Problem Set 4 Exercise #07: My String Functions

Reference: Lecture 10 notes

Learning objective: Characters and strings

Estimated completion time: 60 minutes

Problem statement:

In the lecture, we have introduced several string functions such as: **`strlen`**, **`strcpy`**, **`strcat`** and **`strcmp`**. Now we are to implement our own version of string functions of the same functionalities. Of course, you are not allowed to use any string functions from <string.h> when writing your own verion. However, your functions may invoke each other if necessary.

Write a program **my_str_functions.c** that contains the following functions.

(a) **`int my_strlen(char s[])`** that returns the number of characters in string **`s`** before (and excluding) the termination null character.

(b) **`void my_strcpy(char s1[], char s2[])`** that copies string **`s2`** to **`s1`**, including the terminating null character, stopping after the null character has been copied.

(c) **`void my_strcat(char s1[], char s2[])`** that appends a copy of string **`s2`**, including the terminating null character, to the end of **`string s1`**. The first character of **`s2`** overrides the first null character of **`s1`**.

(d) **`int my_strcmp(char s1[], char s2[])`** that compares two strings character by character, according to the ASCII character ordering. The function returns 15, 0, or -15, if string **`s1`** is greater than, equal to, or less than string **`s2`**. (C language specifies return values to be positive or negative, if the first string is greater or less than the second string. Here we use 15 and -15 as example.)

You may assume that both **`s1`** and **`s2`** contain less than 100 characters.

Sample run #1:

```
Enter s1: abc
Enter s2: abcd
my_strlen(s1) returns 3
my_strlen(s2) returns 4
my_strcmp(s1, s2) returns -15
my_strcat(s1, s2) returns abcabcd
my_strcpy(s1, s2) returns abcd
```

Sample run #2:

```
Enter s1: ac bd
Enter s2: ab cd
my_strlen(s1) returns 5
my_strlen(s2) returns 5
my_strcmp(s1, s2) returns 15
my_strcat(s1, s2) returns ac bdab cd
my_strcpy(s1, s2) returns ab cd
```