LAB 2

AIM: Introduction to 8087 programming and floating point representation.

Pre-requisite

Floating Point Representation

IEEE 754 standard: 32 bit (single precision) and 64 bit (double precision)

Example:

   i.   Convert 89.625 to IEEE 754 single precision format
   ii.   Convert 89.625 to IEEE 754 double precision format
  iii.   Convert -56.625 to IEEE 754 single precision format
  iv.   Convert -56.625 to IEEE 754 double precision format

8087 programs

1. Write an ALP to do addition of three floating point numbers using 8087 instruction set.
   Test case data: x = 3.5 y = 5.0 z = 2.2
2. Write an ALP to find area of a circle using 8087 instruction set.
   Test case data: Pi = 3.1472 radius = 5.0
3. Write an ALP to find volume of sphere using 8087 instruction set.
   Test case data: Pi = 3.1472 radius = 5.0
4. Write an ALP to find c = sqrt(a^2 + b^2)
   Test case data: a = 5.0 b = 3.0

Sample Problem and Steps

Problem: Find sum of two floating point numbers. a = 5.0 b = 3.5 and store in c.

Assembly Program: P1.asm

```
1    data segment
2    a dd 5.0
3    b dd 3.5
4    c dd ?
5    data ends
6    code segment
7    assume cs:code, ds:data
8    start:
9    mov ax, data
10   mov ds, ax
11   finit
12   fld a
13   fld b
14   fadd
15   fst c
16   int 3
17   code ends
18   end start
```

Steps:

1. Write ALP for the given problem.
2. Open dosbox and assemble the .asm file using TASM
3. Generate the .exe file for the same
   using tlink command in TASM
4. Debug the exe file using
   td <filename.exe>