

COP 2535: Data Structures

Quiz 07, Chapter 08 – Arrays and Vectors

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.

1. What does it mean for an array's size declarator to be a "constant integer expression?"
2. Many files are in CSV format, and you will read them frequently. Write pseudo-code to read in a CSV file. Note that the file contents are delimited by a newline character, and that the fields in each line are delimited by a comma, so your file will consist of an array of arrays. You can assume that you know the file format in advance, or you can use a Vector.
3. Write the code to initialize two arrays. The array named **suits** will consist of the four card suits. The array named **values** will consist of the 13 card values. Both arrays will be of type **string**.
4. What is the syntax for the range-based loop?
5. What do the contents of a partially filled array contain? This array is of size 20, and has eight elements initialized. What is the value of the uninitialized elements?

```
int fibo[20] = {1, 1, 2, 3, 5, 8, 12, 21};
```

6. Give a practical example of the use of parallel arrays. For example, you might want to use parallel arrays to track a student's grades and credits, as shown below. Create your own example.¹

```
string courses[] = {"ART-101", "BIO-202", "ENG-303", "CS-404"};
float grades[] = {3.23, 2.89, 3.76, 3.21};
int credits[] = {3, 4, 3, 3};
```

7. How do you pass an array element as an argument to a function? How do you pass an entire array as an argument to a function?
8. How do you use a **const** array argument to a function? Why would you do this?
9. The Standard Template Library provides convenient data structures. In this class, we will build our own. However, the STL is convenient to use. What is an STL **vector**, and how is it different from an array?
10. Write the pseudo-code to create an array of Student objects. Write the pseudo-code to create an array of Student structs. What is the difference between the two?

¹Postgresql, a very popular enterprise RDBMS, offers an array type. You may know that First Normal Form requires atomic data types, and an array data type is certainly not atomic. Learning how to effectively use this data type in Postgres can be quite a challenge to developers encountering Postgres for the first time.