

1. Planning & Requirement Analysis

- **Duration:** 1-2 weeks
- Define objectives, gather requirements from stakeholders, and create the initial project plan.

2. System Design

- **Duration:** 2-3 weeks
- Create a detailed system architecture, including database design, user interface design, and module design.

3. Database Development

- **Duration:** 2 weeks
- Set up the database, define tables, relationships, and create data flow diagrams.

4. Frontend Development

- **Duration:** 4 weeks
- Develop the user interface, including screens for catalog search, user registration, and check-in/check-out features.

5. Backend Development

- **Duration:** 5 weeks
- Implement core functionalities, including user authentication, inventory management, and search algorithms.

6. Integration of Frontend & Backend

- **Duration:** 2 weeks
- Link frontend and backend components, ensuring smooth data exchange and user experience.

7. Testing

- **Duration:** 3 weeks
- Conduct unit, integration, system, and user acceptance testing, covering test cases for all modules.

8. Deployment

- **Duration:** 1 week
- Set up servers, deploy the application, and configure settings for live use.

9. Training & Documentation

- **Duration:** 1-2 weeks
- Provide end-user training and complete project documentation, including a user manual.

10. Maintenance & Support

- **Duration:** Ongoing
- Monitor the system, address issues, and provide updates as necessary.