Project 3   CSc 402   Kutztown

Points: 30 + 5
Purpose: Ordering Data over Multiple Keys
Assignment: In this assignment, you will pick out a data set and write a program to read it and permit it to be ordered over multiple keys. The program will further permit printouts based on its keys.

There are many interesting datasets in our library (https://library.kutztown.edu/az.php). The web also has sites like https://www.kaggle.com/datasets and https://data.fivethirtyeight.com/. There are many others. Using the library's resources justifies their retention. But the choice is yours. Choose a dataset and place a post on the forum to claim it. First come, first serve.

Your program will be loosely based on the States example in that you will take data and provide options for viewing analogous to those provided by the example. Library objects will be used for storage, and sorting will be facilitated by functors or similar written for your data that will be passed to the sort() routine.

Once you settle on your data, write a class to encapsulate each datum. It must include appropriate member functions. One of those should be for the purpose of decoding it from its raw form. For example, JavaScript Object Notation (JSON) is easy to read and decode. Java has a package javax.json that includes routines for processing JSON data. But JSON doesn't require libraries, as creation of routines to process it into a data structure is not a daunting task.

The application will permit the user to order the data in an interesting fashion. For example, with virus data, it might be ordered by states with most occurrences, by order of first occurrence in states, by hospitalizations over a range of dates, etc;

The user will have ample options to view the data over the at least several featured keys.

Notes:
- There is no requirement to use all data in the set.
- Built-in language elements, i.e. widgets, containers, etc. must be used. The only container you may write yourself is to hold a datum.
  - It is expected that discussions will ensue on the forum regarding how to handle data sets. For example, is there a C++ library for JSON? Python?
- Your project plan must be approved. Provide a file named Project3Plan of type txt, doc(x) or pdf that contains your choice of data and language, if not C++, as well as a general idea of the queries you intend to provide in the Project3Readme dropbox on D2L. You will receive feedback within a short period of time following submission.
- Provide a readme with your final submission that details your design, how and why you deviated from your original plan, if you did, and any issues that arose. It should also include:
  - Thorough directions on running the program. This is to be named Project3Readme.
  - A link to a Doxygen site that is professional in appearance. Diagrams and/or images may be appropriate on the mainpage.
- Name your project's application file p3_402 (of type appropriate for your language). If it contains more than one file, provide a makefile.
- You will demonstrate your project's functionality and answer questions during presentation day on May 4 or 11. Specific info on design is encouraged. Presentations shouldn't exceed approximately five minutes.
- The presentation is informal and worth 5 points. Unless you are excused, if you don't appear for presentations and stay the entire time, your grade on Project 3 will be 0.

Deliverables
- April 9 @ 10 AM: Project3Plan, by, in the Project3Readme dropbox.
- Wednesday, May 4 or 11 @ 5 PM: We will choose exam and presentation days.
  - Project3Readme, in the Project3Readme dropbox.
  - Project code files, by, via turnin