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Business Requirements Specification

Introduction

Sprout Exchange is an interactive transaction-based web application that connects gardeners with patrons that can contribute (monetarily) to their garden in exchange for a share of the produce.

- A gardener is defined as someone who owns any amount of yard space or land.
 - Instead of letting that space remain unused, they can use it to grow food and to make a profit.
 - A gardener posts a proposal on the platform, complete with diagrams and other layout specifications.
- A sponsor visits the platform and can view a list of potential investment opportunities.
 - After investing in a garden, a sponsor becomes a stakeholder, and the money raised is used to maximize the garden's potential and returns.

As time passes, gardeners provide their patrons with updates through the platform. At harvest, all patrons are rewarded with their share of the produce. If at any time a patron decides that they don't want to own a share of a garden anymore, they may sell their shares in a market where other patrons can buy or sell shares after the initial offering.

User Requirements

1. User accounts shall be created and required to browse gardens, carry out transactions, and communicate with other users. *(User accounts ensure that payments are secure, information is saved for future retrieval, and private communication can occur between different users.)*
 - 1.1. All users shall register for an account that will grant them control over specific information depending on their role.
 - 1.2. There are only two types of users: gardeners and patrons.
 - 1.3. All users shall log into their account using their provided username and password.
 - 1.4. All users shall be presented with a dashboard upon logging in. This dashboard shall feature information that is relevant to each type of user.
 - 1.5. All users shall be able to log out.
2. All gardeners shall create a garden.
 - 2.1. The system shall automatically unlist a garden if it has passed its sponsor deadline and has no patrons.
 - 2.2. All users - gardeners, patrons, and users who are not currently logged in shall be able to view a garden after its creation.
 - 2.3. Gardeners shall be able to update their garden after creating it.
 - 2.4. Gardeners shall be able to delete their garden after creating it.
3. Gardeners shall create different levels of shares in their garden that patrons can purchase. Each share shall cost a different amount, proportional to the promised return of produce.
 - 3.1. Gardeners shall be able to update a tier after creating it.

- 3.2. Gardeners shall be able to delete a tier after creating it.
4. Gardeners shall provide updates to their patrons in a blog format, with text and images. (*Updates will keep patrons engaged in their garden, or convince them to sell their shares if they are not content.*)
5. Patrons shall browse all available gardens. (*All gardens that have shares available for sale shall be browsable.*)
6. Patrons shall be allowed to monetarily sponsor a garden by purchasing 1 or more shares in that garden.
7. The system shall allow patrons who own any amount of shares in a garden to list their shares for sale on a marketplace. (*In this secondhand market, shares can be listed for price for purchase by other patrons.*)
8. All transactions shall be secure and require users to create an account.
9. Users privacy shall be respected and identities shall be secured.
10. All searches should not take a long time to load the results.

System Requirements

1. All users shall register for an account that will grant them control over specific information depending on their role.
 - 1.1. This functionality shall only be accessible to users who do not already have an account and are not currently logged in.
 - 1.2. A user shall only assume one of two roles, either as a gardener or as a patron, but not as both. Each type of user has different functionalities as illustrated in Figure 1.2.1:

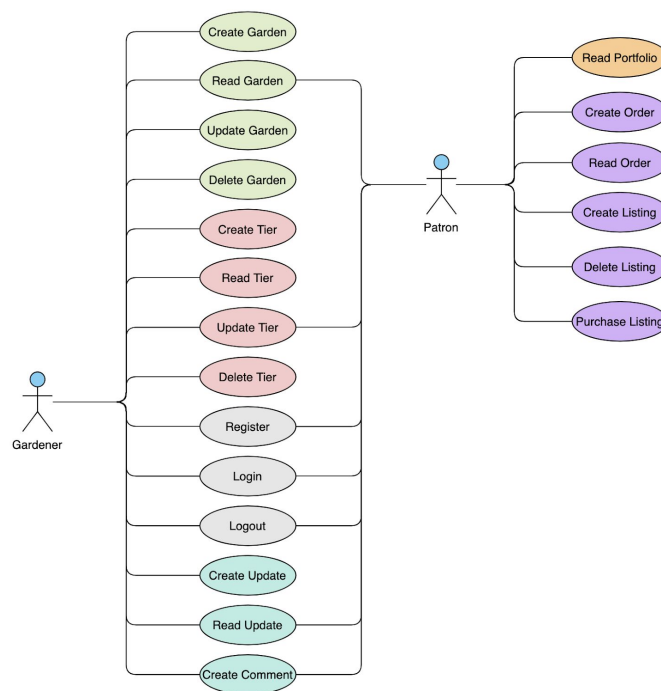
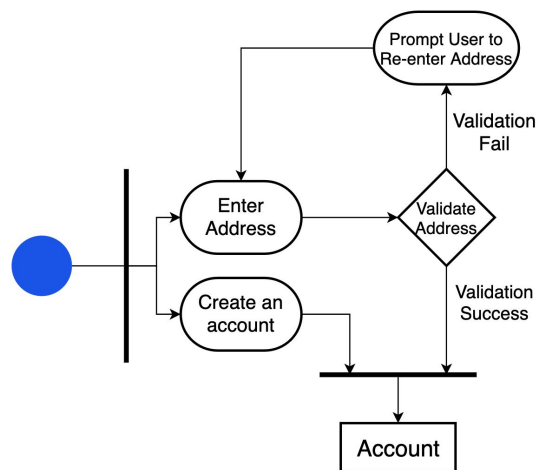


Figure 1.2

- 1.3. All types of users shall register for an account using a single general form.
 - 1.3.1. This form shall feature a checkbox for users to indicate their role.
 - 1.3.1.1. Users shall choose either gardener or patron, not both.
 - 1.3.1.2. The role chosen at registration shall be fixed upon creating an account, and may not be changed after this point.
- 1.4. Basic contact and login information is submitted through the form.
 - 1.4.1. Contact information includes first name, last name, email, phone number, and mailing address.
 - 1.4.1.1. This information will be used for transaction records, shipping, and communication with the system and/or among users.
 - 1.4.1.2. The mailing address shall be validated to ensure that it is a valid location.
 - 1.4.1.3. Patrons shall enter the address where they want their produce to be mailed to at harvest time.
 - 1.4.1.4. Gardeners shall enter the address of the location of their garden.



- 1.4.2. Login information includes a valid username and password.
- 1.5. After submitting the registration form, users are redirected to a login screen and prompted to log in using their username and password.
2. All users shall log into their accounts using their provided username and password.
 - 2.1. A login form is presented and is accessible only to users who are not currently logged in.
 - 2.2. All types of users shall log in to their account using a single form.
 - 2.3. If either the username or password is incorrect, an error message is displayed and the user is prompted to re-enter their information.
3. All users shall be presented with a dashboard upon logging in. This dashboard shall feature information that is relevant to each type of user.
 - 3.1. Gardeners shall be provided with access to tools for the management of their gardens. This includes editing their garden, providing patrons with updates, and viewing garden statistics.
 - 3.1.1. All of a gardener's gardens shall be listed in alphabetical order.
 - 3.2. Patrons shall have quick access to their portfolio of all owned shares, recent updates from all of the gardens that they are patrons of, and a list of all of their recent transactions.

- 3.2.1. The portfolio shall list shares in order: first by garden name, then by tier.
- 3.2.2. Recent updates shall appear along with their respective garden's name and timestamp.
 - 3.2.2.1. Recent updates shall be limited to those dated within the past 30 days.
- 3.2.3. All updates shall be listed in ascending order with respect to the timestamp, with the most recent updates appearing first.
- 3.2.4. Recent transactions shall appear along with their respective transaction id, garden's name/tier, and timestamp.
 - 3.2.4.1. Recent transactions are limited to the 10 most recent transactions.
- 3.2.5. All transactions shall be listed in ascending order with respect to the timestamp, with the most recent transactions appearing first.
- 3.3. Buttons shall allow for one-click access to the above-mentioned tools.
- 4. All users shall be able to log out.
 - 4.1. Logging out ends a user's session and redirects them to the login page.
 - 4.2. Users attempting to log out while currently in a transaction such as purchasing shares or creating a garden shall be presented with a warning.
 - 4.2.1. Users shall be allowed to bypass the warning, after which their transaction is canceled and no changes are made.
- 5. All gardeners shall be able to create a garden.
 - 5.1. Only users who are logged in on a gardener account can create a garden.
 - 5.1.1. The owner of the garden is assumed to be the user logged in at the time of the garden's creation.
 - 5.2. Creating a garden means providing:
 - 5.2.1. A garden name
 - 5.2.2. Textual description describing one's aspirations for the garden, goals, and plan of execution.
 - 5.2.3. Images of the current space or any blueprints.
 - 5.2.4. A sponsor deadline after which no more patrons shall be able to sponsor a garden.
 - 5.3. When a garden is created, it also features other fields that are initialized and change as patrons sponsor the garden.
 - 5.3.1. A running total of the amount raised for each garden is initially set to \$0.00 and increases as patrons purchase shares in a garden.
 - 5.3.2. A running total of the number of backers supporting a garden is initially set to 0 and increments as distinct patrons purchase shares in a garden.
 - 5.3.2.1. Distinct patrons are those who have different login credentials. This ensures that the same patron is not counted multiple times, thus resulting in a false count.
 - 5.3.3. The date of creation of the garden is noted for recording and calculating subsequent deadlines.
 - 5.4. Upon creation, a garden shall be automatically marked as active and shall appear in any search results across the entire platform.

- 5.4.1. After the sponsor deadline date passes, the garden is automatically marked as inactive, thus preventing other patrons from sponsoring a garden past its deadline.

Function	Create a garden.
Description	Creates a garden that will be listed on the platform for patrons to sponsor.
Inputs	Garden name, Textual description, Images, sponsor deadline
Output	A garden is created
Precondition	The user is logged in and their account role is set to gardener.
Postcondition	A garden is created and its owner set to the current user.

Figure 5.4.1

6. The system shall automatically unlist a garden if it has passed its sponsor deadline and has no patrons or if it has not passed its sponsor deadline but has no more shares available to purchase.
 - 6.1. The deadline shall be specified by the gardener and must be at least 30 days from the date that the garden was created. This is done to ensure a sufficient period for patrons to buy shares.
 - 6.2. Gardeners shall be able to modify a deadline given that the updated deadline adheres to the above conditions.

Condition	Action
Current_date <= sponsor_deadline & num_available_shares > 0	Active = True
Current_date > sponsor_deadline	Active = False
Current_date <= sponsor_deadline & num_available_shares < 0	Active = False

Figure 6.1

7. Gardeners and patrons shall be able to view a garden after its creation.
 - 7.1. Viewing a garden means that basic information is shown, such as name, general location, the total amount raised, number of backers, images, descriptions, and garden updates.
 - 7.2. If the current user logged in is the gardener that owns that garden, they shall be allowed to edit that garden's information, tiers, and provide updates to their patrons.
 - 7.3. If the current user logged in is a patron, then they will be allowed to view information about that garden, purchase shares in that garden, and view all updates.
 - 7.4. If a user is not logged in, they shall not be allowed to view the garden.

- 7.4.1. Anonymous users who attempt to view a garden will be prompted to log in or register for an account.

Condition	Action
Current_user is logged in & current_user is gardener	Can view and update garden
Current_user is logged in & current_user is not gardener	Can view and purchase shares
Current_user is not logged in	Can not view garden or purchase shares, prompted to log in

Figure 7.1

8. Gardeners shall be able to update basic garden information after creating it.
 - 8.1. A form is prepopulated with current information and the user shall be prompted to make changes.
 - 8.2. Upon submitting the form, the information shall be posted and gardeners shall be redirected to their garden's page.
9. Gardeners shall be able to delete their garden after creating it.
 - 9.1. Deletions of a garden shall only occur if the garden does not have any backers, ie. it has not raised any funds.
 - 9.1.1. If a garden has at least one backer, then it must not be deleted because this would involve a refund process.
 - 9.1.2. In this case, an error message shall be provided to the user indicating the reason for their unsuccessful deletion attempt.

Condition	Action
Num_backers > 0	Garden can not be deleted, error message displayed.
Num_backers = 0	Garden can be deleted

Figure 9.1

10. Gardeners shall create different levels of shares or "tiers" in their garden that all patrons can view and purchase.
 - 10.1. A text description of the promised return, an estimated harvest date, the price of the share, and the total number of available shares is provided.
 - 10.2. Each tier of a garden shall cost a different amount, proportional to the promised return of produce.
 - 10.2.1. No two shares may have the same price, thus ensuring that different levels are established.

- 10.3. The price and description of any tier is unchangeable after it has been created. This ensures that there is consistency in patrons' expectations and the promised return.
- 10.4. Each level of shares must have a maximum quantity of available shares to be purchased.
- 10.5. The estimated harvest date must be 50 days after that garden's sponsor deadline to ensure sufficient time for gardeners to collect funds and farm their garden.
- 11. Gardeners shall be able to delete a tier after creating it.
 - 11.1. Deletions of a tier shall only occur if that tier does not have any backers, and has not raised any funds.
 - 11.1.1. If a tier has at least one backer, then it must not be deleted because this would involve a refund process.
- 12. Gardeners shall provide updates to their patrons in a blog format, with text and images.
 - 12.1. The system shall notify all patrons of their garden's updates immediately after updates are posted.
 - 12.2. Updates shall be presented on the respective garden's page.
 - 12.2.1. Longer posts shall be truncated after 1000 words and users can see more on a separate display.
 - 12.3. Patrons shall be able to view the updates and post text comments on an update.
 - 12.3.1. Comments shall include a patron's username, the DateTime of posting, and a text body.
 - 12.3.2. Comments shall be listed in ascending DateTime order and limited to the most recent 25.
 - 12.3.2.1. Comments shall be queued as requested by clicking a "See More Comments" button under the most recent comment of a particular update.
- 13. Patrons shall browse all available gardens.
 - 13.1. An available garden is a garden whose deadline has not arrived and that has 1 or more remaining shares.
 - 13.2. Gardens that have no remaining shares shall be closed and will not be available for all patrons to browse since they are not available to sponsor.
- 14. Patrons shall be allowed to monetarily sponsor a garden by purchasing 1 or more shares in that garden.
 - 14.1. Patrons will select a share, specify the number of shares that they would like to purchase, provide billing information such as address and payment information.
 - 14.2. Upon payment being validated and checking out, the system shall inform the user of their purchase through email and updating their profile.
 - 14.3. This quantity shall not exceed the total number of that tier that is available for purchase.
 - 14.3.1. Users can only purchase shares that exist.
 - 14.4. The total number of available shares is decremented from the garden to reflect the purchase.
 - 14.5. The number of backers and the total amount raised is increased in response to the purchase made.
 - 14.6. Upon purchasing shares, those shares are added to a patron's portfolio as a holding.
 - 14.7. Gardeners shall not be able to purchase shares in their garden or anyone else's garden.

Function	Purchase shares in a garden.
Description	A patron purchases shares in a specific garden.
Inputs	A particular garden share, credit-card information.
Output	Shares added to patron's holdings portfolio; transaction receipt generated; email sent to buyer.
Precondition	The user is logged in and their account role is set to patron. A garden share is selected, credit-card information is provided.
Postcondition	The user owns shares in that garden. Gardens total amount raised = total amount before purchase + purchase amount. Garden total backers increased by 1 if it is a new user.

Figure 14.1.1

15. Patrons shall be provided with a confirmation page that serves as a receipt for their transaction.
 - 15.1. It shall feature a transaction number for future reference, as well as a total amount.
16. The system shall allow patrons who own any amount of shares in a garden to list their shares for sale on a secondary marketplace.
 - 16.1. Other patrons shall be able to visit this marketplace and purchase shares.
 - 16.2. Seller Patrons shall list their shares for any price.
 - 16.3. Shares will remain on the market place until:
 - 16.3.1. They are purchased by another buyer patron.
 - 16.3.2. The garden's harvest date arrives.
 - 16.4. If shares are purchased by another patron, they provide payment information and check out.
 - 16.4.1. When the payment is confirmed, the shares shall appear on their profile and shall be removed from the seller's profile.
 - 16.4.2. When a sale is made on the marketplace, a listing fee of 10% of the listing price shall be automatically deducted by the system:
 - 16.5. If the garden's harvest date arrives and it has not been purchased, the share is removed from the marketplace and the seller retains normal ownership.
17. All transactions shall be secure and require users to create an account.
 - 17.1. Billing information shall not be saved on the system database. Instead, it shall be solely handled by the payments service.
 - 17.2. All users must login to view gardens, read updates, make comments, and purchase shares.
18. Users privacy shall be respected and identities shall be secured.
 - 18.1. Users shall be identified by their username as opposed to their actual name on the system.
 - 18.2. A user's address shall only be made known to their farmer at the time of shipping.
 - 18.3. A farmer's address shall be generalized to city and state.
19. All searches should not take a long time to load the results.

- 19.1. Larger queries for comments or gardens shall be limited to a certain value to ensure quick load times.

Platform Requirements Specification

1. The system shall be constructed using the Django Framework in the Python programming language.
 - a. It shall make use of the Django user authentication and security framework.
2. The website shall run on a web server and accessible through a website.
 - a. The website shall be mobile-friendly, such the system's functionality is accessible on a web browser on a mobile device.