



MICROPROCESSOR LABORATORY

Assignment No. 5

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DIVISION :- A

Assignment No. 5

Program :

```
%macro print 2
mov Rax,1
mov Rdi,1
mov Rsi,%1
mov Rdx,%2
syscall
%endmacro

%macro exit 0
mov rax,60
mov rdi,0
syscall
%endmacro

section .data
arr dq 00h,-10h,20h,-30h,40h,-50h,60h,-70h
n equ 8
pmsg db 10,13,"The count of positive elements in the array is : ",10,13
pmsglen equ $-pmsg
nmsg db 10,13,"The count of negative element in the array is : ",10,13
nmsglen equ $-nmsg
nwline db 10,13

section .bss
```

```
    pcnt resq 1
    ncnt resq 1
    char_answer resb 16

section .text
global _start
_start:
    mov rsi,arr
    mov rdi,n
    mov rbx,0
    mov rcx,0

up:mov rax,[rsi]
    rol rax,1
    jc negative

positive:inc rbx
    jmp next

negative:inc rcx

next:add rsi,8
    dec rdi
    jnz up

    mov [pcnt],rbx
    mov [ncnt],rcx
```

```
print pmsg,pmsglen
```

```
mov rax,[pcent]
```

```
call display
```

```
print nmsg,nmsglen
```

```
mov rax,[ncnt]
```

```
call display
```

```
print newline,1
```

```
exit
```

```
display:
```

```
mov rsi,char_answer+15
```

```
mov rcx,16
```

```
cnt:mov rdx,0
```

```
mov rbx,16h
```

```
div rbx
```

```
cmp dl,09h
```

```
jbe add30
```

```
add dl,07h
```

```
add30:add dl,30h
```

```
mov [rsi],dl
```

```
dec rsi
```

```
dec rcx
```

```
jnz cnt
```

```
print char_answer,16
```

```
ret
```

</> Code ≡ Input >_ Output

▶ Run

📄 Save

```
1  %macro print 2
2  mov Rax,1
3  mov Rdi,1
4  mov Rsi,%1
5  mov Rdx,%2
6  syscall
7  %endmacro
8
9  %macro exit 0
10 mov rax,60
11 mov rdi,0
12 syscall
13 %endmacro
14
15 section .data
16 arr dq 00h,-10h,20h,-30h,40h,-50h,60h,-70h
17 n equ 8
18 pmsg db 10,13,"The count of positive elements in the array is : ",10,13
19 pmsglen equ $-pmsg
20 nmsg db 10,13,"The count of negative element in the array is : ",10,13
```

</> Code ≡ Input >_ Output

▶ Run

📄 Save

```
21 nmsglen equ $-nmsg
22 newline db 10,13
23
24 section .bss
25 pcnt resq 1
26 ncnt resq 1
27 char_answer resb 16
28
29 section .text
30 global _start
31 _start:
32
33 mov rsi,arr
34 mov rdi,n
35 mov rbx,0
36 mov rcx,0
37
38 up:mov rax,[rsi]
39     rol rax,1
40     jc negative
```

</> Code ≡ Input >_ Output

▶ Run

📄 Save

```
41
42 positive:inc rbx
43           jmp next
44
45 negative:inc rcx
46
47 next:add rsi,8
48       dec rdi
49       jnz up
50
51 mov [pcnt],rbx
52 mov [ncnt],rcx
53
54 print pmsg,pmsglen
55 mov rax,[pcnt]
56 call display
57
58 print nmsg,nmsglen
59 mov rax,[ncnt]
60 call display
```

</> Code

☰ Input

>_ Output

▶ Run

📄 Save

```
61
62 print newline,1
63 exit
64
65 display:
66 mov rsi,char_answer+15
67 mov rcx,16
68 cnt:mov rdx,0
69     mov rbx,16h
70     div rbx
71     cmp dl,09h
72     jbe add30
73     add dl,07h
74 add30:add dl,30h
75     mov [rsi],dl
76     dec rsi
77     dec rcx
78     jnz cnt
79 print char_answer,16
80 ret
```

Output :

</> Code

☰ Input

>_ Output

▶ Run

📄 Save

```
The count of positive elements in the array is :
0000000000000004
The count of negative element in the array is :
0000000000000004

[Program exited with exit code 0]
```