📘 PROJECT 1 REPORT

🎬 Movie Recommendation System

1. Introduction

The Movie Recommendation System is an AI-based application that suggests movies to users based on their preferences. It uses collaborative filtering and cosine similarity to analyze user behavior and recommend similar movies.

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2. Objective

- To build an intelligent system that suggests movies.
- To analyze user ratings and find similarity between users.
- To provide personalized recommendations.

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3. Technologies Used

- Python
- Pandas
- Scikit-learn
- Streamlit (UI)
- Git & GitHub
- Render (Deployment)

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4. System Architecture

Components:

1. **Data Loader**
    - Loads ratings and movie datasets.
2. **Recommender Engine**

- Creates user–movie matrix.
- Computes similarity using cosine similarity.

3. **Streamlit UI**
    - Accepts user input.
    - Displays recommendations.

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5. Working Process

Step 1: Load Dataset

- ratings.csv → user ratings.
- movies.csv → movie titles.

Step 2: Create User-Movie Matrix

Pivot table:

Rows → Users

Columns → Movies

Values → Ratings

Step 3: Apply Cosine Similarity

Finds similar users based on rating patterns.

Step 4: Generate Recommendations

Movies liked by similar users are suggested.

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6. Features Implemented

✅ Collaborative filtering
✅ Cosine similarity algorithm
✅ Streamlit web interface
✅ Movie search feature
✅ Netflix-style UI
✅ Deployment on Render

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7. Challenges Faced

- File path errors (ratings.csv not found)
- Column naming issues
- GitHub push errors
- Deployment configuration

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8. Future Enhancements

- Add movie posters
- Improve ML model
- Add user login system
- Real-time database integration

🎤 **Viva Questions & Answers**

Q1: What is a recommendation system?

👉 A system that suggests items to users based on preferences or behavior.

Q2: What type of recommendation system did you use?

👉 Collaborative filtering.

Q3: What is cosine similarity?

👉 A mathematical measure that calculates similarity between two users based on rating patterns.

Q4: Why use Pandas?

👉 For data manipulation and creating pivot tables.

Q5: Why Streamlit?

👉 To build a simple and interactive web UI quickly.

Q6: What problem does this solve?

👉 Helps users discover movies they are likely to enjoy.