Assignment No. 01

Program:

.model small

.stack 100h

.data

array1 db 2, 4, 0, 2, 0, 5, 5, 1, 7 ; VUID digits

array2 db 9 dup(0) ; To store results of (sum - digit)

sum db 0 ; To store sum of digits

.code

start:

; Initialize data segment

mov ax, @data

mov ds, ax

; ----------- Part B: Compute sum of all digits -----------

xor cx, cx ; CX = 0 (loop counter)

xor al, al ; AL = 0 (accumulator)

lea si, array1 ; SI points to start of array1

sum\_loop:

mov bl, [si + cx] ; Load digit from array1

add al, bl ; Add to accumulator

inc cx ; Move to next index

cmp cx, 9 ; Have we processed 9 digits?

jne sum\_loop ; If not, jump again

mov sum, al ; Store total sum in 'sum' variable

; ----------- Part C: Subtract each digit from sum -----------

xor cx, cx ; Reset CX for new loop

lea si, array1 ; SI -> array1

lea di, array2 ; DI -> array2

mov bl, sum ; BL = total sum

subtract\_loop:

mov al, bl ; AL = sum

sub al, [si + cx] ; AL = sum - current digit

mov [di + cx], al ; Store result in array2

inc cx

cmp cx, 9

jne subtract\_loop ; Loop until all 9 digits processed

; ----------- Program Exit -----------

mov ah, 4ch

int 21h

end start