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Intelligent Monitoring and Maintenance System Automatic on Ornamental Plants

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Abstract
In everyday life, a system with very complex planning is still needed to facilitate daily activities, in helping human life. even more so if that system made or used to be able to do something and can be set up in an integrated system, of course this will have an influence on someone to be able to think about and create a system that can control its surroundings and can help humans efficiently. One way is to create a system to monitor the condition of ornamental plants and take care of them. The purpose of this tool is of course to make it easier for humans to monitor and water plants, and this tool has been tested according to the objectives. The need for a monitoring system for now makes it very easy for users or users to supervise plants,.

Keywords: *Monitoring, Maintenace, Automatic, Plants*

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I. INTRODUCTION

In everyday life, a system with very complex planning is still needed to facilitate daily activities, in helping human life. even more so if that system made or used to be able to do something and can be set up in an integrated system, of course this will have an influence on someone to be able to think about and create a system that can control its surroundings and can help humans efficiently. One way is to create a system to monitor the condition of ornamental plants and take care of them. The need for a monitoring system at this time greatly facilitates users or users in monitoring plants, such as ornamental plants. This monitoring is designed to help monitor the care system for ornamental plant plants cultivated by someone and in the future can be developed more broadly in its application.

The current problem s still little monitoring of ornamental plants. Using smart systems and caring for ornamental plants still does not pay proper attention to temperature conditions, light intensity, levels of water reserves, and soil moisture because people think that ornamentals can survive without serious maintenance. Along with current technological developments, many have given birth to intelligent system technologies that help agriculture to develop more. Various models of intelligent systems can be developed. Including an intelligent system in terms of monitoring soil moisture conditions. And monitoring of water reserves.

The DHT11 sensor is a series of sensor components and controller IC packaged in one package. There are sensors that have 4 pins and some are 3 pins. But it's not a problem because in practice there is no difference. Inside the sensor body which is blue or white in color there is a resistor with NTC (Negative Temperature Coefficient) type. This type of resistor has characteristics where the resistance value is proportional reversed with increasing temperature. That is, the higher the room temperature, the value NTC resistance will be smaller. Otherwise the resistance value will increase when the temperature around the sensor decreases. In addition, inside there is a humidity sensor with characteristics resistive to changes in moisture content in the air. Data from these two sensors is processed inside the controller IC. This controller IC will output data in the form single-wire bi-directional.

The inputs used in this tool are soil moisture sensors, DHT11 water level sensors, LDR sensors. Voltage is obtained via the VCC +5 Volt and GND pins on Arduino Uno R3. The input obtained by the sensor will affect the process and output of this tool.

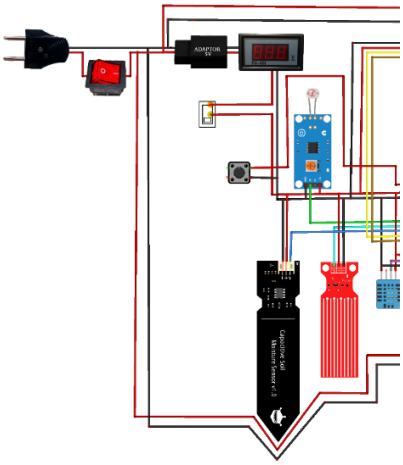

Figure 1. Input Block

The process block is the place where sensor data processing occurs input to be converted into output. The core of this process is the Arduino Uno R3 which will process input from soil moisture sensors, water level sensors DHT11, LDR Sensors,. If the sensor gets data then Arduino Uno R3 will process data according to the program that has been embedded in the Arduino uno R3 and then will be continued in the output block

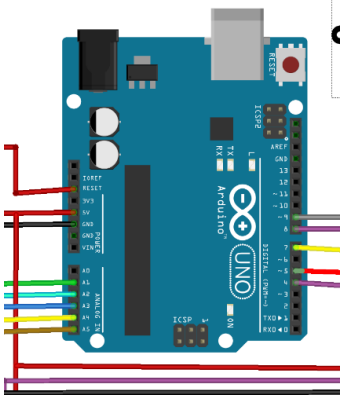

Figure 2. Input Block

The output block is a place or block for the output of a circuit. The output produced by this tool is in the form of a display on the LCD, a buzzer that will sound. Growlights that will turn on, pumps that will flush, fans that will turn on. The on off process occurs because the trigger from the relay.

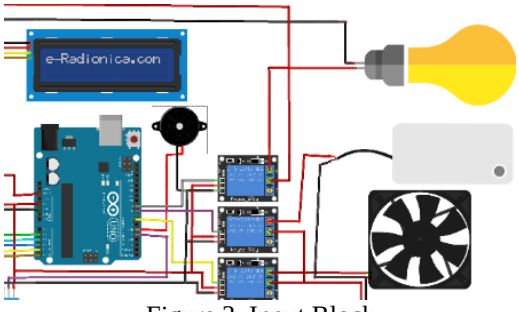

Figure 3. Input Block

II. RESULT AND DISCUSSION

1. Schematic

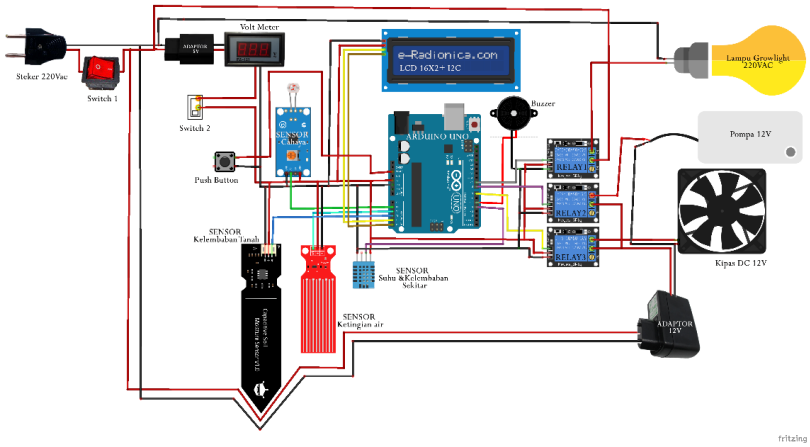

Figure 1. Schematic

schematic drawing of the circuit as a whole. The control center is on the Arduino R3, which is directly connected to the adapter + 5V through the 5v port and GND arduino uno, the powering system in this circuit from the 5v adapter will be connected to the bread board which will be VCC and GND generated from the adapter will be distributed to, Arduino, LCD 16X2, soil sensors moisture, DHT sensors LDR sensors, Water Level sensors and Relays. And for volts meter is an adapter protection system that will be damaged. So you see the voltage which is not fair. After Arduino Uno R3 is active, Arduino Uno will initialize it himself with the instilled program.

2. Result

The results of the system testing process that has been made. Where in the test that will be carried out later in the form of measurements of the components used. After carrying out the testing process of each component used, then an analysis is carried out. Data collection began on July 4 2022 to July 10 2022. It can be seen in the table that significant temperature changes occur during the day on some days the weather is cloudy so the temperature during the day is cool therefore this cloudy weather causes evaporation of water in pots and tubs water reserve reservoir is not too big. Especially for soil sensor values moisture is calibrated so that the reading of the sensor value if the soil moisture is correct true dry value = 0 and if the maximum humidity is worth = 600, from the value Soil moisture sensor readings can be concluded 0 = 0% humidity and 600 = 100%. And even when the condition stops flushing, the sensor will read the value of ± around 400 is due to the rather heavy flow of pump water. If conditions are made above than that then there will be excessive watering, likewise with other sensors the value of the reading on this tool will vice versa. So that you get a percentage value of 0% to 100%.

Figure 2. Temp Result

TABLE 1. Result

Day	Hour	Humidity (%)	Suhu (C)	Water sensor (%)	Light sensor (%)	Pump	Fan	Buzzer
Monday	**07.00**	**68**	**26**	**100**	**92**	**Off**	**Off**	**Off**
	12.00	**63**	**29**	**98**	**97**	**Off**	**Off**	**Off**
	18.00	**58**	**27**	**95**	**73**	**On**	**On**	**Off**
Tuesday	**07.00**	**67**	**27**	**93**	**100**	**Off**	**Off**	**Off**
	12.00	**65**	**35**	**91**	**95**	**Off**	**Off**	**Off**
	18.00	**56**	**26**	**89**	**76**	**On**	**On**	**Off**

	07.00	**65**	**23**	**88**	**97**	**Off**	**Off**	**Off**
	12.00	**63**	**29**	**85**	**95**	**Off**	**Off**	**Off**
	18.00	**54**	**25**	**88**	**70**	**on**	**on**	**Off**

III. CONCLUSION

Based on the results of testing the tools that have been carried out, the intelligent system automated monitoring and maintenance that is designed to be successful and appropriate design, this is shown in the reaction of the tool when reading the respective values each sensor. in accordance with the conditions for triggering the relay so that it can activate the pump, fan and lights on this tool When the soil moisture sensor touches a number less than 100 then the pump will do the watering. , if the soil sensor value is more than 60% will turn off the pump, when the Dht 11 sensor touches temperature more than 28°C it will , turn on the fan, if the temperature value is less than 28°C will turn off the fan, when the Ldr sensor is less than 90% then the Growlight lamp will light up, and if the Ldr value is more than 90% it will turn off the Growlight lamp If the Waterlevel sensor is worth I less than 100 then it will turn on the Buzzer. And on cloudy days then the temperature will be low and the Ldr sensor value will be high because it's a little dark.

REFERENCES

[1]. Abiola K. "Strategy for Development of the Petrochemicals Industry in Nigeria" A paper submitted to the Department of chemical Engineering, University of Lagos.
[2]. Afifah, Erint. "Mengenal Perangkat Lunak Arduino IDE." 2022:
[3]. https://www.kmtech.id/post/mengenal-perangkat-lunak-arduino-ide. di akses pada tanggal 26 juni 2022
[4]. Bayu Tri Anggara, Mimin Fatchiyatur Rohmah, Sugianto. "SISTEM PENGUKUR KELEMBABAN TANAH PERTANIAN DAN PENYIRAMAN OTOMATIS." 2018. Di akses pada 11 juni 2022
[5]. Fasabani, Ejawanti Aulia. *POT PINTAR RAMAH LINGKUNGAN.* 2. Bandung: Erlangga, 2020. di akses pada 8 juni 2022
[6]. Fasabani, Ejawati Aulia. *POT PINTAR RAMAH LINGKUNGAN.* 2020. di akses pada tanggal 14 juni 2022
[7]. Firdaus, Aan. *Penyiraman tanaman otomatis.* 23. Jakarta: Elsevier, 2022. di Akses pada tanggal 16 juni 2022
[8]. JURNAL BIOS LOGOS Accredited by Ministry of Research, Technology and Higher Education. "Tanaman HIAS Janda Bolong." 2019 . di akses pada tanggal 01 juli 2022 JURNAL BIOS LOGOS Accredited by Ministry of Research, Technology and Higher Education. "Tanaman HIAS Janda Bolong." 2019 . di akses pada tanggal 04 juni 2022
[9]. Rachmat Aulia, Rachmat Aulia Fauza, Imran Lubis. "PENGENDALIAN SUHU RUANGAN MENGGUNAKAN MENGGUNAKAN FAN DAN DHT11 BERBASIS ARDUINO." Vol. 6 (2021). di akses pada 20 juni 2022 Suryana, Taryana. "Capacitive Soil Moisture Sensor Untuk Mengukur Kelembaban Tanah." 2021. di akses pada 21 juni 2022
[10]. Sutiono. "Sensor Suhu DHT-11 dan DHT-22." 2022. di akses pada tanggal 26 juni 2022