

# Far Procedure Program

a1.asm file contents

```
extern far_proc
global filehandle, char, buf, abuf_len
%include "macrofun.asm"
;-----
section .data
    msg1      db      10,10,10, 'Assignment 05:FAR PROCEDURE
PROGRAM....'
    msg1len   equ     $-msg1
    filemsg   db      10, "Enter filename      : "
    filemsg_len equ    $-filemsg
    charmsg   db      10, "Enter character to search : "
    charmsg_len equ    $-charmsg
    errmsg    db      10, "ERROR in opening File...",10
    errmsg_len equ    $-errmsg
    exitmsg   db      10,10, "Exit from program...",10,10
    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:
        disp  msg1,msg1len

        disp  filemsg,filemsg_len
        accept filename,50
        dec  rax
        mov  byte[filename + rax],0
        disp  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:      disp    errmsg, errmsg\_len

Exit:        disp  exitmsg,exitmsg\_len  
              exit

## a2.asm file contents

### section .data

```

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
disp_buff  resb 16

```

;-----

### global far\_proc

```

extern     filehandle, char, buf, abuf_len
%include   "macrofun.asm"

```

;-----

### section .text

### global \_main

**\_main:**

**far\_proc:**

```
xor    rax,rax
xor    rbx,rbx
xor    rcx,rcx
xor    rsi,rsi
```

```
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
             disp   smsg,smsg_len
             mov    rbx,[scount]
             call   disp_proc
             disp   nmsg,nmsg_len
             mov    rbx,[ncount]
```

```
        call    disp_proc
        disp    cmsg,cmsg_len
        mov     rbx,[ccount]
        call    disp_proc
        fclose [filehandle]
        ret
;-----
```

disp\_proc:

```
        mov rsi,disp_buff

        mov rcx,16

up:     ROL rbx,4

        mov dl,bl

        and dl,0fh

        cmp dl,09h

        jbe l23

        add dl,07h

l23:    add dl,30h

        mov [rsi],dl

        inc rsi

        dec rcx

        jnz up

        disp disp_buff+12,4

        ret
```

## Macro.asm file contents

```
%macro accept 2
    mov rax,0      ;read
    mov rdi,0      ;stdin/keyboard
    mov rsi,%1     ;buf
    mov rdx,%2     ;buf_len
    syscall
%endmacro
```

```
%macro disp 2
    mov rax,1      ;print
    mov rdi,1      ;stdout/screen
    mov rsi,%1     ;msg
    mov rdx,%2     ;msg_len
    syscall
%endmacro
```

```
%macro exit 0

    mov rax,60;exit
    mov rdi,0
    syscall
%endmacro
```

```
%macro fopen 1
    mov rax,2      ;open
    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/print
    mov rdi,%1     ;filehandle
    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 :-

```

[SanketPatil@localhost fwdmil7]$ nasm -f elf64 a1.asm
[SanketPatil@localhost fwdmil7]$ nasm -f elf64 a2.asm
[SanketPatil@localhost fwdmil7]$ ld -o main a1.o a2.o
[SanketPatil@localhost fwdmil7]$ ./main
Assignment 05:FAR PROCEDURE PROGRAM....
Enter filename      : a1.asm

Enter character to search      : s

No. of spaces are  : 0085
No. of lines are   : 0043
No. of character occurrences are      : 0034

Exit from program...

[SanketPatil@localhost fwdmil7]$

```