

Tutorial Sheet 2**Instructions:**

- 1) Submit all the programs given below in handwritten format only.
- 2) Write descriptions of each instruction in all the programs given below.
- 3) Before writing the actual code for the programs given below, write about the method or concept you will be applying to solve the given problem.
- 4) Explain the working of code by using block diagrams (as shown in the Sample solution pdf)
- 5) You must make your submissions to this Tutorial in completely HAND-WRITTEN format.

Write generic assembly language code instructions only (not 8085 instruction codes) in the problems from Question 1 to Question 4.

Question 1. Write generic assembly code instructions to perform addition of first N natural numbers using: 3-Address instruction format and 2-Address instruction format. **(2 marks)**

Question 2. Write code instructions to perform conversion of an operand 90H from hexadecimal to its equivalent BCD form and then store the 1's and 0's of the resultant separately into contiguous memory locations. (Store 1's at memory location starting from 2050 and 0's at memory location starting from 2060). **(1 marks)**

Question 3. Give the equivalent assembly code for the following three cases: Assume that variables b, x, and z reside in registers r3, r5, and r8, respectively. **(4 marks)**

1) _____
 1 if (3 * x > b)
 2 x = b & 29;
 3 else
 4 b = x / 4;

2) _____
 1 if ((3 * x > b) || (z - b < 25))
 2 x = b & 29;
 3 else
 4 b = x / 4;

3) _____
 1 if ((3 * x > b) && ((z - b < 25) || (z + 14 > x)))
 2 x = b & 29;
 3 else
 4 b = x / 4;

Question 4. Write assembly code instructions to calculate factorial of a number. (Hint: You can use code written in Question6 for multiplication, as a subroutine here to calculate factorial of a number). **(2 marks)**

Write 8085 instruction code program for the problems given below from Q5 to Q7

Question 5. Write 8085 instruction code program to perform Division of an arbitrary hexadecimal operand. **(2 marks)**

Question 6. Write 8085 instruction code program to perform multiplication of any arbitrary hexadecimal operand.

Question 7. Write 8085 instruction code program to generate first 15 elements of Fibonacci series.