My Garden App

An application developed by Rachel Warner

Introduction

My Garden App is a helpful tool designed to simplify plant care and garden management. It allows users to identify plants, access tailored care information, and receive timely notifications for essential tasks like watering, pruning, and fertilizing. Whether you're growing a few houseplants or maintaining a full garden, this app helps you stay organized and informed, so your plants thrive with ease.

Features

The application features tools such as:

My Garden

My garden is a portion of the application that stores the plants you identify in your garden

• A local SQLite database that stores the plants you identify in your garden.

Identification History

Get a history of all the plants you have identified.

Care notifications:

• Get notifications for caring for your plants, such as:

Essentials:

- Watering
- Pruning
- Sunlight Adjustment: (moving plants indoors/outdoors based on season, light levels, outside temperatures).
- Fertilizing
 - Notification based on the plant's growth cycle (e.g. once a month during growing season).
- Repotting
 - o Every 6-12 months for some indoor plants.
 - Notifying based on plant age or user log.
- Seasonal Changes
 - o Bring plants indoors before frost
 - Bring plants in based on temperature outside and hardniess
 - Dormancy reminders (stop watering or fertilizing in the winter)

- Vermicomposting:
 - o Reminders to feed worms

Advanced:

- o Rotation:
 - o For houseplants to grow evenly (every 2-4 weeks).
- o Pest Check:
 - Monthly reminder to inspect leaves/soil
- o Germination or Propagation updates
 - If the user logs propagation, send reminders to check the water roots or transfer to the soil
- o Soil check:
 - o Check pH, nutrients, and moisture
- Weather-driven:
 - o Don't water today—rain expected.
 - o Water more—heatwave this week.
- Custom User Tasks:
 - o The user can add their own custom tasks for reminders, such as: "Spray for fungus"

Backend

The backend of the application is built with **Python** and powered by **FastAPI**, a modern, high-performance web framework designed for building APIs quickly and efficiently. It exposes a series of RESTful endpoints that support core functionality such as searching for plants, managing a personal garden, and logging care tasks.

To minimize external dependencies and improve performance, the backend uses a local **SQLite** database to **cache plant data** retrieved from the <u>Perenual API</u>. This caching strategy reduces redundant API calls and improves response times, especially for frequently accessed plant records. When a user requests data that is not yet stored locally, the backend fetches it from the Perenual API, stores it in the database, and returns the response.

This approach balances the flexibility of a live third-party API with the speed and reliability of local data storage.

Database Architecture:

default_image hardiness dimensions plantID: INT PK plantID: INT FK plantID: INT FK plantID: INT FK scientific_name: TEXT UNIQUE imageID: INT PK min: INT min_value: INT common_name: TEXT license: INT max: TEXT max_value: INT other_name: TEXT license_name: TEXT unit: TEXT family: TEXT license_url: TEXT pruning_month origin: TEXT original_url: TEXT other_names plantID: INT FK type: TEXT regular_url: TEXT plantID: INT FK month: TEXT cycle: TEXT name: TEXT flowers: BOOLEAN pruning_count sunlight flowering_season: TEXT plantID: INT FK plantID: INT FK propagation fruits: BOOLEAN value: TEXT amount: INT plantID: INT FK edible_fruits: BOOLEAN interval: TEXT method: TEXT fruiting_season: TEXT scientific_names harvest season: TEXT watering_benchmark attracts plantID: INT FK harvest_method: TEXT plantID: INT FK plantID: INT FK name: TEXT edible_leaf: BOOLEAN species: TEXT min_value: INT growth_rate: TEXT max_value: INT maintenance: TEXT my_garden_plants unit: INT medicinal: BOOLEAN gardenplantID:PK poisonous_to_humans: BOOLEAN plantID: INT FK poisonous_to_animals: BOOLEAN sensor sensor_id: INT FK drought_tolerant: BOOLEAN sensorID: INT PK nickname: TEXT invasive: BOOLEAN gardenplantID: INT FK isWatered: BOOLEAN rare: BOOLEAN sensor_type: TEXT wateredDate: DATE NULL indoor: BOOLEAN value: REAL isFertilized: BOOLEAN unit: TEXT care_level: TEXT fertilized_date: DATE description: TEXT timestamp: DATETIME next_fertilized_date: DATE isPruned: BOOLEAN pruned_date: DATE hardiness_zone_threshold next_pruned_date: DATE zoneID: INT FK isInside: BOOLEAN min_temp: REAL isOutside: BOOLEAN max_temp: REAL needsRepotting: BOOLEAN unit: INT repotting_date: DATE next_repotting_date: DATE acquired_date: DATE location_notes: TEXT isDead: BOOLEAN