Assignment 7

1. Pointer arithmetic: *average* function -- 20pts.
2. Reverse Array Problem -- 40 pts.
3. Password Verifier -- 30 pts.
4. Sentence Capitalizer
    a. Done with c-strings -- 30 pts.
    b. Overloaded version (with `string` parameter) -- 10 pts.

TOTAL: 130 pts.

Part 1 (Pointers)

average Function

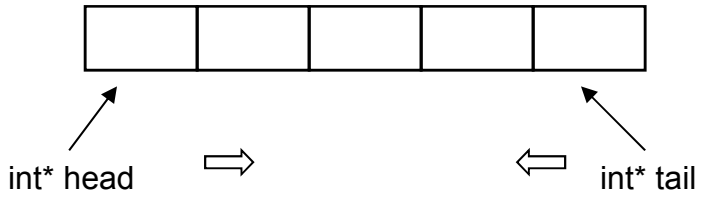
Write a function that finds an average of the array using only pointers (and pointer arithmetic) to move through the array. Test the function in a driver program.
Function header: **double average(int* array, int size)**

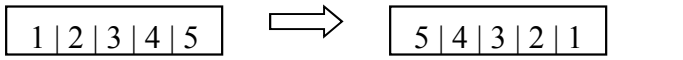
Reverse Array

Write a program that reverses in memory an array of integers given by the user.
The program should ask the user to enter the size of the array, dynamically allocate memory for it and populate the array with the data provided by the user.

Implement function ***void reverse (int* array, int size).*** The function gets pointer to the array as a parameter and reverses the order of elements using pointers **"**head" and "tail" to move through the array.
Use this function to reverse an array given by the user. Output the original array and the reversed array, after the function worked on it.
NOTES:

- [ ] operator should not be used to access elements of the array.
- There should be no output statements in the function implementation.





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Part 2 (Strings)

Password Verifier

Imagine you are developing a software package that requires users to enter their own passwords. Your software requires that users' passwords meet the following criteria:

- The password should be at least six characters long.
- The password should contain at least one uppercase and at least one lowercase letter.
- The password should have at least one digit.

Write a program that asks for a password and then verifies that it meets the stated criteria. If it doesn't, the program should display a message telling the user why.

Sentence Capitalizer

a) Write a function that accepts a pointer to a C-string as an argument and capitalizes the first character of each sentence in the string. For instance, if the string argument is "`hello.  my name is Joe. what is your name?`" the function should manipulate the string so it contains "`Hello.  My name is Joe. What is your name?`"
   - There can be more than one whitespace between the period and the first word of the new sentence.
   - Assume that period, question mark, and exclamation mark are the only signals of the sentence ending.

b) Write an overloaded version of this function that accepts a string class object as its argument.

Demonstrate the functions in a program that asks the user to input two strings and then passes them to the functions. The modified strings should be displayed on the screen.