

LINEAR SEARCH

```
.model small
.386
.data
    ARRAY DW 20 DUP (?)
    DATA1 dw 0000H
    indexmsg db 10,13,"Element is present at :: $"
    fail db 10,13,"Element is not present in the array $"
    msg db 10,13,"Enter the size of the array :: $"
    msg2 db 10,13,"Enter the array :: $"
    msg3 db 10,13,"Enter the element to be searched :: $"
```

```
.code
.startup
```

```
    MOV AH,09
    MOV DX,OFFSET msg
    INT 21H
```

```
    MOV AH,01
    INT 21H
```

```
    SUB AL,30H
    MOV AH,0
    MOV CX,AX
```

```
    MOV DATA1,AX
```

```
    MOV AH,09
    MOV DX,OFFSET msg2
    INT 21H
```

```
    MOV AH,0
```

```
    MOV SI, 0
    MOV BX, OFFSET ARRAY
```

```
L1: MOV DL, 0AH ; jump onto next line
    MOV AH, 02H
    INT 21H
```

```
    MOV DX, SI ; input element of the array
    MOV AH, 01H
    INT 21H
```

```
    SUB AL,30H
    ;MOV SI, DX
```

```
    MOV [BX + SI], AX
    INC SI
LOOP L1
```

```
MOV CX,DATA1
MOV AH,09
MOV DX,OFFSET msg3
INT 21H
```

```
MOV AH,01 ; Enter element to be searched
INT 21H
```

```
SUB AL,30H
MOV SI, 0
MOV BX, OFFSET ARRAY
L2: CMP [BX + SI], AL ; linear search loop
    JZ L3 ; jump if element is found
    INC SI
LOOP L2
```

```
MOV AH, 09H
MOV DX,OFFSET fail ; if the element is not found
INT 21H
```

```
MOV AH, 4CH ; to forcefully terminate the program
INT 21H
```

```
L3: MOV AH, 09H
MOV DX,OFFSET indexmsg ; if the element is found
INT 21H
```

```
MOV AH,02H ;display index
ADD SI,30H
INC SI ;SI contains the index
MOV DX,SI
INT 21H
```

```
MOV AH, 4CH
INT 21H
```

```
.EXIT
END
```

OUTPUT

```

Enter the size of the array :: 7
Enter the array ::
1
3
2
4
9
7
3
Enter the element to be searched :: 9
Element is present at :: 5

```

```

C:\TASM>lsearch

Enter the size of the array :: 4
Enter the array ::
3
2
4
1
Enter the element to be searched :: 5
Element is not present in the arary

```

BINARY SEARCH

```

.model small
.386
.data
    ARRAY DW 20 DUP (?)
    DATA1 dw 0000H
    DATA2 dw 0000H
    indexmsg db 10,13,"Element is present at :: $"
    fail db 10,13,"Element is not present in the arary $"
    msg db 10,13,"Enter the size of the array :: $"
    msg2 db 10,13,"Enter the array :: $"
    msg3 db 10,13,"Enter the element to be searched :: $"

.code
.startup

    MOV AH,09
    MOV DX,OFFSET msg
    INT 21H

    MOV AH,01
    INT 21H
    SUB AL,30H
    MOV AH,0
    MOV CX,AX
    MOV DATA1,AX

```

```
MOV AH,09
MOV DX,OFFSET msg2
INT 21H
```

```
MOV AH,0
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MOV SI, 0
MOV BX, OFFSET ARRAY
L1: MOV DL, 0AH ; jump onto next line
    MOV AH, 02H
    INT 21H
```

```
    MOV DX, SI ; input element of the array
    MOV AH, 01H
    INT 21H
    SUB AL,30H
    MOV SI, DX
    MOV [BX + SI], AX
    INC SI
LOOP L1
```

```
MOV AH,09
MOV DX,OFFSET msg3
INT 21H
```

```
MOV AH,01 ; Enter element to be searched
INT 21H
SUB AL,30H
```

```
MOV DATA2,AX
MOV CX,DATA1
MOV SI,0
MOV DI, DATA1
MOV BP, 0
MOV BX, OFFSET ARRAY
MOV AX, DATA1
```

```
L2: MOV SI, DI
    ADD SI, BP
    MOV AX, SI
    MOV DL, 2
    DIV DL
    MOV AH,0
    MOV DX,0
    MOV SI,AX
    MOV DX,DATA2

    CMP [BX + SI],DL
    JZ L3
    CALL L4
LOOP L2
```

```
MOV AH, 09H
MOV DX, OFFSET fail ; if the element is not found
INT 21H
MOV AH, 4CH ; to forcefully terminate the program
INT 21H
```

```
L3: MOV AH, 09H
    MOV DX, OFFSET indexmsg; if the element is found
    INT 21H
```

```
    MOV AH, 02H ;display index
    ADD SI, 30H
    INC SI ;SI contains the index
    MOV DX, SI
    INT 21H
```

```
    MOV AH, 4CH
    INT 21H
```

```
L4 PROC NEAR
    CMP [BX+SI], DL
    JL L6
    MOV DI, SI
    RET
```

```
    L6: MOV BP, SI
    RET
L4 ENDP
```

```
.EXIT
END
```

OUTPUT

```
C:\TASM>bsearch

Enter the size of the array :: 5
Enter the array ::
1
2
3
4
5
Enter the element to be searched :: 2
Element is present at :: 2
C:\TASM>bsearch

Enter the size of the array :: 3
Enter the array ::
1
2
3
Enter the element to be searched :: 4
Element is not present in the array
```