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AP22110011103

1 (a) Write a program in assembly language to print single character on screen.

ORG 100h ; Origin, to specify that the program starts at 100h (COM file format)

MOV DX, OFFSET msg\_read

MOV AH,09h

INT 21h

; Read a single character from user

MOV AH, 01h ; Function 01h of INT 21h is used to read a character from input

INT 21h ; Call DOS interrupt to get the character

MOV DL, AL ; Store the input character from AL register to DL for printing

MOV BL,AL

; Print the character on screen

MOV DX, OFFSET msg\_print

MOV AH, 09h ; Function 02h of INT 21h is used to print a character

INT 21h

MOV DL,BL

MOV AH,02h

INT 21h ; Call DOS interrupt to print the character

; Terminate the program

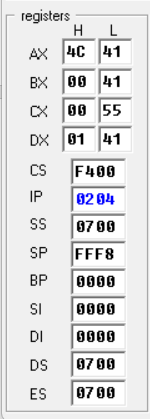
MOV AH, 4Ch ; Function 4Ch of INT 21h terminates the program

INT 21h ; Call DOS interrupt to exit

msg\_read DB 0Dh,0Ah, 'Enter the character: $'

msg\_print DB 0Dh,0Ah, 'The entered character is: $'

END ; End of program





(b) Write an assembly language program to convert an upper-case letter to the

corresponding lower-case letter.

ORG 100h ; Origin, to specify that the program starts at 100h (COM file format)

; Display message "Enter an uppercase letter: "

MOV DX, OFFSET msg\_input ; Load the address of the message

MOV AH, 09h ; Function 09h of INT 21h is used to display a string

INT 21h ; Call DOS interrupt to print the message

; Read a single character from the user

MOV AH, 01h ; Function 01h of INT 21h is used to read a character

INT 21h ; Call DOS interrupt to get the character

MOV DL, AL ; Store the input character in AL

; Check if the character is an uppercase letter (A-Z)

CMP AL, 'A' ; Compare AL with 'A'

JL NotUpperCase ; If the input is less than 'A', it is not uppercase

CMP AL, 'Z' ; Compare AL with 'Z'

JG NotUpperCase ; If the input is greater than 'Z', it is not uppercase

; Convert the uppercase letter to lowercase

; Add 32 (20h) to convert uppercase to lowercase

ADD AL,20h

MOV BL,AL

; Print the message "The lowercase letter is: "

MOV DX, OFFSET msg\_output ; Load the address of the output message

MOV AH, 09h ; Function 09h of INT 21h is used to display a string

INT 21h ; Call DOS interrupt to print the output message

; Print the converted lowercase letter

MOV AL,BL

MOV DL,AL ; Move the lowercase letter to DL

mov AH,02h ; Function 02h of INT 21h is used to print a single character

INT 21h ; Call DOS interrupt to print the character

JMP EndProgram ; Jump to the end of the program

NotUpperCase:

; If the input is not an uppercase letter, display an error message

MOV DX, OFFSET msg\_error ; Load the address of the error message

MOV AH, 09h ; Function 09h of INT 21h is used to display a string

INT 21h ; Call DOS interrupt to print the error message

EndProgram:

; Terminate the program

MOV AH, 4Ch ; Function 4Ch of INT 21h terminates the program

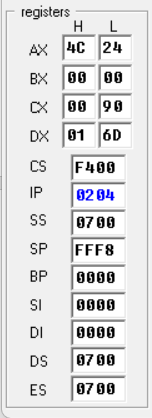
INT 21h ; Call DOS interrupt to exit

msg\_input DB 'Enter an uppercase letter: $'

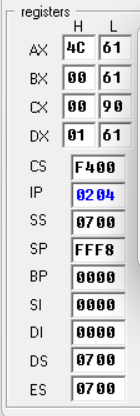
msg\_output DB 0Dh, 0Ah, 'The lowercase letter is: $' ; Output message

msg\_error DB 0Dh, 0Ah, 'Error: Not an uppercase letter! $' ; Error message

END ; End of program









2. (a) Write a program in assembly language to print multiple characters on screen.

ORG 100h

MAXLEN EQU 50

MOV DX, OFFSET msg\_input

MOV AH, 09h

INT 21h

LEA DI, buffer

ReadLoop:

MOV AH, 01h

INT 21h

CMP AL, 0Dh

JE PrintMessage

MOV [DI], AL

INC DI

CMP DI, OFFSET buffer + MAXLEN

JB ReadLoop

PrintMessage:

MOV BYTE PTR [DI], '$'

MOV DX, OFFSET msg\_output

MOV AH, 09h

INT 21h

MOV DX, OFFSET buffer

MOV AH, 09h

INT 21h

EndProgram:

MOV AH, 4Ch

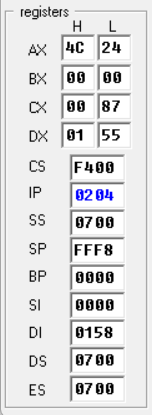
INT 21h

msg\_input DB 'Enter your message: $'

msg\_output DB 0Dh, 0Ah, 'You entered: $'

buffer DB MAXLEN DUP('$')

END





(b) Write an assembly language program to convert a lower-case letter to the

corresponding upper-case letter.

ORG 100h ; Origin, to specify that the program starts at 100h (COM file format)

; Display message "Enter an uppercase letter: "

MOV DX, OFFSET msg\_input ; Load the address of the message

MOV AH, 09h ; Function 09h of INT 21h is used to display a string

INT 21h ; Call DOS interrupt to print the message

; Read a single character from the user

MOV AH, 01h ; Function 01h of INT 21h is used to read a character

INT 21h ; Call DOS interrupt to get the character

MOV DL, AL ; Store the input character in AL

; Check if the character is an uppercase letter (A-Z)

CMP AL, 'a' ; Compare AL with 'A'

JL NotUpperCase ; If the input is less than 'A', it is not uppercase

CMP AL, 'z' ; Compare AL with 'Z'

JG NotUpperCase ; If the input is greater than 'Z', it is not uppercase

; Convert the uppercase letter to lowercase

; Add 32 (20h) to convert uppercase to lowercase

SUB AL,20h

MOV BL,AL

; Print the message "The lowercase letter is: "

MOV DX, OFFSET msg\_output ; Load the address of the output message

MOV AH, 09h ; Function 09h of INT 21h is used to display a string

INT 21h ; Call DOS interrupt to print the output message

; Print the converted lowercase letter

MOV AL,BL

MOV DL,AL ; Move the lowercase letter to DL

mov AH,02h ; Function 02h of INT 21h is used to print a single character

INT 21h ; Call DOS interrupt to print the character

JMP EndProgram ; Jump to the end of the program

NotUpperCase:

; If the input is not an uppercase letter, display an error message

MOV DX, OFFSET msg\_error ; Load the address of the error message

MOV AH, 09h ; Function 09h of INT 21h is used to display a string

INT 21h ; Call DOS interrupt to print the error message

EndProgram:

; Terminate the program

MOV AH, 4Ch ; Function 4Ch of INT 21h terminates the program

INT 21h ; Call DOS interrupt to exit

msg\_input DB 'Enter an lowercase letter: $'

msg\_output DB 0Dh, 0Ah, 'The uppercase letter is: $' ; Output message

msg\_error DB 0Dh, 0Ah, 'Error: Not an lowercase letter! $' ; Error message

END ; End of program

