Lab Assignment Week 10

CSC 3320 – System-level Programming

Week of March 18th, 2024

Introduction

Welcome to the ninth programming lab of CSC 3320! Today, we will be covering the following topics:

1. Pointers

Lab Policies

- Attendance is mandatory.
- Labs must be completed **individually.**
- TAs are here to help you. Ask them for help!
- Lab assignments are due at midnight on the day of your lab.

Deliverables:

1. The C Code for your program. (.c file).
2. A screenshot of the output in the Terminal.

If you have any questions, please do not hesitate to ask your TA.

Program: String Reversal

Write a C program that reads a message from the terminal, implements the reverseString() and swap() functions described below, and outputs the reversed String into the terminal.

In the main function:

- Prompt the user to enter a string using printf.
- Declare a character array to store the user's input (remember to consider a reasonable maximum string length).
- Use fgets (or scanf with caution for buffer overflow risks) to read the user's input into the character array.
- Call the reverseString function, passing the address of the character array where the user's input is stored (use the & operator).
- Finally, print the reversed string using printf.

You will need to implement two functions as part of this week's lab. The function prototypes in your solution should be as follows:

`void reverseString(char *str)`

- This function takes a character pointer (str) pointing to a null-terminated string entered by the user. It should modify the string in-place (without creating a new string) to reverse its order. You can achieve this by swapping characters from the beginning and end of the string towards the middle until they meet.

`void swap(char *left, char *right)`

- This helper function takes two character pointers (left and right). It should swap the values that these pointers point to. Use a temporary variable to hold one value during the swap to ensure proper exchange.

Finally, your program should output the reversed string in the terminal. See the example output below.

Example Output

```
Enter a string: Hello World!
Original string: Hello World!
Reversed string: !dlroW olleH
```

Deliverables

For today's lab, you will need to upload the C program code for your bubble sort program and its output in the terminal on iCollege. Please name your C code and screenshot as follows:

- C Files
  - lastname_firstname_filename.c
  - For example: **hawamdeh_faris_string_reversal.c**
- Screenshots
  - lastname_firstname_filename.png
  - For example: **hawamdeh_faris_string_reversal.png**