CS1428 Lab 10: Fall 2020

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Lab Section: L03

Type your name at the top of this sheet. Answer the following questions and turn in this sheet before the due date. You may use the pre-lab, your book, or internet resources to assist you.

Your instructor will be available on Zoom during the usual lab hours to answer questions or in the Discussion section of Canvas outside of those hours.

Visit https://userweb.cs.txstate.edu/~js236/cs1428/c-ides-for-cs1428.html for instruction on setting up a Development Environment (like CodeBlocks) to be able to complete the coding portion.

1. (15 pts) Write a function prototype, function call, and function definition for a function named **findRetirementYear()** which has the following parameters: the integer array **date_of_birth**, a const integer **SIZE**, and an integer **retirement_age**. The function will add the elements in **date_of_birth** to the value of **retirement_age** and store the result in the same index of date_of_birth (so date_of_birth[0] = date_of_birth[0] + retirement_age).

Function Prototype: void findRetirementYear(int date_of_birth[], int retirement_age, const int SIZE);

Function Call: findRetirementYear(date_of_birth[], retirement_age, SIZE);

Function Definition:

```
void findRetirementYear(int date_of_birth[], int retirement_age, const int SIZE){
    for(int i = 0; i < SIZE; i++){
      date_of_birth[i] = date_of_birth[i] + retirement_age;
    }
}
```

2. (5pts) What is special about passing arrays to functions?

The function will use the memory of the array and change it by using the pointer in the array passed.

3. (50 pts) Modify the provided code to create a program to process an array of 5 grades. First ask the user to enter the 5 grades and store them into an array called grades. Then find the information needed for a curve (highest grade and amount of the curve). Lastly, apply the curve to the all the elements in the grades array and print the information to the screen.

- **void findCurveInfo(double grades[], const int SIZE, int &highest, double &curve)** Finds the index of the highest grade and populates the highest variable. Next, the function finds the value of the curve and populates the curve variable.
  - curve = (100 - highest_grade)/2
- **double getAverage(double grades[], const int SIZE)** Finds the average of the grades and returns it.
- **void applyCurve(double grades[], const int SIZE, double curve)** Applies a curve to every grade in the array, increasing each element by the value of curve.
- **void printData(double grades[], const int SIZE, int highest, double average, double curve)** Prints the grades after the curve, average after the curve, highest grade after the curve and the curve amount.

NOTE: Each function needs to be called once from main.

Sample output:

```
Enter 5 grades:
45.3
77.4
78.2
74.5
95.6
Grades after curve:
47.5
79.6
80.4
76.7
97.8
Average after curve: 76.4
Highest grade after curve: 97.8
Curve amount applied: 2.2
```

WRITE your name in the authorship comments at the top of your program.
UPLOAD this pdf with your answers filled in and your source code as lab10.cpp to Canvas.