



Ahsanullah University of Science & Technology

Department of Computer Science & Engineering

Course No: CSE2214

Course Title: Assembly Language Programming Sessional

Assignment No: 04

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Section: C

Question No: 01

Question: Write a program to input an uppercase letter and display its corresponding lowercase letter.

Answer:

```
.MODEL SMALL
.STACK 100H
.DATA
.CODE
MAIN PROC
    ;initialize DS
    MOV
    AX,@DATA
    MOV DS,AX

    ;print user prompt
    LEA DX,MSG1
    MOV AH,9
    INT 21H

    ;input a character and convert to lowercase
    MOV AH,1
    INT 21H
    ADD
    AL,20H
    MOV CHAR,AL

    ;display on the next line
    LEA DX,MSG2

    MOV AH,9
    INT 21H
    ;DOS exit
    MOV AH,4CH
    INT 21H
    END MAIN
```

Question No: 02

Question: Write a program to read two decimal digits whose sum is less than 10 and display them and their sum in the next line with appropriate message.

Answer:

```
.MODEL SMALL
.STACK 100H
.DATA
    MSG1 DB "Enter First Number : $"
    MSG2 DB ,0DH,0AH,"Enter Second Number : $"
    MSG3 DB ,0DH,0AH,"SUM of Entered Numbers = $"
    NUM1 DB ?
    NUM2 DB ?,
    ANS DB ?,"$"

.CODE
MAIN
PROC

    ;INITIALIZE DS
    MOV AX,@DATA
    MOV DS,AX

    ;DISPLAY
    MSG1 LEA
    DX,MSG1
    MOV AH,9
    INT 21H

    ;READ THE FIRST NUMBER
    MOV AH,1H
    INT 21H
    SUB AL,30H
    MOV NUM1,AL
```

```
;DISPLAY  
MSG2 LEA  
DX,MSG2  
MOV AH,9  
INT 21H
```

```
;READ THE SECOND NUMBER  
MOV AH,1H  
INT 21H  
SUB AL,30H  
MOV NUM2,AL
```

```
;DISPLAY  
MSG3 LEA  
DX,MSG3  
MOV AH,9  
INT 21H
```

```
;ADD THE NUMBERS & MOVE VALUE TO ANS  
MOV AL,NUM1  
ADD AL,NUM2  
;ADD NUM1 AND NUM2  
ADD AL,30H  
MOV ANS,AL  
;MOVE THE VALUE TO ANS
```

```
;DISPLAY THE ANS  
LEA DX,ANS  
MOV AH,9  
INT 21H
```

```
;RETURN CONTROL TO DOS  
MOV AH,4CH  
INT 21H  
MAIN
```

ENDP
END MAIN

Question No: 03

Question: Using only MOV, ADD, SUB, INC, DEC and NEG, translate the following high level language assignment statements into assembly language. A, B, and C are word variables.

- a) $A = B - A$
- b) $A = -(A + 1)$
- c) $C = A + B$
- d) $B = 3 \times B + 7$
- e) $A = B - A - 1$

Answer:

a. MOV AX, B
SUB AX, A
MOV A, AX

b. MOV AX, A
INC AX
NEG AX
MOV A, AX

c. MOV AX, A
ADD AX, B
MOV C, AX

d. MOV AX, B
ADD AX, B
ADD AX, B
ADD AX, 7
MOV B, AX

e. MOV AX, B
SUB AX, A
DEC AX
MOV A, AX