

Movie Management System Project

Sample Console Output

Movie Management System

1. Add New Movie
2. View All Movies
3. Search Movie by Title
4. Sort Movies by Rating
5. Request to Watch a Movie
6. View Watch Queue
7. Watch Movie (Pop from Queue and Add to History)
8. View Watch History
9. View Recommendations
10. Exit

Objective

Manage a collection of movies with features like adding, deleting, searching, sorting, and user interaction (watch history, requests) using core data structures.

Data Structures Used

- List: Store all movie records
- Stack: Last watched movies (LIFO)
- Queue: For managing movie watch requests
- Linked List: Suggest related movies in order
- Binary Search Tree: Sorted access (by genre or name)
- Searching: Linear and Binary Search
- Sorting: Bubble, Quick, or Merge Sort

Feature Breakdown

1. Movie Catalog (List)

```
movies = []
```

```
movies.append({"id": 101, "title": "Inception", "year": 2010, "rating": 8.8})
```

2. Watch History (Stack)

```
watch_stack = []  
watch_stack.append("Inception")  
last_watched = watch_stack.pop()
```

3. Watch Request Queue (Queue)

```
from collections import deque  
request_queue = deque()  
request_queue.append("Interstellar")  
next_movie = request_queue.popleft()
```

4. Movie Recommendations (Linked List)

```
class Node:  
    def __init__(self, movie):  
        self.movie = movie  
        self.next = None
```

5. Genre Tree (Binary Search Tree)

```
class TreeNode:  
    def __init__(self, movie):  
        self.movie = movie  
        self.left = self.right = None
```

6. Searching (Linear/Binary Search)

```
def search_movie_by_title(movies, title):  
    for movie in movies:  
        if movie["title"] == title:  
            return movie  
    return None
```

7. Sorting (e.g., Bubble Sort)

```
def bubble_sort_by_rating(movies):
```

```
n = len(movies)
for i in range(n):
    for j in range(n - i - 1):
        if movies[j]["rating"] > movies[j + 1]["rating"]:
            movies[j], movies[j + 1] = movies[j + 1], movies[j]
```

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Optional Enhancements

- Save/load movie data using JSON or text file
- Add user profiles with separate watch histories
- CLI pagination (e.g., view 5 movies at a time)