Jahangirnagar University (JU)

Institute of Information Technology

Lab Report-4

Assembly Language

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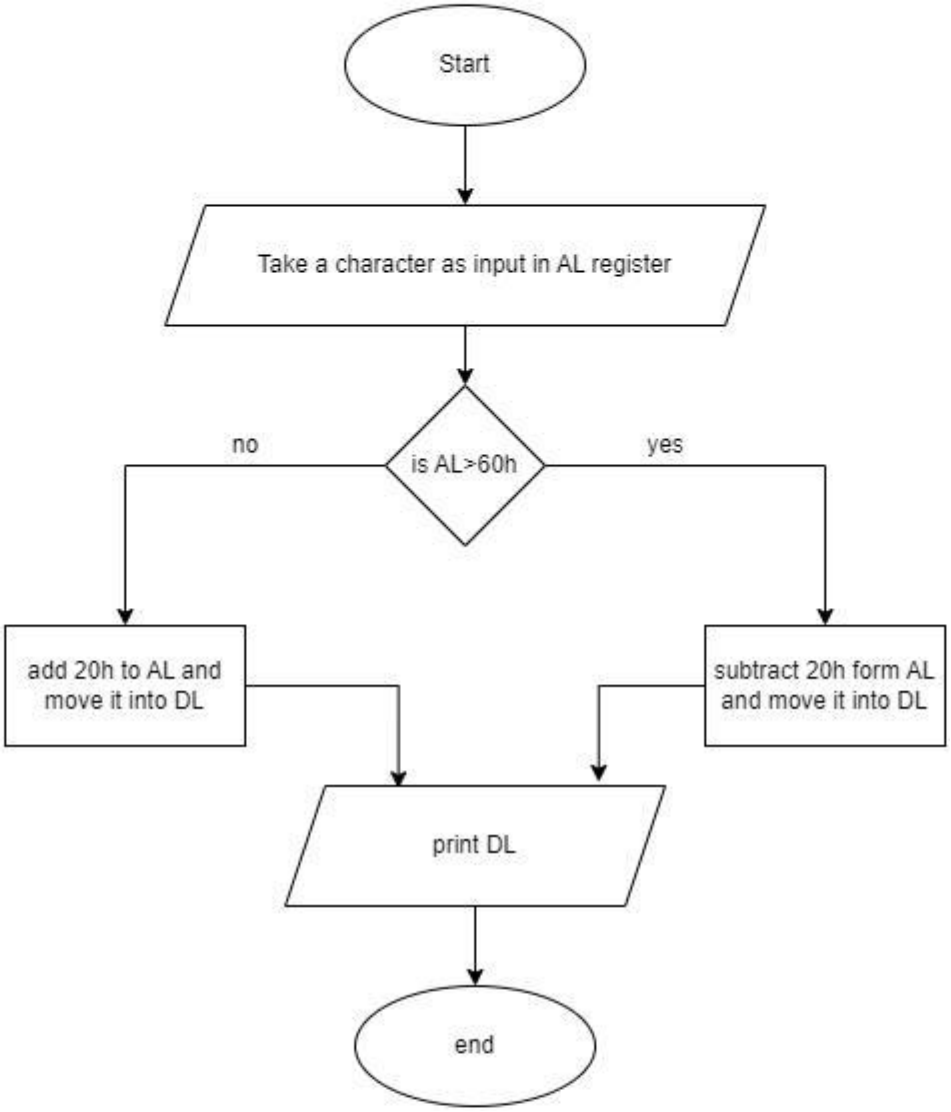
Experiment 1.

Title: Case conversion (upper case to lower case and vice versa Using an assembly language program).

Algorithm:

```
Step1: Start
Step2: take an input character in AL register.
Step3: if AL>60h then subtract 20h from AL.
Step4: otherwise add 20h to AL.
Step5: print the content of AL register.
Step6: end.
```

Flow chart:


Start
Take a character as input in AL register
no
is AL>60h
yes
add 20h to AL and move it into DL
subtract 20h form AL and move it into DL
print DL
end

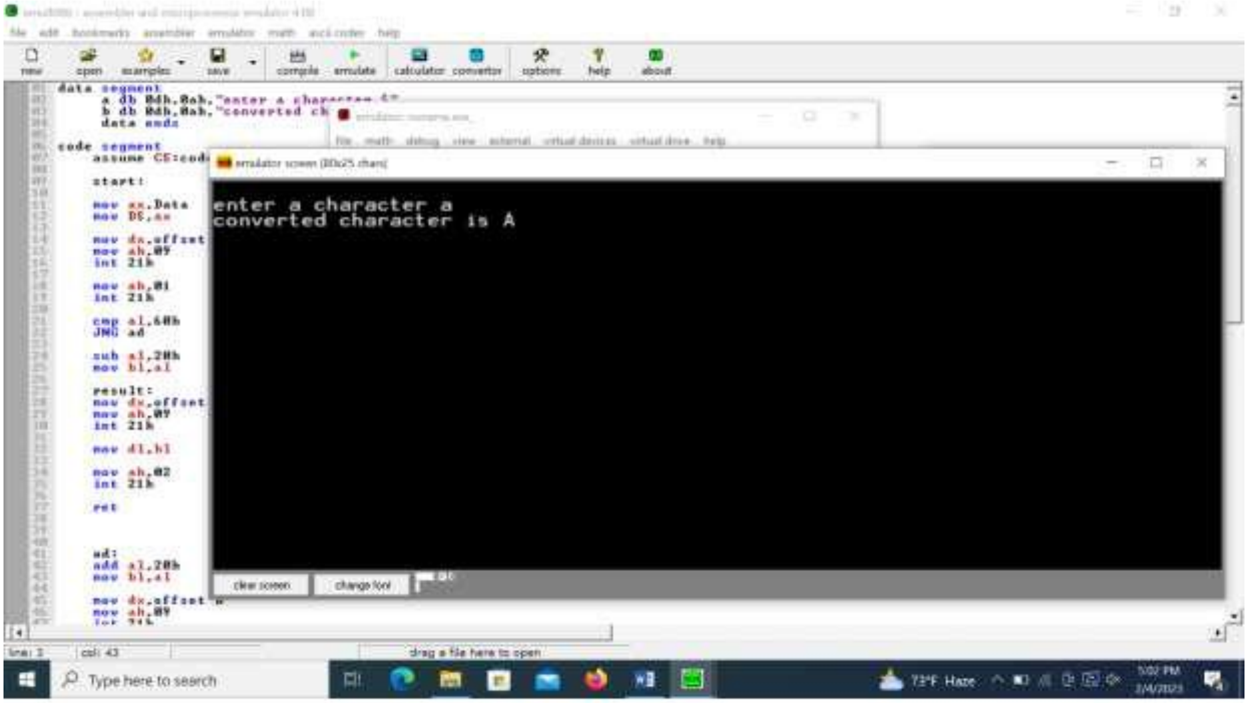
Source Code:

```
data segment
    a db 0dh,0ah,"enter a character $"
    b db 0dh,0ah,"converted character is $"
    data ends

code segment
   assume CS:code,DS:Data

   start:

   mov ax,Data
   mov DS,ax

   mov dx,offset a
   mov ah,09
   int 21h

   mov ah,01
   int 21h

   cmp al,60h
   JNG capital

   small:
   sub al,20h
   mov bl,al
```

```
 mov dx,offset b
 mov ah,09
 int 21h

 mov dl,bl
 mov ah,02
 int 21h
 ret



 capital:
 add al,20h
 mov bl,al

 mov dx,offset b
 mov ah,09
 int 21h

 mov dl,bl
 mov ah,02
 int 21h
 ret

code ends
end start
```

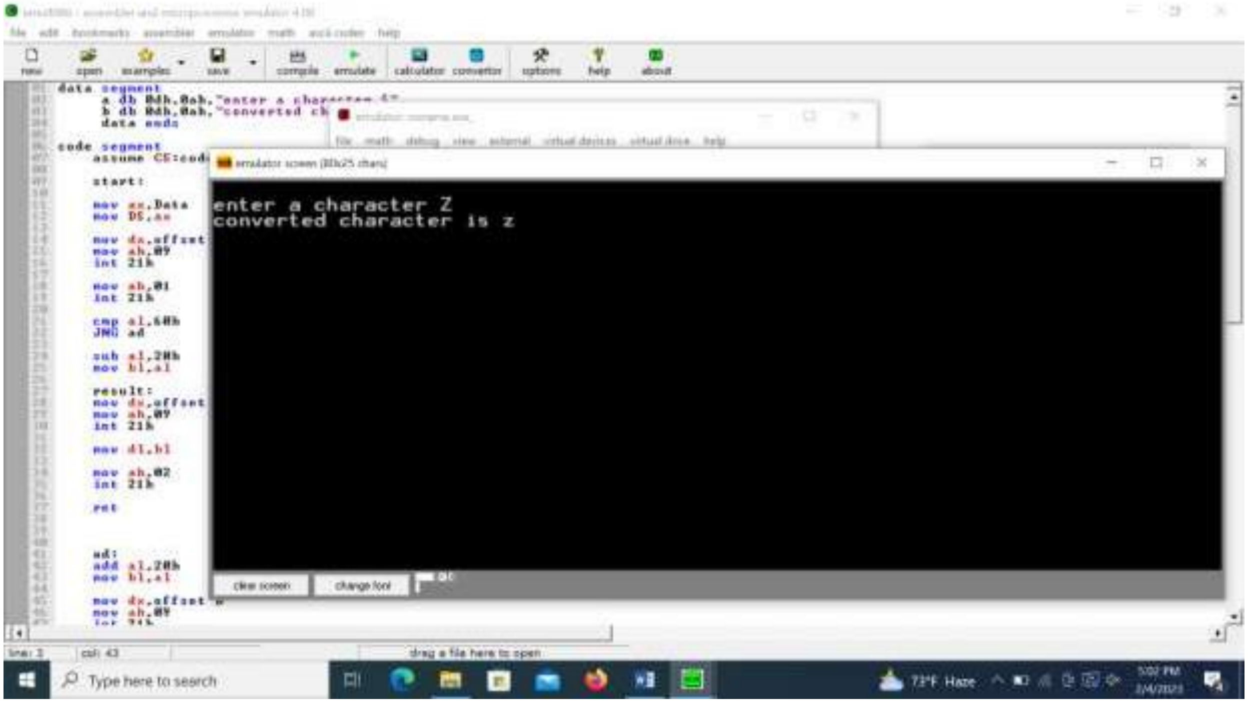
Input: firstly take a input in lower case latter a and take another input in upper case latter Z.

Output:



```
data segment
    a db 0dh,0ah,"enter a character
    b db 0dh,0ah,"converted ch
    data ends

code segment
    assume CS:cod

    start:

    mov ax,Data
    mov DS,ax

    mov dx,offset
    mov ah,09
    int 21h

    mov ah,01
    int 21h

    cmp al,60h
    JNG ad

    sub al,20h
    mov bl,al

    result:
    mov dx,offset
    mov ah,09
    int 21h

    mov dl,bl

    mov ah,02
    int 21h

    ret



    ad:
    add al,20h
    mov bl,al

    mov dx,offset b
    mov ah,09
```

```
enter a character a
converted character is A
```



```
data segment
    a db 0dh,0ah,"enter a character
    b db 0dh,0ah,"converted ch
    data ends

code segment
    assume CS:cod

    start:

    mov ax,Data
    mov DS,ax

    mov dx,offset
    mov ah,09
    int 21h

    mov ah,01
    int 21h

    cmp al,60h
    JNG ad

    sub al,20h
    mov bl,al

    result:
    mov dx,offset
    mov ah,09
    int 21h

    mov dl,bl

    mov ah,02
    int 21h

    ret



    ad:
    add al,20h
    mov bl,al

    mov dx,offset b
    mov ah,09
```

```
enter a character Z
converted character is z
```

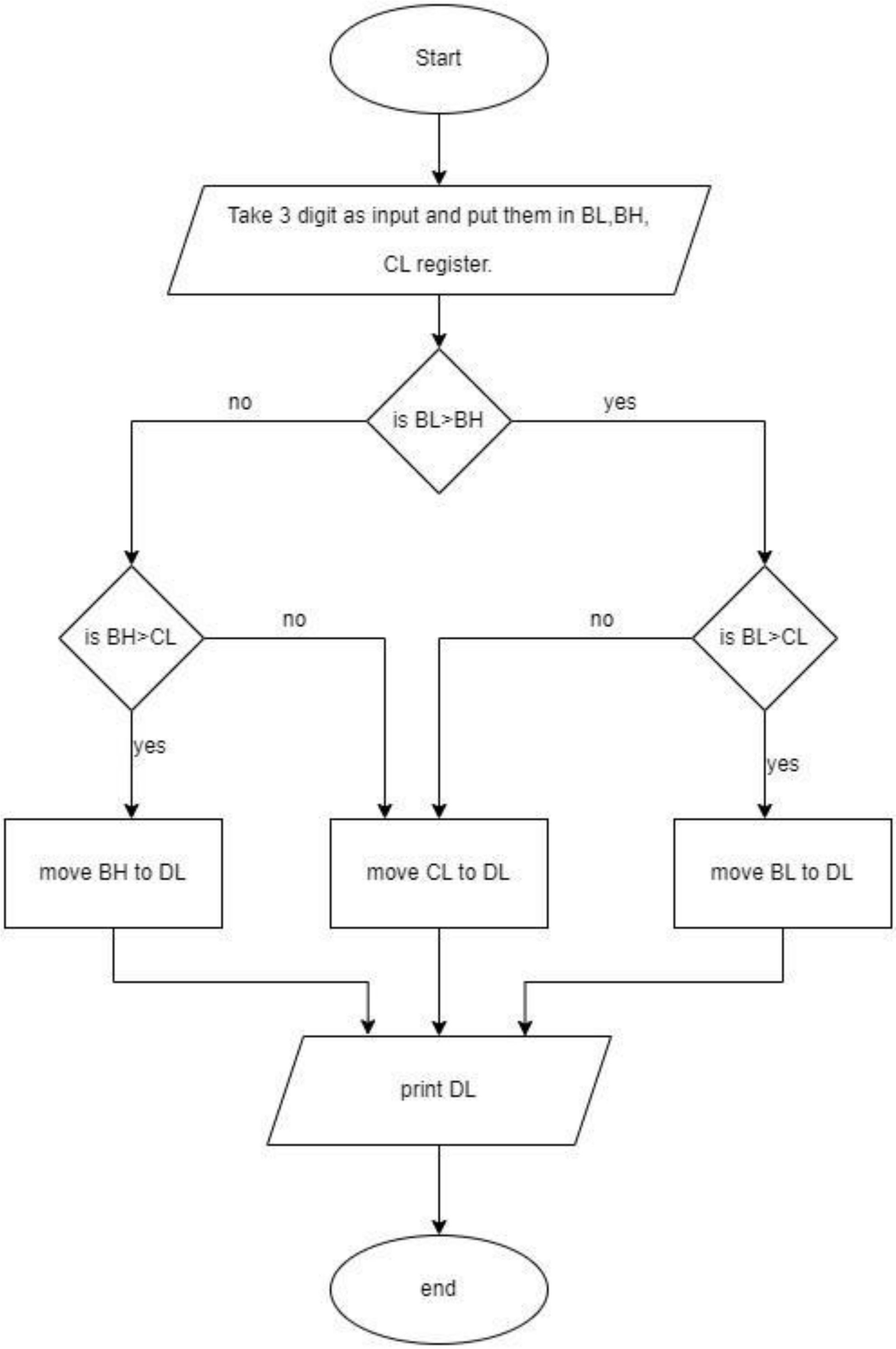
Experiment 2.

Title: Compare three digits and find the biggest number (Using an assembly language program).

Algorithm:

```
Step1: Start
Step2: Take 3 digit as input and put them in BL,BH,CL register.
Step3: if BL>BH then
Step4:if BL<CL move CL to DL. otherwise move BL to DL.
Step5: otherwise,if BH<CL move CL to DL. otherwise move BH to DL.
Step6: print the content of DL.
Step7: end.
```

Flow chart:


Start
Take 3 digit as input and put them in BL,BH,
CL register.
no
is BL>BH
yes
is BH>CL
no
no
is BL>CL
yes
yes
move BH to DL
move CL to DL
move BL to DL
print DL
end

Source Code:

```
data segment
    a db 0dh,0ah,"enter first number $"
    b db 0dh,0ah,"enter second number $"
    c db 0dh,0ah,"enter third number $"
   d db 0dh,0ah,"biggest number is: $"
   data ends
code segment
   assume CS:code,DS:Data

   start:

   mov ax,Data
   mov DS,ax

   mov dx,offset a
   mov ah,09
   int 21h
   mov ah,01
   int 21h
   mov bl,al
```

```
 mov dx,offset b
 mov ah,09
 int 21h
 mov ah,01
 int 21h
 mov bh,al


 mov dx,offset c
 mov ah,09
 int 21h
 mov ah,01
 int 21h
 mov cl,al


 cmp bl,bh
 JNG secondbig

firstbig:

 cmp bl,cl
 JNG thirdbig1
```

```
mov dx,offset d
mov ah,09
int 21h

mov dl,bl
mov ah,02
int 21h
ret


thirdbig1:

mov dx,offset d
mov ah,09
int 21h

mov dl,cl
mov ah,02
int 21h
ret



secondbig:
```

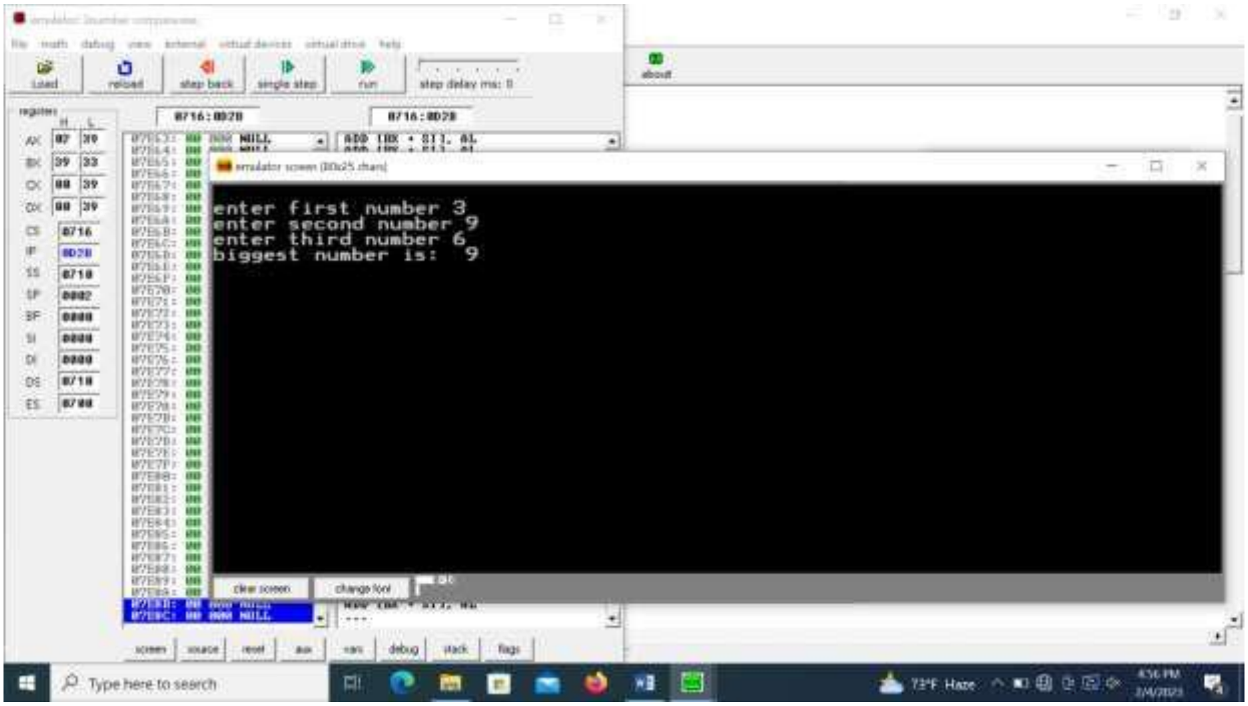
```
cmp bh,cl
JNG thirdbig2
mov cl,bh

mov dx,offset d
mov ah,09
int 21h

mov dl,cl
mov ah,02
int 21h
ret


thirdbig2:
mov dx,offset d
mov ah,09
int 21h

mov dl,cl
mov ah,02
int 21h
ret
```

```
code ends
end start
```

Input:

Taking input 3,6,9.

Output:



```
enter first number 3
enter second number 9
enter third number 6
biggest number is:  9
```