CSC 1300 LAB 10

Fall 2024

Note: This is to be an individual assignment. No paired programming for this lab.

Learning Objectives

- Arrays
- Pointers
- Common array algorithms

Description

You are the manager of Terror Park, the spookiest roller coaster park in the United States located in Cookeville, TN.

You would like to know how profitable your theme park has been. You want to know the total profits, average profit per month, the most profitable month, and the least profitable month.

Specifications

- You must implement your program in three different files:
  - **lab10.h** – header file (include guards) that contains all #includes, namespace, and function prototypes of all programmer-defined functions
  - **driver.cpp** – source file containing the main function
  - **functions.cpp** – source file containing the function definitions of all programmer-defined functions.

- You must have two arrays
    - **profit array** – holds the profit amount for each month. Each month is an element in this array.
    - **date array** – holds the Month & Year of each profit entered in profit array
    - **You must use pointer notation when accessing array elements**
    - **You can't use STL vector or STL array for this program**

- You must have a minimum of five functions that do what is described below:
    - **main function** –
        - Ask user how many months of profits they wish to enter. *Validate that the user entered an integer greater than 1. Refer to sample output.*
        - Dynamically allocate two arrays based on the number of months. One array is the profit array and the other is the date array.
        - All results must be printed in the main function, not in any of the other functions.
    - **getprofit function** – allows user to enter in the date & profit for each month into the date & profit arrays. *Validate the user entered a number greater than zero. Refer to sample output.*
    - **gettotal function** – accumulates a running total of the profit array and returns this value back to the main function.
    - **getmax function** – finds the month with the largest profit (in the profit array), returns both the profit amount and the date of this max profit. *Hint: you will need to use a reference variable!*
    - **getmin function** - finds the month with the smallest profit (in the profit array), returns both the profit amount and the date of this min profit. *Hint: you will need to use a reference variable!*

- **You may not have any global variables – even if they are constant**. This is so you must practice sending data to/from functions!
- The user must be able to run the program as many times as they wish.
- All dollar amounts must be printed in the results with a dollar sign ($) and printed to two numbers after the decimal point. The output also must be in a neat, easy-to-read format.
- You must have a comment block at the top of your program as well as a comment above each function describing the function name & purpose.
- You must indent your code properly and consistently.
- Note: the ASCII art in the sample output is optional to put in your code – you can also come up with your own ASCII art or just omit it.

Fill Out the Lab Report

You will fill out this lab report for every lab and it is part of your grade. To get credit, you must upload a screenshot of the confirmation page to this lab assignment. Name your screenshot **lab10ReportProof**.
Lab Report Link: https://tntech.co1.qualtrics.com/jfe/form/SV_d6BGc6kzQdSvBmS

What to Turn In

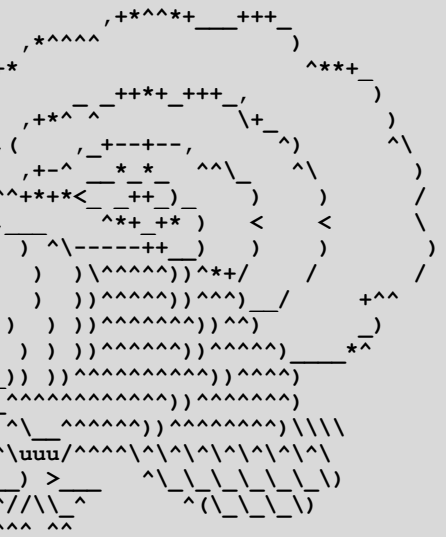
Create a zip file named **YOUR-TTU-USERNAME_lab10** containing the following .cpp files and upload it to ilearn. Replace YOUR-TTU-USERNAME with your TTU username . Example: **`acrockett43_lab9.zip`**

- driver.cpp
- functions.cpp
- lab10.h
- Lab10ReportProof

Sample Output

User input is highlighted in **yellow**.

```
--------------------------------------------------------------------------------
            Welcome to Turkey Town Theme Park Profit Calculator!
--------------------------------------------------------------------------------
```



```
--------------------------------------------------------------------------------
How many months of profits do you wish to enter?     bum
Whoa!  That's not right.  Enter a number greater than one!

How many months of profits do you wish to enter?     0
Whoa!  That's not right.  Enter a number greater than one!

How many months of profits do you wish to enter?     7
Let's enter some profits!
When you enter in the date, enter in the month & year like this:  'April 2024'.

DATE:    July 2023
PROFIT: $1234.56
DATE:    August 2023
PROFIT: $9483.44
DATE:    September 2023
PROFIT: $8454.22
DATE:    October 2023
PROFIT: $3944.32
DATE:    November 2023
PROFIT: $1203.44
DATE:    December 2023
PROFIT: $-34
Whoa!  That's not right.  Enter a number greater than zero!
PROFIT: $duh
Whoa!  That's not right.  Enter a number greater than zero!
PROFIT: $34.56
DATE:    January 2024
PROFIT: $234.56

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                     TOTAL PROFITS:         $    24589.10
                   AVERAGE PROFIT:          $     3512.73
          DATE WITH LARGEST PROFIT:          August 2023 totaling $9483.44
         DATE WITH SMALLEST PROFIT:          December 2023 totaling $34.56
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Would you like to run the program again? (Y/N)
N
```