

CS 180: Data Structures, Spring 2011

Homework 1

Due *via email* by 11:59pm on Wednesday, January 26

This homework covers the transition guide and Ch1 of the text. Please read and familiarize yourself with this material before working on the homework. Note that these should be tested before submitting them; make sure they actually compile and work!

Please type all answers and email to the instructor at echambe5 - at - slu.edu by 11:59pm on the date due.

1. Problem R-1.8 from the text:

Write a short C++ function, `isMultiple`, that takes two positive long values n and m , and returns true if and only if n is a multiple of m , that is, $n = mi$ for some integer i .

2. Problem R-1.21 from the text:

Write a short C++ functions that takes an integer n and returns the sum of all the odd integers smaller than n .

3. Problem C-1.2 from the text:

Write a short C++ function that takes an array of int values and determines if there is a pair of numbers in the array whose product is even.

4. Problem C-1.6 from the text:

Write a short C++ program that outputs all possible strings formed by using each of the characters 'a', 'b', 'c', 'd', 'e', and 'f' exactly once.

5. Extra Credit: Problem C-1.10 from the text:

Write an efficient C++ function that takes any integer value i and returns 2^i as a long value. Your function should *not* multiply 2 by itself i times; there are much faster ways of computing 2^i .

Note: Faster solutions will receive more extra credit.