

Assignment 12 | MFP

CE-092

Assignment submission for Microprocessor Fundamentals and Programming subject week 12.

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Task 1:

Write an assembly language to perform addition,sub,mul and div of two floating point/Integer numbers and verify the result.

Driver Code:

```
data segment
    n1 dd 3.14
    n2 dd 1.11
    result dd 4 dup(-1)
    status dw 0
data ends

code segment
    assume cs:code, ds:data
    mov ax,data
    mov ds,ax
    finit
    fld n1
    fadd n2
    fst result[0]
    fld n1
    fsub n2
```

```

    fst result[4]
    fld n1
    fmul n2
    fst result[8]
    fld n1
    fdiv n2
    fstsw status
    test status,4
    jnz divide_error ; division might cause an divide
error
    fst result[12]
    int 03h

divide_error:
    int 0
    int 03h

code ends
end

```

Output:

```

C:\DEBUG125>debug ..\p1.exe
-g=0020
Unexpected breakpoint interrupt
AX=0744 BX=0000 CX=0075 DX=0000 SP=0000 BP=0000 SI=0000 DI=0000
DS=0744 ES=0734 SS=0743 CS=0744 IP=0072 NV UP EI PL ZR NA PE NC
0744:0072 CD00          INT     00
-d
0744:0000  C3 F5 48 40 7B 14 8E 3F-00 00 88 40 86 EB 01 40  ..He{..?...e...e
0744:0010  CC 10 5F 40 88 0B 35 40-20 22 00 00 00 00 00 00  .._e..5e ".....
0744:0020  B8 44 07 8E D8 9B DB E3-9B D9 06 00 00 9B D8 06  .D.....
0744:0030  04 00 9B D9 16 08 00 9B-D9 06 00 00 9B D8 26 04  .....&.
0744:0040  00 9B D9 16 0C 00 9B D9-06 00 00 9B D8 0E 04 00  .....
0744:0050  9B D9 16 10 00 9B D9 06-00 00 9B D8 36 04 00 9B  .....6...
0744:0060  DD 3E 18 00 F7 06 18 00-04 00 75 06 9B D9 16 14  .>.....u.....
0744:0070  00 CC CD 00 CC 3C 01 57-8B D8 E8 87 EE 26 C7 06  ....<.W.....&..

```

Task 2:

Write a program to find the area of a circle.

Driver Code:

```
data segment
    radius dd 3.0
    area dd 0
data ends

code segment
    assume cs:code, ds:data

    mov ax,data
    mov ds,ax
    finit
    fldpi
    fld radius
    FMUL ST,ST(0)
    FMUL ST,ST(1)
    FST area
    int 03h

code ends
end
```

Output:

```
C:\DEBUG125>debug ..\p2.exe
-g=0010
Unexpected breakpoint interrupt
AX=0744 BX=0000 CX=002C DX=0000 SP=0000 BP=0000 SI=0000 DI=0000
DS=0744 ES=0734 SS=0743 CS=0744 IP=002C NU UP EI PL ZR NA PE NC
0744:002C F606040004      TEST     BYTE PTR [0004],04      DS:0004=D6
-d
0744:0000 00 00 40 40 D6 31 E2 41-00 00 00 00 00 00 00 00 ..00.1.A.....
0744:0010 BB 44 07 8E D8 9B DB E3-9B D9 EB 9B D9 06 00 00 .D.....
0744:0020 9B D8 C8 9B D8 C9 9B D9-16 04 00 CC F6 06 04 00 .....
0744:0030 04 74 0C 26 80 26 01 00-F8 26 80 0E 01 00 04 26 .t.&.&...&....&
0744:0040 A1 16 00 99 26 A3 0A 00-26 89 16 0C 00 26 88 16 ....&...&...&..
0744:0050 24 00 33 C0 26 A3 14 00-26 A3 16 00 26 80 26 05 $.3.&...&...&.
0744:0060 00 FC 26 80 0E 05 00 01-E8 5E 3B E8 43 3B E8 82 ..&.....^;.C;..
0744:0070 3B E9 DD 04 BF 3C 01 57-8B D8 E8 87 EE 26 C7 06 ;....<.W....&..
```

Task 3:

Write a program to find the side of a right side of a right angled triangle.

Driver Code:

```
data segment
    a dd 3.0
    b dd 4.0
    c dd 0.0
data ends

code segment
    assume cs:code, ds:data

    mov ax,data
    mov ds,ax
    finit
    FLD A
    FMUL ST,ST(0)
    FLD B
    FMUL ST,ST(0)
    FADD ST,ST(1)
```

```

FSQRT
FST c
int 03h

code ends
end

```

Output:

```

C:\DEBUG125>debug ..\p3.exe
-g=0010
Unexpected breakpoint interrupt
AX=0744 BX=0000 CX=0034 DX=0000 SP=0000 BP=0000 SI=0000 DI=0000
DS=0744 ES=0734 SS=0743 CS=0744 IP=0034 NU UP EI PL ZR NA PE NC
0744:0034 80260100F8      AND      BYTE PTR [0001],F8      DS:0001=00
-d
0744:0000  00 00 40 40 00 00 80 40-00 00 A0 40 00 00 00 00  ..e.e...e...
0744:0010  B8 44 07 8E D8 9B DB E3-9B D9 06 00 00 9B D8 C8  .D.....
0744:0020  9B D9 06 04 00 9B D8 C8-9B D8 C1 9B D9 FA 9B D9  .....
0744:0030  16 08 00 CC 80 26 01 00-F8 26 80 0E 01 00 04 26  ....&...&...&
0744:0040  A1 16 00 99 26 A3 0A 00-26 89 16 0C 00 26 88 16  ....&...&...&..
0744:0050  24 00 33 C0 26 A3 14 00-26 A3 16 00 26 80 26 05  $.3.&...&...&..
0744:0060  00 FC 26 80 0E 05 00 01-E8 5E 3B E8 43 3B E8 82  ..&.....^;.C;..
0744:0070  3B E9 DD 04 BF 3C 01 57-8B D8 E8 87 EE 26 C7 06  ;....<.W.....&..
S

```

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