

**APPLICATION REAL TIME CLOCK (RTC)  
ON AUTOMATIC FEEDER BASE ARDUINO**

By

YULIUS NANANG SUTRISNO

1-1502-120

BACHELOR'S DEGREE  
in

MECHANICAL ENGINEERING-MECHATRONICS CONCENTRATION  
FACULTY OF ENGINEERING AND INFORMATION

SWISS GERMAN UNIVERSITY 

SWISS GERMAN UNIVERSITY  
EduTown BSD City  
Tangerang 15339  
Indonesia

**February 2017**

**Revision after Thesis Defense on [14 February 2017]**

### STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

[Name of Student]

\_\_\_\_\_  
Student

\_\_\_\_\_  
Date

Approved by:

[Name and Title of Advisor]

\_\_\_\_\_  
Thesis Advisor

\_\_\_\_\_  
Date

(OPTIONAL)

[Name and Title of Co-Advisor]

\_\_\_\_\_  
Thesis Co-Advisor

\_\_\_\_\_  
Date

[Name and Title of Dean]

\_\_\_\_\_  
Dean

\_\_\_\_\_  
Date

---

**ABSTRACT**

APLICATION REAL TIME CLOCK (RTC)  
ON AUTOMATIC FEEDER BASE ARDUINO

SWISS GERMAN UNIVERISTY

By

Yulius Nanang sutrisno Students

Dedy Loebis, ST, MBA, M.Sc., Ph.D, Advisor

Abdul Rahman Riza, S.T., M.Sc, Co-Advisor

The increasing numbers of the bird lovers now, the more the request of birds good for birds ornamental or birds there are several. This led many started a new business that is as farmers birds. They the farmers it comes from various parties. Ranging from young and old, school children, porter, traders, factory workers, company owner, a collector of until housewife. They see this as a business opportunities. Some who take it as a major there is also an attempt side. Birds in cattle also varies its kind, the price, and also the food. For those who made this in their efforts main may not experienced many problems in control or care of birds which they cattle. But for those who made this business in their efforts a side it would have had difficulty in control the birds of the cattle, because the time they have not fully to care for birds, they have another that was seized more time. In this case is giving eat, if food intake is not guaranteed would affect growth and the quality of birds. It takes a tool that lets guarantees that the supply eat when farmers are doing business another or when they leave the house. Solutions ever is to have feed much, but it has in fact reduce the cost to buy feed the to rise because many feed wasted and mixed with droppings of itself. With automatic feeder buses controlled with modules the rtc (of real clock time) it may help farmers to ensure the increased availability of feed and reduce extravagance from granting meal excess.

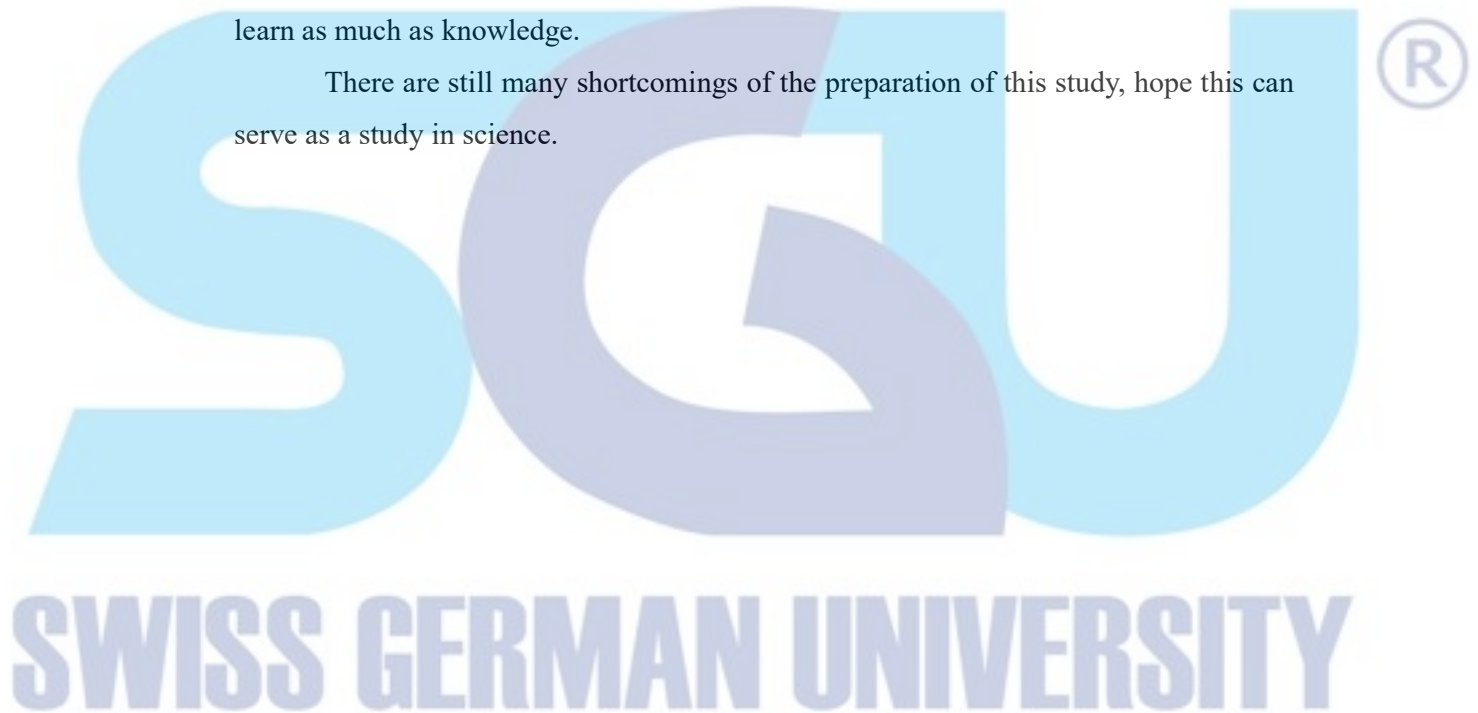
*Keywords: Arduino UNO, Real Time Clock Modul, Aotomatic Feeder, I2c Modul.*



## DEDICATION

I dedicate my research to my parents my Father Antonius Sutrisno and mother Luciana Sukemi, and prospective my wife Monica Via Dellarozza always support me. Thank you for all his prayer. And also to colleagues, learning fellow always help and encourage to me. And also this research i dedicated to Swiss German University. Where i learned and learn as much as knowledge.

There are still many shortcomings of the preparation of this study, hope this can serve as a study in science.



## ACKNOWLEDGEMENTS

Thanks to ATMI for opportunity so I can have the opportunity study in SGU. Thanks to Mr. Hendry Paul, to lecturers SGU, to Mr. Dedy Loebis as my advisor, to Mr Abdul Rahman to Riza, Mr. Gembong Baskoro over guidance during this time. So this final task I can accomplish.



---

## TABLE OF CONTENTS

	Page
STATEMENT BY THE AUTHOR.....	2
ABSTRACT.....	3
DEDICATION.....	5
ACKNOWLEDGEMENTS.....	6
CHAPTER 1 - INTRODUCTION.....	10
1.1 Background.....	10
1.2 Objectives.....	10
1.3 Hypothesis.....	11
CHAPTER 2 - LITERATURE REVIEW.....	12
2.1 Theoretical Perspectives.....	12
2.1.1 Board Arduino.....	12
2.1.2 Module RTC (Real Time Clock).....	17
2.1.3 LCD (Liquid Crystal Display).....	17
2.1.4 Motor Servo 360°.....	18
2.1.5 Buzzer.....	18
2.1.6 LED (Light Emitting Diode).....	19
2.1.7 Switch ON/OFF.....	20
2.1.8 Laser Sensor.....	20
2.1.9 Relay.....	21
2.1.10 SIM800.....	22
CHAPTER 3 – RESEARCH METHODS.....	24
3.1 Material and Equipment.....	24
3.2 Research Framework.....	25
3.3 Analisis Method.....	26
3.3.1 Design.....	26
3.3.1.1 Closed Tube.....	27
3.3.1.2 Laser Sensor Trigger.....	27
3.3.1.3 Feed Tube.....	28
3.3.1.4 Upper Base.....	29
3.3.1.5 Housing Screw Conveyor.....	29
3.3.1.6 Screw Conveyor.....	29
3.3.1.7 Place Feed.....	30
3.4 Calculation Many Feed Issued.....	31
3.5 Wiring Diagram Real Time Clock To Arduino.....	31
3.6 Performance Test.....	32

---

3.7 Installation Program.....	33
3.7.1 Void Setup.....	33
3.7.2 Void Loop.....	34
3.7.3 Servo Motor Program.....	35
CHAPTER 4 – RESULTS AND DISCUSSIONS.....	37
4.1 Initial Evaluation.....	37
4.2 Result of Testing.....	37
4.2.1 Hardware Display.....	37
4.2.2 Types Of Feed.....	40
4.3 Data Analysis.....	40
CHAPTER 5 – CONCLUSIONS AND RECCOMENDATIONS.....	44
5.1 Conclusions.....	44
5.2 Recommendations.....	44
GLOSSARY.....	45
REFERENCES.....	46
APPENDIX.....	47
CURRICULUM VITAE.....	49



SWISS GERMAN UNIVERSITY