CS562
932526065
Yi-Chiao, Yang

Proposal for what I want to test

This data structure library for python is developed by Ashish Yadav. The source code is from https://github.com/ashish0x90/pytree. It is a module for implementing various tree based on data structure. In the following tasks, I will use Template Scripting Testing Language (TSTL) to test this python library.

In this python library, the developer designed two classes for the tree data structure in the btree file, including `Node`, and `bTree` classes. In the `Node` class, it generates a node in a tree as its member. In the `bTree` class, it represents a tree data structure with simple binary tree. In this class, the developer states that the main idea in his code is to represent how a binary tree should look like, and less considers the efficiency of his python library.

According to article " TSTL: A Language and Tool for Testing (Demo)" which is provided by our professor in the Software Engineering class, our professor use TSTL to test AVL tree for python. In my task, it is a library base on a tree data structure. I will also follow some checks and tests are from this article. First of all, I will check this binary tree in question wheatear is satisfied to the property of binary tree or not. Second, I ill check the stability after the height computation.

There are two python files in this library. In the main file, which produces new node for following implementations and generates another python file, has less than 100 lines. However, in another file, which contains over 200 lines algorithm about data structure of binary search tree. So, I will focus on testing this file, which has suitable coverage code. In addition, our professor defines two utility functions for testing, including the `heightOK` and `it` functions to test whether this tree data structure is balanced after change not and whether this tree data structure sorts correctly after lots of movements.

In my test, because of the binary research tree is simpler than the AVL tree which our professor mentioned in his article, I will attempt to create several utility functions to test the correctness of sort after lots of movements, the correctness of the node's children and parent. After I define two utility functions for testing, I also need to consider the pool value. My test in TSTL is a serial of assignments and functions, and this value pool contains the values to use, but I am not sure that how to define the range of pool value. I need to ask our professor or TA to get more information to define it.