**NATIONAL UNIVERSITY OF COMPUTER & EMERGING SCIENCES**

**ISLAMABAD CAMPUS**

**CS-118 Programming Fundamentals Spring-2021**

**ASSIGNMENT-02**

**Section (A, B, C, D, E and F)**

Instructions:
Dear students we will be using auto-grading tools, so failure to submit according to the below format would result in zero marks in the relevant evaluation instrument.
i. For each question in your assignment, make a separate cpp file e.g. for question 1, make ROLL-NUM_SECTION_Q#.cpp (20i-0001_A_Q1.cpp) and so on. Each file that you submit must contain your name, student-id, and assignment # on top of the file in comments.
ii. Combine all your work in one folder. The folder must contain only .cpp files (no binaries, no exe files etc.).
iii. Run and test your program on a lab machine before submission.
iv. Rename the folder as ROLL-NUM_SECTION (e.g. 20i-0001_A) and compress the folder as a zip file. (e.g. 20i-0001_B.zip). do not submit .rar file.
v. Submit the .zip file on Google Classroom within the deadline.
vi. Submission other than Google classroom (e.g. email etc.) will not be accepted.
vii. The student is solely responsible to check the final zip files for issues like corrupt file, virus in the file, mistakenly exe sent. If we cannot download the file from Google classroom due to any reason it will lead to zero marks in the assignment.
viii. Displayed output should be well mannered and well presented. Use appropriate comments and indentation in your source code. Five Bonus marks will be awarded to well commented/indented code (for all questions).
ix. Total Marks: 100
x. If there is a syntax error in code, zero marks will be awarded in that part of assignment.
xi. Your code must be generic.

Deadline: Deadline to submit assignment is **10 April 2021 12:00 AM**. Assignment submitted after the deadline will be marked DIRECT ZERO rather than deducted marks. You are supposed to submit your assignment on GOOGLE CLASSROOM (CLASSROOM TAB not lab). Only ".ZIP" files are acceptable. Other formats should be directly given ZERO. Correct and timely submission of the assignment is the responsibility of every student, hence no relaxation
will be given to anyone.
Tip: For timely completion of the assignment, start as early as possible.
Plagiarism: Plagiarism is not allowed. If found plagiarized, you will be awarded zero marks in the assignment.
Note: Follow the given instruction to the letter, failing to do so will result in a zero.

1) Write a C++ program that gives the largest number using ternary operator among:

1. Three Numbers that is if three numbers are taken as input form user.
2. Four Numbers that is if three numbers are taken as input form user.

2) Attempt the following by writing C++ code and using conditional operators determine:

a) Whether the character entered through the keyboard is a lower case alphabet or not.
b) Whether a character entered through the keyboard is a special symbol or not.
c) Write a program using conditional operators to determine whether a year entered through the keyboard is a leap year or not.

3) Write a C++ program that assign a value to double variable cost depending on the value of integer variable distance as follows:

| **Distance** | **Cost** |
|---|---|
| 0 through 100 | 5.00 |
| More than 100 but not more than 500 | 8.00 |
| More than 500 but less than 1,000 | 10.00 |
| 1,000 or more | 12.00 |

4) Write a code that takes two integers as input representing a month and day and prints the season for that month and day. Assume that months are specified as an integer between 1 and 12 (1 for January, 2 for February, and so on) and that the day of the month is a number between 1 and 31. If the date falls between 16/12 and 15/3, you should print "Winter". If the date falls between 16/3 and 15/6, you should print "Spring". If the date falls between 16/6 and 15/9, you should print "Summer". And if the date falls between 16/9 and 15/12, you should print "Fall".

5) The colors red, blue, and yellow are known as the primary colors because they cannot be made by mixing other colors. When you mix two primary colors, you get a secondary color, as shown here:

- When you mix red and blue, you get purple.
- When you mix red and yellow, you get orange.
- When you mix blue and yellow, you get green.

Design a program that prompts the user to enter the first letter of names of two primary colors to mix. If the user enters anything other than “r,” “b,” or “y,” the program should display an error message. Otherwise, the program should display the name of the secondary color that results. Implement it using if\else structure and then switch structure.

6) A university has the following rules for a student to qualify for a degree with A as the main subject and B as the subsidiary subject:

a) He should get 55 percent or more in A and 45 percent or more in B.
b) If he gets than 55 percent in A he should get 55 percent or more in B. However, he should get at least 45 percent in A.
c) If he gets less than 45 percent in B and 65 percent or more in A he is allowed to reappear in an examination in B to qualify.
d) In all other cases he is declared to have failed.

Write a program to receive marks in A and B and Output whether the student has passed, failed or is allowed to reappear in B.

7) An Insurance company follows following rules to calculate premium.

a) If a person's health is excellent and the person is between 25 and 35 years of age and lives in a city and is a male then the premium is Rs. 4 per thousand and his policy amount cannot exceed Rs. 2 lacs.
b) If a person satisfies all the above conditions except that the sex is female then the premium is Rs. 3 per thousand and her policy amount cannot exceed Rs. 1 lac.
c) If a person's health is poor and the person is between 25 and 35 years of age and lives in a village and is a male 90 then the premium is Rs. 6 per thousand and his policy cannot exceed Rs. 10,000.
d) In all other cases the person is not insured.

Write a C++ program to output whether the person should be insured or not, his/her premium

8) Write a program that takes input from the user the 4-digit number and converts it into its reverse. Like if the number is 4567 the reverse will be 7654.

9) A certain grade of steel is graded according to the following conditions: (i) Hardness must be greater than 50 (ii) Carbon content must be less than 0.7 (iii) Tensile strength must be greater than 5600

The grades are as follows: Grade is 10 if all three conditions are met. Grade is 9 if conditions (i) and (ii) are met. Grade is 8 if conditions (ii) and (iii) are met. Grade is 7 if conditions (i) and (iii) are met. Grade is 6 if only one condition is met. Grade is 5 if none of the conditions are met Write a program, which will require the user to give values of hardness, carbon content and tensile strength of the steel under consideration and output the grade of the steel.