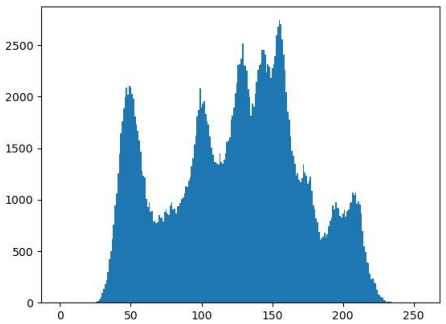
Computer Vision - Assignment 3

R09922A04 資工所人工智慧組 黃品硯

(a) original image and its histogram

Iteratively get every pixel's value and use a list to store how many pixels with that value have been encountered.

[Output]



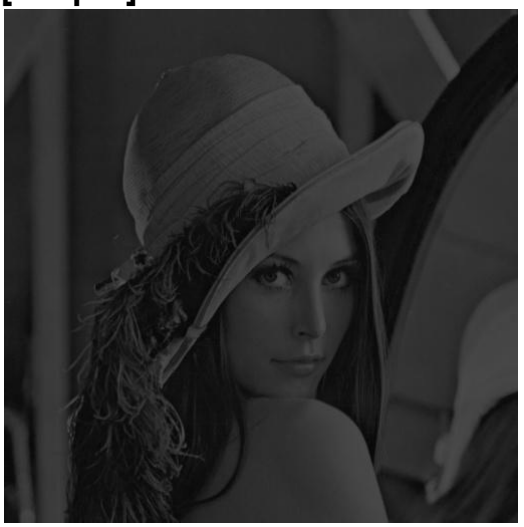
[Code]

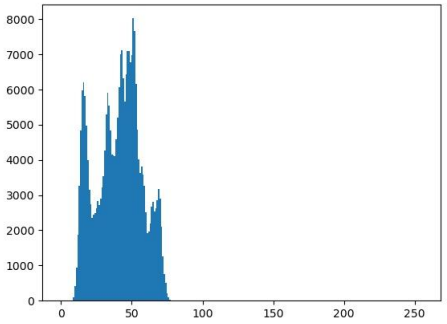
```
pixel_count = [0] * 256
for y in range(height):
    for x in range(width):
        pixel_count[img[y, x]] += 1
```

(b) image with intensity divided by 3 and its histogram

Iteratively divide every pixel's value by 3.

[Output]





[Code]

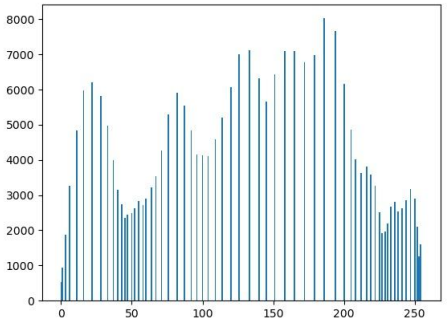
```
for y in range(height):
    for x in range(width):
        img[y, x] //= 3
```

(c) image after applying histogram equalization to (b) and its histogram

1. Create a list s_k which transforms a pixel with value i to new value s_k[i].

2. s_k[i] = cdf[i] * 255 / total_pixels

[Output]



[Code]

```
total_pixels = height * width
cdf = 0

s_k = []
for i in range(256):
    cdf += hist[i]
    s_k.append(cdf * 255 / total_pixels)

for y in range(height):
    for x in range(width):
        img[y, x] = s_k[img[y, x]]
```