

Assignment 04 | MFP

CE-092

Assignment submission for Microprocessor Fundamentals and Programming subject week 4.

nevilparmar24@gmail.com

Note: Some programs are tested in emu8086 due to the permission issues in tasm and windows 10.

Task 1:

Write a program to find all the prime numbers between 1 to 50.

Code:

```
;Author : Nevil Parmar
;Roll NO: CE092
data segment
    prime_numbers db 20 dup (0)
data ends

code segment
    assume cs:code, ds:data
    mov ax, data
    mov ds, ax
    mov bl, 01h
    mov cx, 10h
    mov si, offset prime_numbers
up:
    mov dl, 02h
```

```

    add bl, 01h
    cmp bl, 02h
    je loop2
    cmp bl, 03h
    je loop2
    cmp bl, 04h
    jge Loop1
loop1:
    mov ah, 00
    mov al, bl
    div dl
    cmp ah, 00h
    je up
    add dl, 01h
    cmp dl, al
    jle loop1
    jmp loop2
loop2:
    mov [si], bl
    inc si
    loop up
    int 21h
code ends
end

```

Output:

0000:0000	02	03	05	07	0B	0D	11	13-17	1D	1F	25	29	2B	2F	35
0000:0010	80	01	00	F4	00	01	00	F4-00	01	00	F4	00	01	00	F4
0000:0020	00	01	00	F4	00	01	00	F4-00	01	00	F4	00	01	00	F4
0000:0030	00	01	00	F4	00	01	00	F4-00	01	00	F4	00	01	00	F4
0000:0040	90	01	00	F4	D0	01	00	F4-A0	01	00	F4	B0	01	00	F4
0000:0050	00	01	00	F4	E0	01	00	F4-C0	01	00	F4	00	04	00	F4
0000:0060	00	01	00	F4	00	00	FF	FF-60	01	00	F4	00	01	00	F4
0000:0070	00	01	00	F4	00	01	00	F4-C0	01	00	F4	00	01	00	F4

Task 2:

Write a program to read a string of lowercase letters and convert to upper case and display the string on the console.

Code:

```
;Author : Nevil Parmar

;Roll NO: CE092

data segment

    LSTR DB 30,?,30 DUP(' ')

data ends


code segment

Assume cs:code, ds:data

Begin:

    mov ax, data

    mov ds, ax


    mov dx,offset LSTR

    mov ah,0ah

    int 21h


    ; printing new line
```

```
mov ah,2

mov dl,0Dh

int 21h

mov dl,0Ah

int 21h


mov bl,LSTR[1]
```

CONVERT:

```
cmp bx,00

je EXIT

mov al,LSTR[bx+1]

sub al,20h

mov LSTR[bx+1],al

dec bx

jmp CONVERT
```

EXIT:

```
xor bx,bx

mov bl,LSTR[1]
```

```

mov LSTR[bx+2], '$'

mov dx, offset LSTR+2

mov ah, 09h

int 21h


mov ah, 4Ch

int 21h

```

Code Ends

End Begin

Output:

```

C:\DEBUG125>debug c:\P2.EXE
-g
nevil parmar
NEVIL PARMAR
Program terminated normally (0024)

```

Task 3:

Write a program to create a file and write 10 bytes of data into the file. Create one more file and make a copy of the first file. (i.e Read from the first file and write into the second file)

Code:

```

;Author : Nevil Parmar

;Roll NO: CE092

data segment

```

```
;creating a new file
```

```
fname1 db 'C:\emu8086\MyBuild\file1', 0
```

```
fname2 db 'C:\emu8086\MyBuild\file2', 0
```

```
fp1 dw ?
```

```
fp2 dw ?
```

```
string db 'Hey There, Nevil Here !'
```

```
temp db 40 dup(?)
```

```
data ends
```

```
code segment
```

```
assume cs:code, ds:data
```

```
start:
```

```
    mov ax, data
```

```
    mov ds, ax
```

```
    mov ah, 3ch ; new file1
```

```
    mov dx, offset fname1
```

```
    mov cl, 1
```

```
    int 21h
```

```
    mov fp1, ax
```

```
mov ah, 3ch ; new file2

mov dx, offset fname2

mov cl, 1

int 21h

mov fp2, ax


mov ah, 3eh ; closing file1

mov dx, fp1

int 21h


mov ah, 3eh ; closing file2

mov dx, fp2

int 21h


mov ah, 3dh ; open existing file1

mov dx, offset fname1

mov al, 1 ; writing mode

int 21h

mov fp1, ax
```

```
mov ah, 40h ; updation in file1

mov bx, fp1

mov cx, 23h

mov dx, offset string

int 21h


mov ah, 3eh ; closing file1

mov dx, fp1

int 21h


mov ah, 3dh

mov dx, offset fname1

mov al, 0 ; reading mode

int 21h

mov fp1, ax


mov ah, 3fh ; reading 23 bytes from file1

mov bx, fp1

mov dx, offset temp

mov cx, 23h
```



```
int 21h
```

```
mov ah, 3dh ; open existing file2
```

```
mov dx, offset fname2
```

```
mov al, 1 ; writing mode
```

```
int 21h
```

```
mov fp2, ax
```

```
mov ah, 40h ; copy from file2 to file2
```

```
mov bx, fp2
```

```
mov cx, 23h
```

```
mov dx, offset temp
```

```
int 21h
```

```
mov ah, 3eh ; closing file1
```

```
mov dx, fp1
```

```
int 21h
```

```
mov ah, 3eh ; closing file2
```

```
mov dx, fp2
```

```

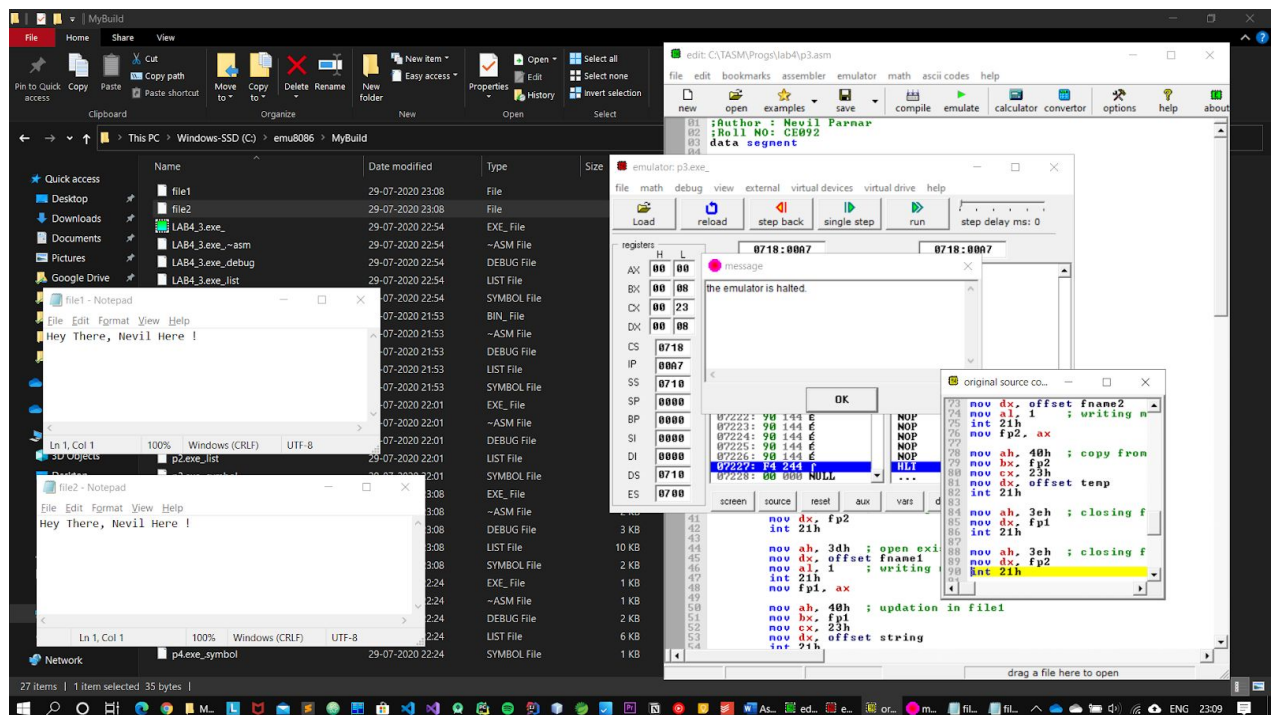
int 21h

code ends

end start

```

Output:



Task 4:

Write a program to display the string "Hello World" when the character 'Y' is pressed.

Code:

```

;Author : Nevil Parmar

;Roll NO: CE092

; It reads character from the console, and prints
"Hello world" only if the entered character is 'Y'

```

;otherwise the loop continues and keep on asking for input character

data segment

SAYHI DB 'Hello World !','\$'

data ends

code segment

Assume cs:code, ds:data

Begin:

mov ax,data

mov ds,ax

READ:

;read a character

mov ah,1

int 21h

;save input character to bl register and go to new line

mov bl,al

mov ah,2

mov dl,0dh

```
int 21h

mov dl,0ah

int 21h

; check if the entered character is 'Y' by
subtracting its ascii value
```

CHECK:

```
mov al,59h

sub al,bl

jz EXIT

jmp READ

; terminate
```

EXIT:

```
; print hello world and exit

lea dx,SAYHI

mov ah,09h

int 21h

; return back to console

mov ah,4ch

int 21h
```

Code Ends

End Begin

Output:

```
C:\DEBUG125>debug c:\P4.EXE
-g
a
n
c
Y
Hello World !
Program terminated normally (0000)
```

Nevil Parmar
CE-092
<https://nevilparmar.me>