**Count number 1’s in a number**

DATA SEGMENT

NUM DW 0C0DEH ; Number to count the 1s in

COUNT DB 0 ; Variable to store the count of 1s

DATA ENDS

CODE SEGMENT

ASSUME CS:CODE, DS:DATA

START:

MOV AX, DATA ; Load the data segment address into AX

MOV DS, AX ; Move the data segment address to DS

MOV AX, NUM ; Load the number to count the 1s in into AX

MOV CX, 16 ; Set the loop counter to 16 (number of bits in a word)

COUNT\_ONES:

TEST AX, 1 ; Test the least significant bit of AX

JNZ INCREMENT ; Jump if not zero (i.e., bit is 1)

NEXT\_BIT:

SHR AX, 1 ; Shift AX right by 1 bit

LOOP COUNT\_ONES ; Loop until all bits in AX are processed

INCREMENT:

INC COUNT ; Increment the count of 1s

JMP NEXT\_BIT ; Jump to process the next bit

MOV AH, 4CH ; Set the exit function number

INT 21H ; Invoke the DOS interrupt to terminate the program

CODE ENDS

END START

**Count number 0’s in number**

DATA SEGMENT

NUM DW 0C0DEH ; Number to count the 0s in

COUNT DB 0 ; Variable to store the count of 0s

DATA ENDS

CODE SEGMENT

ASSUME CS:CODE, DS:DATA

START:

MOV AX, DATA ; Load the data segment address into AX

MOV DS, AX ; Move the data segment address to DS

MOV AX, NUM ; Load the number to count the 0s in into AX

MOV CX, 16 ; Set the loop counter to 16 (number of bits in a word)

COUNT\_ZEROS:

TEST AX, 1 ; Test the least significant bit of AX

JZ INCREMENT ; Jump if zero (i.e., bit is 0)

NEXT\_BIT:

SHR AX, 1 ; Shift AX right by 1 bit

LOOP COUNT\_ZEROS ; Loop until all bits in AX are processed

INCREMENT:

INC COUNT ; Increment the count of 0s

JMP NEXT\_BIT ; Jump to process the next bit

MOV AH, 4CH ; Set the exit function number

INT 21H ; Invoke the DOS interrupt to terminate the program

CODE ENDS

END START