

# 0515作業\_薛皓陽

## HW01 視覺暫留

HW01\_code

```
void setup()
{
  pinMode(LED_BUILTIN, OUTPUT);
}

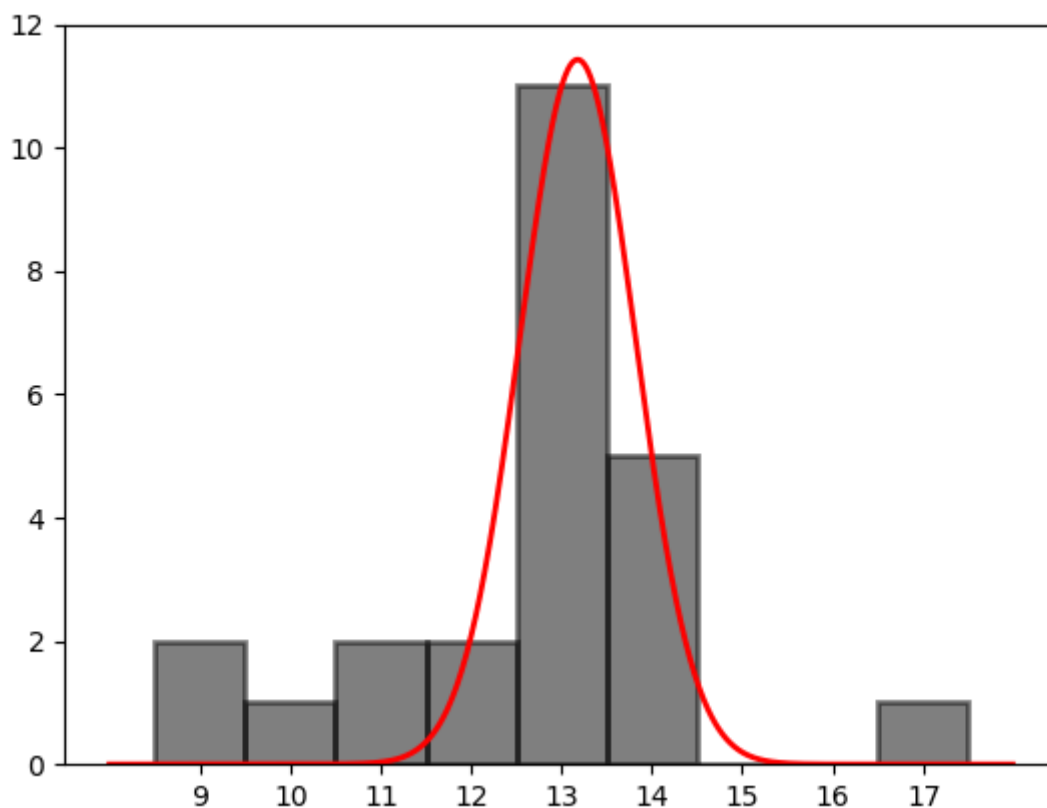
void loop()
{
  digitalWrite(LED_BUILTIN, HIGH);
  delay(13);
  digitalWrite(LED_BUILTIN, LOW);
  delay(13);
}
```

全班同學視覺暫留時間數據 ( 單位：豪秒 )

| 第一排 | 第二排 | 第三排 | 第四排 | 第五排 |
|-----|-----|-----|-----|-----|
| X   | 9   | X   | X   | X   |
| 13  | 14  | X   | 14  | 13  |
| 14  | 11  | X   | 13  | X   |
| X   | 12  | 13  | 13  | 13  |
| X   | 10  | 11  | X   | X   |
| X   | 9   | X   | 13  | X   |
| X   | 13  | 13  | 12  | 17  |
| X   | 13  | X   | 13  | 14  |
| X   | 14  | X   | X   | X   |

全班同學視覺暫留時間數據統計 ( 單位：豪秒 )

| 時間 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|----|---|----|----|----|----|----|----|----|----|
| 人數 | 2 | 1  | 2  | 2  | 11 | 5  | 0  | 0  | 1  |



$$y = 11.43042 \exp\left(-\frac{1}{2} \left(\frac{x - 13.17844}{0.6381478}\right)^2\right)$$

## HW02 校歌

### 校歌簡譜

```
X:1
T:校歌
C:蕭而化 作曲
M:C
L:1/4
K:C
G G A3/4 B/4 c | A G3/4 F/4 F E | G3/4 c/4 e A3/4 B/4 c | E ^F G2 |
```

### HW02\_code

<https://github.com/sun92122/NTNU-Arduino-2023-Spring/blob/main/0515/Song.ino>

```
#define C4 262
#define CS4 277
#define D4 294
#define DS4 311
#define E4 330
```

```
#define F4 349
#define FS4 370
#define G4 392
#define GS4 415
#define A4 440
#define AS4 466
#define B4 494
#define C5 523
#define CS5 554
#define D5 587
#define DS5 622
#define E5 659
#define F5 698
#define FS5 740
#define G5 784
#define GS5 831
#define A5 880
#define AS5 932
#define B5 988
#define NONE 0

int tempo = 76;

int buzzer[] = {11, 10, 9, 8};

int melody[] = {
    G4, 4, G4, 4, A4, 3, B4, 1, C5, 4,
    A4, 4, G4, 3, F4, 1, F4, 4, E4, 4,
    G4, 3, C5, 1, E5, 4, A4, 3, B4, 1, C5, 4,
    E4, 4, FS4, 4, G4, 8,

    G4, 4, G4, 4, A4, 3, B4, 1, C5, 4,
    A4, 2, A4, 2, G4, 3, F4, 1, F4, 2, F4, 2, E4, 4,
    G4, 4, E5, 4, D5, 3, C5, 1, B4, 4,
    B4, 2, B4, 2, A4, 2, A4, 2, G4, 8,

    G4, 4, G4, 4, A4, 2, G4, 2, G4, 2, G4, 2,
    G4, 4, A4, 2, B4, 2, C5, 4, C5, 4,
    NONE, 16,
    C5, 2, C5, 2, B4, 2, A4, 2, A4, 2, G4, 2, G4, 2,

    E5, 4, C5, 4, B4, 3, A4, 1, G4, 4,
    D5, 2, D5, 2, C5, 2, C5, 2, B4, 8,
    E5, 4, C5, 4, B4, 3, A4, 1, G4, 4,
    E5, 2, E5, 2, D5, 2, D5, 2, C5, 8,
};

void setup()
{
    int size = sizeof(melody) / sizeof(int);
    for (int thisNote = 0; thisNote < size - 1; thisNote = thisNote + 2)
    {
        int noteDuration = 15000 / tempo * melody[thisNote + 1];
        tone(buzzer[0], melody[thisNote], noteDuration);
```

```
    int pauseBetweenNotes = noteDuration * 1.1;
    delay(pauseBetweenNotes);
    noTone(buzzer[0]);
  }
}

void loop()
{
  // no need to repeat the melody.
}
```

## reference

1. 小节. (2018, November 30). Retrieved from 维基百科, 自由的百科全书:  
<https://zh.wikipedia.org/w/index.php?title=小节&oldid=52205885>
2. (2021, November 26). 2927dd1d760401441ca541189f0db408.jpg (2299×3249). Pr.  
<https://pr.ntnu.edu.tw/archive/news/2927dd1d760401441ca541189f0db408.jpg>