SSN COLLEGE OF ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
UCS 1512-MICROPROCESSOR LAB
MODEL PRACTICALS

Name: Anirudh H
RegNo: 185001019
Semester:5

Questions:

1. To write an ALP code in 8086 to sort numbers located in memory addresses XX00 in descending order.
2. To write ALP code in 8051 to convert a number from HEX to BCD

SORTING:

Algorithm:
We are sorting an array in descending order.
1. Initialize the data and code segment, variables.
2. Move starting address of data segment to DS
3. Initialize AH to 0 and transfer the contents of count to AL register
4. JUMP CONDITION: HERE:- Move AX to CX register and starting address of matrix/memory to SI register
5. JUMP CONDITION: HERE1 :- Move the contents pointed by SI register to the BL register.
6. Compare the value in BL register and the value pointed at location SI +1
   > If BL < [SI +1] then JUMP TO NEXT, else
   > Swap BL and [SI +1] and transfer the contents of BL register to [SI]
7. JUMP CONDITION: NEXT :-
   > Increment SI, loop HERE1 until CX becomes 0
   > Decrement AX
8. End Program

Program:

```
assume cs:code, ds:data
    data segment
    count dw 0009h
```

```
    org 0010h
    matrix1 db 88h,77h,33h,22h,11h,44h,55h,66h,00h

data ends

code segment
    org 0100h
start:
    mov ax,data
    mov ds,ax
    mov ax,count
    dec ax

here:
    mov cx,ax
    mov si, offset matrix1

here1:
    mov bl, [si]
    cmp bl,[si+1]
    jge next
    xchg bl,[si+1]
    mov[si],bl
next:
    inc si
    loop here1
    dec ax
    jnz here
mov cx,count


mov ah,4ch
int 21h
code ends
end start
```

OUTPUT:

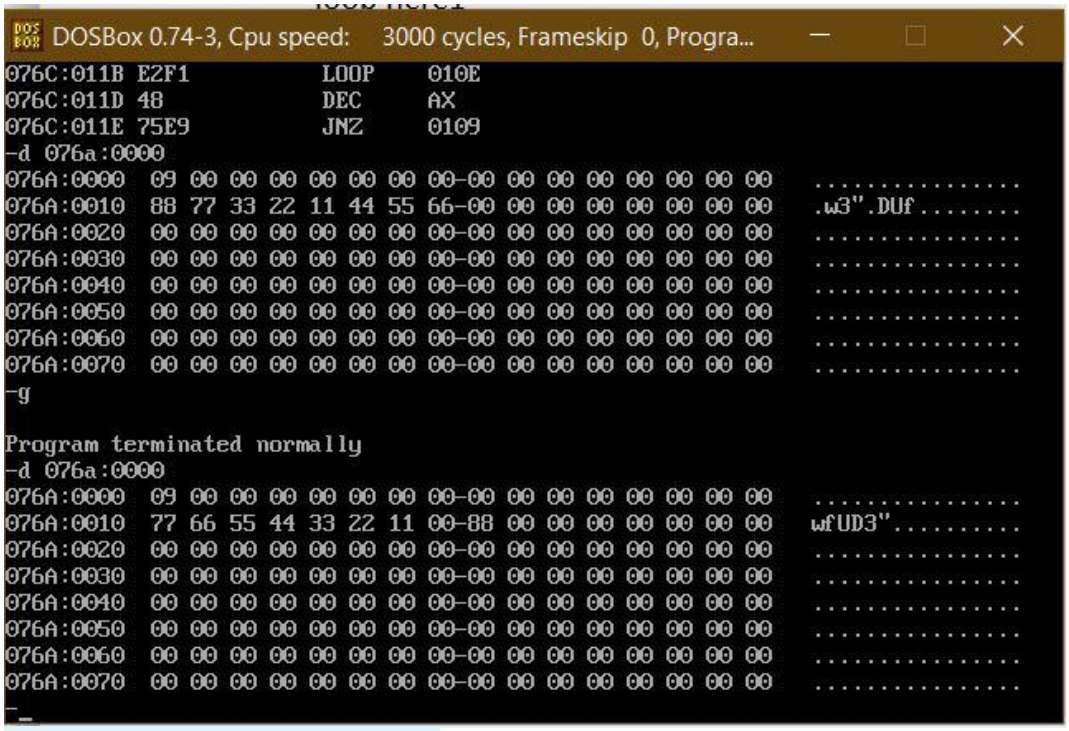


Fig 1: Descending Order Output.

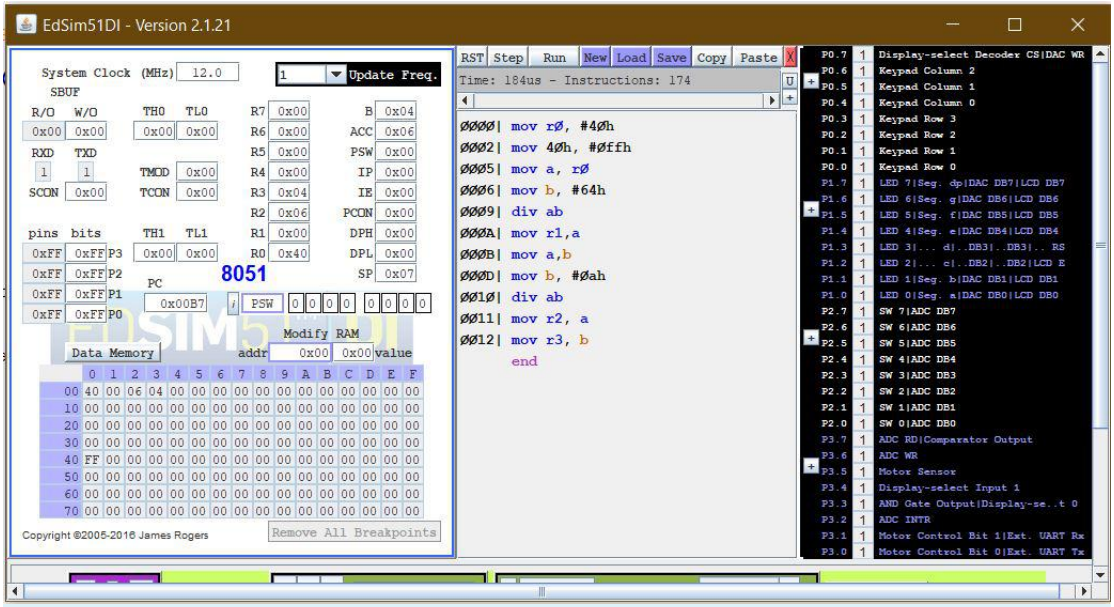
8051 ASSEMBLY LEVEL PROGRAMMING:

To do Hexa to BCD conversion in 8051

ALGORITHM:

1. The input is given in r0 which will be out hexa input.
2. This input is divided by 64 and assigned to r1 (hundreds digit)
3. Then it is divided by 0a and assigned to r2 and the remainder to r3.
4. We get resulting 10s and Units digit.
5. Convert the decimal code to binary and answer is obtained

CODE AND OUTPUT:



40 is converted to 0604 which to BCD gives 01100100

RESULT:

The given ALP problems were coded and neccesary output was taken.