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Study of Security Issues in the ERP System Implementation And Development of the Security Analysis Tool

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Declaration

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The above candidate has carried out research for the Masters dissertation under my supervision.

UOM Verified Signature 29/04/2016

Mr. Saminda Premaratne Date

Dissertation Supervisor

Dedication

This thesis is dedicated to my beloved wife, Dhanushka Priyangi, to my children's Oneli Sethumya and Methum Sethmina they have always encouraged me to do this master degree.

Also this thesis is dedicated to my parents, D M Jayasekara and Lalitha Ekanayake who have given me a tremendous education since beginning of my life, mother in law C. Herath, my brother Ranga and his wife Imali, sister in law Eranga and her husband Dananjaya.

Finally, this thesis is dedicated to all who believe in the richness of learning and value of knowledge sharing among members in communities.

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Abstract

There is a growing tendency in the security of an ERP systems. This has resulted in security issues when an implementing an ERP system. Despite many researchers have discovered various solution for the improve ERP system implementation security there are lack of solutions to analysis security issues of Microsoft Dynamics Navision ERP system.

The solution take various inputs parameters related to the ERP systems. Having giving the input system will be analysis the security threats related to ERP system. After the analysis phase system will produce a report; it consists a list of security issues, suggestions and solutions for those identified issues. This solution can be useful to; ERP systems security auditors, ERP systems own organizations, ERP systems implementation organizations or anyone who interested to investigate the ERP system implementation security issues.

System modules are developed using Open Source technology by using Apache as web server, MySQL as a database server and PHP/Perl/Python as scripting language. System uses existing Open Source libraries and security scanning tools to perform security analysis. The over system has been designed to work in platform independent manner. System can be accessible using any modern web browser also the users can access the system by hosting the application on they own or rented LAMP or WAMP server.

Based on the identified security issues online survey questionnaire was design to understand what target audience are really thinking about the ERP systems security. After the statistically analyzing collected data it shows that those identified issues are significant to the ERP systems security. After development of the security analysis tool, it was tested by the target audience by using the test cases. The results show that our solution can evaluated the ERP systems related security issues.

In summary, the proposed security analysis tool offers unique features necessary for the security of Microsoft Dynamics Navision ERP systems. It also overcomes the limitations associated with existing security approaches and enables the protection of the three major components; people, policy and technology.

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List of Abbreviations

Abbreviation	Description
ERP	Enterprise Resource planning systems
CIA	Confidentiality, Integrity and Availability
MS	Microsoft
SQL	Structured Query Language
PHP	Hypertext Preprocessor
HTML	Hypertext markup language
NAV ERP	Microsoft Dynamics Navision Enterprise Resource Planning system
BI	Business Intelligence
LAMP	Linux, Apache, MySQL, and PHP/Python/Perl
WAMP	Windows, Apache, MySQL, and PHP
Nmap	Network Mapper
DEM	Dynamic Enterprise Modeler
HTTP	Hypertext Transfer Protocol
RSS	Really Simple Syndication
XML	Extensible Markup Language
IT	Information Technology
MRP	Manufacturing Requirements Planning
BYOD	Bring Your Own Device
VPN	Virtual Private Network
OS	Operating System
NAT	Network address translation
phpMyAdmin	PHP based MySQL database management tool
VM	Virtual machine
US-CERT	United States Computer Emergency Readiness Team
ESE	Extensible Storage Engine
EDB	Extensible Storage Engine Database File
libesedb	Library and tools to access the ESE and EDB format
NT	New Technology (Microsoft Windows term)
ntdsxtract	NT directory information extract