Lab#1: Frequency Distribution Table

Question: By using Python, for the following frequency distribution table that describes the frequencies of weights of 26 students in a class.

1. Construct histogram
2. Plot ogive of cumulative frequency
3. Plot the stair figure of the relative cumulative frequency

Weights (in lbs)	Frequency (Number of students)
65 - 70	4
70 - 75	10
75 - 80	8
80 - 85	4

```
import numpy as np
import matplotlib.pyplot as plt

# creating dataset
# data = [67.5, 67.5, 67.5, 67.5, 72.5, 72.5, 72.5, 72.5, 72.5,
72.5,72.5, 72.5, 72.5, 72.5, 77.5, 77.5, 77.5, 77.5, 77.5, 77.5,
77.5, 77.5, 82.5, 82.5, 82.5, 82.5]
data = [*67.5*np. ones(4), *72.5*np. ones(10), *77.5*np.
ones(8), *82.5*np. ones(4)]
# creating class interval
classInterval = [65, 70, 75, 80, 85]
#classInterval=5

# calculating frequency and class interval
values, base = np.histogram(data, bins=classInterval)
# Plotting a basic histogram
plt.figure()
plt.hist(data,bins=classInterval, color='red',  edgecolor='black')

# formatting
plt.title('Histogram Graph')
plt.xlabel('Students')
plt.ylabel('Frequency')
```

```
# calculating cumulative sum
cumsum = np.cumsum(values)

# plotting  the ogive graph of the cumulative sum
plt.figure()
plt.plot(base[1:], cumsum, color='red', marker='o', linestyle='-')

# formatting
plt.title('Ogive Graph')
plt.xlabel('Students')
plt.ylabel('culumative frequency')

# calculating relative cumulative frequency
rel_fre = cumsum/cumsum[-1];

# plotting  the step graph of relative cumulative frequency
plt.figure()
plt.step(base[1:], rel_fre)

# formatting
plt.title('stair Graph')
plt.xlabel('students')
plt.ylabel('relative Cumulative Frequency')
```