Lab 6

CS 313: Intermediate Computer Programming

Date: October 17, 2024

Lab Objectives and Instructions:

The goal of this lab is to improve coding for concepts we've seen in class. This lab is pure C++ programming. **You are to attempt each question in your programming pairs. Submit only your code solutions on Canvas.**

Submission Instructions:

Submit a zip file named using the format *firstname1 lastname1 & firstname2 lastname2_ Lab 6.zip*. Your code files should be named using a similar format. **Ensure you submit only your answers to the questions and your .cpp files**.

All the Best!!!

Programming Challenge [50 pts]

1. The history teacher at your school needs help in grading a True/False test. The students' IDs and test answers are stored in a file. The first entry in the file contains answers to the test in the form:

   `TFFTFFTTTTFFTFTFTFTT`

   Every other entry in the file is the student ID, followed by a blank, followed by the student's responses. For example, the entry

   `ABC54301 TFTFTFTT TFTFTFFTTFT`

   indicates that the student ID is ABC54301 and the answer to question 1 is True, the answer to question 2 is False, and so on. This student did not answer question 9. The exam has 20 questions, and the class has more than 150 students. Each correct answer is awarded two points, each wrong answer gets one point deducted, and no answer gets zero points. Write a program that processes the test data. The output should be the student's ID, followed by the answers, followed by the test score, followed by the test grade. Assume the following grade scale:

   `90%-100\%, A; 80%-89.99%, B; 70%-79.99%, C; 60%-69.99%, D; and 0%-59.99%, F.`

2. Consider the following function **main**:

```
int main(){
    int alpha[20];
    int beta[20];
    int matrix[10][4];
    .
    .
    .
}
```

   a. Write the definition of the function `inputArray` that prompts the user to input 20 numbers and stores the numbers into **alpha**.

   b. Write the definition of the function `doubleArray` that initializes the elements of beta to two times the corresponding elements in **alpha**. Make sure that you prevent the function from modifying the elements of **alpha**.

   c. Write the definition of the function `copyAlphaBeta` that stores **alpha** into the first five rows of **matrix** and **beta** into the last five rows of**matrix**. Make sure that you prevent the function from modifying the elements of **alpha** and **beta**.

   d. Write the definition of the function **printArray** that prints any one-dimensional array of type `int`. Print 15 elements per line.

   e. Write a C11 program that tests the function main and the functions discussed in parts a through d. (Add additional functions, such as printing a two-dimensional array, as needed.)