**LABSHEET 1: INTRODUCTION TO 8085 MICROPROCESSORS**

**Name: Aadithyan Raju Roll Number:AM.EN.U4CSE21301**

1. Convert the binary number 01000101 to hexadecimal.
   * 45
2. Convert the hex number 0x63F to binary.
   * 0110 0011 1111
3. Give the signed representations of the decimal 45 in 8-bit binary and hexadecimal.
   * Binary : 0010 1101
   * Hex: 2D
4. Specify the signed and unsigned decimal representations of the 8-bit hex number 0x95.
   * Unsigned 145
   * Signed -17
5. Convert the signed binary number (11011010)2 to signed decimal.
   * -38
6. For the unsigned 8-bit number system, the basis elements are {128,64,32,16,8,4,2,1}. What are the basis elements of signed 8-bit number system?
   * If MSB = 1 then {-64,-32,-16,8,4,2,1}
   * If MSB = 0 then {64,32,16,8,4,2,1}
7. Give the representations of -54 in 8-bit binary and hexadecimal.
   * BIN = 11001010 HEX = CA
8. What are the possible values of 8-bit signed numbers?
   * -127 to 126
9. What are the possible values of 8-bit unsigned numbers?
   * 0 to 255
10. Download a simulator for simple 8-bit processor 8085 in the below link <https://gnusim8085.github.io/>
11. Fill the machine code for the following assembly program

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Assembly** | **Instruction size** | **Memory Address** | **Object Binary Code** | **Object Code in Hex** |
| **Code1:** MVI A, 32H MVI B, 48H ADD B OUT 01H  HLT | 2  2  1  2  1 | 4200  4202  4204  4205  4207 | 00111110  00000110  10000000  11010011  00000001 | 3E  06  80  D3  01 |
| **Code2:** MVI A,01H STA 4500H HLT | 2  3  1 | 4200  4202  4205 | 00111110  00110010  01110110 | 3E  32  76 |
| **Code 3:** LDA 1000H MOV B, A LDA 2000H STA 1000H MOV A, B STA 2000H  HLT | 3  1  3  3  1  3  1 | 4200  4203  4204  4207  420A  420B  420E | 11101010  01000111  11101010  00110010  01111000  00110010  01110110 | EA  47  EA  32  78  32  76 |
| **Code 4:** MVI A,55H CMA  STA 1001H MVI A,00H  HLT | 2  1  3  2  1 | 4200  4202  4203  4206  4208 | 00111110  00101111  00110010  00111110  01110110 | 3E  2F  32  3E  76 |