Assignment-11

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ROLL NO: CE037

1.Write an assembly language to handle the divide by zero interrupt.

Main1.asm

```
stack_seg segment stack
dw 100 dup(0)
top_st label word
stack_seg ends

extrn bad_div:far
code segment
assume cs:code,ss:stack_seg
mov ax,stack_seg
mov ss,ax
mov sp,offset top_st
mov ax,0000
mov es,ax
mov al,05
```

```
mov bl,00
mov word ptr es:0000,offset bad_div
mov word ptr es:0002,seg bad_div
div bl
int 03
code ends
end
```

f1.asm

```
data segment word public
str1 db "Divide by zero error occured$"
data ends
public bad_div
code segment word public
bad_div proc far
assume cs:code,ds:data
push ax
push ds
mov ax,data
mov ds,ax
lea dx,str1
mov ah,09
int 21h
pop ds
```

pop ax

pop bx

add bx,2

push bx

iret

bad_div endp

code ends

end

```
C:\TASM>tasm main1.asm
Turbo Assembler  Version 2.51  Copyright (c) 1988, 1991 Borland International

Assembling file:   main1.asm
Error messages:    None
Warning messages:  None
Passes:            1
Remaining memory:  491k


C:\TASM>tasm f1.asm
Turbo Assembler  Version 2.51  Copyright (c) 1988, 1991 Borland International

Assembling file:   f1.asm
Error messages:    None
Warning messages:  None
Passes:            1
Remaining memory:  491k


C:\TASM>tlink main1.obj f1.obj
Turbo Link  Version 4.0 Copyright (c) 1991 Borland International
Warning: No stack
```

```
C:\TASM>type main1.map

 Start  Stop   Length Name               Class

 00000H 000C7H 000C8H STACK_SEG
 000D0H 000F1H 00022H CODE
 000F2H 00107H 00016H CODE
 00108H 00124H 0001DH DATA

Program entry point at 0000:0000
Warning: No stack


C:\TASM>cd ../debug125

C:\DEBUG125>debug c:\tasm\main1.exe
-g=00D0
Divide by zero error occuredUnexpected breakpoint interrupt
AX=0005 BX=00F1 CX=0125 DX=0008 SP=00C8 BP=0000 SI=0000 DI=0000
DS=0734 ES=0000 SS=0744 CS=0744 IP=00F2 NV UP EI PL ZR NA PE NC
0744:00F2 50              PUSH    AX
```

2.Write an assembly language to override the overflow interrupt.

Main2.asm

```
stack_seg segment stack
dw 100 dup(0)
top_st label word
stack_seg ends

extrn bad_overflow:far
code segment
assume cs:code,ss:stack_seg
mov ax,stack_seg
mov ss,ax
mov sp,offset top_st
mov ax,0000
mov es,ax
mov word ptr es:0010,offset bad_overflow
mov word ptr es:0012,seg bad_overflow
int 04
code ends
end
```

f2.asm

```
data segment word public
str1 db "override the overflow interrupt$"
data ends
public bad_overflow
code segment word public
bad_overflow proc far
assume cs:code,ds:data
push ax
push ds
mov ax,data
mov ds,ax
lea dx,str1
mov ah,09
int 21h
pop ds
pop ax
iret
bad_overflow endp
code ends
end
```

```
C:\TASM>tasm main2.asm
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Assembling file:   main2.asm
Error messages:    None
Warning messages:  None
Passes:            1
Remaining memory:  491k


C:\TASM>tasm f2.asm
Turbo Assembler  Version 2.51  Copyright (c) 1988, 1991 Borland International

Assembling file:   f2.asm
Error messages:    None
Warning messages:  None
Passes:            1
Remaining memory:  491k


C:\TASM>tlink main2.obj f2.obj
Turbo Link  Version 4.0 Copyright (c) 1991 Borland International
Warning: No stack
```

```
C:\TASM>type main2.map

 Start  Stop   Length Name               Class

 00000H 000C7H 000C8H STACK_SEG
 000D0H 000ECH 0001DH CODE
 000EEH 000FEH 00011H CODE
 00100H 0011FH 00020H DATA

Program entry point at 0000:0000
Warning: No stack


C:\TASM>cd ../debug125

C:\DEBUG125>debug c:\tasm\main2.exe
-g=00D0
override the overflow interruptS_
```

3.Write an assembly language program to find the factorial recursively and find the nCr.

```
data segment
    n dw 5
    r dw 4
    resultn dw ?
    resultr dw ?
    result dw ?

data ends
code segment
    assume cs:code, ds:data
    mov ax,data
    mov ds,ax
    mov bx,n
    call factorial
    mov  resultn,ax
    mov bx,r
    call factorial
    mov  resultr,ax
    mov ax,n
    sub ax,r
    mov bx,ax
    call factorial
```

```
    mov bx,resultr
    mul bx
    mov bx,ax
    mov ax,resultn
    div bx
    mov result,ax
    int 03h

factorial PROC NEAR
      cmp bx,1
      jg l1
      mov ax,1
      RET
l1:   dec bx
      call factorial
      inc bx
      mul bx
      RET

factorial ENDP

code ends
end
```

```
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Assembling file:   f3.asm
Error messages:    None
Warning messages:  None
Passes:            1
Remaining memory:  491k


C:\TASM>tlink f3.obj
Turbo Link  Version 4.0 Copyright (c) 1991 Borland International
Warning: No stack

C:\TASM>type f3.map

 Start  Stop   Length Name               Class

 00000H 00009H 0000AH DATA
 00010H 00056H 00047H CODE

Program entry point at 0000:0000
Warning: No stack
```

```
C:\TASM>cd ../debug125

C:\DEBUG125>debug c:\tasm\f3.exe
-g=0010
Unexpected breakpoint interrupt
AX=0005 BX=0018 CX=0057 DX=0000 SP=0000 BP=0000 SI=0000 DI=0000
DS=0744 ES=0734 SS=0743 CS=0744 IP=0046 NV UP EI PL NZ NA PE NC
0744:0046 83FB01            CMP     BX,+01
-d ds:0000
0744:0000  05 00 04 00 78 00 18 00-05 00 00 00 00 00 00 00 ....x...........
0744:0010  B8 44 07 8E D8 8B 1E 00-00 E8 2A 00 A3 04 00 8B .D........*.....
0744:0020  1E 02 00 E8 20 00 A3 06-00 A1 00 00 2B 06 02 00 .... .......+...
0744:0030  8B D8 E8 11 00 8B 1E 06-00 F7 E3 8B D8 A1 04 00 ................
0744:0040  F7 F3 A3 08 00 CC 83 FB-01 7F 04 B8 01 00 C3 4B ...............K
0744:0050  E8 F3 FF 43 F7 E3 C3 59-A9 59 A9 59 A9 59 A9 59 ...C...Y.Y.Y.Y.Y
0744:0060  A9 59 A9 59 AB 59 AB 59-AB 59 AB 59 AB 59 AB 59 .Y.Y.Y.Y.Y.Y.Y.Y
0744:0070  AB 59 AB 59 AB 59 62 14-AB 59 AB 59 AB 59 61 15 .Y.Y.Yb..Y.Y.Ya.
```