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SECTION: - IT A3 UG2

Jadavpur University
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Microprocessor Lab
Paper Code: IT/S/222

Assignment 4

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1. Write an Assembly Language Program to add 3 X 3 matrices. Assume the matrices are stored in the form of lists (row wise). First matrix is stored from DS:0030H and the second matrix is stored from DS:0040. Store the result of the addition in the third lists starting from DS:0050H.

```
.model small
.stack 100h
.data
 .code
main proc
mov ax, @data
mov ds, ax
mov es, ax
mov si, 0030h
mov bx, 0040h
mov di, 0050h
mov cx, 0009h
l1: mov al, [si]
add al, [bx]
mov [di], al
inc di
inc si
inc bx
```

```
loop l1
int 03h
mov ah, 4ch
int 21h
main endp
end main
```

2. Write an Assembly Language Program to convert an eight bit binary number stored in DS:0030H into its equivalent BCD number. Stored the result in DS:0040H.

```
.model small
.stack 100h
.data
.code
main proc
mov ax, @data
mov ds, ax
mov si, 0030h
mov bl, [si]
mov ax, 0000h
mov dx, 0000h
cmp bl, 00h
jz l2
l1:
add ax, 01h
daa
adc dl, 00h
dec bl
cmp bl, 00h
jnz l1
l2:
mov si, 0040h
mov [si], dl
inc si
```

```
mov [si], ax
int 03h
mov ah, 4ch
int 21h
main endp
end main
```

3. Write an Assembly program to convert a BCD number stored in DS:0030H into its equivalent hexadecimal number. Stored the result in DS:0040H.

```
.model small
 .stack 100h
 .data
 .code
 main proc
 mov ax, @data
 mov ds, ax
 mov si, 0030h
 mov al, [si]
 mov bl, 00h
 cmp al, 00h
 jz l2
 l1:
 sub al, 01h
das
inc bl
cmp al, 00h
jz l2
jmp l1
l2: mov si, 0040h
mov [si], bl
int 03h
mov ah, 4ch
```

```
int 21h
main endp
end main
```

4. Write an Assembly program to convert a binary number stored in DS:0030H into its equivalent gray code. Stored the result in DS:0040H.

```
.model small
.stack 100h
.data
.code
main proc
mov ax, @data
mov ds, ax
mov si, 0030h
mov al, [si]
mov bl, al
ror bl, 01h
xor al, bl
mov si, 0040h
mov [si], al
int 03h
mov ah, 4ch
int 21h
main endp
end main
```

5. Write an Assembly program to find the factorial of a number stored in DS:0030H. Store the result in DS:0040H.

```
.model small
.stack 100h
.data
.code
main proc
mov ax, @data
```

```
mov ds, ax
mov si, 0030h
mov bl, [si]
mov bh, 00h
mov ax, 0001h
cmp bl, 00h
jz l2
cmp bl, 01h
jz l2
l1:
 mul bx
dec bl
cmp bl, 01h
jz l2
jmp l1
l2:
 mov si, 0040h
 mov [si], dh
inc si
mov [si], dl
inc si
mov [si], ah
inc si
mov [si], al
int 03h
mov ah, 4ch
int 21h
main endp
end main
```
