Indian Institute of Information Technology Sri City, Chittoor
(An Institute of National Importance under An Act of Parliament)

Name: **CP Lab - 2** Date: **30 Nov, 2022** Maximum Marks: **20**

INSTRUCTIONS:

1. Please carefully read all assignment problems and write the required programs in C language.
2. All **PROBLEMS** are **COMPULSORY**.
3. **You should submit the following**
   - **Six C files -** Name the file as follows:
     - **Program1_S2022xxxxx.c**
     - **Program2_S2022xxxxx.c**
     - **Program3_S2022xxxxx.c**
     - **Program4_S2022xxxxx.c**
     - **Program5_S2022xxxxx.c**
     - **Program6_S2022xxxxx.c**
   - **Six text files** containing output of running the programs
     - **Output1_S2022xxxxx.txt**
     - **Output2_S2022xxxxx.txt**
     - **Output3_S2022xxxxx.txt**
     - **Output4_S2022xxxxx.txt**
     - **Output5_S2022xxxxx.txt**
     - **Output6_S2022xxxxx.txt**
4. Replace the **"S2022xxxxx"** in the filenames with your full roll number.
5. **DO NOT zip**. Upload the files directly to your submission in the common Google classroom.
6. Don't share or copy the codes. If malpractice is found, you will be awarded **Zero**.

If you do not follow the above-mentioned instructions, a strict penalty would be imposed

ASSIGNMENT PROBLEMS

1. Read an integer, a floating-point number, a character and a string of length less than 13 characters from the keyboard and print the value of these variables. **[3 marks]**

2. Write a C program to execute the following instructions:

   Take any three numbers from the user, and add these three integers in a variable, ***sum***. Take another input from the user, and subtract it from ***sum***, and store it in ***sub***. Display ***sum*** and ***sub***. **[3 marks]**

3. Read three integers a, b and c from the user and do the following:

i. Pre-decrement of a

ii. Add the result of (i) to the post-decrement of c.

iii. Pre-decrement of b

iv. Subtract the result of (iii) from the pre-increment of c.

Print the values of a, b and c before and after the execution. **[3 marks]**

4. Declare the variable P and Q as data type int; variable R and S as data type float (initialize the values or use scanf function); variable X as float. Write a C program to evaluate the following expressions and print the result.

[3 marks]

i. X = P + Q / 4 * S/ 3 + Q

ii. X = R + S / 4 * Q / 3 + S

iii. X = (int) R / P * Q / 3

iv. X = P / Q * Q % 5 % 3

v. X = 10 - 5 - 7 / 4 * 4

vi. X = 24/(1 + 2%3 + 4/5 + 6 + 31%8)

5. Declare three integers A = 5, B = 10, and C=15. Write a C program to perform the following operations. **[4 marks]**

i. A Bitwise AND B

ii. A Bitwise OR B

iii. B Bitwise exclusive OR C

iv. A Left shift 2

v. B Right shift 4

vi. One's complement of C

6. A ball is released from a height of Y meters. Each time it bounces on the floor, its velocity becomes halved. Write a C program, which reads the value of Y and prints the total distance traversed by the ball when it touches the ground for the third time. Assume that the value of acceleration due to gravity, g, is 9.8. **[4 marks]**

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