

## Problem Set 4

### Numbers and Strings

Complete each of the exercises below. Be certain to include all components of the Design Recipe when writing each program.

1. Define the program *Fahrenheit->Celsius*, which consumes a temperature measured in Fahrenheit and produces the Celsius equivalent. Use a textbook or the Internet to look up the conversion formula.
  
2. The local supermarket needs a program that can compute the value of a bag of coins. Define the program *sum-coins*. It consumes four numbers: the number of pennies, nickels, dimes, and quarters in the bag; it produces the amount of money, in dollars, in the bag.
  
3. An old-style movie theater has a simple profit function. Each customer pays \$5 per ticket. Every performance costs the theater \$200, plus \$.50 per attendee. Develop the function *total-profit*. It consumes the number of attendees (of a show) and produces how much income the attendees produce.
  
4. One of the rules for converting English to Pig Latin states: If a word begins with a consonant, move the consonant to the end of the word and add “ay”. Thus “dog” becomes “ogday,” and “crisp” becomes “rispcay”. Develop a function named *pig-latin* that takes in a string that begins with a consonant and produces the same word in pig latin.
  
5. Develop a function named *flip-word* that takes in a string and returns a string such that the first half of the original string is at the end and the second half of the original string is at the beginning. For example, the string “boxcar” should produce the string “carbox”. It can be assumed that the string has length at least two and the length is even.