

CS1050 – Prelab 12

Fall 2021

Concepts to Practice

- Structures
- Arrays of structures
- Sorting

Description

For the prelab assignment, you need to implement a program that reads data from the provided prelab12.dat file into an array of structures. Each line in the file represents a movie. The data in each movie is:

- Title
- Gross Revenue (adjusted for inflation to 2019 dollars)
- Year

The fields are separated by spaces. Note that words in the title are separated by underscores to make it easier to read in the whole title field.

You can rely on there being no more than 15 lines in the file. You can also rely on the titles being no more than 30 characters long. Note that the gross revenue field can be up to \$99,999,999,999 (no cents).

Once you have read all the movies into memory, you should print out the movies. Then, sort the movies by year of release, in ascending order. Then, print out the sorted movies. Anytime you print out movies, there should be a nice heading for each field (see sample output).

To get started on this prelab, type the following while logged in to tc.rnet.missouri.edu:

```
cs1050start prelab12
```

Notice that this prelab only provides the data file. It is up to you to write the program from scratch.

Functions You Must Write

It is totally up to you what functions you write. When I did mine, I wrote a function to read in the movies, one to print out the movies, and one to sort the movies (in addition to main). I also wrote a little worker function called SwapMovies() that I call inside my sort implementation.

Hints

- Don't hard-code the name of the input file. Take it as a parameter on the command-line...in case your lab works that way 😊
- Create an array of structures to hold the data. Otherwise, it will be hard to properly sort things.
- Use bubble sort. You can use a different sort, but bubble sort is easy to write and you can copy it from the book or slides if you need.

Sample Output

```
jimr@JimRXPS13:~/CS1050/FS2021/labs/lab12$ compile prelab12.c
jimr@JimRXPS13:~/CS1050/FS2021/labs/lab12$ ./a.out
./a.out filename
jimr@JimRXPS13:~/CS1050/FS2021/labs/lab12$ ./a.out movies.dat
Original:
```

Title	Gross	Year
Gone_with_the_Wind	3713000000	1939
Avatar	3263000000	2009
Titanic	3087000000	1997
Star_Wars	3049000000	1977
Avengers:_Endgame	2798000000	2019
The_Sound_of_Music	2554000000	1965
E.T._the_Extra-Terrestrial	2493000000	1982
The_Ten_Commandments	2361000000	1956
Doctor_Zhivago	2238000000	1965
Star_Wars:_The_Force_Awakens	2206000000	2015
Snow_White	2150000000	1937
Jurassic_Park	2100000000	1993
Jaws	2100000000	1975
Avengers:_Infinity_War	2050000000	2018
The_Exorcist	2000000000	1973

Year:

Title	Gross	Year
Snow_White	2150000000	1937
Gone_with_the_Wind	3713000000	1939
The_Ten_Commandments	2361000000	1956
The_Sound_of_Music	2554000000	1965
Doctor_Zhivago	2238000000	1965
The_Exorcist	2000000000	1973
Jaws	2100000000	1975
Star_Wars	3049000000	1977
E.T._the_Extra-Terrestrial	2493000000	1982
Jurassic_Park	2100000000	1993
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