CS 401 Algorithms
Assignment3
Due Date: June 4th, 2021 11:59pm

IMDB Movie Database *Red-Black Binary Search Trees and Hashing*

The assignment is about design and development of a movie database for IMDB movie data. You are given a .csv file which stores the following information for each movie. There are around 5000 movies listed in the file.

- id
- Color
- movie_title
- duration
- director_name
- actor_1_name
- actor_2_name
- actor_3_name
- movie_imdb_link
- language
- country
- content_rating
- year
- imdb_score

Functional and Design Requirements

Your program

- creates a movie database by reading the data from .csv file into an array
- creates a hash table of red black trees to perform search operation by fields including year, imdb_score, language and content_rating. [red black tree where key is year; another red black tree where key is imdb_score, etc.]
- stores red black trees in a hash table
- performs search operation by year, imdb_score, by content_rating and/or language using the indexing trees
- prompts the user to enter search criteria (- for ignore)
- Prints the information of all the movies that are in the result set

What to submit:

- All source files (.java)

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//simple.csv

```
id,color,movie_title,duration,director_name,actor_1_name,actor_2_name,actor_3_name,movie_imdb_link,language,country,content_rating,title_year,imdb_score
1,Color,Avatar ,178,James Cameron,CCH Pounder,Joel David Moore,Wes Studi,http://www.imdb.com/title/tt0499549/?ref_=fn_tt_tt_1,English,USA,PG-13,2009,7.9
2,Color,Pirates of the Caribbean: At World's End ,169,Gore Verbinski,Johnny Depp,Orlando Bloom,Jack Davenport,http://www.imdb.com/title/tt0449088/?ref_=fn_tt_tt_1,English,USA,PG-13,2007,7.1
3,Color,Spectre ,148,Sam Mendes,Christoph Waltz,Rory Kinnear,Stephanie Sigman,http://www.imdb.com/title/tt2379713/?ref_=fn_tt_tt_1,English,UK,PG-13,2012,6.8
4,Color,John Carter ,132,Andrew Stanton,Daryl Sabara,Samantha Morton,Polly Walker,http://www.imdb.com/title/tt0401729/?ref_=fn_tt_tt_1,English,USA,PG-13,2012,6.6
5,Color,Spider-Man 3 ,156,Sam Raimi,J.K. Simmons,James Franco,Kirsten Dunst,http://www.imdb.com/title/tt0413300/?ref_=fn_tt_tt_1,English,USA,PG-13,2012,6.1
6,Color,Tangled ,100,Nathan Greno,Brad Garrett,Donna Murphy,M.C. Gainey,http://www.imdb.com/title/tt0398286/?ref_=fn_tt_tt_1,English,USA,PG,2010,7.8
7,Color,Avengers: Age of Ultron ,141,Joss Whedon,Chris Hemsworth,Robert Downey Jr.,Scarlett Johansson,http://www.imdb.com/title/tt2395427/?ref_=fn_tt_tt_1,English,USA,PG-13,2015,7.5
8,Color,Harry Potter and the Half-Blood Prince ,153,David Yates,Alan Rickman,Daniel Radcliffe,Rupert Grint,http://www.imdb.com/title/tt0417741/?ref_=fn_tt_tt_1,English,UK,PG,2009,7.5
9,Color,Batman v Superman: Dawn of Justice ,183,Zack Snyder,Henry Cavill,Lauren Cohan,Alan D. Purwin,http://www.imdb.com/title/tt2975590/?ref_=fn_tt_tt_1,English,USA,PG-13,2016,6.9
10,Color,Superman Returns ,169,Bryan Singer,Kevin Spacey,Marlon Brando,Frank Langella,http://www.imdb.com/title/tt0348150/?ref_=fn_tt_tt_1,English,USA,PG-13,2012,6.1
```

Sample Run:

```
Year: 2012
Score: 6.1
Language:-
Rating:-


Results (Movies -> year:2012 score:6.1)

[5, 10]
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id:5
color:Color
title:Spider-Man 3
duration:156
director_name:Sam Raimi
act1:J.K. Simmons
act2:James Franco
act3:Kirsten Dunst
movie_imdb_link:http://www.imdb.com/title/tt0413300/?ref_=fn_tt_tt_1
language:English
country:USA
content_rating:PG-13
title_year:2012
imdb_score:6.1
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id:10
color:Color
title:Superman Returns
duration:169
director_name:Bryan Singer
act1:Kevin Spacey
act2:Marlon Brando
act3:Frank Langella
movie_imdb_link:http://www.imdb.com/title/tt0348150/?ref_=fn_tt_tt_1
language:English
country:USA
content_rating:PG-13
title_year:2012
imdb_score:6.1
```