# Functional Requirement

# 1. Functional Requirements  
  
## 1.1 Asset Lifecycle Management Function   
Function ID: FR-01   
Description: Manage the full lifecycle of an asset, including stages such as acquisition, deployment, maintenance, and decommissioning. The system must support lifecycle updates with appropriate validation, approval workflow, and audit trail.   
Input: AssetID, Stage, Notes, UserID   
Output: Updated AssetLifeCycle record in the Database, AuditTrail record, EmailNotification to stakeholders, ApprovalWorkflow status update  
  
## 1.2 Asset Usage Tracking Function   
Function ID: FR-02   
Description: Track and record asset usage by users, including usage date, duration, and purpose. The system must validate user permissions and initiate approval workflows if required.   
Input: AssetID, UserID, UsageDate, UsageDuration, UsagePurpose   
Output: AssetUsage record in the Database, AuditTrail record, EmailNotification to stakeholders, ApprovalWorkflow status update  
  
## 1.3 Asset Report Generation Function   
Function ID: FR-03   
Description: Generate reports based on asset data, including lifecycle, usage, and summary reports. The system must allow report customization through filters and options.   
Input: ReportType, Filters (e.g., time range, asset category), UserID   
Output: ReportAnalysis record in the Database, Report file (CSV, Excel, PDF), EmailNotification with report, AuditTrail record  
  
## 1.4 Asset Data Analysis Function   
Function ID: FR-04   
Description: Analyze asset data to produce insights such as performance, usage trends, and lifecycle efficiency. The system must support viewing and downloading of analysis results.   
Input: AssetID, AnalysisType, UserID   
Output: ReportAnalysis record in the Database, AnalysisResult (summary or detailed report), EmailNotification with results, AuditTrail record  
  
## 1.5 Permission Assignment Function   
Function ID: FR-05   
Description: Assign permissions to General Users based on predefined roles and permission types. The system must ensure the Administrator has the correct authority to assign permissions.   
Input: UserID, PermissionType, AllocationDate, ExpiryDate   
Output: PermissionAllocation record in the Database, AuditTrail record, Authentication system update, EmailNotification to user  
  
## 1.6 Permission Modification Function   
Function ID: FR-06   
Description: Modify existing permission assignments for General Users. The system must validate the modification request, update the Database, and synchronize with the Authentication System.   
Input: UserID, PermissionID, NewPermissionType, NewExpiryDate   
Output: Updated PermissionAllocation record in the Database, AuditTrail record, Authentication system update, EmailNotification to user  
  
## 1.7 General User Registration Function   
Function ID: FR-07   
Description: Allow Administrators to register new General Users by providing user details. The system must validate data integrity, check for duplicates, and send a confirmation email.   
Input: Name, Email, Role, JoinDate   
Output: GeneralUser record in the Database, Authentication system update, EmailNotification to user, AuditTrail record  
  
## 1.8 General User Deletion Function   
Function ID: FR-08   
Description: Allow Administrators to delete General User accounts. The system must confirm the deletion, update the Authentication System, and notify stakeholders via email.   
Input: UserID   
Output: Deleted GeneralUser record in the Database, Authentication system update, EmailNotification to Administrator, AuditTrail record  
  
## 1.9 General User Information Update Function   
Function ID: FR-09   
Description: Allow General Users or Administrators to update user information such as name, email, or role. The system must validate the update request and initiate approval workflows if necessary.   
Input: UserID, NewName, NewEmail, NewRole   
Output: Updated GeneralUser record in the Database, AuditTrail record, EmailNotification to user/Administrator, ApprovalWorkflow status update  
  
## 1.10 Administrator Role Management Function   
Function ID: FR-10   
Description: Allow Administrators to assign or modify administrator roles for users. The system must ensure that the Administrator has the necessary authority to perform the action.   
Input: AdminID, UserID, NewRole   
Output: Updated Admin record in the Database, AuditTrail record, Authentication system update, EmailNotification to Administrator, ApprovalWorkflow status update  
  
## 1.11 Approval Workflow Processing Function   
Function ID: FR-11   
Description: Process approval workflows initiated by users for asset or permission-related actions. The system must notify approvers, record the approval status, and update the related asset or permission records.   
Input: RequestID, ApprovalStatus (Approved/Rejected), ApproverID   
Output: Updated ApprovalWorkflow record in the Database, AuditTrail record, EmailNotification to requester/approvers, Updated Asset/PermissionAllocation record  
  
## 1.12 Approval Request Submission Function   
Function ID: FR-12   
Description: Allow users to submit approval requests for actions that require authorization. The system must validate the request and notify the required approvers.   
Input: UserID, AssetID or PermissionID, RequestDate, ApprovalReason   
Output: ApprovalRequest record in the Database, AuditTrail record, EmailNotification to approvers, ApprovalWorkflow status update  
  
## 1.13 Approval History Viewing Function   
Function ID: FR-13   
Description: Allow users to view the history of approval requests, including timestamps, approvers, and decisions. The system must ensure the user has permission to access this information.   
Input: RequestID, Filters (e.g., date range, approver)   
Output: ApprovalHistory records retrieved from the Database, AuditTrail record, Displayed ApprovalHistory on the system interface  
  
## 1.14 User Authentication Function   
Function ID: FR-14   
Description: Authenticate General Users or Administrators using login credentials. The system must validate the credentials, check user roles, and log the authentication event.   
Input: Username, Password   
Output: Authentication status (Success/Failure), AuthRecord in the Database, AuditTrail record, Session creation, Role-based redirection  
  
## 1.15 Email Notification Integration Function   
Function ID: FR-15   
Description: Configure and manage email notification settings for system events such as asset updates, approvals, and user actions. The system must support custom templates and recipient lists.   
Input: EventTriggers, RecipientList, EmailTemplate   
Output: EmailNotification record in the Database, Email sent via EmailSystem, AuditTrail record, ApprovalWorkflow status update  
  
## 1.16 Asset Data Import Function   
Function ID: FR-16   
Description: Allow Administrators to import asset data in formats such as CSV or Excel. The system must validate data integrity, map fields, and initiate approval workflows if required.   
Input: File (CSV/Excel), Mapping configuration   
Output: DataImportExportRecord in the Database, Updated Asset records, AuditTrail record, EmailNotification to Administrator, ApprovalWorkflow status update  
  
## 1.17 Asset Data Export Function   
Function ID: FR-17   
Description: Allow users to export asset data in formats such as CSV, Excel, or PDF. The system must validate export permissions, apply filters, and notify users of the export status.   
Input: Filters (e.g., category, status), ExportFormat   
Output: Exported file (CSV/Excel/PDF), DataImportExportRecord in the Database, AuditTrail record, EmailNotification to user/Administrator  
  
## 1.18 Audit Trail Viewing Function   
Function ID: FR-18   
Description: Allow General Users or Administrators to view audit trail records for system activities. The system must filter and display records while logging the access attempt.   
Input: Filters (e.g., date range, actor, action), UserID   
Output: Retrieved AuditTrail records, AuditTrail record for access, Displayed AuditTrail on system interface  
  
## 1.19 Asset Category Management Function   
Function ID: FR-19   
Description: Allow Administrators to manage asset categories, including adding, modifying, or deleting categories. The system must validate input and initiate approval workflows if required.   
Input: CategoryID, CategoryName, Description   
Output: Updated AssetCategory record in the Database, AuditTrail record, EmailNotification to stakeholders, ApprovalWorkflow status update  
  
## 1.20 Asset Location Management Function   
Function ID: FR-20   
Description: Allow Administrators to manage asset locations, including building, room, and rack information. The system must validate location data and initiate approval workflows if required.   
Input: LocationID, Building, Room, Rack   
Output: Updated AssetLocation record in the Database, AuditTrail record, EmailNotification to stakeholders, ApprovalWorkflow status update  
  
## 1.21 Usage Record Management Function   
Function ID: FR-21   
Description: Allow General Users or Administrators to manage usage records, including adding, modifying, or deleting records. The system must validate data and initiate approval workflows if required.   
Input: UsageRecordID, AssetID, UserID, UsageDate, Duration, Purpose   
Output: Updated UsageRecord in the Database, AuditTrail record, EmailNotification to stakeholders, ApprovalWorkflow status update  
  
## 1.22 Permission Record Management Function   
Function ID: FR-22   
Description: Allow Administrators to manage permission records, including adding, modifying, or deleting records. The system must validate the permission changes and initiate approval workflows if required.   
Input: PermissionRecordID, UserID, PermissionID, AllocationDate, ExpiryDate   
Output: Updated PermissionRecord in the Database, AuditTrail record, EmailNotification to stakeholders, ApprovalWorkflow status update  
  
## 1.23 Authentication Record Management Function   
Function ID: FR-23   
Description: Allow Administrators to manage authentication records, including adding, modifying, or deleting records. The system must validate the changes and initiate approval workflows if required.   
Input: AuthRecordID, UserID, AuthID, Timestamp, Status   
Output: Updated AuthenticationRecord in the Database, AuditTrail record, EmailNotification to stakeholders, ApprovalWorkflow status update  
  
## 1.24 Email Notification Management Function   
Function ID: FR-24   
Description: Allow Administrators to manage email notification configurations, including event triggers, recipients, and templates. The system must validate configurations and synchronize with the Email System.   
Input: EmailNotificationID, EventTriggers, RecipientList, EmailTemplate   
Output: Updated EmailNotification record in the Database, EmailSystem configuration update, AuditTrail record, EmailNotification to Administrator  
  
## 1.25 Data Import/Export Record Management Function   
Function ID: FR-25   
Description: Allow Administrators to manage records of data import and export actions. The system must validate the input and initiate approval workflows if required.   
Input: ImportExportID, AssetID, UserID, Timestamp, Type (Import/Export), FilePath   
Output: Updated DataImportExportRecord in the Database, AuditTrail record, EmailNotification to stakeholders, ApprovalWorkflow status update