

CSC3320 System Level Programming

Lab Assignment 10 - Post-Lab

Due at 11:59 pm on Friday, April 02, 2021

Purpose: Learn how to use the pointers to represent strings in C.

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Lab 10

Part 1:

Write a function about string copy, the *strcpy* prototype "*char* strcpy (char* strDest, const char* strSrc);*". Here *strDest* is destination string, *strSrc* is source string.

- 1) Write the function *strcpy*, don't call C string library.

```
#include <stdio.h>

char* strcpy(char* strDest, const char* strSrc);

int main() {
    char src[] = "Hello World!";
    char dest[] = "";
    char *newStr = strcpy(dest, src);
    printf("%s\n", newStr);

    return 0;
}

char* strcpy(char* strDest, const char* strSrc) {
    //Temp array to return
    char *newStr = strDest;

    //Loops through source
    while(*strSrc != '\0') {
        *strDest = *strSrc; //Copy source element to destination
        strDest++; //Increment source & destination
        strSrc++;
    }

    *strDest = '\0'; //Adds new line character
    return newStr;
}
```

2) Here *strcpy* can copy *strSrc* to *strDest*, but why we use *char** as the return value of *strcpy*?

- C is Pass by Value, so editing *strDest* in the function does not affect the values of the array passed in the parameters.

Part 2:

Write a program *findStr.c* that finds the "smallest" and "largest" in a series of words. After the user enters the words, the program will determine which words would come first and last if the words were listed in dictionary order. The program must stop accepting input when the user enters a four-letter word. Assume that no word is more than 20 letters long. An interactive session with the program might look like this:

```
Enter word: dog
Enter word: zebra
Enter word: rabbit
Enter word: catfish
Enter word: walrus
Enter word: cat
Enter word: fish
```

```
Smallest word: cat
Largest word: zebra
```

Hint: Use two strings named *smallest_word* and *largest_word* to keep track of the "smallest" and "largest" words entered so far. Each time the user enters a new word, use *strcmp* to compare it with *smallest_word*; if the new word is "smaller", use *strcpy* to save it in *smallest_word*. Do a similar comparison with *largest_word*. Use *strlen* to determine when the user has entered a four-letter word.

Questions:

- 1) Attach the source code of your C program into the answer sheet.
- 2) Run the C program, attach a screenshot of the output in the answer sheet. 1

```
[asiegell11@gsuad.gsu.edu@snowball Lab10]$ vi findStr.c
[asiegell11@gsuad.gsu.edu@snowball Lab10]$ gcc -o str -g findStr.c
[asiegell11@gsuad.gsu.edu@snowball Lab10]$ ./str
Enter word: dog
Enter word: zebra
Enter word: rabbit
Enter word: catfish
Enter word: walrus
Enter word: cat
Enter word: fish
Smallest word: cat
Largest word: zebra
```

```

#include <stdio.h>
#include <string.h>

int main(){

    //User input
    char input[20];
    char smallest_word[20]="";
    char largest_word[20]="";
    int length = 0;

    /*
    *Loops user input until user enters 4 letter word
    */
    do {

        //Reads user input
        printf("Enter word: ");
        scanf("%s", input);
        length = strlen(input);

        //Sets the first input as the largest and smallest word
        if(strcmp(smallest_word, "")==0)
            strcpy(smallest_word, input);

        if(strcmp(largest_word, "")==0)
            strcpy(largest_word, input);

        //Compares input to smallest and largest word
        int cmp1 = strcmp(input, smallest_word);
        int cmp2 = strcmp(input, largest_word);

        if(cmp1 < 0)
            strcpy(smallest_word, input);

        if(cmp2 > 0) {
            strcpy(largest_word, input);
        }

    } while (length != 4);

    printf("Smallest word: %s\n", smallest_word);
    printf("Largest word: %s\n", largest_word);
    return 0;
}

```

Submssion:

- Please follow the instructions below step by step, and then write a report by answering the questions and upload the report (named as **Lab10_FirstNameLastName.pdf or Lab10_FirstNameLastName.doc**) to Google Classroom, under the rubric Lab 10 – Post Lab Assignment.
- Upload the C files **findStr.c** to the folder named “**Lab 10 – Post Lab**” in Google Classroom.
- Please add the lab assignment NUMBER and your NAME at the top of your filesheet.