Week Three

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Readings

For this week please read the rest of Chapters 4 and 5 in Overland. Some of it will be review, so fee free to skim those sections, but be mindful that there is also a lot of new information introduced.

Main Ideas

- This week is in a sense a continuation of last week in that you will cover more on functions, but it also introduces random number generation in C++. By the end of it you should know:

- How to declare and use recursive functions in C++.

- The basics of random numbers in C++.

- How strings are stored in C++.

- Syntax of multidimensional arrays in C++.

Exercise 1 (Exercises from the Reading)

All the exercises from the reading except 4.3.3.

Exercise 2 (Cryptology Program)

Write a program called cipher_functions2.cpp that builds on the cipher_functions.cpp program from last week by adding 4 new functions. Three of the functions should be to implement the additive, multiplicative, and affine ciphers, but the encoding should be done using a random key unknown to the user. I would suggest doing this by adding an extra parameter to the functions from last week that corresponds to the range of possible random values, generating a random number inside the new function, and then (still inside the new function) passing all the necessary information (including the random key) to the original function.

The final function to add will be the familiar rand_0toN1 function needed for random number generation. Also modify the code from last week by adding a #define directive similar to that described on age 122 of Overland, but for the length of the global array. Use this variable wherever the length of the global array comes up in the main function. Finally, don't forget all the necessary include statements and to set the seed for random number generation.