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Class: SE(B)

Batch – B3

Assignment No. 10

Problem Statement: Write 8087 ALP to obtain i)Mean ii)Variance iii)Standard Deviation

**Code**

section .data

msg1 db 10, 'mean is: '

msg1len equ $- msg1

msg2 db 10, 'std deviation is:'

msg2len equ $- msg2

msg3 db 10, 'variance is:'

msg3len equ $- msg3

data dd 9.0,1.0

datacnt dw 02

hdec dq 100

decpt db '.'

;......................................

section .bss

res rest 01

mean resd 01

var resd 01

dispbuff resb 01

%macro display 2

mov eax,04

mov ebx,01

mov ecx,%1

mov edx,%2

int 80h

%endmacro

%macro accept 2

mov eax,03

mov ebx,00

mov ecx,%1

mov edx,%2

int 80h

%endmacro

;......................................

section .text

global \_start

\_start:

display msg1,msg1len

finit

fldz

mov rbx,data

mov rsi,00

xor rcx,rcx

mov cx,[datacnt]

bk: fadd dword [rbx+rsi\*4]

inc rsi

loop bk

fidiv word[datacnt]

fst dword[mean]

call dispres

mov rcx,00

mov cx,[datacnt]

mov rbx,data

mov rsi,00

fldz

up1: fldz

fld dword[rbx+rsi\*4]

fsub dword[mean]

fst st1

fmul

fadd

inc rsi

loop up1

fidiv word[datacnt]

fst dword[var]

fsqrt

display msg2,msg2len

call dispres

fld dword[var]

display msg3,msg3len

call dispres

exit: mov eax,01

mov ebx,00

int 80h

;......................................

disp8\_proc:

mov rdi,dispbuff

mov rcx,02

back: rol bl,04

mov dl,bl

and dl,0FH

cmp dl,09

jbe next1

add dl,07H

next1: add dl,30H

mov [rdi],dl

inc rdi

loop back

ret

;......................................

dispres:

fimul dword[hdec]

fbstp tword[res]

xor rcx,rcx

mov rcx,09H

mov rsi,res+9

up2: push rcx

push rsi

mov bl,[rsi]

call disp8\_proc

display dispbuff,2

pop rsi

dec rsi

pop rcx

loop up2

display decpt,1

mov bl,[res]

call disp8\_proc

display dispbuff,2

ret

**;...............Output.......................**

;[root@localhost MIT2016]# nasm -f elf64 mean.asm

;[root@localhost MIT2016]# ld -o mean mean.o

;[root@localhost MIT2016]# ./mean

;mean is: 000000000000000005.00

;std deviation is:000000000000000004.00

;variance is:000000000000000016.00