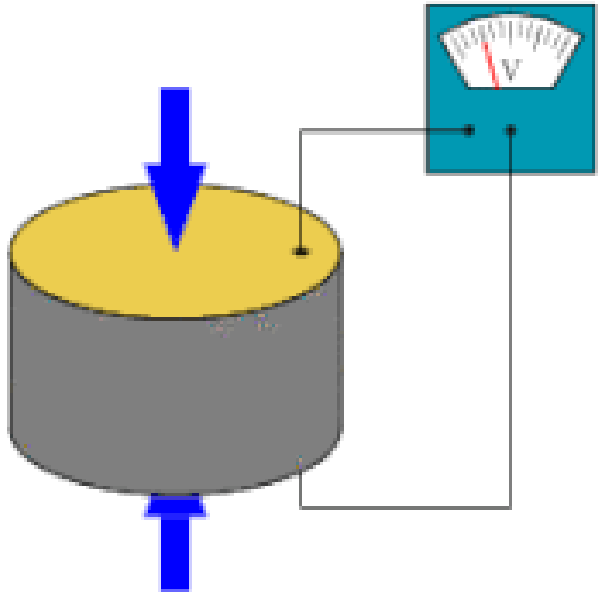
BUZZER



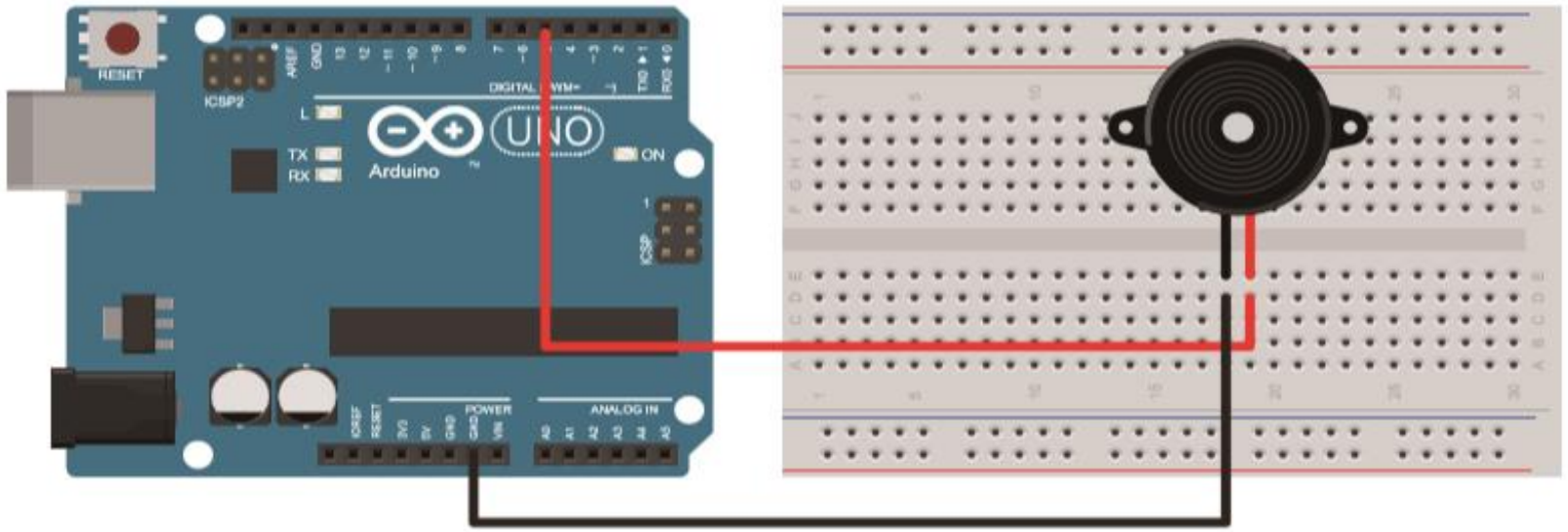
BUZZER



Piezo Buzzer Construction



Buzzer



Buzzer	Arduino
+	5
-	GND

```
int buzzer_pin = 5;

void setup(){
      pinMode(buzzer_pin, OUTPUT);
}

void loop(){
      for(int x=0; x<180; x++){
            // convert degrees to radians then obtain value
            float sinVal = (sin(x*(3.1412/180)));
            // generate a frequency from the sin value
            int toneVal = 2000+(int(sinVal*1000));
            tone(buzzer_pin, toneVal);
            delay(2);
      }
}
```

tone(pin, frequency)

tone(pin, frequency, duration)

//duration value in millisecond

noTone(pin)

Playing the song with buzzer

https://github.com/robsoncouto/arduino-songs

Frequency (Hz)	**262**	**262**	**294**	**262**	**349**	**330**	**262**	**262**	**294**
Duration (s)	0.5	0.5	1	1	1	2	0.5	0.5	1
Frequency (Hz)	**262**	**392**	**349**	**262**	**262**	**523**	**440**	**349**	**330**
Duration (s)	1	1	2	0.5	0.5	1	1	1	1
Frequency (Hz)	**294**	**466**	**466**	**440**	**349**	**392**	**349**		
Duration (s)	3	0.5	0.5	1	1	1	2		

```
int buzzer_pin = 5;

void setup(){
  pinMode(buzzer_pin, OUTPUT);
}

void loop(){
  int notes_len = 25;
  int frequency[] = {262, 262, 294, 262, 349, 330, 262, 262, 294, 263,
  392, 349, 262, 262, 523, 440, 349, 330, 294, 466, 466, 440, 349, 392, 349};
  float duration[] = {0.5, 0.5, 1, 1, 1, 2, 0.5, 0.5, 1, 1, 1, 2, 0.5,
  0.5, 1, 1, 1, 1, 3, 0.5, 0.5, 1, 1, 1, 2};

  for (int i=0; i<notes_len; i++) {
    tone(buzzer_pin, frequency[i], duration[i]*1000);
    delay(500);
  }
  noTone(buzzer_pin);
}
```

	Octave 1	Octave 2	Octave 3	Octave 4	Octave 5	Octave 6	Octave 7
C	32.7	65.4	130.8	261.6	523.3	1046.5	2093.0
C#	34.6	69.3	138.6	277.2	554.4	1108.7	2217.4
D	36.7	73.4	146.8	293.7	587.3	1174.6	2349.3
D#	38.9	77.8	155.6	311.1	622.3	1244.5	2489.0
E	41.2	82.4	164.8	329.6	659.3	1318.5	2637.0
F	43.7	87.3	174.6	349.2	698.5	1397.0	2793.8
F#	46.2	92.5	185.0	370.0	740.0	1480.0	2960.0
G	49.0	98.0	196.0	392.0	784.0	1568.0	3136.0
G#	51.9	103.8	207.6	415.3	830.6	1661.2	3322.4
A	55.0	110.0	220.0	440.0	880.0	1760.0	3520.0
A#	58.3	116.5	233.1	466.2	932.3	1864.6	3729.3
B	61.7	123.5	246.9	493.9	987.8	1975.5	3951.0