```
import numpy as np
from sklearn.linear_model import LinearRegression
from sklearn import linear_model
# import statsmodels.api as sm
import statistics
import math
from collections import OrderedDict

x =[]
print("enter the data")
x = list(map(float, input().split()))
print("enter the number of bins")
bi = int(input())
# X_dict will store the data in sorted order
X_dict = OrderedDict()
# x_old will store the original data
x_old ={}
# x_new will store the data after binning
x_new ={}

for i in range(len(x)):
    X_dict[i]= x[i]
    x_old[i]= x[i]
x_dict = sorted(X_dict.items(), key = lambda x: x[1])
# list of lists(bins)
binn =[]
# a variable to find the mean of each bin

avrg = 0
i = 0
k = 0
num_of_data_in_each_bin = int(math.ceil(len(x)/bi))
# performing binning
for g, h in X_dict.items():
    if(i<num_of_data_in_each_bin):
        avrg = avrg + h
        i = i + 1
    elif(i == num_of_data_in_each_bin):
        k = k + 1
        i = 0
        binn.append(round(avrg / num_of_data_in_each_bin, 3))
        avrg = 0
        avrg = avrg + h
        i = i + 1
rem = len(x)% bi
if(rem == 0):
    binn.append(round(avrg / num_of_data_in_each_bin, 3))
else:
    binn.append(round(avrg / rem, 3))
# store the new value of each data
```

```
i = 0
j = 0
for g, h in X_dict.items():
    if(i<num_of_data_in_each_bin):
        x_new[g]= binn[j]
        i = i + 1
    else:
        i = 0
        j = j + 1
        x_new[g]= binn[j]
        i = i + 1

print("number of data in each bin")

print(math.ceil(len(x)/bi))
for i in range(0, len(x)):
    print('index {2} old value {0} new value {1}'.format(x_old[i],
x_new[i], i))
```

```
enter the data
10 5 9 8 3 2 14 20 33 19 20
enter the number of bins
3
number of data in each bin
4
index 0 old value 10.0 new value 8.0
index 1 old value 5.0 new value 8.0
index 2 old value 9.0 new value 8.0
index 3 old value 8.0 new value 8.0
index 4 old value 3.0 new value 9.75
index 5 old value 2.0 new value 9.75
index 6 old value 14.0 new value 9.75
index 7 old value 20.0 new value 9.75
index 8 old value 33.0 new value 36.0
index 9 old value 19.0 new value 36.0
index 10 old value 20.0 new value 36.0
```

```
# Import libraries
import matplotlib.pyplot as plt
import numpy as np
# Creating dataset
np.random.seed(10)
data_1 = np.random.normal(100, 10, 200)
data_2 = np.random.normal(90, 20, 200)
data_3 = np.random.normal(80, 30, 200)
data_4 = np.random.normal(70, 40, 200)
data = [data_1, data_2, data_3, data_4]
fig = plt.figure(figsize =(10, 7))
# Creating axes instance
ax = fig.add_axes([0, 0, 1, 1])
# Creating plot
bp = ax.boxplot(data)
# show plot
plt.show()
```