CSE110 Practice Assignment 7

Task 1) Assume that we have the following array contains marks of 5 students.
int[] marks = new int[] {10, 30, 20, 50,40};
Find the max, min, average mark.
Output:
Highest mark is 50
Lowest mark is 10
Average mark is 30

Task 2) Assume that we have the following array contains marks.
int[] marks = new int[] {10, 30, 20, 50, 40};
Find how many students are better than average.
Output:
2 students are better than average.
They received following marks
50
40
Hint: First calculate average marks. Then loop through the marks array and count how many marks are greater than average. Print this count. Then again, loop through the marks and count how many elements were greater than average marks.

Task 3) Assume that we have the following array.
int[] a = new int[] {10, 30, 20, 50, 40};
Find the largest number and print it along with its location.
Output:
Largest number is 50
Largest number was found at location 3

Task 4) Assume that we have the following array.
int[] a = new int[] {10, 30, 20, 50, 40};
Modify Task 3. Swap the first number with largest number.
Your output should be 50, 30, 20, 10, 40
Hint:
Find largestNumber and largestNumberLocation.
backup = a[0];
a[0]=largestNumber;
a[largestNumberLocation]=backup;

Task 5) Assume that we have the following array.
int[] a = new int[] {50, 30, 20, 10, 40};
Modify Task 4.
Find largest number among all numbers between 2nd and last number (30, 20, 10, 40).
Swap the 2nd number with this largest number.
Thus you just put 2nd largest in 2nd position.

Task 6) Combine ideas from Task 4 and 5.
Ask the user for a number n, and then find nth highest number
Hint:
Repeat the idea (from task 4, 5) n times.
Then you will find nth highest number in nth position in array.
Read https://sites.google.com/site/bucse110/sort

Task 7) Modify Task 5 to sort / arrange all numbers in the array.
Your output should be 50, 40, 30, 20, 10
Hint:
Read https://sites.google.com/site/bucse110/sort

Task 8) Find median among some numbers.
Ask user how many numbers and input those numbers.
Definition of Median:
For example, if a < b < c, then the median of the list {a, b, c} is
b, and, if a < b < c < d, then the median
of the list {a, b, c, d} is the mean of b and
c; i.e., it is (b + c)/2.
Hint:
Sort numbers
if there are odd number of numbers, say 9, then
the median is the middle number, at 5th position
if there are even number of numbers, say 10, then
the median is average of two middle numbers, (5th+6th)/2
Sample Input
1: 5 10 50 40
20 30
Sample Output
1: 30
Sample Input 2: 6
10 50 40 20 30
60
Sample Output
2: 35

Q9) Ask user for quantity, take ID (int) and full name (String)
and mark (double) of that many students.
Print average mark and then print all names and IDs

Sample Input:
2
12345678
Mr a
20
12345679
Mr b
18

Sample Output:
Average mark: 19
Mr a: 20
Mr b: 18

Q10) Ask user for quantity and take that many numbers (int) from user.
Print YES/NO. Print YES if numbers are strictly increasing. NO otherwise.
That means all later numbers are larger than all previous numbers.
Further reading: https://en.wikipedia.org/wiki/Sequence

Q11) Design Employee class so that following code prints 12000

```
class EmployeeTester {
        public static void main (String[] args) {
                Employee a = new Employee();
                a.name = "Mohammad Java Choudhury";
                a.salary = 10000;
                a.increaseSalary(20); //percentage
                System.out.println(a.salary);//prints 12000
        }
}
```