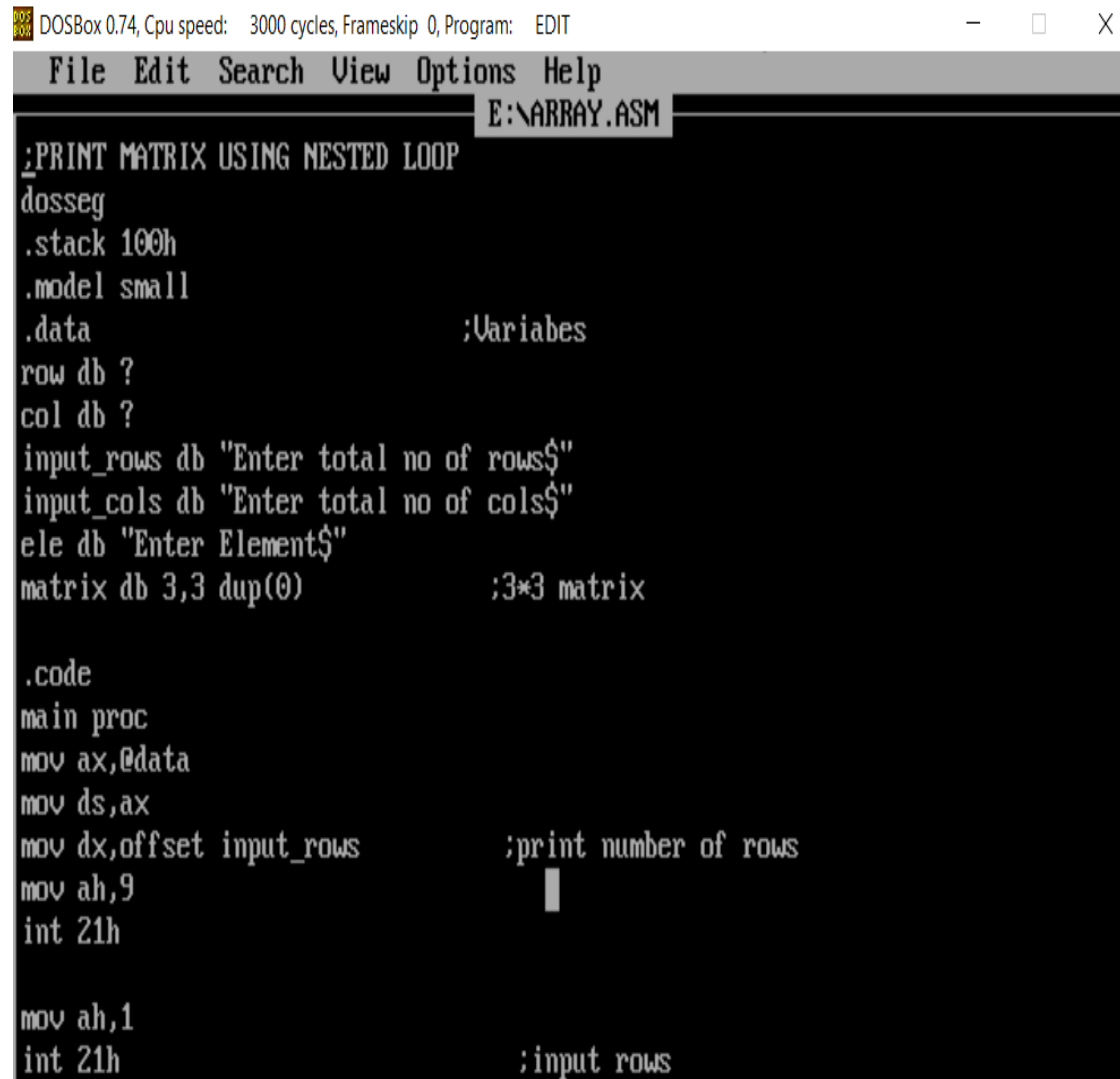NAME: MUHAMMAD ZOHAIB KHAN
FATHER NAME: MUHAMMAD MUMTAZ
KHAN
SEAT NO: B21110106061
CLASS: BSSE (4th SEMESTER)
COURSE NAME: ASSEMBLY LANGUAGE
COURSE CODE: 402
DEPARTMENT: COMPUTER SCIENCE

TASK 1 : Program two print 2D array using nested loop.

Program:

```
 File  Edit  Search  View  Options  Help
                        E:\ARRAY.ASM
;PRINT MATRIX USING NESTED LOOP
dosseg
.stack 100h
.model small
.data                          ;Variabes
row db ?
col db ?
input_rows db "Enter total no of rows$"
input_cols db "Enter total no of cols$"
ele db "Enter Element$"
matrix db 3,3 dup(0)           ;3*3 matrix


.code
main proc
mov ax,@data
mov ds,ax
mov dx,offset input_rows       ;print number of rows
mov ah,9
int 21h


mov ah,1
int 21h                        ;input rows
```

```asm
mov bl,al
mov row,bl

call newline                          ;newline
mov dx,offset input_cols              ;print column
mov ah,9
int 21h

mov ah,1                               ; input columns
int 21h
mov cl,al
mov col,cl

;input matrix
mov bl,[row]
mov cl,[col]
mov di,offset matrix                  ;memory allocate matrix
add di,2                              ;skip 2 bytes
;input no of rows
mov cx,3
input_row:
push cx
```

```asm
mov cx,3
;input no of columns

input_col:
call newline
mov dx,offset ele                     ;newline
mov ah,9
int 21h
mov ah,1                              ; input matrix element
int 21h
mov [di],al
inc di
loop input_col

pop cx
loop input_row
call newline                          ;newline
;msg
call newline
;print matrix
mov cx,3
mov si,offset matrix                  ;source index matrix
```

```asm
add si,2

print_row:                          ;print matrix
push cx
mov cx,3
print_col:
mov dl,[si]
mov ah,2
int 21h
inc si
loop print_col
pop cx
call newline
loop print_row
;Exit
mov ah,4ch                          ;Exit program
int 21h
main endp


newline:
mov dx,10
mov ah,2
int 21h

mov dx,13
mov ah,2
int 21h
ret

end main
```
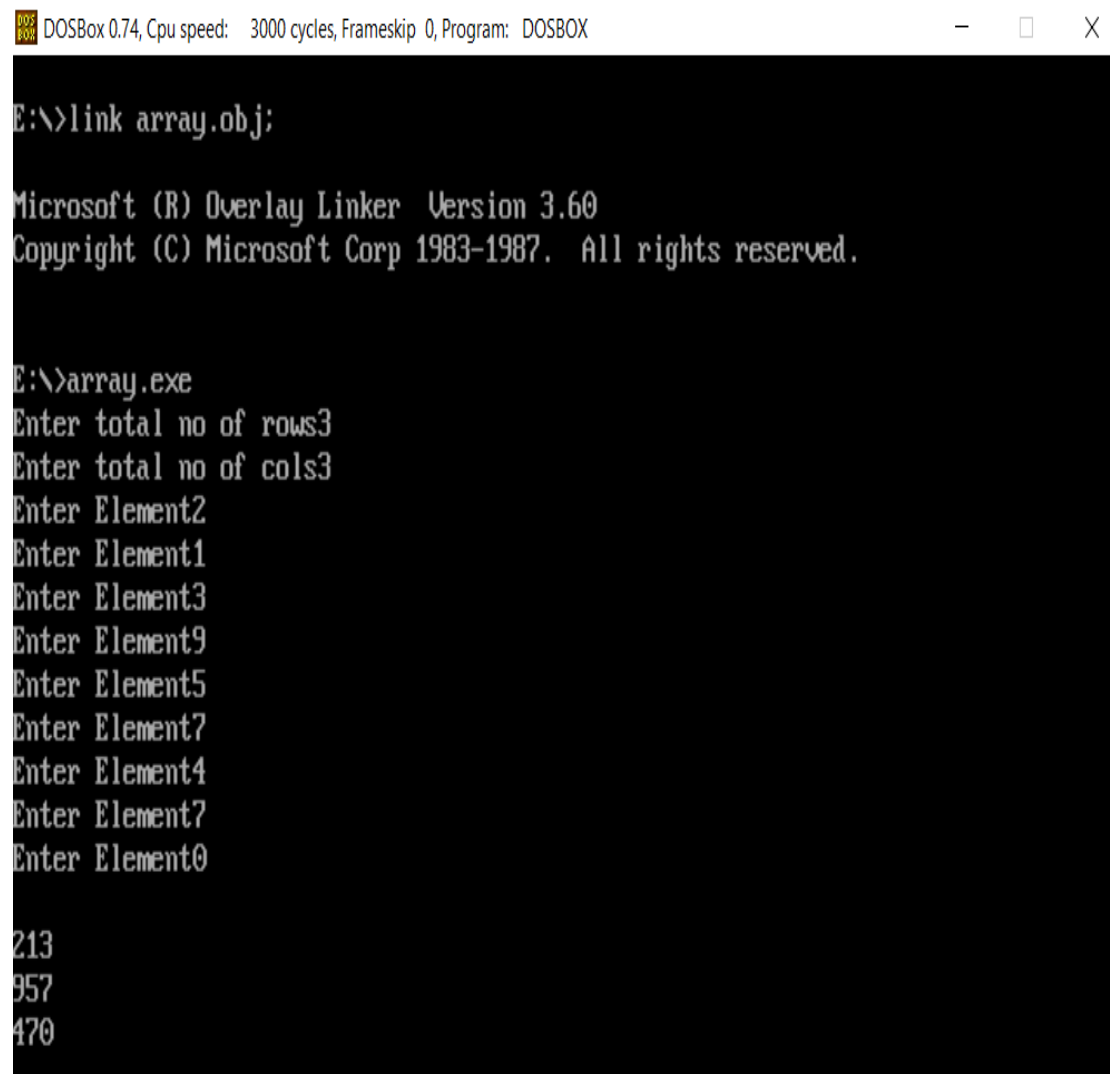
OUTPUT:

```
DOSBox 0.74, Cpu speed:    3000 cycles, Frameskip  0, Program:  DOSBOX                    —    □    X

E:\>link array.obj;

Microsoft (R) Overlay Linker  Version 3.60
Copyright (C) Microsoft Corp 1983-1987.  All rights reserved.


E:\>array.exe
Enter total no of rows3
Enter total no of cols3
Enter Element2
Enter Element1
Enter Element3
Enter Element9
Enter Element5
Enter Element7
Enter Element4
Enter Element7
Enter Element0

213
957
470
```

Task 2: Convert string to capitalize string using Procedure.

Program:

```
File  Edit  Search  View  Options  Help
                    E:\MACRO.ASM
dosseg
.model small
.stack 100h
.data
var1 db "my name is zohaib"        ;variables
len equ $-var1                     ;length
.code
main proc
mov ax,@data
mov ds,ax
call capital                       ;call function
mov ah,4ch                         ;program end
int 21h
main endp
capital proc
mov cx,len
mov si,offset var1
L1:                                ;loop start
mov dx,[si]                        ;source index
sub dx,32                          ;ASCII convert
mov ah,2                           ;print
int 21h
inc si                             ;increment
loop L1
ret
capital endp
end main
```

OUTPUT:

```
E:\>masm macro.asm;
Microsoft (R) Macro Assembler Version 5.00
Copyright (C) Microsoft Corp 1981-1985, 1987.  All rights reserved.


  51632 + 464912 Bytes symbol space free


      0 Warning Errors
      0 Severe  Errors

E:\>link macro.obj;

Microsoft (R) Overlay Linker  Version 3.60
Copyright (C) Microsoft Corp 1983-1987.  All rights reserved.


E:\>macro.exe
MY NAME IS ZOHAIB
```

Task 3 : Program to divide two numbers using macro.

Program:

```
E:\PROC.ASM
;PROGRAM TO DIVIDE TWO NUMBERS USING MACRO
;MARCO
division macro a,b
mov ax,a
mov dx,0
mov bx,b
div bx
mov quo,ax        ;Quotient
mov rem,dx        ;Reminder

mov dx,quo        ;Print Quotient
mov ah,2
int 21h

mov dx,rem        ;Print Reminder
mov ah,2
int 21h
endm

dosseg
.model small
.stack 100h
.data
var1 db 26              ;Variables
var2 db 10
quo db ?
rem db ?
.code
main proc
mov ax,@data
mov ds,ax              ;Stack Segment
division var1,var2    ;Call
mov ah,4ch            ;Exit
int 21h
main endp
end main
```