

SE101 Project Proposal: Smart Garden

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October 10, 2022

Summary

Our proposal is to create an automatic smart garden that monitors the plants and waters automatically using Arduino. Using a soil moisture sensor, soil data will be sent to pumps to water the garden based on their positions. The pumps will shoot quantities of water corresponding with each plant species' needs found in a plant water intake API. The endmost goal is to be able to automate tending to a garden's nourishment using the specified software and hardware applications.

Software Components

- **Moisture Sensor Processing:** Takes data from the sensor regarding the moisture of the soil to determine the intervals in which the plants need watering.
- **Servo Control:** Controls the rotation, water pressure, and flow rate of water pumps

Hardware Components

- **Arduino UNO:** Mainframe for software and connecting hardware.
- **Soil Moisture Sensor:** Hardware used to measure the moisture in the soil.
- **Servo Motor:** Positions the pumps in line with the soil container.
- **Water Pumps:** Transports the water to the plants spanning various relative distances.

Challenges

- Measuring and responding to real-time soil moisture levels for an optimal watering schedule.
- Implementing the existing data of individual plant water needs into hardware function.
- Assembling the hardware components so they function together seamlessly.
- Ensuring that the water is fired at their intended locations.

Evolutionary Prototype Plan

- Connect the moisture sensor to an Arduino software program to monitor moisture.
- Have a working procedure to have the pumps water the plant based on the appropriate watering amounts and intervals.
- Having the recorded information display onto the terminal in real-time.