SMART GARDEN SYSTEM

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BORANG PENGESAHAN STATUS LAPORAN
PROJEK SARJANA MUDA II

Tajuk Projek : SMART GARDEN SYSTEM

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Specially dedicate to my beloved parent, En. Mohd Said b. Ali and Pn. Sa‟æ Bt Kawi and also to my siblings who give the encouragement and support for me to completed this thesis. Not forgotten to my supervisor Miss Siti Aisah Bt Mat Junos@ Yunus who gave me lot of guidance and advice throughout this project until successful. Thanks you very much to all of you.

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ABSTRACT

This project will describe about Smart Garden System. This project has four systems that will combine to each others to create a perfect combination system. This project only involves hardware only. There are three circuits that are automatic functional and one is functional in manually. The first circuit is an Automatic Water Sprinkle that functional to sprinkle the plants or flowers at the garden. This Automatic Water Sprinkler circuit is operating in automatically. Then second is LDR Sensor that will automatically switch ON the light when it detects the dark condition. The last circuit is motor canopy circuit. This circuit has two functions. First is manually functional is the Motor Canopy Circuit prepared at the „*wakaf*‟ or at the chair that functional to protect garden user from rain and sunlight. Second function is as automatic system that will operate when temperature sensor (LM35) is used. When the sensor detects heat or no heat, the canopy will open or close automatically. An automatic function also prepared at the „*wakaf*‟ or at the chair. This Garden will facilitate and make the users are in a comfortable position because it can protect users from rain and sun. Facilities provided by the garden were user friendly and make it easier to users because it can maintain moister on the plant and it also can save the electricity.

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ABSTRAK

Projek ini menerangkan tentang Smart Garden System. Projek ini mengandungi empat sistem yang akan digabungkan untuk menghasil sistem yang sempurna. projek ini hanya melibatkan penggunaan perkakas (Hardware) sahaja tanpa melibatkan penggunaan „software". Terdapat tiga sistem yang berfungsi secara automatik dan hanya satu sistem yang berfungsi secara manual. Sistem yang pertama adalah sistem „Automatic Water Sprinkle" yang berfungsi untuk menyiram tanaman- tanaman yang berada di taman secara automatik. Sistem yang kedua pula adalah litar „LDR Sensor" yang menggunakan pengesan cahaya (LDR Sensor) sebagai pengesan. Apabila taman berada dalam keadaan gelap, maka Pengesan LDR akan menghidupkan lampu ditaman secara automatik. Sistem yang ketiga dan keempat pula adalah sistem „Motor Canopy". Sistem ini mempunyai dua fungsi, fungsi yang pertama adalah fungsi secara manual iaitu menggunakan suis untuk membuka dan menutup kanopi. Fungsi yang kedua pula adalah fungsi secara automatik iaitu menggunakan pengesan suhu (Temperature Sensor) untuk membuka dan menutup kanopi. Sistem ini disediakan dikawasan- kawasan rehat seperti di wakaf, kerusi dan sebagainya yang akan melindungi pengguna taman daripada panas dan hujan.

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CHAPTER 1

INTRODUCTION

This chapter will briefly discuss on the project overview. The project introduction, problem statement, scope, objective, methodology and report outline will be presented in this chapter

1.1 Introduction

This project is application based on the electronic circuit that applied at the garden which has functional automatically and manually. „Smart Garden System" is a model or a prototype for a real project on a large scale. In this prototype, there are four systems that will combine to each others to make a perfect combination system. This System only involved hardware part.

The first system is an Automatic Water Sprinkle Function is to sprinkle water in automatic condition. It also to ensure the plant or flower at that garden is in good condition. When the soil moister sensor probe detects the soil in dry condition, then the sprinkler will automatically ON. When the soil moister sensor probe detects the soil is in wet condition, then the sprinkler is OFF.

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The second system is LDR Light Sensor is to detect the light. When the garden is in dark condition, this LDR Sensor circuit will automatically light ON the lamp. Otherwise, when the garden is light or in bright condition, the light will automatically OFF the lamp.

Then the last system is the Motor Canopy Circuit is functional either automatic system or manual system. For automatic action, it functions when the canopy detects heat, then the canopy will automatically open and it will automatically close, when there is no heat detect. For manual action, it depends on the owner or the users of the garden. This circuit is important during the rain season that can provide shelter at „*wakaf*" for user to rest and hanging out.

1.2 Advantages of Project

For Smart Garden System there are several advantages for the user. First advantages for smart garden it can produce comfortable to the users by endow with shelter at „*wakaf*". Second advantage is in term of save energy and cost-effective. That is because the LDR sensor and Water Sensor (Pad) are used.

1.3 Problem Statement

The existing garden is less shelter and less comfortable. So, the Smart Garden System is creating to make the garden more shelter and comfortable. The other problem is the existing garden needs people to keep and control the operations. By using this smart garden system, it can easily the user and the owner to control the operation.

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1.4 Objective

There are several objectives need to achieve in this project:

1. To create Smart Garden System that easy to manage
2. To develop four systems: 1) Automatic water Sprinkler System 2) LDR Light Sensor System 3) Motor Canopy System (Manually) 4) Motor Canopy System (Automatically).

1.5 Scope

Smart Garden System will involve for hardware system only. It will have 4 circuits that connected with each other. For Automatic Water Sprinkler, the components that have been used are water sensor (pad), water pump, sprinkler, relay and IC Timer 555. For LDR Light Sensor, the components that have been used are LDR (Light Dependent Resistor) sensor, relay and. For Motor Canopy the component that have been used are temperature sensor (LM35), CD-ROM, LED (Light Emitting Diode), buzzer, operational amplifier IC CA3140, IC CD4001, fuse, and voltage regulator REG 7805.

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1.6 Methodology

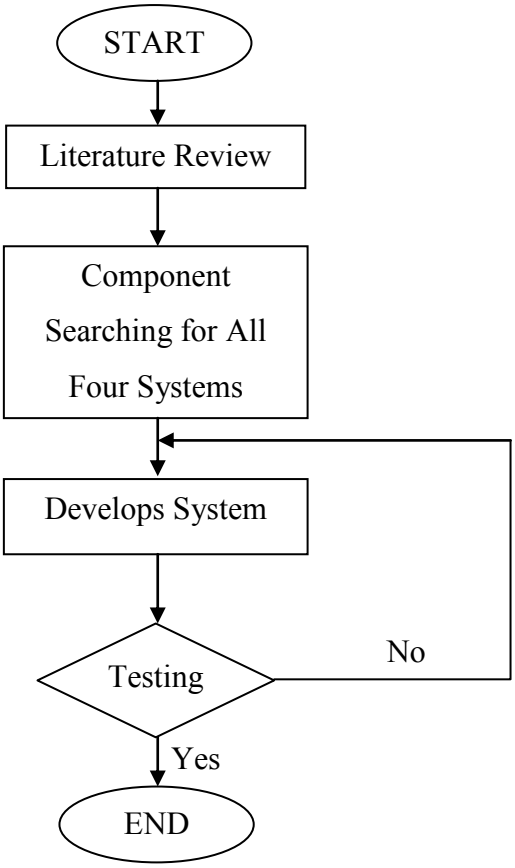

Figure 1.1: Methodology Overview

1.7 Report Outline

This report is organized into six chapters and the outline of each chapter is explained briefly as follows.

Chapter 1 is the introduction of the project which discusses the objectives, project advantages, problem statement and scope of the project.

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Chapter 2 is the literature review of the project. All the theoretical and the basic idea for the project are explained in detail manner.

Chapter 3 is describing the methodology of the project. In this chapter shows the planning of project implementation. This chapter also explains in detail the methods that have being selected.

Chapter 4 will explain the development process for the project. This chapter also will show the equipment involve to accomplish this project.

Chapter 5 is the project result. This chapter consists of discussion and analysis of the project results.

The end of the chapter is chapter 6, project conclusion. This chapter was summarizes the whole project. Some additional idea is discussed for future improvement or to implement in the actual field.

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CHAPTER 2

LITERATURE REVIEW

In this chapter, it will give information and described all components that involve in Smart Garden System project. The major components consist is water sensor (pad), water pump, LDR sensor, LED, relay, H-bridge circuit, temperature sensor and CD-ROM. This component will help to develop the Smart Garden System.

2.1 Automatic Water Sprinkler Circuit

2.1.1 Description

This circuit is functional as automatic system that depends on the garden soil condition. This circuit is important to the plant, it can keeping moister to the plant.

Water sensor (pad) planted in the soil. When the soil is dry, the circuit will operate and turn the pump motor (water pump) for a few seconds and sprinkle the water in the plant. To ensure the dryness of the soil, water sensor (pad) is used.

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2.1.2 Water Sensor (Pad)

Water sensor (pad) is able to monitoring soil water content. Because this pad measures the dielectric constant of the soil using transmission line techniques, it is insensitive to water salinity, and will not corrode over time as does conductivity based probes. This probe is small, rugged, and consume under a milliamp of power. This pad also has a rapid response time. They can be inserted and take an accurate reading in under 1 second. Water sensor (pad) has an output range of 0 to 3V related proportionally to water content.

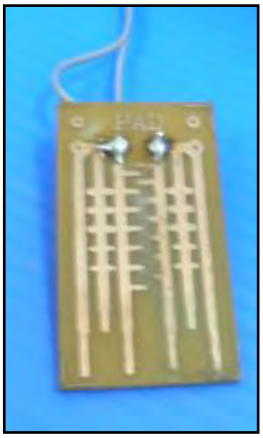

Figure 2.1: Water sensor (pad)

2.1.3 Sprinkler

Sprinkler is an important part of automatic water sprinkler. It is usually installed inside the building and structures with light fire danger, medium fire danger and heavy fire danger, such as workshop, warehouse, hotel, shop, recreational place, hospital, cinema, office building and garage.

The sprinkler is composed of sprinkler frame, sealant and glass bulb. It is to be installed in the protective district via ductwork, acting as a fire detector and auto

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