CSC 212: Data Structures and Abstractions
Spring 2018
University of Rhode Island
Weekly Problem Set #6

Due Thursday 3/8 before class. Please turn in neat, and organized, answers hand-written on standard-sized paper **without any fringe**. At the top of each sheet you hand in, please write your name, and ID. The only library you're allowed to use in your answers is `iostream`.

1 Recursion

Solve the following using only recursion.

1. Reverse the elements of an array in place. Matching the following function signature:

   ```
   void reverse_array(int* arr, int n);
   ```

2. Find and return the maximum of a given array. Matching the following function signature:

   ```
   int max_array(int* arr, int n);
   ```

3. Write a function to print triangles to `std::cout` that takes three positive integers: a, b, c as input. The function should print the `+` character a times, then $a + c$ times, then $a + c + c$ times, and so on. This pattern should repeat until the line is b characters long. At that point, the pattern is repeated backwards. For example calling `draw_triangle(4, 7, 1)` will output: (where the dollar symbol is the bash command prompt)

   ```
   ++++
   +++++
   ++++++
   +++++++
   +++++++
   ++++++
   +++++
   ++++
   ```

4. Recursively multiply two numbers together, *without using the * operator*. Matching the following function signature:

   ```
   int multiply(int a, int b);
   ```

5. Suffix summation is the sum from n to $n - s$. Matching the following function signature:

   ```
   int suffix_sum(int n, int s);
   ```

   For example, the suffix sum of $n = 5, s = 2$ is $(5 + 4 + 3) = 12$