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LAB PROGRAM.1

Q. Binary Search.

A.
```
.MODEL SMALL

DISPLAY MACRO MSG
        LEA DX, MSG
        MOV AH, 09H
        INT 21H
ENDM

.DATA
LIST DB 01H, 05H, 07H, 10H, 12H, 14H
NUMBER EQU($-LIST)
KEY DB 10H
MSG1 DB 0DH,0AH, "ELEMENT FOUND IN THE LIST---$"
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            ;MOV AX, 00H
       CMP CL, CH            ;SUBSTRACTION OF CL-CH
       JE NEXT
       INC FAILED
```

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```
NEXT:   MOV AL,CL          ; AL = 00H
        ADD AL,CH          ; AL = 00 + 05 = 05
        SHR AL,01H         ; DIVIDE BY 2
        MOV BL,AL          ; BL → index of middle element
        XOR AH,AH          ; clear AH
        MOV BP,AX
        MOV AL, DS:[BP][SI]
        CMP AL, KEY        ; COMPARE KEY AND A[I]
        JE  SUCCESS        ; IF EQUAL, DISPLAY SUCCESS MESSAGE
        JC  INCLOW
        MOV CH, BL         ; IF KEY > A[I] SHIFT HIGH
        DEC CH
        JUMP AGAIN

INCLOW: MOV CL, BL         ; IF KEY < A[I] SHIFT LOW
        INC CL
        JUMP AGAIN

SUCCESS: DISPLAY MSG1
         JMP FINAL

FAILED : DISPLAY MSG2      ; JOB OVER. TERMINATE.....

FINAL : MOV AH, 4CH
        INT 21H

END START
```