项目文档

# Functional Requirement

1. Functional Requirements  
  
1.1 Asset Registration Function   
 Function ID: FR-01   
 Description: Administrators can register new assets in the system by providing details such as name, description, purchase date, status, category, and location.   
 Input: Asset details including Name, Description, PurchaseDate, Status, Category, and Location.   
 Output: A new Asset record in the database and an email confirmation sent to the Administrator.  
  
1.2 Asset Management Function   
 Function ID: FR-02   
 Description: Administrators can update or delete existing asset records in the system.   
 Input: Selected AssetID and updated or deletion request data.   
 Output: Updated or deleted Asset record in the database and an email notification to the Administrator.  
  
1.3 Asset Details View Function   
 Function ID: FR-03   
 Description: Administrators can view detailed information of a specific asset.   
 Input: Selected AssetID.   
 Output: Displayed Asset details including Name, Description, PurchaseDate, Status, Category, and Location.  
  
1.4 Asset Information Modification Function   
 Function ID: FR-04   
 Description: Administrators can modify the information of an existing asset, including name, description, status, category, and location.   
 Input: Selected AssetID and updated asset information.   
 Output: Updated Asset record in the database and an email notification to the Administrator.  
  
1.5 Asset Removal Function   
 Function ID: FR-05   
 Description: Administrators can remove an asset from the system after verifying it is not in use.   
 Input: Selected AssetID and confirmation of deletion.   
 Output: Removed Asset record from the database and an email notification to the Administrator.  
  
1.6 Asset Usage Assignment Function   
 Function ID: FR-06   
 Description: Administrators can assign an asset for usage to a specific user or department by providing usage details such as date, type, and description.   
 Input: Selected AssetID and usage assignment details (UsageDate, UsageType, UsageDescription, RequestStatus).   
 Output: Updated AssetUsage record in the database and an email notification to the Administrator.  
  
1.7 Asset Usage History View Function   
 Function ID: FR-07   
 Description: Administrators can view the usage history of a specific asset, including usage dates, types, and descriptions.   
 Input: Selected AssetID.   
 Output: Displayed AssetUsage history including UsageDate, UsageType, UsageDescription, and RequestStatus.  
  
1.8 Asset Usage Reporting Function   
 Function ID: FR-08   
 Description: Administrators can generate reports on asset usage data, including filtering by date range or asset selection.   
 Input: Filter criteria such as AssetID, date range, and report format (e.g., PDF, Excel).   
 Output: Generated AssetReport and an optional exported file or email notification to the Administrator.  
  
1.9 Email Notification Sending Function   
 Function ID: FR-09   
 Description: The system automatically sends email notifications to administrators based on system events such as asset registration, modification, or deletion.   
 Input: Event data including AssetID, action performed, and Administrator email address.   
 Output: EmailNotification record in the database and an email sent to the Administrator.  
  
1.10 Email Notification View Function   
 Function ID: FR-10   
 Description: Administrators can view a list of previously sent email notifications, including details such as title, content, send date, and recipient.   
 Input: None.   
 Output: List of EmailNotification records displayed to the Administrator.  
  
1.11 Administrator Account Management Function   
 Function ID: FR-11   
 Description: Administrators can create, update, or delete other administrator accounts in the system.   
 Input: Administrator details including Name, Email, Role, Department, and AdminID (for updates and deletions).   
 Output: Updated or deleted Administrator record in the database and an email notification to the Administrator.  
  
1.12 Administrator Profile Update Function   
 Function ID: FR-12   
 Description: Administrators can update their own profile information, such as name and contact details.   
 Input: Updated Administrator profile data including Name, Email, and Role.   
 Output: Updated Administrator record in the database and an email notification to the Administrator.  
  
1.13 Administrator Account Deletion Function   
 Function ID: FR-13   
 Description: Administrators can delete another administrator account after verifying it is not in use.   
 Input: Selected AdminID and confirmation of deletion.   
 Output: Deleted Administrator record from the database and an email notification to the Administrator.  
  
1.14 Asset Archive Log Management Function   
 Function ID: FR-14   
 Description: Administrators can view, filter, or export logs of assets that have been archived.   
 Input: Filter criteria such as ArchiveID, ArchiveDate, Reason, and AdminID.   
 Output: Displayed or exported AssetArchiveLog records including ArchiveDate, Reason, and AdminID who performed the action.  
  
1.15 Asset Usage Request Management Function   
 Function ID: FR-15   
 Description: Administrators can review and process asset usage requests by approving or rejecting them.   
 Input: Selected RequestID, approval or rejection decision, and optional reason for rejection.   
 Output: Updated AssetUsageRequest record in the database, updated AssetUsage status, and email notifications sent to the requestor and Administrator.  
  
1.16 Email Notification Configuration Function   
 Function ID: FR-16   
 Description: Administrators can configure email notification settings, such as enabling/disabling notifications, selecting event types, and specifying recipient preferences.   
 Input: Email notification configuration data including NotificationType, Enabled status, and Recipient email address.   
 Output: Updated EmailNotification settings in the database and an optional confirmation email to the Administrator.

# External Description

\*\*Chapter 2: External Interfaces\*\*  
  
This chapter describes the external interfaces of the system, including the interactions with users, hardware, software components, and communication channels. These interfaces are essential for ensuring the system can effectively exchange data and information with external entities.  
  
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### 2.1 User Interface Output  
  
The system provides a graphical user interface (GUI) for administrators to interact with asset and user data. All user interface outputs are designed to be intuitive and informative, ensuring administrators can efficiently manage the system.  
  
- \*\*Asset Details View (FR-03, FR-07)\*\*:   
 Displays detailed information of an asset, including \*\*Name\*\*, \*\*Description\*\*, \*\*PurchaseDate\*\*, \*\*Status\*\*, \*\*Category\*\*, \*\*Location\*\*, and \*\*Usage History\*\* (UsageDate, UsageType, UsageDescription, RequestStatus). This is presented in a structured format to allow easy reading and modification.  
  
- \*\*Email Notification View (FR-10)\*\*:   
 Displays a list of all sent email notifications to the administrator, including \*\*Title\*\*, \*\*Content\*\*, \*\*Send Date\*\*, and \*\*Recipient\*\*. This allows administrators to review the communication history of the system.  
  
- \*\*Administrator Profile and Account Management (FR-11, FR-12, FR-13)\*\*:   
 Provides forms and displays for creating, updating, or deleting administrator accounts. Information such as \*\*Name\*\*, \*\*Email\*\*, \*\*Role\*\*, \*\*Department\*\*, and \*\*AdminID\*\* is presented for modification and confirmation.  
  
- \*\*Asset Usage Reporting (FR-08)\*\*:   
 Presents the generated asset usage report to the administrator, including filtered data based on \*\*AssetID\*\*, \*\*Date Range\*\*, and \*\*Report Format\*\* (e.g., PDF, Excel). The interface allows the user to choose the format and initiate the export or send it via email.  
  
- \*\*Asset Archive Log Management (FR-14)\*\*:   
 Displays a list of archived asset logs, including \*\*ArchiveID\*\*, \*\*ArchiveDate\*\*, \*\*Reason\*\*, and \*\*AdminID\*\* of the administrator who performed the archive action. This allows administrators to review and export the archive logs.  
  
- \*\*Asset Usage Request Management (FR-15)\*\*:   
 Displays asset usage requests to the administrator, including \*\*RequestID\*\*, \*\*Approval or Rejection Decision\*\*, and \*\*Optional Rejection Reason\*\*. This interface allows administrators to process and manage requests.  
  
- \*\*Email Notification Configuration (FR-16)\*\*:   
 Provides a configuration interface for email notifications, allowing the administrator to set \*\*NotificationType\*\*, \*\*Enabled Status\*\*, and \*\*Recipient Preferences\*\*. This ensures that administrators can customize the notification behavior of the system.  
  
All user interfaces are accessible through a secure, web-based portal and are designed to be responsive to different screen sizes and devices.  
  
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### 2.2 Hardware Interface Output  
  
The system does not require direct interaction with external hardware devices. Therefore, there are no hardware interfaces defined in this section.  
  
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### 2.3 Software Interface Output  
  
The system interacts with the following software components and databases to manage asset data and notifications.  
  
#### 2.3.1 Database Interface  
  
The system interacts with a relational database to store and retrieve asset, user, and notification records. The following data is managed via the database:  
  
- \*\*Asset Table\*\*: Stores \*\*AssetID\*\*, \*\*Name\*\*, \*\*Description\*\*, \*\*PurchaseDate\*\*, \*\*Status\*\*, \*\*Category\*\*, \*\*Location\*\*.   
- \*\*AssetUsage Table\*\*: Records \*\*UsageDate\*\*, \*\*UsageType\*\*, \*\*UsageDescription\*\*, \*\*RequestStatus\*\*, and \*\*AssetID\*\*.   
- \*\*EmailNotification Table\*\*: Logs \*\*NotificationTitle\*\*, \*\*NotificationContent\*\*, \*\*SendDate\*\*, \*\*RecipientEmail\*\*, and \*\*AssetID\*\* or \*\*AdminID\*\*.   
- \*\*Administrator Table\*\*: Stores \*\*AdminID\*\*, \*\*Name\*\*, \*\*Email\*\*, \*\*Role\*\*, \*\*Department\*\*.   
- \*\*AssetArchiveLog Table\*\*: Logs \*\*ArchiveID\*\*, \*\*ArchiveDate\*\*, \*\*Reason\*\*, \*\*AdminID\*\*.   
- \*\*AssetUsageRequest Table\*\*: Records \*\*RequestID\*\*, \*\*AssetID\*\*, \*\*Requestor\*\*, \*\*RequestDate\*\*, \*\*ApprovalStatus\*\*, and \*\*RejectionReason\*\* (if applicable).  
  
The database is accessed through standard SQL queries or via an ORM (Object-Relational Mapping) layer to ensure data integrity and security. It is assumed that the database supports transactions and rollbacks to handle concurrent updates and deletions safely.  
  
#### 2.3.2 Email Notification Interface (FR-09, FR-10, FR-15, FR-16)  
  
The system sends and receives email notifications using an email service. The following interactions are defined:  
  
- \*\*Email Sending\*\*:   
 The system sends email notifications to administrators upon asset registration (FR-01), modification (FR-04), deletion (FR-05), and other configured events (FR-16). Each email contains a \*\*title\*\*, \*\*content\*\*, and references to \*\*AssetID\*\* or \*\*AdminID\*\*.  
  
- \*\*Email Configuration\*\*:   
 Administrators can configure email settings, including \*\*NotificationType\*\*, \*\*Enabled Status\*\*, and \*\*Recipient Preferences\*\* (FR-16). These settings are stored in the \*\*EmailNotification\*\* table and used to control the sending behavior of the system.  
  
- \*\*Email Viewing\*\*:   
 The system provides a list of previously sent emails, including \*\*Title\*\*, \*\*Content\*\*, \*\*Send Date\*\*, and \*\*Recipient\*\* (FR-10). This is retrieved from the \*\*EmailNotification\*\* table and displayed in the user interface.  
  
The email service is assumed to support standard protocols such as SMTP and to provide a REST API for sending and receiving messages. The system uses an email API to send and retrieve emails, ensuring compatibility with various email service providers.  
  
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### 2.4 Communication Interface Output  
  
The system communicates with external systems and users via network-based methods, primarily through email notifications.  
  
#### 2.4.1 Email Communication (FR-09, FR-10, FR-15, FR-16)  
  
- \*\*Functionality\*\*:   
 The system sends email notifications to administrators and users based on system events. These emails include confirmation of asset registration, modification, deletion, and usage requests.  
  
- \*\*Inputs\*\*:   
 - \*\*AssetID\*\* or \*\*AdminID\*\* for identifying the relevant asset or administrator.   
 - \*\*Action Performed\*\* (e.g., registration, modification, deletion).   
 - \*\*Recipient Email Address\*\* (e.g., administrator's email).   
 - \*\*Optional Reason for Rejection\*\* in the case of usage requests (FR-15).  
  
- \*\*Outputs\*\*:   
 - \*\*EmailNotification Record\*\* in the database.   
 - \*\*Email Message\*\* sent to the specified recipient.  
  
- \*\*Interaction Method\*\*:   
 The system uses an email API to send and receive messages. The API is responsible for formatting the email content, handling SMTP communication, and logging the email in the database.  
  
- \*\*Configuration\*\*:   
 Email notification settings can be configured by the administrator (FR-16). These settings include \*\*NotificationType\*\*, \*\*Enabled Status\*\*, and \*\*Recipient Preferences\*\*, which are used to control the email sending behavior.  
  
#### 2.4.2 Web Communication  
  
- \*\*Functionality\*\*:   
 The system is accessed via a web browser and communicates with the server using HTTP/HTTPS protocols. This includes user authentication, asset management, and report generation.  
  
- \*\*Inputs/Outputs\*\*:   
 - \*\*Asset Management\*\*: Asset data is sent from the client to the server for registration, modification, deletion, and viewing.   
 - \*\*Email Notification Configuration\*\*: Configuration data is sent from the client to the server for updating notification settings.   
 - \*\*Asset Reports\*\*: Reports are generated on the server and sent back to the client in the requested format (e.g., PDF, Excel).  
  
- \*\*Interaction Method\*\*:   
 The system uses RESTful APIs for all web-based communication. Each functional requirement corresponds to one or more API endpoints that accept input data and return structured output data in JSON or XML format.  
  
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### Summary of External Interfaces  
  
| Interface Type | Interface Description | Related Functional Requirements (FR) |  
|------------------------|---------------------------------------------------------------------------------------|-------------------------------------|  
| \*\*User Interface\*\* | Web-based GUI for managing assets, users, and notifications | FR-01, FR-02, FR-03, FR-04, FR-05, FR-06, FR-07, FR-08, FR-10, FR-11, FR-12, FR-13, FR-14, FR-15, FR-16 |  
| \*\*Software Interface\*\* | Interaction with the relational database for storing and retrieving asset and user data | FR-01, FR-02, FR-03, FR-04, FR-05, FR-06, FR-07, FR-08, FR-10, FR-11, FR-12, FR-13, FR-14, FR-15 |  
| \*\*Email Interface\*\* | Sending and receiving email notifications via an email API | FR-09, FR-10, FR-15, FR-16 |  
| \*\*Web Communication\*\* | RESTful API for web-based user interactions and data exchange | All FRs |  
  
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This chapter ensures that all external interfaces are clearly defined and that the system can effectively communicate with users, databases, and external services. It provides a foundation for developers to implement the system with accurate data handling and user interaction.

# Use Case

Use Case Name: Register Asset   
Use Case ID: UC-01   
Actors: Administrator   
Preconditions:   
1. The system is running and accessible.   
2. The administrator is logged into the system.   
3. The administrator has the necessary permissions to register a new asset.   
  
Postconditions:   
1. The asset is successfully registered in the system.   
2. An email confirmation is sent to the administrator.   
  
Main Flow:   
1. The administrator navigates to the asset registration page.   
2. The system displays a form for entering asset details.   
3. The administrator fills in the form with the required asset information.   
4. The administrator submits the form.   
5. The system validates the input data.   
6. The system registers the asset in the database.   
7. The system sends an email confirmation to the administrator.   
8. The system displays a success message to the administrator.   
  
Alternative Flow:   
1. If the input data is invalid, the system displays an error message and prompts the administrator to correct the information.   
2. If the email cannot be sent, the system logs the error and displays a warning message to the administrator.  
  
Use Case Name: Manage Asset   
Use Case ID: UC-02   
Actors: Administrator   
Preconditions:   
1. The system is running and accessible.   
2. The administrator is logged into the system.   
3. The administrator has the necessary permissions to manage existing assets.   
  
Postconditions:   
1. The asset is either updated or deleted in the system.   
2. An email notification is sent to the administrator regarding the changes made.   
  
Main Flow:   
1. The administrator navigates to the asset management page.   
2. The system displays a list of registered assets.   
3. The administrator selects an asset to modify or delete.   
4. The system displays the asset details and options for editing or deleting.   
5. The administrator makes the necessary changes or confirms the deletion.   
6. The administrator submits the changes or deletion request.   
7. The system validates the request and updates or removes the asset in the database.   
8. The system sends an email notification to the administrator.   
9. The system displays a confirmation message to the administrator.   
  
Alternative Flow:   
1. If the asset information is invalid during the update, the system displays an error message and prompts the administrator to correct the details.   
2. If the deletion is attempted for an asset in use, the system displays a warning message and prevents the deletion.   
3. If the email cannot be sent, the system logs the error and displays a warning message to the administrator.  
  
Use Case Name: View Asset Details   
Use Case ID: UC-03   
Actors: Administrator   
Preconditions:   
1. The system is running and accessible.   
2. The administrator is logged into the system.   
3. The administrator has the necessary permissions to view asset details.   
4. At least one asset is registered in the system.   
  
Postconditions:   
1. The asset details are displayed to the administrator.   
2. No changes are made to the asset data in the system.   
  
Main Flow:   
1. The administrator navigates to the asset details page.   
2. The system displays a list of registered assets.   
3. The administrator selects a specific asset from the list.   
4. The system retrieves the selected asset's information from the database.   
5. The system displays the detailed information of the selected asset to the administrator.   
  
Alternative Flow:   
1. If the selected asset does not exist, the system displays an error message indicating the asset could not be found.   
2. If there is an issue retrieving the asset information, the system logs the error and displays a warning message to the administrator.  
  
Use Case Name: Modify Asset Information   
Use Case ID: UC-04   
Actors: Administrator   
Preconditions:   
1. The system is running and accessible.   
2. The administrator is logged into the system.   
3. The administrator has the necessary permissions to modify asset information.   
4. At least one asset is registered in the system.   
  
Postconditions:   
1. The selected asset's information is updated in the system.   
2. An email notification is sent to the administrator confirming the modification.   
  
Main Flow:   
1. The administrator navigates to the asset management page.   
2. The system displays a list of registered assets.   
3. The administrator selects an asset to modify.   
4. The system displays the asset details in an editable form.   
5. The administrator updates the asset information as needed.   
6. The administrator submits the updated form.   
7. The system validates the updated data.   
8. The system updates the asset information in the database.   
9. The system sends an email notification to the administrator.   
10. The system displays a confirmation message to the administrator.   
  
Alternative Flow:   
1. If the updated data is invalid, the system displays an error message and prompts the administrator to correct the details.   
2. If the asset is currently in use, the system displays a warning message and prevents certain modifications.   
3. If the email cannot be sent, the system logs the error and displays a warning message to the administrator.  
  
Use Case Name: Remove Asset   
Use Case ID: UC-05   
Actors: Administrator   
Preconditions:   
1. The system is running and accessible.   
2. The administrator is logged into the system.   
3. The administrator has the necessary permissions to remove an asset.   
4. At least one asset is registered in the system.   
  
Postconditions:   
1. The selected asset is successfully removed from the system.   
2. An email notification is sent to the administrator confirming the removal.   
  
Main Flow:   
1. The administrator navigates to the asset management page.   
2. The system displays a list of registered assets.   
3. The administrator selects an asset to remove.   
4. The system displays a confirmation prompt for the deletion.   
5. The administrator confirms the deletion.   
6. The system removes the asset from the database.   
7. The system sends an email notification to the administrator.   
8. The system displays a confirmation message to the administrator.   
  
Alternative Flow:   
1. If the asset is currently in use, the system displays a warning message and prevents the deletion.   
2. If the email cannot be sent, the system logs the error and displays a warning message to the administrator.  
  
Use Case Name: Assign Asset Usage   
Use Case ID: UC-06   
Actors: Administrator   
Preconditions:   
1. The system is running and accessible.   
2. The administrator is logged into the system.   
3. The administrator has the necessary permissions to assign asset usage.   
4. At least one asset is registered in the system.   
  
Postconditions:   
1. The asset usage is successfully assigned to a user or department.   
2. An email notification is sent to the administrator confirming the assignment.   
  
Main Flow:   
1. The administrator navigates to the asset usage assignment page.   
2. The system displays a list of registered assets and their current usage status.   
3. The administrator selects an asset to assign usage for.   
4. The system displays a form for entering the user or department and usage details.   
5. The administrator fills in the form with the necessary usage information.   
6. The administrator submits the form.   
7. The system validates the input data.   
8. The system updates the asset's usage status in the database.   
9. The system sends an email notification to the administrator.   
10. The system displays a confirmation message to the administrator.   
  
Alternative Flow:   
1. If the input data is invalid, the system displays an error message and prompts the administrator to correct the information.   
2. If the asset is already assigned and cannot be reassigned, the system displays a warning message and prevents the assignment.   
3. If the email cannot be sent, the system logs the error and displays a warning message to the administrator.  
  
Use Case Name: View Asset Usage History   
Use Case ID: UC-07   
Actors: Administrator   
Preconditions:   
1. The system is running and accessible.   
2. The administrator is logged into the system.   
3. The administrator has the necessary permissions to view asset usage history.   
4. At least one asset is registered in the system with recorded usage history.   
  
Postconditions:   
1. The asset usage history is displayed to the administrator.   
2. No changes are made to the asset or usage data in the system.   
  
Main Flow:   
1. The administrator navigates to the asset usage history page.   
2. The system displays a list of registered assets.   
3. The administrator selects a specific asset to view its usage history.   
4. The system retrieves the asset's usage history from the database.   
5. The system displays the usage history, including dates, users, and departments associated with the asset.   
  
Alternative Flow:   
1. If the selected asset has no usage history, the system displays a message indicating no data is available.   
2. If there is an issue retrieving the usage history, the system logs the error and displays a warning message to the administrator.  
  
Use Case Name: Report Asset Usage   
Use Case ID: UC-08   
Actors: Administrator   
Preconditions:   
1. The system is running and accessible.   
2. The administrator is logged into the system.   
3. The administrator has the necessary permissions to report asset usage.   
4. At least one asset is registered in the system with recorded usage data.   
  
Postconditions:   
1. The asset usage report is generated and displayed to the administrator.   
2. The report may be exported in a selected format (e.g., PDF, Excel).   
3. An email notification is sent to the administrator if requested.   
  
Main Flow:   
1. The administrator navigates to the asset usage reporting page.   
2. The system displays options to filter and select assets for the report.   
3. The administrator selects the assets and sets the report parameters (e.g., date range).   
4. The system retrieves the usage data for the selected assets from the database.   
5. The system generates the asset usage report.   
6. The system displays the report to the administrator.   
7. The administrator chooses to export the report or request an email copy.   
8. The system performs the export or sends the email with the report.   
9. The system displays a confirmation message to the administrator.   
  
Alternative Flow:   
1. If no assets are selected or the selection is invalid, the system displays an error message and prompts the administrator to make a valid selection.   
2. If the report cannot be generated due to missing or incomplete data, the system logs the error and displays a warning message to the administrator.   
3. If the email cannot be sent, the system logs the error and displays a warning message to the administrator.  
  
Use Case Name: Send Email Notification   
Use Case ID: UC-09   
Actors: System, Administrator   
Preconditions:   
1. The system is running and accessible.   
2. The administrator is logged into the system.   
3. The system has an email notification feature configured.   
4. The email address of the administrator is recorded in the system.   
  
Postconditions:   
1. The email notification is successfully sent to the administrator.   
2. The system logs the successful delivery of the email.   
  
Main Flow:   
1. The system determines that an email notification is required based on an event (e.g., asset registration, modification, or deletion).   
2. The system prepares the email content, including relevant details (e.g., asset name, action performed).   
3. The system sends the email to the administrator's registered email address.   
4. The system logs the email notification as sent.   
5. The system displays a confirmation message to the administrator indicating the email has been sent.   
  
Alternative Flow:   
1. If the system cannot connect to the email server, it logs the error and displays a warning message to the administrator.   
2. If the administrator's email address is invalid or missing, the system displays an error message and does not send the notification.   
3. If the email is rejected by the recipient's server, the system logs the failure and notifies the administrator with an error message.  
  
Use Case Name: View Email Notifications   
Use Case ID: UC-10   
Actors: Administrator   
Preconditions:   
1. The system is running and accessible.   
2. The administrator is logged into the system.   
3. The administrator has the necessary permissions to view email notifications.   
4. There is at least one email notification recorded in the system.   
  
Postconditions:   
1. The administrator is presented with a list of past email notifications.   
2. No changes are made to the email notifications or the system data.   
  
Main Flow:   
1. The administrator navigates to the email notifications page.   
2. The system displays a list of previously sent email notifications.   
3. The system includes details such as the date, subject, recipient, and content summary of each notification.   
4. The administrator selects an email notification for more details if needed.   
5. The system displays the full content of the selected email notification.   
  
Alternative Flow:   
1. If no email notifications are found, the system displays a message indicating there are no notifications available.   
2. If there is an issue retrieving the email notifications, the system logs the error and displays a warning message to the administrator.  
  
Use Case Name: Manage Administrator Account   
Use Case ID: UC-11   
Actors: Administrator   
Preconditions:   
1. The system is running and accessible.   
2. The administrator is logged into the system.   
3. The administrator has the necessary permissions to manage administrator accounts.   
4. At least one administrator account is already created in the system.   
  
Postconditions:   
1. The administrator account is either created, updated, or deleted in the system.   
2. An email notification is sent to the administrator if an account is created or updated.   
3. The system displays a confirmation message to the administrator.   
  
Main Flow:   
1. The administrator navigates to the administrator account management page.   
2. The system displays a list of existing administrator accounts.   
3. The administrator selects an option to create, update, or delete an account.   
4. If creating, the system displays a form for entering new administrator details.   
5. If updating or deleting, the system displays the selected administrator's information and options.   
6. The administrator fills in the required information or confirms the deletion.   
7. The administrator submits the request.   
8. The system validates the input data.   
9. The system updates or deletes the administrator account in the database.   
10. If applicable, the system sends an email notification to the administrator.   
11. The system displays a confirmation message to the administrator.   
  
Alternative Flow:   
1. If the input data is invalid, the system displays an error message and prompts the administrator to correct the information.   
2. If the deletion is attempted for an administrator currently in use, the system displays a warning message and prevents the deletion.   
3. If the email cannot be sent, the system logs the error and displays a warning message to the administrator.  
  
Use Case Name: Update Administrator Profile   
Use Case ID: UC-12   
Actors: Administrator   
Preconditions:   
1. The system is running and accessible.   
2. The administrator is logged into the system.   
3. The administrator has the necessary permissions to update their profile.   
4. An administrator account exists in the system.   
  
Postconditions:   
1. The administrator's profile information is updated in the system.   
2. An email notification is sent to the administrator confirming the update.   
3. The system displays a confirmation message to the administrator.   
  
Main Flow:   
1. The administrator navigates to the profile management page.   
2. The system displays the current profile information in an editable form.   
3. The administrator modifies the necessary details (e.g., name, contact information).   
4. The administrator submits the updated form.   
5. The system validates the updated data.   
6. The system updates the administrator's profile in the database.   
7. The system sends an email notification to the administrator.   
8. The system displays a confirmation message to the administrator.   
  
Alternative Flow:   
1. If the updated data is invalid, the system displays an error message and prompts the administrator to correct the information.   
2. If the email cannot be sent, the system logs the error and displays a warning message to the administrator.  
  
Use Case Name: Delete Administrator Account   
Use Case ID: UC-13   
Actors: Administrator   
Preconditions:   
1. The system is running and accessible.   
2. The administrator is logged into the system.   
3. The administrator has the necessary permissions to delete an administrator account.   
4. At least one administrator account is registered in the system.   
  
Postconditions:   
1. The selected administrator account is successfully deleted from the system.   
2. An email notification is sent to the administrator confirming the deletion.   
3. The system displays a confirmation message to the administrator.   
  
Main Flow:   
1. The administrator navigates to the administrator account management page.   
2. The system displays a list of existing administrator accounts.   
3. The administrator selects an account to delete.   
4. The system displays a confirmation prompt for the deletion.   
5. The administrator confirms the deletion.   
6. The system verifies that the selected account is not in use.   
7. The system deletes the administrator account from the database.   
8. The system sends an email notification to the administrator.   
9. The system displays a confirmation message to the administrator.   
  
Alternative Flow:   
1. If the selected administrator account is currently in use, the system displays a warning message and prevents the deletion.   
2. If the email cannot be sent, the system logs the error and displays a warning message to the administrator.  
  
Use Case Name: Manage Asset Archive Log   
Use Case ID: UC-14   
Actors: Administrator   
Preconditions:   
1. The system is running and accessible.   
2. The administrator is logged into the system.   
3. The administrator has the necessary permissions to manage asset archive logs.   
4. At least one asset archive log is recorded in the system.   
  
Postconditions:   
1. The asset archive log is either viewed, filtered, or exported.   
2. No changes are made to the asset or its usage in the system.   
3. If requested, the archive log is exported in a selected format (e.g., PDF, Excel).   
  
Main Flow:   
1. The administrator navigates to the asset archive log management page.   
2. The system displays a list of asset archive logs with details such as asset name, date of archiving, reason for archiving, and the administrator who performed the action.   
3. The administrator can apply filters to search for specific logs (e.g., by date range, asset name, or status).   
4. The system displays the filtered results to the administrator.   
5. The administrator selects an asset archive log to view more details.   
6. The system displays the full information of the selected archive log.   
7. The administrator chooses to export the archive logs or a specific log.   
8. The system generates the archive log data in the selected format.   
9. The system provides the exported file to the administrator for download.   
10. The system displays a confirmation message to the administrator.   
  
Alternative Flow:   
1. If no archive logs match the filter criteria, the system displays a message indicating no logs are available for the current selection.   
2. If the system is unable to retrieve the archive logs, it logs the error and displays a warning message to the administrator.   
3. If the export fails due to system errors or unsupported formats, the system logs the error and displays a warning message to the administrator.  
  
Use Case Name: Manage Asset Usage Request   
Use Case ID: UC-15   
Actors: Administrator   
Preconditions:   
1. The system is running and accessible.   
2. The administrator is logged into the system.   
3. The administrator has the necessary permissions to manage asset usage requests.   
4. At least one asset usage request is recorded in the system.   
  
Postconditions:   
1. The asset usage request is either approved, denied, or viewed in the system.   
2. If the request is approved or denied, the system updates the asset's usage status accordingly.   
3. An email notification is sent to the requestor and the administrator regarding the action taken.   
4. The system displays a confirmation message to the administrator.   
  
Main Flow:   
1. The administrator navigates to the asset usage request management page.   
2. The system displays a list of pending or all asset usage requests.   
3. The administrator selects a specific asset usage request to review.   
4. The system retrieves and displays the details of the selected request (e.g., requested asset, user, department, usage period, reason).   
5. The administrator reviews the request and decides to approve or deny it.   
6. If the administrator approves the request, the system updates the asset's usage status and records the approval.   
7. If the administrator denies the request, the system records the denial and optionally allows the administrator to provide a reason.   
8. The system sends an email notification to the requestor and the administrator informing them of the decision.   
9. The system logs the action taken (approve or deny).   
10. The system displays a confirmation message to the administrator indicating the request has been processed.   
  
Alternative Flow:   
1. If the requestor's email address is invalid or missing, the system logs the error and displays a warning message to the administrator.   
2. If the selected asset usage request does not exist, the system displays an error message indicating the request could not be found.   
3. If the system is unable to update the asset's usage status due to an error, it logs the error and displays a warning message to the administrator.   
4. If the email cannot be sent, the system logs the error and displays a warning message to the administrator.  
  
Use Case Name: Manage Email Notification   
Use Case ID: UC-16   
Actors: Administrator   
Preconditions:   
1. The system is running and accessible.   
2. The administrator is logged into the system.   
3. The administrator has the necessary permissions to manage email notification settings.   
4. The system has an email notification feature configured.   
  
Postconditions:   
1. The email notification settings are updated in the system.   
2. The changes take effect for future email notifications.   
3. An email confirmation is sent to the administrator if configured.   
  
Main Flow:   
1. The administrator navigates to the email notification management page.   
2. The system displays the current email notification settings (e.g., enabled/disabled, notification types, recipient preferences).   
3. The administrator modifies the notification settings as needed (e.g., enable/disable notifications, adjust types of events to notify about, or change the email address to send notifications to).   
4. The administrator submits the updated settings.   
5. The system validates the input data.   
6. The system updates the email notification settings in the database.   
7. If applicable, the system sends a confirmation email to the administrator with the updated settings.   
8. The system displays a confirmation message to the administrator indicating the settings have been successfully updated.   
  
Alternative Flow:   
1. If the input data is invalid (e.g., invalid email address), the system displays an error message and prompts the administrator to correct the information.   
2. If the email notification feature is not properly configured, the system logs the error and displays a warning message to the administrator.   
3. If the confirmation email cannot be sent after the settings are updated, the system logs the error and displays a warning message to the administrator.