REQUIREMENT MODEL OF SCHOOL MANAGEMENT SYSTEM FOR ADULT COMMERCIAL SECONDARY SCHOOL IN SOMALIA (ACSSMS)

HUSSEIN ABDULLAHI

UNIVERSITI UTARA MALAYSIA

2011
REQUIREMENT MODEL OF SCHOOL MANAGEMENT SYSTEM FOR ADULT COMMERCIAL SECONDARY SCHOOL IN SOMALIA (ACSSMS)

A project submitted to the Dean of Research (Awang Had Salleh Graduate School) in partial fulfillment of the requirements for the degree

Master of Science (Information Technology)

Universiti Utara Malaysia

By

Hussein Abdullahi

Copyright © Hussein Abdullahi, 2011. All Rights Reserved
PERMISSION TO USE

In presenting this project of the requirements for a Master of Science in Information Technology (MSc. IT) from Universiti Utara Malaysia, I agree that the University library may make it freely available for inspection. I further agree that permission for copying of this project paper in any manner, in whole or in part, for scholarly purposes may be granted by my supervisor(s) or in their absence, by the Dean of Research (Awang Had Salleh Graduate School). It is understood that any copying or publication or use of this project or parts thereof for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to Universiti Utara Malaysia for any scholarly use which may be made of any material from my project paper. Request for permission to copy or make other use of materials in this project, in whole or in part, should be addressed to:

Dean of Research Awang Had Salleh Graduate School

College of Arts and Sciences

Universiti Utara Malaysia

06010 UUM Sintok

Kedah Darul Aman

Malaysia.
ABSTRACT

To develop a system, it is necessary for the system's analyst to provide a model. In order to produce this model, the analyst must identify the user’s requirement first. Requirement model is one of the techniques used to model out the user’s requirement for a specific system before the development of that system. In other words, requirement model gives a view of the user’s requirement for a particular system. The purpose of this study is to create a requirement model as a basis to develop school management system for Adult Commercial Secondary School in Somalia. So, during this study, the UML graphical notation was used to model out the requirement model of the proposed school management system, and the requirement model was designed and presented using different UML tools (e.g., use case diagram, use case specifications, activity diagram, sequence diagram, collaboration diagram and class diagram), and supporting textual information. Also, a small prototype was then developed and presented in this study, which covers some of the main functional requirements, so as to assist the school in managing their daily operations effectively and more efficiently. Thus, this study is believed to be a step forward and very crucial guidance for Adult School in Somalia to be able to give this model to system developers to build the proposed school management system.
ACKNOWLEDGMENT

In the Name of Allah, the Most Gracious and Most Merciful

First and foremost, All Praises be to Allah for his guidance and blessing for giving me the strength and perseverance to complete this study.

Besides, especial thanks go to my mother and my fiancée who did not forget me in their prayers and they always keep encouraging me during this period of my study. Equal thanks go to my beloved family, for providing me with the opportunity to pursue my goals and for their love and support, which has helped me along my study stages and through all my life.

Also, I would like to express my deepest gratitude to my supervisor Dr. Abdul Jaleel Kehinde Shittu for his guidance, instructions and advices that have enabled me to complete my project properly and on time.

Lastly but not the least, I would like to thank all my friends and colleagues who share with me their enthusiasm and knowledge, also gave me their assistance throughout this study.

Hussein Abdullahi /10-6-2011
TABLE OF CONTENTS

PERMISSION TO USE ...................................................................................................................... i
ABSTRACT ...................................................................................................................................... ii
ACKNOWLEDGEMENT .................................................................................................................. iii
TABLE OF CONTENTS .................................................................................................................. iv
LIST OF FIGURES ........................................................................................................................... vii
LIST OF TABLES ............................................................................................................................ viii
LIST OF ABBREVIATIONS ............................................................................................................. ix
CHAPTER ONE: INTRODUCTION ................................................................................................. 1
  1.0 BACKGROUND OF THE STUDY ............................................................................................. 1
  1.1 PROBLEM STATEMENT ......................................................................................................... 2
  1.2 RESEARCH QUESTIONS ......................................................................................................... 3
  1.3 OBJECTIVE OF THE STUDY .................................................................................................. 4
  1.4 SCOPE OF THE STUDY ........................................................................................................... 4
  1.5 SIGNIFICANCE OF THE STUDY ............................................................................................ 5
  1.6 EXPECTED DELIVERABLE ..................................................................................................... 5
  1.7 REPORT STRUCTURE ............................................................................................................ 5
  1.8 CHAPTER SUMMARY ............................................................................................................ 6
CHAPTER TWO: LITERATURE REVIEW ......................................................................................... 7
  2.0 INTRODUCTION ....................................................................................................................... 7
  2.1 REQUIREMENTS .................................................................................................................... 7
  2.2 REQUIREMENT MODEL .......................................................................................................... 8
    2.2.1 REQUIREMENT MODEL FOR THE MANAGEMENT OF ELECTRONIC RECORDS ........... 9
  2.3 MANAGEMENT INFORMATION SYSTEM .............................................................................. 10
    2.3.1 BASIS FOR THE EXISTENCE OF INFORMATION SYSTEMS ........................................ 11
    2.3.2 MANAGEMENT INFORMATION SYSTEMS IN SCHOOLS ............................................ 12
  2.4 SCHOOL MANAGEMENT SYSTEM ......................................................................................... 13
  2.5 ADULT LEARNING DOMAIN ............................................................................................... 14
  2.6 UNIFIED MODELING LANGUAGE ........................................................................................... 14
    2.6.1 USE CASE DIAGRAM ..................................................................................................... 15
    2.6.2 USE CASE SPECIFICATIONS ......................................................................................... 15
    2.6.3 CLASS DIAGRAM ........................................................................................................... 15
  2.7 CHAPTER SUMMARY ............................................................................................................. 15
CHAPTER THREE: RESEARCH METHODOLOGY .............................................. 16
3.0 INTRODUCTION .................................................................................. 16
3.1 DESIGN RESEARCH IN INFORMATION SYSTEMS METHODOLOGY ............ 16
    3.1.1 PHASE 1: AWARENESS OF PROBLEM ............................................. 17
        3.1.1.1 DATA COLLECTION .................................................................. 18
        3.1.1.2 PRIMARY DATA ...................................................................... 18
        3.1.1.3 INTERVIEWING ...................................................................... 18
    3.1.2 PHASE 2: SUGGESTION .................................................................. 19
    3.1.3 PHASE 3: DEVELOPMENT ................................................................. 19
        3.1.3.1 PROTOTYPING METHODOLOGY .............................................. 19
        3.1.3.2 DEVELOPMENT TOOLS .......................................................... 21
            3.1.3.2.1 FRONT-END APPLICATION .............................................. 21
            3.1.3.2.2 BACK-END APPLICATION .............................................. 21
            3.1.3.2.3 RATIONAL ROSE ENTERPRISE EDITION ....................... 21
    3.1.4 PHASE 4: EVALUATION ................................................................. 21
    3.1.5 PHASE 5: CONCLUSION ............................................................... 21
3.2 CHAPTER SUMMARY ........................................................................... 21
CHAPTER FOUR: SYSTEM ANALYSIS AND DESIGN ...................................... 22
4.0 INTRODUCTION .................................................................................. 22
4.1 SYSTEM REQUIREMENTS .................................................................. 22
4.2 USER REQUIREMENTS ..................................................................... 22
    4.2.1 FUNCTIONAL AND NON-FUNCTIONAL REQUIREMENTS ................. 22
4.3 HARDWARE REQUIREMENTS .............................................................. 24
4.4 SYSTEM DESIGN ............................................................................. 25
    4.4.1 USE CASE DIAGRAM ................................................................. 25
        4.4.1.1 USE CASE SPECIFICATION .................................................. 26
    4.4.2 ACTIVITY DIAGRAM ................................................................. 32
    4.4.2 SEQUENCE DIAGRAM ............................................................. 33
    4.4.2 CLASS DIAGRAM .................................................................. 34
4.5 CHAPTER SUMMARY .......................................................................... 34
CHAPTER FIVE: PROTOTYPE DEVELOPMENT AND EVALUATION ............... 35
5.0 INTRODUCTION ............................................................................. 35
5.1 PROTOTYPE DEVELOPMENT .......................................................... 35
    5.1.1 USER INTERFACE DESIGN ......................................................... 35
CHAPTER FIVE: PROTOTYPE TESTING PHASES

5.2 PROTOTYPE TESTING PHASES

5.2.1 SYSTEM TESTING

5.2.2 CODE TESTING

5.2.3 UNIT TESTING

5.3 EVALUATION OF THE PROTOTYPE

5.3.1 EVALUATION TECHNIQUES AND RESULTS

5.4 FEATURES OF THE PROTOTYPE

5.5 CHAPTER SUMMARY

CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

6.0 INTRODUCTION

6.1 CONTRIBUTION OF THE STUDY

6.2 CONCLUSION AND LIMITATIONS

6.3 RECOMMENDATIONS AND FUTURE WORKS

6.4 CHAPTER SUMMARY

REFERENCES

APPENDIX A

APPENDIX B

APPENDIX C
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>NO</th>
<th>NAME</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIGURE 3.1</td>
<td>DESIGN RESEARCH IN INFORMATION SYSTEMS</td>
<td>17</td>
</tr>
<tr>
<td>FIGURE 3.2</td>
<td>PROTOTYPING METHODOLOGY</td>
<td>20</td>
</tr>
<tr>
<td>FIGURE 4.1</td>
<td>USE CASE DIAGRAM</td>
<td>25</td>
</tr>
<tr>
<td>FIGURE 4.2</td>
<td>LOGIN USE CASE SPECIFICATION</td>
<td>26</td>
</tr>
<tr>
<td>FIGURE 4.3</td>
<td>REGISTRATION USE CASE SPECIFICATION</td>
<td>26</td>
</tr>
<tr>
<td>FIGURE 4.4</td>
<td>CREATE NEW USER USE CASE SPECIFICATION</td>
<td>27</td>
</tr>
<tr>
<td>FIGURE 4.5</td>
<td>CHANGE PASSWORD USE CASE SPECIFICATION</td>
<td>28</td>
</tr>
<tr>
<td>FIGURE 4.6</td>
<td>MAKE FEES PAYMENT USE CASE SPECIFICATION</td>
<td>29</td>
</tr>
<tr>
<td>FIGURE 4.7</td>
<td>VIEW STUDENT REPORT USE CASE SPECIFICATION</td>
<td>30</td>
</tr>
<tr>
<td>FIGURE 4.8</td>
<td>LOGOUT USE CASE SPECIFICATION</td>
<td>31</td>
</tr>
<tr>
<td>FIGURE 4.9</td>
<td>ACTIVITY DIAGRAM</td>
<td>32</td>
</tr>
<tr>
<td>FIGURE 4.9</td>
<td>SEQUENCE DIAGRAM</td>
<td>33</td>
</tr>
<tr>
<td>FIGURE 4.9</td>
<td>CLASS DIAGRAM</td>
<td>34</td>
</tr>
<tr>
<td>FIGURE 5.1</td>
<td>WELCOME SCREEN</td>
<td>36</td>
</tr>
<tr>
<td>FIGURE 5.2</td>
<td>LOGIN SCREEN</td>
<td>37</td>
</tr>
<tr>
<td>FIGURE 5.3</td>
<td>REGISTRATION SCREEN</td>
<td>37</td>
</tr>
<tr>
<td>FIGURE 5.4</td>
<td>CREATE USERS SCREEN</td>
<td>38</td>
</tr>
<tr>
<td>FIGURE 5.5</td>
<td>ABOUT DEVELOPER SCREEN</td>
<td>38</td>
</tr>
</tbody>
</table>
# LIST OF TABLES

<table>
<thead>
<tr>
<th>NO</th>
<th>NAME</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TABLE 4.1: FUNCTIONAL REQUIREMENTS</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>TABLE 4.2: NON-FUNCTIONAL REQUIREMENTS</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>TABLE 4.3: MINIMUM HARDWARE REQUIREMENT SPECIFICATIONS</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>TABLE 6.1: DEMOGRAPHIC DATA RESULTS</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>TABLE 6.2: RESPONDENTS DATA RESULTS</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>TABLE 6.3: EVALUATION RESULTS</td>
<td>41</td>
</tr>
</tbody>
</table>
# LIST OF ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACSSMS</td>
<td>Adult Commercial Secondary School Management System</td>
</tr>
<tr>
<td>SIMS</td>
<td>Student Information Management System</td>
</tr>
<tr>
<td>SIS</td>
<td>Student Information System</td>
</tr>
<tr>
<td>SMS</td>
<td>Student Management System</td>
</tr>
<tr>
<td>ACSS</td>
<td>Adult Commercial Secondary School</td>
</tr>
<tr>
<td>SRS</td>
<td>Student Records System</td>
</tr>
<tr>
<td>CMS</td>
<td>Campus Management System</td>
</tr>
<tr>
<td>ERP</td>
<td>Enterprise Resource Planning</td>
</tr>
<tr>
<td>MIS</td>
<td>Management Information System</td>
</tr>
<tr>
<td>UML</td>
<td>Unified Modeling Language</td>
</tr>
<tr>
<td>ERMS</td>
<td>Electronic Record Management System</td>
</tr>
</tbody>
</table>
CHAPTER ONE: INTRODUCTION

1.0 BACKGROUND OF THE STUDY:

For the last two decades the themes of governance and management have continuously been on the top of education policy agendas in most countries in the world, and a great number of educational problems were attributed to bad management or inappropriate mechanisms of governance (Gábor, 2003; Duhaney, 2005; Jessica et al., 2009). Furthermore, information has become a critical resource to organizations and individuals and should be managed in a suitable way to ensure its cost effective use, and every aspect of management relies on information to succeed. So, to improve the performance of the organization, the management must be economical, efficient and effective (Baskerville, 2002; Johnson & Higgins, 2010).

Moreover, information systems is essential part of modern education, notably because of numerous possibilities and advantages which information technology brought forward like effectiveness and efficiency for education sectors, as well as for better achievement of setup education goals (Michael et al., 2006; Vuksanovic et al., 2007; Kate, 2010). Thus, nowadays the deployment of information systems in organizations has been highly interconnected with each other and the development and the use of an information management system (MIS) leads to better planning, better decision-making and better results (Nambisan, 2003; Arnott & Pervan, 2005).

In addition, managing diversity of tasks and complexity will certainly be one of the most difficult tasks in Schools. The administrative traditions of education, one of the oldest public services, often make the elaboration of adequate new answers particularly difficult (Tabata & Johnsrud,
The contents of the thesis is for internal user only
REFERENCES


