Please write the following four programs in MIPS assembly language.

1. **Area of a Triangle (30%)**
   We will give you three 2D points \((x1,y1,x2,y2,x3,y3)\), and your job is to calculate the area between this three points. Your output should look like this.

   Your output should look like this. The filename is `Area.s`.

   --- Triangle Area ---
   Please type 6 integers, \(x1,y1,x2,y2,x3,y3\), and each with the
   Enter key:
   
   \((\text{x1}, \text{y1}, \text{x2}, \text{y2}, \text{x3}, \text{y3})\)
   
   The area is : [the area]

2. **Tower of Hanoi (35%)**
   Your task is to complete a recursive implementation of the Tower of Hanoi problem in order to get familiar with assembly programming. We will give you an integer \(n (1 \leq n \leq 5)\) which means Tower of Hanoi with \(n\) disks. Your job is to move all disks from A to C and print out the moving process.

   Your output should look like this. The filename is `Hanoi.s`.

   --- Tower of Hanoi ---
   Input :
   
   \(n = 3\)

   Output :
   
   move a -> c
   move a -> b
   move c -> b
   move a -> c
   move b -> a
move b -> c
move a -> c

3. **Bubble Sorting (35%)**
   We will give you five positive integers. Your job is to sort 5 numbers in ascending order. You can choose a sorting algorithm you want. (Such as Quick sort, Merge sort, Bubble sort ...)

   Your output should look like this. The filename is Sorting.s

   ---- Bubble Sort ----
   **Input:**
   Insert the first integer: 3
   Insert the second integer: 4
   Insert the third integer: 2
   Insert the fourth integer: 5
   Insert the fifth integer: 1

   **Output:**
   1, 2, 3, 4, 5

4. **Bonus: Variation of Fibonacci (Optional)**
   We make some variations on the original Fibonacci numbers with the new definition as following.

   \[
   \begin{align*}
   F(0) &= 0 \\
   F(1) &= 1 \\
   F(2) &= 2 \\
   F(n) &= F(n-1) + F(n-3), \text{ if } n > 2
   \end{align*}
   \]

   In order to let you students get more understanding of how to use assembly language to implement recursive call, you are asked to write a program which computes the modified Fibonacci numbers as definition above.

   Your output should look like this. The filename is Fibonacci.s

   ---- Variation of Fibonacci ----
   Please type 1 integer, and then press Enter keys.
   \( n = 13 \)

   The result of \( F(13) \) is 101