**Technical Memo 4: Recommending Lendings**

**Issue:** The capability for lending recommendations is shallow and only based on user-preferred or pattern-based aspects.

**Problem**

The Library Management System does not yet have a recommending system that would suggest lending options based on user behaviour, genre popularity, etc., and improve the user experience.

**Summary of Solution**

A recommendation module should be implemented that can base its suggestions on user data about lendings. The said module should be able to support several recommendation criteria that can be set and modified at runtime.

**Factors**

* Personalization: Providing personalized recommendations to users concerning their interests regarding book suggestions will more engage them, taking into consideration their past borrowing history.
* Scalability: In the event of increasing the volume of users, the recommendation system should scale with volume.
* Flexibility: It should be configurable by various algorithms, such as collaborative filtering and content-based filtering, since different applications have different requirements.

**Solution**

Design a recommendation engine based on pluggable algorithms that would let the administrators decide and tune recommendation criteria. This module might employ machine learning models to improve the quality of recommendations continuously.

**Motivation**

Flexible, personalized lending recommendations increase user satisfaction and engagement, thus making the library system more interactive.

**Alternatives**

* Make generic recommendations based on global popularity alone without any user-specific information.
* Generate a static list of recommendations, therefore limiting the level of personalization and ultimate engagement of users.

**Pending Issues**

* Identify the strategy to manage and secure user data privacy in the Recommendation System.
* Optimize algorithms for performance so that recommendations emerge in real time.