594 final project

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Topic: Movie Database

General Description:
In this project, we want to build a tool for storing and retrieving data from the movie database, with each movie associated with different types of tags.

+ Use a HashSet to store all movies, each movie has an unique key.

+ Users can search a movie by name and get name suggestions for that movie even if they do not know the exact title. This feature is implemented by Trie like autocomplete homework. Each leaf node in our Trie contains a set of movie indexing.

+ Users can also search movies by specific type or by combining multiple types to get a more accurate search for movies.

+ Users can search movies based on years or ratings by giving specific year, rating or giving a range of year, raging.

+ Users can filter the search result with different sort strategies, such as sort by rating, sort by year or sort by duration.

Queries (operations) that your project will perform:
+ Exact search on movie name or part of movie name.
+ Range query that on movies with year range or rating range.
+ Query by multiple movie types and get intersection.

Related data structures:
HashMap - storing detailed information about movies
Trie - used to generate possible movie titles. Node with a complete title of a movie also stores the id of the movie
B+ Tree - store indexes (a unique movie id) for movies by time or rating
LinkedList/ArrayList - storing movie ids of different movie types

Design pattern:
Strategy pattern - used to implement different sorting options
Composite pattern - used in constructing Trees