Homework Assignment 1
CSIS 280

- **Please submit homework by email no later than 24/11/2017 23:59**
- **Send zip file with all tasks to faik.catibusic@ssst.edu.ba**
- **All code should compile with IntelliJ IDEA without any problems, tasks that doesn't compile will be rejected.**
- **Total number of points is 10 and that will represent 10% of your final grade**

1. **Find largest number in array**

Write a program that creates an ArrayList which can hold Integers. Fill the ArrayList with random numbers from 1 to 100. Display the values in the ArrayList on the screen. Then find the largest number in the ArrayList, and printout value to the command line interface.

[0.5 point]

2. **Find smallest number in array**

Write a program that creates an ArrayList which can hold Integers. Fill the ArrayList with random numbers from 1 to 100. Display the values in the ArrayList on the screen. Then find the smallest number in the ArrayList, and printout value to the command line interface.

[0.5 point]

3. **Print smaller numbers from array**

Write a program that creates an ArrayList which can hold Integers. Fill the ArrayList with random numbers from 1 to 100. Display the values in the ArrayList on the screen. Then prompt user for integer, after that printout all values that are smaller or equal to input integer.

[0.5 point]

4. **Print average value of array**

Write a program that creates an ArrayList which can hold Integers. Fill the ArrayList with random numbers from 1 to 100. Display the values in the ArrayList on the screen. Then

printout average value of elements in array.

[0.5 point]

5. **Sum square difference**

The sum of the squares of the first five natural numbers is,

$1^2 + 2^2 + ... + 5^2 = 55$

The square of the sum of the first ten natural numbers is,

$(1 + 2 + ... + 5)^2 = 15^2 = 225$

Hence the difference between the sum of the squares of the first ten natural numbers and the square of the sum is $225 − 55 = 170$. Find the difference between the sum of the squares of the first one hundred natural numbers and the square of the sum.

[0.5 point]

6. **Finding a value in an ArrayList**

Create an ArrayList that can hold Integers, and fill each slot with a different random value from 50 - 100. Display those values on the screen, and then prompt the user for an integer. Search through the ArrayList, and if the item is present, printout “Item is in the list.”, if value is not found printout “Item is not in the list.”

[0.5 point]

7. **Quote of a Day**

Create class that will store a quote as a string and person with whom that quote is associated. Add couple of quotes from internet sources (e.g. https://www.brainyquote.com/topics/computer_science) to your program. When program starts, randomly write to standard output a quote. Give an user option to ask for more quotes. Extra points for disabling display of same quote again in the same program run.

[1 point]

8. **FizzBuzz**

Write a program that prints the numbers from 1 to 100. But for multiples of three print "Fizz" instead of the number and for the multiples of five print "Buzz". For numbers which are multiples of both three and five print "FizzBuzz".

[1 point]

9. **Sport Team**

Create set of classes that will give option to the user to create a sport team with a manager. Once information is collected, print out full squad with manager information too. System should contain following classes:

- **Team class** This class should have one constructor that accept number of players that team has. This class should have a function for adding new team member, and should ignore adding new member if team is already full. Add similar function for adding manager too. In addition class should have a function that will list all team members and manager too.
- **Player class** This class will keep information about player, first name (String), last name (String) and age (Integer). Class should have a function that will return all player information as a string.
- **Manager class** This class will keep information about manager, first name (String), last name (String) and years of experience (Integer). Class should have a function that will return all player information as a string.

At the end write code in Main class, that will prompt user for number of players, enter information for each player, at the end ask for manager information. When all info is entered and stored, print out information about team.

[2 point]

10. **Student management**

Create program that will store information about students and their tests. Program will collect information about students from command line and than printout report about them. System should contain following classes:

- **Student** Class for keeping information about student, first name (String), last name (String), test results (ArrayList of TestResults). Student will have a constructor that will accept first name and last name, and another constructor that will accept first name, last name and array of tests. Student class should provide following public functions, average score (based on tests), best test score, worst test score and function that will return first name, last name and average score as a string.

- **TestResult** Class for keeping information about test, test name, and score. This class should have one constructor that accept test name and score, and one public function that will return test name and score as a string (e.g. "Test name, 100")
- **Students** Class for keeping information about Students. Class should have two constructors, one that doesn't have parameters (setup students as empty array list) and other one that accept array list of students. Class should have following public functions: Average score (calculate average score for all students based on their average score), Best Score (return student that has best test result, if there are more students with same result, return them as a list), Worst Score (return student that has worst test result, if there are more students with same result, return them as a list) and Report (print our one student on a line, with his/her name and average score on all tests).

[3 point]