COP 2535: Data Structures

Quiz 08, Chapters 09 – 10

Instructions

Answer the following questions in writing. These are short answer questions. Upload your answers in Canvas as plain text. Please include your name in the text.

NOTE: You should pay close attention to, and master, the material presented in Chapter 10. You will see this material again and again. I can recommend *Understanding and Using C Pointers* by Richard Reese, which you can probably find as a PDF if you search online.

1. What is a *pointer*?

2. How do you declare a pointer variable?

3. How do you dereference a pointer variable?

4. What is the difference between an array name and a pointer?

5. How does pointer arithmetic work for the following code?

   ```
   char letters[] = { 'a','b','c','d','e','f' };
   for (int i = 0; i < 7; i++)
       cout << letters[i] << " ";
   cout << endl;
   char* letterPtr = letters;
   letterPtr[3] = 'x'; // answer for this line of code
   ```

6. What does this print?

   ```
   for (int i = 0; i < 7; i++)
       cout << letterPtr[i] << " ";
   cout << endl;
   ```

7. What does this print?

   ```
   for (int i = 0; i < 7; i++)
       cout << &letters[i] << " ";
   cout << endl;
   ```

8. What is the difference between a pointer constant and a pointer to a constant?

9. What is the purpose of dynamic memory allocation?

10. What causes a pointer to dangle?

11. What causes a memory leak?