

## CSE-3105 (Microprocessors and Micro-controller)

Date: 14 May 2020

### Topics of Lecture 06, Lecturer 07 and Lecture 08:

1. The following program is written in Assembly Language.

```
.MODEL SMALL                                ;display character
.STACK 100h                                MOV DL, BL ;retrieve character
.DATA                                       INT 21h ;display character
.CODE                                       ;return to dos
MAIN PROC                                  MOV AH,4CH ;DOS exit function
;display prompt                            INT 21h ;exit to DOS
MOV AH, 2                                  MAIN ENDP
MOV DL, '?'                                END MAIN
INT 21h
;input a character
MOV AH,1
INT 21h
MOV BL, AL ;save it in BL
;go to a new line
MOV AH,2 ;display character function
MOV DL, 0DH ; carriage return
INT 21h ;execute carriage return
MOV DL, 0AH ;line feed
INT 21h ;execute line feed
```

Analyze each instruction of the program and answer the following question:

- (a) What are the uses of .MODEL, .STACK, .DATA and .CODE directives in Assembly Language?
  - (b) How can you display a character in Assembly Language?
  - (c) How can you take input from user in Assembly language?
  - (d) What are the reasons of entering into various values in AH such as AH=2, AH=1 and AH=4CH?
  - (e) What are the purposes of using INT 21H?
2. Explain the working procedure of MOV, XCHG, ADD, SUB, INC, DEC and NEG instructions in Assembly Language.
  3. Write an Assembly language program that can display a string.
  4. Find the error(s) of the following assembly program and explain the reasons and write the possible solution of the problem.

```
.MODEL SMALL  
.STACK 100h  
.DATA  
MSG DB 'HELLO!$' ;define the message  
.CODE  
MAIN PROC  
;display message  
LEA DX, MSG ;get message  
MOV AH, 9 ;display string function  
INT 21h ;display message  
;return to dos  
MOV AH, 4CH ;DOS exit function  
INT 21h ;exit to DOS  
MAIN ENDP  
END MAIN
```

5. What are two types of flags exists in flag register in 8086 microprocessor?
6. What are the uses of control flags such as Direction Flag (DF), Interrupt Flag (IF) and Trap Flag (TF)?