Purpose

The purpose of the Laboratory Equipment Borrowing System is to facilitate the efficient management and utilization of laboratory resources within the educational environment. By providing a centralized platform accessible to laboratory technicians, professors, and students, the system aims to streamline the borrowing and returning process of laboratory equipment for academic experiments and projects.

Intended Audience or User

- **Laboratory Technician:** They oversee the Laboratory Equipment Borrowing System, making decisions regarding borrowing and return requests. They have the authority to manage the equipment list and monitor borrowing and returning transactions.
- **Professors:** Professors can browse the available equipment catalog to identify resources needed for academic experiments, projects, or teaching purposes. They also have the authority to borrow and return equipment within the system.
- **Students:** Similarly, students have the ability to browse the available equipment catalog. This enables them to select the necessary resources for their experiments, projects, or educational activities. Additionally, they are authorized to borrow and return equipment through the system.

User Needs

- **Laboratory Technician:** They can manage the catalog by adding new equipment or removing existing equipment as needed. They also have access to the borrowing and return history, overseeing all transactions involving borrowed and returned equipment.
- **Students & Professors:** They can browse the catalog of available laboratory equipment and utilize the system to borrow and return equipment for experiments or projects.

System Requirements

- Database
- End User
- Internet
- Network
- PC

Functional Requirements

- **Borrowing History Tracking (Laboratory Technician):** The laboratory technician can monitor the borrowing history, including details such as the borrower, the list of borrowed equipment and quantities, borrowing and return timestamps, and a status indicating whether the request is pending for approval or rejected. Also, if the equipment is currently borrowed, has been returned, or has incurred a penalty for late returns.
- **Catalog Management (Laboratory Technician):** The laboratory technician can manage the equipment catalog by adding new equipment or removing existing equipment.
- **Equipment Borrowing:** Users can borrow specific laboratory equipment by selecting the items they need and specifying the desired quantities. The selected equipment will be displayed on a borrowing list, where users can also remove any items they no longer wish to borrow. The total quantity of equipment to be borrowed will be shown. When users click the "Borrow" button, their request will notify the laboratory technician for confirmation. The system will automatically record the current date and time as the borrowing timestamp. Additionally, there is a predefined return time set at 5 pm to ensure adherence to school hours.

- **Equipment Catalog Display:** The system displays a catalog of available equipment, providing details such as the name of the equipment, an image for better visualization, the purpose of the equipment, and the available stock.
- **Equipment Return Functionality:** Users have the capability to return the equipment they borrowed and can see how much time they have remaining before the set return time.
- **User Authentication:** Users can securely create accounts and log in, with access to the system restricted to registered users only. Additionally, Laboratory Technicians already have system-generated accounts they can use for logging in.
- **Notification:** The laboratory technician will be notified of borrow or return requests for laboratory equipment from users, and users can receive notifications about the status of their requests, whether they are accepted or rejected.

Non-Functional Requirements

- **Security:** The system must implement security measures to safeguard sensitive information such as user credentials, borrowing history, and equipment inventory from unauthorized access, ensuring data integrity and confidentiality.
- **Usability:** The user interface should be intuitive and user-friendly, allowing users to navigate the system easily, borrow equipment, and perform administrative tasks without extensive training or technical knowledge, enhancing the overall user experience.
- **Efficiency:** The system should perform tasks promptly and efficiently, minimizing response times for actions such as equipment borrowing, catalog updates, and inventory management. Optimized performance enhances productivity and user satisfaction.
- **User Interface:** The user interface should be visually appealing, responsive, and consistent across devices, providing a cohesive experience for users interacting with the system. Clear navigation and intuitive design elements contribute to an effective user interface.