Wyatt Emery

Talon Marquard

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Task 3

Our test cases will include an empty tree that will return 0. A tree of size 1 that returns 1. Then given tree:

1: 2 3

2: 4

3:

4:

Return 3;

Tree:

1: 2 3

2: 4 5 6

3:

4:

5:

6: 7

7: 8

8:

Return 5;

Tree:

1: 2

2: 3 4

3: 5

4: 6

5:

6:

7:

Return 3;

These cases will give us a base line to be sure that our program is working as it goes through our tree and counts the length of the branches.

We will then be able to test for time complexity by timing how long our function takes using Dr. Baileys winTimer. We can then mathematically prove that the time complexity is indeed linear.