Scientific Repository Management System Outline

1. Introduction:

This project aims to develop a robust, user-friendly Scientific Repository Management System (SRMS). The SRMS is designed to enhance research productivity by streamlining the management of scientific materials, offering functionalities such as adding, deleting, revising, and viewing materials, along with an efficient search engine. By simplifying material management and offering personalized options such as creating collections, bookmarking materials, and adding notes, the SRMS enhances the organization and workflow efficiency of its users.

System Overview:

I. Functional Requirements

The Scientific Repository Management System (SRMS) is a standalone, GUI-based Python application designed for individual users. It provides a range of features to maximize usability and efficiency. Most functionalities are controlled through interactive buttons and forms, offering an intuitive and user-friendly experience.

Part 1: Home Page

The home page can have a 'Search' field and a 'Search' button for users to search for materials. Below this, there can be a 'Recent Publications' section that displays the latest additions to the repository. There should also be an 'Add Material' button on this page which, when clicked, opens a new window or form for adding materials.

Part 2: Material Management

- **Add Material:** Users can add scientific materials to the library by clicking the 'Add Material' button and filling in the required input fields (e.g., title, description, subject, tags, author, identifiers, language, etc.) in the form that appears. After the form is submitted, the new material is stored in the library.
  URLs /DOI links/ ISBN and other attributes will be preferred over file uploads for ease of management.
  Material Type Selection: When adding a new material, the user first selects the type of material they want to add (e.g., Database, Research Paper, Book, Article). The system presents an appropriate form based on this selection.
- **Delete Material:** Users can remove unwanted materials from their library by selecting the material and clicking the 'Delete' button. A confirmation prompt will appear to ensure accidental deletions are minimized. When a user deletes a material, instead of completely removing it from the system, you will move it to this “Recycle Bin”. Then you could provide options for the user to either permanently delete or restore materials from the garbage can.
- **Revise Material:** Users can update and edit information on the materials in their library by selecting the material and clicking the 'Edit' button. The same form used for adding materials will appear but pre-filled with the current information of the material. Users can then make the necessary changes and update the material.
- **View Material:** Users can view detailed information on materials stored in their library by selecting the material and clicking the 'View Details' button. This will open a new window or pane that displays the complete information of the selected material, including the ability to access the history or previous versions of revised materials.

Part 3: Search

- **Simple Search:** This function will be provided on the home page, where users can select the search method (author, title, or keyword) and retrieve relevant results.
- **Advanced Search:** An advanced search option will be developed in a separate GUI, enabling users to sort materials based on categories and year, and apply multiple search criteria.

- **Sorting function:** This feature will allow users to sort search results based on various attributes such as date and relevance.
- **No Records Found Handling:** Should a search query yield no results, SRMS will display a message indicating no records were found and provide suggestions for refining the search.
- **Summary Display:** Enhance the search results page to include brief summaries or key information about the retrieved materials. This summary can provide users with a quick overview of the materials and help them decide which ones to explore further.

Part 4: Personalization and Organization

- **Personalized collections/folders:** Users can create and manage collections or folders to organize their scientific materials by clicking the 'New Collection' button, providing a name for the collection, and then adding materials to it.
- **Bookmarking or favorites:** Users can mark specific materials as favorites or bookmark them for quick access by clicking the 'Bookmark' or 'Favorite' button next to each material.
- **Note-taking capabilities:** Users can add notes or annotations to individual materials by selecting the material and clicking the 'Add Note' button. A new window will open where users can write and save notes for future reference.

II. Data Input and Validation

Data will be primarily inputted through GUI forms. Each form will have fields for the different attributes of a scientific material such as title, author, keywords, and more.

Validation rules will be implemented to ensure that:

- All fields are completed.
- DOI, ISBN, and other attributes are correctly formatted.
- Uploaded files(if any) are of acceptable type and size.
- Publication dates adhere to the DD-MM-YYYY format.