**Test Scenarios for Each Requirement**

**1.1 User Management**

1. **Register User**
   * **Positive Scenarios:**
     + User successfully creates an account with valid credentials.
     + User receives a confirmation email after registration.
   * **Negative Scenarios:**
     + Registration fails with invalid username or password formats.
     + User tries to register with an already existing username.
   * **Edge Cases:**
     + User inputs very long or special characters in username/password fields.
     + User attempts to register without filling in mandatory fields.
2. **Login/Logout**
   * **Positive Scenarios:**
     + User logs in successfully with correct credentials.
     + User logs out and session ends, returning to login page.
   * **Negative Scenarios:**
     + Login fails with incorrect username or password.
     + User tries to log out without being logged in.
   * **Edge Cases:**
     + User attempts to log in with a username that includes special characters.
     + Session timeout management (logging out after a period of inactivity).
3. **Profile Management**
   * **Positive Scenarios:**
     + User updates profile information (e.g., username, email, password) successfully.
     + Changes reflect accurately across the application.
   * **Negative Scenarios:**
     + User tries to update profile with invalid email format.
     + Update fails due to network error or server downtime.
   * **Edge Cases:**
     + User changes password multiple times in quick succession.
     + Profile fields are left blank or filled with unexpected data.
4. **Password Management**
   * **Positive Scenarios:**
     + User changes password securely from user settings.
     + Password reset via email verification is successful.
   * **Negative Scenarios:**
     + Password change fails due to incorrect current password input.
     + User does not receive password reset email.
   * **Edge Cases:**
     + User resets password with an expired reset link.
     + Password change during peak server load conditions.

**1.2 Recipe Management**

1. **Add Recipe**
   * **Positive Scenarios:**
     + User adds a new recipe with all required fields (title, ingredients, instructions).
     + Newly added recipe is visible in the user’s recipe list.
   * **Negative Scenarios:**
     + Recipe addition fails due to missing mandatory fields.
     + User attempts to add a recipe with duplicate title.
   * **Edge Cases:**
     + Recipe title or instructions contain special characters or emojis.
     + Adding a recipe with a very large number of ingredients.
2. **Edit Recipe**
   * **Positive Scenarios:**
     + User edits existing recipe details successfully.
     + Changes to recipe details are saved and reflected accurately.
   * **Negative Scenarios:**
     + Editing fails due to network issues or server errors.
     + User tries to edit a recipe that does not exist.
   * **Edge Cases:**
     + Recipe title or instructions are edited to exceed maximum character limits.
     + Editing a recipe simultaneously from multiple devices.
3. **Delete Recipe**
   * **Positive Scenarios:**
     + User deletes a recipe from their list successfully.
     + Deleted recipe is no longer visible in the user's recipe list.
   * **Negative Scenarios:**
     + Deletion fails due to permission issues.
     + User tries to delete a recipe that has already been deleted.
   * **Edge Cases:**
     + Deleting a recipe with special characters in the title.
     + Attempting to delete multiple recipes in rapid succession.
4. **View Recipe**
   * **Positive Scenarios:**
     + User views detailed information about a recipe successfully.
     + Recipe details (title, ingredients, instructions) are displayed accurately.
   * **Negative Scenarios:**
     + Viewing recipe details fails due to database connection issues.
     + User tries to view a recipe that is private or restricted.
   * **Edge Cases:**
     + Viewing a recipe with a very long list of ingredients.
     + Accessing recipe details with high server load conditions.
5. **Search Recipe**
   * **Positive Scenarios:**
     + User searches for recipes by keyword, ingredient, or category successfully.
     + Search results accurately display relevant recipes based on the search criteria.
   * **Negative Scenarios:**
     + Search functionality fails due to indexing or database search errors.
     + No results are returned for valid search criteria.
   * **Edge Cases:**
     + Searching for recipes with non-English characters in keywords.
     + Searching for recipes using complex ingredient combinations.

**1.3 Recipe Categorization**

1. **Add Category**
   * **Positive Scenarios:**
     + Admin adds a new recipe category successfully.
     + Newly added category is available for recipe categorization.
   * **Negative Scenarios:**
     + Adding category fails due to duplicate category name.
     + Admin attempts to add category without required permissions.
   * **Edge Cases:**
     + Adding a category with a very long category name.
     + Adding categories during peak load times.
2. **Edit Category**
   * **Positive Scenarios:**
     + Admin edits existing recipe categories successfully.
     + Changes to category details are saved and reflected accurately.
   * **Negative Scenarios:**
     + Editing category fails due to database update errors.
     + Admin tries to edit a category that does not exist.
   * **Edge Cases:**
     + Editing a category name to exceed maximum character limits.
     + Simultaneous editing of categories by multiple admins.
3. **Delete Category**
   * **Positive Scenarios:**
     + Admin deletes existing recipe categories successfully.
     + Deleted category is no longer available for recipe categorization.
   * **Negative Scenarios:**
     + Deletion fails due to category being associated with existing recipes.
     + Admin tries to delete a category without proper permissions.
   * **Edge Cases:**
     + Attempting to delete multiple categories in rapid succession.
     + Deleting categories with special characters in the name.

**1.4 Admin Management**

1. **Manage Users**
   * **Positive Scenarios:**
     + Admin views, edits, or deletes user accounts successfully.
     + Changes to user accounts are reflected accurately.
   * **Negative Scenarios:**
     + Admin tries to edit or delete user account without proper permissions.
     + View/edit user functionality fails due to server errors.
   * **Edge Cases:**
     + Managing a very large number of user accounts simultaneously.
     + Performing user management tasks during peak server load conditions.
2. **Manage Recipes**
   * **Positive Scenarios:**
     + Admin approves or rejects user-submitted recipes successfully.
     + Approved recipes are visible to all users.
   * **Negative Scenarios:**
     + Approval or rejection fails due to server communication issues.
     + Admin tries to approve a recipe that is incomplete or violates guidelines.
   * **Edge Cases:**
     + Simultaneous approval or rejection of multiple recipes.
     + Handling large volumes of recipe submissions.