项目文档

# Functional Requirement

2.1 User Authentication and Authorization  
Input: Username, password, role  
Output: Authenticated user session or error message  
Description: The system must authenticate users using a secure mechanism (e.g., OAuth, LDAP). Users are assigned roles (Admin, Department Head, General User) that determine their access level and permissions.  
2.2 Asset Registration  
Input: Asset name, type, category, location, owner, cost, serial number  
Output: Confirmation of successful registration or error message  
Description: Users can register new assets into the system. Required fields include mandatory details such as name, type, and location.  
2.3 Asset Allocation  
Input: Selected asset, assignee, start/end date  
Output: Updated asset status and confirmation message  
Description: Assets can be allocated to individuals or departments. Allocation records are tracked with timestamps and responsible parties.  
2.4 Asset Tracking and Status Updates  
Input: Asset ID, current status (e.g., in use, maintenance, decommissioned)  
Output: Updated asset record  
Description: Users can update the status of an asset. Changes are logged with a timestamp and modifier.  
2.5 Approval Workflow  
Input: Request type (allocation, return, modification), approver list  
Output: Workflow status (pending, approved, rejected)  
Description: A configurable multi-step approval process is required for certain actions (e.g., asset transfer or disposal).  
2.6 Reporting and Analytics  
Input: Report type (asset usage, ownership, depreciation), filters (date range, department, etc.)  
Output: Generated report in PDF/Excel format  
Description: The system allows users to generate reports on asset usage, availability, and other metrics.  
2.7 Data Import and Export  
Input: File (CSV, Excel), target table or entity  
Output: Confirmation of import/export success or error log  
Description: Users can import bulk asset data from files and export selected datasets for analysis or archival.  
2.8 Audit Trail  
Input: N/A  
Output: Log entries showing all changes to asset records  
Description: All modifications to asset data must be recorded with timestamps, user IDs, and action details.  
2.8 Asset Maintenance and Repair Tracking  
Input: Asset ID, type of maintenance (preventive / corrective), description, technician name  
Output: Updated asset status and maintenance log  
Description: The system must allow users to record and track maintenance and repair activities for assets. Each maintenance event is associated with an asset and logged with timestamps and responsible personnel.  
2.9 Asset Depreciation Calculation  
Input: Asset cost, purchase date, depreciation method (straight-line, declining balance)  
Output: Current book value and depreciation schedule  
Description: The system must calculate the current book value of each asset based on its depreciation policy. Users can view a depreciation timeline and export it as a report.  
2.10 Asset Reservation  
Input: Asset ID, requested user, start/end time, purpose  
Output: Confirmation of reservation or rejection message  
Description: Users can request temporary access to an asset by reserving it for a specific period. The system checks availability and allows approval workflows if needed.  
2.11 Inventory Reconciliation  
Input: Manual inventory list (CSV or Excel file), selected location/department  
Output: Discrepancy report and updated asset records  
Description: The system supports periodic physical inventory checks. Users can upload a manually counted list and compare it against the system’s records to identify discrepancies.  
2.12 Mobile Access Support  
Input: Mobile device, login credentials  
Output: Responsive UI optimized for mobile devices  
Description: The system must be accessible via web browsers on smartphones and tablets. Key features like asset tracking, reporting, and basic approvals should work seamlessly in mobile mode.  
2.13 Multi-Language Support  
Input: User-selected language (e.g., English, Chinese, Spanish)  
Output: Interface translated into the selected language  
Description: The system must support multiple languages to accommodate international users. Language settings are stored per user profile.  
2.14 Customizable Dashboards  
Input: User preferences, widget selections  
Output: Personalized dashboard layout  
Description: Users can customize their dashboards to display widgets such as asset summaries, pending approvals, recent activity logs, and reports.  
2.15 Audit Trail Search and Filter  
Input: Search criteria (date range, user, action type)  
Output: List of matching audit log entries  
Description: The system provides advanced search and filtering capabilities for the audit trail. This helps administrators trace changes and ensure compliance.  
2.16 Asset Tagging and Scanning (Optional)  
Input: QR code / barcode from asset tag  
Output: Asset details displayed instantly  
Description: Assets can be tagged with unique QR codes or barcodes. Users can scan these tags using a mobile app or scanner to quickly access asset information and update statuses.  
2.17 Notification Preferences  
Input: User-defined notification settings (email, in-app, SMS)  
Output: Notifications sent according to user preferences  
Description: Users can configure how they receive notifications (e.g., email alerts for workflow updates, in-app messages for new tasks).

# External Description

3.1 Database Interfaces  
Database Type: Relational (MySQL, PostgreSQL)  
Purpose: Store and retrieve asset, user, and transaction data.  
Requirements: Support ACID transactions, indexing, and backup/recovery mechanisms.  
3.2 Email Integration  
Interface: SMTP or REST-based email service  
Purpose: Send notifications for approvals, status updates, and system alerts.  
Requirements: Secure authentication, template-based messages, and logging of sent emails.  
3.3 Authentication Services  
Interfaces: LDAP, OAuth 2.0, SAML  
Purpose: Provide single sign-on (SSO) and user authentication.  
Requirements: Role mapping, token-based sessions, and session timeout controls.  
3.4 API Endpoints  
RESTful APIs:  
/api/assets  
/api/users  
/api/workflow  
/api/reports  
Purpose: Allow third-party systems to integrate with the asset management system.  
Requirements: Rate limiting, input validation, and HTTPS encryption.