### Student Monitoring System using RFID via Website and Android App

A Thesis Presented to the Faculty of Computer Engineering College of Engineering, Architecture and Technology De La Salle University –Dasmariñas Dasmariñas City, Cavite

In Partial Fulfillment of the Requirement for the Degree Bachelor of Science in Computer Engineering

> Cyrus Rome Z. Dela Cruz Katrina Mae C. dela Cruz John Marfel T. Legaspi

#### **ABSTRACT**

The Student Monitoring System using RFID via Website and Android App is an automated way of monitoring students for the Jesus Christ King of Kings and Lord of Lords Academy (JCKL Academy). It is an easy way to identify the students log without any physical contact with the use of UHF RFID reader. Basically, it consists of the following: a tag that serves as the identification of each students, reader which use radio waves to retrieve all the data from the RFID tag, and database were the information are stored. The data accumulated will be processed by the website and android app.

The aim of the study is to create a web portal and android application that parents can use to check the status of their children. Both must inherit the same functions such as viewing student log, schools announcement, providing PCF forms, concerns, updates, and to provide a mean of notifying parents from the staff's, and faculty members of JCKL Academy.

# **TABLE OF CONTENTS**

TITLE PAGE	i	
APPROVAL SHEET	ii	i
ACKNOWLEDGMENT	ii	ii
ABSTRACT	i	٧
TABLE OF CONTENTS	v	/
	v	
	V	
CHAPTER 1: INTRODUCTION		
1.1 Background of the Study	IIIEAna	1
3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	111FV/1////	2
1.3 Significance of the Study	A	3
1.6 Definition of Terms	6	)
CHAPTER 2: REVIEW OF RELATED LIT	ERATURE	
2.1 Foreign Literatures	8	3
	9	
		LO
		L1
study		
CHAPTER 3: RESEARCH METHODOLOG	5 <b>Y</b> Dasmantias 1	
	Dasma.	
3.1 Research Design	1977	2
3.2 Research Instrument		3
3.3 Data Gathering Procedure 3.4 Sampling		4.5
3.5 Procedure		6
3.5.1 Hardware Installation/Develop		6
3.5.2 Software Development/Installa		8
3.6 System Block Diagram	2	5
3.7 System Flow Chart		6
3.8 Gantt Chart	3	0

# **CHAPTER 4: RESULTS AND DISCUSSION**

4.1 Introduction		31
4.2 Setting up the RFID tags		31
4.2.1 RFID Tags		32
4.3 System Testing in JCKL		34
4.3.1 Installation of the RFID reader		34
4.3.2 Range of the reader		35
4.3.3 Student Log Testing		36
4.3.4 RFID scan test		40
4.3.5 Software Testing		42
4.3.5.1 Website		42
4.3.5.1.1 Administrator's Page		43
4.3.5.1.2 Staff's Page		49
4.3.5.1.3 Sample Conversations		50
4.3.5.2 Android App		52
4.3.5.2.1 Parent's Login		52
4.3.5.2.2 Checking Students Log		53
4.3.5.2.3 Parent Consent Form Activity		53
4.3.5.2.4 Conversations Activity		54
4.3.5.2.5 Announcement Activity		55
4.3.5.2.6 Android Notification		56
Speed Test		
4.4 UHF RFID Design Planning	<u></u>	57
4.5 Survey Questions	/	60
CHAPTER 5: CONCLUSION AND RECOMMENDA	TION	
5.1 Conclusion		62
5.2 Recommendation		63
BIBLIOGRAPHY		64

APPENDICES	 65
Appendix A SDK Manual	 66
Appendix B Cost of Materials	 114
Appendix C RFID Student Log Code	 115
Appendix D Database test RFID	 314
Appendix E Data Sheets	 320
Appendix F Sample Survey Form	 323
Appendix G Answered Survey Forms	 324
Appendix H Letters	 327
Letter of Agreement	 327
Appendix I Certification	 328
Oral Defense Form	 328
Schedule Form for the Undergraduate Thesis Defense	 331
Thesis Fee Endorsement Form	 332
Thesis Editing Form	 333
Proof-reader Certification	 334
Appendix J Curriculum Vitae	 335

#### **LIST OF TABLES**

Table 4.1: Tag number arrangement	3	35
T 11 40 DETD		42
Table 4.2. Andreid Nationalism Consul Test		57
Table 4.4. Common Organia		61
Table A 1. Canala Company Farms		326
LIST OF FIG	GURES	
Figure 1.1: Paradigm of Student Monitoring System	n using RFID	5
via Website and Android App		
Figure 3.1:Slovin's Formula		16
Figure 3.2: RFID to Student I.D installation		17
Figure 3.3: RFID Antenna and RFID Reader into so	T A C	18
Figure 3.4: Middleware for RFID		19
Figure 3.5: Android Application to Computer Serve		20
Figure 3.6: Web Portal to Computer Server		21
Figure 3.7: RFID to Computer Server		24
Figure 3.8: School Administrator Log to Computer		25
Figure 3.9: Parents Log to Computer Server		26
Figure 3.10: Block Diagram of the System		27
Figure 3.11: RFID Detection		28
Figure 3.12: Authentication Process		29
Figure 3.13: Messaging Process		30
Figure 3.14: PCF sending process		31
Figure 3.12: Gantt Chart of the System		32
Figure 4.1: Default setting of the tag		33
Figure 4.2: Electronic product code		34 37
Figure 4.3: Setting up at the main entrance of JCK		
Figure 4.4: Determining the range of the reader Figure 4.5: First Batch of Students passes through		38 39
Figure 4.6: Android App notification of student 000		39
and 0005		39
Figure 4.7: Second batch of students passes through		40
Figure 4.8: Android App notification of student 000 0010	08, 0012, and	40
Figure 4.9: Third batch of students passes through	the gate	40
with android notification		-
Figure 4.10: Android App notification of student 00	015, 0012,	41
and 0018	igh the gete	11
Figure 4.11: Fourth batch of students passes through		41
Figure 4.12: Android App notification of student 00	•	41 44
Figure 4.13: Home Page Figure 4.14: Login Page		44 44
FIGURE 4.14. LOUIT PAUE		44

Figure 4.15: Administrator's Dashboard	 45
Figure 4.16: Dropdown list for "People"	 46
Figure 4.17: Dropdown list for "School"	 46
Figure 4.18: "Conversation's" navigation drawer	 47
Figure 4.19: Parent's Home Page	 48
Figure 4.20: "My Children's" navigation drawer	 48
Figure 4.21: "PCF's" navigation drawer	 49
Figure 4.22: "Conversation's" navigation drawer	 49
Figure 4.23: "Announcement's" navigation drawer	 50
Figure 4.24: Staff's Home Page	 50
Figure 4.25: "Classes" navigation drawer	 51
Figure 4.26: "Conversation/s" navigation drawer	 51
Figure 4.27: Conversation between Parent and Adviser	 52
Figure 4.28: Conversation between Parent and Guidance	 52
Figure 4.29: Conversation between Parent and Accounting	 53
Figure 4.30: Conversation between Parent and Librarian	 53
Figure 4.31: Conversation between Parent and Clinic	 53
Figure 4.32: (a) Login Page; (b) navigation bar	 54
Figure 4.33: Student's Activity Log	 55
Figure 4.34: Parent Consent Form	 55
Figure 4.35: Inbox	 56
Figure 4.36: Announcement Activity	 57
Figure 4.37: 1st Design of the RFID rack	 59
Figure 4.38: 1st Design of the RFID rack	 60