**OBJECTIVE:**

The objective of this homework assignment is to practice the implementation of Binary Search Tree (BST). Your task is to implement the following tasks mentioned below.

**IMPLEMENTATION**  
1) Generate n random items between 0 and 100 inclusive. This will be your number of elements in the tree once it is built.

2) The program will have the ability to randomly reshuffle the elements generated in step 1 above. Use the Knuth Reshuffle algorithm for this purpose.

3) Also the program will have the ability to add a node to an initially created or empty binary tree

4) The program will have the ability to pass the n randomly generated elements (one a time) to be inserted into the binary search tree.  
  
5) The program, for each instance, must be able to calculate the average tree height.

**OUTPUT**  
1) Run the program 100 times and calculate the average tree height. Output the result.  
2) If you ran the program 500 and 1000 times with array size n of 1000, what would be the average tree height?

**NOTES**

What are your conclusions on the height of the tree? What will be the ideal scenario so that the height of the tree is less as possible?

What can you say about the complexity of various operations performed on BST?

You may need a node class

You may need an array to store the elements first before building the tree