

SmartSuite
Authenticator & Security Manager

By:

Faisal Kayani(141022010)



Supervised

by:

Mr Azhar Kaleem

A report is submitted to the department of Computer Science,
Bahria Institute of Management and Computer Science, Islamabad

In partial fulfillment of requirement for the degree of MCS

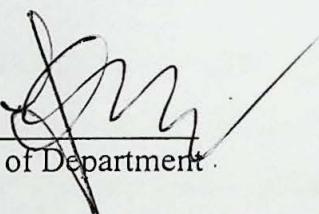
Dedications

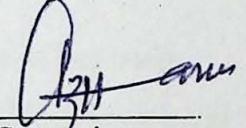
In the name of Allah, who lives in the hearts of the people, his kindness and blessing
make us possible to complete this task.

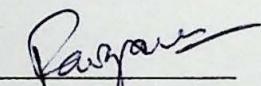
We are grateful to our parents, whose prayers and cooperation make it possible to
complete our work. We once again thanks to our family members.

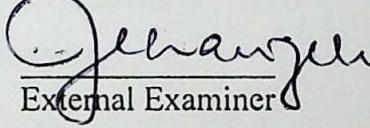
Certificate

We accept the work contained in this report as confirming to the required standard for the partial fulfillment of the degree of MCS.


Head of Department


Supervisor


Internal Examiner


External Examiner

Declaration

I, hereby declare that this software, neither as a whole nor as a part there of has been copied out from any source. It is further declared that I have developed this software and the accompanied report entirely on the basis of my personal efforts made under the sincere guidance of my supervisor. If any part of this report of this report is proved is proved to be copied out or found to be reported, I shall stand by the consequence.

Abstract

Smart card-enhanced systems are in use today throughout several key applications around the world and this demand will increase in future. The self-containment of smart card makes it resistant to attack. There is a need to provide secure and cost-effective solution to the local market.

SmartSuite is developed to fulfill this demand. SmartSuite is a Smart card Security Solution it allow users to design cards, personalize cards, authenticate cards and manage security. SmartSuite have four modules, Card designer have a wizard for easy collection of data and it provides designing tools such as add text tool, graphics, shapes, barcodes, shadows, and other effects for user to design card in any way he wants. Personalizer is used to write data to the memory of the card and to the database of SmartSuite.

Authenticator checks authenticity of the Card , Card Accepting Device and the User verify that the respective counterpart is genuine then allow the transaction. And Security Manager gives control to administration to change the rights of card holders

Acknowledgements

A good teacher is really God gift. We think our self lucky that we found such gift. We are truly grateful to Mr Azhar Kaleem whose valuable guidance, suggestions, directions and encouragements remained a continuous source of study. We would extend our great appreciation to him for supervising this work and being so kind and friendly.

We are also thankful to Mr. Malik Mumtaz Ghafoor for allowing us the necessary equipment to complete this work and for good suggestions to improve our work.

Table of Contents

1 INTRODUCTION.....	2
1.1 Project background	3
1.2.1 Designer	4
1.2.2 Personalizer.....	5
1.2.3 Authenticator.....	5
1.2.4 Security Manager.....	6
1.3 Scope and goals	7
1.3.1 Controlling Access.....	7
1.3.2 Securing Information and Physical Assets	7
1.3.3 Telecommuting And Corporate Network Security.....	8
1.4 System Requirements	8
2.4.1 Microsoft Windows® Operating System:	8
2.2.2 VB/VC for programming the application	8
2 LITERATURE SURVEY.....	10
2.1 Smart Card.....	10
2.1.1 Memory Cards	11
2.1.2 CPU MPU Microprocessor Multifunction Cards	11
2.2 Smart Cards Security	12
2.2.1 What Is Security?	13
2.2.2 Existing Systems	14
2.2.3 Smart Card Security Capabilities.....	14
2.3 Open DataBase Connectivity (ODBC).....	16
2.4 SmartSuite Overview.....	16
2.4.1 Driver & Dynamic Link Library (DLL)	16
2.4.2 The Application	17

3 PLANNING AND ANALYZING.....	19
3.1 Requirements.....	19
3.2 System Functions	20
3.2.1 Card Design Functions.....	21
3.2.2 Card Personalize Functions.....	22
3.2.3 Manage Database Functions	22
3.2.4 Card Test Functions	23
3.2.5 Card Authenticate Functions.....	23
3.2.6 Security manager Functions.....	23
3.3 Use cases.....	24
3.4 Expanded Use cases	26
3.4.1 Design Card Use Case	26
3.4.2 Personalize Card Use Case	28
3.4.3 Update Database Use Case	29
3.4.5 Authenticate Card Use Case	30
3.4.6 Manage Security Use Case	31
3.8 Use Case Diagrams	32
3.9 Conceptual Model.....	33
3.9.1 Designer Conceptual Model	34
4.1.2 Personalizer Conceptual Model	35
4.1.3 Authenticator Conceptual Model	36
4.1.4 Security Manager Conceptual Model	37
4 SYSTEM DESIGNING	39
4.1 Components of the system.....	39
4.2 System Sequence Diagram	39
4.2.1 System Sequence Diagram For Personalize Card Use Case.....	40
4.2.2 System Sequence Diagram For Design Card Use Case.....	41
4.2.3 System Sequence Diagram For Update Database Use Case.....	42
4.2.4 System Sequence Diagram For Test Card Use Case	43
4.2.5 System Sequence Diagram For Authenticate Card Use Case.....	44
4.2.6 System Sequence Diagram For Manage Security Use Case.....	45
4.3 Contracts.....	46
4.3.1 Contract: Select Template.....	46
4.3.2 Contract: Enter Card Dimensions	47
4.3.3 Contract: Draw Line	47
4.3.4 Contract: DrawRectangle.....	48
4.3.5 Contract: Draw Ellipse.....	48

5.4 Personalizer	75
5.4 Authenticator.....	78
5.5 Security manager	79
6 TESTING	81
6.1 Test plan.....	81
6.1.1 Test Strategy	81
6.1.2 Environment Requirements	82
6.1.3 Test Schedule	83
6.1.4 Control Procedures.....	83
6.1.5 Functions To Be Tested	84
6.1.6 Resources and Responsibilities.....	84
6.1.7 Suspension / Exit Criteria	85
6.1.8 Resumption Criteria.....	86
6.1.9 Dependencies	86
6.1.10 Risks.....	86
6.2 Test Cases	87
6.2.1 Definitions and Abbreviations	87
6.2.3 Test Case 1: CD[NPR]- Connect to Any Database	88
6.2.4 Test Case 2: CD[NPR]-Accepts special characters	88
6.2.5 Test Case 3: DC[NPR]- Accepts LS	89
6.2.6 Test Case 4: Per- From and To Time.....	89
6.2.7 Test Case 6: Authenticator[NPR]- Valid user be given Entry	90
7 Conclusion	92
7.1 Conclusion	92
7.2 Future Enhancement	92
APPENDIX A- BIBLIOGRAPHY.....	94

4.3.6 Contract: Draw Text	49
4.3.7 Contract: Draw Bar Code.....	49
4.3.8 Contract: Insert Picture	50
4.3.9 Contract: Change Properties	50
4.3.10 Contract: Select DSN.....	51
4.3.11 Contract: Select Tables	51
4.3.12 Contract: Select Fields	52
4.3.13 Contract: Make Query.....	52
4.3.14 Contract : Categorize Data.....	53
4.3.15 Contract: Connect To Writer	53
4.3.16 Contract: Personalize Card	54
4.3.17 Contract : Get Card Holder Info	54
4.3.18 Contract : Get Access Timings	55
4.3.19 Contract : Get Expiry Date	55
4.3.20 Contract : Establish Connection.....	56
4.3.21 Contract : Update Database	56
4.3.22 Contract : Connect To Reader.....	57
4.3.23 Contract: Connect To Database	57
4.3.24 Contract : Read Data.....	58
4.3.25 Contract : Display Data.....	58
4.3.26 Contract : Activate	59
4.3.27 Contract : Detect Card	59
4.3.28 Contract : Connect To Database	60
4.3.29 Contract : Authenticate	60
4.3.30 Contract : Get Password.....	61
4.3.31 Contract : Verify Password.....	61
4.3.32 Contract : Select Record	62
4.3.33 Contract : Set New Time.....	62
4.3.34 Contract : Set New Date	63
4.3.35 Contract : Get Remarks.....	63
4.4 Interaction Diagrams.....	64
4.4.1 Personalize Card Collaboration Diagram	64
4.4.2 Design Card Collaboration Diagram	65
4.4.3 Authenticate Card Collaboration Diagram	66
5 IMPLEMENTATION.....	68
5.1 Translating A Design Into An Implementation	68
5.1.1 Mapping Object-Oriented Concepts	68
5.2 Interacting with card	69
5.3 Card Designer.....	70
5.3.1 The Wizard.....	70
5.3.2 The Designer.....	72