Dalton Darrah

CS 202 – Project 4

**Purpose:** The purpose of this week's project – in a shortened version, was to take in a file given by the user, and store these items to decipher the message given inside the file. To do this, we needed to dynamically allocate memory for a number of different items throughout the program so that we had the correct – and the exact, amount of space to hold everything. The first objective of the program was to receive a file name to be used for input from the program. After this was found the amount of words and keys were stored, telling us just how big our arrays really needed to be. After storing the info, we then had to read in our keys to decipher the message that was a quote hidden in the text.

**Design:** To start of the program, I declared a number of variables that I know I would have needed later in the program. This helped me think my way through some of the issues. The design that I used to take in the file contents was to call a function, that took in all of the data at once and stored it in the proper place. First the number of words, and number of keys was taken in, and right after the arrays were dynamically allocated to that set size. After this I used dummychars and dummyints to take in the values of the file before properly storing them into the arrays. This made it so I could call my strlen function, allowing me to size the array perfectly to what I needed. To decipher the message hidden in the file, I set up a system of while and for loops that iterated the possible outcomes of the key, and accounted for the case when the key + jump value was greater than our word count value. After deciphering the message, I used my strConcat function to put all the broken strings together in one, and deallocated my previous arrays.

**Problems:** While doing this project, I was severely stressed on taking in the correct input, as I had many issues when dealing with the words in the file. After solving this issue, it became a matter of getting the logic correct on the deciphering portion of the project, and a matter of solving how to get the message all together ***with*** spaces. This was the most tedious part of the whole project, as I felt I had done the most difficult aspect, but struggled with getting a decent output. One big issue I had was that I did most of the coding on my PC, running windows 10 or my MacBook, both running different OS, making it very difficult to keep up with what I could and couldn't do. After finishing the project, I took it to a department machine to run, and clean up what was left to ensure my code worked properly on the correct platform.

**Changes:** The only item that I may feel need to be changed is simple code optimizations, as I'm sure that many of my functions like strLen, strConcat, and strCpy are not the best possible solutions, and perfecting those may speed up my program run time, however negligible it is.