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Date: 30/3/22

EXPERIMENT 9

Aim: Program to search for a given number

LO: 4

LO STATEMENT: Develop the assembly level programming using 8086 loop instruction set

Software and Hardware Requirements: TASM Software

Theory:

1. MOV Instruction

The MOV instruction is the most important command in the 8086 because it moves data from one location to another. It also has the widest variety of parameters; so the assembler programmer can use MOV effectively, the rest of the commands are easier to understand. MOV copies the data in the source to the destination. The data can be either a byte or a word. Sometimes this has to be explicitly stated when the assembler cannot determine from the operands whether a byte or word is being referenced.

Syntax:
Move Destination, Source

Example:
MOV Ax, Bx

2. LEA Instruction

LEA is Used to load the address of operand into the provided register. LES − Used to load ES register and other provided register from the memory. The lea instruction places the address specified by its first operand into the register specified by its second operand. Note, the contents of the memory location are not loaded, only the effective address is computed and placed into the register.

3. INC Instruction:

The INC instruction adds one to the destination operand, while preserving the state of the carry flag CF. The destination operand can be a register or a memory location. This instruction allows a loop counter to be updated without disturbing the CF flag.

Syntax:

INC destination

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4. JMP Instruction:

Conditional execution often involves a transfer of control to the address of an instruction that does not follow the currently executing instruction. Transfer of control may be forward, to execute a new set of instructions or backward, to re-execute the same steps. The JMP instruction provides a label name where the flow of control is transferred immediately.

Syntax:

JMP label

Example:

JMP next

5. JZ Instruction:

he jz instruction is a conditional jump that follows a test.It jumps to the specified location if the Zero Flag (ZF) is set (1). jz is commonly used to explicitly test for something being equal to zero whereas je is commonly found after a cmp instruction.

Syntax:

jz location

6. CMP Instruction:

The cmp instruction is used to perform comparison. It's identical to the sub instruction except it does not affect operands. It impacts the Zero Flag (ZF) as well as the Carry Flag (CF)

Syntax:

cmp destination, source

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Code:

```
assume cs:code,ds:data
data segment
a1 db 10H,34H,13H,78H,56H
msg1 db 0AH,0DH,'Number Found$'
msg2 db 0AH,0DH,'Number Absent$'
num db 10H
data ends
code segment
start:mov Ax,data
    mov Ds,Ax
    mov Cx,05H
    lea Si,a1
    mov AH,num
to :  mov Al,[Si]
    CMP Al,AH
    JZ me
    INC Si
    DEC Cx
    JNZ to
    lea Dx,msg2
    mov AH,09H
    int 21H
    JMP last
me :  lea Dx,msg1
    mov AH,09H
    int 21H
last: mov AH,4CH
    int 21H
code ends
 end start
```

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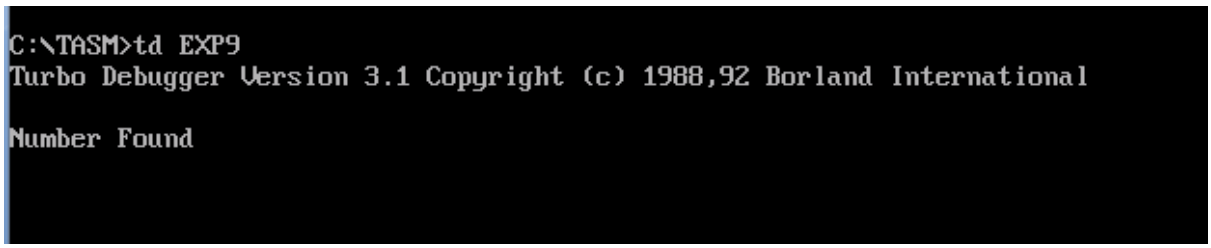
Output:



Conclusion:

From this experiment we learned about inc and dec commands and also how to search for a number