13/10/2020

MP LAB

Binary search:-

```
.model small
; MACRO TO DISPLAY THE MESSAGE...
DISPLAY MACRO MSG
        LEA DX, MSG
        MOV AH, 09H
        INT 21H
ENDM
.DATA
LIST DB 01H, 05H, 07H, 10H, 12H, 14H
NUMBER EQU ($-LIST)  (For finding out length of array)
↓
Variable
KEY DB 012H
MSG1 DB 0DH, 0AH, " ELEMENT FOUND IN THE LIST..$"
MSG2 DB 0DH, 0AH, "SEARCH FAILED!! ELEMENT NOT FOUND
                   IN THE LIST$"
.CODE
START: MOV AX, @DATA
       MOV DS, AX

       MOV CH, NUMBER-1      ; HIGH VALUE..
       MOV CL, 00H           ; LOW VALUE...
AGAIN: MOV SI, OFFSET LIST / Lea si, List
       XOR AX, AX
       CMP CL, CH
       JE NEXT
       JNC FAILED
```

```
NEXT:   MOV AL, CL
        ADD AL, CH
        SHR AL, 01H      ; DIVIDE BY 2
        MOV BL, AL
        XOR AH, AH       ; CLEAR AH
        MOV BP, AX
        MOV AL, DS:[BP][SI]
        CMP AL, KEY      ; COMPARE KEY AND A[I]
        JE SUCESS        ; IF EQUAL, DISPLAY SUCESS MESSAGE
        JC INCLOW
        MOV CH, BL       ; IF KEY > A[I] SHIFT HIGH
        DEC CH
        JMP AGAIN
INCLOW: MOV CL, BL       ; IF KEY < A[I] SHIFT LOW
        INC CL
        JMP AGAIN
SUCESS: DISPLAY MSG1
        JMP FINAL
FAILED: DISPLAY MSG2     ; JOB OVER, TERMINATE..
FINAL:  MOV AH, 4ch
        INT 21H
END START:
```

To compute mid = (low + high)/2