Project 3

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UML

A screenshot of a computer code

Description automatically generated

Testing

A screenshot of a computer

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A screenshot of a computer

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A screen shot of a computer

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A black screen with white text

Description automatically generated

Test cases were mainly test for input validation and the rest was to ensure three was properly constructed. Test case 1 tested the input validation from the user. If anything besides the integers and stars were used the program was to throw an exception. If the tree was entered incomplete the program is supposed to also throw an exception. The last input validation test was to ensure the program was continue or exit after the question “More Trees?” and would act based of the answer. Test Case 2 was there to ensure the tree appropriately being constructed based off the input. As you can see in the first image, the tree was appropriately constructed. For all the test cases, the program passed each test.

Lessons Learned

When creating a tree data structure, you must be very organized with the details because it is not like the other data structures. When implementing a binary search tree, the left subtree of the node must only contain values that are less than the value of the nodes. The right subtree must only contain values greater than or equal to the value of the node. This was key to me implementing this search tree and without it I would have not done this correctly.