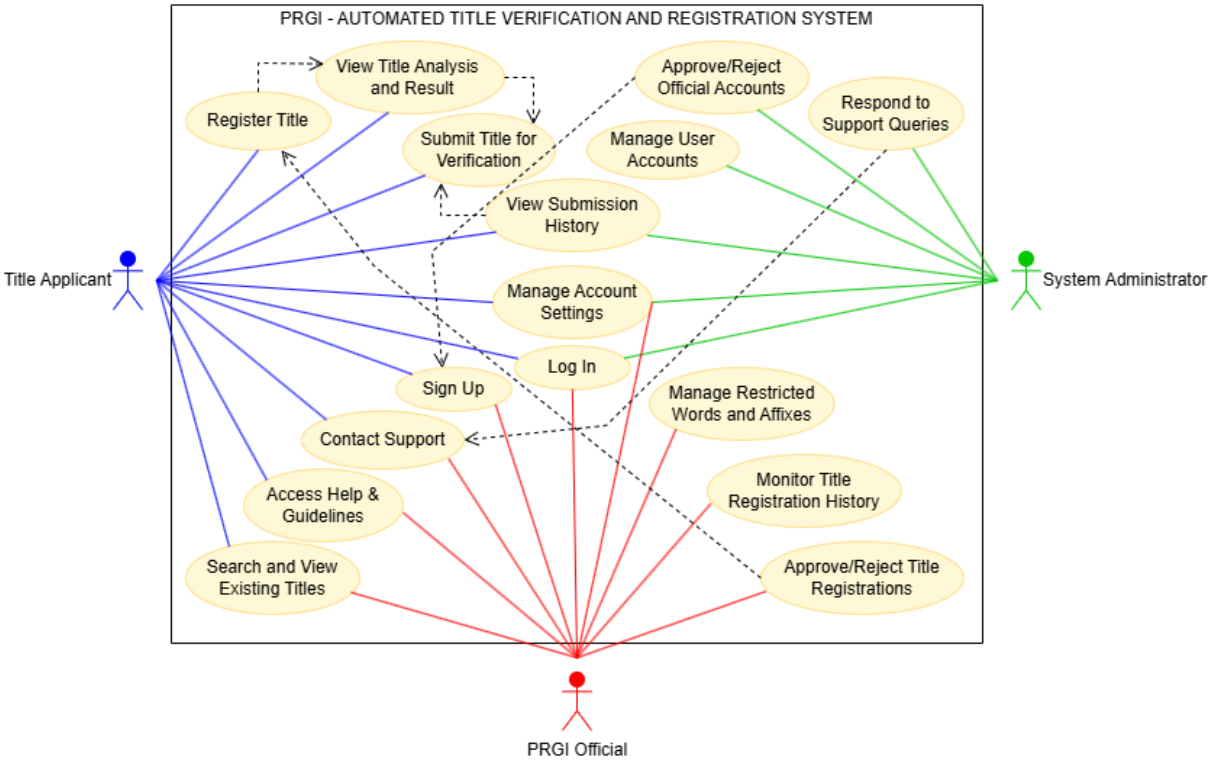
# USE CASE MODEL

## DIAGRAM, SUBSYSTEMS & SPECIFICATIONS

# USE CASE DIAGRAM:



# USE CASE SUBSYSTEMS:

The features of PRGI - Automated Title Verification and Registration system are grouped into subsystems and their use cases are listed below.

## 1. User Access & Management Subsystem:

*(Handles identity, roles, and user-related configurations)*

i. Sign Up (Applicant, PRGI Official)
ii. Log In (All Users)
iii. Manage Account Settings (All Users)
iv. Approve/Reject Official Accounts (System Admin)
v. Manage User Accounts (System Admin)

## 2. Title Processing & Management Subsystem:

*(Covers all functions related to title verification and registration)*

i. Submit Title for Verification (Title Applicant)
ii. View Title Analysis and Result (Title Applicant)
iii. Register Title (Title Applicant)
iv. Approve/Reject Title Registrations (PRGI Official)
v. Manage Restricted Words and Affixes (PRGI Official)

## 3. Title Exploration & Records Subsystem:

*(Focused on search and view features of existing data)*

i. Search and View Existing Titles (Title Applicant, PRGI Official)
ii. View Submission History (Title Applicant, System Admin)
iii. Monitor Title Registration History (PRGI Official)

## 4. Support & Help Subsystem:

*(Assists users and manages their issues and guidance needs)*

i. Access Help & Guidelines (Title Applicant, PRGI Official)
ii. Contact Support (Title Applicant, PRGI Official)
iii. Respond to Support Queries (System Admin)

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# USE CASE SPECIFICATIONS:

## 1. USER ACCESS & MANAGEMENT SUBSYSTEM:

### 1.1. Sign Up

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|---|---|
| **Name** | Sign Up |
| **Description** | Allows new users to create an account. |
| **Actor(s)** | Title Applicant, PRGI Official. |
| **Basic Flow** | 1. The user navigates to the Sign-Up page.<br>2. The system displays options to select their role (Title Applicant or PRGI Official).<br>3. The user selects a role, and the respective registration form appears.<br>4. The user enters required details:<br>• Full Name<br>• Email (unique, valid format: example@domain.com)<br>• Username (unique, alphanumeric, 5-15 characters)<br>• Password (minimum 8 characters, including uppercase, lowercase, number, and special character)<br>• Confirm Password<br>5. The system validates the input:<br>• Ensures email and username are unique.<br>• Checks password strength and match with confirmation.<br>6. If all validations pass, an email verification link is sent to the user.<br>7. The system displays "Check your email to verify your account."<br>8. After email verification, users are taken to their respective dashboards.<br>9. The use case ends successfully. |
| **Alternate Flows** | **a) User chooses PRGI Official role**<br>• The user is taken to official dashboard only after getting verified by the system admin.<br>• Until then, the user can stay in the signup page or close signup and login directly after getting verification from admin.<br>**b) Email or Username Already Exists**<br>• The system prompts: "Email/Username already registered. Try a different one."<br>**c) Invalid Input Format**<br>• If any field fails validation, an error message is displayed with guidelines. |

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| | **d) Password Doesn’t Meet Criteria**<br>• The system prompts: "Password must be at least 8 characters, including uppercase, lowercase, number, and special character."<br>**e) User Fails to Verify Email**<br>• If the user doesn’t verify their email within 24 hours, the system deactivates the incomplete registration.<br>• The user can request a new verification link.<br>**f) Registration Abandoned**<br>• If the user leaves mid-registration, no data is stored unless the form is submitted. |
| **Pre-conditions** | The user must have internet access, a valid email, and unique credentials. |
| **Post-conditions** | If successful, the account is created, and the user can log in after email verification. |

## 1.2. Log In

| | |
|---|---|
| **Name** | Log In |
| **Description** | Allows registered users to access their accounts. |
| **Actor(s)** | Title Applicant, PRGI Official, System Administrator. |
| **Basic Flow** | 1. The user navigates to the login page.<br>2. The system displays role selection options (Title Applicant, PRGI Official, System Administrator).<br>3. The user selects their role, and the corresponding login form appears.<br>4. The user enters their credentials:<br>• Username or registered email (must match a valid account).<br>• Password (case-sensitive, must match stored credentials).<br>5. The system validates the credentials:<br>• If correct, the system grants access and redirects the user to their dashboard.<br>• If incorrect, an error message is displayed.<br>6. If login is successful, the system logs the session and updates last login timestamp.<br>7. The use case ends successfully. |
| **Alternate Flows** | **a) Incorrect Username or Password**<br>• The system displays: "Invalid username or password. Please try again."<br>• After three failed attempts, the system temporarily locks the account for 5 minutes.<br>**b) Forgotten Password**<br>• The user clicks “Forgot Password?”<br>• The system prompts for a registered email.<br>• If valid, the system sends a password reset link.<br>• The user resets the password and logs in successfully.<br>**c) Account Not Verified (For new official users)**<br>• If the admin hasn’t verified the new official account after sign-up, the system displays: "Admin verification pending.”<br>• The user can wait till the admin verifies the account and grants access.<br>**d) Email Not Verified (For new users)**<br>• If the user hasn’t verified their email during sign-up, the system displays: "Email verification required. Check your inbox."<br>• The user can do a new registration through signup.<br>**e) Inactive or Suspended Account** |

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| | • If the account is deactivated by the system administrator, the system displays: "Your account has been suspended. Contact support."<br>**f) User Navigates Away Before Logging In**<br>• If the user leaves the page before entering credentials, no action is recorded. |
| **Pre-conditions** | The user must be registered and have an active account. |
| **Post-conditions** | If successful, the user is logged in and can access authorized functionalities. |

## 1.3. Manage Account Settings

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|---|---|
| **Name** | Manage Account Settings |
| **Description** | Allows users to modify system and account settings. |
| **Actor(s)** | Title Applicant, PRGI Official, System Administrator |
| **Basic Flow** | 1. The user logs into the system and navigates to the "Settings" section.<br>2. The system displays available preference options categorized as follows:<br>a. **Account Settings** – Update personal information (name, email, username) or Reset password.<br>b. **Notification Preferences** – Manage in-app notifications for approval of registration and query responses.<br>3. The user selects a category and makes the desired modifications.<br>4. The system validates and saves the changes.<br>5. A confirmation message is displayed, and the use case ends. |
| **Alternate Flows** | **a) Invalid Input**<br>• If the user enters an invalid format for email, password, or other fields, the system displays an error message and prompts for corrections.<br>**b) Reverting Changes**<br>• If the user wishes to discard modifications before saving, they can cancel the operation, and no changes will be applied.<br>**c) Logging Out**<br>• If the user wishes to log out from the system, then the user can proceed with the “Log out” option from the account settings and securely log out of the system. |
| **Pre-conditions** | The user must be logged into the system. |
| **Post-conditions** | The modified preferences are saved, and the system reflects the updates accordingly. |

## 1.4. Approve/Reject Official Accounts

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| **Name** | Approve/Reject Official Accounts |
| **Description** | Admin reviews and acts on PRGI official signup requests. |
| **Actor(s)** | System Administrator |
| **Basic Flow** | 1. The system administrator navigates to **Official Signup Requests**.<br>2. The system displays a list of pending PRGI official signup requests.<br>3. The admin reviews each request, including the entered details.<br>4. If applicable, external info is cross-verified for authenticity.<br>5. The admin either **approves** or **rejects** the request.<br>6. If approved, the official is granted access and redirected to their dashboard (from signup page) or allowed to login.<br>7. If rejected, the system discards the request along with provided signup details.<br>8. The use case ends successfully. |
| **Alternate Flows** | **a) Insufficient Info**<br>• If the admin finds insufficient information, they can hold the request. |
| **Pre-conditions** | PRGI official must have completed the signup request form. |
| **Post-conditions** | The PRGI official account is either activated or denied access. |

## 1.5. Manage User Accounts

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|---|---|
| **Name** | Manage User Accounts |
| **Description** | Allows the system administrator to manage user accounts. |
| **Actor(s)** | System Administrator |
| **Basic Flow** | 1. The system administrator logs into the system and navigates to the "User Management" section.<br>2. The system displays a list of all registered users, along with their roles and submission history (if Title Applicant) or registration approval history (if PRGI Official).<br>3. The system administrator selects a specific user account to manage.<br>4. The system presents available account management options:<br>a. **Freeze an account** – Temporarily restrict user access based on violations or suspicious activity.<br>b. **Delete an account** – Permanently remove a user account from the system.<br>5. The system administrator selects the desired action and confirms the operation.<br>6. The system processes the request and updates the user account accordingly.<br>7. The administrator receives a success message.<br>8. The use case ends successfully. |
| **Alternate Flows** | **a) Reversal of an Action**<br>• If the administrator needs to undo a freeze of an account, they can navigate to the affected user's profile and revert the action. |
| **Pre-conditions** | The system administrator must be logged in with administrative privileges. |
| **Post-conditions** | The selected account is updated based on the performed action, and the changes are logged in the system. |

## 2. TITLE PROCESSING & MANAGEMENT SUBSYSTEM:

## 2.1. Submit Title for Verification

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| **Name** | Submit Title for Verification |
| **Description** | Allows title applicants to enter and submit their titles for analysis. |
| **Actor(s)** | Title Applicant |
| **Basic Flow** | 1. The title applicant logs into the system.<br>2. The system allows the user to enter the title they wish to verify, through their dashboard.<br>3. The user enters the title and submits it for verification.<br>4. The system processes the title and redirects the user to the **Analysis Page.**<br>5. The use case ends successfully. |
| **Alternate Flows** | **a) Invalid Title Entry**<br>• If the user enters an empty or improperly formatted title, the system prompts for correction before proceeding.<br>**b) System Processing Delay**<br>• If title verification takes longer than expected, the system displays a loading indicator and notifies the user to wait. |
| **Pre-conditions** | The title applicant must be logged into the system. |
| **Post-conditions** | The system processes the title, and redirects the user to the Title Analysis Page. |

## 2.2. View Title Analysis and Result

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|---|---|
| **Name** | View Title Analysis and Result |
| **Description** | Allows title applicants the view the verification analysis for the submitted title along with the verification result. |
| **Actor(s)** | Title Applicant |
| **Basic Flow** | 1. The title applicant successfully submits a title for verification through their dashboard.<br>2. The system processes the title and redirects the user to the **Analysis Page**, where the following information is displayed:<br>a. **Similar Titles –** A list of top 50 most similar existing titles is displayed along with their similarity percentage with the submitted title.<br>b. **Similarity Score** – Displays the highest percentage of similarity with existing titles.<br>c. **Verification Probability** – Shows the likelihood of approval based on similarity score and some predefined criteria.<br>d. **View Verification Result** – Displays whether the title is accepted or rejected based on the verification probability and predefined acceptance threshold.<br>e. **Feedback for Rejections** – If rejected, the system provides reasons for rejection like, too similar to an existing title, usage of restricted words, etc...<br>f. **Modify & Resubmit** – If the title is rejected, then the user can make changes and resubmit the title.<br>g. **Register Title** – If the title is accepted, then the user can proceed with title registration.<br>5. The applicant reviews the analysis results and takes appropriate action. |
| **Alternate Flows** | **a) Not registering Accepted Title**<br>• If the user doesn't want to register an accepted title, then the user is allowed to come out of the analysis page.<br>• User can use their history section to register these titles.<br>**b) Access through History**<br>• If the applicant wants to access the Analysis page of a particular previously submitted title, then the submission history section can be used.<br>• All unregistered but accepted titles can be registered only through this option. |
| **Pre-conditions** | The title applicant must have submitted a title for verification. |

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| **Post-conditions** | The analysis page is displayed with similarity scores, verification probability, verification result and feedback (if rejected) or Register option (if accepted). |

## 2.3. Register Title

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| **Name** | Register Title |
| **Description** | Allows the title applicant to register an approved title. |
| **Actor(s)** | Title Applicant |
| **Basic Flow** | 1. The title applicant views the analysis page and sees that the title has been accepted.<br>2. The **"Register Title"** button is enabled for the applicant.<br>3. The applicant clicks the **"Register Title"** button.<br>4. The system navigates to the registration page.<br>5. The system prompts the user to fill out the necessary details including title details and ownership details.<br>6. The applicant fills out the registration form and confirms the registration.<br>7. The system takes this form to the PRGI officials.<br>8. An official verifies other external documents and processes and approves the registration.<br>9. The title is registered and stored in database.<br>10. User is notified about the approval of registration.<br>11. The use case ends successfully. |
| **Alternate Flows** | **a) Registration Pending**<br>• The title after submitting the registration form would fall under 'Pending' category.<br>• It would change to 'Registered', once the title is approved by an official.<br>**b) User Cancels Registration**<br>• The applicant chooses not to proceed and exits the registration page or the applicant cancels a pending submitted registration.<br>• The title remains approved but unregistered. |
| **Pre-conditions** | The submitted title must be approved in the verification result. |
| **Post-conditions** | The title is successfully registered and stored in the system, with a confirmation message provided to the applicant. |

## 2.4. Approve/Reject Title Registrations

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|---|---|
| **Name** | Approve/Reject Title Registrations |
| **Description** | Officials act on submitted title registration requests. |
| **Actor(s)** | PRGI Official |
| **Basic Flow** | 1. The PRGI official accesses the **Registration Requests** section.<br>2. The system displays all pending title registration requests.<br>3. The official selects a request and reviews the submitted registration form.<br>4. External legal procedures (outside the website) are verified and confirmed.<br>5. If all external requirements are met, the official **approves** the registration.<br>6. The system sends success notifications to both the applicant and the responsible official.<br>7. The registered title is added to the **Existing Titles** section for public reference.<br>8. If legal requirements are not met or discrepancies exist, the official may **reject** the request. |
| **Alternate Flows** | **a) Verification Pending**<br>• The official may postpone action if external legal procedures are incomplete.<br>• In that case, the registration is kept as pending. |
| **Pre-conditions** | The title applicant must have submitted the title registration form. |
| **Post-conditions** | The title is either registered or rejected and removed from pending requests. |

## 2.5. Manage Restricted Words and Affixes

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|---|---|
| **Name** | Manage Restricted Words and Affixes |
| **Description** | Allows PRGI officials to manage the list of restricted words and affixes. |
| **Actor(s)** | PRGI Official |
| **Basic Flow** | 1. The PRGI official navigates to the **"Manage Restrictions"** page.<br>2. The system provides two sections, "**Restricted Words**" and "**Restricted Affixes**". Official can choose the one, they need to manage.<br>3. The system displays the list of all restricted words/affixes along with their details (e.g., category (if affixes), last modified/added by, date modified/added).<br>4. The official can perform the following actions:<br>○ **Add a New Restricted Word/Affix:**<br>a. Enter the new word/affix in the space provided.<br>b. Select the category as prefix or suffix (if affix).<br>c. Confirms to add the word/affix to the list.<br>○ **Modify an Existing Word/Affix:**<br>a. Selects a word/affix from the list.<br>b. Edits its details (e.g., spelling, category).<br>c. Saves the changes.<br>○ **Delete a Word/Affix:**<br>a. Selects a word/affix from the list.<br>b. Clicks **"Delete"** and confirms the deletion.<br>5. The page includes the following features:<br>○ **Search Bar:** To find specific words.<br>○ **Sorting:** By word/affix name and date modified.<br>○ **Filters:** To view words/affixes based on categories or date range.<br>○ **Pagination:** To navigate large lists efficiently.<br>6. After adding, modifying or deleting a word/affix, the system saves the changes in the database along with the officials' username and date of action.<br>7. A notification is sent to all the officials mentioning the action, official name and date of the action.<br>8. These restrictions are updated and will be applied for further verification processes. |
| **Alternate Flows** | **a) User Cancels an Action**<br>• At any point, the PRGI official can cancel adding, modifying, or deleting a word/affix.<br>• No changes are saved.<br>**b) Attempt to Add a Duplicate Word/Affix** |

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| | • The system checks if the word/affix already exists.<br>• If found, an error message is displayed, preventing duplication. |
| **Pre-conditions** | The PRGI official must be logged into the system. |
| **Post-conditions** | The restricted words/affixes list is updated based on the PRGI official's actions and a notification mentioning the changes is sent to all the officials. |

## 3. TITLE EXPLORATION & RECORDS SUBSYSTEM:

## 3.1. Search and View Existing Titles

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|---|---|
| **Name** | Search and View Existing Titles |
| **Description** | Allows users to search, filter, and view existing titles. |
| **Actor(s)** | Title Applicant, PRGI Official |
| **Basic Flow** | 1. The user navigates to the **"Existing Titles"** page.<br>2. A list of all existing titles is displayed.<br>3. The user can enter keywords in the search bar to find specific titles.<br>4. The system filters the list dynamically based on the search input.<br>5. The user can apply sorting and filtering options, including:<br>• **Sort by:** Alphabetical order, Date of registration, etc...<br>• **Filter by:** Category, Language, etc...<br>6. The user selects a title from the list.<br>7. The system displays the title's detailed description.<br>8. The use case ends successfully. |
| **Alternate Flows** | **a) No Matching Titles Found**<br>• If no titles match the search criteria, the system displays a message: **"No matching titles found."**<br>• The user can modify the search query or reset filters. |
| **Pre-conditions** | The user must be logged into the system. |
| **Post-conditions** | The user successfully searches and views existing title details. |

## 3.2. View Submission History

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|---|---|
| **Name** | View Submission History |
| **Description** | Allows title applicants to view their past title submissions. |
| **Actor(s)** | Title Applicant, System Administrator |
| **Basic Flow** | 1. The applicant navigates to the **History** section.<br>2. The system provides two sections namely, verification history and registration history.<br>3. Applicant can choose either verification or registration history to view.<br>**Verification History:**<br>4. All the previously submitted titles for verification are listed along with the details like status and date of submission.<br>5. User can open the analysis page of a title by clicking the info button provided.<br>6. If the applicant wants to register a pre-verified accepted title, then the info button can be used to register the title through analysis page.<br>**Registration History:**<br>4. All the previously submitted titles for registrations are listed along with the details like status and date of submission.<br>5. User can check whether a title registration is approved by any official and got registered in the system.<br>6. The Applicant can cancel any registration if the registration is not approved by any official.<br>7. The use case ends successfully. |
| **Alternate Flows** | **a) Pre-verified Registration**<br>• A pre-verified accepted title can be registered only through this history page.<br>• The titles that are accepted during verification process are stored in a buffer, so that no other similar titles can be accepted during verifications.<br>**b) Delete Title**<br>• If the user wants to delete a title from verification history.<br>• The title is also removed from the buffer to allow further similar titles during verification.<br>**c) Cancel registration**<br>• Once a pending registration is cancelled, the registration is marked as “Cancelled” in the place of status.<br>**d) Admin access**<br>• The system admin can also view the submission history of any applicant through the “Manage Users” section. |

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| **Pre-conditions** | The user must have submitted at least one title for verification. |
| **Post-conditions** | The applicant can view the history of submissions and manage them. |

## 3.3. Monitor Title Registration History

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|---|---|
| **Name** | Monitor Title Registration History |
| **Description** | PRGI officials can view recently registered titles and their details. |
| **Actor(s)** | PRGI Official |
| **Basic Flow** | 1. PRGI official opens their dashboard.<br>2. A list of recently registered titles is displayed with details such as:<br>o Title name<br>o Registration date<br>o Publisher name<br>3. The most recently registered title is present at the top of the list.<br>4. The official can click on any title to view its full description. |
| **Alternate Flows** | **a) Accessing older titles**<br>• If the official wants to access any title that is not present in the recently registered title list, then it can be accessed from the Existing titles section, with appropriate filters and sorting. |
| **Pre-conditions** | The PRGI official must be logged in with the necessary permissions. |
| **Post-conditions** | Officials gain insights into recent registrations of Titles. |

# 4. SUPPORT & HELP SUBSYSTEM:

## 4.1. Access Help & Guidelines

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|---|---|
| **Name** | Access Help & Guidelines |
| **Description** | Provides guidance on using the software. |
| **Actor(s)** | Title Applicant, PRGI Officials |
| **Basic Flow** | 1. The user navigates to the **Help and Guidelines** section.<br>2. The system displays a categorized list of topics, including:<br>○ **General Overview:** Introduction to the system and its purpose.<br>○ **Title Submission Process:** Steps to submit, modify, and verify a title.<br>○ **Analysis Page Explanation:** Understanding similarity scores, verification probability, and rejection feedback.<br>○ **Title registration:** How the registration process works, when and how to register.<br>○ **Accessing Submission History:** How and why to use History section.<br>○ **Existing Titles:** How to access existing titles list.<br>○ **Notification:** Getting Support and Registration responses.<br>○ **Guidelines for Officials:** Managing restrictions and registrations.<br>3. If further assistance is needed, users can access contact support. |
| **Alternate Flows** | **a) Downloadable Help Documents**<br>• Users can download PDFs or guides for offline reference. |
| **Pre-conditions** | The user must be logged into the system. |
| **Post-conditions** | The user gains knowledge about the system and its functionalities. |

## 4.2. Contact Support

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|---|---|
| **Name** | Contact Support |
| **Description** | Allows users to message the system administrator. |
| **Actor(s)** | Title Applicant, PRGI Officials |
| **Basic Flow** | 1. The user navigates to the **Contact Support** section.<br>2. The system prompts the user to provide a detailed description of the issue faced.<br>3. The user enters the problem description in the space provided and submits the request.<br>4. The system sends the message to the **System Administrator**.<br>5. The administrator reviews the issue and responds via the system.<br>6. The user receives a notification when a response is available. |
| **Alternate Flows** | **a) Response Delay**<br>• If the system admin takes time to respond to support requests, then the user will not get any notification.<br>• User may need to wait till he/she gets a response. |
| **Pre-conditions** | The user must be logged into the system. |
| **Post-conditions** | The user receives assistance from the system administrator. |

## 4.3. Respond to Support Queries

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|---|---|
| **Name** | Respond to Support Queries |
| **Description** | Allows the system administrator to view and respond to support requests. |
| **Actor(s)** | System Administrator |
| **Basic Flow** | 1. The system administrator navigates to the **Support Requests** section.<br>2. The system displays a list of all support requests, including:<br>o Username<br>o User role (Title Applicant / PRGI Official)<br>o Submission Date and Time<br>3. The administrator selects a support request to review.<br>4. The system displays detailed information of the issue, provided by the user.<br>5. The administrator types a response and submits it.<br>6. The system sends the response to the user as a notification. |
| **Alternate Flows** | **a) Filter and Sort Requests**<br>• The administrator can filter or sort requests by user type or date. |
| **Pre-conditions** | The system administrator must be logged into the system and Users (title applicants or PRGI officials) must have submitted support queries. |
| **Post-conditions** | The user receives a response or resolution to their support query. |

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END