COSC 301: Operating Systems - Homework 2

Due Tuesday, September 4, 2012

1. Write a (weird) C function that takes a C string and returns the average of the values of each of the characters in the string in the form of an int. You can assume that the string passed as a parameter is valid. The function prototype should be:

   ```
   int avgchar(char *mystring);
   ```

2. Write a C function that mimicks the `charAt` method for the String class in Java. The function can take a string and an index, and just return the char at the specified index. On error, the function should return -1. You can assume that the string passed as a parameter is valid, but you should not assume anything about the index. The function prototype should be:

   ```
   char charat(char *mystring, int index);
   ```

3. Write a C function called `string_in` that takes two `char *` as arguments. If the second string is contained within the first string, the function should return the address at which the contained string begins. The match should be done in a case-insensitive way. For example, `string_in("hats!", "AT")` should return the address of `'a'` in `"hats!"`. If the second string is not contained within the first string, the function should just return `NULL`.

4. Write a `strncmp` function that takes two strings and a maximum length, and compares the strings (in a case-sensitive manner). You should only compare, at most, the maximum number of characters supplied in the parameter (you may compare fewer characters). Return 0 on a match, -1 if the first string appears lexicographically before the second string, and 1 otherwise.

For any of the above questions, you can *not* use any built-in C string processing function except `strlen`.

You can just include all three functions in a single text file to upload. (Plain text please; no word processing formats.)