RAJSHAHI UNIVERSITY OF ENGINEERING AND TECHNOLOGY

Lab report

Course No.: CSE 2202

Date of Experiment: 10.07.2019
Date of Submission: 17.07.2019

Submitted to:
Biprodip Pal
Assistant Professor,
Department of Computer Science and Engineering
Rajshahi University of Engineering and Technology

Submitted by:
Riyad Morshed Shoeb
Roll No: 1603013
Section: A
Department of Computer Science and Engineering
Rajshahi University of Engineering and Technology

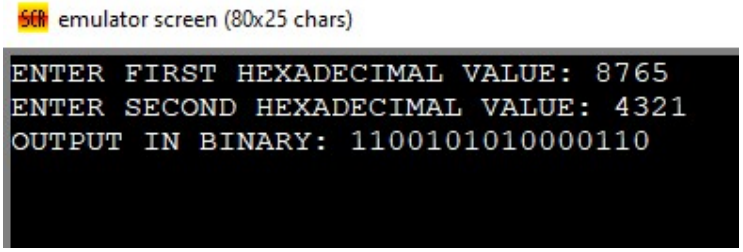
Problem: Given two hexadecimal number, print their sum in binary. Reverse the second input and print their sun in binary.

Code:

```
.MODEL SMALL
.STACK 100H
.DATA
FIRST_INPUT_MSG DB 'ENTER FIRST HEXADECIMAL VALUE: $'
SECOND_INPUT_MSG DB 'ENTER SECOND HEXADECIMAL VALUE: $'
OUTPUT_MSG DB 'OUTPUT IN BINARY: $'
FIRST_INPUT_DATA DW 0H
SECOND_INPUT_DATA DW 0H

.CODE
    MAIN PROC
        ;DATA SEGMENT
        MOV AX, @DATA
        MOV DS, AX

        ;INPUT SEGMENT
        ;FIRST INPUT
        ;INPUT PROMPT
        LEA DX, FIRST_INPUT_MSG
        MOV AH, 9
        INT 21H
        MOV CX, 4
        MOV AH, 1
        FIRST_INPUT:
            INT 21H
            MOV BL, AL                ;NOT TO LOOSE THE DATA
            CMP AL, 65
            JL DATA_PROCESS_FIRST
            SUB BL, 55                ;TO GET 10-15 FOR A-F
            DATA_PROCESS_FIRST:
                AND BL, 0FH              ;TO LOOSE UNNECESSARY BITS
EXCEPT THE LAST 4 BITS
                SHL FIRST_INPUT_DATA, 4
                OR FIRST_INPUT_DATA, BX
            LOOP FIRST_INPUT

        ;PRINT NEW LINE
        MOV AH, 2
        MOV DL, 0AH
        INT 21H
        MOV DL, 0DH
        INT 21H

        ;SECOND INPUT
        ;INPUT PROMPT
        LEA DX, SECOND_INPUT_MSG
        MOV AH, 9
        INT 21H
        MOV CX, 4
        MOV AH, 1
        MOV DX, 0
```

```
        SECOND_INPUT:
            INT 21H
            MOV BL, AL                ;NOT TO LOOSE THE DATA
            CMP AL, 65
            JL DATA_PROCESS_SECOND
            SUB BL, 55                ;TO GET 10-15 FOR A-F
            DATA_PROCESS_SECOND:
                AND BL, 0FH              ;TO LOOSE UNNECESSARY BITS
EXCEPT THE LAST 4 BITS
                SHL SECOND_INPUT_DATA, 4
                OR SECOND_INPUT_DATA, BX
            LOOP SECOND_INPUT

        ;SUM SEGMENT
        SUM_SEGMENT:
            MOV BX, FIRST_INPUT_DATA
            MOV CX, SECOND_INPUT_DATA
            ADD BX, CX

        ;PRINT NEW LINE
        MOV AH, 2
        MOV DL, 0AH
        INT 21H
        MOV DL, 0DH
        INT 21H

        ;OUTPUT SECTION
        ;OUTPUT PROMPT
        LEA DX, OUTPUT_MSG
        MOV AH, 9
        INT 21H
        MOV CX, 16
        MOV AH, 2
        JNC OUTPUT_SECTION
        MOV DL, 0
        INT 21H
        OUTPUT_SECTION:
            ROL BX, 1
            JNC PRINT_ZERO
            PRINT_ONE:
                MOV DL, 31H
                INT 21H
                LOOP OUTPUT_SECTION
            PRINT_ZERO:
                MOV DL, 30H
                INT 21H
                LOOP OUTPUT_SECTION

        ;RETURN CONTROL
        MOV AH, 4CH
        INT 21H

        MAIN ENDP
    END MAIN
```

Output:


SCR emulator screen (80x25 chars)
ENTER FIRST HEXADECIMAL VALUE: 8765
ENTER SECOND HEXADECIMAL VALUE: 4321
OUTPUT IN BINARY: 1100101010000110