Software system design and Analysis

Assignment 1

This C++ programming assignment is designed to help you further develop your skills and knowledge that you have acquired from week 1 and week 2. By completing this assignment, you will have the opportunity to put into practice what you have learned and demonstrate your proficiency in using the c++ language.
To submit your solution, you are required to upload your code to CodeTest, a comprehensive platform that streamlines the task of grading programming assignments and detecting plagiarism. With CodeTest, you can be assured of an accurate and fair evaluation of your work, so you can focus on demonstrating your best efforts.

Deadline: 2.9.2023 23:55:00

What to do?

To complete this assignment and achieve a high grade, follow these simple steps:

1. Log into CodeTest platform.
    a. You should have received an email to your Innopolis email with the login to Code test. In the event that you haven't received the login information, simply navigate to the "Forgot Password" option on the CodeTest platform and reset your password with ease.
2. After login, Navigate to the dashboard and select the "Contests" section.
3. Choose the "**2023.SSDA.A1**" contest from the "Current" section.
4. Tackle the 3 problems assigned and submit your solutions.
5. Reap the benefits of your hard work and effort as you receive an A 🙂

Problems Description:

1) Switch - branching (30%)

- Become familiar with switch-branching (Just Google it)

- Using this branching, write a calculator such that user inputs number_1, number_2 (-1e8 <= number_1,number_2 <= 1e8) and operator separated by comma. For example:
- 2, 5, + The code should return 7
- Prevent division by zero!

num1	num2	op	output
1 3 3 2	2 6 0 1e8	- + / *	-1 9 NAN 2e8

2)The same using functions (30%)

- Write same calculator without branching but with functions
- Make possible to add, subtract letters such that (no divisions)

  a + b = ab

  abb - b = ab

  aba - b = error message
- Make possible to multiply words on integers such that

  *abc * 2 = abcabc*

3)First largest single integer using pointers (40%)

- You have a String S containing N<100 elements with no spaces (letters, numbers, etc). Write a C++ program to find the first largest single integer (one digit number [-9,9]) that occurs in this string and then print it, also print its index in the string using pointers/functions that have parameters passed as pointers or references.
- here you can see examples:

- notice in the first example you have 2 fives, you take the first one
  and its index starts from: 0 for ‘w’.
- display the message ‘-1’ if you don’t find numbers in the string.
- for the negative integers print the index of the integer itself like in the second example(without the minus).

Input	Output
wSjf23545dsf	5 6
-1-2-3	-1 1
Ilovec++	-1

Grading Criteria

The assignment will be graded on the following criteria:

1. Successful completion of every test case is mandatory, failure to do so will result in a score of ZERO.
2. The code will be evaluated based on the specific requirements set out in the problem statement and a grading rubric. For instance, if the problem requires the use of pointers and your code does not implement them, you will receive a score of ZERO.
3. Any form of plagiarism or cheating will result in an automatic score of ZERO and consequences as per the academic policies.
4. The late policy will be strictly enforced and will result in penalties as follows:
    a. submissions received after the deadline, even by a single minute, will result in a reduction of 50% of the total grade.
    b. Submissions received more than 12 hours past the deadline will receive a score of ZERO.

It is important to keep these evaluation parameters in mind while completing the assignment, as they will determine your final score and success in the course.

Good Luck!