Assignment 06

50 points

Due 04/06/2020 (11:45 A.M.)

Assignment Objectives

- Discover how to declare Two-Dimensional Arrays.
- Discover how to Process Two-Dimensional Arrays
- Learn how to Pass Two-Dimensional Arrays to Function

Answer questions 1 to 3 on a word file; write a program for Q.4.
All assignments must be submitted by the Canvas. **No email or hard copy** is accepted. You must follow the following format:

a. For non-programming questions, use a word file to type your answers. Don't use the text box on the Canvas to answer the questions or to write comments, we will not read it.
b. State your answer clearly.
c. For programming questions, include only the source file for each problem.
d. Submit your file to the Canvas. You must submit your assignment on time; otherwise, you will receive zero. In addition, you cannot submit your file more than one time.
e. There will be several folders on the Canvas. You need to upload your file(s) using the correct folder on the Canvas.
f. Name each file: "Assignment Number(Question number(s))".
g. To upload your file(s):
    - In Course Navigation, click the Assignments link.
    - Click the title of the assignment.
    - Click the **Submit** Assignment button.
    - Add **File**. ...
    - Add Another **File**. ...
    - **Submit** Assignment. ...
    - View **Submission**.

It is your responsibility to make sure that each file is uploaded correctly. If you uploaded a wrong file, you receive zero; files will not be accepted after due date even if you have a prove that the file is created before the due date.

Make sure you review the Cheating & Plagiarism policy on Canvas.

1. (19 points: 1 point each; i, j, and k = 3 points each)

Consider a 2-by-3 integer array t.

a) Write a declaration for t.
b) How many rows does t have?
c) How many columns does t have?
d) How many elements does t have?
e) Write the names of all the elements in row 1 of t.
f) Write the names of all the elements in column 2 of t.
g) Write a statement that sets the element of t in the first row and second column to zero.
h) Write a series of statements that initialize each element of t to zero. Do not use a loop.
i) Write a nested for statement that initializes each element of t to zero.
j) Write a statement that inputs the values for the elements of t from the keyboard.
k) Write a series of statements that determine and print the smallest value in array t.
l) Write a statement that displays the elements in row 0 of t.
m) Write a statement that totals the elements in column 3 of t.

2. (10 points: 3 points each; a = 1 point)

Write C++ statements that do the following:

a. Declare an array `alpha` of `10` rows and `20` columns of type `int`.
b. Initialize the array `alpha` to `0`.
c. Store `1` in the first row and `2` in the remaining rows.
d. Store `5` in the first column, and make sure that the value in each subsequent column is twice the value in the previous column.

Use loops for parts b, c, and d.

3. (6 points: a = 4 points; b = 2 points)

Suppose that you have the following declarations:

```
int times[30][7];
int speed[15][7];
int trees[100][7];
int students[50][7];
```

a. Write the definition of the function `print` that can be used to output the contents of these arrays.
b. Write the C++ statements that calls the function `print` to output the contents of the arrays `times`, `speed`, `trees`, and `students`.

Programming Question

4. (15 points: 3 points each function)

Write a program that uses a two-dimensional array to store the highest and lowest temperatures for each month of the year. The program should output the average high, average low, and the highest and lowest temperatures for the year. Your program must consist of the following functions:

a. Function `getData`: This function reads and stores data in the two-dimensional array.

b. Function `averageHigh`: This function calculates and returns the average high temperature for the year.

c. Function `averageLow`: This function calculates and returns the average low temperature for the year.

d. Function `indexHighTemp`: This function returns the index of the highest high temperature in the array.

e. Function `indexLowTemp`: This function returns the index of the lowest low temperature in the array.

(These functions must all have the appropriate parameters.)

```
Enter high temperature for each month
32 35 45 59 69 79 83 81 74 61 48 36
Enter low temperature for each month
19 21 28 39 49 59 63 62 54 43 34 24
Average high temperature: 58
Average low temperature: 41
Highest temperature: 83
Lowest temperature: 19
```