

1. Write the signed and unsigned conditional statement

Ans: signed conditional jumps :

JG or JNLE : Jump if greater

JGE or JNL : Jump if greater or equal

JL or JNGE : Jump if less

JLE or JNG : Jump if less or equal

JE or JZ : Jump if equal

JNE or JNZ : Jump if not equal

unsigned conditional jumps :

JA or JNBE : Jump if above

JAE or JNB : Jump if above or equal

JB or JNAE : Jump if below

JBE or JNA : Jump if below or equal

JF or JZ : Jump if equal

JNB or JNZ : Jump if not equal

2. Find the value of factorial 3 using loop and condition statement in assembly language.

Ans:

- model small
- stack 100h
- data

a db 3

b db 1

- code

main proc

mov ax, @data

mov ds, ax

mov cx, a

mov al, b

loop:

mul cx

dec cx

jnz loop

mov dx, 2

mov dl, al

add dl, 48

int 21h

exit:

mov ah, 4Ch

main endp

end main

3. Find the max value among 3 numbers.

.model small

.stack 100h

.data

msg db 13,10 "Enter three numbers:\$"

max_msg db 13,10 "Maximum number is:\$"

num1 db ?

num2 db ?

num3 db ?

max_num db ?

newline db 13,10, '\$'

.code

main proc

mov ax, @data

mov ds, ax

mov ah, 9

lea dx, msg

int 21h

mov ah, 1

int 21h

sub al, '0'

mov num1, al

int 21h

sub al, '0'

mov num2, al

int 21h

sub al, '0'

mov num3, al

mov al, num1

cmp al, num2

jge check_num3

mov al, num2

check_num3:

cmp al, num3

jge max_found

mov al, num3

max_found:

mov max_num, al

mov ah, 9

lea dx, max_msg

int 21h

mov dx, max_num

add dx, 10

mov ah, 2

int 21h

mov dx, offset newline

mov ah, 9

int 21h

mov ah, 4ch

int 21h

main endp

end main.

4. Show the prove with example that multiplication by left shift produce double value.

Ans: model small

- stack 100h
- data

num db 5

code

main proc

mov ax, @data

mov ds, ax

mov al, num

shl al, 1

mov ah, 2h

add al, '0'

mov dl, al

int 21h

mov ah, 4Ch

int 21h

main endp

end main

We then left shift this value by one position, effectively multiplying it by 2. left shift operation effectively double original value.

Original number 1010 After left shift 10100. ~~A~~.
left shifting the binary number 1010 effectively
doubled its value. The binary number 10100
represents decimal 20, which is double the value
10. So, in general left shifting a binary
number by one position multiplies its decimal
equivalent by 2.