Name:- Sravan Chittupalli

VJTI ID: 181060018

EXPERIMENT - 5

AIM

1. Design and implement an 8086 assembly language program to search a key element in a list of 'n' 16-bit numbers using the binary search algorithm.

SOFTWARE

- EMU8086 emulator

ALGORITHM

1. First the element in the middle position is compared with the KEY variable.
2. If KEY greater than the middle element then BX is given value of middle position + 1 and if KEY is less than middle element then DX is given value of middle position – 1.
3. Repeat step 1 and 2 till we find a match.
4. Store this result in RES variable.
5. Stop Execution

CODE

```asm
.model small

.data
    ARR DW 0011H,2201H,3723H,4512H,5432H,7126H,0A125H,0C123H
    KEY DW 0A125H
    RES DB 0FFh
    LEN DW ($-ARR)/2


.code
    .startup

    MOV AX,@DATA
    MOV DS,AX

    MOV BX,00
    MOV DX,LEN
    MOV CX,KEY
AGAIN:
    CMP BX,DX
    JA ENDLABEL
    MOV AX,BX
    ADD AX,DX
    SHR AX,1
    MOV SI,AX
    ADD SI,SI
    CMP CX,ARR[SI]
    JAE GREATER
    DEC AX
    MOV DX,AX
    JMP AGAIN
GREATER:
    JE PASS
    INC AX
    MOV BX,AX
    JMP AGAIN
PASS:
    MOV RES,AL
ENDLABEL:
    .exit
```
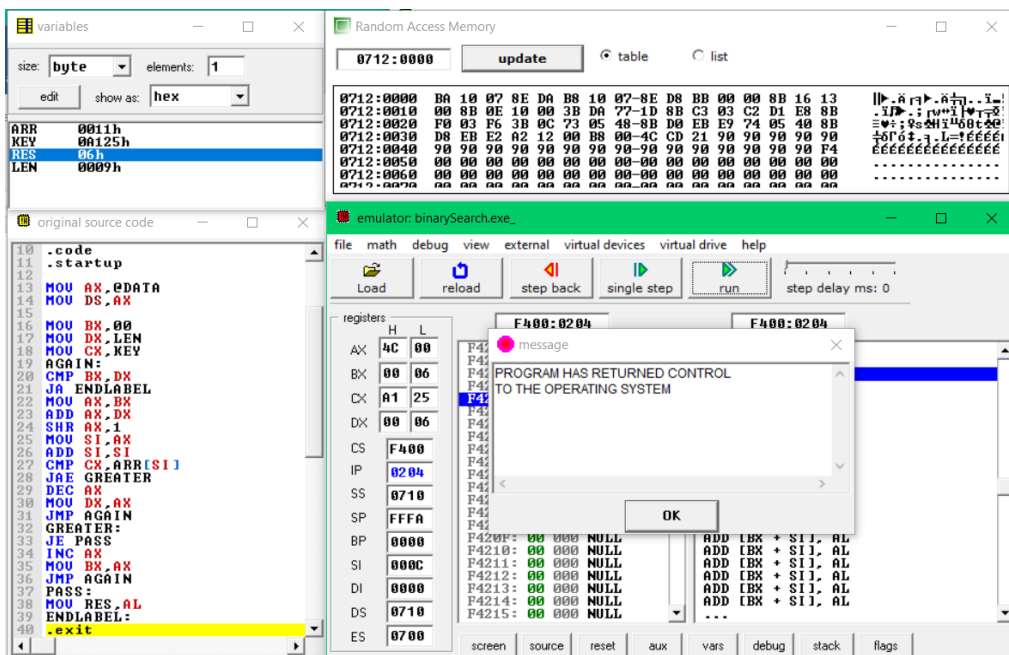
- ## INPUT
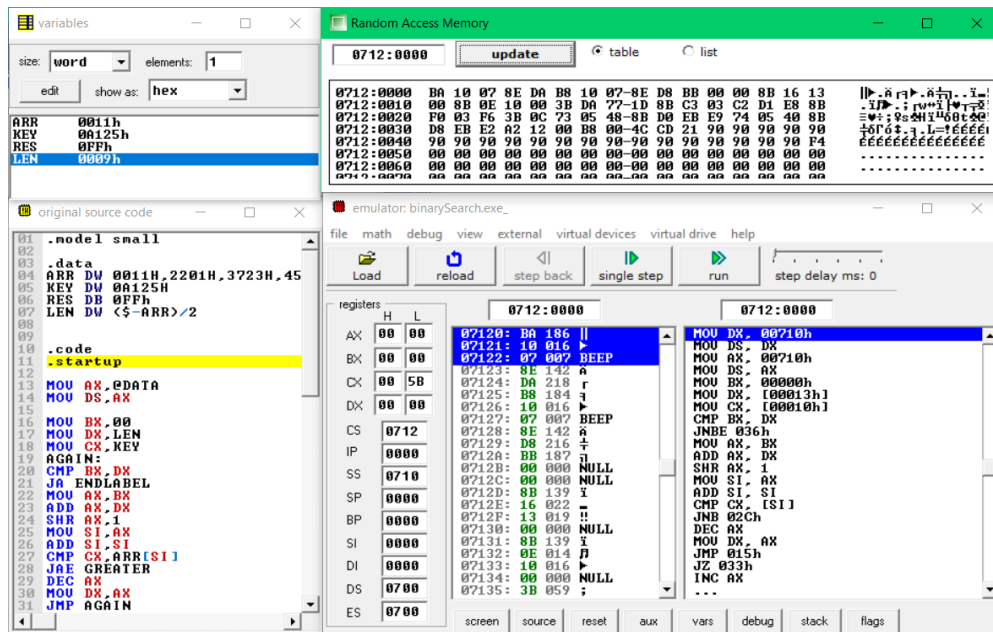
- ## OUTPUT

CONCLUSION

In this program we have learnt how to implement binary search algorithm in assembly language to find a number in the given array. This algorithm is an efficient way to search an array. It is faster than a linear search as it eliminates half of the list in every step.