

Lab10

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Please explain how they work by commenting line by line

---10.1---

.model small ; Specifies the memory model as small (1 code segment and 1 data segment).

.stack 100h ; Allocate 256 bytes for the stack.

.data ; Start of the data segment (this is where data is defined).

 ; No data is defined here.

.code ; Start of the code segment.

MAIN PROC ; Define the start of the main procedure.

MOV bl, 3 ;Assign 3 to bl register

MOV cl, 1 ;Assign 1 to cl register

ADD bl, cl ;Adding the value of bl and cl then assign to bl

ADD bl, 48 ;Adding 48 into the addition result For ASCII Management

MOV dl, bl ;Moving the value of bl into dl for performing output

MOV ah, 2 ;Calling print Function for print value in dl register

INT 21H ;Calling text Interrupt

MOV ah, 4CH ;Calling Exit Function

INT 21H ;Calling text Interrupt

MAIN ENDP ; End of the main procedure.

END MAIN ; End of the program.

---10.2---

.model small ; Specifies the memory model as small.

.data ; Start of the data segment (no data defined here).

.code ; Start of the code segment.

MAIN PROC ; Define the start of the main procedure.

MOV al, 5 ; Move the value 5 into AL register.

MOV bl, 2 ; Move the value 2 into BL register.

ADD ah, 48 ; Add 48 to AH to adjust for ASCII value. AH = 48 (ASCII '0').

MOV bh, ah ; Move the value of AH (which is 48) into BH. Now, BH = 48 (ASCII '0').

ADD al, 48 ; Add 48 to AL. Now, AL = 5 + 48 = 53 (ASCII '5').

MOV bl, al ; Move the value of AL (53) into BL. Now, BL = 53 (ASCII '5').

MOV dl, bh ; Move the value of BH (48) into DL. DL now holds ASCII '0'.

MOV ah, 2 ; Set AH to 2 to prepare for the "print character" function.

INT 21H ; Call interrupt 21H to print the character in DL ('0').

MOV dl, bl ; Move the value of BL (53) into DL. DL now holds ASCII '5'.

MOV ah, 2 ; Set AH to 2 to prepare for the "print character" function.

INT 21H ; Call interrupt 21H to print the character in DL ('5').

MOV ah, 4CH ; Set AH to 4Ch for the "exit" function.

INT 21H ; Call interrupt 21H to exit the program.

MAIN ENDP ; End of the main procedure.

END MAIN ; End of the program.

---10.3---

;Program to convert UPPER into LOWER letter

.model small ; Specifies the memory model as small.

.stack 100h ; Allocate 256 bytes for the stack.

.data ; Start of the data segment (no data defined here).

.code ; Start of the code segment.

MAIN PROC ; Define the start of the main procedure.

;Input Character

MOV ah, 1 ; Set AH to 1 to prepare for the "read character" function.

INT 21H ; Call interrupt 21H, function 1 to get the input character into AL.

MOV bl, al ; Move the input character (in AL) into BL for further processing.

;Printing next line

MOV dl, 0DH ; Move carriage return (CR, ASCII 0Dh) into DL.

MOV ah, 2 ; Set AH to 2 to prepare for the "print character" function.

INT 21H ; Call interrupt 21H to print the carriage return.

MOV dl, 0AH ; Move line feed (LF, ASCII 0Ah) into DL.

MOV ah, 2 ; Set AH to 2 to prepare for the "print character" function.

INT 21H ; Call interrupt 21H to print the line feed.

;Printing Character

MOV dl, bl ; Move the input character from BL into DL.

ADD dl, 32 ; Add 32 to DL to convert uppercase letter to lowercase. (ASCII 'A' = 65, 'a' = 97; $97 = 65 + 32$)

MOV ah, 2 ; Set AH to 2 to prepare for the "print character" function.

INT 21H ; Call interrupt 21H to print the character in DL (converted to lowercase).

;Calling Exit Function

MOV ah, 4CH ; Set AH to 4Ch for the "exit" function.

INT 21H ; Call interrupt 21H to exit the program.

MAIN ENDP ; End of the main procedure.

END MAIN ; End of the program.