**Project Objectives**: Develop a collaborative web application for local communities to share resources efficiently, reducing redundant purchases and fostering community interactions.

**Key Features**:

1. **User Registration and Authentication**:
   1. Secure user login and profile management.
2. **Resource Management**:
   1. Users can list resources and update or delete their listings.
3. **Reservation System**:
   1. Users can reserve listed resources and manage reservations.
4. **Review and Rating System**:
   1. Users can leave reviews and ratings on resources and other users.
5. **Messaging Interface**:
   1. Allows users to communicate within the platform.
6. **Responsive Design**:
   1. The application should work on various devices, including desktops and mobile devices.

### **User Stories**

1. **User Registration and Profile Management**
   1. *As a user, I want to register with my personal details so that I can create an account and access the platform.*
   2. *As a user, I want to log in securely so that I can access my account and manage my resources.*
   3. *As a user, I want to edit my profile details and upload a profile image so that I can keep my profile up to date.*
2. **Resource Listing**
   1. *As a user, I want to add a resource to the platform so that others in the community can reserve it.*
   2. *As a user, I want to upload images when listing a resource so that potential users can see what it looks like.*
   3. *As a user, I want to edit or delete my listed resources so that I can manage my offerings effectively.*
3. **Reservation System**
   1. *As a user, I want to browse available resources so that I can find items to reserve.*
   2. *As a user, I want to book a reservation for a resource so that I can use it at a specific time.*
   3. *As a user, I want to view my reservations in my dashboard so that I can keep track of my booked items.*
   4. *As a user, I want the owner of a resource to be able to approve or decline my reservation request so that I know if I can use the resource.*
4. **Review and Rating System**
   1. *As a user, I want to leave a review and rating for a resource I have used so that others know about my experience.*
   2. *As a user, I want to read reviews and ratings from other users so that I can decide if a resource is reliable.*
   3. *As a user, I want to leave a review and rating for other users who have borrowed my resources so that their reputation is visible on the platform.*
5. **Messaging System**
   1. *As a user, I want to send messages to other users so that I can coordinate the details of a reservation or ask questions.*
   2. *As a user, I want to receive notifications when I get a message so that I can respond promptly.*
   3. *As a user, I want to view a forum-like page with all messages so that I can see ongoing discussions in one place.*
6. **Responsive and User-Friendly Design**
   1. *As a user, I want the platform to be accessible on my mobile phone so that I can manage my resources and reservations on the go.*
   2. *As a user, I want the navigation to adjust and show a hamburger menu on smaller screens so that I can easily access different parts of the site.*
7. **Security and Data Validation**
   1. *As a user, I want my data to be protected against unauthorized access so that my personal information stays safe.*
   2. *As a user, I want to be able to enter special characters without breaking the system so that I can use all types of input without issues.*
8. **Notifications and Availability Management**
   1. *As a user, I want to be notified if my reservation is approved or declined so that I can plan accordingly.*
   2. *As a user, I want to know if a resource is available or already reserved so that I can choose an appropriate time to book it.*
   3. *As a user, I want the application to alert me of any conflicts when booking a resource so that I avoid double-booking.*

**Technical Specifications**:

* **Backend**: Python (Flask)
* **Frontend**: HTML, CSS, JavaScript
* **Database**: SQLite
* **Security Measures**:
  + Protection against SQL injection, XSS, and CSRF.
  + Input validation on both client and server sides.

**Timeline and Milestones**:

* **Day 1-3**: Project setup and documentation (PRD, wireframes).
* **Day 4-6**: Database design and user authentication.
* **Day 7-9**: Implement CRUD operations for resource management.
* **Day 10-12**: Develop user dashboard and reservation system.
* **Day 13-14**: Integrate review and rating features.
* **Day 15-16**: Add messaging functionality and ensure form validation.
* **Day 17**: Documentation (user manual, ER diagrams, requirements).
* **Day 18**: Final review and testing.

**Acceptance Criteria**:

* Users can register, log in, and manage their profiles.
* Resources can be listed, reserved, and reviewed.
* Communication between users via messages is functional.
* The application is responsive and user-friendly.
* Security measures are validated and robust.