Exercise #4
Due Friday, 01/29/2016, at 11:59pm

Vocabulary
Give a brief definition of each of the following terms:

- String
- Logic Error
- Syntax Error
- Return Value

Function Signatures
For each function description below, come up with a function signature that would allow for the function to be implemented as described. Write a description of the purpose of each parameter in the function, and the meaning of the return value. For example:

  less_than_two_half: Determines if a number is less than two and a half or not.
  
  Answer: bool less_than_two_half(float num);
  
  num is the number to consider. If it is less than 2.5, the function returns true. Otherwise, it returns false.

1. is_safe_denom: Determines if an integer is safe to use as the denominator of a division operation.
2. display_product: Prints out the product of three numbers.
3. letter_in_str: Calculates the number of times a certain letter is in a string.
4. replace_letter: Replaces all instances of a provided letter in a string with another provided letter.
5. random_character: Chooses a random character from a given string.
6. most_common_letter: Calculates the most frequent letter in a given string.

Interpreting Functions
In plain English, describe the purpose of each of these four functions. Additionally, determine if the function has any preconditions and if so, what they are. A precondition is some property about the value of the function’s arguments that has to be true for the function to work as defined—so it’s possible that a function’s preconditions could change depending on how you define the purpose of that function!

bool fn1(int i, string s, char c) {
    for (int x = 0; x < s.size(); x++) {
        if (s.at(x) == c) {
            i--;
        }
    }
    return i <= 0;
}

int fn2(string s, int i) {
    if (i > (int)s.size()) {
        return s.size();
    } else if (i < 0) {
        return 0;
    } else {
        return i;
    }
}

string fn3(string s, int i, int j) {
    char c = s.at(i);
    s.at(i) = s.at(j);
    s.at(j) = c;
    return s;
}

int fn4(string s, char c) {
    int i = s.size()-1;
    for (; s.at(i) != c; i--) {
    }
    return i;
}

For take-home exercises completed in peer-led groups, each student must participate in the class discussion and write answers to each of the questions on his/her own paper to show for credit.

For take-home exercises completed on your own, turn in your work electronically using the TEACH website.