

### Practical3

```
section .data
array db 72h, 92h, 80h, 90h ,60h
msg1 db 10, "ALP to find the smallest 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 Smallest number in the array is: ", 10
msg3_len equ $ - msg3
space db " "
space_len equ $ - space
```

```
section .bss
counter resb 1
result resb 4
```

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

```
section .text
global _start
```

```
_start:
    write msg1, msg1_len
    write msg2, msg2_len
    mov byte [counter], 5
    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], 5
    mov rsi, array
    mov al, [rsi]    ; Initialize min with the first element
    inc rsi          ; Move to the next element
    dec byte [counter] ; Decrement counter
```

repeat:

```
    cmp byte [rsi], al
    jl update_min    ; Change to jl for finding the smallest
    jmp next_element
```

update\_min:

```
    mov al, [rsi]
```

next\_element:

```
    inc rsi
    dec byte [counter]
    jnz repeat
```

```
    call disp
    mov rax, 60
    xor rdi, rdi
    syscall
```

disp:

```
    mov bl, al
    mov rdi, result
    mov rcx, 2
```

up1:

```
    rol bl, 4
    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 rcx
    jnz up1
```

```
    write result, 4
    write space, space_len
    ret
```

## Output

```
rllab@fedora:/home/liveuser$ nasm -f elf64 prathamesh3.nasm
rllab@fedora:/home/liveuser$ ld -o prathamesh3 prathamesh3.o
rllab@fedora:/home/liveuser$ ./prathamesh3
```

ALP to find the smallest number in an array

The Array contains the elements:

74 92 87 40 0A

The Smallest number in the array is:

87 rllab@fedora:/home/liveuser\$ ./prathamesh3

ALP to find the smallest number in an array

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