INTRODUCTION TO MICROCOMPUTERS LAB.

152115025

Homework #2
(ARITHMETIC INSTRUCTIONS)

In this study, you are expected to add two 16 bit BCD numbers <u>by using decimal adjust accumulator</u>.

First of all, you need to receive your starting year at university and the number 6789 as hexadecimal from the I/O ports in the range "00h-03h" (you may need to convert hexadecimal to decimal for the ports!). Instead of using code, use values by adding them to I/O ports from the interface! (25p)

00h -> 20h

01h -> 23h

02h -> 67h

03h -> 89h

The values you will receive from the ports need to be transferred to the register pairs as "DE -> 6789h" and "BC -> 2023h," respectively. Afterwards, you are expected to perform 16 bit BCD addition using these register pairs. Since the arithmetic instructions you are expected to use can operate with 8 bits, you must perform the operation in the order "C+E" and then "B+D" as shown in the example. (50p)

```
    20   23        B-C

    67   89        D-E

 +_____

         12        carry!

    88

 +_____

    88   12
```

As you can see here, carry bit is used when the 8 bit range is exceeded.

Use the HL register pair as a address, by equating the last four digits of your student number ("HL -> 1000h"), to save the values you obtained during the addition process. Transfer the 8-bit values you will obtain during the process to the addresses <u>88h -> [HL], 12h -> [HL+1] (by using register pair increment!)</u>. As the output of the study, you should see the output of your addition process in the section of memory represented by the last four digits of your student number and in the next section. (25p)

152120231000h ->   1000h -> 88h

1001h -> 12h

Save your completed work in the file named "152120XX10XX_AdSoyad_HwX.asm" and zip it into file of the same name (not .asm.zip!). Upload the zip file to the relevant section on the UZEM.

<u>As indicated in the orientation, make sure that the comments on your work are descriptive, as this will be effective in scoring.</u>