Jurnal Mantik
Volume 4 Number 1 May 2020, pp. 134-138 E-ISSN 2685-4236
https://iocscience.org/ejournal/index.php/mantik/index

Application Of Heat Coffee Passing Tools With Web-Based Monitoring System

Dede Sunardi[1], Ritzkal[2], A Hendri Hendrawan[3]

[1,2,3] Informatics engineering Study Program, Faculty of Engineering and Science, University of Ibn Khaldun Bogor.

E-mail: sunardidede1@gmail.com,ritzkal@ft.uika-bogor.ac.id,hendri@ft.uika-bogor.ac.id

ARTICLE INFO

Article history:
Received: 02/03/2020
Revised: 29/03/2020
Accepted: 01/05/2020

Keywords:
Coffee,
RFID,
Web,monitor,
Arduino mega

A B S T R A C T

Coffee not only offers large quantities, but also comes in a variety of qualities, varieties, and shapes. These include arabica and robusta, baked or green, as well as instant and soluble. Coffee exports are also a major source of foreign exchange and national income for many developing countries. In 2012, a total export of 7 million tons contributed a value of US $ 24 billion. Only 10 years ago, the value was only US $ 5.1 billion with a total of 5.5 million tons [2]. in this study contains several problem formulations which consist of (i) How to make hot coffee using RFID. (ii) How to monitor the pouring of hot coffee through the web. The research objectives consist of (i) Designing a tool that can be used to pour hot coffee. (ii) Monitor the hot coffee pourer by web monitoring. The method used in the hot coffee pouring system consists of several, analysis, design, testing, and implementation. So the conclusion of this research is (i) RFID can be made as a request to control the device approved by Arduino Mega 2560. (ii) Web monitoring can display coffee making data by type and time of manufacture.

1. Introduction

Coffee is a commodity that is loved all over the world. The demand for coffee from year to year is increasing. As informed by AEKI (Association of Indonesian Coffee Exporters) on the site www.AgroFarm.co.id Friday, 15 Jan 2016 19:39:08, it was reported that "World coffee production is currently being shorted, this is due to the large demand for coffee . In Indonesia began to mushroom coffee shops, and this. increasing domestic coffee needs. Coffee consumption in Indonesia continues to increase. "This year, national coffee consumption is estimated at 1.6-1.7 kilograms / capita. [1]. Coffee is not only traded in large quantities, but also comes in a variety of qualities, varieties and shapes. These include arabica and robusta, baked or green, as well as instant and solubles. Coffee exports are also a major source of foreign exchange and national income for many developing countries. In 2012, a total export of 7 million tons contributed a value of US $ 24 billion. Only 10 years ago, the value was only US $ 5.1 billion with a total of 5.5 million tons [2].

The development of technology is currently very active role in everyday life. The development of technology in various fields is able to facilitate human needs with accuracy and very high speed and determination. [5] Where the use of technology in the field of food and beverages is very often used. One example is the fast food beverage machine. Fast food beverage machine is a machine that can work hot in the process of making drinks. Fast food beverage machines are often found in shopping centers and in food and beverage providers and large restaurants. In general, fast food beverage machines that are often encountered still have shortcomings. These shortcomings include the user having to come in direct contact with the machine and wait until the machine is finished to make the drink as ordered. This makes the user takes a long time to make a fast food drink because they have to go to the beverage machine, choose a drink and wait for the machine to make the drink as ordered. Coffee drinks are in demand by almost all groups of people. Along with the high level of community activity, everything is demanded to be instant and efficient. This microcontroller-based coffee machine is designed to address people's needs

Accredited "Rank 4"(Sinta 4), DIKTI, No. 36/E/KPT/2019, December 13th 2019.

Jurnal Mantik
Volume 4 Number 1 May 2020, pp. 134-138 E-ISSN 2685-4236
https://iocscience.org/ejournal/index.php/mantik/index

for coffee with an efficient serving process. [3,4] so we need a tool to then be made as a faster-serving coffee maker and can be monitored for making coffee through the web. The formulation of the problem in this study is (i). How to make hot coffee pouring equipment using RFID. (ii). How to monitor hot coffee pouring tools via the web. The purpose of this study is (i) Designing a tool that can be used to pour hot coffee, (ii) Monitoring hot coffee pouring tools with web monitoring.

2. Research Methods

The research method or framework in this research is to carry out a gradual and directed research as shown below

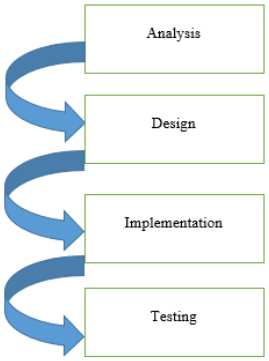

Fig 1. Research Method

3. Result

3.1. Analysis

In this stage an analysis of how the system works will be applied in the surrounding environment. Here are some ways the system works:

a. When RFID provides data to Arduino Mega 2560 and from Arduino Mega 2560 gives commands to stepper Motor, DC Motor and Servo Motor and sends them to MySql server to be stored which will then be displayed on the web monitoring then all systems run with their respective provisions .
b. Arduino Mega 2560 sends RFID data to the server via Ethernet Shield and is stored in a database.
c. The web can display data from a database in the form of RFID codes, coffee making times and types of copies made.

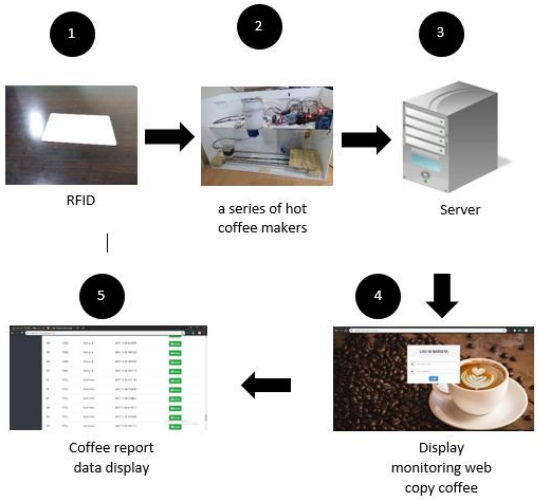

Fig 2. How the system works

Accredited "Rank 4"(Sinta 4), DIKTI, No. 36/E/KPT/2019, December 13th 2019.

Jurnal Mantik
Volume 4 Number 1 May 2020, pp. 134-138 E-ISSN 2685-4236
https://iocscience.org/ejournal/index.php/mantik/index

Figure 2 explains how the system works in this study. After planning the system, then proceed with preliminary research of the tools to be made. At the research stage an initial mechanical circuit design and components of this hot coffee maker are carried out to ensure that all components can run well. this tool uses Arduino Mega 2560 mega 2560 which functions as the main microcontroller of the whole system or can be called the brain of this drive system, the input system uses the TAG RFID as an RFID pin reader, then the stepper motor is used to run the coffee glass and stop in a place that has been determined, the DC motor issues hot coffee according to the specified amount and the servo functions as an output that will release sugar, if the coffee is sweet the servo containing sugar will open, and if black coffee (bitter coffee) then the servo containing the sugar was not open and Data will be sent to the server to be stored in a database and then displayed on the web monitoring.

3.2. Design

a. Block Diagram

Based on the block diagram contained in Figure 3 the overall system is divided into several sections. RFID as input, Arduino Mega 2560 as a receiver and sender of instructions and from Arduino Mega 2560 to Stepper Motor, DC Motor and Servo Motor. And ethernet shield as a link to web monitoring to send data to be displayed on web monitoring.

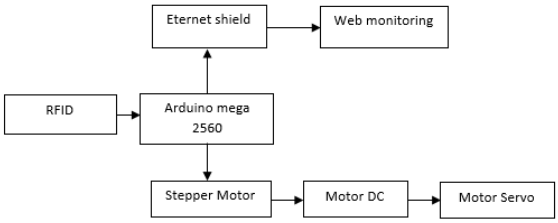

Fig 3. Block Diagram

b. Network Design

At this stage that is making a network design that will be built on the application of a hot coffee maker with a web-based monitoring system. This network design is made for monitoring. This network is created using a local area network (LAN) network.

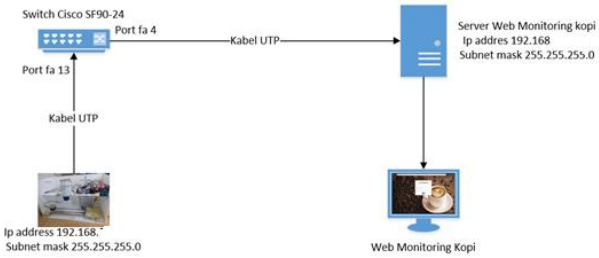

Fig 4. Network Design

In Figure 4. is a network design that has been made on a hot coffee maker with a web-based monitoring system. From the hot coffee maker circuit connected to SF90-24 switch to port 13 with IP address 192.168.xx.xx with subnet mask 255.255.255.0 using UTP cable with straight type, and from the switch using straight cable to connect to server with IP address 192.168 .xx.xx with the subnet mask 255.255.255.0 and finally from the server to the monitor to display the coffee making data in the database.

3.3. Implementation

At the implementation stage, namely the assembly or installation of all components that were carried out previously implemented on the system in full. The implementation of the program aims to ensure that the system that was designed before is running well or not. This research is generally described using a flowchart as follows.

Accredited "Rank 4"(Sinta 4), DIKTI, No. 36/E/KPT/2019, December 13th 2019.

Jurnal Mantik
Volume 4 Number 1 May 2020, pp. 134-138 E-ISSN 2685-4236
https://iocscience.org/ejournal/index.php/mantik/index

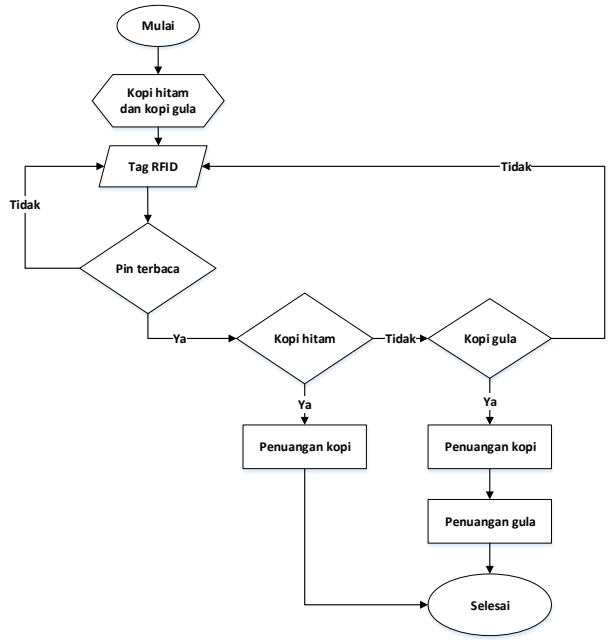

Fig 5. Flowchart System

3.4. Testing

At this stage, testing all features that have been made. The system is the application of a hot coffee maker with a web-based monitoring system.

a. Servo motor testing

Show pouring sugar on an empty glass then the stepper motor will walk carrying an empty glass and stop under the sugar container.

Fig 6. Servo motor testing

b. Testing the calculation of time

After the application of this hot coffee pourer with the results of the calculation of pouring sugar coffee and bitter coffee as follows

Table 1
Results of calculation of total time on sugar coffee

Trial	Motor DC (Hot Coffee)	Motor Servo 2 (Sugar)	Stepper Motor (Glass Trip)	Total
RFID 1 Sugar Coffee	Delay 7000 = 7 seconds	Delay 4000 = 4 seconds	Delay 7000 = 7 seconds dan step 30000 = 30 seconds	48000 = 48 seconds

Table 2
Results of calculation of total time on bitter coffee

Trial	Motor DC (Hot Coffee)	Motor Servo 2 (Sugar)	Stepper Motor (Glass Trip)
RFID 2 Hot Coffee	Delay 7000 = 7 seconds	Delay 4000 = 4 seconds dan step 30000 = 30 seconds	41000 = 41 seconds

Accredited "Rank 4"(Sinta 4), DIKTI, No. 36/E/KPT/2019, December 13th 2019.

Jurnal Mantik
Volume 4 Number 1 May 2020, pp. 134-138 E-ISSN 2685-4236
https://iocscience.org/ejournal/index.php/mantik/index

4. Conclusion

Based on the research that has been done, the following conclusions can be drawn: (i) RFID can be used as an order to control the devices concerned with the Arduino Mega 2560. (ii) Web monitoring can display coffee making data with the type and time of manufacture.

5. References

[1] Suasnawa IW. SISTEM INFORMASI MONITORING HARGA KOPI INTERNASIONAL BERBASIS ANDROID. 2016;6(3):5.
[2] Ritzkal,Manajemen Jaringan Untuk Pemula,Bogor:UIKA PRESS,2018
[3] Kasypurohman PM, Hendrawan AH. Penerapan Monitoring Kunci Magnetic dan Lampu dengan menggunakan Mikrokontroler di Laboraturium Prodi Teknik Informatika. :6.
[4] Ritzkal, A.G., Keny Aldiansyah Mohammad Aziz, Andik Eko Kristus Pramuko, Ade Hendri Hendrawan, 2017. Implementasi Sistem Kontrol Berbasis Mikrokontroler Arduino Uno R3 Untuk Sistem Penetasan Telur Ayam. Semin. Nas. Inov. Dan Apl. Teknol. Ind. 2017 B53.1-B53.10.
[5] Ritzkal, Arief Goeritno, dan Eko Hadi P, (2017), "Pengukuran Kualitas Perangkat Lunak Sistem E-Learning Menggunakan Metric Function Oriented", Prosiding SNATIF Ke-4 Fakultas Teknik Universitas Muria, Kudus.
[6] Ritzkal,Keamanan Jaringan Cyber,Bogor:UIKA PRESS,2019
[7] Johan, A., Goeritno, A., dan Ritzkal, "Prototipe Sistem Elektronis Berbasis Mikrokontroler Untuk Pemantauan Instalasi Listrik," di Prosiding Seminar Nasional Teknologi Industri (SNTI FTI-Usakti V-2016), Jakarta, JK, 2016, hlm. 324-330.
[8] Goeritno, A., Ritzkal, dan Johan, A. "Kinerja Prototipe Sistem Elektronis Berbasis Mikrokontroler Arduino Uno R3 Untuk Pemantauan Analogi Instalasi Listrik," di Jurnal Ilmiah SETRUM, Volume 5, No.2, hlm. 94-99, Desember 2016.
[9] Hendrian, F., Ritzkal, dan Goeritno, A. "Penggunaan Protokol Internet untuk Sistem Pemantauan pada Analogi Instalasi Listrik Fase-3 Berbantuan Mikrokontroler Arduino UNO R3 Terkendali melalui Smartphone Berbasis Android," di Prosiding Seminar Nasional (ke-2) Sains, Rekayasa, dan Teknologi (SNSRT) UPH-2017, Tangerang, 17-18 Mei 2017, hlm. (II)103-110.
[10] Banzi, M. and Shiloh, M. (2015). Getting Started with Arduino: the Open Source Electronis Prototyping Platform, 3rd Edition. Sebastopol, CA: Maker Media, 2015, pp. 15-22

Accredited "Rank 4"(Sinta 4), DIKTI, No. 36/E/KPT/2019, December 13th 2019.