This program was written as a lab for the given problem. You are stuck on an island with x number of gas cans, and a small boat that can only hold 1 can of gas in the tank and one more can with you sitting in it. The boat can go 100km per can of gas, how far can you go with x cans of gas.

The problem was interesting because it was not straight forward at all. The end solution is to slowly transport gas cans in a line outward so that you can refill every so often. The equation to calculate this, shown in the code, is to slowly calculate the distance by going back and forth consuming cans of gas to transport more cans of gas a distance out in the water. This problem does assume that you can just put cans of gas in the water and keep them there for pickup later on.

I solved this problem using recursion, to slowly go through the cans of gas and transport other cans of gas further out. This solution looks counterintuitive because at some times, you will be subtracting from the total distance because it will take multiple cans of gas just to get back to a far away point; however, the end result will be positive and should be the max distance you can get with the given number of cans of gas.

Using python for this program made it simpler to read input from the command line, as well as parse the input, and do the recursive calculations. The program itself does not exceed 50 lines, but the math behind it is still very intuitive and took a while to figure out.