

PROJECT ABSTRACT

Community Tool Lending Library Portal

A tool-lending library portal: reservable catalogue with live availability calendar, conflict-checked reservations, rental lifecycle tracking, automatic late-fee computation and volunteer admin. Delivered built-to-order with source, schema, seeded inventory, report, PPT and viva kit.

Title

Community Tool Lending Library Portal — a reservation system for neighbourhood tool libraries where date-range conflicts are rejected transactionally and late fees compute themselves.

Introduction / Background

Every flat owns a drill used twice a year, a ladder used once, and a toolbox gathering dust — while the neighbour buys the same drill new for one afternoon's work. Tool libraries fix this by lending: members borrow instead of buying. But volunteer-run libraries drown in registers and WhatsApp: who has the circular saw, when is it due back, who pays for the broken chuck? This project gives the library a proper portal — a catalogue with deposit and late-fee terms, a live availability calendar per item, conflict-checked reservations, and rental tracking from pickup to return with condition notes and automatic late-fee computation.

Problem Statement

Manual lending records cause double-bookings, lost track of due dates, and disputed damage claims. The project makes the reservation the atomic unit: one tool, one borrower, one date range — enforced by the database, with the full lifecycle timestamped.

Objectives

- Catalogue tools with category, specifications, deposit, daily late fee and condition.
- Render a live per-item availability calendar from reservation data.
- Reject overlapping reservations for the same tool at the data layer.
- Track rentals through reserved → picked-up → due → returned → inspected states.
- Compute late fees automatically (overdue days × daily rate) on a fine ledger.
- Record photo-annotated condition reports at pickup and return.
- Give volunteers an admin view: inventory, members, overdue alerts.

Proposed Methodology

Reservations are whole-day date ranges per tool. The reservation write runs in a transaction that checks for range overlaps before inserting — the standard interval-conflict guard — and on conflict returns the nearest free dates. Rentals are a five-state machine with guarded transitions; deposit release requires a passed return inspection, and overdue detection is a scheduled query comparing due dates against today.

System Architecture / Working

Member flow: catalogue → tool detail with calendar → pick dates → reserve → pickup with deposit and condition note → tracker countdown → return with inspection. Volunteer flow:

inventory CRUD, membership management, overdue alerts with accruing fines. The demo seeds 40+ tools across 8 categories.

Hardware / Software Requirements

Any modern desktop or mobile browser (Chrome, Edge, Firefox, Safari). Server side: PHP 8.x with MySQL 5.7+ on shared or VPS hosting; the demo runs fully client-side from a single HTML file for screenshots and UI review.

Expected Outcomes

- A working lending portal with calendar reservations and lifecycle tracking.
- Conflict-checked reservation module and automatic fine computation.
- Project report with reservation logic, fine computation, ER diagram and test cases.
- PPT presentation and viva Q&A; (conflict prevention, state machine, fine ledger).

Applications

Housing-society and neighbourhood tool libraries; the reservation engine generalises to equipment rental — cameras, projectors, event gear.

Future Scope

Multi-branch inventory transfer, maintenance scheduling, hourly lending granularity, and online deposit/fine payments.