Project 1 Milestone 1

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In order to solve the problem, I have decided to break the project into three steps:
1. First, I want to focus on all the utility functions. These include the functions the file read and write functions. I want to make sure the Load_File and Save_File functions work perfectly with a variety of files with varying elements in the files. Then, I want to ensure that the filed handle missing files and write errors in the proper manner and don't break the program by throwing an error, but rather return error codes which can be used for debugging.

2. Then I will use the Save_File function is constructing the Save_Seq1 and Save_Seq2 functions. Sequence one looks easier and hence, I plan to implement that first using a simple while look to keep multiplying the current element by 1/(1.3) and taking the floor of the result to obtain an integer in the sequence. Sequence one at first glance seems harder to implement. However, here is the pseudo-code I have come up with to count the elements.

```
Generate Sequence(N)
        I2 = 0
        I3 = 0
        p2 = 2^I2
        p3 = 2^I3
        p = 2^(I2) * 3^(I3)
        while (p < N)
                if (p2*2) < (p3*3)
                        p = p2*2
                        p2 = p
                        add p to array
                else
                        p = p3*3
                        p3 = p
                        add p to sequence
```

The above code should generate the sequence till N to be used for the shell sort. I will make sure that the values provided are positive and valid to ensure that error cases are handled properly.

3. Finally after implementing the help functions, I will implement the actual sort functions. To do that I would read through the lecture slides to figure out how the gap method is used to implement the shell sort function and how it is different from simple insertion sort. I will test the sort function with the test files provided and further test files of my own. Then I will use the ideas obtained to complete the bubble sort function and further test it with the test files.