CMPT 470

Project Report

Overview

The main goals of our project is to build a web application that randomly generate movie titles using a local database with extensive search feature and a movie management system for users. The project was conducted by a team of four during the last month of the semester. The technology stack that was employed is React front-end with Bootstrap Material UI Design, Express back-end and MySQL database, deployed with Docker and AWS.

Team members and responsibilities

Rico Chao (**rchao**) – Front-end developer, Dashboard and filters
Yoel Yonata (**yyonata**) – Front-end developer, User Movie List
Jason Nguyen (**pdnguyen**) – Back-end developer, server-side controllers and SQL
June Shim (**jys2**) – Back-end developer, server-side security/authentication and DevOps

List of features

- Secure user authentication
- Random movie generator based on elaborate filter options (such as type, rating, genres, year released, runtime, vote count, title includes)
- Manage user movie list (add/remove a title)
- Mark a movie as Watched/Not Watched/Favorite
- *Trending*: Provide list of movies that are most favorite (based on users data)
- *Most Favorite/Watched*: Provided list of most favorite/watched movies (based on users data)

Technologies and Implementation

Here is the detailed list of frameworks and libraries used in the development of the project:

Client-side:
- ReactJS
- Material UI Design

Server-side:
- ExpressJS (with jsonwebtoken)
- Bookshelf ORM
- Knex query builder
- bluebird (Promise library)
- MySQL server
- node-fetch for making external API calls

DevOps:
- Amazon Web Service (AWS)
- Docker

A local database was populated by processing a text data set provided by IMDb (for free) that includes movie titles and movie ratings, separately. The two tables was loaded into a SQL database using a **tsv** parser in JavaScript and then combined together to produce the main data set (titles_with_ratings) that we can query on.

Client-side is built with RESTful design that makes requests to server routes. The requests are signed with **jsonwebtoken** for later authorization and handled by different server controllers. These controllers take care of parsing the requests, authorizing users and making secure SQL queries using ORM and query builder. The results were then embedded with some details retrieved from an external source (by making synchronous API calls to TMDb) and sent back to client-side with appropriate response status code.

The application was then deployed on AWS using Docker.

Limitations and Constraints

Currently, our movie database is entirely static since the process of parsing the text data set (of few GBs) and loading into SQL database was not streamlined. This will be improved in the near future to keep our local data set up-to-date. The design and complexity of the front-end interface was intentionally simple but was very minimal given the time constraints and knowledge limitation of framework used (by some team members). For example, the Alert component should be implemented instead of browser window alerts that sometimes give users uneasiness when navigating the site.

There are also some incompatibilities between our local movie database (from IMDb) and the database that was used for requesting poster images (TMDb). Users will occasionally see blank posters (or even incorrect) when searching for movies due to this limitation. IMDb itself does not provide a free and public API for making image requests (hopefully they will soon).

On server-side, the responses are sometimes delayed due to joining of large tables in the database. On average, each request would take 1.5 -2 seconds to process and get the results back. This could be another hindrance that annoys the users.

Alternative applications

Both IMDb and TMDb offer users advanced search features based on their own movie data set. However, NO options for generating random movies was found on both site. There are a few websites that include this feature but the filter parameters were very limited. Here are some examples:

https://www.randomlists.com/random-movies

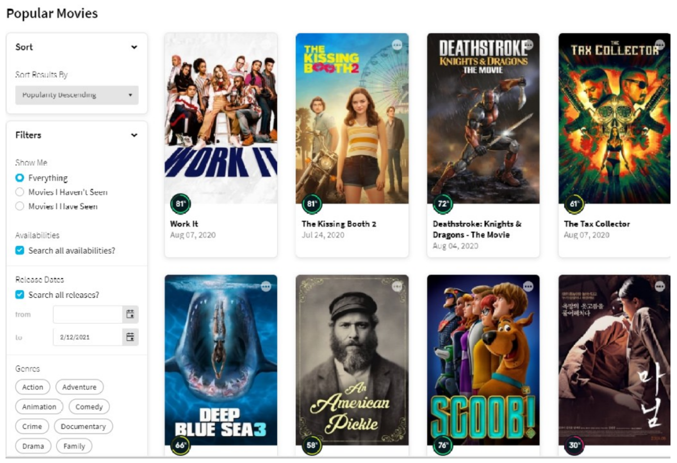
https://www.generatormix.com/random-movie-generator

https://pickrandom.com/random-movie-generator/

Our application was created to try to solve this paradox, by giving the users more freedom in choosing what they can filter out (creating personalized filter) and combining the two most popular movie data sets on the Internet.

https://www.imdb.com/search/title/

https://www.themoviedb.org/movie



Popular Movies

Sort

Sort Results By: Popularity Descending

Filters

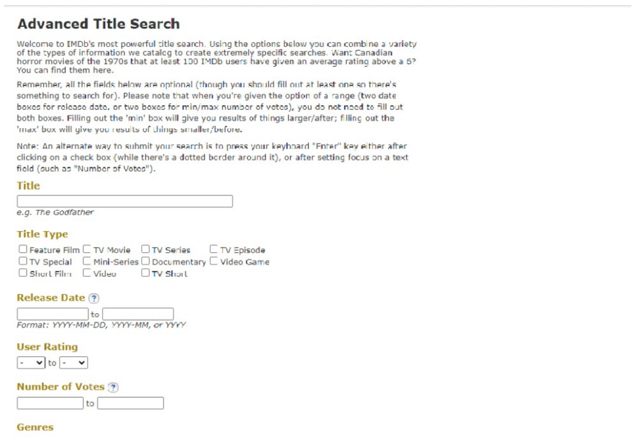
Show Me
[✓ Everything]
Movies I Haven't Seen
Movies I Have Seen

Availabilities
[✓ Search all availabilities?]

Release Dates
[✓ Search all releases?]
from
to 2/12/2021

Genres
Action
Adventure
Animation
Comedy
Crime
Documentary
Drama
Family

81 Work It — Aug 07, 2020
81 The Kissing Booth 2 — Jul 24, 2020
72 Deathstroke: Knights & Dragons - The Movie — Aug 04, 2020
61 The Tax Collector — Aug 07, 2020
66
58
76
30



Advanced Title Search

Welcome to IMDb's most powerful title search. Using the options below you can combine a variety of the types of information we catalog to create extremely specific searches. Want Canadian horror movies of the 1970s that at least 100 IMDb users have given an average rating above a 6? You can find them here.

Remember, all the fields below are optional (though you should fill out at least one so there's something to search for). Please note that when you're given the option of a range (two date boxes for release date, or two boxes for min/max number of votes), you do not need to fill out both boxes. Filling out the 'min' box will give you results of things larger/after; filling out the 'max' box will give you results of things smaller/before.

Note: An alternate way to submit your search is to press your keyboard "Enter" key either after clicking on a check box (while there's a dotted border around it), or after setting focus on a text field (such as "Number of Votes").

Title

e.g. The Godfather

Title Type

☐ Feature Film ☐ TV Movie ☐ TV Series ☐ TV Episode
☐ TV Special ☐ Mini-Series ☐ Documentary ☐ Video Game
☐ Short Film ☐ Video ☐ TV Short

Release Date

to

Format: YYYY-MM-DD, YYYY-MM, or YYYY

User Rating

- to -

Number of Votes

to

Genres

Image: Both IMDb and TMDb have their advanced search options.

Future Developments

Development of the project will be carried on after the course to build more features into the web app and to create more usable front-end components. Extended functionalities might include a Search All option with pagination, Save filters for each user, a Sort by option and Search function for movie title lookup in User Movie List. The ultimate aim of this project is to deploy the website to public use with a domain name and HTTPS.