Data Structures and Algorithms
Discussion Mini-Assignment

Due Date: Tuesday, November 12th-Thursday, November 14th at your Design Section
Note: You do not need to email a PDF to your section leaders ahead of time.

Instructions

• Review the lecture slides!
• Bring a copy of your answers to your design discussion so your design discussion TAs can facilitate a productive and collaborative conversation.

Written Answers

1. Stacks + Queues
   a. What is the difference between a stack and a queue?
   b. What is a real world example of a stack? A queue? (Try not to use examples from lecture and be creative!)

2. Linked Lists
   a. When would we want to use linked lists rather than arrays or arraylists?
   b. What are the advantages of using singly linked lists vs. doubly linked lists? What are the disadvantages?
   c. What is the advantage to using trees over both of these options?

3. You are given the string “mystery” and told to sort the characters alphabetically. For one of the sorting algorithms listed below, write out the sort step-by-step, i.e. write what the string would look like after one iteration/recursion of the following algorithms:
   EXAMPLE: Selection sort, where the blue letter is the letter we’re looking at and the red letter is the letter we’re swapping with:

   mystery → eystmry
   eystmry → emstryry
   emstiry → emrtysy
   emrtysy → emrsyty
   emrsyty → emrstyy
Pick one algorithm and write the step-by-step yourself:
  a. Insertion sort
  b. Merge sort

**CS Responsibility**

Social media is undeniably a powerful tool for political campaigning. During lecture, we presented the contrasting decision and views of both Facebook and Twitter. We also overviewed the potential positive and negative consequences of each decision. The first article delves further into the complexities regarding both decisions, and a potential solution to strike a balance. The second article is about how Facebook employees responded to Mark Zuckerberg’s decision.

Please read the following two articles:


Questions:

1. What do you believe is the correct action that should be taken regarding political advertisement on social media platforms? Why? [3-4 sentences]
2. In what circumstances should an employee speak up about a companies decision that they disagree with? [1-2 sentences]