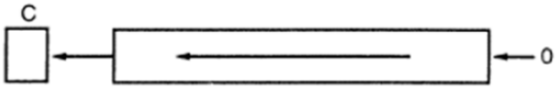
CEN 214 Microprocessors Lab
Assignment 8

New Instructions:

SHL, SAL

Description: The shift arithmetic left (SAL) and shift logical left (SHL) instructions perform the same operation; they shift the bits in the destination operand to the left (toward more significant bit locations). For each shift count, the most significant bit of the destination operand is shifted into the CF flag, and the least significant bit is cleared.

Algorithm :

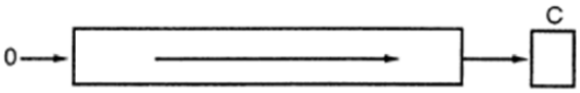


SHR, SAR

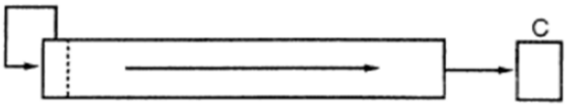
Description: The shift arithmetic right (SAR) and shift logical right (SHR) instructions shift the bits of the destination operand to the right (toward less significant bit locations). For each shift count, the least significant bit of the destination operand is shifted into the CF flag, and the most significant bit is either set or cleared depending on the instruction type. The SHR instruction clears the most significant bit; the SAR instruction sets or clears the most significant bit to correspond to the sign (most significant bit) of the original value in the destination operand.

Algorithm:

SHR:



SAR:



Examples:

1. Write a program that multiply unsigned values 18d and value of 0100:1000h memory address by using shift instructions, and saves the result to the memory address 0100:1002h.

2. Write a program that divide signed value of 0100:3000h memory address by 4d using shift instructions, and saves the result to the memory address 0100:3000h.

3. Write a program that shift the value of 0100:1400h memory address to the right, until the value of 12th bit will be 0.

4. Write a program that will find the nibbles of the value of 0100:1000h memory address. The left side of the value will be written to the CH and right side of the value will be written to the CL registers.