Faculty of Engineering & Technology
Electrical & Computer Engineering Department

COMPUTER ORGANIZATION AND MICROPROCESSOR

-ENCS2380-

First semester 2020-2021

Final Project

Invert the first and the second bits of the ASCII code of each character.

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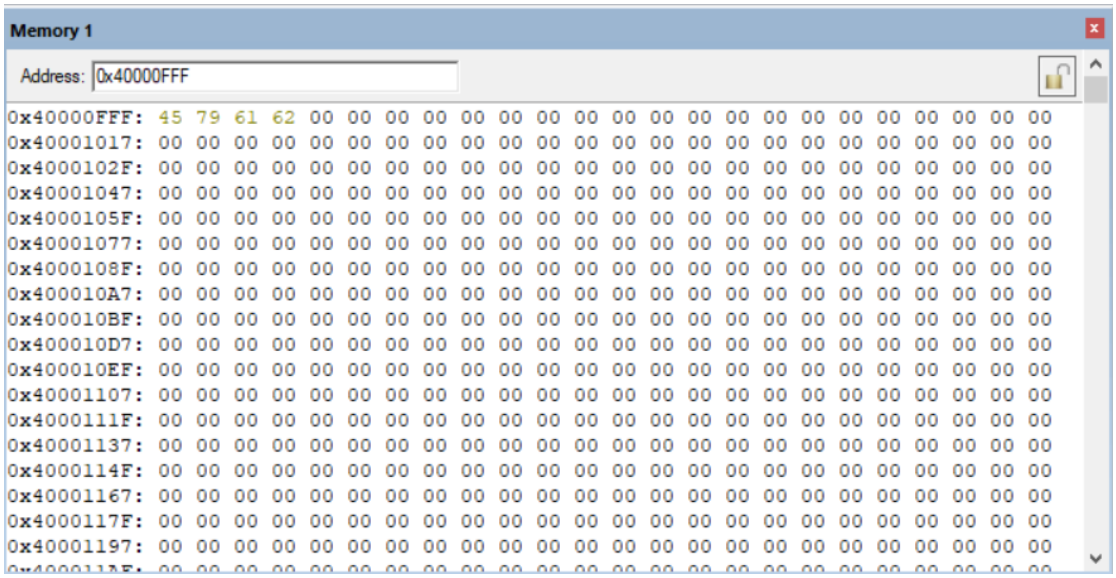
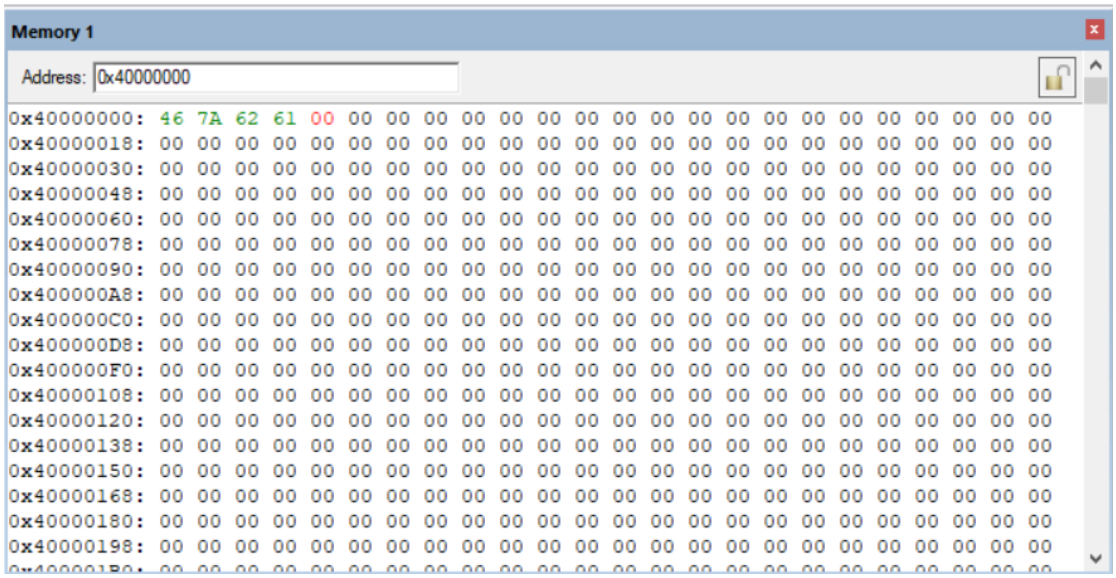
Section: 1
Date: 5 – 6 -2021

The Encryption



The Decryption



The Code :

```
        AREA MyProject1190999,CODE,READONLY
        ENTRY
                MOV R10,#0

                ; Name : Eyab Ghifari
                ; ID : 1190999
                ; my method is number 5
                ; (999 mod 5 )+ 1 = 5

MyName          DCB     "Eyab",0

                ADR     R0,MyName       ; put a pointer(address) of MyName String in R0
                LDR     R2,=0x40000000  ; Address in memory to point to the Encrypted string

StringToEncryption              ;will take MyName as input and will encrypt it and put it in R2 Address
                LDRB    R1,[R0]         ;loads a byte from R0 Address into R1
                CMP     R1,#0           ;chech if it reach the end of the string | compare between R0 and 0
                BEQ     ExitEncryption  ;Branch if Zero flag = 0 that mean it rech the end of the string
                EOR     R1,#3           ;make XOR of the first and second bits , 00000011 -> 1 XOR b = b' -> 0 XOR b = b
                STRB    R1,[R2]         ;takes a byte of data from R1 and stores it to R2 Address
                ADD     R0,#1           ;increment R0 by 1 -> move 1 byte
                ADD     R2,#1           ;increment R0 by 1 -> move 1 byte
                B       StringToEncryption ;Keep Looping until reach end of the string
ExitEncryption  ; exit from the Encryption
```

```
        LDR     R0,=0x40000000 ;Address in memory to point to the Encrypted string
        LDR     R2,=0x40000FFF ;Address in memory to point to the Decrypted string

StringToDecryption              ;will take R0 as input and will decrypt it and put it in R2 Address
        LDRB    R1,[R0]         ;loads a byte from R0 Address into R1
        CMP     R1,#0           ;chech if it reach the end of the string | compare between R0 and 0
        BEQ     ExitDecryption  ;Branch if Zero flag = 0 that mean it rech the end of the string
        EOR     R1,#3           ;make XOR of the first and second bits , 00000011 -> 1 XOR b = b' -> 0 XOR b = b
        STRB    R1,[R2]         ;takes a byte of data from R1 and stores it to R2 Address
        ADD     R0,#1           ;increment R0 by 1 -> move 1 byte
        ADD     R2,#1           ;increment R0 by 1 -> move 1 byte
        B       StringToDecryption ;Keep Looping until reach end of the string
ExitDecryption                  ;exit from the Encryption

        END                     ;The End of the Program
```