MID EXAM\_05 Юли 2020

ВРЕМЕ:

ЗАДАЧА 1: - 20 мин.

ЗАДАЧА 2: – 18 мин.

ЗАДАЧА 3 : – 2:57 часа

Общо: 3:26 мин **/300 точки/**

Задача 1:

import java.util.Scanner;  
  
public class midExam\_01 {  
 public static void main(String[] args) {  
 Scanner scanner = new Scanner(System.*in*);  
  
 int firstCountOfStudentsPerHour = Integer.*parseInt*(scanner.nextLine());  
 int secondCountOfStudentsPerHour = Integer.*parseInt*(scanner.nextLine());  
 int thirdCountOfStudentsPerHour = Integer.*parseInt*(scanner.nextLine());  
 int studentsCountAsSingleInteger = Integer.*parseInt*(scanner.nextLine());  
  
 int counterHours = 0;  
 int oneHour = firstCountOfStudentsPerHour + secondCountOfStudentsPerHour + thirdCountOfStudentsPerHour;  
 int totalHours = oneHour;  
  
 for (int i = 1; i <= studentsCountAsSingleInteger; i++) {  
 if (i % 4 == 0) {  
 counterHours++;  
 } else {  
 counterHours++;  
 if (totalHours >= studentsCountAsSingleInteger) {  
 break;  
 }  
 totalHours += oneHour;  
 }  
 }  
  
 System.*out*.printf("Time needed: %dh.", counterHours);  
 }  
}

Задача 2:

import java.util.ArrayList;  
import java.util.List;  
import java.util.Scanner;  
  
public class midExam\_02 {  
 public static void main(String[] args) {  
 Scanner scanner = new Scanner(System.*in*);  
  
 List<Integer> numbers = new ArrayList<>();  
  
 String[] input = scanner.nextLine().split("\\s+");  
 for (int i = 0; i < input.length; i++) {  
 numbers.add(Integer.*parseInt*(input[i]));  
 }  
  
 String command = scanner.nextLine();  
 while (!command.equals("end")) {  
 String[] tokens = command.split("\\s+");  
 String types = tokens[0];  
  
 switch (types) {  
 case "swap":  
 int firstIndex = Integer.*parseInt*(tokens[1]);  
 int secondIndex = Integer.*parseInt*(tokens[2]);  
 int firstElement = numbers.get(firstIndex);  
 int secondElement = numbers.get(secondIndex);  
 numbers.set(firstIndex, secondElement);  
 numbers.set(secondIndex, firstElement);  
 break;  
  
 case "multiply":  
 int oneIndex = Integer.*parseInt*(tokens[1]);  
 int twoIndex = Integer.*parseInt*(tokens[2]);  
 int oneElement = numbers.get(oneIndex);  
 int twoElement = numbers.get(twoIndex);  
 int multiply = oneElement \* twoElement;  
 numbers.set(oneIndex, multiply);  
 break;  
  
 case "decrease":  
 for (int i = 0; i < numbers.size(); i++) {  
 numbers.set(i, numbers.get(i) - 1);  
 }  
 break;  
 }  
 command = scanner.nextLine();  
 }  
 for (int i = 0; i < numbers.size(); i++) {  
 if (i != numbers.size() - 1) {  
 System.*out*.print(numbers.get(i) + ", ");  
 } else {  
 System.*out*.print(numbers.get(i));  
 }  
 }  
 }  
}

Задача 3:

import java.util.ArrayList;  
import java.util.Collections;  
import java.util.List;  
import java.util.Scanner;  
  
public class midExam\_03 {  
 public static void main(String[] args) {  
 Scanner scanner = new Scanner(System.*in*);  
  
 List<Integer> numbers = new ArrayList<>();  
  
 String[] input = scanner.nextLine().split("\\s+");  
 int sum = 0;  
 for (int i = 0; i < input.length; i++) {  
 numbers.add(Integer.*parseInt*(input[i]));  
 sum += Integer.*parseInt*(input[i]);  
 }  
 double averageNumber = sum \* 1.0 / numbers.size();  
 int counter = 0;  
  
 List<Integer> topNumbers = new ArrayList<>();  
  
 for (int i = 0; i < numbers.size(); i++) {  
 if (numbers.get(i) > averageNumber) {  
 topNumbers.add(numbers.get(i));  
 counter++;  
 }  
 }  
  
 if (topNumbers.size() > 5) {  
  
 List<Integer> finalNumbers = new ArrayList<>();  
  
 int counterFive = 0;  
 int maxNumber = -1000000;  
 boolean isMax = false;  
 int loopCounter = 0;  
 int deff = topNumbers.size() - 5;  
  
 for (int i = 0; i < topNumbers.size(); i++) {  
 isMax = false;  
 loopCounter = 0;  
 for (int j = 0; j < topNumbers.size(); j++) {  
 if (topNumbers.get(i) > topNumbers.get(j)) {  
 if (i != j) {  
 loopCounter++;  
 if (loopCounter >= deff) {  
 isMax = true;  
 }  
 }  
 }  
 }  
 if (isMax) {  
 if (counterFive >= 5) {  
 break;  
 }  
 finalNumbers.add(topNumbers.get(i));  
 counterFive++;  
 }  
 }  
  
 finalNumbers.sort((first, second) -> second - first);  
 for (Integer number : finalNumbers) {  
 System.*out*.print(number + " ");  
 }  
 return;  
 }  
  
 if (topNumbers.size() == 0) {  
 System.*out*.println("No");  
 } else {  
 topNumbers.sort((first, second) -> second - first);  
 for (Integer topNumber : topNumbers) {  
 System.*out*.print(topNumber + " ");  
 }  
 }  
 }  
}