

MICROPROCESSOR LABORATORY

Assignment No.8

X86/64 ALP to find the largest of given Byte/Word/Dword/64-bit numbers..

Program:

```
%macro write 2
    mov rax,1
    mov rdi,1
    mov rsi,%1
    mov rdx,%2
    syscall
%endmacro

section .data
    array db 13h,41h,78h,24h,56h

    msg1 db 10,"ALP to find the largest number in an array",10
    msg1_len equ $ - msg1

    msg2 db 10,"The Array contains the elements : ",10
    msg2_len equ $ - msg2

    msg3 db 10,10, "The Largest number in the array is : ",10
    msg3_len equ $ - msg3

section .bss
    counter resb 1
    result resb 4

section .text
    global _start

_start:

    write msg1 , msg1_len
    write msg2 , msg2_len

    mov byte[counter],05
    mov rsi,array
next:
    mov al,[rsi]
    push rsi
    call disp
    pop rsi
    inc rsi
    dec byte[counter]
    jnz next
```

```

write msg3 , msg3_len

mov byte[counter],05
mov rsi, array
mov al, 0

repeat:
    cmp al,[rsi]
    jg skip
    mov al,[rsi]
skip:
    inc rsi
    dec byte[counter]
    Jnz repeat

    call disp

    mov rax,60
    mov rdi,1
    syscall

disp:
    mov bl,al
    mov rdi, result
    mov cx,02
up1:
    rol bl,04
    mov al,bl
    and al,0fh
    cmp al,09h
    jg add_37
    add al,30h
    jmp skip1
add_37:
    add al,37h

skip1:
    mov [rdi],al
    inc rdi
    dec cx
    jnz up1

write result , 4

ret

```

Output:

```
guest-yi4DwY@student-OptiPlex-380:~$ nasm -f elf64 -o A8_Largest.asm A8_Largest.o
guest-yi4DwY@student-OptiPlex-380:~$ ld -o A8_Largest A8_Largest.o
guest-yi4DwY@student-OptiPlex-380:~$ ./A8_Largest
```

ALP to find the largest number in an array

The Array contains the elements :
1341782456

The Largest number in the array is :
78

```
guest-yi4DwY@student-OptiPlex-380:~$
```