# Functional Requirement

# Chapter 1: Functional Requirements  
  
## 1.1 Create User Account Function   
Function ID: FR-01   
Description: The system allows an Administrator to create a new User Account, including sending a confirmation email. The email address must be unique and valid.   
Input: User's name, contact information, email address, and optional password.   
Output: A new User Account in the system, confirmation email sent, and success message displayed to the Administrator.  
  
## 1.2 Delete User Account Function   
Function ID: FR-02   
Description: The system allows an Administrator to delete a User Account, which includes marking the email as deleted in the Email Archive database and sending a confirmation.   
Input: Email address of the User to be deleted.   
Output: The User Account is deleted from the system, associated email is marked as deleted in the Email Archive, and a confirmation message is displayed.  
  
## 1.3 View User Account Information Function   
Function ID: FR-03   
Description: The system allows an Administrator to view detailed information of a specific User Account and associated email data from the Email Archive.   
Input: Email address of the User whose information is to be viewed.   
Output: Display of the User Account details and associated email history.  
  
## 1.4 Update User Account Settings Function   
Function ID: FR-04   
Description: The system allows an Administrator to modify a User Account's settings such as password or contact information and update the Email Archive database accordingly.   
Input: Email address of the User, updated settings (e.g., new password, contact info).   
Output: Updated User Account in the system, associated email information updated in the Email Archive, and a confirmation message.  
  
## 1.5 Send Email Function   
Function ID: FR-05   
Description: The system allows an Administrator to compose and send an email, and logs the email in the Email Archive database.   
Input: Recipient's email address, subject, message content.   
Output: The email is sent to the recipient, and the details are recorded in the Email Archive.  
  
## 1.6 Receive Email Function   
Function ID: FR-06   
Description: The system receives incoming emails from the Email Server, validates the sender, and stores the email in the Email Archive database.   
Input: Incoming email from the Email Server (sender, recipient, subject, content).   
Output: The email is stored in the Email Archive, categorized, and logged for audit purposes.  
  
## 1.7 Format Email Content Function   
Function ID: FR-07   
Description: The system allows an Administrator to format the content of an email using predefined templates, fonts, and signatures.   
Input: Email content (either from an existing email or entered manually).   
Output: Formatted email content ready for sending or saving, and a confirmation message.  
  
## 1.8 View Email Function   
Function ID: FR-08   
Description: The system allows an Administrator to view the full content of an email stored in the Email Archive database.   
Input: Email identifier or selection from the Email Archive.   
Output: Display of the email content (sender, recipient, subject, timestamp, body), and logging of the viewing action.  
  
## 1.9 Delete Email Function   
Function ID: FR-09   
Description: The system allows an Administrator to delete an email from the Email Archive database after confirmation.   
Input: Email identifier or selection from the Email Archive.   
Output: The selected email is deleted from the Email Archive, the action is logged, and a confirmation message is displayed.  
  
## 1.10 Archive Email Function   
Function ID: FR-10   
Description: The system allows an Administrator to archive an email from the active email system to the Email Archive database.   
Input: Email identifier or selection from the active email system.   
Output: The email is archived in the Email Archive database, its status is updated, and the action is logged.  
  
## 1.11 Recover Archived Email Function   
Function ID: FR-11   
Description: The system allows an Administrator to recover an archived email and move it back to the active email system.   
Input: Email identifier or selection from the Email Archive.   
Output: The email is recovered and marked as active, the action is logged, and a confirmation message is displayed.  
  
## 1.12 Create Contact Function   
Function ID: FR-12   
Description: The system allows an Administrator to create a new Contact with associated email information, ensuring the email is valid and not already linked to another Contact.   
Input: Contact name, email address, phone number, and address.   
Output: A new Contact is created and stored in the Contact database, and the email is linked and validated.  
  
## 1.13 Delete Contact Function   
Function ID: FR-13   
Description: The system allows an Administrator to delete a Contact and update the Email Archive database to reflect the deletion.   
Input: Email address of the Contact to be deleted.   
Output: The Contact is deleted from the Contact database, the associated email is updated in the Email Archive, and a confirmation message is displayed.  
  
## 1.14 View Contact Function   
Function ID: FR-14   
Description: The system allows an Administrator to view the full details of a specific Contact and its associated email history.   
Input: Email address of the Contact to be viewed.   
Output: Display of the Contact's details and associated email information from the Email Archive.  
  
## 1.15 Update Contact Information Function   
Function ID: FR-15   
Description: The system allows an Administrator to modify the information of an existing Contact and update the Email Archive database accordingly.   
Input: Email address of the Contact to be updated and the new information.   
Output: Updated Contact in the Contact database, associated email information updated in the Email Archive, and a confirmation message.  
  
## 1.16 Manage Email Archive Function   
Function ID: FR-16   
Description: The system allows an Administrator to perform archive-related actions (view, recover, or delete) on archived emails.   
Input: Email identifier or selection from the Email Archive.   
Output: The Email Archive is updated based on the action taken, the status of the email is modified, and the action is logged.  
  
## 1.17 View Email Archive Function   
Function ID: FR-17   
Description: The system allows an Administrator to view a list of archived emails and the full content of selected emails.   
Input: Access to the Email Archive database.   
Output: Display of the list of archived emails and the content of selected emails, with logging of the viewing action.  
  
## 1.18 Manage Administrator Permissions Function   
Function ID: FR-18   
Description: The system allows a Super Administrator to assign, modify, or revoke permissions for other Administrators or Users.   
Input: Email address of the user or role, permission level to be assigned or modified.   
Output: Updated Permission Setting in the database, confirmation message, and logging of the action.  
  
## 1.19 Manage Email Draft Function   
Function ID: FR-19   
Description: The system allows an Administrator to manage email drafts, including saving, editing, deleting, or sending them.   
Input: Draft identifier or content of the draft email.   
Output: Updated or deleted draft in the Email Draft database, and if sent, the email is stored in the Email Archive.  
  
## 1.20 Manage Contact Group Function   
Function ID: FR-20   
Description: The system allows an Administrator to manage Contact Groups, including creating, updating, deleting, or viewing groups and their associated contacts.   
Input: Group name, selected contacts to be added or removed from the group.   
Output: Updated Contact Group in the database, associated contacts updated, and a confirmation message.  
  
## 1.21 Manage Email Folder Function   
Function ID: FR-21   
Description: The system allows an Administrator to manage Email Folders, including creating, updating, deleting, or associating emails with folders.   
Input: Folder name, selected emails to be associated with the folder.   
Output: Updated Email Folder in the database, associated emails updated, and a confirmation message.  
  
## 1.22 Manage Email Archive Record Function   
Function ID: FR-22   
Description: The system allows an Administrator to manage Email Archive Records, including creating, updating, or deleting them.   
Input: Email identifier, archive date, recovery date, and status.   
Output: Updated Email Archive Record in the database, associated email data updated, and a confirmation message.  
  
## 1.23 Create Administrator Function   
Function ID: FR-23   
Description: The system allows a Super Administrator to create a new Administrator account with the appropriate permissions and roles.   
Input: Name, contact information, and email address of the new Administrator.   
Output: New Administrator account created in the User Account database, email validated and stored in the Email Archive, and a confirmation email sent.  
  
## 1.24 Delete Administrator Function   
Function ID: FR-24   
Description: The system allows a Super Administrator to delete an Administrator account, ensuring that at least one Super Administrator remains for system integrity.   
Input: Email address of the Administrator to be deleted.   
Output: The Administrator account is deleted, associated email is marked as deleted in the Email Archive, and a confirmation message is displayed.

# External Description

## Chapter 2: External Interfaces   
  
This chapter defines the external interfaces that the system interacts with. These interfaces include user interfaces, hardware interfaces (if any), software interfaces, and communication interfaces. Each interface is described in detail, including its role, interaction method, and the data it exchanges with the system.   
  
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### 2.1 User Interface   
  
The user interface is the primary method of interaction between the system and the Administrator (or Super Administrator). It supports all administrative actions and provides feedback on the outcomes of those actions.   
  
#### 2.1.1 Account Management Interface   
- \*\*Description\*\*: A screen-based interface where Administrators can create, delete, view, or update User Accounts and Administrator Accounts.   
- \*\*Inputs\*\*:   
 - User's name, contact information, email address, optional password.   
 - Email address of the User or Administrator to be deleted or updated.   
 - Updated settings (e.g., new password, contact info).   
- \*\*Outputs\*\*:   
 - Success or confirmation messages for account creation, deletion, or update.   
 - Display of detailed account information (name, contact info, email).   
  
#### 2.1.2 Email Management Interface   
- \*\*Description\*\*: An interface that allows Administrators to send, receive, view, delete, format, and archive emails.   
- \*\*Inputs\*\*:   
 - Recipient's email address, subject, message content.   
 - Email identifier or selection from the Email Archive or active email system.   
 - Email content to be formatted using templates, fonts, or signatures.   
- \*\*Outputs\*\*:   
 - Display of email content (sender, recipient, subject, timestamp, body).   
 - Confirmation messages for sending, deleting, archiving, or recovering emails.   
  
#### 2.1.3 Contact Management Interface   
- \*\*Description\*\*: A screen-based interface for creating, deleting, viewing, and updating Contacts.   
- \*\*Inputs\*\*:   
 - Contact name, email address, phone number, address.   
 - Email address of the Contact to be deleted or updated.   
 - New information for a Contact.   
- \*\*Outputs\*\*:   
 - Display of Contact details and associated email history.   
 - Confirmation messages for creating, deleting, or updating Contacts.   
  
#### 2.1.4 Email Archive Management Interface   
- \*\*Description\*\*: A user interface for managing Email Archive Records, including viewing, deleting, or recovering archived emails.   
- \*\*Inputs\*\*:   
 - Email identifier or selection from the Email Archive.   
 - Archive date, recovery date, and status for an Email Archive Record.   
- \*\*Outputs\*\*:   
 - Display of archived emails and their content.   
 - Confirmation messages for actions on Email Archive Records.   
  
#### 2.1.5 Email Draft Management Interface   
- \*\*Description\*\*: An interface that allows Administrators to save, edit, delete, or send draft emails.   
- \*\*Inputs\*\*:   
 - Draft identifier or content of the draft email.   
- \*\*Outputs\*\*:   
 - Updated or deleted draft in the system.   
 - Confirmation message if the draft is sent.   
  
#### 2.1.6 Contact Group Management Interface   
- \*\*Description\*\*: A user interface for managing Contact Groups, including creating, updating, deleting, or viewing groups and their associated contacts.   
- \*\*Inputs\*\*:   
 - Group name.   
 - Contacts to be added or removed from the group.   
- \*\*Outputs\*\*:   
 - Updated Contact Group in the system.   
 - Confirmation message for changes made.   
  
#### 2.1.7 Email Folder Management Interface   
- \*\*Description\*\*: An interface for managing Email Folders, such as creating, updating, deleting, or associating emails with folders.   
- \*\*Inputs\*\*:   
 - Folder name.   
 - Emails to be associated with the folder.   
- \*\*Outputs\*\*:   
 - Updated Email Folder in the system.   
 - Confirmation message for changes made.   
  
#### 2.1.8 Permission Management Interface   
- \*\*Description\*\*: A screen-based interface that allows a Super Administrator to manage permissions for other Administrators or Users.   
- \*\*Inputs\*\*:   
 - Email address of the user or role.   
 - Permission level to be assigned or modified.   
- \*\*Outputs\*\*:   
 - Updated permission settings in the system.   
 - Confirmation message for the change in permissions.   
  
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### 2.2 Hardware Interface   
  
\*\*No hardware interfaces are required for this system.\*\*   
  
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### 2.3 Software Interface   
  
#### 2.3.1 Email Archive Database   
- \*\*Description\*\*: A relational database used to store all email records, including archived emails, their statuses, timestamps, and any associated metadata.   
- \*\*Interaction Method\*\*:   
 - The system interacts with the Email Archive database using SQL queries or ORM (Object-Relational Mapping) to perform create, read, update, and delete (CRUD) operations.   
- \*\*Inputs/Outputs\*\*:   
 - \*\*Inputs\*\*: Email content, timestamps, statuses, archive/recovery dates.   
 - \*\*Outputs\*\*: Stored and retrieved email records, status updates, audit logs.   
  
#### 2.3.2 User Account Database   
- \*\*Description\*\*: A database that stores user account information, including names, contact details, email addresses, and passwords.   
- \*\*Interaction Method\*\*:   
 - The system uses SQL or ORM to manage user accounts, ensuring uniqueness of email addresses and validation of inputs.   
- \*\*Inputs/Outputs\*\*:   
 - \*\*Inputs\*\*: User name, contact information, email, password.   
 - \*\*Outputs\*\*: Stored user account details, confirmation of account creation/deletion, audit logs.   
  
#### 2.3.3 Contact Database   
- \*\*Description\*\*: A database that stores contact information, including names, email addresses, phone numbers, and addresses.   
- \*\*Interaction Method\*\*:   
 - The system uses SQL or ORM to manage Contact records and ensure that email addresses are not duplicated across contacts.   
- \*\*Inputs/Outputs\*\*:   
 - \*\*Inputs\*\*: Contact name, email address, phone number, address.   
 - \*\*Outputs\*\*: Stored and retrieved Contact details, audit logs, status updates for deleted or updated contacts.   
  
#### 2.3.4 Email Draft Database   
- \*\*Description\*\*: A database to store unsent email drafts for Administrators.   
- \*\*Interaction Method\*\*:   
 - The system uses SQL or ORM to save, update, or delete draft emails.   
- \*\*Inputs/Outputs\*\*:   
 - \*\*Inputs\*\*: Draft content, draft identifier.   
 - \*\*Outputs\*\*: Updated or deleted draft, audit logs.   
  
#### 2.3.5 Email Server   
- \*\*Description\*\*: An external email server responsible for sending and receiving emails.   
- \*\*Interaction Method\*\*:   
 - The system uses SMTP (Simple Mail Transfer Protocol) to send emails and POP3 or IMAP to receive emails.   
- \*\*Inputs/Outputs\*\*:   
 - \*\*Inputs\*\*: Recipient’s email, subject, content (for sending).   
 - \*\*Outputs\*\*: Incoming emails with sender, recipient, subject, and content (for receiving).   
  
#### 2.3.6 Email Formatting Engine   
- \*\*Description\*\*: A component or library used to apply formatting (e.g., templates, fonts, signatures) to email content.   
- \*\*Interaction Method\*\*:   
 - The system integrates with the formatting engine through predefined functions or APIs to generate formatted email content.   
- \*\*Inputs/Outputs\*\*:   
 - \*\*Inputs\*\*: Raw email content.   
 - \*\*Outputs\*\*: Formatted email content ready for sending or saving.   
  
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### 2.4 Communication Interface   
  
#### 2.4.1 Email Communication Interface   
- \*\*Description\*\*: This interface enables the system to send and receive emails via the Email Server.   
- \*\*Interaction Method\*\*:   
 - \*\*Sending Emails\*\*: Uses SMTP to deliver emails to recipients.   
 - \*\*Receiving Emails\*\*: Uses POP3 or IMAP to fetch and validate incoming emails.   
- \*\*Inputs/Outputs\*\*:   
 - \*\*Inputs\*\*: Email content (subject, body, recipient), sender validation for incoming emails.   
 - \*\*Outputs\*\*: Emails sent to recipients, incoming emails stored in the Email Archive.   
  
#### 2.4.2 Confirmation Email Interface   
- \*\*Description\*\*: A communication interface for sending confirmation emails to users or administrators for account creation, deletion, or recovery actions.   
- \*\*Interaction Method\*\*:   
 - The system uses the same SMTP-based mechanism for sending confirmation emails.   
- \*\*Inputs/Outputs\*\*:   
 - \*\*Inputs\*\*: Recipient’s email address, confirmation message content.   
 - \*\*Outputs\*\*: Confirmation email delivered to the recipient.   
  
#### 2.4.3 Web Communication Interface   
- \*\*Description\*\*: This interface supports system access through a web browser, enabling remote administration and management.   
- \*\*Interaction Method\*\*:   
 - The system is accessible via a web-based user interface using standard HTTP/HTTPS protocols.   
- \*\*Inputs/Outputs\*\*:   
 - \*\*Inputs\*\*: User credentials, administrative actions (e.g., send email, update account).   
 - \*\*Outputs\*\*: Web-based responses (e.g., success/failure messages, user interface updates).   
  
#### 2.4.4 API Interface for External Integration (if applicable)   
- \*\*Description\*\*: A potential API interface that allows external systems to interact with the Email Archive or User Account databases (if integration with other systems is required).   
- \*\*Interaction Method\*\*:   
 - RESTful API or GraphQL for external system integration.   
- \*\*Inputs/Outputs\*\*:   
 - \*\*Inputs\*\*: API requests for retrieving or updating data (e.g., GET/POST/PUT/DELETE methods).   
 - \*\*Outputs\*\*: JSON or XML formatted responses with success/failure status and relevant data.   
  
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### Summary of External Interfaces   
  
| Interface Name | Type | Description |  
|-----------------------------------------|-----------------------|-----------------------------------------------------------------------------|  
| Account Management Interface | User Interface | Supports user account creation, deletion, viewing, and updating. |  
| Email Management Interface | User Interface | Allows sending, receiving, formatting, and managing emails. |  
| Email Archive Management Interface | User Interface | Interface for managing archived emails and their statuses. |  
| Contact Management Interface | User Interface | Enables creating, deleting, viewing, and updating contacts. |  
| Email Draft Management Interface | User Interface | Manages unsent email drafts including saving, editing, and sending. |  
| Contact Group Management Interface | User Interface | Manages groups of contacts including creation, deletion, and updates. |  
| Email Folder Management Interface | User Interface | Manages folders for organizing emails. |  
| Permission Management Interface | User Interface | Allows Super Administrators to assign or revoke permissions. |  
| Email Archive Database | Software Interface | Stores and manages archived email records. |  
| User Account Database | Software Interface | Stores and manages user account details. |  
| Contact Database | Software Interface | Stores and manages contact information. |  
| Email Draft Database | Software Interface | Stores draft emails before sending. |  
| Email Server | Communication Interface | Used for sending and receiving emails via SMTP, POP3, or IMAP. |  
| Email Formatting Engine | Software Interface | Applies formatting (templates, fonts, signatures) to email content. |  
| Confirmation Email Interface | Communication Interface | Sends confirmation emails to users or administrators for account-related actions. |  
| Web Communication Interface | Communication Interface | Provides remote access to the system via a web browser. |  
| API Interface for External Integration | Communication Interface | Optional interface for external systems to interact with the Email Archive or User Account database. |  
  
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This section provides a clear and comprehensive overview of all external interfaces that the system interacts with. It ensures that developers have a complete understanding of the system's dependencies and communication methods.