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Task 3

Testing for our program will be primarily done in the moment. We will write a function (as suggested by Dr. Bailey) that will take a series of numbers, and calculate the distances from one to all the others. This will provide us with what we need to insert into our turnpike algorithm. We will know that it is working if what we enter into the program is the same as what we get back. To test that it works with no solution we can adjust the numbers of the series before we feed it back into the turnpike and thus end with an impossible solution. Here are also some test cases we will test we will try, but for the most part we will simply use the above method to check our work.

Input: {}

Output: no solution

Input: {2}

Output: no solution

Input: {2,2}

Output: 0 – 2

These will test basic functionality and make sure that the program is running even remotely correct.

Input: {1,2,2,2,3,3,3,4,5,5,5,6,7,8,10}

Output: 0 – 3 – 5 – 6 – 8 – 10

This problem offers many complications and possible backtrackings. It will be a true test of our algorithm. There are many wrong solutions and only one right one.

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 on average O(n^2logn) assuming there is no backtracking.