EE312: Assignment IV

Embedded Systems

October 14, 2020

Report the contents of the Flag Registers and Calculate T-States for the execution of each code.

1. Let x and y be the last and second last non-zero digits from your Roll Number. For example, if your Roll Number is 18101104, then $x = 4$ and $y = 1$. **(a)** Execute a loop to store 10 numbers in the address range A to $(A+9)$. These 10 numbers are in an Arithmetic Progression with the First Term as x and Common Difference as y. **(b)** Execute a loop to copy these 10 numbers from source address arange A to $(A + 9)$ to the destination address range B to $(B + 9)$. **(c)** Execute a loop to copy these 10 numbers from source address arange A to $(A+9)$ to the destination address range C to $(C + 9)$ in a reversed order.

2. Manually store ten 8-bit numbers (not in ascending or descending order) in the address range A to $(A + 9)$. Implement Bubble Sort to arrange these numbers in ascending order.

3. The 8-bit number $x8$ is stored in address A. Multiply its upper and lower nibble. Store the result in address B.

4. The 8-bit number $x8$ and the 4-bit number $y4$ are stored in addresses X and Y respectively. Multiply $x8$ and $y4$ and store the result in address A.

5. Consider the decimal number 14.25 stored in BCD format. Addresses A and $(A + 1)$ respectively store 14 and 25. Convert 14.25 to fixed-point representation and store that in addresses B and $(B + 1)$. Here, B stores the integer part and $(B + 1)$ stores the fraction part.