Automated Gardening Project: User Guide

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CST-452 Capstone Project Proposal

Grand Canyon University

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**TABLE OF CONTENTS**

Project Overview and Project Objectives 3

**TABLE OF FIGURES**

[Figure 1 Presentation/views/login.php 6](#_Toc105172584)

[Figure 2 Presentation/view/register.html 7](#_Toc105172585)

[Figure 3 Presentation/views/sensor.php 8](#_Toc105172586)

[Figure 4 Presentation/views/About.php 9](#_Toc105172587)

[Figure 5 Presentation/views/Store.php 10](#_Toc105172588)

[Figure 6 Presentation/views/cart.php 11](#_Toc105172589)

[Figure 7 Presentation/views/logout.php 12](#_Toc105172590)

Project Overview and Project Objectives

**State the Problem and Background**

A previous project from a prior class for an Internet of Things (IoT) weather station will be used as a base code that will be converted into a different development language. It is a project which was not fully completed at the time and some additional features should be possible to add in along the way as well. The original project was developed in a small group and consists of taking Global Position System (GPS) coordinates as well as atmospheric data from a Raspberry Pi 4 and adding this data to a database through a Python script and then read by a Java web program for display to a user. The plan for this project is to take this concept and convert it into PHP while simultaneously enhancing the user experience. This project will be expanded upon to conceivably control water solenoids to determine whether a garden should be watered for proper fruit and vegetable growth while accounting for current and forecasted weather conditions.

**Christian Worldview**

Guided by a Christian worldview this project is being developed to support this concept through being a good steward of the land and resources provided by God. “As every man hath received the gift, even so minister the same one to another, as good stewards of the manifold grace of God.” 1 Peter 4:10 KJV. In this world we are and hold nothing of our own accord and owe all to God’s grace. By taking the gifts set upon us by God we can better utilize the resources on hand to help ensure a fruitful venture in a literal sense through this project.

**Benefits and Opportunities**

The benefits for this project include but are not limited to decreased water usage and subsequent cost, easier maintenance of a garden at home allowing for more quality time with family and being able to grow food which would otherwise purchase or bartered for. Through a viable design effort allowing for a continuation of development and cost reduction a hardware kit can be made available to other people. This would allow more people the opportunity to grow their own garden with a reduced effort and costs necessary to do so. Through enough sales, growth, and support better software and hardware support and technologies could be taken advantage of to better refine the product and expand upon up-to-date features and technologies.

**Login**

1. From Homepage click the “Login” button to be taken to the Login page.
2. Enter your previously registered username and password.
3. Click the “Login” button to login to the Sensor, Shop, and Cart pages.

Graphical user interface, timeline

Description automatically generated

Figure 1 Presentation/views/login.php

**Register**

1. Enter the required registration information and click “Submit” button

**Graphical user interface, website

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Figure 2 Presentation/view/register.html

**Sensor**

1. Navigate to the Sensor page.
2. Use the “Get I/O” button to see the status of the garden section relays.

**Graphical user interface, website

Description automatically generated**Figure 3 Presentation/views/sensor.php

**About**

1. Navigate to the About page.

**Graphical user interface, text

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Figure 4 Presentation/views/About.php

**Shop**

1. Navigate to the store via the “Shop” links.

**Graphical user interface, PowerPoint

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Figure 5 Presentation/views/Store.php

**Cart**

1. Add items to your cart from the Shop page.

**Graphical user interface

Description automatically generated**

Figure 6 Presentation/views/cart.php

**Logout**

1. Click one of the various “Logout” buttons.

Graphical user interface, text

Description automatically generated

Figure 7 Presentation/views/logout.php