CSE 331L / EEE 332L

Microprocessor Interfacing & Embedded System

Section: 6, 7 & 8, Spring 2021

Lab- 06: Bit-Shift and MUL/DIV

Bit-shift:

- The instructions have two possible formats. For a single shift or rotate, the form is

  Opcode destination,l

- For a shift or rotate of N positions, the form is

  Opcode destination, CL

  where CL contains N. In both cases, destination is an 8 or 16 bit register or memory location.

Example: Multiply using bit-shift instruction

```
12      mov ax, 3h
13
14      shl ax, 1     ; multiply bx by 2^1
15
16      print "3X2^1 = 3X2 = "
17      call print_num
18      printn
19
20      shl ax, 2     ; multiply bx by 2^2
21
22      print "6X2^2 = 6X4 = "
23      call print_num
24      printn
25
26      shl ax, 3     ; multiply bx by 2^3
27
28      print "24X2^3 = 24X8 = "
29      call print_num
30      printn
```

Example: Division using bit-shift

```
    mov ax, 192

    shr ax, 1    ; divide by 2^1

    print "192/2^1 = 192/2 = "
    call print_num
    printn

    shr ax, 2    ; divide by 2^2

    print "96/2^2 = 96/4 = "
    call print_num
    printn

    shr ax, 3    ; divide by 2^3

    print "24/2^3 = 24/8 = "
    call print_num
    printn

    ;division for odd number
    print "3/2 = "
    shr ax, 1
    call print_num
```