

# CS 180: Data Structures, Fall 2011

## Homework 1

Due *via email* by 11:59pm on Saturday, Sept. 10

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. Write a short C++ program that prompts the user to input a double value  $x$  and then computes and prints the number of times we can divide  $x$  by 2 before we get a number less than 2.
2. Write a short C++ functions that takes an integer  $n$  and returns the sum of all the even integers smaller than  $n$ .
3. Write a short C++ function that takes an array of int values and determines if the numbers are all different from each other (that is, they are all distinct).
4. 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.