**Assembly Language (D and E)**

**Fall 2019**

**Assignment-3**

**Submission: Submit soft copies on slate. Submission deadline is October 28, 2019 5 PM. Clearly mention your roll number and section on submission folder**

**Question no 1 (Questions from exercise of chapter-5) 50**

1. Q-9

**Question no 2 50**

Write a subroutine that takes two parameters 1) a 16 bit number and 2) an n-bit (n<16) pattern. Now find whether the given n-bits can be found in 16 bit number or not. If n-bits pattern is found, then return the index number else return -1. Suppose that the index number of the most significant bit is 0, and the index number of the least significant bit is 15. This sub routine will return starting Index number if found else -1.  
**For example:**   
Example 1:

AX has 16 bit number and BX has n bit pattern  
AX= 1110 1111 0000 1010b  
BX= 111100b (it does not matter what the remaining 9 bits of BX contain)  
n=6  
  
In example 1, the n-bit number can be found in AX, starting from index=4  
  
Example 2:  
AX= 1100 1100 1010 0000b  
BX= 1101b (it does not matter what the remaining 12 bits of BX contain)   
n=4  
  
In example 2, the given n-bit number cannot be found in AX.

**Question no 3 50**

Write a subroutine print\_triangle that draw an equilateral Triangle (length of all sides are equal), that starts from the middle of the first row of screen having length L. L should be less than 25.

In each iteration move that triangle towards the bottom of screen (now starts from the next line) after some delay. When base of triangle touches the bottom of screen terminate your program. For above problem, a program is given to you which have a delay subroutine, a clear screen subroutine, a print\_triangle subroutine and a main program. Everything is assembled and written you have to write print\_triangle subroutine, and also complete the terminating condition of main program. You can use asterisk as for printing. Asterisk hex value is 2A.

**For Example:**

L = 15, the all sides of triangle will be 15

Dealy subroutine is given with assignment document name as “delay\_code”

**Question no 4 (use string instructions) 50**

Write a subroutine to copy a given area on the screen at the center of the screen without using a temporary array. The routine will be passed top, left, bottom, and right in that order through the stack. The parameters passed will always be within range the height will be odd and the width will be even so that it can be exactly centered.