**Assignment number: 10**

**Subject: MICROPROCESSOR LAB**

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Class: ***SECOND YEAR ENGINEERING***

Division: ***B***

Roll no: ***222008***

Batch: ***B1***

**PROBLEM STATEMENT:**

Write 80387 ALP to obtain: i) Mean ii) Variance iii) Standard Deviation Also plot the histogram for the data set. The data elements are available in a text file.

**Code:**

%macro scall 4

mov rax,%1

mov rdi,%2

mov rsi,%3

mov rdx,%4

syscall

%endmacro

section .data

array dd 15.00,5.00,6.99,7.44,8.00

count dd 05

hdec dw 100

msg db 10," Enter the choice"

db 10," 1. Calculate mean",10,13

db " 2. Calculate variance",10,13

db " 3. Calculate SD",10,13

db " 4. Exit",10

msgl equ $-msg

pt db "."

ptl equ $-pt

msg4 db " Mean is :"

msgl4 equ $-msg4

msg5 db " variance is :"

msgl5 equ $-msg5

msg6 db " SD is :"

msgl6 equ $-msg6

section .bss

choice resb 3

mean resd 1

var resd 1

sd resd 1

buff resb 10

temp resb 2

section .text

global \_start

\_start:

cop: scall 1,1,msg,msgl

scall 0,0,choice,3

mov al,byte[choice]

cmp al,'1'

je mean1

cmp al,'2'

je variance

cmp al,'3'

je SD

cmp al,'4'

je cexit

mean1:

scall 1,1,choice,2

finit

fldz

mov rsi,array

mov rcx,5

bk: fadd dword[rsi]

add rsi,4

loop bk

fidiv word[count]

fst dword[mean]

scall 1,1,msg4,msgl4

call display

jmp cop

variance:

mov rsi,array

mov rcx,5

fldz

bck1: fldz

fld dword[rsi]

fsub dword[mean]

fst ST1

fmul

fadd

add rsi,4

dec rcx

jnz bck1

fidiv word[count]

fst dword[var]

scall 1,1,msg5,msgl5

call display

jmp cop

SD: fldz

fld dword[var]

fsqrt

scall 1,1,msg6,msgl6

call display

jmp cop

cexit: call exit

display:

fimul word[hdec]

fbstp tword[buff]

mov rsi,buff+9

mov rcx,9

bck3:

push rcx

push rsi

mov bl,[rsi]

call disp

pop rsi

pop rcx

dec rsi

loop bck3

push rsi

scall 1,1,pt,ptl

pop rsi

mov bl,[rsi]

call disp

ret

disp:

mov rcx,2

mov rsi,temp

bk5:

rol bl,4

mov dl,bl

and dl,0FH

cmp dl,09H

jbe nxt

add dl,07H

nxt:

add dl,30H

mov [rsi],dl

inc rsi

dec rcx

jnz bk5

scall 1,1,temp,2

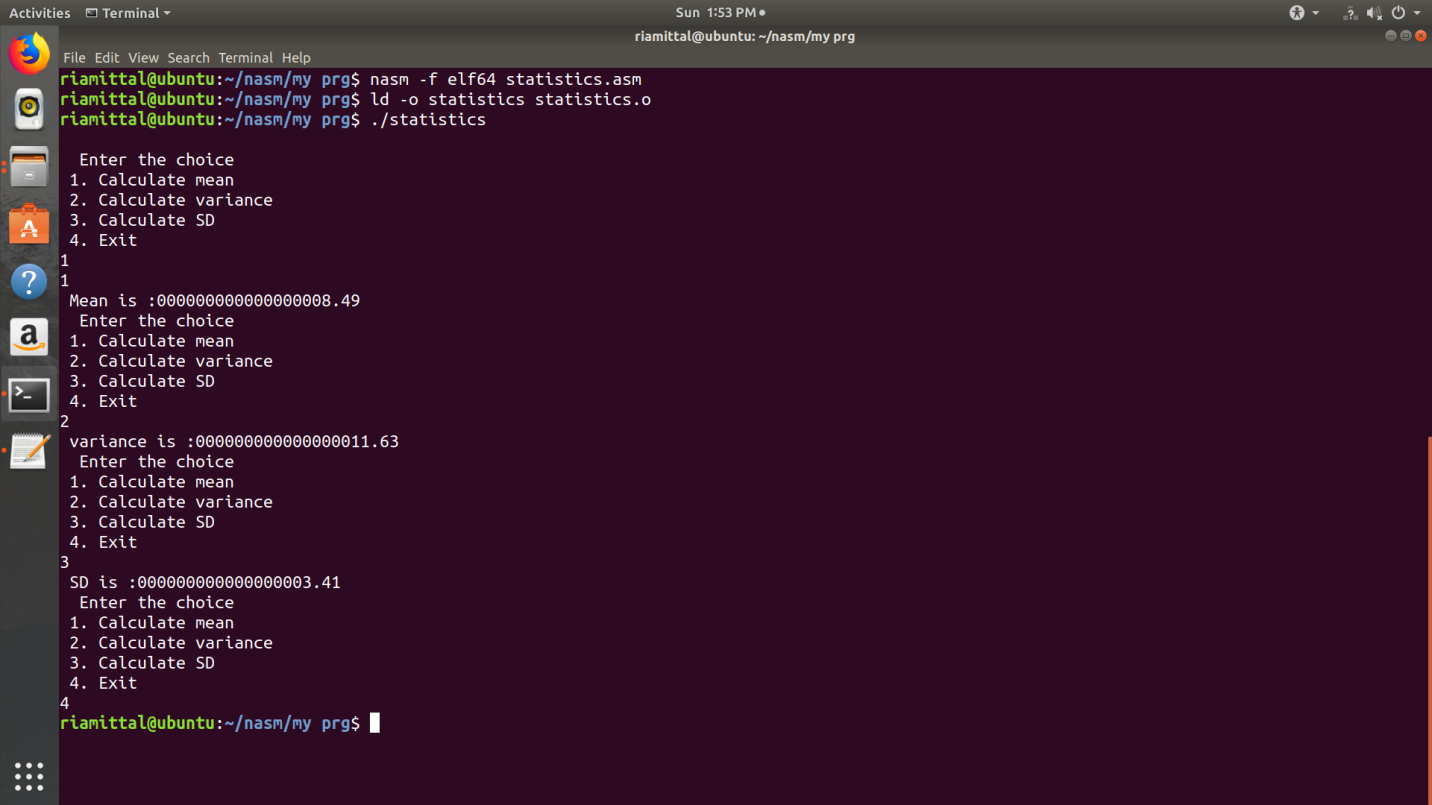
ret

exit:

mov rax,60

mov rdi,0

syscall

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