

## **Requirements Specification**

This document outlines the **functional** and **non-functional requirements** for the UQPLAY Toy Library Information System. Each requirement is written as a **User Story** with **Acceptance Criteria** to ensure clarity, usability, and testability.

### **Functional Requirements**

#### **Real-Time Availability & Social Proof**

##### **User Story**

“As a parent I want to see real-time updates on toy availability, and past borrowing activity of other parents, so that I can make a good and quick decision.”

##### **Acceptance Criteria**

- The system shows clear availability states (Available/Limited/Unavailable) and current quantity per branch.
- Availability auto-refreshes (or includes a refresh button) with a visible “Last updated” time.
- The page displays anonymised social proof (e.g., “Borrowed 124 times in the last 90 days”) without revealing identities.
- Stock is reduced immediately after a successful booking to prevent over-allocation.
- If a toy is unavailable, the system shows the expected return date or a waitlist option.
- Parents can view availability at nearby branches for the same toy.

#### **Feedback & Ratings for Informed Choice**

##### **User Story**

“As a parent I want to see other parents’ feedback and ratings on toys so that I can choose the best toys for my children.”

##### **Acceptance Criteria**

- Toy pages display an average rating (1–5) and total number of reviews.
- Recent comments are shown with date and rating, while reviewer identities remain anonymous.
- Reviews are sortable and filterable (e.g., most recent, highest rated, with photos).
- Inappropriate content can be reported and hidden pending moderation.
- Feedback mentioning safety issues or damage automatically flags the toy for staff review and links to a maintenance ticket.
- Rating breakdowns and common themes (e.g., “great for ages 3–5”) are shown when sufficient data exists.

## **New Stock & Restock Notifications**

### **User Story**

“As a parent I want to get notified whenever there is new stock or restock of a toy so that I don’t miss out.”

### **Acceptance Criteria**

- Parents can subscribe to alerts for specific toys and/or categories.
- Notification preferences include Email and/or SMS, with the ability to change or unsubscribe anytime.
- Alerts are only sent when stock is actually available to reserve.
- Alerts include toy name, branch, quantity, and a “Reserve now” link.
- SMS notifications respect quiet hours and queue messages accordingly.
- Each alert is logged with timestamp and delivery status on the parent’s account.

## **Filter by Child’s Age & Interests**

### **User Story**

“As a parent I want to filter toys by my child’s age and interests so that I can quickly find the most suitable options.”

### **Acceptance Criteria**

- Filters are available for age group and interests/genre, and can be combined.
- Results update immediately when filters are applied.
- A “Clear all filters” option resets to the full list.
- When no results match, guidance with suggestions is provided.
- If a child profile exists, the system defaults to the saved age range (editable).
- Each result card shows current availability and branch.

## **Reserve Online with Deposit**

### **User Story**

“As a parent I want to reserve a toy online and pay any required deposit so that my booking is confirmed instantly.”

### **Acceptance Criteria**

- Parents must select a loan period within policy limits before confirmation.
- Stock availability is verified for the chosen dates, blocking booking if unavailable.
- Deposits for high-value items are displayed and processed before confirmation.
- Member borrowing limits are enforced (e.g., maximum active loans).
- Available quantity is reduced immediately on confirmation, and a booking reference is issued.
- Confirmation includes pickup window, deposit status, and cancellation rules.

## **Rate & Comment on Return**

### **User Story**

“As a parent I want to rate a toy and leave a short comment when I return it so that other families and staff know its condition and usefulness.”

### **Acceptance Criteria**

- Parents are prompted to rate (1–5) and optionally comment after toy check-in.
- Each review is linked to a completed loan to ensure authenticity (one review per loan).
- Parents may edit or withdraw comments within a short grace period.
- Reported content is moderated or hidden according to policy.
- Comments mentioning safety or damage are flagged for staff follow-up.
- Toy ratings are updated automatically and review timestamps displayed.

## **Report Damaged or Missing Parts**

### **User Story**

“As a parent or staff member I want to report a toy as damaged or missing parts so that it can be flagged for inspection.”

### **Acceptance Criteria**

- Reports include toy ID, issue description, optional photos, and when noticed.
- A maintenance ticket with reference number is generated upon submission.
- Toys with safety risks are immediately marked Unavailable.
- Reporters are notified with ticket details and current status.
- Tickets appear in a maintenance queue with priority and due date.
- An audit trail with timestamps records all actions on the ticket.

## **Manage Customer Records**

### **User Story**

“As a librarian I want to manage customer records efficiently so that I don’t have to add details manually.”

### **Acceptance Criteria**

- Librarians can search members by name, email, or ID, with auto-filled forms.
- Bulk import/update of records is supported with validation and error reporting.
- Potential duplicates are detected, with safe merge options requiring approval.
- Required fields are validated with clear error messages.
- Sensitive fields are editable only by authorised staff.
- All changes are logged with staff ID, timestamp, and reason.

## **Search Toys by Product ID**

### **User Story**

“As a librarian I want to search toys by product ID so that I can find a specific toy quickly.”

### **Acceptance Criteria**

- Exact lookup by product ID and barcode scanning is supported.
- Toy detail page is accessible within two clicks from search.
- Toy status (Available/On loan/Inspecting) and branch are displayed.
- Clear messages and suggestions are shown if an ID is not found.
- Cross-branch stock for the product ID can be viewed.
- Results return within performance targets ( $\leq 2$  seconds).

## **Prevent Double-Booking with Real-Time Inventory**

### **User Story**

“As a librarian I want the system to track real-time inventory so that I can prevent double booking.”

### **Acceptance Criteria**

- Available stock is decremented instantly on confirmation.
- Only one booking succeeds when multiple users attempt the last unit.
- Temporary checkout holds with auto-timeouts prevent race conditions.
- Inventory synchronises across web and desk channels in real time.
- Live view shows available, on-loan, and inspecting counts by branch.
- All adjustments are recorded with timestamps and reason codes.

## **Track Overdues & Send Alerts**

### **User Story**

“As a librarian I want the system to track overdue toys and send reminders so that members return them on time.”

### **Acceptance Criteria**

- Loans are marked Overdue immediately after the due date/time.
- Automated reminders are sent on a defined schedule (e.g., day 1, 2, 3).
- Overdue fees are calculated per policy and posted to accounts.
- Escalation applies after a threshold (e.g., suspending bookings).
- Dashboard filters overdues by days late, value, and member.
- Status is cleared and fees recalculated when items are returned.

## **See Booking & Deposit at Pickup**

### **User Story**

“As a librarian I want to see booking and deposit details at pickup so that I can hand over toys without delay.”

### **Acceptance Criteria**

- Lookup supported by booking code, member name, or toy ID.
- Deposit amount and status are displayed on booking screen.
- Member status and loan limits are verified before checkout.
- Checkout is blocked if deposit is unpaid/unauthorised.
- One-click checkout records staff ID and timestamp.
- Receipt (digital or printed) includes due date, rules, and deposit summary.

## **View Member Profile, History & Feedback**

### **User Story**

“As a customer liaison I want to view a member’s profile, borrowing history, and feedback so that I can answer queries and make recommendations.”

### **Acceptance Criteria**

- A single profile view shows contact details, active bookings, and balances.
- Borrowing history lists dates, condition notes, and fees paid.
- Feedback and ratings submitted by the member are displayed.
- Recommendations are suggested based on age, interests, and history.
- Access is restricted to authorised staff, with profile views logged.
- Profiles can be summarised in printable or emailable format with consent.

## **Maintenance Reports & Parts Needed**

### **User Story**

“As a purchasing manager I want maintenance reports to show damaged toys and parts needed so I can order replacements quickly.”

### **Acceptance Criteria**

- Maintenance tickets include a parts list with quantities.
- Tickets are filterable by urgency and branch.
- Estimated part costs are captured and require approval.
- Vendor, order number, and date are recorded when approved.
- Delivery status (ordered/shipped/received) is tracked per ticket.
- Notifications update when parts are received and ticket status changes.

## **Immediately Mark Damaged Toys Unavailable**

### **User Story**

“As a maintenance manager I want toys reported as damaged to be marked unavailable immediately so no one borrows them until fixed.”

### **Acceptance Criteria**

- Toys are set to Unavailable immediately on safety-risk reports.
  - Unavailable toys are removed from search and booking.
  - Inspections are scheduled within defined timeframes and ETAs shown.
  - Members with reservations are notified and offered options.
  - Toys return to Available only after repair and quality check with full audit trail.
  - Unrepairable toys are marked Retired and purchased for replacement.
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## **Non-Functional Requirements**

### **System Availability & Reliability**

#### **User Story**

“As a system administrator I want the system to be highly available so that users can reliably access services anytime.”

#### **Acceptance Criteria**

- Uptime is at least 99.9% during operational hours.
- System recovers within 5 minutes after failures.
- Downtime does not exceed 1% during peak usage.
- Clear messaging is shown during scheduled maintenance.
- Backup systems prevent full service outages.
- Administrators receive immediate alerts on failures.

### **Usability & User Experience**

#### **User Story**

“As a member I want the application to be easy to navigate so I can borrow toys without technical difficulties.”

#### **Acceptance Criteria**

- Interface is intuitive with clear menus and icons.
- Help and FAQ sections are accessible from all pages.
- Search and filter respond within 2 seconds.
- Mobile responsiveness ensures full usability on smartphones and tablets.
- Reservations are possible in  $\leq 3$  clicks from search.
- Styling is consistent across the application.

## **Security & Data Protection**

### **User Story**

“As a system user I want secure authentication and privacy so that my personal information is protected.”

### **Acceptance Criteria**

- Passwords are stored with industry-standard hashing.
- Data transmission uses secure protocols.
- Sessions expire after 15 minutes of inactivity.
- Role-based access controls protect sensitive data.
- Personal information remains encrypted at all times.
- Audit logs track all access or changes to personal data.

## **Performance & Scalability**

### **User Story**

“As a system administrator I want the system to scale smoothly so UQPLAY can expand its reach without performance issues.”

### **Acceptance Criteria**

- Response time remains under 3 seconds during peak load.
- System supports capacity increases as members grow.
- Database queries are optimised for large datasets.
- Handles up to 500 users concurrently without crashing.
- Caching ensures faster loading of popular pages.
- Performance monitoring notifies admins of issues.

## **Maintenance & Operations Support**

### **User Story**

“As maintenance staff I want timely notifications about toys needing cleaning or repair so I can maintain quality and safety.”

### **Acceptance Criteria**

- Notifications are sent immediately when toys are returned for maintenance.
- Daily summaries list pending cleaning and repair tasks.
- Urgent repairs can be prioritised for safety.
- Full history of maintenance actions is available per toy.
- Alerts trigger when maintenance deadlines approach.
- Logs are maintained for all maintenance communications.