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Arduino Based Automatic Curtains and Light Dependent Resistor (LDR) Sensors

Athaya Atsiq[a], Amelia Husna[b]

[a,b]Electrical Engineering,Universitas Negeri Padang, Indonesia

*Coresponding email: athaya.atsiq01@gmail.com

ABSTRACT

Today's technological developments provide very real changes in human life. There are many tools made to facilitate human work. With advances in science and technology, innovations are developed that are better. Automatic control systems in the field of science and technology lately also growing rapidly. This can be seen from the range of applications ranging from household to sophisticated equipment. Automatic curtains using Arduino-based light sensors are an idea that arose to meet the needs of home automation systems. Automatic curtains work based on the intensity of light that is captured by the light sensor and is real to be processed by Arduino and gives the task of the driving motor to carry out orders to go up or down the curtain according to the light intensity settings that have been set to the system. Simply put, when the light intensity is 271 - 1000 lux then the curtain goes up, then if the light intensity is 1001 lux the curtain will go down, and if the light intensity is 270 lux then the curtain stays down or closed.

Keywords : Curtain; light sensor; Arduino; Light intensity.

1. INTRODUCTION

In this day and age, people are so busy with various activities that they sometimes forget to close and open things, such as forgetting to close the curtains. This indeed looks very simple, but the consequences are very fatal if the curtains are open when the occupants of the house are traveling. Because it can cause lack of lighting, poor air circulation and can cause surveillance for criminals.

Automatic control systems in the field of science and technology have recently developed very rapidly. Therefore, opening or closing the curtain can also be done automatically by Arduino and the LDR sensor. The curtain automatic control system works during the day and at night. The working principle of this tool, during the day the curtains will open, while at night the curtains will be closed.

2. LITERATURE REVIEW

Many previous studies have discussed automatic curtains with various types of controllers and the methods used include the design of automatic curtain opening devices using a microcontroller and light sensors in control methods and processes (Sudimanto, 2014). Measuring Instrument Design and Realization Light Intensity with the use of an intensity sensor BH1750 digital light and use of LCD for output display (Pamungkas et al.,

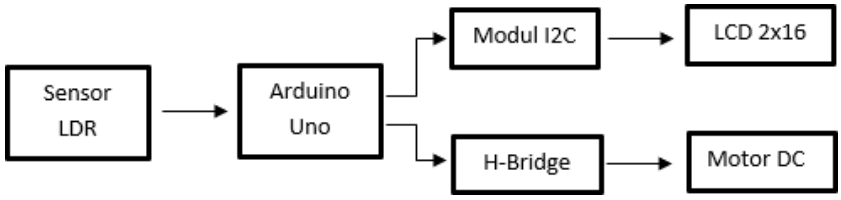
2015). Luxmeter Design Equipped with Arduino Based Proximity Sensor with the additional use of a light sensor in the luxmeter design (Astrawinanta & Rahmawati, 2019). And several previous studies on the use of servo devices for pulleys to open and close curtains have also been carried out in other studies with different tools or methods including the design of an elevator prototype (Adriansyah & Hidyatama, 2013).

3. EXPERIMENTAL

Tool Specifications

The Arduino-Uno based automatic curtain system and LDR sensor includes three parts. First, the input part is the LDR sensor. The second part of the process is using the Arduino-Uno microcontroller. The three output sections consist of a 2x16 LCD and a DC motor.

Block Diagram



*F*igure 1. Block Diagram

Flowchart

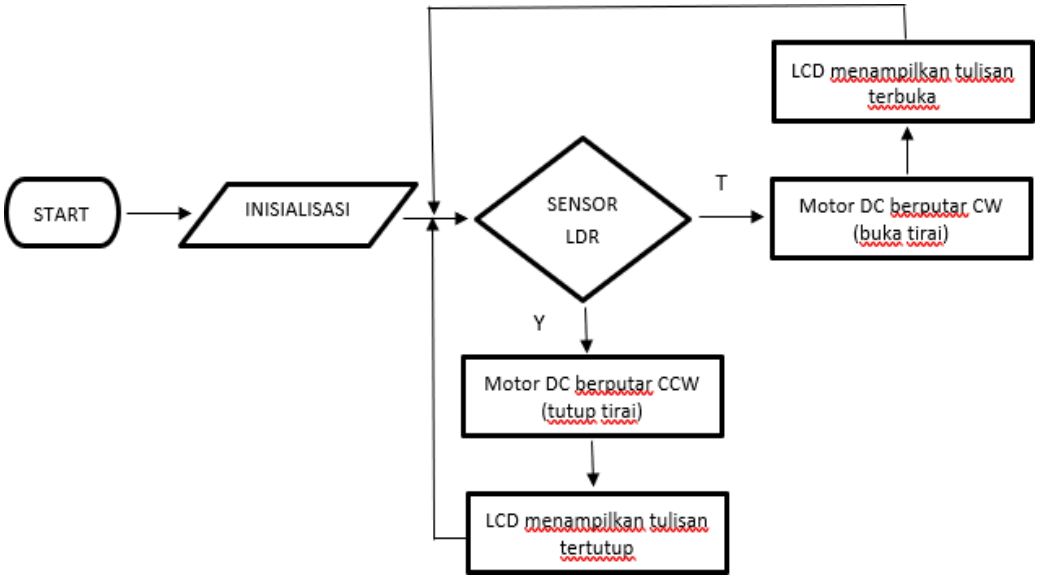


Figure 2. Flowchart

4. RESULTS AND DISCUSSION

Trial Result

Figure 4.1.1 View from the front of the miniature

The working principle of this tool, when there is light entering the LDR sensor, the curtains will open automatically and the LCD will display the word day. When no light enters the LDR sensor, the curtains will close automatically and the LCD will display the word night.

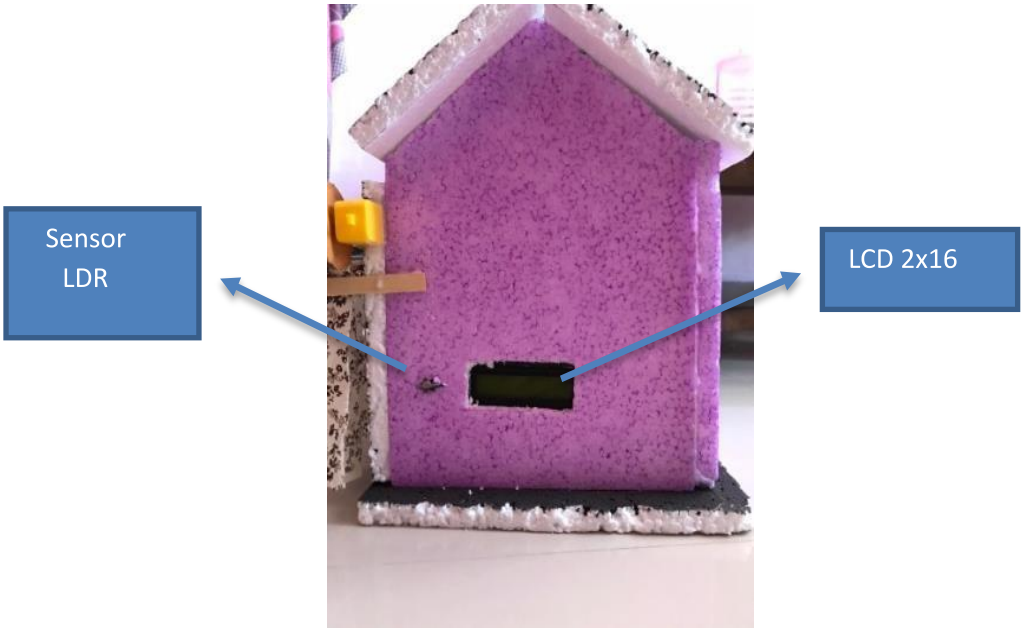


Figure 4.1.1 View from the right of the miniature

However, when this tool is run there is an error in the working system of the curtains. Where the working principle is that when there is light entering the LDR sensor, the curtains will be closed and the LCD will display the words noon.

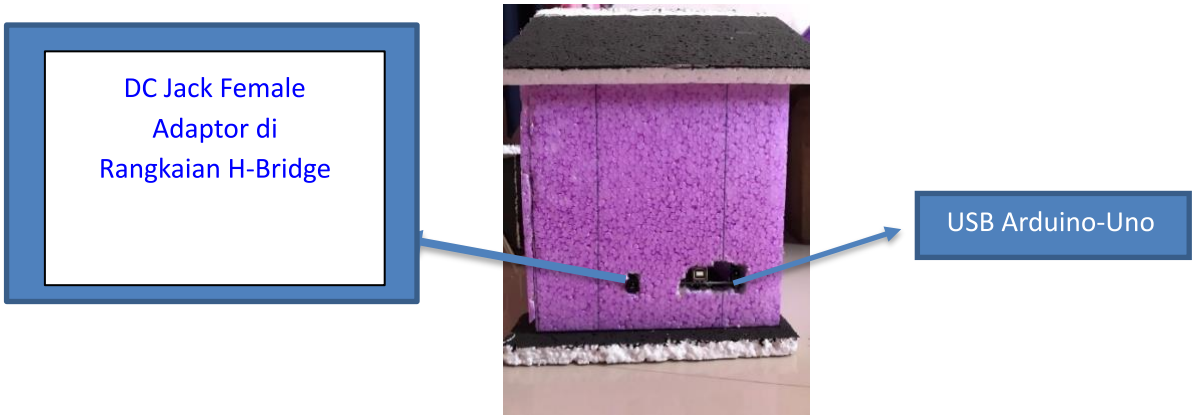


Figure 4.1.1 View from the back of the miniature

When no light enters the LDR sensor, the curtains will open and the LCD will display the word night. This is due to the reverse of the wiring on the DC motor.

Figure 4.1.4 View from inside the miniature

5. CONCLUSION

This tool works to open or close the curtain which can be done automatically by Arduino and the LDR sensor. The curtain automatic control system works during the day and at night. The working principle of this tool, when there is light entering the LDR sensor, the curtains will open automatically and the LCD will display the word day. When no light enters

the LDR sensor, the curtains will close automatically and the LCD will display the word night.

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