# Lab Week 12&13 – Using Multiplication & Division Instructions

## Objectives

The objectives of this lab are to learn how to use MUL and DIV instructions for different programming applications.

## Lab Tasks

**TASK 1:** Use following algorithm and code to read a number in decimal from user:

TOTAL = 0

READ AN ASCII DIGIT

REPEAT

CONVERT CHARACTER TO BINARY VALUE

TOTAL = 10 X TOTAL + VALUE

READ A CHARACTER

UNTIL CHARACTER IS CARRIAGE RETURN

**TASK 2:** Use following algorithm and code to display a number stored in AX register in decimal on console:

1. IF AX < 0 THEN
2. PRINT A MINUS SIGN
3. REPLACE AX BY ITS 2’S COMPLEMENT
4. END IF
5. GET THE DIGITS IN AX’S DECIMAL REPRESENTATION
6. CONVERT THESE DIGITS TO CHARACTER AND PRINT THEM

LINE 5:

COUNT = 0

REPEAT

DIVIDE QUOTIENT BY 10

PUSH REMAINDER ON THE STACK

COUNT = COUNT + 1

UNTIL QUOTIENT = 0

LINE 6

FOR COUNT TIMES DO

POP A DIGIT FROM STACK

CONVERT IT INTO A CHARACTER

OUTPUT THE CHARACTER

END FOR

|  |
| --- |
| .MODEL SMALL  .STACK 100H  .DATA  total db ?  .CODE  mov total,0  mov ah,1    while:  int 21h  cmp al,0Dh  je exit  mov cl,8  mov bl,0  lbl:  cmp cl,0  je lbl2  shl al,1  rcl bl,1  loop lbl  lbl2:  mov al,total  mov cl,10  mul cl  add al,bl  mov total,al  mov ah,1  jmp while    exit:  mov ah,4ch  int 21h |

|  |
| --- |
| .MODEL SMALL  .STACK 100H  .DATA  count db ?  .CODE  mov ax,11  cmp ax,0  jl if  jg else  if:  mov ah,1  mov dl,'-'  int 21h  neg ax  else:  mov count,0  while:  mov bl,10  div bl  mov bh,ah  mov bl,0  push bx ;push remainder on stack  mov cl,count  inc cl  mov count,cl  cmp al,0  je line6  jmp while    line6:  mov cl,count  loops:  pop bx  mov ah,2  mov dl,bh  int 21h  mov ah,2  mov dl,0Ah  int 21h  mov ah,2  mov dl,0Dh  int 21h  loop loops    exit:  mov ah,4ch  int 21h |