**Non-functional Requirements**

Non-functional requirements define the performance, security, usability, and reliability criteria that ensure the Movie Recommendations system operates efficiently and meets user expectations.

**1. Performance**

* The system should generate movie recommendations within **2 seconds** for an optimal user experience.
* The search and filtering functionalities should return results instantly or within **1 second**.
* The system should be capable of handling **high concurrent user traffic** without significant slowdowns.
* Load balancing should be implemented to distribute traffic and maintain performance.

**2. Security**

* User authentication should use **secure encryption protocols** (e.g., HTTPS, OAuth, JWT).
* Passwords should be **hashed and stored securely** using encryption standards (e.g., bcrypt, Argon2).
* The system should prevent **unauthorized access** to sensitive data through role-based access control (RBAC).
* Regular security audits and penetration testing should be conducted to identify vulnerabilities.
* Data privacy policies should be enforced to comply with **GDPR** and **other relevant regulations**.

**3. Usability**

* The user interface should be **intuitive and easy to navigate**, ensuring a smooth experience for users of all technical backgrounds.
* The platform should support **responsive design** for optimal performance on desktops, tablets, and mobile devices.
* Minimal user actions should be required to perform key tasks (e.g., filtering movies, rating content).
* A **help and support section** should be available to guide users on system features.

**4. Reliability**

* The system should maintain **99.9% uptime** to ensure continuous availability.
* A robust **backup and recovery plan** should be in place to prevent data loss.
* Error handling mechanisms should be implemented to **gracefully recover** from failures and minimize disruptions.
* Logging and monitoring tools should be in place to **track system health** and detect issues in real time.

**Conclusion**

By ensuring high performance, robust security, user-friendly design, and system reliability, the Movie Recommendations system will provide a seamless and secure experience for users while maintaining operational efficiency.