Exercise 01

Draw the flowchart and provide the assembly language program for each of the following algorithms:

1. If (A==03) B=02, otherwise B=03
2. For I=1 to 10, do (A=A+1; B=B-1;)
3. While (A!=100) do (A=A+1; B=B-2;)

Exercise 02

We want to add two signed numbers N1 and N2 located at addresses 1100H and 1101H, respectively. The result is stored at address 1102H if it is positive, at address 1103H if it is negative, and at address 1104H if it is zero. Draw the flowchart and provide the assembly language program.

Exercise 03

Draw the flowchart of the program that calculates the sum of the first 11 integers. Then write the assembly language program.

Exercise 04

Write an 8085 program that allows to:

1. Copy a string of 100 characters located at address 1000H to a segment starting at address 2000H.
2. Determine the frequency of occurrence of the character 'A' (ASCII code 41h) in a text file starting at address 4000H.

Exercise 05

Create the flowchart and write the program that allows to:

1. Initialize two arrays, 'TAB1' and 'TAB2', each with 5 bytes, located at addresses 1000H and 1005H. These arrays are initialized with the following values: 1, 2, 3, 4, 5 and 6, 7, 8, 9, 10, respectively.
2. Add the elements of the two arrays and store the result in a third array, 'TAB3', located at address 100AH.
3. Calculate the sum of the elements in the resulting array and store it in memory location 100BH.

Exercise 06

Sorting an array of N=5 elements starting from address 1000H while writing the 8085 assembly language program for the following algorithm:

```
i ◄—— 0
j ◄—— 1
n ◄—— 5
While i<n-1
        While j< n
                If TAB[i] > TAB[j] then swap TAB[i] and TAB[j]
                j=j+1
        End While
        i=i+1
        j=i+1
End While
```

Exercise 07

Write an assembly language program that checks whether a string starting from address 2000H and ending with the null character "00H" is a palindrome or not.