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# Microcontroller Based Money Storing Tools with Web Monitoring and Social Media

Prayoga Aldi Kurniawan[1], Ritzkal [2*], Bayu Adhi Prakosa [3]

Faculty of Engineering & Science, Ibn Khaldun University Bogor

E-mail: yogem378@gmai.com[1] , ritzkal@ft.uika-bogor.ac.id[2]*, bayu@uika-bogor.ac.id[3]

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**ABSTRACT**

The money deposit box is one of the equipment at home that functions as a place to store money, although there are many practical money storage media, but there are still those who like to store money in the Money Deposit Box but in that storage many do not know how much the nominal money is. already saved. For this reason, a money storage box based on the Arduino Mega microcontroller was made. This tool can provide information on the amount of money saved and is equipped with a lock as a security. This study designs the hardware platform: (1) Ardunio Mega 2560 (2) TCS3200 sensor (3) DC motor (4) LCD i2C (5) 1ch relay (6) selenoyd doorlock (7) RTC DS3231 (8) Ethernet shield module, and Software: (1)Windows 10 (2)Arduino IDE 1.8 (2)XAMPP 3.2 (3)PHP 10 (4)MySQL (5)Visual Studio Code 1.5 The system is connected to the Internet Network. the data flow will be stored into a MySQL-based database at the NCC Lab, the nominal money obtained from reading the TCS3200 will be flowed through the Internet network, where the use of the ethernet shield module can integrate money storage equipment on the computer with a local MySQL database. Integration of hardware components, software and internet network.



## 1. Introduction

The money storage box is one of the equipment in the house that functions as a place for storage, with the availability of the appropriate storage box and capacity, there will be no accumulation of documents or objects to be stored [1,6]. Although there are many practical money storage media, but there are still people who like to save money in the Money Deposit Box. For this reason, a money deposit box based on the Arduino Mega microcontroller was made. This tool can provide information on the amount of money saved. In this design, the TCS3200 sensor is used to read the value of money entered according to color, for nominal money information, LCD is used as the output information. This money storage box is designed to lock using a solenoid and a relay so that it is not easy to open.

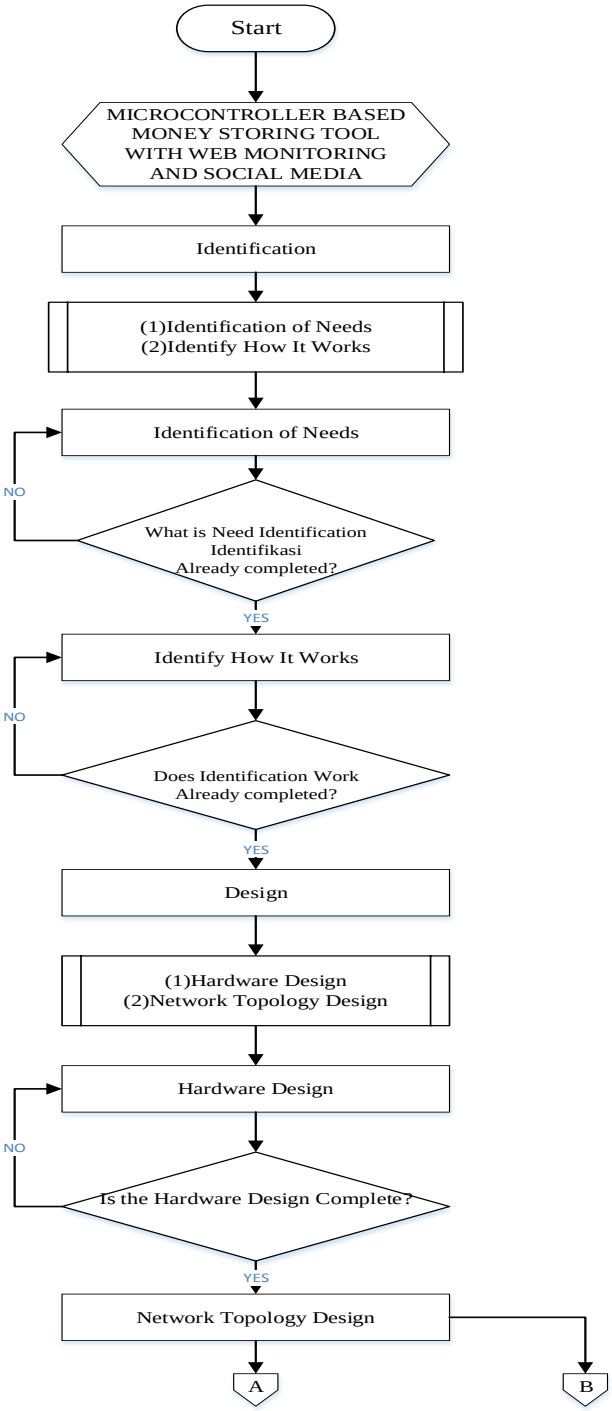
one of the practical money storage media is in the form of a wallet and money storage in a bank, but there are still many who store money in a money deposit box. The money deposit box itself is still in great demand from children to adults, in addition to saving money, money storage boxes are also used as decorations at home and can also be used as children's toys. Most people don't use manual money storage boxes such as ceramic and plastic money boxes because people still don't remember the amount of money they put in the money box and it's easy for users to take it [2,7].

Based on this explanation, the design of a money deposit box system based on the Arduino Mega microcontroller was carried out. In this study[4,5], we want to provide solutions and advantages of the money deposit box for certain considerations that make some people prefer to save in the money deposit box. For now, the solution that can be given is by making a Microcontroller-Based Money Saving Tool with Web and Social Media Monitoring from this money deposit box that has been conFigd using a microcontroller and this tool can provide information on the amount of money saved In designing, using, LCD is used as information output. Selenoid and Relay will be used to lock the money box so that it is not easy to open, the money stored in the box will provide information with Web and Social Media monitoring. The formulation of the problem in this study are (1) How to design and implement a Microcontroller-Based Money Deposit Box?. (2) How to

display income information and web monitoring results on a microcontroller-based money saving device?. (3) How to display information through social media on a microcontroller-based money storage device.

## 2. Research Method

The research method is the steps for research purposes through the problem boundary batasan. Flowchart of research methods, as shown in Fig 1



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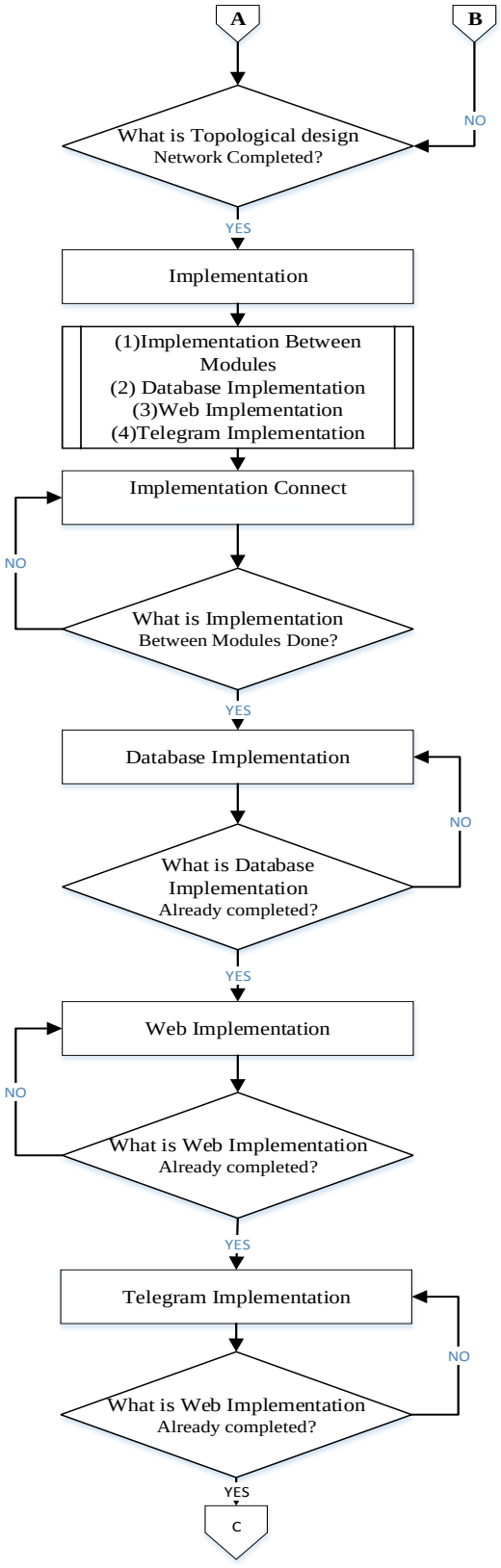




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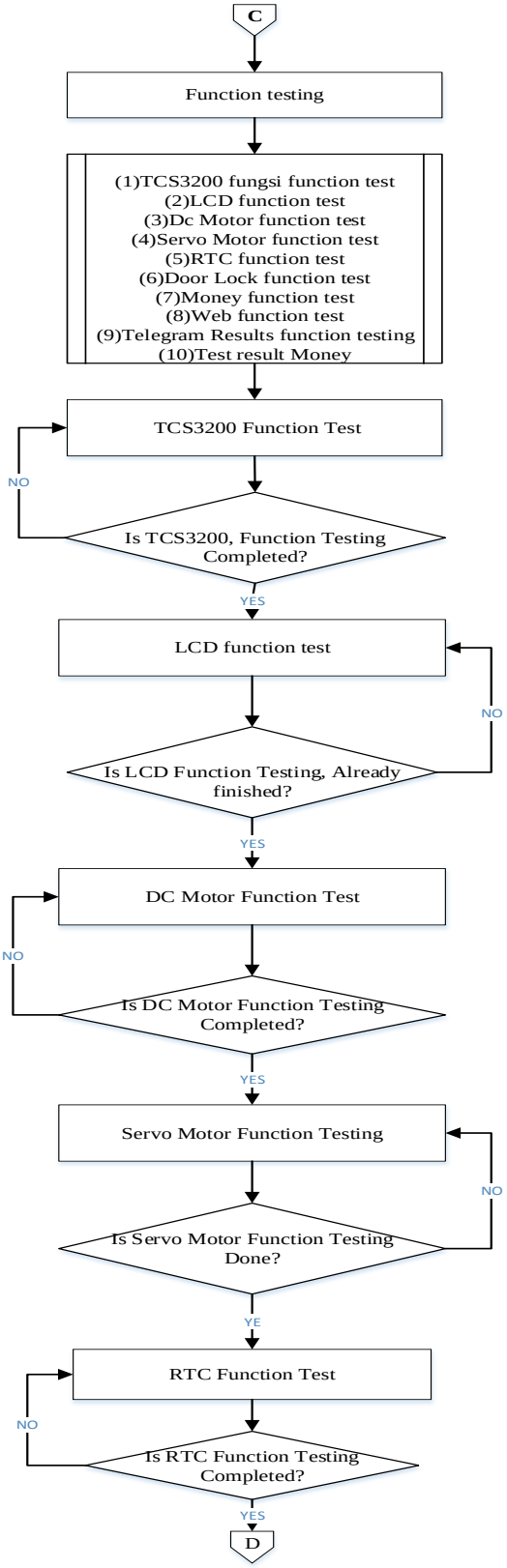




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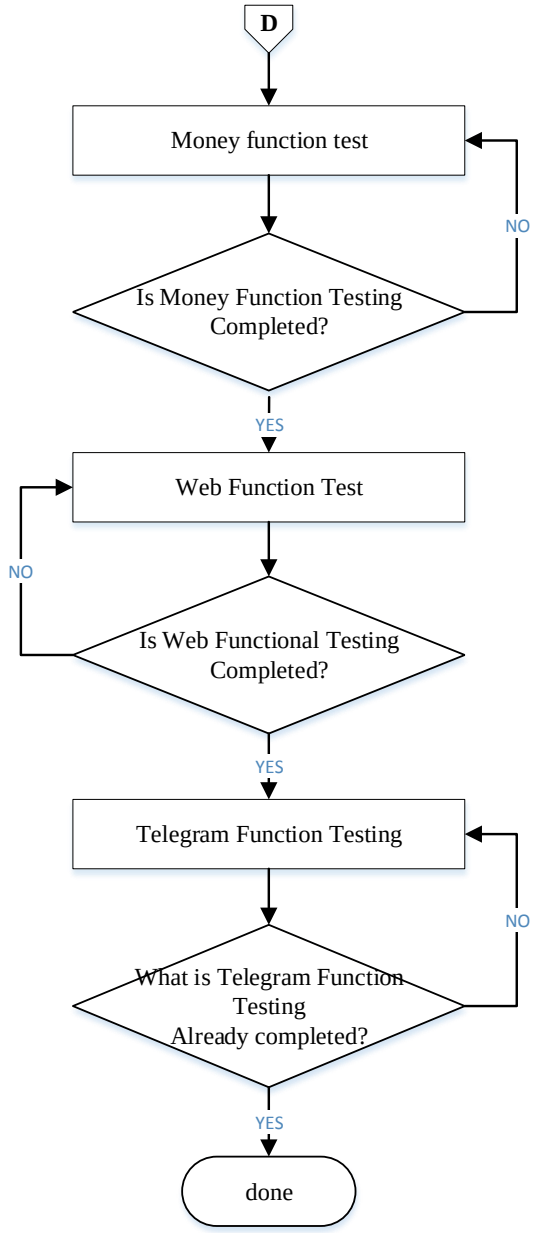


**Fig 1.** Research Method

## 3. Result

In the process of analyzing how it works , it will explain how the system works in this research . The following picture will explain the analysis of how this system works:



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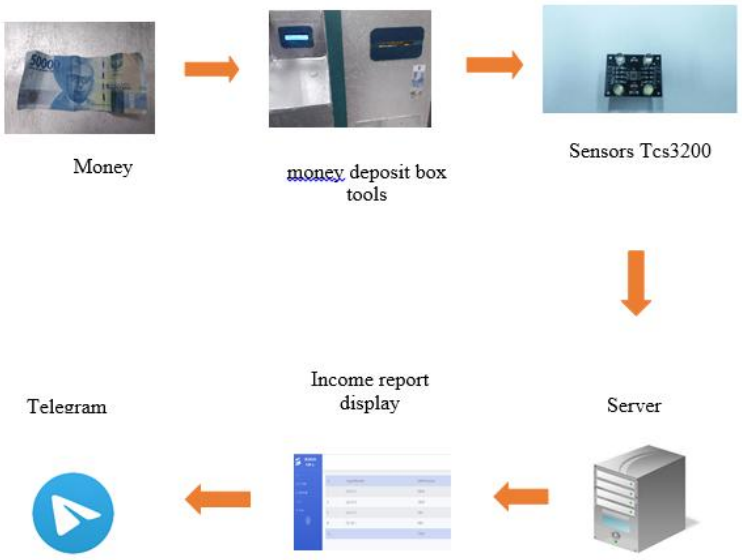


**Fig 2.** Work Analysis

Fig 2 explains how the system works in this study starting with (1) the user entering banknotes into the money deposit box (2) the money deposit box withdrawing the money entered by the user. (3) the TCS3200 sensor detects the color of the banknote, then the TCS3200 sensor will send commands to the Arduino Atmega and Ethernet Shield, the source code that has been created is stored on the server. (4) the server will communicate with the WEB and telegram (5) the web stores reports sent through the server (6) Telegram receives and displays notifications of nominal money.

At the implementation stage, namely the assembly or installation of all components that were previously implemented, the system is actually implemented. The following are the stages of implementation that will be carried out using a flowchart as follows[8].

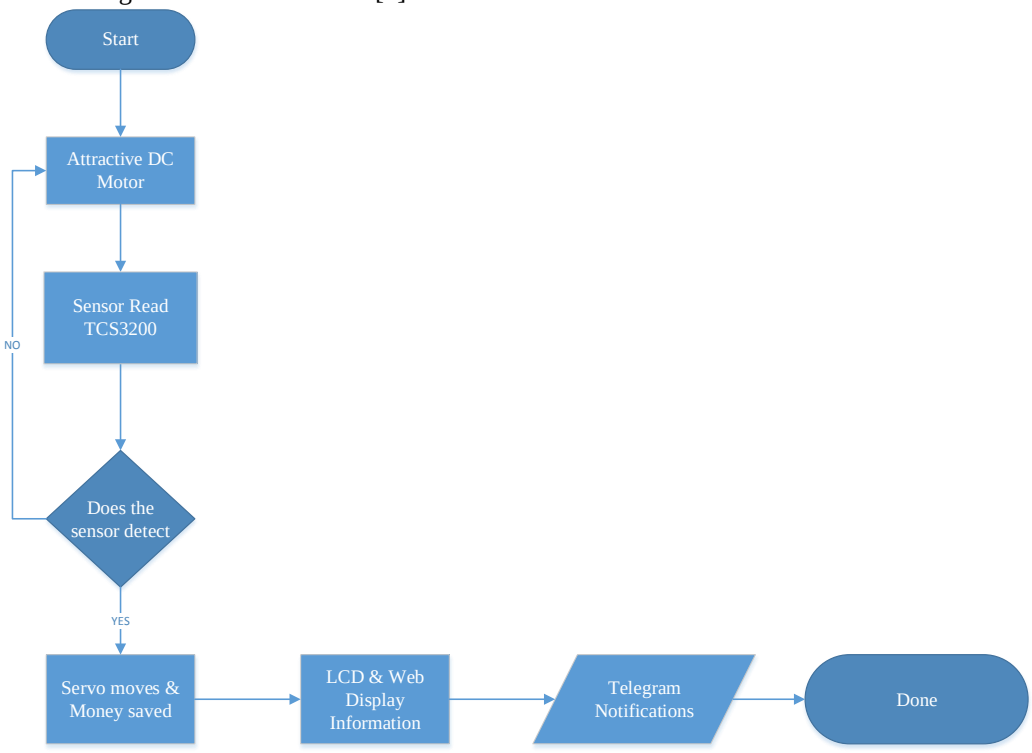


**Fig 3.** Flowchart of How the System Works



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Black box testing is carried out on the Entry page, with the aim that the resulting entry page is as expected and valid. The following is a test table from the entry page.

**Table 1**
Black Box Testing on the Money Entry Page

| No. | Test Name | Test Case | Expected results | Result Test | Conclusion |
|---|---|---|---|---|---|
| 1. | Menambahakan pemasukan uang dengan memasuki uang kedalam alat | Money 100000<br>Money 50000<br>Money 20000<br>Money 5000 | The system will receive the new money data and display the message “data saved successfully”. | According to expzectations | Valid |
| 2. | Change entry data | Money 100000<br>Money 50000<br>Money 20000<br>Money 5000 | The system will receive the new input data and display the message "successfully change the input data". | According to expectations | Valid |
| 3. | Delete entry data | Money 100000<br>Money 50000 | The system will delete and display the message “successfully deleting data entry”. | According to expectations | Valid |

## 4. Conclusion

Based on the discussion of the results of this study, several conclusions were obtained as follows: Physical design has been made and implemented a Microcontroller-based money storage device by putting money into the box, then the sensor reads the color of the money. After that, it will provide notification information to Telegram social media and display text information on the LCD and on the Web providing information on the nominal money, the date the money was entered, and the amount of money. Obtaining money income information through the WEB that has been made to function properly according to its function. Can display money income information through Telegram social media.

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