Assignment 10_Quadratic Equation Program (MIL)

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qua .asm file

```
section .data
    a     dq 1.0
    b     dq -6.0
    c     dq 9.0
    integer4     dw 4
    infmt db 10,"a = %f",10,"b = %f",10,"c = %f",10,0
    outfmt db 10,"Root 1 = %f",10,10,"Root 2 = %f",10,0


section .bss
    sqrtdelta     resq 1
    negb          resq 1
    root1         resq 1
    root2         resq 1


global main
extern printf
```

```
section .text

main:

    push rbp

    finit                   ;Initialize 80387

    mov rdi,infmt

    movq xmm0,[a]

    movq xmm1,[b]

    movq xmm2,[c]

;    mov rax,3

    call printf


    fld qword[b]                ;Load b

    fmul qword[b]       ;b square

    fld qword[a]                ;Load a

    fmul qword[c]       ;Calculate ac

    fimul word[integer4]    ;Calculate 4ac

    fsub                ;Delta (b_square - 4ac)
    fsqrt               ;Square root of delta

    fst qword[sqrtdelta]        ;Store in memory for future use

    fldz                ;Load zero
```

```
    fsub qword[b]       ;-b
    fst qword[negb]     ;Store -b in memory for future use
    fadd                ;-b + square root of delta
    fld qword[a]                ;Load a
    fadd qword[a]       ;Calcuate 2a
    fdiv                ;Divide [-b + square root of delta] / 2a
    fstp qword[root1]           ;Store root 1
    fld qword[negb]     ;Load -b
    fsub qword[sqrtdelta]    ; -b - sq. root of delta
    fld qword[a]                ;Load a
    fadd qword[a]       ;Calcuate 2a
    fdiv                ;Divide [-b + sq. root of delta]/2a
    fstp qword[root2]           ;Store root 2
    mov rdi,outfmt
    movq xmm0,[root1]
    movq xmm1,[root2]
;    mov rax,2
    call printf
    pop rbp
    mov rax,60
    mov rdi,0
```

Syscall

qua.c file

```
#include <stdio.h>

 int main()

 {

   float a,b,c;

   printf("a = %f",10,"b = %f",10,"c = %f",a,b,c);

   return 0;

 }
```

Output :-

```
[root@localhost Sanket]# nasm -f elf64 qua.asm
[root@localhost Sanket]# gcc qua.o
[root@localhost Sanket]# ./a.out

a = 1.000000
b = -6.000000
c = 9.000000

Root 1 = 3.000000

Root 2 = 3.000000
[root@localhost Sanket]#
```