Worksheet: Using recursion
COSC 101, 2018-04-13

Warm-up
What does every recursive function need?

Writing recursive functions
1) Write a recursive function called sum that takes a list of integers and returns the sum of the integers in the list.
   a) What is the condition and result for the base case?

   b) What is the smaller problem on which you recurse?

   c) How do you combine the simple piece and result of the recursive call?

   d) Write the function.

2) Write a recursive function called reverse that takes a string as a parameter and returns the reverse of the string—e.g., "COLGATE" becomes "ETAGLOC".
   a) What is the condition and result for the base case?

   b) What is the smaller problem on which you recurse?
c) How do you combine the simple piece and result of the recursive call?

d) Write the function.

3) Write a recursive function called `mirror` that takes a string as a parameter and returns the string with its mirror—e.g., "COLGATE" becomes "COLGATEETAGLOC".

   a) What is the condition and result for the base case?

   b) What is the smaller problem on which you recurse?

   c) How do you combine the simple piece and result of the recursive call?

   d) Write the function.
4) Write a recursive function called `is_palindrome` that returns True if a string is a palindrome and False otherwise.
   
   a) What is the condition and result for the base case?
   
   b) What is the smaller problem on which you recurse?
   
   c) How do you combine the simple piece and result of the recursive call?
   
   d) Write the function.