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Class: SE(B)

Batch – B3

Assignment No. 5

Program Statement: Write x86/64 ALP to find

a)number of blank spaces

b)number of lines

c)Occurence of a particular character.

accept data from text file.the text file has to be accessed during program1 execution

write FAR procedure in program2 for rest of processing. Use of PUBLIC and EXTERN Directives is mandatory

**Code**

;Program1.asm

;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

extern far\_proc

global filehandle,char,buf,abuf\_len

%include "macro.asm"

;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

section .data

nline db 10

nline\_len equ $-nline

ano db 10,10,10,10,"ML assignment 05:-String Operation using Far procedure"

db 10,"----------------------------------------",10

ano\_len equ $-ano

filemsg db 10,"enter file name for string operation:-"

filemsg\_len equ $-filemsg

charmsg db 10,"Enter character to search:"

charmsg\_len equ $-charmsg

errmsg db 10,"error in opening/reading/writing file..."

errmsg\_len equ $-errmsg

exitmsg db 10,"exit from program"

exitmsg\_len equ $-exitmsg

;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

section .bss

buf resb 4096

buf\_len equ $-buf

filename resb 50

char resb 2

filehandle resq 1

abuf\_len resq 1

;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

section .text

global \_start

\_start:

display ano,ano\_len

display filemsg,filemsg\_len

accept filename,50

dec rax

mov byte[filename+rax],0

display charmsg,charmsg\_len

accept char,2

fopen filename

cmp rax,-1H

jle error

mov [filehandle],rax

fread [filehandle],buf,buf\_len

mov [abuf\_len],rax

call far\_proc

jmp exit

error: display errmsg,errmsg\_len

exit: display exitmsg,exitmsg\_len

display nline,nline\_len

mov rax,60

mov rdi,0

syscall

;Program2.asm

;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

global far\_proc

extern filehandle,char,buf,abuf\_len

%include "macro.asm"

;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

section .data

nline db 10

nline\_len equ $-nline

smsg db 10,"No. of spaces are:"

smsg\_len equ $-smsg

nmsg db 10,"No. of lines are:"

nmsg\_len equ $-nmsg

cmsg db 10,"No. of character occurances are:"

cmsg\_len equ $-cmsg

;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

section .bss

scount resq 1

ncount resq 1

ccount resq 1

dispbuff resb 4

;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

section .text

far\_proc:

mov rax,0

mov rbx,0

mov rcx,0

mov rsi,0

mov bl,[char]

mov rsi,buf

mov rcx,[abuf\_len]

again:mov al,[rsi]

case\_s: cmp al,20h

jne case\_n

inc qword[scount]

jmp next

case\_n: cmp al,0Ah

jne case\_c

inc qword[ncount]

jmp next

case\_c: cmp al,bl

jne next

inc qword[ccount]

next: inc rsi

dec rcx

jnz again

display smsg,smsg\_len

mov rbx,[scount]

call display16\_proc

display nmsg,nmsg\_len

mov rbx,[ncount]

call display16\_proc

display cmsg,cmsg\_len

mov rbx,[ccount]

call display16\_proc

fclose [filehandle]

ret

;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

display16\_proc:

mov rcx,04

mov rdi,dispbuff

back1: rol bx,04

mov dl,bl

and dl,0FH

cmp dl,09H

jbe skip1

add dl,07H

skip1: add dl,30H

mov [rdi],dl

inc rdi

loop back1

display dispbuff,4

ret

macro.asm

;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

;macro.asm

;--------------------------------------

%macro accept 2

mov rax,0 ;read

mov rdi,0 ;stdin

mov rsi,%1 ;buf

mov rdx,%2 ;buf\_len

syscall

%endmacro

%macro display 2

mov rax,1 ;print

mov rdi,1 ;stdout

mov rsi,%1 ;msg

mov rdx,%2 ;msg\_len

syscall

%endmacro

%macro fopen 1

mov rax,2 ;2 for oprn file

mov rdi,%1 ;filename

mov rsi,2 ;mode RW

mov rdx,0777o ;file permissions

syscall

%endmacro

%macro fread 3

mov rax,0 ;read

mov rdi,%1 ;filehandle

mov rsi,%2 ;buf

mov rdx,%3 ;buf\_len

syscall

%endmacro

%macro fwrite 3

mov rax,1 ;write

mov rdi,%1 ;file handle

mov rsi,%2 ;buf

mov rdx,%3 ;buf\_len

syscall

%endmacro

%macro fclose 1

mov rax,3 ;close

mov rdi,%1 ;file handle

syscall

%endmacro

**OUTPUT:**

hl-19@hl19-OptiPlex-390:~/far$ nasm -f elf64 program1.asm

hl-19@hl19-OptiPlex-390:~/far$ nasm -f elf64 program2.asm

hl-19@hl19-OptiPlex-390:~/far$ ld -o program1 program1.o program2.o

hl-19@hl19-OptiPlex-390:~/far$ ./program1

enter file name for string operation:-data.txt

Enter character to search:e

No. of spaces are:0009

No. of lines are:0006

No. of character occurances are:000E

exit from program