NATIONAL UNIVERSITY OF COMPUTER & EMERGING SCIENCES
ISLAMABAD CAMPUS
CS-118 Programming Fundamentals Spring-2021
ASSIGNMENT-01
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: 55

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 **24st March 2021 08:30 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.

(Marks 05) Question 01:

Write a C++ program to calculate the given below formula. The value of **i** needs to be input by user while u = 1.234 and p = 3.334.

$$\frac{\sqrt{\mu(i)^{\frac{3}{2}}(i^2-1)}}{\sqrt{\rho(i)-2}+\sqrt{\rho(i)-1}}$$

(Marks 05) Question 02:

Write a C++ program in which you declare variables that will hold an hourly wage, a number of hours worked, and a withholding tax (percentage deduction). Prompt the user to enter values for each of these fields. Compute and display net pay.

Example01:

Enter hourly wage: 900

Enter number of hours: 3

Enter withholding tax: 25

Net Pay:2025

Example02:

Enter hourly wage: 1600

Enter number of hours: 3

Enter withholding tax: 25

Net Pay:3600

(Marks 05) Question 03:

Write a C++ program which accepts a character as input and display its 3rd next character as output.

Example: Input: A

Output: D

(Marks 05) Question 04:

Write a C++ program which accepts days as integer and display total number of years, months and days in it. Suppose Year =365days and month = 30 days.

For example: If user input as 856 days the output should be 2 years 4 months 6 days.

Marks 05) Question 05:

Write a program that converts inches to yards and feet. Prompt the user to enter an integer value i.e. the number of inches, and then make the conversion and output the result.

For example: If user input as 49 inches the output should be 1 yard 1 feet 1 inches.

Note: 1 ft = 12 inches 1 yard = 3ft

(Marks 05) Question 06:

Write two different C++ programs to swap two values without using a third temporary value.

(Marks 10) Question07:

Write a C++ program which accepts amount in rupees as input (integer) within Range from Rs. 100 to Rs. 100000 and then display the total number of Currency Notes of Rs. 500, 100, 50, 20, 10, 5 and 1.

For example: when a user enters a number, Rs. 57477

Currency Note	: Number
500	: 114
100	: 4
50	: 1
20	: 1
10	: 0
5	: 1
1	: 2

(Marks 05) Question 08:

Write a C++ program that outputs arrow pattern using I/O manipulator <iomanip> appropriately. You will input a string from the user and will draw the following pattern of strings using that variable. (Note: You cannot use any string literals containing white spaces in cout. And **use single cout statment**)
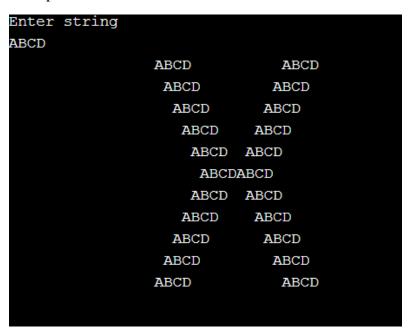
Example01:

```
Enter string
###
                      ###
                        ###
                          ###
                            ###
                              ###
#############################
                              ###
                            ###
                          ###
                        ###
                      ###
```

Example02:

```
Enter string
ABC
                  ABC
                    ABC
                      ABC
                        ABC
                          ABC
ABCABCABCABCABCABCABCABCABC
                          ABC
                        ABC
                      ABC
                    ABC
                  ABC
```

(Marks 05) Question 09:

Write a C++ program that outputs X pattern using I/O manipulator <iomanip> appropriately. You will input a string from the user and will draw the following pattern of strings using that variable. (Note: You cannot use any string literals containing white spaces in couts.)

Example01:

```
Enter string
ABCD
                ABCD            ABCD
                 ABCD          ABCD
                  ABCD        ABCD
                   ABCD      ABCD
                    ABCD    ABCD
                     ABCDABCD
                    ABCD    ABCD
                   ABCD      ABCD
                  ABCD        ABCD
                 ABCD          ABCD
                ABCD            ABCD
```

Example02:

```
Enter string
@#$%
                @#$%            @#$%
                 @#$%          @#$%
                  @#$%        @#$%
                   @#$%      @#$%
                    @#$%    @#$%
                     @#$%@#$%
                    @#$%    @#$%
                   @#$%      @#$%
                  @#$%        @#$%
                 @#$%          @#$%
                @#$%            @#$%
```

(Marks 5) Question10:

Write a program that takes five integer numbers (range 0 to 10). And display horizontal bar chart.
Example:
Input Five integer numbers:
N1=1
N2=5
N3=9
N4=0
N5=2
Number01:*
Number02:*****
Number03:*********
Number04:
Number05:**

Note: use <iomanip> header file for printing bar chat.