

Experiment 7

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.MODEL SMALL

.STACK 100H

.DATA

NUM1 DW 36 ; First number

NUM2 DW 24 ; Second number

GCD_RESULT DW ? ; Store GCD result

LCM_RESULT DW ? ; Store LCM result

MSG_GCD DB 'GCD: \$'

MSG_LCM DB ' LCM: \$'

NEWLINE DB 0DH, 0AH, '\$' ; New line for output formatting

.CODE

MAIN PROC

MOV AX, @DATA

MOV DS, AX

MOV AX, NUM1

MOV BX, NUM2

CALL GCD ; Compute GCD

MOV GCD_RESULT, AX

MOV AX, NUM1

MUL BX ; AX = NUM1 * NUM2

DIV GCD_RESULT ; AX = LCM (Product / GCD)

MOV LCM_RESULT, AX

MOV DX, OFFSET MSG_GCD

MOV AH, 09H

INT 21H ; Print "GCD: "

MOV AX, GCD_RESULT

CALL PRINT_NUM ; Print GCD

MOV DX, OFFSET NEWLINE

MOV AH, 09H

INT 21H ; Print new line

MOV DX, OFFSET MSG_LCM

MOV AH, 09H

INT 21H ; Print " LCM: "

MOV AX, LCM_RESULT

CALL PRINT_NUM ; Print LCM

MOV AH, 4CH

INT 21H ; Exit program

MAIN ENDP

; GCD Procedure (Euclidean Algorithm)

GCD PROC

CMP BX, 0

JE END_GCD

GCD_LOOP:

MOV DX, 0

DIV BX ; AX = AX / BX, Remainder in DX

MOV AX, BX

MOV BX, DX

CMP BX, 0

JNE GCD_LOOP

END_GCD:

RET

GCD ENDP

; Print Number Procedure

PRINT_NUM PROC

MOV CX, 0

NEXT_DIGIT:

MOV DX, 0

MOV BX, 10

DIV BX ; AX / 10 → Quotient in AX, Remainder in DX

PUSH DX

INC CX

TEST AX, AX

JNZ NEXT_DIGIT

PRINT_LOOP:

POP DX

ADD DL, '0'

MOV AH, 02H

INT 21H

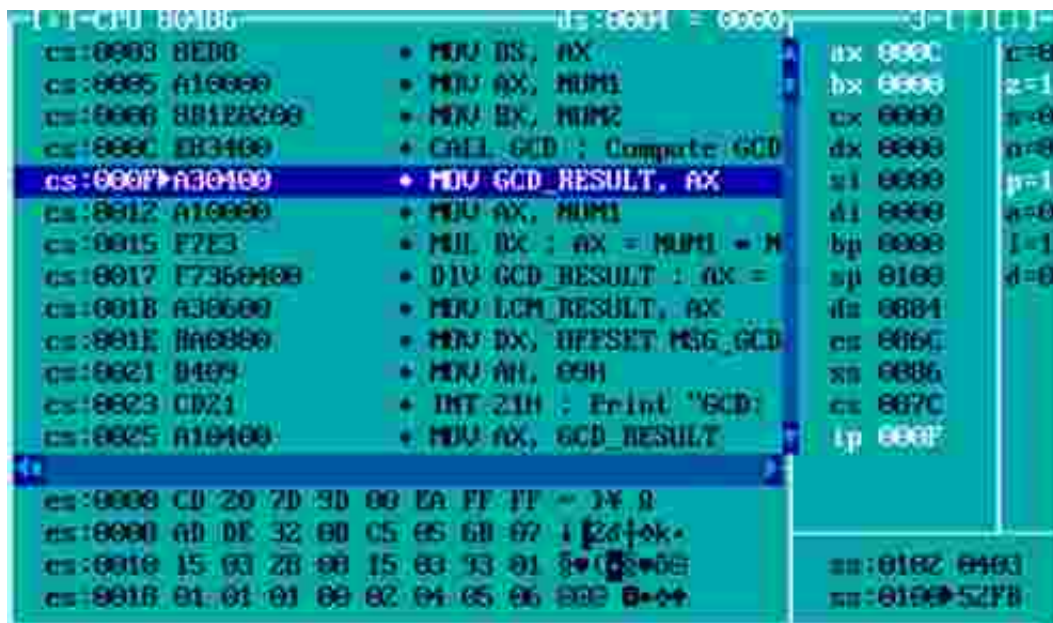
LOOP PRINT_LOOP

RET

PRINT_NUM ENDP

END MAIN

OUTPUT:



The screenshot shows a DOS assembly program running in a debugger. The program is titled "GCD" and is located at "C:\DOS\GCD.COM". The program is running at address 0000:0000. The output window shows the following text:

```
GCD: 2
```

The program's memory dump shows the following data:

Address	Hex	Dec
0000:0000	CD 20 7D 3D 00 EA FF 7F	20 7D 3D 00 EA FF 7F
0000:0001	AD DE 32 00 05 05 60 07	AD DE 32 00 05 05 60 07
0000:0002	15 03 2B 00 15 03 53 01	15 03 2B 00 15 03 53 01
0000:0003	01 01 01 00 02 04 05 06	01 01 01 00 02 04 05 06

The program's registers show the following values:

Register	Value
ax	0000
bx	0000
cx	0000
dx	0000
si	0000
di	0000
bp	0000
sp	0100
ip	0000