Assignment 1

COMP 1123 - Data Structures I

Yaşar University

March 12, 2022

You are given two files: *records.txt* and *film.c*. The *records.txt* file contains information about 1000 films.

Inside *film.c* there is a structure called **RECORD_t** which is designed to keep information about a film. Within the main function, all 1000 films in *records.txt* are read into a **RECORD_t** array, namely *records*.

You are going to implement some functions for a customer who wants to select films. Your task is to implement the following functions inside *film.c*:

- **float** average_rental_rate(**RECORD** records):
  Calculates the average of the rental rates in given **RECORD_t** array.

- **float** average_release_year(**RECORD** records):
  Calculates the average of the release years in given **RECORD_t** array.

- **RECORD** find_top_ten_films(**RECORD** records):
  The *film_id* represents the IMDB rank of the film. This function finds the top 10 films according to the IMDB ranks (film id), puts the films in an array and returns it. Lower film id means higher IMDB rank. **Do not sort the records array!**

- **RECORD** find_ten_affordable_films(**RECORD** records):
  This function is for customers who like new films but have limited money. The function finds 10 films with;

    - rental rate less than the average,
    - release year greater than the average,

  and returns the films as an array. The films do not need to be the cheapest new films. The first ten films that satisfy the conditions will be returned.

In the main

- Test average_rental_rate function: Calculate the average rental rate and print it.

- Test average_release_year function: Calculate the average release year and print it.

- Test find_top_ten_films function: Find the top ten films which will be a **RECORD_t** array.

- Write the titles of the top ten films to a new file *records_top_ten.txt.* **Write in character mode, not in binary mode.**

- Test find_ten_affordable_films function: Find ten affordable films which will be a **RECORD_t** array.

- Write the titles of the affordable films to a new file *records_affordables.txt.* **Write in character mode, not in binary mode.**

Hints

- To return an array from a function, you need to create/allocate the array dynamically (with malloc) and return the pointer.

- To write the titles to a file, you will need the length of the string. You are allowed to use *strlen()* function in *string.h.*

Notes

- Do not use any library other than *stdio.h*, *stdlib.h* and *string.h.*

- Any kind of cheating (over the internet, between students, etc.) is not allowed.

- Upload a single .c file.