Observed Output

A (Assemble)

- A 0100

```
073F:0100    MOV AX,1000
073F:0103    MOV BX,1024
073F:0106    MOV CX,010E
073F:0109    MOV SI,107F
073F:010C    INT 3
073F:010D
```

G (Go)

- G = 0100

```
AX=1000 BX=1024 CX=010E DX=0000 BP=0000 SI=107F DI=0000
DS=073F ES=073F SS=073F CS=073F IP=010C NV UP EI PL NZ NA
PO NC
```

E (Enter)

- E 0100 56 35 89 78 94 → enter data starting from DS:0100
- E 0100
  2000:0100 12 → replace data of DS:0100
- E CS:0100 B8 12 00 BB 53 12 0C → enter machine code starting from CS:0100

F (Fill)

- F 0100 0104 45 46 43 08 09 → values from 45 to 49 will be filled in memory locations DS:0100 to 0104

Experiment Name / No.: 1. INTRODUCTION TO DEBUGGING COMMANDS

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Aim

To learn different commands of debugging.

Theory

DEBUG is a program which allows the programmer to write, execute & debug assembly language programs, & to examine the contents of registers & memory. To start DEBUG its name is typed after DOS prompt as shown below:

```
C:\> DEBUG
-
```

'Enter' key after a command.

The hyphen shown above is DEBUG prompt.

1. A (Assemble) converts mnemonics into machine codes. The machine codes are directly stored in the memory. Formats are:

   A ; assembles beginning from CS:0100

   A Address ; assembles starting from the given address.

2. C (Compare) compares the contents of two specified blocks of memory. The general format is C Range Address

   When the contents of the 2 blocks of memory are not same, the addresses where contents are different are displayed.

3. D (Display or Dump) displays the contents of the specified memory locations. Formats are:

   D address range

   or D address

   or D

4. E (Enter) To enter data or machine codes. Default register is the DS:IP.

   Formats are:

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```
-a
073F:0100    MOV AX,0015
073F:0103    MOV CX,0023
073F:0106    SUB CX,AX
073F:010_    MOV [120],AL
073F:010B    MOV CL,[120]
073F:010F    INT 3
073F:0110

-g=0100
AX=0015 BX=0000 CX=0015 DX=0000 SP=FFEE BP=0000 SI=0000 DI=0000
DS=073F ES=073F SS=073F CS=073F IP=010F NV UP EI PL NZ AC PO NC
```

E address list

E address

5. F(Fill) fills a range of memory locations with the values in the list. Formats are:

5 F address range list

6. G(Go) Executes program. Provides break-point. Formats are:

G = address

G address

7. H(Hexadecimal) shows the sum & difference of 2 hexadecimal numbers.

8-10 I(Input) Inputs & displays 1 byte from a port. Format is:

I port address

9. L(Load) It is used to load a file or program. Its default register is CS.

10. M(Move) Copies (moves) the block of data from 1 memory area into another. The general format is M range address

11-15 N(Name) It is used to name a program or file to be read or written onto disk. The format is

-N filename.COM

When drive name is not given in the command, the file will be saved on the hard disk.

12-20 O(Output) Sends a byte to a port. Format is

O port address byte

13. Q(Quit) It is used to exit DEBUG. The format is -Q

14. R(Register) Displays the contents of 1 or more CPU registers, & the next instruction. Format is

25 -R register name

15. S(Search) Searches the specified memory range for the specified list of bytes. Format is S range list.

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T(Trace) Executes a program in a single-step mode. The format is

T = address

U(Unassemble) Unassembles machine code of specified memory range. General format is

U address range or U address

W(Write) It is used to save a file or program. Default register is the CS. Format is

W address

Result

Familiarized with the various DEBUG commands in DOS.

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