

# Bug/Progress Report

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## Bug Description

In this project, I prepare to test codes of BST, string to rot Unicode, and other several small codes. I have already done the test of BST. In the process of testing BST, I tested delete, insert, length, repeat number processing, and different input types. I did not find any problem in the code, but some parts of code can be enhanced. According to the code, when I did delete test, the result of testing sometimes return error of 'Empty Tree'. It is because if more delete happens, the tree I input will be empty and the code ban to delete anything from an empty tree and return error of that. However, in the code of delete function, I found that it allows to delete an index from a tree, which does not contain the index, and return the original tree. To be the same, if using delete function on empty tree, it should return an empty tree not an error. I also pull out part of the original code to test if all of the code is necessary. After testing, I know that the BST code is good to be used.

For the other code, string to rot Unicode, I just test a part of it because the unexpected perform of the result. The code is working on transferring strings to Unicode and according to operating the Unicode to let it can be read but different from the original string. For example, string 'Hello World!' to 'Ĥĕĥ!ŦŦŦ ŴŦŦŦd!'. However, when I was testing the code, I find the result always has error, even I did a really simple test. I run the code and find that the result is not like what I expected. It appears as Unicode, not the readable words. To solve this problem, I need to find some requirement codes for it. For this reason, I only tested part of this code, like safety function, string to Unicode function, and etc. The test result is that there is no error appear when I tested these functions.

## Explanation of Progress

When I was first time testing the code, I used length, relationship between children nodes and their parents, empty tree delete and other operations, and different types of input to test the code of BST. But I did not find any bug except one place can be enhanced. Then I add same number insert and delete test. I still did not find any bug. So I put in several errors in the code, according to analysis of the error returned by TSTL, I can find most of the errors. For the rest of errors, I could not find specific location, but the function where it is.

The other code about string to rot-Unicode has not been finished because of the unexpected performance problem. Right now, I can only find some small errors by testing part of the code, like a function.

## Estimate of Progress

At the end of the term, I prepare to finish the test of the code on rot-Unicode translation if I can solve the performance problem.

**Discuss quality of the SUT**

I think the SUT can find bugs, but cannot find all of them. It cannot touch the specific error location. It is find to be used, but not normally used.

**Code Coverage**

As my BST code is a small code, so I have already done that test. Rot-Unicode translation still has several problem to be solve, so I have done nearly 50% of test, which is small function test.