

CMSC21 Lab Exercise 13 – Arrays and strings

Don't forget the design recipe! I'll be looking for the following:

- Signature
- Purpose
- Examples

Also: for-loops all the way! Do not use while loops. Remember, for-loops specify start, stop, and step.

1. Design a function that returns the smallest value in an array of ints, given the array and its length.
2. Design a function that returns true if a given array of floats is sorted from smallest to largest values. Otherwise, it should return false. The function should accept the array and its length.
3. Design a function that counts the number of words in a string.
4. Design a function that capitalizes a string.
5. Design a function that encrypts a string using the Ceasar cipher method with a shift (key) of 3. Do not shift the spaces, leave them as-is.

The Caesar cipher is one of the earliest known and simplest ciphers. It is a type of substitution cipher in which each letter in the plaintext is 'shifted' a certain number of places down the alphabet. For example, with a shift of 1, A would be replaced by B, B would become C, and so on. The method is named after Julius Caesar, who apparently used it to communicate with his generals.

Example with a shift (key) of 1:

plaintext: defend the east wall of the castle

ciphertext: efgfoe uif fbtu xbmm pg uif dbtumf

[<http://practicalcryptography.com/ciphers/caesar-cipher/>]

(Notice that when shifting, the alphabet is treated as a ring, with "a" following "z". So encrypting "xyz" with a key of 3 will yield "abc". Hint: do you remember that previous function we made, threeDown? Might be useful here.)