EXAMINATIONS WEB SERVICES SYSTEM USING .NET FRAMEWORK

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by

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ABSTRACT

Web services make it possible to share programmable application logic among a diverse set of programs, regardless of the platform or the programming language. Such components can be exposed over the Internet or the institution’s intranet using Internet protocols. The main purpose of this project is to develop a set of Web Services, which can be accessed from different types of applications.

Examinations Web Services System (EWSS) is an online examinations marks entry and processing system. It supplies modules for authentication, examinations marks entry, results calculations, results viewing, results reporting and analysis. The Web Services module exposes services for delivering mark sheets, grade calculation, and results processing, which are consumed by Web pages and windows applications. The system is developed using C#, using ASP.NET for Web forms and ADO.NET for data access. The system is running under the Microsoft .NET Framework and the database chosen is Microsoft SQL Server 2000.

The system had been used for the processing of the school examination results in Sekolah Menengah Jenis Kebangsaan Chan Wa (SMJKCW). With the system, it reduces the workload of the teacher by over 300%. Besides, the system helps to generate timely and vital reports for analysis. These reports have resulted in appreciative feedback both from the teachers as well as the school administrators.
ACKNOWLEDGEMENTS

It is not a trivial task to complete a project of this magnitude, especially having to meet the dateline of the project. There are many people who had contributed to the completion of the project. The first person I would express my sincere gratitude is to my project supervisor, Mr. Ang Tan Fong. His lectures on Web Servers, and Software Engineering were crucial to the understanding of how a software project of this nature should be developed. His guidance, insight, and confidence have inspired me to complete this project within the time schedule. It was he who moved me to use the C# language for this project, when I was waverling between C# and Java!

There are other lecturers who have guided me in developing and using some of the techniques selected in this project, such as Dr. Sameem, who took pains to explain database concepts to us. In addition there are those who gave input into the examination system, such as Ms. Wo Mee Chin, who explained the inner workings of the SPM Registration process.

Among the many people who have been of assistance is Mr. Tan Ten Lee who reviewed my manuscript and had given valuable suggestions. I must also not forget the multitude of students and teachers of SMJK Chan Wa, who have tested my programs, and given much feedback. There are also too many people to mention, who have provided feedback and inspiration in one way or another that contributed to the success of this project. Thank you very much.
# TABLE OF CONTENTS

Abstract

Acknowledgement

Table of Contents

List of Figures

List of Tables

Abbreviations

## CHAPTER 1: INTRODUCTION
1.1 Overview of the System  
1.2 Project Objective  
1.3 Project Scope  
1.4 Project Limitation  
1.5 Expected Outcome  
1.6 Significance of Project  
1.7 Project Schedule  
1.8 Report Organization

## CHAPTER 2: LITERATURE REVIEW
2.1 Analysis Studies  
2.1.1 Overview of current Examinations Systems  
2.1.2 Current Process Flow (Manual) or Existing System  
2.1.3 Similar Systems available in the Internet.  
2.1.4 Web Services on the Internet  
2.2 Reviews on Latest Technologies  
2.2.1 Client-Server Architecture  
2.2.2 Component Technology  
2.2.3 Web services  
2.2.3.1 The benefits of Web Services  
2.2.3.2 When to use Web services  
2.2.3.3 The Web Services core technologies  
2.2.3.4 Web Services Architecture  
2.2.3.5 Types of Web Services  
2.2.3.6 Web Service Communication Styles  
2.2.3.7 The future of Web Services  
2.2.4 Platforms  
2.2.4.1 Sun ONE, J2EE, Java and Open Source  
2.2.4.2 .NET Framework and Microsoft Technology  
2.2.4.3 Comparing Sun ONE open source and .NET Platform
2.2.5 Web Server
  2.2.5.1 Internet Information Service (IIS) 42
  2.2.5.2 Microsoft Personal Web Server (PWS) 43
  2.2.5.3 Apache Web Server 43
  2.2.5.4 TomCat 43
  2.2.5.5 Other servlet engines 43
2.2.6 Operating System
  2.2.6.1 Microsoft Windows 44
  2.2.6.2 UNIX 44
  2.2.6.3 Linux 44
2.2.7 Database Server
  2.2.7.1 Microsoft Access and Microsoft Jet 45
  2.2.7.2 Microsoft SQL Server 2000 Desktop Engine (MSDE) 46
  2.2.7.3 Microsoft SQL Server 46
  2.2.7.4 IBM DB2 49
  2.2.7.5 MySQL 50
  2.2.7.6 Oracle 9i Database 50
2.2.8 Database Access Technology
  2.2.8.1 Open Database Connectivity (ODBC) 51
  2.2.8.2 Microsoft JET and Data Access Objects (DAO) 51
  2.2.8.3 Remote Data Objects (RDO) 51
  2.2.8.4 OLE DB 51
  2.2.8.5 ActiveX Data Objects (ADO) 51
  2.2.8.6 Remote Data Service (RDS) 52
  2.2.8.7 Microsoft Data Access Components (MDAC) 52
  2.2.8.8 ADO.NET 52
2.2.9 Programming Language
  2.2.9.1 C# 52
  2.2.9.2 Java 53
  2.2.9.3 C++ 53
2.2.10 Authoring Tools
  2.2.10.1 Microsoft Visual Studio.Net 54
  2.2.10.2 NET Framework Software Development Kit 54
  2.2.10.3 SunONE studio 54

CHAPTER 3: METHODOLOGY
3.1 Methodology
  3.1.1 Software Process Model 55
  3.1.2 Choice of Reuse-based development 57
    3.1.2.1 PHASE 1 - Requirements specification 59
    3.1.2.2 PHASE 2 - Component analysis 60
    3.1.2.3 PHASE 3 - Requirements Modification 61
    3.1.2.4 PHASE 4 - System Design with reuse 62
    3.1.2.5 PHASE 5 - Development and Integration 63
    3.1.2.6 PHASE 6 - System validation 64
  3.1.2 The Process Iteration 65
3.2 Techniques Used to Define Requirements
  3.2.1 Analysis of existing systems 67
  3.2.2 Feedback from users of existing systems 68
  3.2.3 Review of new technologies 68
  3.2.4 Library Research 70
  3.2.5 Purchase of new books on relevant topics 71
  3.2.6 Internet Browsing 71
  3.2.7 Subscription to e-magazines 72
  3.2.8 e-Books, that is, electronic books 72

CHAPTER 4: SYSTEM ANALYSIS
4.1 Introduction 74
4.2 Functional Requirements of EWSS
  4.2.1 Web Services functional requirements 74
    4.2.1.1 Authentication Web Services 74
    4.2.1.2 Data Retrieval Web Services 75
    4.2.1.3 Data Update Web Services 75
    4.2.1.4 Data Processing Web Services 76
    4.2.1.5 Data Analysis Web Services 76
  4.2.2 Database System Requirements 77
  4.2.3 Data Entry User Requirements 77
  4.2.4 Data Processing User Requirements 78
  4.2.5 Data Retrieval User Requirements 79
  4.2.6 Data Analysis User Requirements 80
  4.2.7 Security User Requirements 81
4.3 Non-Functional Requirements
  4.3.1 Product requirements 81
  4.3.2 User Interface Requirements 82
  4.3.3 Organizational requirements 83
  4.3.4 External requirements 83
4.3 Decisions on the choice of Technology, Software and Development Tools
  4.3.1 Development Platform 84
  4.3.2 Development Web Server 87
  4.3.3 Database Server 89
  4.3.4 Data Access Technology 90
  4.3.5 Development Language 90
4.4 Hardware Requirements
  4.4.1 The Development Machine requirements 92
  4.4.2 The Web Server hardware requirements 92
  4.4.3 The Client Components hardware requirements 92

CHAPTER 5: SYSTEM DESIGN
5.1 Architecture Design
  5.1.1 System Structuring of EWSS: Client-Server Model 93
    5.1.1.1 Web Services 96
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1.1.2 Database Services</td>
<td>96</td>
</tr>
<tr>
<td>5.1.1.3 Client Services</td>
<td>96</td>
</tr>
<tr>
<td>5.2 System Functionality Design</td>
<td>97</td>
</tr>
<tr>
<td>5.2.1 Modular Diagram</td>
<td>97</td>
</tr>
<tr>
<td>5.2.2 Data Flow Diagram</td>
<td>98</td>
</tr>
<tr>
<td>5.3 Database Design</td>
<td>105</td>
</tr>
<tr>
<td>5.3.1 E-R Diagram</td>
<td>105</td>
</tr>
<tr>
<td>5.3.2 Data Dictionary</td>
<td>108</td>
</tr>
<tr>
<td>5.4 User Interface Design</td>
<td>113</td>
</tr>
<tr>
<td><strong>CHAPTER 6: SYSTEM IMPLEMENTATION</strong></td>
<td></td>
</tr>
<tr>
<td>6.1 Development Environment</td>
<td>116</td>
</tr>
<tr>
<td>6.1.1 Hardware Configuration</td>
<td>117</td>
</tr>
<tr>
<td>6.1.2 Software Configuration</td>
<td>117</td>
</tr>
<tr>
<td>6.1.3 Development with Provision for Disaster Recovery</td>
<td>118</td>
</tr>
<tr>
<td>6.1.4 Implementation Environment</td>
<td>120</td>
</tr>
<tr>
<td>6.2 System Development</td>
<td>120</td>
</tr>
<tr>
<td>6.2.1 Architecture Implementation</td>
<td>121</td>
</tr>
<tr>
<td>6.2.2 Database Implementation</td>
<td>130</td>
</tr>
<tr>
<td>6.2.3 Program Implementation</td>
<td>137</td>
</tr>
<tr>
<td><strong>CHAPTER 7: SYSTEM TESTING</strong></td>
<td></td>
</tr>
<tr>
<td>7.1 Testing Approach</td>
<td>144</td>
</tr>
<tr>
<td>7.2 Type of Testing</td>
<td>145</td>
</tr>
<tr>
<td>7.2.1 Unit Testing</td>
<td>146</td>
</tr>
<tr>
<td>7.2.1.1 Black Box testing</td>
<td>147</td>
</tr>
<tr>
<td>7.2.1.2 White Box Testing</td>
<td>148</td>
</tr>
<tr>
<td>7.2.1.3 Code Flow</td>
<td>150</td>
</tr>
<tr>
<td>7.2.2 Module Testing</td>
<td>150</td>
</tr>
<tr>
<td>7.2.3 Interface Testing</td>
<td>151</td>
</tr>
<tr>
<td>7.2.4 Integration Testing</td>
<td>151</td>
</tr>
<tr>
<td>7.2.5 System Testing</td>
<td>152</td>
</tr>
<tr>
<td>7.3 Acceptance of User Testing</td>
<td>153</td>
</tr>
<tr>
<td>7.4 Performance Testing</td>
<td>153</td>
</tr>
<tr>
<td>7.5 Conclusion</td>
<td>157</td>
</tr>
<tr>
<td><strong>CHAPTER 8: SYSTEM EVALUATION AND CONCLUSION</strong></td>
<td></td>
</tr>
<tr>
<td>8.1 Problems Encountered and its Solutions</td>
<td>158</td>
</tr>
<tr>
<td>8.1.1 Username and Password for ASP.NET</td>
<td>158</td>
</tr>
<tr>
<td>8.1.2 Insufficient documentation for various tools</td>
<td>158</td>
</tr>
<tr>
<td>8.1.3 Problems in mirroring a development platform</td>
<td>159</td>
</tr>
<tr>
<td>8.1.4 Difficulties with the C# language</td>
<td>159</td>
</tr>
<tr>
<td>8.1.5 Difficulties in Various components</td>
<td>160</td>
</tr>
<tr>
<td>8.1.6 Problems with user access rights</td>
<td>160</td>
</tr>
<tr>
<td>8.1.7 Problems with Web Forms</td>
<td>160</td>
</tr>
</tbody>
</table>
8.2 Evaluation by End Users
8.3 Using EWSS at CHANWA
8.4 System Strength
  8.4.1 User-friendly User Interface
  8.4.2 Use of SQL technology
  8.4.3 More Intuitive Interface
  8.4.4 Reliability
  8.4.5 Ease of development using the newer tools
  8.4.6 Modular Architecture is very flexible
8.5 System Constraints and Future Enhancement
  8.5.1 System Constraints
  8.5.2 Future Enhancements
8.6 Knowledge and Experience Gained
8.7 A Comment on Web Services as used in EWSS
8.8 Conclusion

APPENDICES
  A. Questionnaire
  B. Using Windows XP Home to run Web Services
  C. User Manual
  D. Crystal Reports
  E. Sample Reports
  F. References
  G. Sample Reports
List of Figures

Figure 1.1 Project TimeLine

Figure 2.1 Four Stages in the Examination System

Figure 2.2 Classic Examinations system

Figure 2.3 Semi-Computerized Examinations Marks System

Figure 2.4 Menu Screen for REX system

Figure 2.5 Data Entry Screen of REX system

Figure 2.6 Marks Entry in Skali's Web Site

Figure 2.7 The Air Fare Quote Web Service Main Screen

Figure 2.8 Using the Air Fare Quote Flight Request Information

Figure 2.9 Searching of the Air Fare Request

Figure 2.10 Results of the Air Fare Search

Figure 2.11 Financial Web Services (Bond Pricing)

Figure 2.12 Foreign Exchange Cross rates Screen

Figure 2.13 The GraphMagic Site

Figure 2.14 iCuisine Chicken Recipe Listing

Figure 2.15 iCuisine Chicken Breast Recipe

Figure 2.16 IBM UDDI Business Registry

Figure 2.17 The SOAP Message

Figure 2.18 Web Services Message Passing

Figure 2.19 Web Services Architecture

Figure 2.20 Java Web Services technologies

Figure 2.21 Web Services in J2EE application server implementation

Figure 2.22 The Microsoft .NET platform

Figure 2.23 The .NET Framework

Figure 2.24 The Conceptual Java Architecture

Figure 2.25 The Conceptual .NET Architecture

Figure 3.1 Reuse-based Software Development Process

Figure 3.2 Two stages in overall functionality increments

Figure 3.2 Incremental Development

Figure 4.1 Peak Throughput Comparison between J2EE and .NET platforms
Figure 7.1 Testing Process
Figure 7.2 Black Box Testing of a Web Service
Figure 7.3 Successful Output of Black Box Testing
Figure 7.4 White Box Testing: Examining the Code
Figure 7.5 Examining Code Flow
Figure 7.6 Units in a Client Module
Figure 7.7 Interface between Modules-Web Service and Client Module
Figure 7.8 The evolution in the performance of examinations results processing software
Figure 7.9 ASP.NET Performance Test Screen for processing all of Form Five
Figure 7.10 Windows Forms Performance Test Screen
Figure 7.11 Performance of ASP.NET and Windows Forms Application
Figure 8.1 The TallyStats C# Form containing buttons that increment each questionnaire item
Figure 8.2 The façade of CHANWA
Figure 8.3 Students assisting in the data entry into EWSS
Figure 8.2 Web Service Requests completed in 60 seconds with 100 simultaneous clients
List of Tables

Table 2.1 Multi-tier architecture  
Table 4.1 GPMP allocations of points  
Table 4.2 Comparison of .NET and Java Platforms  
Table 4.3 Comparisons of Web Servers  
Table 4.4 Comparisons of Database Servers  
Table 5.1 Symbols used in Data Flow Diagram  
Table 5.2 Table Structure of the Class Information  
Table 5.3 Table Structure of Students  
Table 5.4 Table Structure of Subjects  
Table 5.5 Table Structure of Class-Subjects  
Table 5.6 Table Structure of Student-Subjects  
Table 5.7 Table Structure of Grading for Forms 1 to 3  
Table 5.8 Table Structure of Grading for Forms 4 and 5  
Table 5.9 Table Structure of Teachers  
Table 5.10 Table Structure of Users  
Table 6.1 Software used in development  
Table 6.2 EWSS CORE Web Services Architectural Components  
Table 6.3 EWSS ADVANCED Web Services Architectural Components  
Table 6.4 EWSS Database Tables  
Table 6.5 Pseudo-code for deletion of an entry in Students  
Table 6.6 Stored Procedures used in EWSS  
Table 6.7 Setting up the Database Connection Using ADO.NET  
Table 6.8 Using the DataSet and Stored Procedures in ADO.NET  
Table 6.9 EWSS Program Module Functions  
Table 6.10 Calling a Web Service  
Table 6.11 Relocating the Web Service Reference  
Table 6.12 Code Template Table for Returning Errors in a DataSet  
Table 6.13 Overview Template Table for Updating Database Table
Table 7.1 Performance Test Machine Configurations 156
Table 7.2 Algorithm for performance test 156
Table 8.1 Results of tallying the Questionnaire responses 162
Table 8.2 Questionnaire Job Titles 163
Table 8.3 Questionnaire Gender 163
Table 8.4 Age Groups of respondents 163
Table 8.5 Summary of Questionnaire Section B, questions 1 – 3 164
Table 8.6 Summary of Questionnaire Section B, questions 4-6 164
Table 8.7 Summary of Questionnaire Section B, questions 7-17 165
Table 8.8 Questionnaire Section C, User Interface Colour Scheme 165
Table 8.9 Questionnaire Section C, User Interface Layout 166
Table 8.10 Questionnaire Section C, User Interface Buttons 166
Table 8.11 Questionnaire Section C, User Interface Menus 167
Table 8.12 Questionnaire Section D, Question 1 167
Table 8.13 Questionnaire Section D, Question 2 168
Table 8.14 Questionnaire Section D, Question 3 168
Table 8.15 Overall Performance of EWSS at CHANWA 172
## Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>.NET</td>
<td>Microsoft .NET Framework</td>
</tr>
<tr>
<td>A2A</td>
<td>Application To Application</td>
</tr>
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<td>ADO</td>
<td>Microsoft ActiveX Data Objects</td>
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<td>ADO.NET</td>
<td>Microsoft ActiveX Data Objects used in the .NET Environment</td>
</tr>
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<td>API</td>
<td>Application Programming Interface</td>
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<td>ASP</td>
<td>Microsoft Active Server Pages</td>
</tr>
<tr>
<td>ASP.NET</td>
<td>Microsoft Active Server Pages used in the .NET Environment</td>
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<tr>
<td>ATL</td>
<td>Microsoft Active Template Library</td>
</tr>
<tr>
<td>Axis</td>
<td>Apache eXtensible Interaction System</td>
</tr>
<tr>
<td>B2B</td>
<td>Business To Business</td>
</tr>
<tr>
<td>CHANWA</td>
<td>Chan Wa Secondary School</td>
</tr>
<tr>
<td>CLR</td>
<td>Common Language Runtime</td>
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<td>CLS</td>
<td>Common Language Specification</td>
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<td>CORBA</td>
<td>Common Object Request Brokering Architecture</td>
</tr>
<tr>
<td>COM</td>
<td>Microsoft's Component Object Model</td>
</tr>
<tr>
<td>CTS</td>
<td>Common Type System</td>
</tr>
<tr>
<td>DAO</td>
<td>Database Access Objects</td>
</tr>
<tr>
<td>DCOM</td>
<td>Microsoft's Distributed Component Object Model</td>
</tr>
<tr>
<td>DFD</td>
<td>Data Flow Diagram</td>
</tr>
<tr>
<td>DISCO</td>
<td>Discovery, Microsoft's Web Service discovery method</td>
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<tr>
<td>DOS</td>
<td>Microsoft Disc Operating System</td>
</tr>
<tr>
<td>EDI</td>
<td>Electronic Document Interchange</td>
</tr>
</tbody>
</table>
EJB  Enterprise Java Beans
ERD  Entity Relationship Diagram
EWSS Examinations Web Services System
EXE  Executable File extension
GNU  GNU’s Not Unix
GPMP Grade Purata Mata Pelajaran, the average Grade Point Average
GUI  Graphical User Interface
HTTP Hypertext Transport Protocol
IDL  Interface Definition Language
IDE  Integrated Development Environment
I I S  Microsoft Internet Information Service
IBM  International Business Systems
J2EE Java 2 Enterprise Edition
J2RE Java 2 Runtime Environment
J2SE Java 2 Standard Edition
JAX-M Java API for XML Messaging
JAX-RPC Java API for XML Remote Procedure Calls
JAXB Java API for XML Binding
JAXP Java API for XML Processing
JAXR Java API for XML Registries
JDBC Java Database Connectivity
JMS  Java Messaging Service
JRE  Java Runtime Engine
JSTL  JavaServer Pages™ Standard Tag Library
JVM  Java Virtual Machine
JWSDP  Sun Microsystems’ Java Web Services Developer Pack
LDAP  Lightweight Directory Access Protocol
MDAC  Microsoft Data Access Components
MFC  Microsoft Foundation Classes
MSDE  Microsoft SQL Server Desktop Engine
MSIL  Microsoft Intermediate Language
MSVS  Microsoft Visual Studio
ODBC  Open Database Connectivity
OLAP  Online Analytical Processing
OLE DB  Object Linking and Embedding Databases
OLTP  Online transaction processing
PHP  Originally stood for Personal Home Page, but has changed in line with the GNU recursive naming convention and now stands for PHP Hypertext Preprocessor
PWS  Microsoft Personal Web Server
RDO  Remote Data Objects
RDS  Remote Data Service
REX  Relational Examinations System, a file-based examinations processing system which was written in the C-language, and using dBase IV file formats.
RPC  Remote Procedure Call
SAAJ  Soap with Attachments API for Java
SAN  System Area Networking
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SDK</td>
<td>Software Development Kit from various vendors</td>
</tr>
<tr>
<td>SNMP</td>
<td>Simple Network Management Protocol</td>
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<tr>
<td>SOAP</td>
<td>Simple Object Access Protocol</td>
</tr>
<tr>
<td>SPM</td>
<td>Sijil Pelajaran Malaysia. A public examination certificate for Form Five students in Malaysia.</td>
</tr>
<tr>
<td>SQL</td>
<td>Standard Query Language, the de facto standard language of all databases</td>
</tr>
<tr>
<td>STL</td>
<td>Standard Template Library</td>
</tr>
<tr>
<td>SunONE</td>
<td>Sun Microsystems’ Open Network Environment architecture</td>
</tr>
<tr>
<td>TCP/IP</td>
<td>Transport Control Protocol / Internet Protocol</td>
</tr>
<tr>
<td>UDA</td>
<td>Universal Data Access</td>
</tr>
<tr>
<td>UDDI</td>
<td>Universal Description, Discovery and Integration</td>
</tr>
<tr>
<td>VB</td>
<td>Visual Basic</td>
</tr>
<tr>
<td>VB.NET</td>
<td>Visual Basic.NET</td>
</tr>
<tr>
<td>WSDK</td>
<td>IBM WebSphere SDK for Web Services</td>
</tr>
<tr>
<td>WSDL</td>
<td>Web Service Description Language</td>
</tr>
<tr>
<td>WSTK</td>
<td>IBM’s Web Services Toolkit</td>
</tr>
<tr>
<td>XML</td>
<td>Extensible Markup Language</td>
</tr>
</tbody>
</table>