

IMDB Movie Database and Query Generator



In this assignment, you are going to design and develop movie database and a query generator 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
- genres
- duration
- director_name
- actor_1_name
- actor_2_name
- actor_3_name
- plot_keywords
- movie_imdb_link
- language
- country
- content_rating
- title_year
- imdb_score

Functional and Design Requirements

Your program

- creates a movie database by reading the data from .csv file into an array
- allows to add as many fields possible as search index
 - each time a new field index is added to the database, a new red black tree is created by the given field as the key. For example, `db.addFieldIndex("title")` will create a new red black tree by title field. Then, key is the title, and the value is the set of id's of movies having the same title.
- stores red black trees in a hash table
- allows to create a query by combining one or more of the following queries.
 - and

- or
 - not
 - greater than or equal to
 - less than or equal to
 - equal to
 - not equal to
- Executes the query using the indexing trees
 - Prints the information of all the movies that are in the result set

A sample test case is provided below. The program prints the movie information for all records with year= 2013 and imdb_scores>=6.5.

```
public static void main(String[] args){
    MoviesDB db = new MoviesDB("movie_metadata.csv");
    db.addFieldIndex("title");
    db.addFieldIndex("year");
    //...
    Query query = new And(new Equal("title_year", 2013), new GreaterThanEqual("imdb_score", 6.5))
    Set<Integer> results= db.executeQuery(query);
    db.print(results);
}
```

HINT:

- You can use “Composite” design pattern to build composite query structure. Please find a sample project at:
https://nick79.gitlab.io/mnblog/post/composite_design_pattern/

How Submit:

You are supposed to submit your work as a single zip file via CANVAS. Zip file including all source files you created. Please use the following file format while naming the zip file:

LastNameFirstnameX_Y.zip where LastNameFirstname is your last name with the first letter in capital, followed by your first name with the first letter in capital; the X is the course code; the Y is the assignment #. (ex: SerceFatmaCS401_3.zip)