**Assignment learning objectives:**

Implement inheritance and polymorphism through base and derived classes.

Implement classes and class functions including constructors, accessors, mutators

Read data from a file (.csv) and utilize try/except to error check.

Pointer used to create a vector of parent and child objects.

Create functions to print a menu and search object data for provided search results.

# The problem:

You realized how handy your movie program was, and decided, since you also love music AND books and have a HUGE collection of these (okay – you only have 72…but you get the idea), you would update your program to include these as well.

You realized that many of these things have very similar implementations and think that creating a common ‘parent’ for these different things might be helpful.

The parent information would include the following fields for all media:

Base Class:

char type;

string title;

int rating;

string genre;

int yearReleased;

Derived Classes:

Movies would also need:

string director;

int duration;

vector<string> stars;

Books would need:

string author;

int pages;

Songs would need:

string artist;

int duration;

You will need to create the necessary functions for these classes (getters, setters, constructors). You may implement copy constructors and destructors for these classes as well, but since there are no pointer references as part of these classes, you really do not need them. It would be good practice though if you have time to add them.

Ms. Gladbach realizes that YOU realize the very similar fields that could be placed in the parent and utilized differently in the child – but to practice implementing classes, this is how we are proceeding.

The main program (or a functions.cpp and functions.h file) will also need to act on these classes and need to include the following (some of these should have been implemented in the movies project done previously)

|  |  |  |
| --- | --- | --- |
| **GENERAL FUNCTIONS** | **RETURN TYPE** | **PURPOSE** |
| readDataFile(inFile,outFile,  vector<Media \*>) | int (optional) | Reads the data from csv file and loads pointers to the objects into a vector<Media \*>  Produces an error report of any records that can not be read |
|  |  | Error file sample: |
| printMenu() | char | prints the menu so user can choose from these options:    Verifies that a correct option is chosen |
| printBookList(vector<Media \*>)  printSongList(vector<Media \*>)  printMovieList(vector<Media \*>)  printList(vector<Media \*>) | void | Prints list of books, movies, songs or all media  (see below) This is a partial list |
| printTotals()  NOTE: I used a global array to that was updated as the file was read and pointers were added to the vector. | void | Prints the total count of movies, books and songs in your library: |
| listMovieStars | void | Given a movie, prints the list of the stars in the movie  Provides a message if the movie is not found |
| findMovie | void | Given a movie star, print the list of the movies the actor was in  Provides a message if the actor is not found |
| Additional Feature  (groups or individuals) |  | You are eligible for up to 20 additional bonus points for completing an additional enhancement for this project. Difficulty and usability will determine the number of points awarded.  (ex: a virtual function in parent that must be implemented in each child is considered 1 feature that would receive 20 bonus points) |
| **GROUP PROJECT OPTION**  If you would like to work in a team, please use [**this signup**](https://docs.google.com/document/d/1nerpbeoUJQn7C8BJeR0PRek6RLS-oZyl69H2vvwG-d0/edit?usp=sharing) to let me know your group. |  | Special NOTES:  **Teams are expected to complete two additional features (see above)** to receive the 20 bonus points. (1 additional feature = 10 points). The team enhancement should allow for multiple team members to participate if possible.  Teams will need to complete this [**team evaluation document.**](https://umkc.box.com/s/j8k80hz0kb3off54fu3modg1dpca6nzl) 10 additional bonus points for full completion of the team evaluation document will be award. (so teams can earn up to 30 bonus points – individuals up to 20)  Teams will turn in 1 program/project link and multiple team evaluation documents |

# Remember:

* + Make sure you clearly understand the program and its requirements
  + Write a neat easy-to-follow code and organize it
  + To help you get started (and to check that you read through all of the instructions prior to begin your coding) Ms. Gladbach has provided starter code for the book class in this repl.it: bit.ly/CS201Pgm4Starter
  + After you finish coding all the requirements of this program, think what can go wrong with the code. How can others mishandle it, and how should your program respond to bad input. Improve your code accordingly.

**Share your completed repl.it code using this link:** [**CS201 Program 4**](https://forms.gle/GzLSuS1AMTFEjhJE6)