Advanced Computer Organization and Architecture with Lab

Lab Assignment 5 – Code conversion

Submitted by – Sanjana Jammi (CS18M522)

Screenshots:

Part 1 - Convert an ASCII digit(given in hex format) to hex digit.

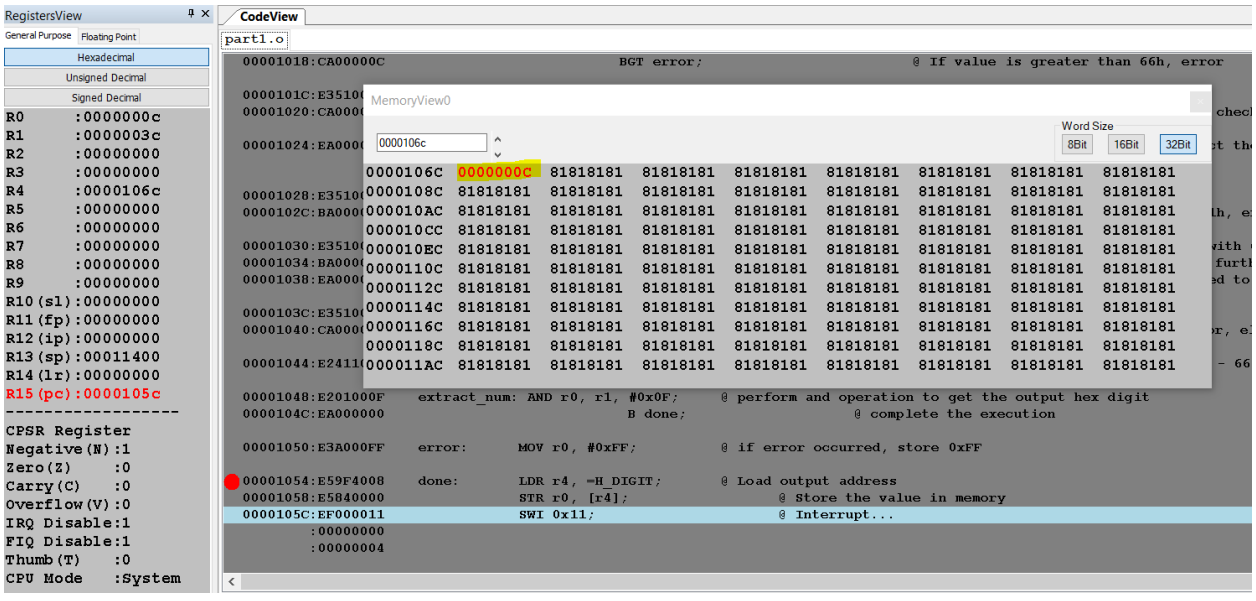
Input: ASCII is in the valid hex digit range - works for 30h-39h (numbers 0-9), 41h-46h (A-F), 61h-66h(a-f)

Note: In case a number outside this range is given as input, the output is 0xFF (ERROR).

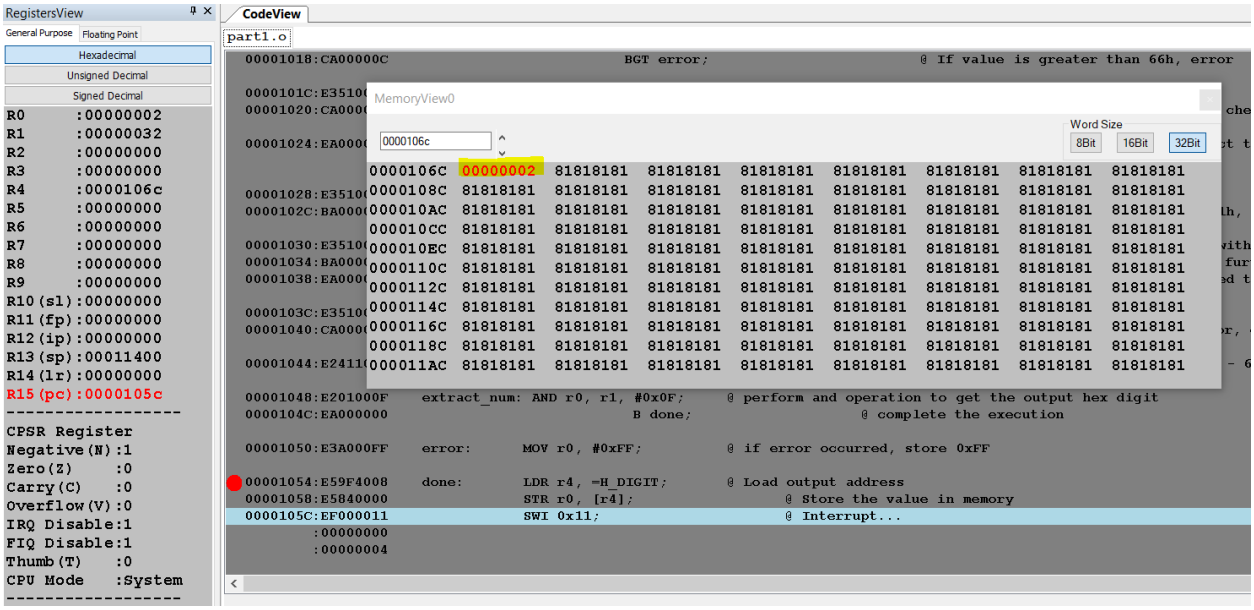
Output: Stored in memory location 0x106c

Test inputs and outputs:

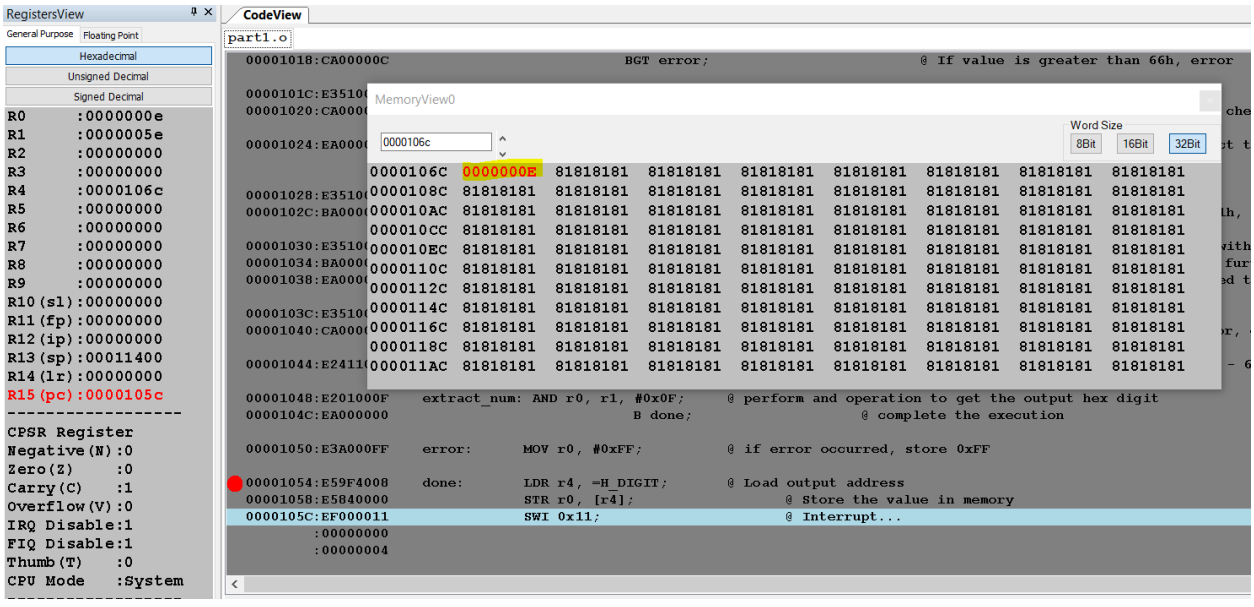
1. Input - 0x43, Output – 0C



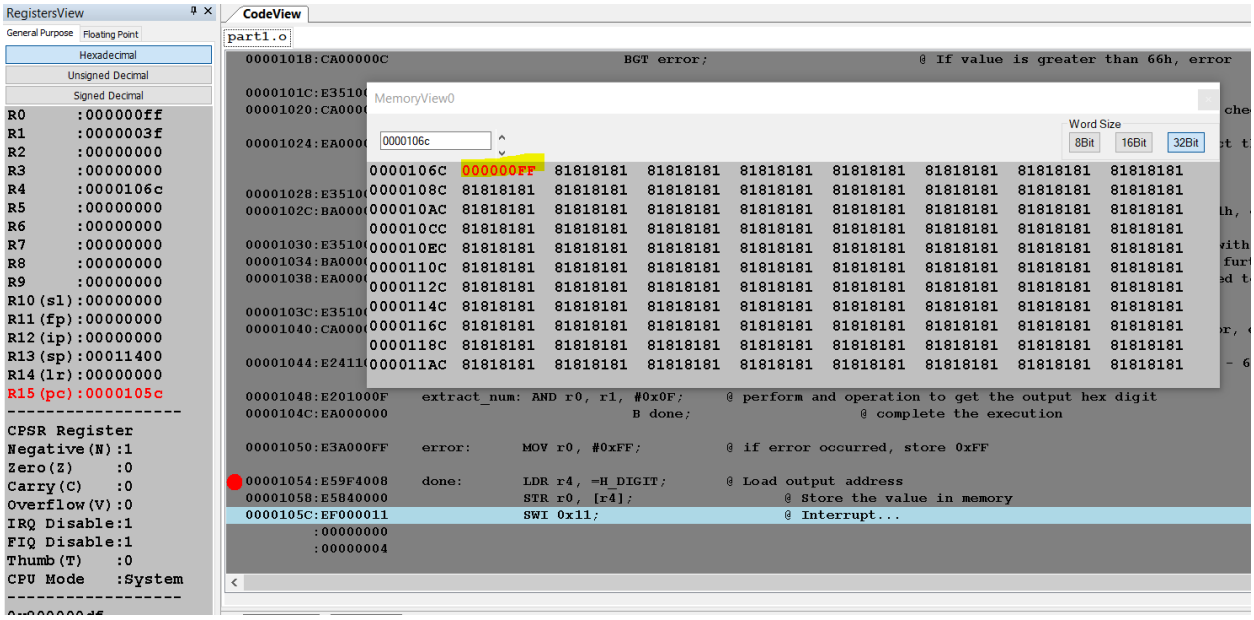
2. Input – 0x32, Output – 02



3. Input – 0x65, Output – 0E



4. Input – 0x3F, Output – FF (ERROR)



Part 2 - Convert a given eight ASCII characters to an 8-bit binary number

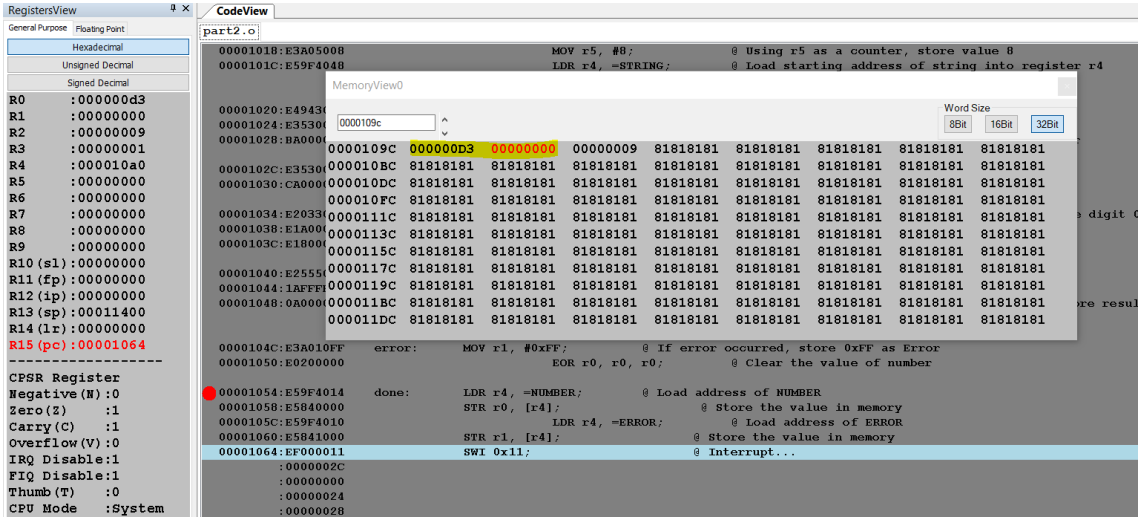
Input: If the length of string is less than 8, the program throws error. If length is greater than 8, consider only the first 8 ASCII characters given. If any digit other than 30h or 31h is present, throw error

Output: Number – Stores the 8 bit number consisting of 0s and 1s.

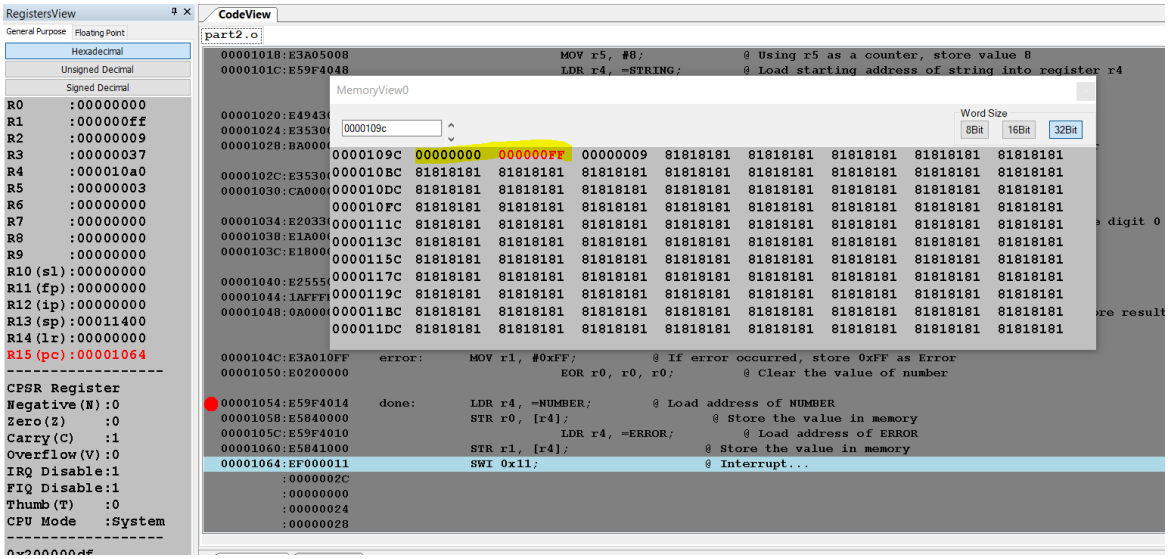
Error – Contains 0x00 if no error, 0xFF if error occurred.

Test inputs and outputs:

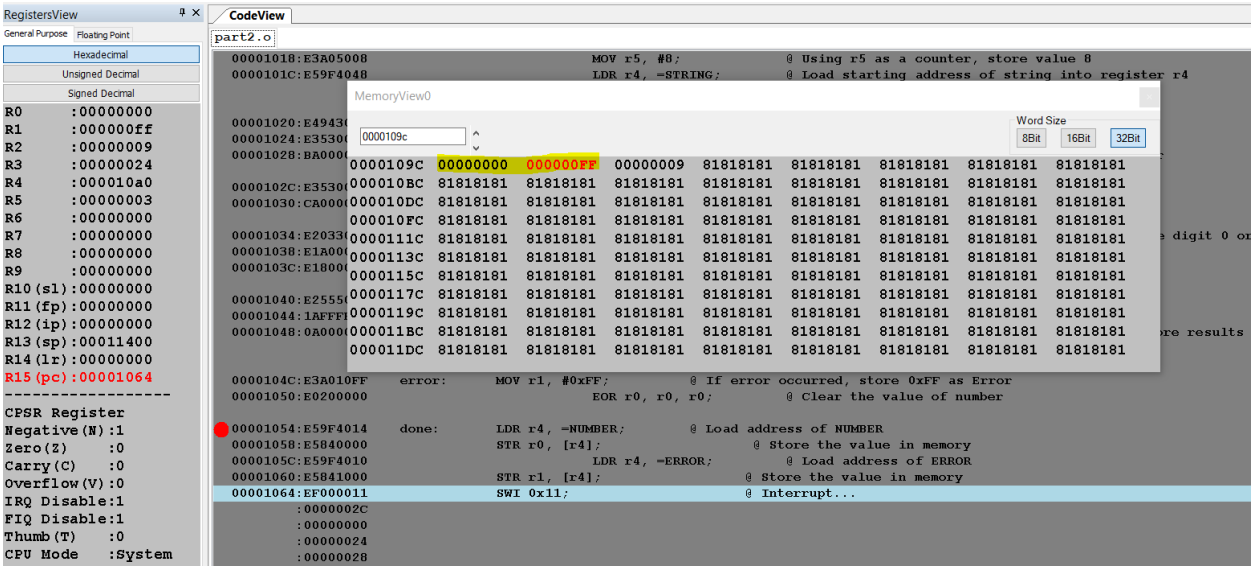
1. Input - 31,31,30,31,30,30,31,31,30, Outputs – Number(D3 – 11010011), Error (0)



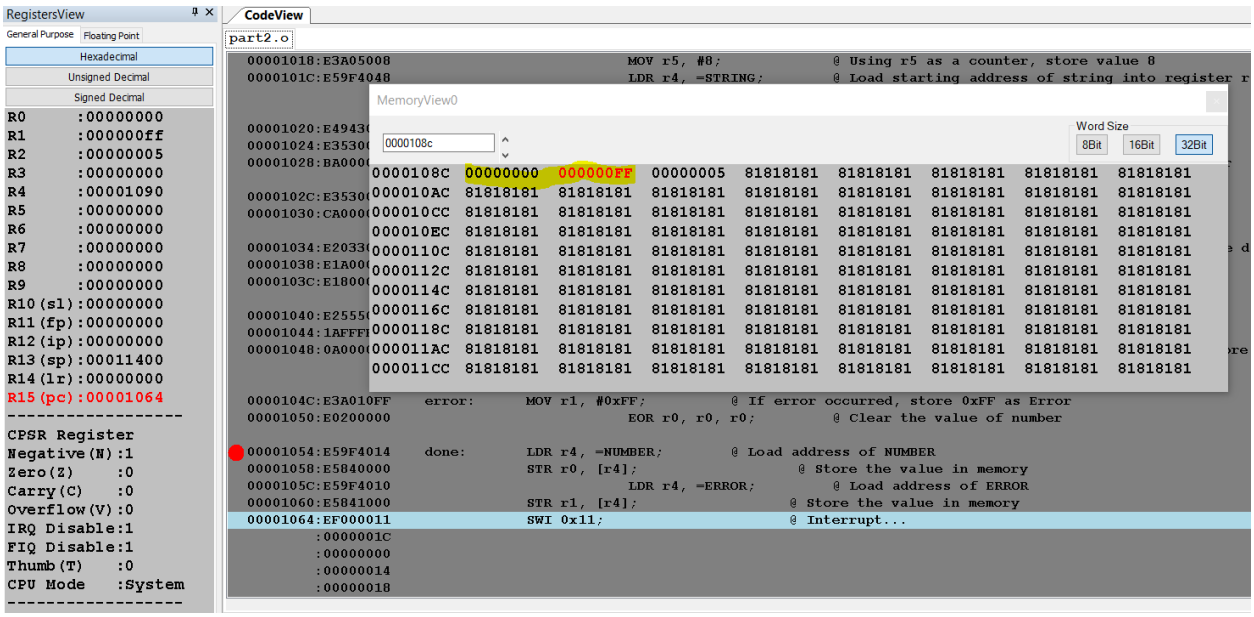
2. Input – 31,31,30,31,30,37,31,31,30, Outputs – Number(0), Error (0xFF)



3. Input – 31,31,30,31,30,24,31,31,30, Outputs – Number(0), Error (0xFF)



4. Input – 31,30,31,31, Outputs – Number(0), Error (0xFF)



Part 3 - Convert given 8 digit packed BCD number to 32 bit number

Input represents the given number in hex format which are 8 digits of packed BCD number (4 bits for each digit)

Shift right by 4 each time and obtain the lower 4 bits each time

Find output by multiplying by 1,10, 100, 1000.. starting from the least significant nibble and accumulating the result

Test inputs and outputs:

Input – 0x92529679

Output – 0x0583e40f