Lab Assignment Week 11

CSC 3320 – System-level Programming

Week of March 25th, 2024

Introduction

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

1. Arrays
2. 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: Pointer Sort

This week's lab assignment involves rewriting the Bubble Sort function that we previously submitted for Week 9's lab. Now that we have discussed the topic of pointers in the context of arrays, you will now need to modify the for loops in your Bubble Sort implementation to use pointers. Instead of using the traditional index-based approach for iterating through the array, you will implement it using pointer arithmetic. Pointer arithmetic allows you to manipulate memory addresses directly, achieving the same functionality as array indexing but with a different syntax. Utilize pointer arithmetic for all array access instead of using the [ ] operator. You can find an example of iterating over an array using pointers on slide 27 of Week 10's slides on iCollege.

You should use your existing solution from Week 9 to complete this lab assignment. However, if you were unable to complete the previous lab assignment. You can find a bubble sort program on iCollege to use instead.

Hints:

- Consider using two pointers, one for the current element and another for the next element in the comparison.
- Remember to handle the boundary conditions for the loop iterations.
- Be mindful of pointer arithmetic and potential errors like going out of bounds.

Example Output

```
Please Enter Number 1: 22
Please Enter Number 2: 77
Please Enter Number 3: 4
Please Enter Number 4: 28
Please Enter Number 5: 3
Please Enter Number 6: 44
Please Enter Number 7: 93
Please Enter Number 8: -2
Please Enter Number 9: 14
Please Enter Number 10: 15

[-2, 3, 4, 14, 15, 22, 28, 44, 77, 93]
Largest: 93
Smallest: -2
```

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_pointer_sort.c**
- Screenshots
  - lastname_firstname_filename.png
  - For example: **hawamdeh_faris_ pointer_sort.png**