Lab-05 Excercises:

1. Write a program to multiply AX by 27 using only Shift and Add instructions. You should not use the MUL instruction.

> Recall that shifting left n bits multiplies the operand by 2^n.
>
> If the multiplier is not an absolute power of 2,
> then express the multiplier as a sum of terms which are absolute powers of 2.
>
> For example, multiply AX by 7. $(7 = 4 + 2 + 1 = 2^2 + 2^1 + 1)$
>
> Answer = AX shifted left by 2 + AX shifted left by 1 + AX.
>
> **Note:** Only the original value of AX is used in each operation above.

2. Write a program to divide AX by 8 using Shift instructions. You should not use the DIV instruction. Assume AX is a multiple of 8.

> Recall that shifting right n bits divides the operand by 2^n.

3. Write a program to check if a byte is a Palindrome. [Hint: Use Rotate instructions]. If the byte is a Palindrome, then move AAh into BL. Otherwise move 00h in BL.

> A Palindrome looks the same when seen from the left or the right.
>
> For example, 11011011 is a Palindrome but 11010011 is not a Palindrome

4. Write a program to display the bits of a register or memory location. Use the INT 21H interrupts to display data on the display monitor. [Hint: Use logical shift instruction to move data bit into the carry flag]

> For example, if AL = 55H, then your program must display:
>
> AL = 0 1 0 1 0 1 0 1

5. Write assembly code for each of the following high-level language assignment statements. Suppose that A, B, and C are word variables and all products will fit in 16 bits. Use IMUL for multiplication. It's not necessary to preserve the contents of variables A, B, and C.
   a. A = 5 x A − 7
   b. B = (A-B) x (B-10)