PROJECT

MOVIE RECOMMENDATION SYSTEM

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SOFTWARE ENGINEERING

❖Table of Contents:

❖Table of Figures:

DATABASE PROJECT

Movie Recommendation System

❖ Introduction

In today's world where streaming services offer so many different movies and shows, finding the right movie can feel overwhelming. To solve this problem, we recommend a movie recommendation system. It's a smart platform designed to make watching movies more enjoyable. It provides personalized recommendations based on each user's preferences and viewing habits. Our goal is to create a system that understands what users like and adapts as their interests change. By analyzing user profiles, viewing history, and movie ratings, the system aims to provide tailored recommendations that not only save time but also introduce viewers to films they might not have otherwise discovered.

❖ DATABASE PLANNING

➢ System Overview

Several important features have been integrated to improve the functionality of the movie recommendation system. It tracks the user's viewing history and preferences, making various suggestions that are updated over time. Users can rate the movies they watch, which helps improve the accuracy of future recommendations. The system also uses advanced methods to create personalized recommendations and allows users to browse through different movie categories and genres. The database is organized with the necessary tables for user profiles, movie descriptions, ratings, genres, viewing history, and recommendations. In the future, we plan to add social features to share recommendations, implement real-time updates for more relevant suggestions, and include a manual spelling correction feature to improve data accuracy. Overall, this project aims to improve the way viewers discover and enjoy movies, making the movie viewing experience more engaging and enjoyable.

➢ Key Features

- **Track User Watch History and Preferences:**

The system monitors the movies that users have watched and their preferences (e.g., favorite genres or actors), enabling more accurate recommendations.

- **Collect Ratings for Movies:**

Users can rate movies on a scale from 1 to 5, which helps to aggregate data on movie quality and popularity.

- **Generate Movie Recommendations:**

Utilizing collaborative filtering (which recommends movies based on the preferences of similar users)

- **Option to Browse Movie Categories and Genres:**

Users can explore movies by categories and genres, making it easier to discover new content that matches their interests.

- **Social Feature for Users to Share Recommendations:**

This feature allows users to connect with friends and share their movie recommendations, creating a community feel within the platform.

- **Real-Time Updates of Recommendations:**

The system updates recommendations based on recent user activities, ensuring that users always receive relevant suggestions.

- **Auto Spelling Correction for User-Inputted Data:**

An automatic spelling correction feature improves the accuracy of user inputs, correcting common spelling errors before the data is stored.

➢ Database Design

● Entities and Tables

◆ *Users Table*

Purpose: Stores user profile information.

◆ *Movies Table*

Purpose: Stores information about movies.

◆ *Ratings Table*

Purpose: Collects ratings given by users for movies.

◆ *Genres Table*

Purpose: Stores information about movie genres.

◆ *Watch History Table*

Purpose: Tracks the movies that users have watched.

◆ *Recommendations Table*

Purpose: Stores the movie recommendations generated for users.

◆ *Spelling Corrections Table*

Purpose: Stores common spelling corrections for user inputs.

➢ Relationships

◆ **Users and Ratings:**

Each user can provide multiple ratings for different movies, creating a one-to-many relationship between users and ratings.

◆ **Movies and Ratings:**

Each movie can receive ratings from multiple users, establishing a one-to-many relationship between movies and ratings

◆ **Movies and Genres:**

Each movie belongs to one genre but can receive multiple ratings from different users.

◆ **Users and Watch History**:

Each user can have multiple entries in their watch history, linking users to the movies they've watched.

➢ Auto Spelling Correction Implementation

◆ **Feature Design:**

1. Utilize the Spelling Corrections table to store a dictionary of common misspellings and their corrections.

2. When users input text (such as movie titles or reviews), the system checks against this table for any misspellings.

3. The system can either automatically correct the misspellings in real-time or suggest corrections to users before they submit their input, enhancing data accuracy.

➢ Potential Enhancements

◆ **Social Feature:**

1. Create a Friends table to manage user connections and interactions.

2. Implement a shared recommendations table to allow users to share their recommendations with friends, promoting a community atmosphere.

- **Real Time Recommendation Updates:**

1. Develop triggers or background jobs that update the Recommendations table based on new ratings and watch history entries. This ensures that users always receive the most current recommendations.

➢ Testing and Maintenance

- **Unit Testing:**

Implement unit tests to verify that database interactions function correctly and maintain data integrity throughout the system.

- **Regular Maintenance:**

Plan for regular database maintenance, including updates to the Spelling Corrections list and performance optimization checks.

❖ Mission Statement and Objectives

➢ Mission Statement

Our mission is to make finding and enjoying movies easier and more fun by giving personalized recommendations that match what each user likes. We want to help everyone discover films they'll truly enjoy while building a friendly community of movie lovers.

➢ Mission Objectives

- **Personalized Recommendations:**

Create smart systems that suggest movies based on what users have watched and rated. This helps users find films they'll love.

- **User-Friendly Experience:**

Design a simple and clear website or app where users can easily track their movie history, ratings, and preferences.

- **Rich Movie Database:**

Keep a well-organized collection of movies, including their genres and user ratings, so users have access to accurate and up-to-date information.

- **Social Sharing:**

Add features that let users share their favorite movies and recommendations with friends, making the experience more interactive and enjoyable.

- **Real-Time Updates:**

Update movie recommendations based on users' recent activities and feedback, ensuring that suggestions are always fresh and relevant.

- **Correcting Spelling Errors:**

Use auto spelling correction to fix common mistakes in user input. This will improve the accuracy of movie searches and ratings, making it easier for users to find what they want.

- **Explore Genres and Categories:**

Allow users to browse and filter movies by different genres and categories. This will help them discover new films and broaden their viewing options.

- **User Feedback:**

Set up ways for users to give feedback on the recommendations they receive. This will help improve the system and make suggestions even better over time.

❖ System Definition

➢ Purpose of System:

This system is designed to help users discover and enjoy movies that match their tastes. By keeping track of what users watch, their ratings, and their preferences, the system provides personalized movie recommendations. It also allows users to explore different genres and share their favorite movies with friends.

➢ Scope of System:

The system will include the following features:

- **User Profiles:**

Each user will have a profile that stores their watch history, movie ratings, and preferences.

- **Movie Database:**

A comprehensive collection of movies, including details like titles, genres, and user ratings.

- **Recommendation Engine:**

A smart system that suggests movies based on what users have watched and rated, using advanced methods to ensure accuracy.

- **Genre Browsing:**

users can browse through various movie genres and categories to find films they might like.

- **Social Features:**

Users will be able to share their movie recommendations with friends, encouraging social interaction.

- **Real-Time Updates:**

The system will provide up-to-date recommendations based on users' recent activities.

- **Spelling Correction:**

Auto spelling correction for user inputs to improve the accuracy of movie searches and ratings.

❖ System Boundary Diagram

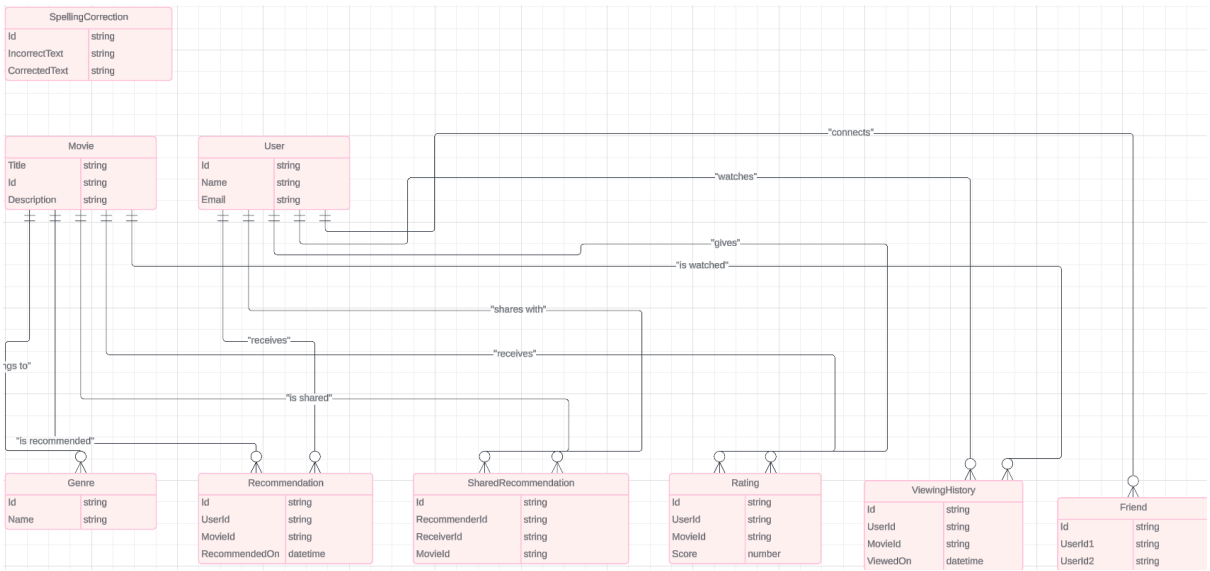

Figure 1:System Boundary Diagram.

❖ User Views and Data Cross-Reference Table

- **User view:**

User View	Main Types of Data Used
User Profile	User Information (Name, email) Watch History Movie Preferences Rating
Movie Recommendations	Recommended Movies Rating Genres Watch History
Movie Browsing	Movie Titles Genres Ratings
Social Features	User Profile Recommended Movies Friends list
Admin Dashboard	Users Table Movies table Ratings Table Watch history Tables Recommendations Table
Search Functionality	Movie Titles Genres Ratings

➢ Cross-Reference Table for User Views and Data

User View	User Information	Watch History	Movie Preferences	Ratings	Recommended Movies	Genres	Friends List	Movie Titles
User Profile	✔	✔	✔	✔				
Movie Recommendations				✔	✔			
Movie Browsing				✔		✔		✔
Social Features					✔		✔	
Admin Dashboard	✔	✔		✔				
Search Functionality						✔		✔

Figure 2:Cross-Reference Table for User Views and Data.

Mark sign indicates that the user view utilizes or interacts with that type of data.

- **User Profile:**

Users can manage their information, see their watch history, preferences, and ratings.

- **Movie Recommendations:**

This view primarily relies on user ratings to generate personalized recommendations.

- **Movie Browsing:**

Users can filter and browse movies by genre or search by title, and they can view ratings for these movies.

- **Social Features:**

This view allows users to share recommended movies with friends, enhancing social interaction.

- **Admin Dashboard:**

Administrators can access and manage user information, watch histories, and ratings.

- **Search Functionality:**

Users can search for movies by title or genre, enhancing their browsing experience.

❖ Requirement Collection and Analysis

➢ Fact-Finding Techniques

1. Interviews:

- **Purpose:**

Interviews were held with potential users, including both movie lovers and casual viewers. The goal was to understand what they like, the difficulties they face when trying to find movies, and the features they want in a recommendation system.

- **Process:**

Structured Interviews: We used a set of specific questions to guide the conversation. This helped us make sure we covered all important topics.
Unstructured Interviews: We asked open-ended questions, which let users share their thoughts in their own words. This helped us discover ideas that we might not have found with the structured questions.

- **Key Findings:**

Users felt frustrated by the huge number of movies available. They really wanted personalized recommendations that fit their own viewing history and likes. They also wanted features that let them browse movies by genre and rate films to help improve suggestions.

2. Questionnaires:

- **Purpose:**

To gather quantitative data on user preferences and experiences, a questionnaire was distributed to a larger audience.

- **Process:**

The questionnaire was made by using google forms and was shared to many people to know about their recommendations and experiences.

- **Key Findings:**

The questionnaire gathered insights from 20 participants about their movie-watching habits and preferences. Most respondents watch 0-1 movie per week, with a preference for late-night viewing. Key findings highlighted a strong interest in Action and Animation genres, along with a desire for improved recommendation services based on ratings and peer suggestions.

3. User Observation:

- **Purpose:**

Observing users while they searched for movies helped identify pain points and areas for improvement in the movie discovery process.

- **Process:**

Selected users were invited to use existing streaming platforms to find movies. Observers noted their behaviors, comments, and frustrations during the search process.

- **Key Findings:**

Users often spent a considerable amount of time scrolling through lists without finding suitable options.

Many users relied heavily on external reviews or friends' recommendations, indicating a gap that the new system could fill.

➢ Analysis of Requirements:

After gathering data through these techniques, the information was analyzed to identify common themes and critical requirements. The analysis focused on:

1. User Needs:

- Personalized recommendations.
- Easy navigation and browsing options.
- Social sharing capabilities.

2. System Features:

- User profiles to track viewing history and ratings.
- A robust recommendation engine leveraging collaborative filtering.
- Real-time updates of recommendations based on user activity.

3. Data Management:

- A comprehensive database structure to store user profiles, movie details, ratings, and watch history.
- Implementing auto-correction features for user input to enhance data accuracy.