

FINAL PROJECT REPORT

Design and Implementation of PaperLess Voting System based on Arduino

Resolved as a condition for obtaining the title of

AHLI MADYA (AMD)

By:

SEPIA MELATI PUTRI

1505114013



INTERNATIONAL COMPUTER ENGINEERING

STUDY PROGRAM

DEPARTMENT OF COMPUTER ENGINEERING AND INFORMATICS

POLITEKNIK NEGERI MEDAN

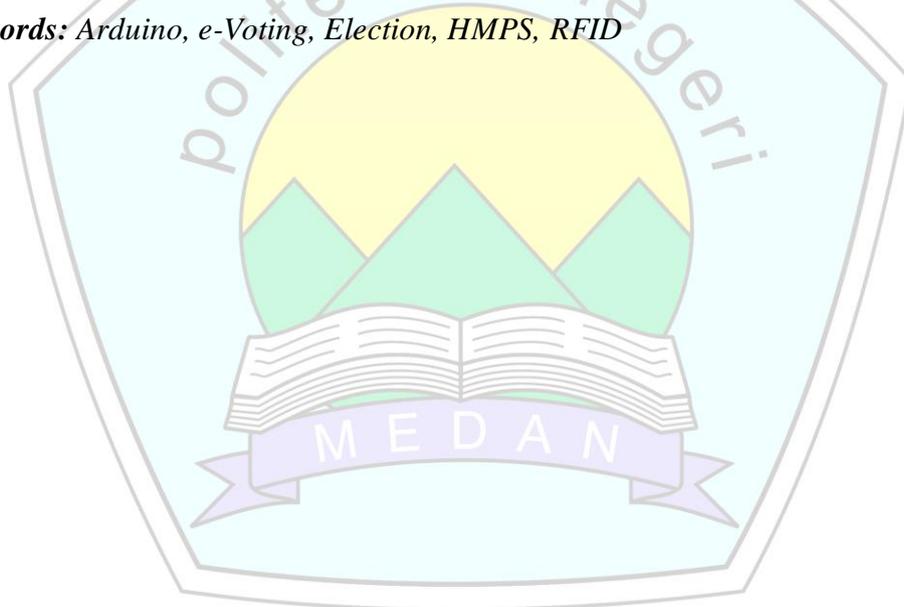
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ABSTRACT

The conventional process of voting is a process to give a vote, aspiration and an important decision to several parties. But the conventional process of voting takes some time and very tiring to wait the result of the voting. By using e-Voting the process do not use papers but the electronic media such as personal computer (PC). The writer has an idea to make the system that was originally a conventional choice changed to be digital. The object used in this study is an election of HMPS Chairman and Vice Chairman of Computer Engineering Department of State Polytechnic of Medan using RFID. RFID is planted in RFID cards that every student has. In this study, the results obtained that in this electoral system did not takes some time to find the result and prevent the double voters.

Keywords: *Arduino, e-Voting, Election, HMPS, RFID*



PREFACE

Praise and gratitude for the presence of Allah SWT over the blessings and love that make the writer can finish the final project with title **“Design and Implementation of PaperLess Voting System based on Arduino”**

The purpose of writing this Final Project is to finish the study of Diploma Degree Computer Engineering, Department of Computer Engineering and Informatics, State Polytechnic of Medan.

This report can be finished because of assistance and encouragement from various parties who have provided ideas, guidance, and other support. In this occasion the author would like to thank to:

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that author cannot mention one by one Author recognize if there are still many deficiency in writing this Final Project Report therefore author look forward for any criticisms and suggestions from readers which is can improving this report so it can be better in the future.

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Writer,

Sepia Melati Putri
NIM. 1505114013

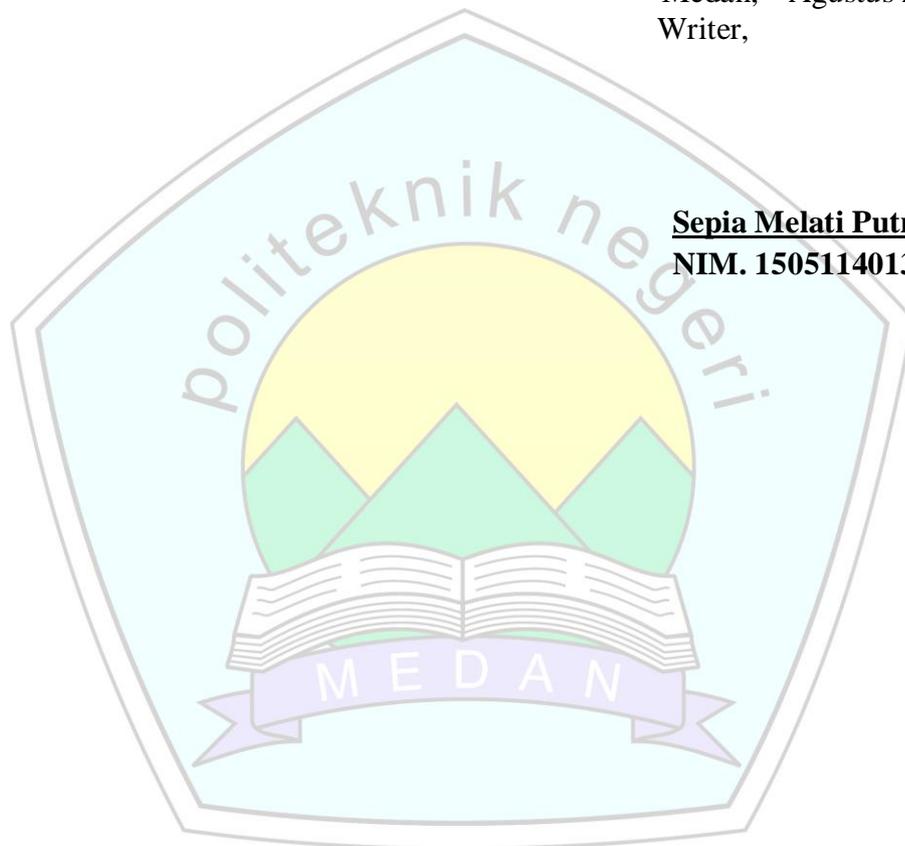


TABLE OF CONTENT

APPROVAL SHEET	i
VALIDATION SHEET	ii
PREFACE.....	iv
LIST OF TABLE.....	x
LIST OF ATTACHMENT.....	xi
CHAPTER 1 INTRODUCTION	1
1.1 Background Of The Study	1
1.2 Problems Of The Study	2
1.3 Scope of problems	2
1.4 Motivation and Objectives of the Study.....	3
1.5 Significances of the study	3
1.6 Methods of the study	4
1.7 Writing Systematics.....	5
CHAPTER 2 BASIC THEORY	6
2.1 Design.....	6
2.2 Implementation	6
2.3 Paperless.....	6
2.4 Voting.....	7
2.5 System	7
2.6 History and introduction of Arduino	7
2.7 Arduino Uno R3	8
2.7.1 Board Arduino Uno R3	8
2.7.2 Power Supply	9
2.7.3 Communication	9
2.7.4 Language Programming	10
2.7.5 Software (Arduino IDE).....	10
2.8 Radio Frequency Identification (RFID)	11
2.8.1 System RFID (Radio Frequency Identification).....	11
2.8.2 RFID Card.....	12
2.8.3 RFID Reader	14

2.10	I2C LCD	16
2.11	MSQL	16
2.12	IDE Visual Studio.....	17
CHAPTER 3 DESIGNING HARDWARE AND SOFTWARE.....		18
3.1	Diagram Blok Rangkaian.....	18
3.1.1	The function of Diagram Block System	19
3.2	Reviews For Hardware.....	20
3.3	The Design of The Hardware.....	20
3.4	Mechanical Design	23
3.5	The Design Of The Software	27
3.5.1	Flowchart	27
3.5.2	Use Case Diagram	28
3.5.3	Activity Diagram Of The Proposed System	29
3.5.4	Class Diagram.....	33
3.5.5	The Design Of Database	33
CHAPTER 4 RESULTS AND DISCUSSION		36
4.1	Hardware Testing	36
4.1.1	Testing Power Supply	36
4.1.2	Testing The Arduino Programming	37
4.1.3	Testing RFID Reader and RFID tags RC522	38
4.1.4	Testing LCD 16 x 2 I2C.....	38
4.2	Software Testing.....	40
4.2.1	Testing The Addition Of A Permanent Voters List	40
4.2.2	Testing The Delete Voters Remain	42
4.2.3	Testing The Addition of Candidate Data	43
4.2.4	Testing Of Candidate Data Removal	45
4.3	Testing The Whole System.....	46
CHAPTER 5 CONCLUSIONS AND SUGGESTIONS		54
5.1	Conclusions.....	54
5.2	Suggestions	54
REFERENCES		55

CHAPTER I

INTRODUCTION

1.1 Background Of The Study

The objectives of voting system is to allow voters to cast their votes for procedure of selecting the government and political representative and also a constitution amendments, because voting is the only way to carry out the opinion or issue of the people for selecting the government which is always being initiative towards the improvement. Voting is the phenomenon which includes the decision making mechanism in a society and the security is the important part of voting.

In its implementation, the process of election is carried out by vote to determine the right one to occupy certain positions. Voting is a way of making decisions in deliberation through the voting process. Voting process on conventional ELECTION is done by giving ballots to voters, then they use their rights by voting for candidates on ballots. In its implementation, the conventional ELECTION has various problems, ranged from the Permanent Voter List (DPT), procurement of ballots, cases of damage to ballots, the relatively long vote counting process, and every election held requires a lot of funds cause The election process is still using paper to give the right of his voice.

To overcome problems of conventional ELECTION, the conventional voting system can be changed using electronic voting or called E-voting. E-voting system in general is the use of computer technology in implementation of voting. One of computer technology that can be used in implementing E-voting is RFID. Radio Frequency Identification (RFID) is a method of identification using means called RFID labels or transponders to store and retrieve data remotely. RFID labels or cards are objects that can be installed or included in a product for the purpose of identification. The most frequent method used is to save the serial number that shows the identity of a person or object.

Based on the background of organizing conventional elections that still lack on many aspects and the existence of E-voting technology, the writer designed an "**Design and Implementation of PaperLess Voting System based on Arduino**". The writer designed a paperless voting system by utilizing voter identity cards as voter data authentication and means of voting, so that no ballot is needed. In designing this system, the writer took the case of HMPS Chairman Election of Computer Engineering Polytechnic State of Medan. The way of paperless voting system works utilizes RFID technology on students Identity Card as an authentication of voter list. The embedded tag of RFID in students' card will be read by RFID Reader settled by Arduino, the ID Tag that is read by RFID Reader is authenticated towards the database by Arduino Uno and VB.NET based application. It is expected that this tool could give more efficiency of counting time, minimize the Double Permanent Voter List, and the most important thing is to make savings because they will not use ballots.

1.2 Problems Of The Study

The problem of study that appears in this final project are:

1. How to design and implement an Arduino-based Voting system?
2. How to test an Arduino-based voting system?
3. How to analyze and display the results of voting data?
4. How to deal with unknown RFID cards?

1.3 Scope of problems

In designing and making this final project, the following problem boundaries are given:

1. The design and manufacture of the Voting system uses Arduino as a regulator, RFID card as an input, and RFID reader as a process, the output for voters displayed on the LCD and on computer applications for election supervisors.
2. Database used is MySQL
3. Uses Cable as an Arduino local communication media.
4. Testing the system using 10 voters and 2 candidates to be elected.

1.4 Motivation and Objectives of the Study

In this writing, the author explains the Motivation and Objectives of the Study:

1.4.1 Motivation of the Study

Things motivating writers in this final project is:

1. The presence of a double election, then needed a tool that can reduce cheating to get results that match the real thing.
2. Creating a tool that is voting systems that do not use a paper thus helping the Government realize the go green.

1.4.2 Objectives of the study

Based on the problems that the writer has discussed, the objectives of the study are:

1. To design and implement an Arduino-based Voting system.
2. To test an Arduino-based voting system.
3. To analyze and display the results of voting data on the election of candidates.

1.5 Significances of the study

Significances that can be given are as follows:

1. For the world of academics and science, especially in State Politeknik Negeri Medan.
 - a. As an additional reference material in terms of solving a problem that is similar to the background of making tools.
 - b. As a practicum module in Embedded System of learning program.
 - c. Improve and adding an insight about the manufacture of paperless voting tools in the Election of HMPS Chairman and Vice Chairman of Computer Engineering.
2. For the readers / community
 - a. This tool is expected to be useful to voters who will use their voting rights.
 - b. This tool is also expected to be useful in reducing fraud that occurs in elections.

3. For the writer
 - a. To apply the knowledge that has been acquired during lectures and to add insight about the manufacture of paperless voting tools at the Election of HMPS Chairman and Vice Chairman of Computer Engineering.
 - b. For the contribution writer's contribution to the world of education to be useful for daily life and can be developed in the future.

1.6 Methods of the study

In this paper the writer collected the data that is done as follows:

1. Literature Study

Analyze the system by conducting literature studies, identifying problems, understanding system performance and analyzing the needs of researchers who have done the same study before.

2. System Design

At this stage the system design will be made in accordance with the literature that has been studied.

3. Manufacture of the System

The System's implementations has been made which include the implementation of coding, designed a series of Arduino on PCB boards and design in a software development.

4. Testing

Testing and evaluation is intended to meet the extent of the system that created at the end of this study can function in accordance with the expected system requirements.

5. Data Collection

A Library Research, obtained by collecting data through books and other sources (internet) that are relevant to problems encountered in this case about how Arduino Uno and RFID can be interconnected.

6. Analysis and Evaluation

Checking something that affects the performance of the tool system and problem solving for enhancement and improvement in the study.

1.7 Writing Systematics

The following systematics is the writing systematics used in the preparation of the study's report:

CHAPTER 1 INTRODUCTION

This chapter contains an explanation of the background of the study, selection of titles, boundaries of problems, motivation and objectives of the study, method of the study and systematics of writing.

CHAPTER 2 THEORETICAL REVIEW

This chapter contains the theoretical foundation that is the main references in writing the study. The theory discussed relates to the paperless voting tool at the Election of HMPS Chairman and Vice Chairman of Computer Engineering that will be designed and also used for the benefit of analysis and design of the tool.

CHAPTER 3 DESIGNING HARDWARE AND SOFTWARE

This chapter contains hardware and software designs so that it can also describe the use/way of working on a paperless voting tool at the Arduino-based Computer Election of HMPS Chairman and Vice Chairman of Computer Engineering.

CHAPTER 4 RESULTS AND DISCUSSION

This chapter contains the results and discussion and system research that will be carried out the overall workings of the tool and analyzing the results obtained from the tool's testing.

CHAPTER 5 CONCLUSIONS AND SUGGESTIONS

This chapter explains the final results of the study, namely conclusions and suggestions that contain inputs to develop and complete the system that has been built in the future.