package com.amalitech.dataStructures;

import java.util.Scanner;

public class Graph {

public static void main(String[] args) {

int arrayLength, i;

Scanner input = new Scanner(System.in);

System.out.println("Please enter the number of elements in the array: ");

arrayLength = input.nextInt();

int [] marks = new int[arrayLength]; //declaring the number of elements

System.out.println("Enter the marks: ");

for(i=0; i < arrayLength; i++) { //loop to accept array elements

marks[i] = input.nextInt();

}

int[] scores = ScoresFunction(marks);

//calling the functions

int max = maxMark(marks); //highest mark

System.out.println("The highest mark is "+ max);

int min = minMark(marks); //lowest mark

System.out.println("The lowest mark is "+ min);

double avg = avgMark(marks); //average mark

System.out.printf("The average mark is %.2f", avg);

System.out.println();

graphFunction(scores);

}

private static int[] ScoresFunction(int[] marks) {

int []scores = {0,0,0,0,0};

System.out.println();

for(int i =0; i<marks.length; i++){

if (marks[i] >= 0 && marks[i] <= 20) {

scores[0] += 1;

}

else if (marks[i] >= 21 && marks[i] <= 40) {

scores[1] += 1;

}

else if (marks[i] >= 41 && marks[i] <= 60) {

scores[2] += 1;

}

else if (marks[i] >= 61 && marks[i] <= 80) {

scores[3] += 1;

}

else if (marks[i] >= 81 && marks[i] <= 100) {

scores[4] += 1;

}

}

return scores;

}

//function for maximum mark

public static int maxMark(int mark[]) {

int max = mark[0];

for(int i = 0; i< mark.length; i++) {

if(max < mark[i]) {

max = mark[i];

}

}

return max;

}

//function for minimum mark

public static int minMark(int mark[]) {

int min = mark[0];

for(int i = 0; i< mark.length; i++) {

if(min > mark[i]) {

min = mark[i];

}

}

return min;

}

//function for average mark

public static double avgMark(int mark[]) {

double total = 0;

for(int i = 0; i< mark.length; i++) {

total = total + mark[i];

}

double avg = total / mark.length;

return avg;

}

//function for graph

private static void graphFunction(int[] scores) {

int maxNum = maxMark(scores); //store maximum score in maxMark

int num1 = maxMark(scores);

for (int i = 0; i<maxNum; i++) {

System.out.print(num1 + " >");

if(i<(maxNum-scores[0])) {

System.out.print(" ");

}else{

for(int j = 0; j<1; j++) {

System.out.print(" #######");

}

}

if(i<(maxNum-scores[1])) {

System.out.print(" ");

}else {

for(int j = 0; j<1; j++) {

System.out.print(" #######");

}

}

if(i<(maxNum-scores[2])) {

System.out.print(" ");

}else {

for(int j = 0; j<1; j++) {

System.out.print(" #######");

}

}

if(i<(maxNum-scores[3])) {

System.out.print(" ");

}else {

for(int j = 0; j<1; j++) {

System.out.print(" #######");

}

}

if(i<(maxNum-scores[4])) {

System.out.print(" ");

}else {

for(int j = 0; j<1; j++) {

System.out.print(" #######");

}

}

System.out.println();

num1--;

}

System.out.print(" ");

for(int i = 0; i<5; i++) {

System.out.print("+-------");

}

System.out.print("+");

System.out.print("\n " + 0 + " " + 21 + " " + 41 + " " + 61 + " " + 81 +" "+ 100 );

}

}