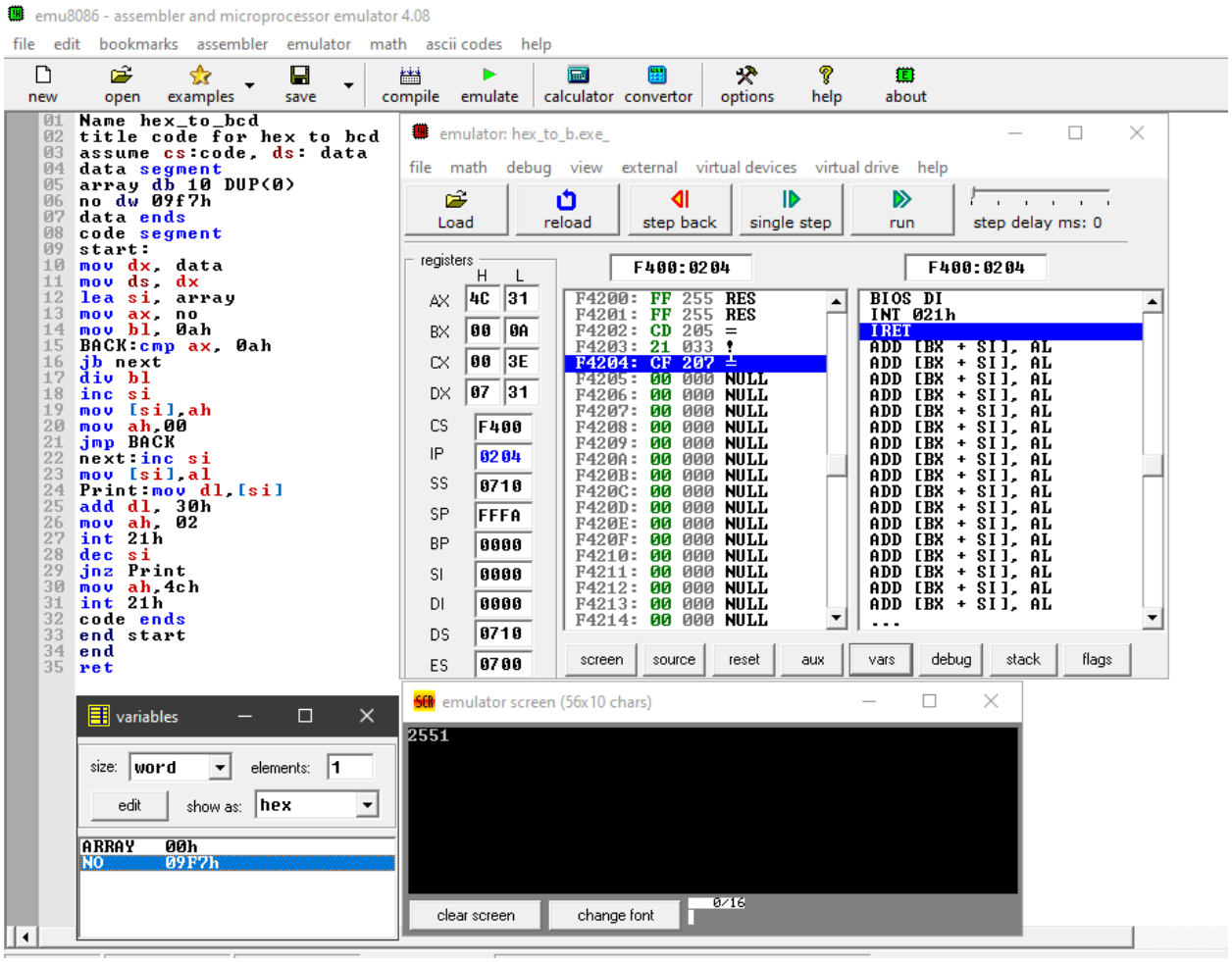
Experiment 7
Class: SE Comp
Year: 2020-21
Performed by: Danyl Fernandes, 72

Hex to BCD:

Code:

```
Name hex_to_bcd
title code for hex to bcd
assume cs:code, ds: data
data segment
     array db 10 DUP(0)
     no dw 09f7h
     data ends
code segment
start:
     mov dx, data
     mov ds, dx
     lea si, array
     mov ax, no
     mov bl, 0ah
     BACK:cmp ax, 0ah
     jb next
     div bl
     inc si
     mov [si],ah
     mov ah,00
     jmp BACK
     next:inc si
     mov [si],al
     Print:mov dl,[si]
     add dl, 30h
     mov ah, 02
     int 21h
     dec si
     jnz Print
     mov ah,4ch
     int 21h
code ends
end start
end
```

Output:


emu8086 - assembler and microprocessor emulator 4.08
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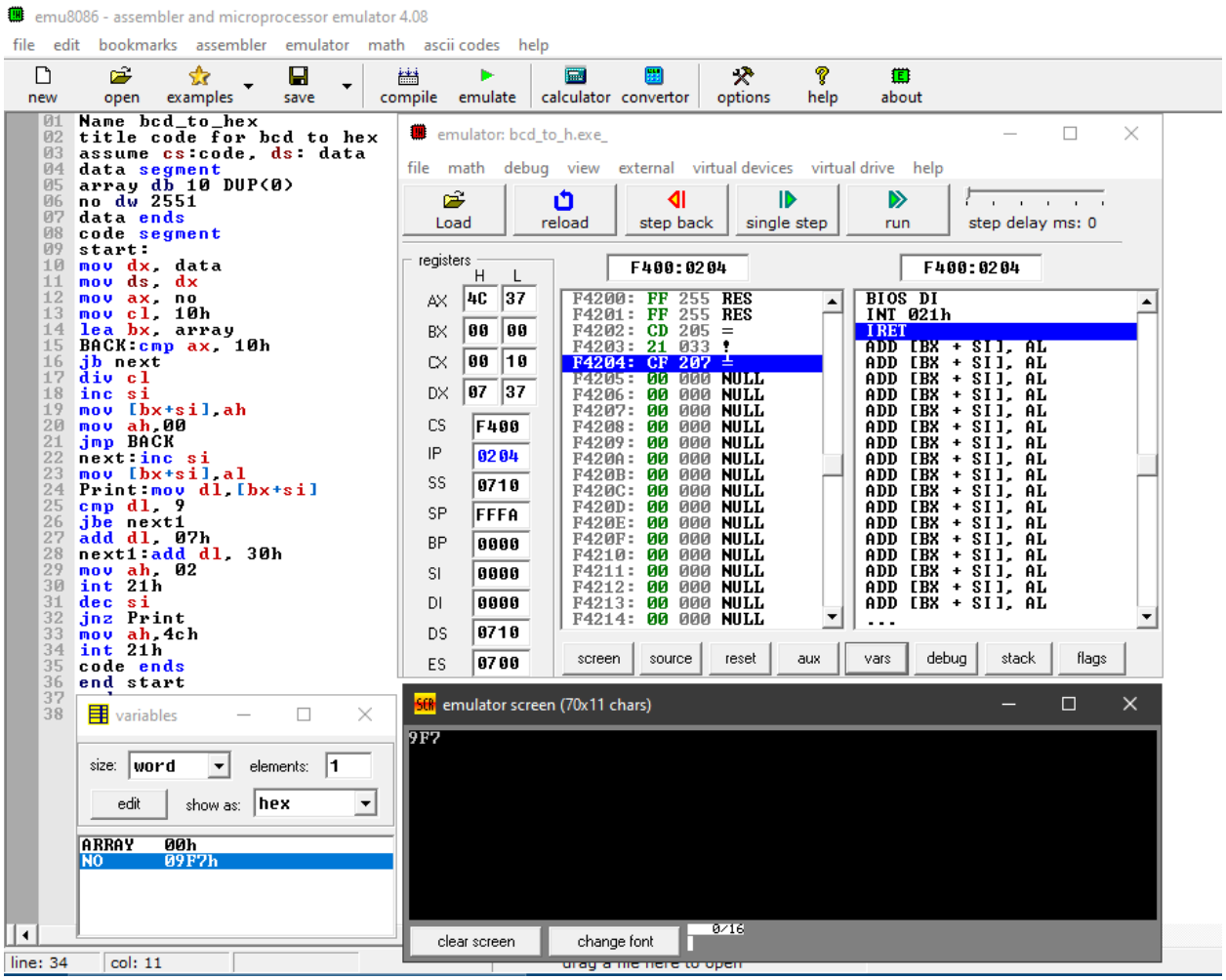
new open examples save compile emulate calculator convertor options help about
Name hex_to_bcd
title code for hex to bcd
assume cs:code, ds: data
data segment
array db 10 DUP(0)
no dw 09f7h
data ends
code segment
start:
mov dx, data
mov ds, dx
lea si, array
mov ax, no
mov bl, 0ah
BACK:cmp ax, 0ah
jb next
div bl
inc si
mov [si],ah
mov ah,00
jmp BACK
next:inc si
mov [si],al
Print:mov dl,[si]
add dl, 30h
mov ah, 02
int 21h
dec si
jnz Print
mov ah,4ch
int 21h
code ends
end start
end
ret
emulator: hex_to_b.exe_
file math debug view external virtual devices virtual drive help
Load reload step back single step run step delay ms: 0
registers
H L
AX 4C 31
BX 00 0A
CX 00 3E
DX 07 31
CS F400
IP 0204
SS 0710
SP FFFA
BP 0000
SI 0000
DI 0000
DS 0710
ES 0700
F400:0204
F4200: FF 255 RES
F4201: FF 255 RES
F4202: CD 205 =
F4203: 21 033 !
F4204: CF 207 ╧
F4205: 00 000 NULL
F4206: 00 000 NULL
F4207: 00 000 NULL
F4208: 00 000 NULL
F4209: 00 000 NULL
F420A: 00 000 NULL
F420B: 00 000 NULL
F420C: 00 000 NULL
F420D: 00 000 NULL
F420E: 00 000 NULL
F420F: 00 000 NULL
F4210: 00 000 NULL
F4211: 00 000 NULL
F4212: 00 000 NULL
F4213: 00 000 NULL
F4214: 00 000 NULL
F400:0204
BIOS DI
INT 021h
IRET
ADD [BX + SI], AL
screen source reset aux vars debug stack flags
variables
size: word elements: 1
edit show as: hex
ARRAY 00h
NO 09F7h
emulator screen (56x10 chars)
2551
clear screen change font 0/16

BCD to Hex:

Code:

```
Name bcd_to_hex
title code for bcd to hex
assume cs:code, ds: data
data segment
     array db 10 DUP(0)
     no dw 2551
     data ends
code segment
     start:
     mov dx, data
     mov ds, dx
     mov ax, no
     mov cl, 10h
     lea bx, array
     BACK:cmp ax, 10h
     jb next
     div cl
     inc si
     mov [bx+si],ah
     mov ah,00
     jmp BACK
     next:inc si
     mov [bx+si],al
     Print:mov dl,[bx+si]
     cmp dl, 9
     jbe next1
     add dl, 07h
     next1:add dl, 30h
     mov ah, 02
     int 21h
     dec si
     jnz Print
     mov ah,4ch
     int 21h
code ends
end start
end
```

Output:



Conclusion:

We successfully implemented Hex to BCD and BCD to Hex conversion using assembly language programs

Daryl Fernandes 2020012004(72) Date : Page No. 1

Experiment 07

Aim : To write an assembly language program to convert from Hex to BCD & BCD to Hex.

Software : Emulator 8086

Theory :

Assembler directives : DUP used to create an array of given length & duplicate values

Instructions :

LEA : used to load effective address of given segment

JB : jump if there's a borrow to the given label

JMP : jump to the given label

INC : increment by 1

DEC : decrement by 1

JNZ : Jump to zero to given label

AND : used to calculate logical & of two operands

SHR : Shift the data

INT 21H : Used to read input characters

D2H : Used to print value