08-FA25-SP26-MD-MOB

Assignment 1

Sept. 21 2025

<div align="center">System Requirements</div>

1. Functional Requirements (FRs)

- FR-01: The system shall allow users to register using a valid email and password.
- FR-02: The system shall send a confirmation email after successful registration.
- FR-03: The system shall allow users to add and delete items from the data base
- FR-04: The system shall allow users to assign an item to a resident and/or household
- FR-05: The system shall allow users to look at logging data / past logs
- FR-06: The system shall allow users to describe and edit information about an item
- FR-07: The system shall allow admin to approve newly registered users
- FR-08: The system shall allow users to add an image to items

2. Non-Functional Requirements (NFRs)

- NFR-01: The system shall load the dashboard page in under 2 seconds under normal load conditions.
- NFR-02: The system shall support up to 500 concurrent users without performance degradation.
- NFR-03: The system shall save newly created items in under 2 seconds.
- NFR-04: The system shall not expose protected information to unauthorized parties
- NFR-05: The system shall not exceed $100 to maintain the database
- NFR-06: The system shall support 500 items without performance degradation.
- NFR-07: The system shall adhere to good coding standards and practices for maintainability.

3. User Stories

- US-01: As a registered user, I want to reset my password so that I can regain access to my account if I forget it.
- US-02: As a registered user, I want to create an administrator account so that I can have full functionality of the application.
- US-03: As a registered user, I want to receive a confirmation email after registering so I know my account was successfully created.
- US-04: As a registered user, I want to delete an item from the database.

- US-05: As a registered user, I want to add an item to the database.
- US-06: As a registered user, I want to be able to reset my account information (name / email) in case it changes.
- US-07: As an admin user, I want to approve a user attempting to register their account.
- US-08: As a registered user, I want to be able to attach an image to an item in the database.
- US-09: As a registered user, I want attach items within the system to a certain household so that we can determine the amount spent on a certain household.
- US-10: As a registered user, I want attach items within the system to a specific resident so that we can determine the amount spent on an individual client.
- US-11: As an admin user, I want to view the history of who added, deleted, or edited and item so that I can contact them with questions.
- US-12: As a registered user, I want to attach a condition description to each item so that we can determine if an item needs to be fixed or replaced.
- US-13: As a registered user, I want to attach a cost to each item so that we can report our operation costs.

4. Gherkin-Based Acceptance Scenarios

US-01: Password Reset

Feature: Password Reset
Scenario: Successful password reset with valid email

Given I am on the password reset page
When I enter my registered email
And I click the "Reset Password" button
Then I should receive a password reset link in my email

Scenario: Failed password reset with unregistered email

Given I am on the password reset page
When I enter an email not linked to any account
And I click the "Reset Password" button
Then I should see an error message "Email not found"

Scenario: Password reset with mismatched new passwords -- Added after GenAI
Given I am on the reset password form
When I enter a new password and a confirmation password that do not match
And I click "Submit"
Then I should see an error message "Passwords do not match"

US-02: Create Administrator Account

Feature: Administrator Account Creation
Scenario: Successful administrator account creation with valid details

Given I am logged in as an existing administrator
When I enter valid details for a new administrator account
And I click "Create Administrator"
Then the new administrator account should be created
And I should see a confirmation message "Administrator account created successfully"

Scenario: Failed administrator account creation with duplicate email

Given I am logged in as an existing administrator
When I try to create a new administrator account with an email already in use
And I click "Create Administrator"
Then I should see an error message "Email already exists"

Scenario: Failed administrator account creation with missing fields -- Added after GenAI
 Given I am logged in as an administrator
 When I try to create a new administrator account without filling in required fields
 Then I should see an error message "Required fields cannot be empty"

US-03: Receive Confirmation Email After Registration

Feature: Account Registration Confirmation
Scenario: Successful account creation sends confirmation email

Given I am on the registration page
When I enter valid registration details
And I submit the registration form
Then my account should be created
And I should receive a confirmation email

Scenario: Failed account registration with invalid email format

Given I am on the registration page
When I enter an invalid email format
And I submit the registration form
Then I should see an error message "Invalid email format"
And my account should not be created

US-04: Delete an Item from the Database

Feature: Delete Database Item
Scenario: Successful item deletion

Given I am logged in as a registered user
And I have access to the database
When I select an existing item
And I click "Delete Item"
Then the item should be removed from the database
And I should see a confirmation message "Item deleted successfully"

Scenario: Failed deletion of non-existent item

Given I am logged in as a registered user
And I have access to the database
When I try to delete an item that does not exist
Then I should see an error message "Item not found"

Scenario: Cancel deletion after prompt -- Added after GenAI
Given I am attempting to delete an item
When the system asks me to confirm
And I select "Cancel"
Then the item should not be deleted

US-05: Add an Item to the Database

Feature: Add Database Item
Scenario: Successful item addition

Given I am logged in as a registered user
And I am on the "Add Item" page
When I enter valid item details
And I click "Add Item"
Then the item should be added to the database
And I should see a confirmation message "Item added successfully"

Scenario: Failed item addition with missing required fields

Given I am logged in as a registered user
And I am on the "Add Item" page
When I submit the form without filling in required fields
Then I should see an error message "Required fields cannot be empty"
And the item should not be added to the database

Scenario: Adding a duplicate item -- Added after GenAI
Given I am adding a new item
When I enter details for an item that already exists in the database
Then I should see a message "Item already exists"

US-06: Reset Account Information

Feature: Reset Account Information
Scenario: Successful update of account information

Given I am logged in as a registered user
When I update my name and email with valid information
And I click "Save Changes"
Then my account information should be updated
And I should see a confirmation message "Account information updated successfully"

Scenario: Failed update with invalid email format

Given I am logged in as a registered user
When I update my email with an invalid format
And I click "Save Changes"
Then I should see an error message "Invalid email format"
And my account information should not be updated

US-07: Registration Verification
Scenario: Admin accepts the registration of a new user

Given that I am an admin approving a new user

When I accept their registration

Then the user will be added to the system

And the user will receive an email saying "Your registration has been accepted"

Scenario: Admin decline the registration of a new user

Given that I am an admin approving a new user

When I decline their registration

Then the user will not be added to the system

And the user will receive an email saying "Your registration has been declined"

US-08: Adding an Image

Scenario: User adds an image to an existing item

Given that I am logged in as a registered user

And I am viewing an item in the system

When I attach an image for the item

And I save my changes

Then the image of the item will be updated and can be viewed when the item is selected

Scenario: User adds an image to a new item

Given that I am adding a new item to the system

When I attach an image to the item

And add the item

Then the new item will display with the image I attached

Scenario: Attach image with unsupported file type -- Added after GenAI
Given I am attaching an image to an item
When I select a file type other than JPG, PNG, or GIF
Then I should see an error message "Unsupported file type"

US-09: Attaching items to a household

Scenario: User assigns an item to a different household

Given that I am viewing an item that is already assigned to a household

When I select the option to attach the item to a new household

And save my changes

Then I will be asked to confirm the removal of the item from the previous household's inventory or cancel the assignment

Scenario: Household does not exist -- Added after GenAI
Given I am trying to assign an item to a household
When I select a household that does not exist
Then I should see "Household not found"

Scenario: Item already assigned to a household -- Added after GenAI
Given I am viewing an item that is already assigned to a household
When I attempt to assign it again to the same household
Then I should see a message "Item already belongs to this household"

US-10:

Scenario: User assigns an item to a resident

Given that I am viewing the item to be assigned

When I select the option to attach the item to a resident

And I save my selection

Then the item will be added to the resident's inventory

Scenario: User assigns an item to a different resident

Given that I am viewing the item that is already assigned to a resident

When I select the option to attach the item to a new resident

And I save my selection

Then I will be asked if the item should be removed from other residents attached to the item before adding the item to the new resident's inventory.

Scenario: Resident not found -- Added after GenAI
Given I am trying to assign an item to a resident
When I search for a resident that does not exist
Then I should see "Resident not found"

US-11: View item history

Scenario: Admin views the history of an item

Given that I am logged in as an admin user

And I am viewing an item within the system

When I select the option to view the items history

Then I will see a history log showing past changes to the item and the user responsible

Scenario: Non-Admin User views the history of an item

Given that I am logged in as a non-admin user

And I am viewing an item within the system

When I select the option to view the items history

Then I will receive a message stating "Insufficient access level"

US-12: Add condition to an item

Scenario: User edits the condition to an existing item

Given that I am logged in as a registered user

And I am viewing an item within the system

When I enter a new condition for the item

And I save my changes

Then the condition of the item will be updated and can be viewed when the item is selected

Scenario: User adds a condition to a new item

Given that I am adding a new item to the system

When I enter a condition in the condition field

And add the item

Then the new item will display with the condition I entered

Scenario: Condition not provided -- Added after GenAI
Given I am adding a new item
When I leave the condition field empty
Then I should see a message "Condition is required"

US-13: Attach cost to an item

Scenario: User adds a valid price to a new item

Given that I am adding a new item to the system

When I enter a price within the cost field

And add the item

Then the new item will display with the price I entered

Scenario: User adds an invalid price to a new item

Given that I am adding a new item to the system

When I enter a negative number within the cost field

And save the item

Then a message will pop up stating "Invalid cost entered. Please replace before saving."

5. GenAI Reflection

Overall, we found it helpful to use GenAI for further brainstorming. Although most of the returned user stories and scenarios were repeats of our existing ideas, there were some boundary and edge cases that we had not considered. It was especially helpful for understanding how a user might interact with our system in unexpected ways. For example, GenAI suggested multiple scenarios where a user canceled their changes part way through, which was not something we had full coverage for. GenAI improved the coverage of our user stories and user scenarios.

The scenarios generated by GenAI are highlighted in red above. One example of an added scenario was "Attach image with unsupported file type". This helped provide coverage for situations where user's attempt to interact with the system in unsupported ways.

GenAI was not particularly helpful for generating functional and non-functional requirements. The returned requirements were either repeats of existing requirements or out of scope for this project. Our client requested a simple system for ease of use, while GenAI consistently suggested a more complex system.

Generally, GenAI was not useful for producing realistic program flows. For example, it was common for GenAI to suggest a scenario in which a user edits a deleted item in the system and receives an error message when they save. Within our system, a user would not have the option to edit a deleted item, and so this scenario was not useful to us.