UNIVERSITI TEKNIKAL MALAYSIA MELAKA

ANTI-THEFT MOSQUE FUND USING GLOBAL SYSTEM FOR MOBILE (GSM)

This report is submitted in accordance with the requirement of Universiti Teknikal Malaysia Melaka (UTeM) for the Bachelor of Electronics Engineering Technology (Industrial Electronics) with Honours

by

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TAJUK: ANTI-THEFT MOSQUE FUND USING GLOBAL SYSTEM FOR MOBILE (GSM)

SESI PENGAJIAN: 2015/16 Semester 1

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I hereby, declared this report entitled “Anti-Theft Mosque Fund Using Global System For Mobile (GSM)” is the results of my own research except as cited in references.

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APPROVAL

This report is submitted to the Faculty of Engineering Technology of UTeM as a partial fulfillment of the requirements for the degree of Bachelor of Electronics Engineering Technology (Industrial Electronics) (Hons.). The member of the supervisory is as follow:

…….

(Project Supervisor)

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ABSTRACT

The mosque is a sacred place of worship. Anyone who is a Muslim is allowed to enter into a mosque for worship without restriction. However, nowadays there are criminals that theft the mosque cash container. Such incidents often occur in our country Malaysia. Therefore, I recommend an application system that can prevent immoral activities like this happening again in the future. The project named is "Anti-Theft Mosque Fund Using Global System for Mobile (GSM)". It will be installed in the mosque cash container. The main function of this application is the preventive system to inform the responsible person of mosque as soon as possible when the mosque cash container stolen. Generally, when the mosque cash container removed from its place of origin, then the system will be activated to prevent the application automatically. When the system is active, it will allow the system to notify the responsible person of mosque through short messaging system by using the Global System for Mobile (GSM). In addition, the buzzer and emergency lights activated and produce a loud sound and light signals will be heard and seen by the people around that will surprise even the locals. This system can be activated and deactivated by the responsible person of mosque. Furthermore, with the implementation of prevention systems, indirectly locals will feel more secure. Generally, this system uses the Arduino Uno R3, Global System for Mobile (GSM), sensor, buzzer and emergency light.

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ABSTRAK

Masjid merupakan tempat yang suci untuk beribadat. Sesiapa sahaja yang beragama Islam dibenarkan untuk memasuki ke dalam ruang masjid untuk beribadat tanpa batasan. Akan tetapi, pada masa kini terdapat jenayah yang sering berlaku iaitu mencuri bekas duit di dalam masjid. Kejadian sedemikian sering berlaku di negara kita Malaysia. Oleh itu, saya cadangkan satu sistem aplikasi yang boleh mencegah aktiviti tidak bermoral sebegini berlaku lagi pada masa akan datang. Projek ini dinamakan sebagai "Anti-Theft Mosque Fund Using Global System for Mobile (GSM)". Ianya akan dipasang di dalam bekas-bekas tabung masjid. Fungsi utama sistem aplikasi ini adalah pencegahan untuk memaklumkan kepada orang yang bertanggungjawab masjid secepat yang mungkin apabila bekas tabung masjid dicuri. Secara umumnya, apabila bekas tabung masjid dialihkan dari tempat asalnya, maka sistem aplikasi pencegahan ini akan teraktif secara automatik. Apabila sistem ini aktif, ia akan membolehkan sistem ini untuk memberitahu kepada orang yang bertanggungjawab masjid melalui sistem pesanan ringkas iaitu dengan menggunakan Sistem Antarabangsa untuk Telefon (GSM). Di samping itu, pembunyi isyarat dan lampu kecemasan akan aktif dan menghasilkan bunyi yang kuat dan isyarat cahaya akan dapat didengar dan dilihat oleh orang sekeliling malah akan mengejutkan penduduk setempat. Sistem ini boleh diaktifkan dan dinyahaktifkan oleh orang yang bertanggungjawab masjid. Tambahan pula, dengan pelaksanaan sistem pencegahan, secara tidak langsung penduduk setempat akan berasa lebih selamat. Secara umumnya juga, sistem ini menggunakan "Arduino Uno", Sistem Antarabangsa untuk Telefon (GSM), pengesan, pembunyi isyarat dan lampu kecemasan.

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DEDICATIONS

Dedicate to my beloved mother and father.

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ACKNOWLEDGMENTS

First and foremost, I am grateful and would like to take this opportunity to express my sincere gratitude to my supervisor Mr Tg Mohd Faisal Bin Tengku Wook for his invaluable guidance, continuous encouragement and constant support in making this project possible. I really appreciate his guidance from the initial to the final level that enabled me to develop an understanding of this project thoroughly. Without his advice and assistance it would be a lot tougher to completion. I also sincerely thanks for the time spent proof reading and correcting my mistakes. In addition, special thanks to my parents for their moral support in completing this project. Last but not least, thank you to everyone who had been to the crucial parts of realization of this project.

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TABLE OF CONTENTS

DECLARATION..... i

APPROVAL..... ii

ABSTRACT.....iii

ABSTRAK..... iv

DEDICATIONS..... v

ACKNOWLEDGMENTS..... vi

TABLE OF CONTENTS.....vii

LIST OF FIGURES..... xi

LIST OF TABLES..... xii

LIST OF SYMBOLS AND ABBREVIATIONS..... xiii

CHAPTER 1.....1

1.0 Introduction..... 1

1.1 Project Background..... 1-2

1.2 Problem Statement.....2

1.3 Objectives of the Project..... 2

1.4 Scope of the Projects..... 3

1.5 Methodology.....4

1.6 Block Diagram.....5

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CHAPTER 2.....6

2.0 Introduction..... 6

2.1 Related Research on Control Boards.....6

2.1.1 Arduino Uno R3.....7

2.1.2 Raspberry Pi Model B.....8

2.1.3 BeagleBone Black Rev C.....9

2.1.4 Comparison of Control Boards..... 10

2.2 Related Research on Networking.....10

2.2.1 GSM.....11-12

2.2.2 Wi-Fi 12-13

2.2.3 Comparison of Networking.....13

2.3 Related Research on Buzzer.....14

2.3.1 Piezo Buzzer.....14

2.3.2 Magnetic Buzzer..... 15

2.3.3 Comparison of Buzzer 15-16

2.4 Related Research on Emergency light (LEDs).....16

2.5 Related Research on Sensor..... 17

2.5.1 Infrared Sensor..... 17

2.5.2 Ultrasonic Sensor..... 18

2.5.3 Comparison of Sensor..... 18

2.6 Review on Related Project..... 19

CHAPTER 3.....20

3.0 Introduction..... 20

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3.1 Methodology Framework..... 20

3.1.1 Overview of Project Methodology.....21

3.2 Details of Framework..... 21

3.2.1 Project Study.....21-22

3.2.2 Information Analysis.....22

3.2.3 Design..... 22-23

3.2.4 Development..... 23

3.2.5 Testing & Deployment.....23-24

3.3 Software and Hardware Components.....24

CHAPTER 4.....25

4.0 Introduction..... 25

4.1 Manually Power ON the System..... 25

4.2 SMS Service Accessibility.....25-27

4.3 Time Analysis.....27

4.3.1 Software and Hardware Components.....28

4.3.2 SMS Sending Time.....28-30

4.3.3 Delay Based on Distance..... 31-33

4.3.4 Coverage of Mobile Networks.....33-35

4.4 Distance Detection.....36

CHAPTER 5.....37

5.0 Introduction..... 37

5.1 Objective of Project.....37

5.1.1 First Objective Achieved.....38

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5.1.2 Second Objective Achieved..... 38

5.1.3 Third Objective Achieved..... 39

5.2 Recommendations for Future Improvement.....40

5.3 Conclusion.....41

REFERENCES..... 42-43

APPENDIX A

APPENDIX B

APPENDIX C

APPENDIX D

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LIST OF FIGURES

Figure 1.1: Flowchart for whole project..... 4
Figure 1.2: Block diagram for whole project..... 5
Figure 2.1: Arduino Uno R3..... 7
Figure 2.2: Raspberry Pi Model B..... 8
Figure 2.3: BeagleBone Black Rev C..... 9
Figure 2.4: GSM Logo..... 11
Figure 2.5: How SMS works..... 11
Figure 2.6: Wi-Fi Logo..... 12
Figure 2.7: Wi-Fi Router..... 12
Figure 2.8: Structure of Piezo buzzer..... 14
Figure 2.9: Structure of Magnetic buzzer..... 15
Figure 2.10: Infrared sensor operation..... 17
Figure 2.11: Ultrasonic sensor operation..... 18
Figure 3.1: Flowchart of Methodology Framework..... 20
Figure 4.1: SMS Service Accessibility Formula..... 26
Figure 4.2: Example of Notification..... 26
Figure 4.3: Calculation of SMS Service Accessibility..... 27
Figure 4.4: The Flow of the Message from System to Receiver..... 29
Figure 4.5: The Location of System and Points..... 31
Figure 4.6: The Network Rank on Opensignal Website..... 35

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LIST OF TABLES

Table 2.1: Comparison between types of control board..... 10
Table 2.2: Comparison between types of networking technology.....13
Table 2.3: Comparison between types of buzzer..... 15
Table 2.4: Comparison of chip technologies for wide-angle, non-diffused LEDs..... 16
Table 2.5: Comparison between types of sensor.....18
Table 3.1: Overview of Project Methodology.....21
Table 3.2: System Components.....24
Table 4.1: Result of Service Accessibility..... 27
Table 4.2: Response Time of the System.....28
Table 4.3: SMS Sending Time..... 29
Table 4.4: The Total Time Taken for User Received Notification..... 30
Table 4.5: Name of Location..... 32
Table 4.6: Delay Based on Distance..... 32
Table 4.7: Total Time for Digi Mobile Network..... 33
Table 4.8: Total Time for Maxis Mobile Network..... 34
Table 4.9: Total Time for Celcom Mobile Network..... 34
Table 4.10: Total Time for U Mobile Mobile Network..... 34
Table 4.11: Distance Detection by Infrared Sensor..... 36

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LIST OF SYMBOLS AND ABBREVIATIONS

LED	=	Light Emitting Diode
GSM	=	Global System for Mobile
USB	=	Universal Serial Bus
I/O	=	Input Output
DC	=	Direct Current
GPU	=	Graphics Processing Unit
RAM	=	Random Access Memory
GHz	=	Gigahertz
MHz	=	Megahertz
KHz	=	Kilohertz
MB	=	Megabyte
GPIO	=	General Purpose Input/Output
PC	=	Personal Computer
TV	=	Television
SMS	=	Short Message Service
SMC	=	Short Message Center
SME	=	Short Message Entity
HLR	=	Home Location Register
GMSC	=	Gateway Mobile Switching Centre
MSC	=	Mobile Switching Centre
VLR	=	Visitor Location Register

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BSS	=	Base Station System
SPL	=	Sound Pressure Level
dB	=	Decibel
mA	=	Milliampere
PIC	=	Peripheral Interface Controller
UART	=	Universal Asynchronous Receiver or Transmitter
GUI	=	Graphical User Interface

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CHAPTER 1

INTRODUCTION

1.0 Introduction

This chapter elaborates the overview and the brief explanation of this research. It is followed by the project background, problem statement, objectives, scopes, and the significance of this project. Besides that, this research also will elaborates the current situation and issues that are being faced which led to this research.

1.1 Project Background

Mosque is a place for Muslims to worship. Furthermore, they will donates money before they leave the mosque at the specific cash container placed in the mosque. However, nowadays criminals will steal the mosque cash container. With the installation of anti-theft mosques funds, expected that it will help mosque committee members to control the theft cases that occur in their area and indirectly can reduce cases of the same in other places. It can be activated at any time without human supervision twenty-four hours. This is because the system itself will notify responsible person of mosque if the theft occur.

Installation of anti-theft mosque funds is the main idea for this project to solve the problem faced by most of the mosque. This project operates to notify in case of theft of mosque cash container. This is because the mosque committee members not residing in the mosque for twenty-four hours. In addition, the thefts that occur frequently occur during night and only known by the mosque committee members in the morning dawn. Even tough, mosques has installed with closed circuit cameras, but thefts still happen. Therefore, the production of this project is expected

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to help reduce thefts occurring. Basically, the system uses the Global System for Mobile (GSM) that will notify the responsible person of mosque. This system also be connected with a buzzer and emergency light. Furthermore, responsible person of mosque can enable and disable it.

1.2 Problem Statement

There are several problems that happen based on the mosque cash container. The problem statement as shown:-

i. Thief usually steal mosque cash container when other people do worship and nobody around the mosque.

ii. Even though closed-circuit cameras installed but theft still occurs because theft happen when nobody around the mosque.

iii. Mosque committee members cannot control the area surrounding of the mosque for twenty-four hours a day a week.

iv. Mosque committee members may forgot to lock the mosque.

1.3 Objectives of the Project

The main objective of this project is to build a system to be implemented at mosque on cash container without human supervision. The objectives as shown:-

i. To using mechanism of sensor as a main point before message notification is sent to responsible person of mosque activated.

ii. To construct the buzzer and emergency light that produce sound and light respectively which is alert if theft occurs.

iii. To develop a device with an application that can notify and alert the responsible person of mosque.

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1.4 Scope of the Project

This project can be divided into two parts which is hardware and software approach implementation. The scopes of the project as shown:-

i. Sensor will range the distance of mosque cash container that will connected to Arduino.

ii. When Arduino receive signal from sensor means that the mosque cash container not at original place.

iii. Buzzer and emergency light will turn on.

iv. Arduino and Global System for Mobile (GSM) communicate before notify the responsible person of mosque.

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1.5 Methodology

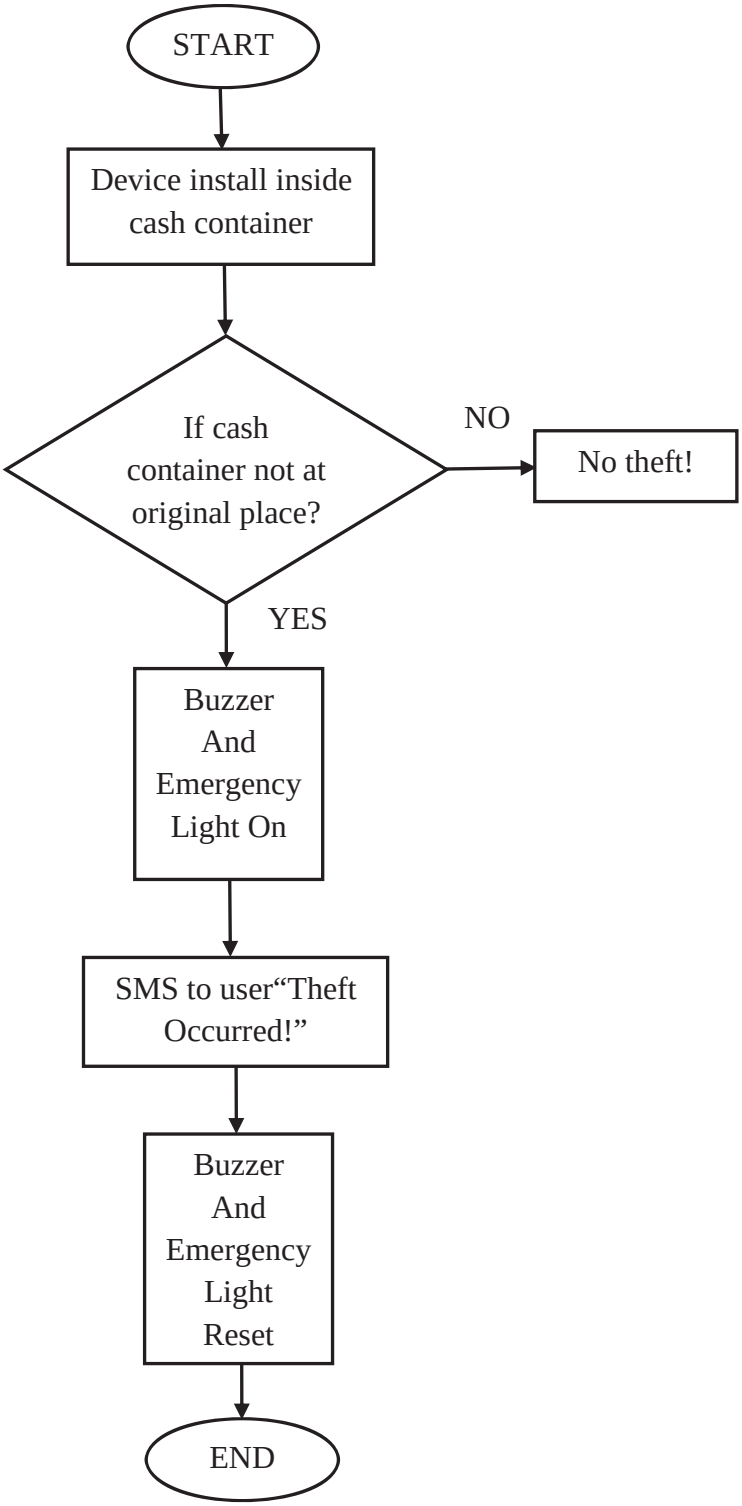

Figure 1.1 : Flowchart for whole project

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1.6 Block Diagram

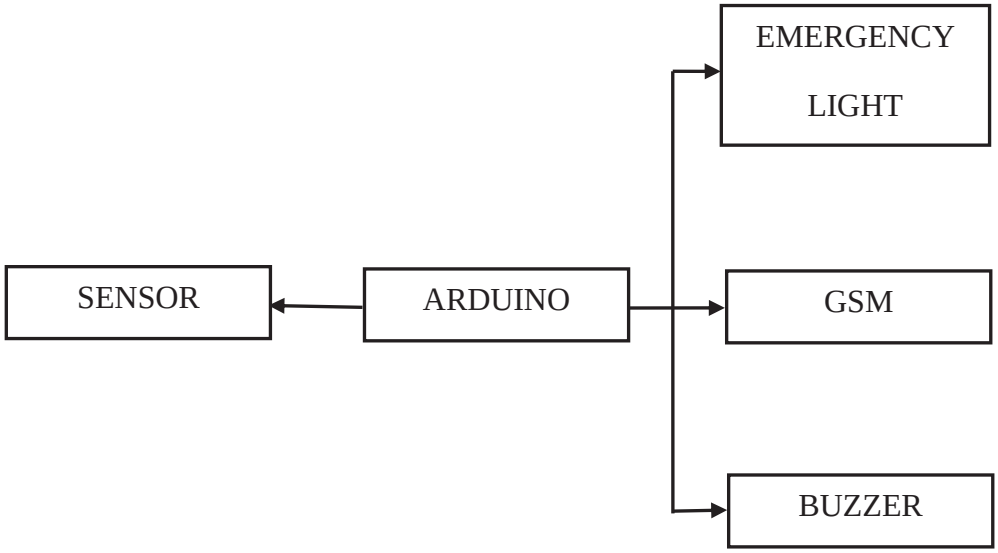

Figure 1.2 : Block diagram for whole project

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CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

This chapter will explain the related articles. The articles will be utilizes as references and guidelines for this project to be done. It can give a considerable measure of great thought to make a great exploration. This chapter reviews the available literature managing for this project.

2.1 Related Research on Control Boards

Nowadays, everything is getting more sophisticated and intelligible. Microcontrollers is popular that be utilized as a part of numerous controls of life for doing robotized assignments. Microcontrollers play a very important role in the development of the smart systems as brain is given to the system. The control board also is used to control any mechanism for the system. For example, the system will obviously have a electronic element especially to notify mosque committee member when theft occur. Some of the control boards that will be considered in this project are Arduino Uno R3, Raspberry Pi Model B and BeagleBone Black Rev C.

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2.1.1 Arduino Uno R3

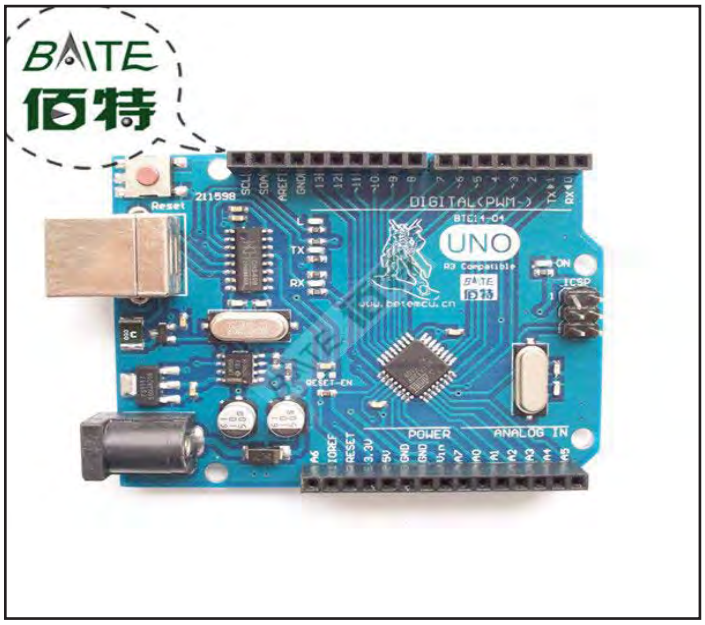

Figure 2.1 : Arduino Uno R3

The diagram above shows the Arduino Uno R3. This is the latest board from Arduino with an USB interface chip. This has an expanded shield header with a 3.3V reference and a RESET pin and a 21 500mA fuse to protect your computer's USB port, but as well as an automatic circuit to select USB or DC power without a jumper. This board is pin and code-compatible. This board also has an USB interface chip and additional breakouts for the i2c pins and an IO Ref pin (Arduino, 2013).

Arduino Uno R3 is reasonable price. It also consumes very little power and suitable for projects that need to be run all day long. Furthermore, Arduino boards is very popular. Therefore, it easier to find the support, tutorials and projects sample. Most importantly, Arduino boards is flexible and can interface with any input output. However, Arduino boards cannot usually handle a lot of different processes at once. Therefore, Arduino Uno R3 is unfit for highly complicated projects.

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2.1.2 Raspberry Pi Model B

Figure 2.2 : Raspberry Pi Model B

The diagram above shows the Raspberry Pi Model B. Raspberry Pi Model B is a control board, which is actually a computer by itself. It is a single-board computer developed with the intention of stimulating the teaching of basic computer science. The design is based on a Broadcom BCM2835 system on a chip, which includes an ARM1176JZF-S 700 megahertz processor, VideoCore IV GPU, and 512 megabytes of RAM. The SD Card slot acts as a slot for storage (Raspberry Pi, 2013).

The Raspberry Pi Model B is great function for any projects that use a computer. But it does not have as many options to interface with input output. Therefore, it not suitable for projects that interfacing with other electronics.

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