Implementing a School Information System via Web Application

by

Ms. Jiratha Pungpaeng

A Final Report of the Three-Credit Course
CE 6998 Project

Submitted in Partial Fulfillment
of the Requirements for the Degree of
Master of Science
in Computer and Engineering Management
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Project Title	Implementing a School Information system via Web Application
Name	Ms. Jiratha Pungpaeng
Project Advisor	RA. Prasart Sribhadung
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The Graduate School of Assumption University has approved this final report of the three-credit course, CE 6998 PROJECT, submitted in partial fulfillment of the requirements for the degree of Master of Science in Computer and Engineering Management.

Approval Committee:

(RA. Prasart Sribhadung)
Advisor

(Prof.Dr. Srisakdi Charmonman)
Chairman

(Dr. Chamnong Jungthirapanich)
Program Coordinator

(Assoc.Prof. Somchai Thayarnyong)
CHE Representative

November 2006

ABSTRACT

St. Francis Xavier Convent School runs under the direction of the Sisters of St. Paul de Chartres in Thailand. It was established in 1925 in Samsen District Area, Bangkok, Thailand.

This project provides the system that is used to manage the work flow in the firm and an analysis tool for data analysis. With this system the manual system can be replaced. It can help the company to store the data into the database and the executives can also use these data for making decisions and a marketing plan. This development project covers the scope of problems, system analysis and design, and project implementation. The knowledge of database management, web application and OLAP technology are integrated for system development. Interbase 6.0 server and Visual Studio 2005 are the tools that are used to create this system. In analyzing this system, the Analysis Services that is the component of Interbase 6.0 server will be used to get high analysis performance. Nonnal reports and OLAP reports are generated by Crystal Report to get a proper report format for viewing and printing. Moreover, the network of the proposed system is a wireless network that is easy to install.

Therefore this project is useful for the company to save the utility cost, and improve the efficiency of staff to serve customers. Moreover, the executives can make use of the information kept in the database to help the organization.

ACKNOWLEDGEMENTS

This project was done with the school information system to create a web application. The writer would like to acknowledge the following for their efforts and thank them for their contributions.

She would like to thank Rear Admiral Prasart Sribhadung, her project advisor for his valuable suggestions and advice given in the preparation of this project.

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In addition, she would like to thank Sister superior of St. Francis Xavier Convent Sr. Maria Noel Phewkeing, SPC who gave her the opportunity and useful information for the project.

Finally, she would like to express her deep appreciation to her parents and family for their moral support and inspiring cheerful words throughout her study.

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I. INTRODUCTION

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School management information system has been used for windows application the school from the year 2000 it was very complicated when we wanted to setup for new personnel computers. But nowadays, there is the technology that can support database management for Web application.

The Web application School information system for St. Francis Xavier Convent manages information system. Log-in from anywhere with an internet connection. This is accessible securely from the internet. We can log into the system from home or even from abroad. In Local Authority can also have their own log-in and set of tools so that they can collate data from schools collectively without having to deal with paper. Ease of Use Data input is via an easy to use set of user-defined drop-down menus and free-text boxes. Follow-up actions and senior/pastoral staff comments are easily added at any time and instantly available for viewing.

1.2 Objectives of the Project

The objective of the project is to create Web application for St. Francis Xavier Convent School.

(1) To manage Student Information Efficiently.

(2) To Record Student Billing and Payments.

(3) To Maintain Grades, Create Teacher Grade report.

(4) To improver grade, GPA, honor, Report Cards, Graduation Requirements, and Transcripts

(5) To Analyze the Performance of a class as a whole through Student Grading Software.

(6) To Manage own Security.

1.3 Scope of the Project

(1) Create WEB Application from exiting system.

(2) Study and analyze the existing system and provide a new system to support the school information system.

(3) Integrate the knowledge of system analysis and design, computer center management, and management information system.

(4) Design the web application for School information flow management in organization and keep the data for analysis.

(5) Integrate the knowledge of OLAP that users can analyze the different dimensions of multidimensional data.

(6) Improve the efficiency of the decision making process by the analysis tool.

1.4 Project Plan

The Project plan of Implementing School information system to Web Application is given in Figure 1.1

Figure 1.1: Project plan of Implementing School information system to Web Application

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II. LITERATURE REVIEW

2.1 Web Application for School Information System

The end-user can work on the website, end-user has to work everywhere and all the time the applications kept on the server. To be easy for report to Director or principal everywhere. Online grade report for student. The user can master the entire functionality of this module within minutes, without technical training, all by him/herself making this module extremely user friendly.

2.2 Web Server (http://www.microsoft.com, October 2003)

The basic knowledge of web application is all web application must be run on the web server. In Microsoft Windows NT, 2000, XP, and 2003, Internet Information Service (115) is available a default except Microsoft Windows XP where installation is needed, Internet Information Services (115) makes it easy to publish information on the Internet or intranet. For other version of Microsoft Windows such as MS Windows 95, 98, and lylE, the web server will be "Personal Web Server". In this project, US is used as web server so explanation will be about ITS only. Internet Information Services is the Windows Web service that makes it easy to publish information on the intranet or the Internet.

2.3 Programming language

In the web application, to make it work dynamically we have to use the program that is run at the server and display the result to client. From the information about 11S above, it is recommended that the web application should be Active Server Pages (ASP). Even new programming language from Microsoft is launched (Microsoft Net Frame work and Microsoft Visual Studio Net). This programming language is not obsolete yet because it still works well and is easy to use

in are efficient and effective way. The most important thing is MS Net which is new and the programmers are still familiar with ASP. Server Pages (http://www.mkrosoft.com, October 2003)

Microsoft Active Server Pages (ASP) is a server-side scripting environment that you can use to create interactive Web pages and build a powerful Web application. When the server receives a request for an ASP file, it processes sewer-side scripts contained in the file to build the Web page that is sent to the browser. In addition to server-side scripts, ASP files can contain HTMl (including related client-side scripts) as well as calls to COM components that perform a variety of tasks, such as competing to a database or processing business logic, If you are able to write HTML and need to creating.

2.4 Database Management System

A database-management system is a collection of interrelated data and a set of programs to access those data. The collection of data, usually referred to as the database, contains information relevant to an enterprise. The primary goal of database-management system is to provide a way to store and retrieve database information that is both convenient and efficient.

Database systems are designed to manage large bodies of information. Management of data involves both defining structure for storage of information and providing mechanisms for the manipulation of information. In addition, the database system must ensure the safety of the information stored, despite system crashes or attempts at unauthorized access. If data are to be shared among several users, the system must avoid possible anomalous results. (Silberschatz, Korth and Sudarshan 2002)

2.5 Database Security

This module of the school administration software is highly secure. Password protection prohibits unauthorized users to view or alter the data in any way The system ensures that once a student profile has been created, it cannot be deleted, as it becomes a financial entity. To optimize the database, however, an entity may be archived and made inactive. It can be re-activated at any time.

III. THE EXISTING SYSTEM

3.1 Background of the Organization

St. Francis Xavier Convent School runs under the direction of the Sisters of St. Paul de Chartres in Thailand. It was established in 1925 in Samsen District Area, Bangkok, Thailand. This year, 2006, the school has 165 teachers and 3021 students, starts from the preschool level to the High School level. Sr. Marie Noel Phewklieng is the director of the school. The school's philosophy is 'Academic excellence, self-discipline, kindness, ethics and efficiency.' The our school vision is, 'St. Francis Xavier Convent School to achieve academic excellence in her students and also instill in them a strong ethical foundation concerning morality Thai traditions and culture, democracy and the environment. St. Francis Xavier Convent School believes in the power of a well-rounded, education both the mind and the heart to raise beneficial citizens for the country. The mission of St. Francis Xavier Convent School is to foster well adjusted students with a sense of self-reliance, personal loyalty and civic responsibility in her students.

Association involved

There are 3 organizations which help in running the school activities.

They are:

(1) The Saint Francis Xavier's Parents and Teacher Association

(2) The Saint Francis Xavier Alumni Association Under the Patronage of Her Majesty the Queen

(3) The 35 St. Francis Foundation

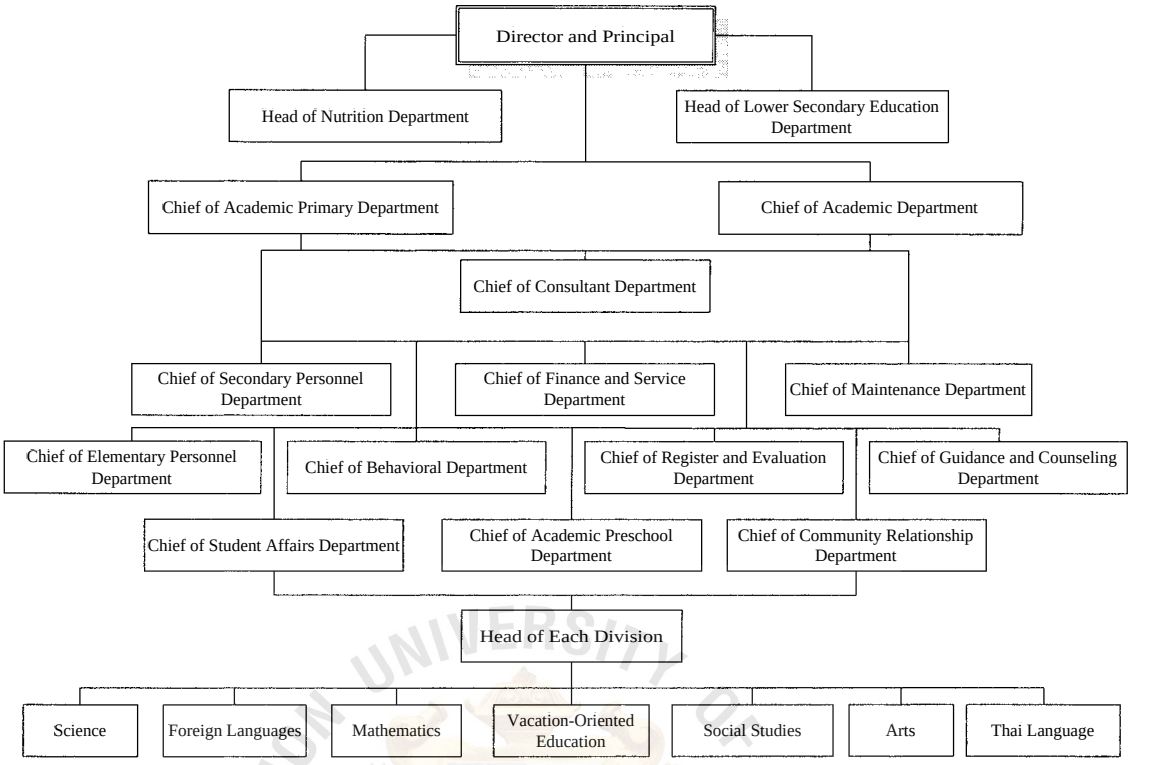

Figure 3.1. Organization Chart of St. Francis Xavier Convent School

3.2 Current problems and Areas for Improvement

3.3.1 Current Problems Problem Definition Statements User's Perspective:

(1) Personnel Computer used for client/server application

(2) Developer can't develop Windows Application new version all client.

(3) No standard for school information system to each client.

(4) User can use only the computer.

(5) The report problems occur because of a confusion in the report templates which lead to report problems such as inaccurate and unreliable reports, not up-to-date for the manager to make a decision immediately.

The current information system is not flexible enough to support new and exceptional situations, supported by the fact that a single change in an order]leads to the repetition of the processes which is an unnecessary waste of time,

Based on the problems that occur, the company has defined the areas of improvement which are as follows:

(1) Design a database based on the data dictionary of the existing system.

(2) Create the systems that support their business function based on the integrated database design.

(3) Add the system's functions that improve the potential of the workflow and the analysis system on the new system.

3.3.1 Existing Computer System

When each client have problem with there computer such as virus computer or reinstall system. Software for school information system had lost, but developer can't update application each client and some of report changed by end-user requested. The system has no standard when employees are absent each client does not have same application form or report.

The Created Web application has the following job responsibilities:

(1) Every where the application is used

(2) Maintaining the application on server

(3) Eliminate of confusion form end-user

(4) One time updating of application and reports

IV. THE PROPOSED SYSTEM

4.1 System Specification

After studying the existing system of St. Francis Xavier Convent, it is found that the School requires a computerized system instead of the manual system. The intended system can be beneficial to the management level and operational level. In order to achieve the target, the new system will have the components which are as follows.

(1) School Information System — It was designed to support data based on the existing system. Crate web-based information system designed to help school personnel to use office referral data to design school and individual student interventions. Helpful school personnel the capability to evaluate individual student behavior, the behavior of groups of students, behaviors occurring in specific settings.

(2) Web Application System — It was designed from the existing system using the integrated data School information system. Moreover, it comprises of specifications that are useful for the user as follows:

a. The system reduces the processing time and data redundancy to search information.

b. The system will alert the user when duplicated data are entered or the data are in a wrong format.

c. Reliable security and control management is required to protect the risk that occurs to the system. Each salesperson has his password to protect others from changing the data. The proposed system can identify the user's access authority and allow only authorized persons to work on their authorized jobs.

(3) Analysis System Component (OLAP) is designed to analyze the transaction data and create the report.

4.2 System Design

4.2.1 Application Architecture

(1) Network Architecture

St. Francis Xavier Convent requires a computerized system in the organization. The distributed database computing (two-tiered client-server) is suitable for client-server model. This architecture stores the database on a server and also the user interface that is web application based on the client-server is stored on the server.

The network configuration of the proposed system is a client-server model. All clients use the same interface to access the application and information. Moreover it is designed to use the school network system. Point to be the center of connecting workstations which is shown in Figure 4.1.

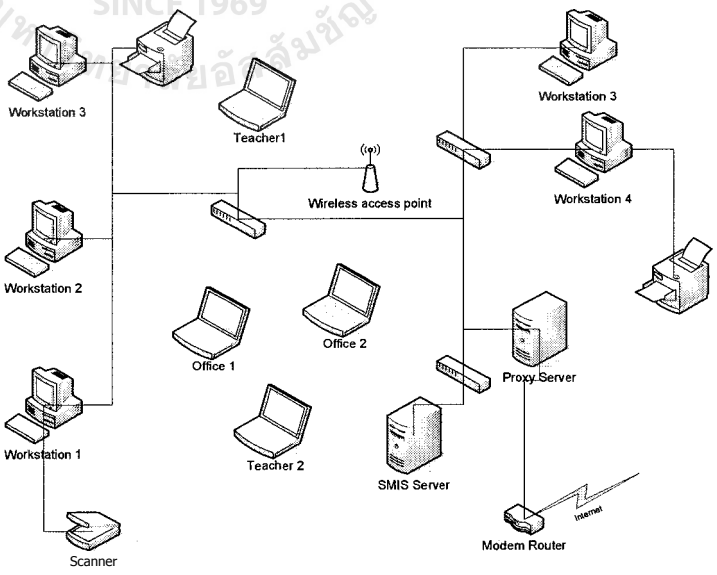

Figure 4.1. Network Configuration of the Proposed System

(2) Data Architecture

The proposed system uses the Relational Database Management System (RDBMS) that is designed in a relational data model. So to update, insert and delete, the data will be automatically changed at a time.

(3) Interface Architecture

In the proposed system, when the user inputs the information, it has to be processed automatically by the system. The data is keyed in by using the keyboard. Most of the data is keyed in the text box. Users can continue to enter the next box. Some text boxes can be filled with no data. The data that has many selections can be selected from the list box. Each type of data is arranged in good proportion with different colors. So all of these data that is the input, will be processed to generate the report.

(4) Process Architecture

An application in terms of the software language and tools will be developed. St. Francis Xavier Convent uses Borland Interbase Server 6 for the database server and the programming language uses MS Visual Basic to develop the program. Further, RE6 will be used to process data and create the OLAP report as a requirement.

4.2.2 Process Specification

A data flow diagram can be drawn to depict the flow of data to and from within the system. The major functions of the proposed system can be summarized as follows:

Process 1: Administration Tool

(1) Verify the user

(2) Given permission for each department

(3) Add remove items into database

(4) Changing Semester and Academic year

(5) Backup Recovery database

Process 2: School information instant database

(1) Verify the user

(2) Keep the documents concerning St. Francis Xavier Convent detail

(3) Add new items into database

Process 3: Students information

(1) Verify the user

(2) Input students's information with the reserved School

(3) Update the status of the Schools "Reserve" and other data concerned

(4) Print the reserved slip for the students

Process 4: Financial information

(1) Verify the user

(2) Input student's information

(3) Input additional information

(4) Update the status of the School

Process 5: Reporting Services

(1) Verify the user

(2) Generate report by specific dimension such as grade, time and transcripts, or record students

(3) Evaluation end of year.

4.2.3 Database Design

In order to get the Database Schema for database design the data model (ERD) or logical data model is converted into the implemented database. In data analysis, a normalization technique is used to transform all data in ERD into applicable database. The result of the database design is illustrated in Appendix A.

4.2.4 Data Dictionary

Data Dictionary provides a list of terms and definition for all data items and data stored in the developed system. The data dictionary for both entity relationship diagram and data flow diagram is shown in Appendix B.

4.2.5 Structure Design

It is one technique to create top-down hierarchy of modules. This technique deals with the size and sampling of program by breaking the program into a hierarchy of modules. It shows how the program has been partitioned into smaller, more manageable module, the organization of those modules and the communication interface between the modules. The structure design is shown in Appendix C.

4.2.6 Input Interface Design

Interface design serves an important goal and gets the data into the format suitable for the computer. The input screens of the proposed system are in Appendix D.

4.2.7 Report Design

The output is applied to any information produced by a system, whether printed, or displayed. The output design of the report design is shown in Appendix E.

4.3 Hardware and Software Requirement

4.3.1 Hardware Requirement

The hardware requirements are shown in Tables 4.1. and 4.2.

Table 4.1. Server Specifications.

Device	Specification
Processor Type and Speed	Intel Pentium IV 3.0 GHz.
Memory	DDR RAM for PC 2 GHz
Hard Drive Capacity	200 GB
CD-ROM Drive (x)	52 X
Floppy Drive	3.5" 1.44 MB.
UPS	SYNDOME SD 200 1 KVA
Display Monitor	Display Monitor 17" Super VGA Color
Network Device	LAN Schoold

Table 4.2. Workstation Specifications.

Device	Specification
Processor Type and Speed	Intel Pentium IV 2.8 GHz.
Memory	DDR RAM for PC 512 MB
Hard Drive Capacity	60 GB
CD-ROM Drive (x)	52 X
Floppy Drive	3.5" 1.44 MB.
Display Monitor	Display Monitor 17" Super VGA Color
Network Device	Wireless LAN Schoold

4.3.2 Software Requirement

The software specifications for server and client software are shown below

Table 4.3. Server Software Specifications.

Software	Specification
Database Server Software	Interbase 6
Operating System	Microsoft Window 2003 Standard Edition
Application Server	Analysis Services
Anti Virus	Malicious Software Removal Tool

Table 4.4. Workstation Software Specifications.

Software	Specification
Web Browser	Microsoft Internet Explorer 6.0
Operating System	Microsoft Window XP
Application Software	Microsoft Office XP, ASP.Net, Crystal Report
Anti Virus	Malicious Software Removal Tool

4.4 Security and Control

One of the most important considerations in the development of system operation is security. Since a user friendly program is created, anyone can access the program if needed. Therefore, to keep the accuracy of the data, management team needs to be extremely useful at this point. The security strategies are listed below.

4.4.1 Identification

The user identification and password are assigned only to the authorized persons. When users sign on to the system, they require supplying, not only their user ID, but also a password. Different users will typically have different privileges on the same object. Only a few users such as the managing director and general manager have authorizations to access every object of the system.

4.4.2 Physical Security

The failure of the main electricity supply causes interruption to the function of the computer facility or telecommunication network. UPS (Uninterruptible Power Supply) is used to supply power in case of main electricity supply shortage. The staffs are not allowed to eat, or smoke while working with the computer because these actions can cause damage to the computer.

4.4.3 Network Security

Firewall is installed to prevent intruders and define from hacking the students's profile and other information. MAC address is used to specify only the computer that can access to the system.

4.4.4 Backup and Recovery

All data are backed up to other hard disk at the end of the day and kept in a secure place because risks can occur intentionally and unintentionally, such as theft, fire, human error, etc.

4.5 Cost and Benefit Analysis. (Interest (i) = 5%)

Cost-Benefit Analysis estimates and totals up the equivalent money value of the benefits and costs to the community of project to establish whether they are worthwhile. Therefore the cost of the existing and proposed system will be specified in Table 4.5 and 4.6

4.5.1 Cost Analysis

(1) Cost of the Existing System

Table 4.5. Existing System Cost Analysis (2000)

Cost Items	Years				
	1	2	3	4	5
Fixed Cost					
Personal Computer 2 units @ 28,000	56,000.00	-	-	-	-
Laser Printer 1 unit @ 20,000	3,500.00	-	-	-	-
MS Windows 98 2 units @ 4,500	15,000.00	-	-	-	-
MS Office 97 2 units @ 13,000	26,000.00	-	-	-	-
Switching Hub	3,000.00	-	-	-	-
Total Fixed Cost	120,000.00	-	-	-	-
Operating Cost					
Salary:					
Management officer 3 persons@ 10,000	30,000.00	31,500.00	33,075.00	34,728.75	36,465.19
Sales officer 6 persons@ 7,500	45,000.00	47,250.00	49,612.50	52,093.13	54,697.79
Total of monthly salary cost	75,000.00	78,750.00	82,687.50	86,821.88	91,162.98
Total of Annual salary cost	900,000.00	945,000.00	992,250.00	1,041,862.56	1,093,955.76
Other Cost:					
Stationary Per Annum	20,000.00	21,000.00	22,050.00	23,152.50	24,310.13
Paper Per Annum	20,000.00	21,000.00	22,050.00	23,152.50	24,310.13
Polaroid Film Per Annum	12,000.00	12,600.00	13,230.00	13,891.50	14,586.08
Internet Service Per Annum	1,200.00	1,260.00	1,323.00	1,389.15	1,458.61
Utility Per Annum	20,000.00	21,000.00	22,050.00	23,152.50	24,310.13
Miscellaneous Per Annum	20,000.00	21,000.00	22,050.00	23,152.50	24,310.13
Total other cost	93,200.00	97,860.00	102,753.00	107,890.65	113,285.21
Total Annual Operating Cost	993,200.00	1,042,610.00	1,095,003.00	1,149,753.21	1,207,240.97
Total Existing System Cost	1,113,200.00	1,042,610.00	1,095,003.00	1,149,753.21	1,207,240.97

(2) Cost of the Proposed System

Table 4.6. Proposed System Cost Analysis.

Cost Items	Years				
	1	2	3	4	5
Fixed Cost					
Hardware Cost:					
Computer Server Cost	30,000.00	-	-	-	-
Workstation Cost 4 units @ 21,000	84,000.00	-	-	-	-
Digital Camera 1 unit @ 10,000	10,000.00	-	-	-	-
Printer 1 unit @ 7,000	7,000.00	-	-	-	-
Wireless ADSL Router	4,500.00	-	-	-	-
Wireless LAN Schoold 4 units @	5,600.00	-	-	-	-
1,400	5,000.00	-	-	-	-
UPS	146,100.00	-	-	-	-
Total Hardware Cost					
Software Cost:	48,000.00	-	-	-	-
Server Software	40,000.00	-	-	-	-
Workstation Software	10,680.00	10,680.00	10,680.00	10,680.00	10,680.00
ADSL Service 890 per month	98,680.00	16,080.00	16,080.00	16,080.00	16,080.00
Total Software Cost					
People-Ware Cost:	46,000.00	-	-	-	-
1 System Analyst @ 23,000 (2 months)	52,000.00	-		-	-
2 Programmers @ 13,000 (2 months)	36,000.00	-	-	-	
1 IT Specialist @ 18,000 (2 months)	134,000.00	-	-	-	-
Total People-Ware Cost					
Implementation Cost:	20,000.00	-	-	-	-
Training Cost	4,000.00	-	-	-	-
Installation Cost	24,000.00	-	-	-	-
Total Implementation Cost					
Total Fixed Cost	402,780.00	16,080.00	16,080.00	16,080.00	16,080.00
Operating Cost					
Salary:					
Management officer 2 persons @ 10,000	20,000.00	21,000.00	22,050.00	23,152.50	24,310.13
Sales officer 4 persons @ 7,500	30,000.00	31,500.00	33,075.00	34,728.75	36,465.19
IT Specialist 1 person @ 18,000	18,000.00	18,900.00	19,845.00	20,837.25	21,879.11
Total of monthly salary cost	68,000.00	71,400.00	74,970.00	78,718.50	82,654.43
Total of Annual salary cost	816,000.00	856,800.00	899,640.00	944,622.00	991,853.20
Other Cost:					
Stationary Per Annum	18,000.00	18,900.00	19,845.00	20,837.25	21,879.11
Paper Per Annum	10,000.00	10,500.00	11,250.00	11,812.50	12,403.13
Utility Per Annum	20,000.00	21,000.00	22,050.00	23,152.50	24,310.13

Table 4.6. Proposed System Cost Analysis. (Continued)

Cost Items	Years				
	1	2	3	4	5
Miscellaneous Per Annum	20,000.00	21,000.00	22,050.00	23,152.50	24,310.13
Total other cost	68,000.00	71,400.00	75,195.00	78,954.75	82,902.50
Total Annual Operating Cost	884,000.00	928,200.00	974,835.00	1,023,576.75	1,074,755.70
Total Proposed System Cost	1,286,780.00	944,280.00	990,915.00	1,039,656.75	1,090,835.70

After specifying and calculating the expense of the existing and proposed system, the total sum of both the existing and proposed system will be taken to calculate the accumulated cost. The accumulated cost is shown in Table 4.7 and 4.8

Table 4.7. Five Years Accumulated Existing System Cost.

Year	Total Cost (Baht)	Accumulated Cost (Baht)
1	1,113,200.00	1,113,200.00
2	1,042,610.00	2,155,810.00
3	1,095,003.00	3,250,813.00
4	1,149,753.21	4,400,566.21
5	1,207,240.97	5,607,807.18
Total	5,607,807.18	-

Table 4.8. Five Years Accumulated Proposed System Cost.

Year	Total Cost (Baht)	Accumulated Cost (Baht)
1	1,286,780.00	1,286,780.00
2	944,280.00	2,231,060.00
3	990,915.00	3,221,975.00
4	1,039,656.75	4,261,631.75
5	1,090,835.70	5,352,467.45
Total	5,352,467.45	-

4.5.2 Benefit Analysis

Benefit analysis can be divided in to two categories: tangible benefits and intangible benefits.

(1) Tangible Benefits (estimated amount per annual)

Reduced cost

Operation cost

According to the proposed system, it helps the School reduce the manual and repeated tasks; therefore the School can save time and cost of people to operate that.

Table 4.9. Estimated Operation Cost Deduction

Resource	Qty	Salary (Baht/month)	Saving per year (Salaryx12)
Management Officer	1	14,000.00	120,000.00
Sales Officer	2	15,000.00	180,000.00
Total			300,000.00

Other expenditure

With the new system, School will use less paper and other supplement such as stationary because data are kept in the electronic form and the system is operated with less people.

Table 4.10. Estimated Other Expenditure Deduction

Description	Price (Baht/month)	Saving per year
Paper	833.00	10,000.00
Office Equipment	2933.00	35,200.00
Total		45,200.00

Sales Loss

The proposed system provides high speed for work flow and all transactions. Therefore, the information of this system is more updated and more accurate. That makes the database management more effective and can reduce the sales loss.

The approximate School revenue is 7,600,000 baht per year and the estimated sale loss is 5% of the revenue, 380,000 baht.

With the support of this system, sales loss is estimated to be reduced by 50% which is equal to 0.5 x 380,000 = 190,000 baht per year.

Total of the reduced cost = 300,000+ 45,200 + 190,000 = 535,200 Baht

Increased revenue

The high speed in the work flow empowers the School to compete with other competitors. School estimates to gain more than 10% of the revenue in the next year which is 760,000 baht. One percent increased revenue will resulted from the new system.

Total tangible benefits = Reduced cost + Increased revenue

= 535,200 + 76,000

= 611,200 Baht per year

(2) Intangible Benefits

These benefits are difficult to qualify in value. The proposed system provides the intangible benefits which are summarized as follows:

(a) The report is up-to-date information to make a decision.

(b) The salesperson can process a quicker transaction so he has more time to serve the students and follow up the potential students.

(c) Improving students satisfaction. The new system can satisfy the students quickly by serving the studentss with high technology. The studentss will be convinced that the School is highly efficient.

(d) Improving working environment. The space to store paper is reduced so the place can be arranged in good environment and convenient to welcome the studentss.

(e) Getting the information on the used School from the browser is very attractive to students.

4.5.3 Break-Even Analysis

Break-even analysis shows the point where the accumulated cost of the existing system is equal to the accumulated cost of the proposed system.

Table 4.11 is the comparison of the accumulated manual cost and accumulated proposed cost. At the beginning, the cost of the proposed system is higher than the cost of the manual system because the development cost incurred in the first year of the new system implementation. But, for the long term, the proposed system can reduce the manual operation costs especially salary cost and office supplies cost.

The break-even point of the proposed system is depicted on Figure 4.2. The break-even point will occur in approximately 2 years and 9 months after the system has been operated. This result is satisfactory for investing and implementing the proposed system because it will incur less operating cost than the existing system in the long run operation.

Table 4.11. The comparison of the system costs, baht.

Year	Accumulated Manual Cost	Accumulated Proposed Cost
1	1,113,200.00	1,286,780.00
2	2,155,810.00	2,231,060.00
3	3,250,813.00	3,221,975.00
4	4,400,566.21	4,261,631.75
5	5,607,807.18	5,352,467.45

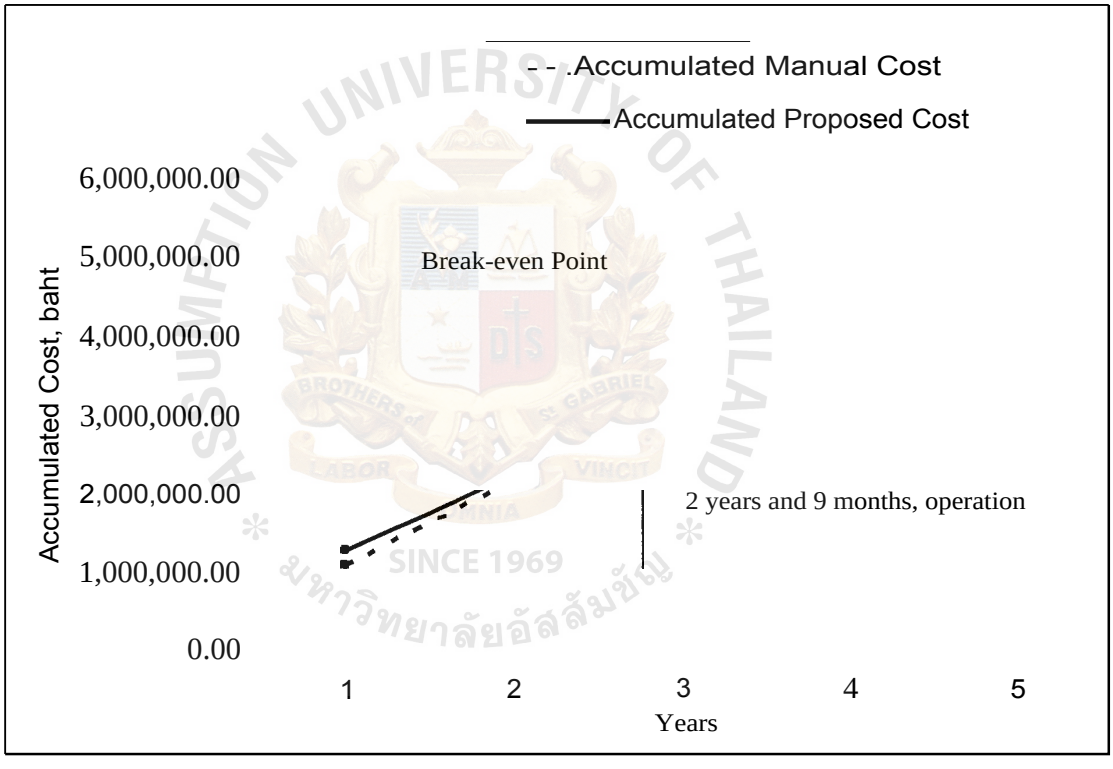

Figure 4.2. The Break-Even Analysis

4.5.4 Payback Analysis

The payback period of this proposed system is 1 year and 3 months. The calculation of the proposed system is shown in table 4.13, the items and price of Table 4.12 is taken from the cost of the proposed system in Table 4.6

Table 4.12. Cost of the Proposed System

Cost Item	Description	Amt.	Unit Price	Total Price
Development Cost	1.1 People-Ware Cost :			
	System Analyst (2 months)	1	50,000.00	50,000.00
	Programmer (2 months)	2	26,000.00	52,000.00
	IT Specialist (2 months)	1	36,000.00	36,000.00
	1.2 Implementation Cost :			
	Training Cost	1	20,000.00	20,000.00
	Installation Cost	1	4,000.00	4,000.00
	1.3 Hardware Cost :			
	Computer Server Cost	1	30,000.00	30,000.00
	Workstation Cost	4	21,000.00	84,000.00
	Digital Camera	1	10,000.00	10,000.00
	Printer	1	7,000.00	7,000.00
	ADSL Router	1	4,500.00	4,500.00
	Wireless LAN Schoold	4	1,400.00	5,600.00
	UPS	1	5,000.00	5,000.00
	1.4 Software Cost :			
	Server Software	1	45,000.00	45,000.00
	Workstation Software	1	30,000.00	30,000.00
	Total Development Cost			383,100.00
Operating Cost	1.5 People-Ware Cost :			
	IT Specialist (18,000 per month)	1	216,000.00	216,000.00
	1.6 Office Suppliers & Miscellaneous Cost :			
	Stationary (1500 per month)		18,000.00	18,000.00
	Paper (833.33 per month)		10,000.00	10,000.00
	Utility (1666.67 per month)		20,000.00	20,000.00
	Miscellaneous (1666.67 per month)		20,000.00	20,000 00
	1.7 Others Cost :			
	True ADSL Service (890 per month)		5,400.00	5,400.00
	Total Operating Cost			289,400.00
	Total Projected Annual Cost			672,500.00

Payback Analysis of the Proposed System.

Cost Items	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Development Cost						
Annual Operating Cost						
Discount Factor for 5%						
Time Adjusted Costs (adjusted to present value)						
Cumulative Time-Adjusted Cost Over Life Time	-383,100.00		-934,551.70	-1,208946.31	-1,483,659.99	
Benefit Derived from Operation of New System			641,760.00	673,848.00	707540.40	742917.42
Discount Factor for 5%			0.91	0.86	0.82	0.78
Time Adjusted Benefits (adjusted to present value)			584,001.60	579,509.28	580,183.10	579,475.60
Cumulative Time-Adjusted Benefit Over Life Time			1,164,641.60	1,744,150.88		
Cumulative Lifetime Time-Adjusted Cost + Benefit	-383,100.00				840,674.01	

Remark: The operating cost and the benefits derived from the new system is 5%

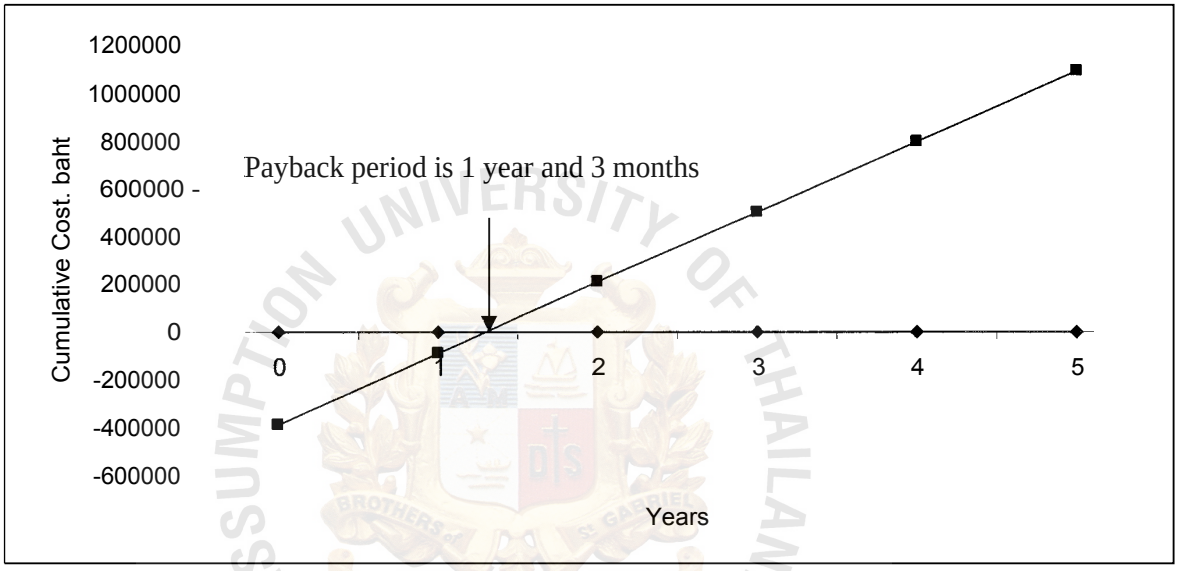

Figure 4.3. Payback Period for the Proposed System

V. PROJECT IMPLEMENTATION

5.1 Overview of Project Implementation

The implementation is the construction of the new system and the delivery of that system into production and is essential to provide a reliable system to meet the organization's requirements. Two main stages are classified for implementing the proposed system with the following details.

(1) Construction Stage

The purpose of the construction stage is to develop and test the functional system that fulfills business and design requirements and to implement the methods between the new systems and the manual system. This stage includes the process of installation and acquisition of the new hardware and software, preparation of data and site for the new system and testing is the final step before the new system is on production that comprises network testing, database testing and program testing.

(2) Delivery Stage

The objective of delivery stage is to provide a smooth transition to the new system. The conversion plan is prepared for changing the manual system to the new one. It includes network configuration, training and conversion plan. After the new system is operated, the system evaluation is conducted to discover any troubles in the operation.

5.2 Stage of the Project

From the overview of the project implementation section, the overall process of implementation can be categorized into more specific details. There are five major processes in implementing the proposed system which are as follows:

(1) Hardware and Software Acquisition and Installation

Many different sizes and types of computing resources put a burden on the analyst who must select or recommend the source of hardware, software or services.

Hardware acquisition

The company needs to acquire new hardware for the proposed system. The proposed system needs are one server, four clients, one UPS and one printer for the server. Factors that are used to determine the hardware for the proposed system are as follows:

(a) Determining size and capacity requirements

The starting point in an equipment decision process is the size and capacity requirements because one particular system may be appropriate for one workload but inappropriate for another. The features that are used to consider include internal memory size and communication component.

(b) Financial factor

Purchasing the new computer hardware depends on what hardware the new system selects. Because of the least cost in the long run, distinct tax advantages if a profit making firm has full control over equipment use.

Software acquisition

The proposed system needs new software that is server software and workstation software. Microsoft Windows 2003 Standard is for the operating system chosen for this system. Interbase 6 is database that has efficiency to store data. To setup application, it must install IIS (Internet Information Services) and

Active Directory that are the components of Microsoft Windows 2003 on the server computer because the users must access application via the browser. Moreover, the workstations need Microsoft Windows XP for operating the system, including Visual Studio.Net 2005 and Crystal Report XI for development. The Microsoft Windows Malicious Software Removal Tool is free software that Microsoft provides to check computers running Windows XP and Linux for infections by specific, prevalent malicious software and helps remove any infection found. Therefore this software will be installed for both clients and server.

The main important program that is required for this system is Analysis Services. It is used to create the cube for OLAP model which will be created after the database installation. The step to create the cube for OLAP model is as follows

1. Setup Data Source Name (DSN)

1.1 Click the Start button, point to Settings, click Control Panel, double-click Administrative Tools, and then double-click Data Sources (ODBC).

1.2 On the System DSN tab, click Add.

1.3 Select Interbase Server and then click Finish.

1.4 In the Name box, enter Home, and then Server box, enter Home, Click Next

1.5 Click 'Next' until finish

2. Start Analysis Manager

2.1 Click the Start button, point to Programs, Interbase 6 Client/ Server, and Analysis Services, and then click Analysis Manager.

3. Setup Data Source in Analysis Services

3.1 In the Analysis Manager tree pane, right-click the Data Sources folder under the Selling MDX database, and then click New Data Source.

3.2 In the Data Link Properties dialog box, click the Provider tab, and click Microsoft OLE DB Provider for OLAP Services 8.0

3.3 Click the Connection tab, and then in the Data Source, enter Home.

3.4 Click Test Connection to be sure everything works. A message should appear in the Microsoft Data Link dialog box, stating that your connection was successful. In the message box, click OK.

3.5 Click OK to close the Data Link Properties dialog box.

4. Build a Cube

4.1 Add measures to the cube

4.1.1 In the 'Welcome' step of the Cube Wizard, click Next.

4.1.2 In the Select a fact table from a data source step, expand the Home data source, and then click Fact_Data.

4.1.3 You can view the data in the Fact Data table by clicking Browse data. After you finish browsing data, close the Browse data window, and click Next.

4.1.4 To define the measures for your cube, under Fact table numeric columns, double-click Selling Price. Repeat this procedure for Cost and Car License No columns, and then click Next.

4.2 Build Dimension

4.2.1 Click New Dimension.

4.2.2 In the 'Welcome' step, click Next.

4.2.3 In the "choose how you want to create the dimension" step, select Star Schema: A single dimension table, and then click Next.

4.2.4 hi the "select the dimension table" step, click Customer, and then click Next.

4.2.5 In the "select the dimension type" step, click Next.

4.2.7 In the last step of the wizard, enter Customer in the Dimension name box, and leave the Share this dimension with other cubes box selected. Click Finish.

4.2.8 In the Cube Wizard, you should see the Customer dimension in the Cube dimensions list.

(2) User Training

The well-designed and technically elegant systems succeed or fail depending on how they are operated and used. Training involves system operators and users who will use the proposed system in every process and know how to use the equipment. The activities are as follows:

(a) The register and evaluation employee department and Chief of register and evaluation are trained on how to use the system both theoretically and practically, and review user training.

(b) The IT Specialist is trained how to develop the report by Crystal Report XI, method for maintenance, backup and recovery of the database.

(3) Site and Data Preparation

Computer Center Management is the knowledge used in this section. Information IT Specialist is responsible for preparing the site to implement the proposed system. LAN connection and other facilities should be setup. The hardware and software server should be setup at suitable location. The developer has to specify the electrical wiring and outlets, air conditioning needs, and space requirement. It is the best to have the site preparation completed prior to the arrival of the requirement. So the server computer will be located in the office that has air conditioning, all client computers are placed in a proper location and ADSL Router is put in the control room of the school because it can easy to maintenance we use wireless Lan and Lan together because some wireless signal better than another places.

(4) System Testing

Testing is conducted to ensure that the proposed system is working properly. There are three levels of testing to be performed.

Network testing

(a) Review the network design outline.

(b) Construct and then test the new network

(c) Revise the network specification for future reference.

Database Testing

(a) Test connection between all clients and server via the browser.

(b) Test services of Interbase 6 have been started. It consists of Web application.

Program Testing

(a) Conduct a system testing to ensure that all programs work properly. If the program does not work correctly or the procedures are not the needed output, the programmer must debug or rewrite the programs and continue testing until they operate correctly and properly.

(b) Update the project repository with revised program documentation for future reference.

(c) Place the new program and reusable components in the software library.

Security and Control Testing

(a) Test user logon and system authentication provided by security system of Windows Server 2003.

(b) Access level testing. Executive and staff have different authentication to access the database.

(5) Conversion

Conversion is the step for converting the system from the old system to the proposed system. System conversion is very important for the staffs who work in the company. Most of them, especially salespersons use the manual system and do not have experience to use computers. So C&C Auto Land Company selects parallel conversion to use. Both the old and new system will be operated for a while. This is done in case the proposed system does not work correctly, the old system is there to support the operation. Then we have time to solve the problems of the proposed system. All major problems will be solved before the old system is discarded.

Parallel conversion minimizes the risk of problems of the proposed system causing irreparable harm to the business. Although more time is needed and more employees are needed to run the two systems at the same time, it is advisable. Gradually, the manual system can be converted to the computerized system when no problems occur.

VI. CONCLUSION AND RECOMMENDATION

6.1 Conclusions

The project study indicates that the proposed system introduced the facility of the operation and sales system. St. Francis Xavier Convent can get many benefits from the proposed system in terms of management information technology, organization, information, business solution, and cost and benefit. The proposed system improves the workflow of many processes to have high efficiency. The input process is arranged in sequence and it is convenient for the user. Web interface is designed in an appropriate proportion with colors. Data that is collected is processed and stored in appropriate database. It supports users to use it any time. The online information can be accessed in a few seconds by several clients. The security system allows the authorized person to access the system. Output process can make a report easily and is helpful to the company. For example, the analysis service of the Crystal Report Program can change the dimension of data that the user would like to see. All the processes done by the proposed system reduces the operation time, the large volume of documents and space for collecting the document. The proposed system is more flexible in making transactions and serving the customers.

For Information Technology, hardware and software are selected to be suitable with the proposed system and the organization. The specifications of the servers are Pentium IV 3.0 GHz, Linux, Interbase server 6 and four workstations use Pentium IV 2.8 GHz, Microsoft Window XP. ASP.Net and Crystal Report that is mature in technology are needed to design and build.

The benefit of saving cost and time can be proved by the work performed in the previous section cost and benefit analysis. Based on the cost and analysis section, in the

first two years, the existing system has a lower operation cost than that of the proposed system because the proposed system incurs some development cost in the project cost in the first year of implementation. But the benefit will occur after break-even point in the second year. Table 6.1 shows the time performed in each process of the proposed system compared with the manual system.

Table 6.1. The Degree of Achievement of the Proposed System.

Process	Existing System	Proposed System
To collect the information	10 minutes	5 minutes
To search the document	10 minutes	1 minute
Time to serve each customer	40 minutes	30 minutes
Report Generation Process	2 hours	1 minute
Check product in the firm	30 minutes	1 minute
Total	3 hours 30 minutes	1 hour 38 minutes

This proposed system also achieves the business solution that increases revenue because this is a school service, students and parent want to get the service. When employees do not spend time searching for and collecting the documents, employees will have more opportunity to serve other customers. The document can be searched within 1 minute. The staff inputs the data until finishes to execute it. It retrieves the information in only 5 minutes. The cost of paper and stationary, advertising and overtime wages are the major factors in reducing the cost and it can make more profits. The reports can be created easily and it takes less than 1 minute to generate the report depending on the volume of the data. The faster the flow of work is processed faster, the more time the employees will have to relax and the more satisfied they will be so that they can serve other customers also. So the time to serve each customer is reduced from 40 minutes to 30 minutes.

6.2 Recommendations

The proposed system is applied to the company's executives and staff who would like to know and see the real information, this proposed system can show them the dimension of the data such as the dimension of the customer, sales, the dimension of the salesperson and sales, reservation and customer.

Analysis Service is a powerful relational database engine that provides a high-performance, scalable, secure environment for storing, retrieving, and modifying data in a relational format. It provides the basis of a powerful business intelligence solution that supports Online Analytical Processing applications and data mining The proposed system is designed in the form of a web application that works on client-server model. Web applications can solve the software distribution problems by using the web application server to provide the client service. When Analysis Service and web application are integrated, it helps the users who are working in the organization access wherever they want.

Currently, Data Mining is the model that is very popular and useful. It can be applied to analyze data and support decision making of executive. Moreover, the application is easy to use and provides a quick response. Therefore the performance of the School can be improved and can get more benefits from this system.

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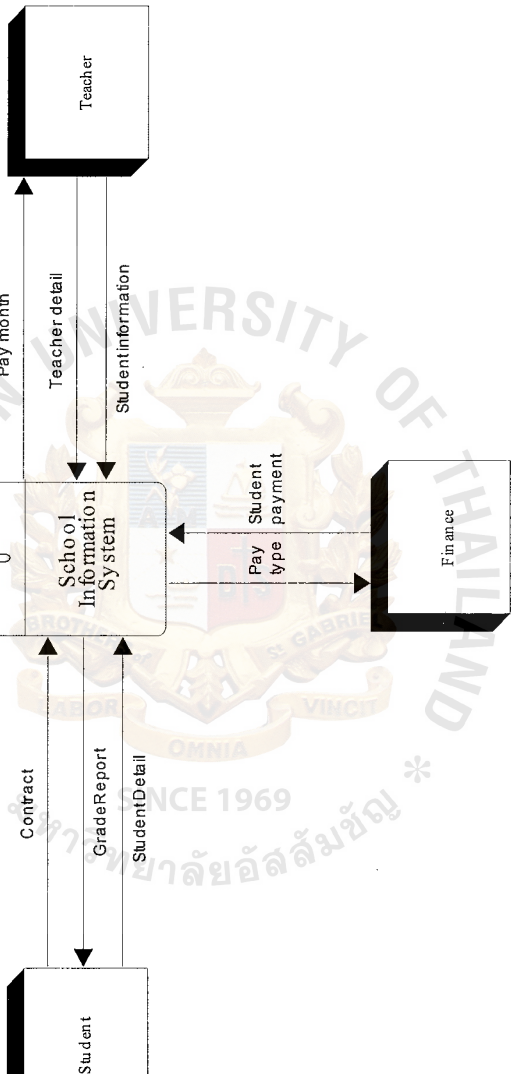
Currently, Data Mining is the model that is very popular and useful. It can be applied to analyze data and support decision making of executive. Moreover, the application is easy to use and provides a quick response. Therefore the perfoimance of the School can be improved and can get more benefits from this system.

APPENDIX A

DATA FLOW DIAGRAM



Context Diagram of School Information System

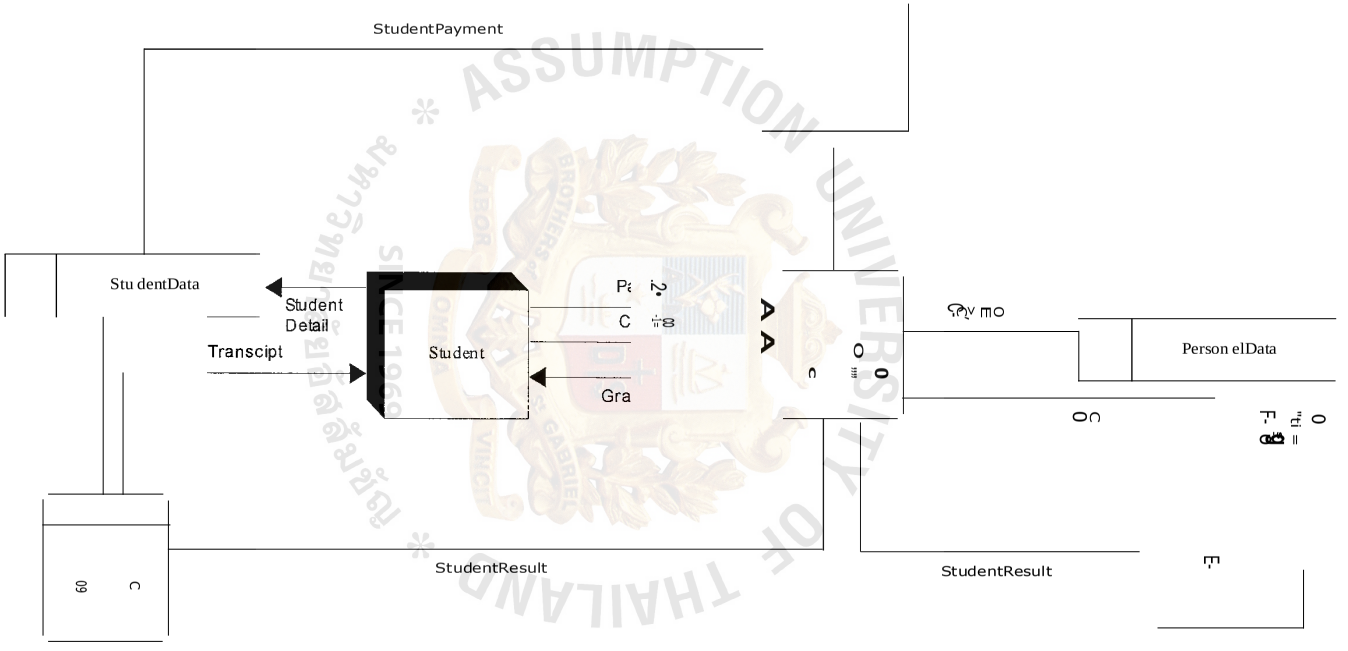


Figure A.2. DFD Level 0 of Used School information System

DFD Level 1 of Registration Process

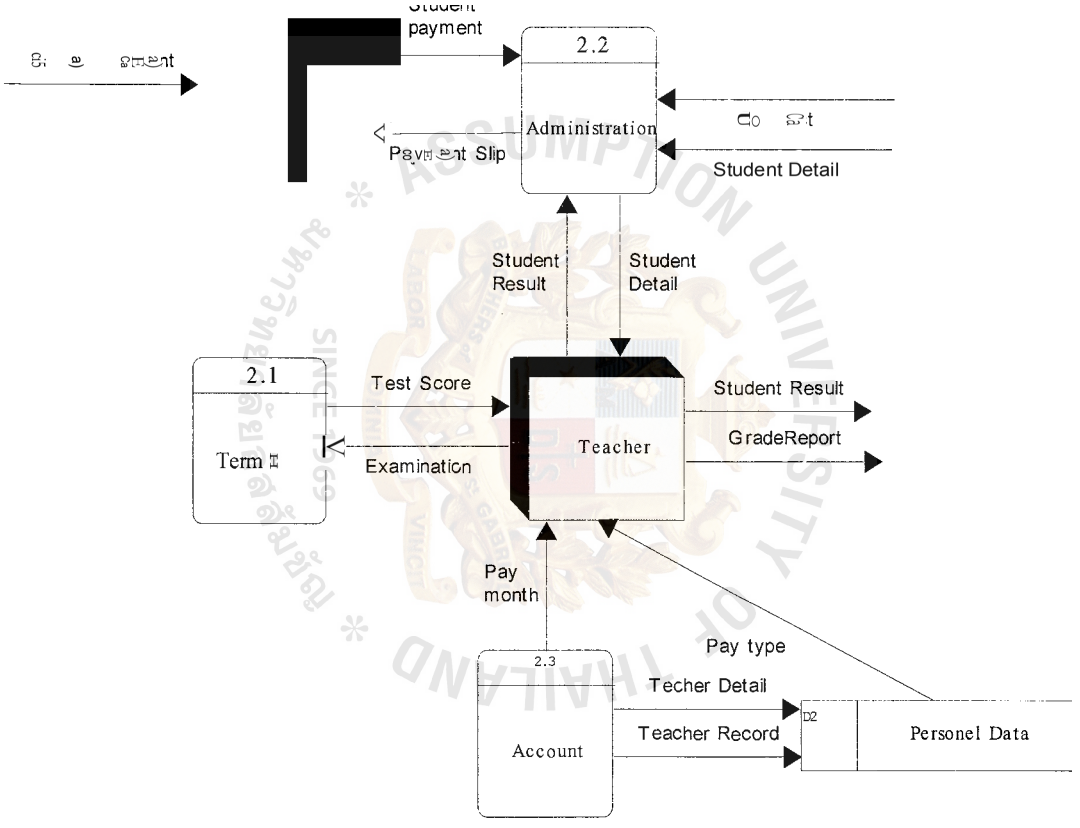


Figure A.4. DFD Level 1 of School Administration Process

APPENDIX B

PROCESS SPECIFICATION

Table B.1. Process Specification of Process 1.0

Items	Description
Process Name	Administration Tool
Data In	Get the new user data
Data Out	Used School's information
Process	(1) Input new uses data to Data store (2) Backup Recovery Data (3) Add, Remove, Grant, Invoke for User (4) Change semester Database
Attachment	(1) Used School Data Store

Table B.2. Process Specification of Process 2.0

Items	Description
Process Name	School information instant database
Data In	Get reserve school information
Data Out	Reserve infoimation from Reserve Data Store
Process	(1) Change semester Database Verify the user (2) Keep the documents concerning St. Francis Xavier Convent detail (3) Add new items into database
Attachment	(1) Reserve Data Store (2) Used Car Data Store

Table B.3. Process Specification of Process 3.0

Items	Description
Process Name	Students information
Data In	(1) Reserve information after approval (2) Student ID
Data Out	Grade , Transcript
Process	(1) Verify the user (2) Input student's information with the reserved School (3) Update the status of the Schools "Reserve" and other data concerned (4) Print the reserved slip for the students
Attachment	(1) Student Data Store (2) Staff Data Store (3) Finance Data Store

Table BA. Process Specification of Process 4.0

Items	**D**escription
Process Name	Financial information
Data In	Student Payment
Data Out	Payment Statement
Process	(1) Choose the report that staff or executive want by checking the authorization of the user (2) Generate the
Attachment	(1) Stored Student Data (2) Stored Staff Data (3) Stored Finance Data (4) Stored Reserve Data

Table B.5. Process Specification of Process 5.0

Items	Description
Process Name	Reporting Services
Data In	Student information
Data Out	Student result
Process	(1) Verify the user (2) Generate report by specific dimension such as grade, time and transcripts, or record students (3) Evaluation end of year.
Attachment	(1) Stored Staff Data

APPENDIX C

DATABASE DESIGN

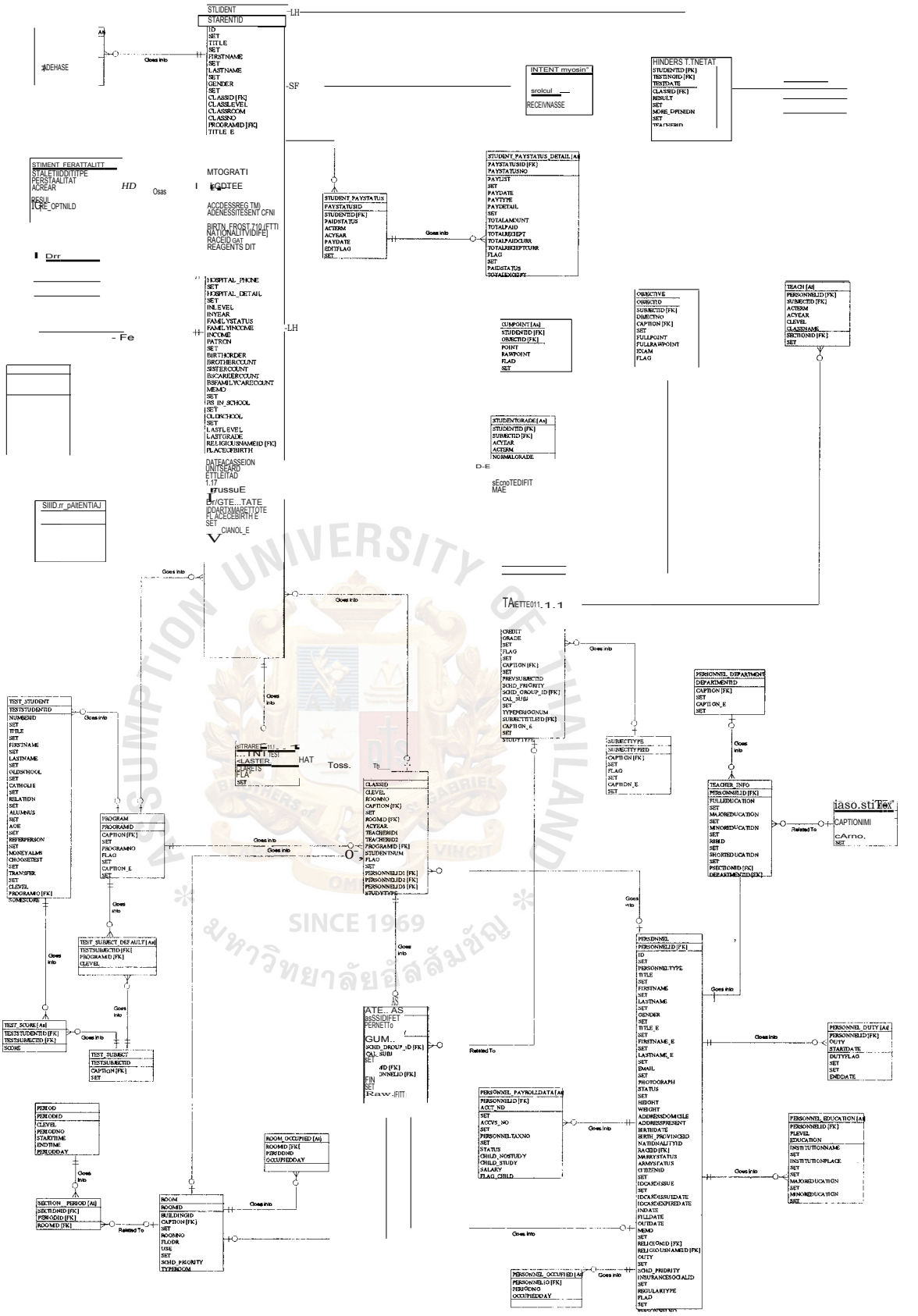


Figure C.1. Entity Relationship Diagram

Table C.1. The Design Of Activity

Name	Type	Key Type	Reference	Not Null	Check
Studentid	Integer	PK	Student	Yes	
Activitytype	Smallint	FK		Yes	
Acyear	Integer	FK		Yes	
Detail	Varchar(50)	Attribute			
Teacherid	Integer	Attribute	Teacher		

Table C.2. The Design Of Address

Name	Type	Key Type	Reference	Not Null	Check
Addressid	Integer	PK	Address	Yes	
Address	Varchar(200)	Attribute			
Districtid	Smallint	Attribute	District		
Provinceid	Smallint	Attribute	Province		
Zipcode	Integer	Attribute			
Phone	Varchar	Attribute			
Fax	Varchar	Attribute			
Address _E	Varchar	Attribute			

Table C.3. The Design Of Alumnus

Name	Type	Key Type	Reference	Not Null	Check
Studentid	Integer	PK	Student	Yes	
Id	Char(12)	FK		Yes	
Title	Varchar(30)	Attribute		Yes	
Firstname	Varchar(30)	Attribute		Yes	
Lastname	Varchar(30)	Attribute		Yes	
Gender	Char(1)	Attribute			

Table C.3. The Design Of Alumnus (Continue)

Name	Type	Key Type	Reference	Not Null	Check
Programid	Integer	Attribute	Program		
Title E	Varchar(30)	Attribute			
FirstnameE	Varchar(30)	Attribute			
LastriameE	Varchar(50)	Attribute			
Photograph	Blob	Attribute			
Studytype	Smallint	Attribute			
Status	Char(1)	Attribute			
Addressreg	Integer	Attribute			
Addresspresent	Integer	Attribute			
Birthdate	Date	Attribute			
Birth Provinceid	Smallint	Attribute			
Nationalityid	Smallint	Attribute			
Raceid	Smallint	Attribute			
Religionid	Smallint	Attribute			
Religiousnameid	Smallint	Attribute			
Bloodtype	Varchar(3)	Attribute			
Inlevel	Smallint	Attribute			
Inyear	Smallint	Attribute			
Lastlevel	Smallint	Attribute			
Lastgrade	Float	Attribute			
Placeofbirth	Varchar(100)	Attribute			
Dateadmission	Date	Attribute			

Table C.4. The Design Of Alumnus_Activity

Name	Type	Key Type	Reference	Not Null	Check
Studentid	Integer	PK	Student	Yes	
Activitytype	Smallint	FK		Yes	
Acyear	Integer	Attribute		Yes	
Teacherid	Integer	Attribute			
Detail	Varchar(50)	Attribute		Yes	

Table C.S. The Design Of Alumnus_Address

Name	Type	Key Type	Reference	Not Null	Check
Addressid	Integer	PK	Address	Yes	
Address	Varchar(200)	Attribute			
Districtid	Smallint	Attribute	District		
Provinceid	Smallint	FK	Province		
Zipcode	Integer	Attribute			
Phone	Varchar(20)	Attribute			
Fax	Varchar(20)	Attribute			
Address_E	Varchar(200)	Attribute			

Table C.6. The Design Of Alumnus_ Education History

Name	Type	Key Type	Reference	Not Null	Check
Studentid	Integer	PK	Student	Yes	
Clevel	Smallint	FK		Yes	
Grade	Float	Attribute		Yes	
Gradebase	Char(1)	Attribute		Yes	
Acterm	Smallint	Attribute		Yes	

Table C.7. The Design Of Alumnus_Parent

Name	Type	Key Type	Reference	Not Null	Check
Parentid	Integer	PK	Parent	Yes	
Title	Varchar(30)	Attribute			
Firstname	Varchar(30)	Attribute		Yes	
Lastname	Varchar(50)	Attribute		Yes	
Gender	Char(1)	FK			
Birthdate	Date	Attribute			
Nationalityid	Smallint	Attribute			
Raceid	Smallint	FK			
Religionid	Smallint	Attribute	Religion		
Pposition	Varchar(30)	Attribute			
Office	Varchar(100)	Attribute			
Office Phone	Varchar(20)	Attribute			
Income	Integer	Attribute			
Parentassoc	Char(1)	Attribute			
Parentassoc No	Varchar(10)	Attribute			
Alumnus	Char(1)	Attribute			
Alumnus No	Varchar(10)	Attribute			
Religiousnameid	Integer	Attribute			
Education	Varchar(100)	Attribute			
Schoolname	Varchar(50)	Attribute			
Careerid	Integer	Attribute			
Parentassoc_Inyear	Smallint	Attribute			
Alumnus_Inyear	Smallint	Attribute			
Alumnus Outyear	Smallint	Attribute			

Table C.7. The Design Of Alumnus_Parent (Continue)

Name	Type	Key Type	Reference	Not Null	Check
Student In Control	Varchar(500)	Attribute			
Title E	Varchar(30)	Attribute			
Firstname_E	Varchar(30)	Attribute			
LastriameE	Varchar(30)	Attribute			

Table C.B. The Design Of Alumnus_Personel

Name	Type	Key Type	Reference	Not Null	Check
Alumnus_Pid	Integer	PK		Yes	
Alumnusno	Varchar(10)	Attribute			
Studentid	Integer	FK	Student		
Title	Varchar(30)	Attribute			
Firstname	Varchar(30)	Attribute			
Lastname	Varchar(30)	Attribute			
Title E	Varchar(30)	Attribute			
Firstname E	Varchar(30)	Attribute			
LastriameE	Varchar(30)	Attribute			
Email	Varchar(50)	Attribute			
Addresspresent	Integer	Attribute			
Office_Addressid	Integer	Attribute			
Office	Varchar(100)	Attribute			
Pposition	Varchar(30)	Attribute			
Careerid	Integer	Attribute			
Acyear	Integer	Attribute			
Clevel	Smallint	Attribute			
Roomno	Smallint	Attribute			
Memo	Varchar(500)	Attribute			

Table C.9. The Design Of Alumnus_Student_Class

Name	Type	Key Type	Reference	Not Null	Check
Studentid	Integer	PK	Student	Yes	
Classid	Integer	FK	Class	Yes	
Classno	Smallint	Attribute		Yes	
Flag	Char(1)	Attribute		Yes	

Table C.10. The Design Of Alumnus_Student_Parent

Name	Type	Key Type	Reference	Not Null	Check
Studentid	Integer	PK	Student	Yes	
Parentid	Integer	FK	Parent	Yes	
Isparent	Char(1)	Attribute		Yes	
Relation	Varchar(10)	Attribute		Yes	

Table C.11. The Design Of Alumnus_Studentgrade

Name	Type	Key Type	Reference	Not Null	Check
Studentid	Integer	PK	Student	Yes	
Subjectid	Integer	FK	Subject	Yes	
Normalgrade	Smallint	Attribute			
Repairgrade	Smallint	Attribute			
Leangrade	Smallint	Attribute			
Score	Float	Attribute			
Flag	Char(1)	Attribute			
Acyear	Integer	Attribute		Yes	
Acterm	Integer	Attribute		Yes	

Table C.12. The Design Of Alumnus_Tran

Name	Type	Key Type	Reference	Not Null	Check
Studentid	Integer	PK	Student	Yes	
Datetrans	Date	Attribute		Yes	
Typetrans	Smallint	Attribute			
Datedispense	Date	Attribute			
Newschool	Varchar(50)	Attribute			
Notes	Varchar(200)	Attribute			
Classid	Integer	FK	Class		
Acyear	Integer	Attribute			
Acterm	Integer	Attribute			

Table C.13. The Design Of Alumnus_ Transcript

Name	Type	Key Type	Reference	Not Null	Check
Studentid	Integer	PK	Student	Yes	
Transcripttype	Varchar(2)	FK	Transcript	Yes	
Typetrans	Smallint	FK	Trans	Yes	
Savedate	Date	Attribute			
Memo	Varchar(5000)	Attribute			
Acyear	Integer	Attribute			
Bookid	Varchar(7)	Attribute			
Transcriptid	Varchar(7)	Attribute			

Table C.14. The Design Of Attendant_ Absentrequest

Name	Type	Key Type	Reference	Not Null	Check
Absentrequestid	Integer	PK		Yes	
Studentid	Integer	FK	Student	Yes	
Datestart	Date	Attribute			
Dateend	Date	Attribute			
Periodstart	Integer	Attribute			
Periodend	Integer	Attribute			
Absenttype	Integer	Attribute		Yes	
Comment	Varchar(1000)	Attribute			
Acyear	Integer	Attribute			
Acterm	Integer	Attribute			
Absentdate	Date	Attribute			
Logindate	Date	Attribute			
Login	Varchar(20)	Attribute			
Src_Ip	Integer	Attribute			

Table C.15. The Design Of Attendant_Daily

Name	Type	Key Type	Reference	Not Null	Check
Attendant_Dialyid	Integer	PK		Yes	
Studentid	Integer	FK	Student	Yes	
Attendantdate	Date	Attribute		Yes	
Periodstart	Integer	Attribute			
Periodend	Integer	Attribute			
Attendanttype	Integer	Attribute			
Comment	Varchar(500)	Attribute			
Absentrequestid	Integer	Attribute			
Acyear	Integer	Attribute			

Table C.16. The Design Of Attendant Daily (Continue)

Name	Type	Key Type	Reference	Not Null	Check
Acterm	Integer	Attribute			
Logindate	Date	Attribute			
Login	Varchar(20)	Attribute			
Srcip	Integer	Attribute			

Table C.17. The Design Of Attendant_Learmdate

Name	Type	Key Type	Reference	Not Null	Check
Acyear	Integer	PK		Yes	
Acterm	Integer	FK		Yes	
Leamdate	Date	FK		Yes	
Clevel_2	Integer	Attribute			
Clevel_l	Integer	Attribute			
Clevel0	Integer	Attribute			
Clevell	Integer	Attribute			
Clevell	Integer	Attribute			
Clevel3	Integer	Attribute			
Clevel4	Integer	Attribute			
Clevel5	Integer	Attribute			
Clevel6	Integer	Attribute			
Clevell	Integer	Attribute			
Clevel8	Integer	Attribute			
Clevel9	Integer	Attribute			
Clevell 0	Integer	Attribute			
Clevel 11	Integer	Attribute			
Clevel 12	Integer	Attribute			

Table C.18. The Design Of Attendant Studentlearn

Name	Type	Key Type	Reference	Not Null	Check
Studentid	Integer	PK	Student	Yes	
Acyear	Integer	FK		Yes	
Acterm	Integer	Attribute		Yes	
Learndate	Integer	Attribute			
Absentdate	Integer	Attribute			
Latedate	Integer	Attribute			
Attendantdate	Integer	Attribute			

Table C.19. The Design Of Case_History

Name	Type	Key Type	Reference	Not Null	Check
Studentid	Integer	PK	Student	Yes	
Detail	Varchar(100)	FK		Yes	
Casetype	Smallint	Attribute		Yes	
Caseyear	Smallint	Attribute		Yes	

Table C.20. The Design Of Class

Name	Type	Key Type	Reference	Not Null	Check
Classid	Integer	PK		Yes	
Clevel	Smallint	FK		Yes	
Roomno	Smallint	Attribute		Yes	
Caption	Varchar(10)	Attribute		Yes	
Roomid	Integer	Attribute			
Acyear	Integer	Attribute		Yes	
Teacheridl	Integer	Attribute			
Teacherid2	Integer	Attribute			
Programid	Integer	Attribute		Yes	

Table C.20. The Design Of Class (Continue)

Name	Type	Key Type	Reference	Not Null	Check
Studentnum	Smallint	Attribute			
Flag	Char(1)	Attribute		Yes	
Personnelid 1	Integer	Attribute			
Personnelid2	Integer	Attribute			
Personnelid3	Integer	Attribute			
Studytype	Smallint	Attribute			

Table C.21. The Design Of Constant

Name	Type	Key Type	Reference	Not Null	Check
Item	Varchar(20)	PK		Yes	
Ivalue	Varchar(100)	Attribute			

Table C.22. The Design Of Cumpoint

Name	Type	Key Type	Reference	Not Null	Check
Studentid	Integer	PK	Student	Yes	
Objectid	Integer	FK	Object	Yes	
Point	Float	Attribute			T
Rawpoint	Float	Attribute			
Flag	Char(1)	Attribute			

Table C.23. The Design Of Education _ History

Name	Type	Key Type	Reference	Not Null	Check
Studentid	Integer	PK	Student	Yes	
Clevel	Smallint	FK		Yes	
Grade	Float	Attribute		Yes	

Table C.23. The Design Of Education _ History (Continue)

Name	Type	Key Type	Reference	Not Null	Check
Gradebase	Char(1)	Attribute		Yes	
Acterm	Smallint	Attribute		Yes	
Acyear	Integer	Attribute			

Table C.24. The Design Of Exschool

Name	Type	Key Type	Reference	Not Null	Check
Schoolname	Varchar(50)	PK		Yes	
Provinceid	Smallint	FK	Province	Yes	
Schoolname_E	Varchar(50)	Attribute			

Table C.25. The Design Of Financialday

Name	Type	Key Type	Reference	Not Null	Check
Financialdayid	Integer	PK		Yes	
Receivepay	Smallint	FK		Yes	
Detail	Varchar(100)	Attribute			
Connectname	Varchar(70)	Attribute			
Catagoryid	Smallint	Attribute			
Moneytype	Integer	Attribute			
Paydate	Date	Attribute			
Amount	Float	Attribute			
Comment	Varchar(100)	Attribute			
Receiptno	Varchar(15)	Attribute			
Commentmemo	Varchar(100)	Attribute			
Flag	Char(1)	Attribute			

Table C.26. The Design Of Group

Name	Type	Key Type	Reference	Not Null	Check
Id	Integer	PK		Yes	
Caption	Varchar(50)	FK			

Table C.27. The Design Of Id_Gen

Name	Type	Key Type	Reference	Not Null	Check
Ig_Name	Varchar(30)	PK		Yes	
Ig_Currentid	Integer	Attribute		Yes	

Table C.28. The Design Of Information_Activity

Name	Type	Key Type	Reference	Not Null	Check
Activityid	Integer	PK		Yes	
Caption	Varchar(100)	Attribute		Yes	
Startdate	Date	Attribute			
Enddate	Date	Attribute			
Activitytime	Varchar(30)	Attribute			
Typeactivityid	Integer	FK			
Participater	Varchar(100)	Attribute			
Sectionid	Integer	FK	Section		
Responsibleid	Integer	Attribute			
Locatename	Varchar(100)	Attribute			

Table C.29. The Design Of Information_Tabeltest

Name	Type	Key Type	Reference	Not Null	Check
Datetest	Date	PK		Yes	
Subjectid	Integer	FK	Subject	Yes	
Acyear	Integer	Attribute			

Table C.29. The Design Of Information_Tabeltest (Continue)

Name	Type	Key Type	Reference	Not Null	Check
Acterm	Smallint	Attribute			
Programid	Integer	Attribute			
Classlevel	Smallint	Attribute			
Starttime	Varchar(30)	Attribute			
Endtime	Varchar(30)	Attribute			
Excusedate	Date	Attribute			

Table C.30. The Design Of List Career

Name	Type	Key Type	Reference	Not Null	Check
Careerid	Smallint	PK		Yes	
Caption	Varchar(30)	Attribute		Yes	
Subcaption	Varchar(50)	Attribute			

Table C.31. The Design Of List District

Name	Type	Key Type	Reference	Not Null	Check
Districtid	Smallint	PK		Yes	
Caption_E	Varchar(30)	Attribute			
Caption	Varchar(30)	Attribute		Yes	

Table C.32. The Design Of List_ Perpetrated

Name	Type	Key Type	Reference	Not Null	Check
Perpetrateid	Integer	PK		Yes	
Caption	Varchar(255)	Attribute		Yes	
Default Score	Integer	Attribute		Yes	
Flag	Varchar(1)	Attribute			

Table C.33. The Design Of List_Race

Name	Type	Key Type	Reference	Not Null	Check
Raceid	Smallint	PK		Yes	
Caption	Varchar(30)	Attribute		Yes	
Caption_E	Varchar(30)	Attribute			

Table C.34. The Design Of List_Relation

Name	Type	Key Type	Reference	Not Null	Check
Relationid	Smallint	PK		Yes	
Caption	Varchar(20)	Attribute		Yes	

Table C.35. The Design Of List Religion

Name	Type	Key Type	Reference	Not Null	Check
Religionid	Smallint	PK		Yes	
Caption	Varchar(30)	Attribute		Yes	
Caption_E	Varchar(30)	Attribute			

Table C.36. The Design Of List_ Religiousname

Name	Type	Key Type	Reference	Not Null	Check
Religiousnameid	Smallint	PK		Yes	
Caption	Varchar(30)	Attribute		Yes	

Table C.37. The Design Of List_Subl_Schd

Name	Type	Key Type	Reference	Not Null	Check
Schd_Group_Id	Integer	PK		Yes	
Caption	Varchar(30)	Attribute		Yes	

Table C.38. The Design Of List Title

Name	Type	Key Type	Reference	Not Null	Check
Caption	Varchar(30)	PK		Yes	

Table C.39. The Design Of List_Title_E

Name	Type	Key Type	Reference	Not Null	Check
Caption	Varchar(30)	PK		Yes	

Table C.39. The Design Of Module_Entity

Name	Type	Key Type	Reference	Not Null	Check
Id	Integer	PK		Yes	
Caption	Varchar(50)	Attribute			
Productname	Varchar(100)	Attribute			
Entity_Type	Integer	Attribute			

Table C.40. The Design Of Objective

Name	Type	Key Type	Reference	Not Null	Check
Objectid	Integer	PK		Yes	
Subjectid	Integer	FK		Yes	
Objectno	Smallint	FK		Yes	
Caption	Varchar(50)	Attribute		Yes	
Fullpoint	Float	Attribute			
Fullrawpoint	Float	Attribute			
Exam	Smallint	Attribute		Yes	
Flag	Char(1)	Attribute		Yes	

Table C.41. The Design Of Parent

Name	Type	Key Type	Reference	Not Null	Check
Parentid	Integer	PK		Yes	
Title	Varchar(30)	Attribute			
Firstname	Varchar(30)	Attribute		Yes	
Lastname	Varchar(50)	Attribute		Yes	
Gender	Char(1)	Attribute			
Addressreg	Integer	Attribute			
Addresspresent	Integer	Attribute			
Nationalityid	Smallint	Attribute			
Raceid	Smallint	Attribute	Race		
Religionid	Smallint	Attribute	Religion		
Pposit ion	Varchar(30)	Attribute			
Office	Varchar(100)	Attribute			
Office Phone	Varchar(20)	Attribute			
Income	Integer	Attribute			
Parentassoc	Char(1)	Attribute			
Parentassoc No	Varchar(10)	Attribute			
Alumnus	Char(1)	Attribute			
Alumnus No	Varchar(10)	Attribute			
Re ligiousnameid	Integer	Attribute			
Education	Varchar(100)	Attribute			
Schoolname	Varchar(50)	Attribute			
Careerid	Integer	Attribute			
Parentassoc_Inyear	Smallint	Attribute			
Alumnus_Inyear	Smallint	Attribute			
Alumnus_Outyear	Smallint	Attribute			
Student In Control	Varchar(500)	Attribute			

Table C.41. The Design Of Parent (Continue)

Name	Type	Key Type	Reference	Not Null	Check
Birthdate	Date	Attribute			
Title_E	Varchar(30)	Attribute			
Firstriame_E	Varchar(30)	Attribute			
Lastriame_E	Varchar(30)	Attribute			

Table C.42. The Design Of Paymentsum

Name	Type	Key Type	Reference	Not Null	Check
Paydate	Date	PK		Yes	
Termpaymentid	Integer	Attribute		Yes	
Sumamount	Float	Attribute		Yes	
Moneyc ash	Float	Attribute			
Moneycheck	Float	Attribute			
Moneycredit	Float	Attribute			
Payamount	Integer	Attribute			

Table C.43. The Design Of Parent

Name	Type	Key Type	Reference	Not Null	Check
Periodid	Integer	PK		Yes	
Cleve]	Smallint	FK		Yes	
Periodno	Smallint	Attribute			
Starttime	Date	Attribute			
Endtime	Date	Attribute			
Periodday	Smallint	Attribute			

Table C.44. The Design Of Perpetrate_Meeting

Name	Type	Key Type	Reference	Not Null	Check
Studentid	Integer	PK	Student	Yes	
Meetingdate	Date	Attribute		Yes	
Ruleid	Integer	Attribute		Yes	
Parentname	Varchar(100)	Attribute			
Meetingdetail	Varchar(255)	Attribute			
Personnelid	Integer	Attribute			
Acyear	Integer	Attribute			
Acterm	Integer	Attribute			

Table C.45. The Design Of Perpetrate_ Rule

Name	Type	Key Type	Reference	Not Null	Check
Ruleid	integer	PK		Yes	
Caption	Varchar(255)	Attribute		Yes	
Score	Integer	Attribute		Yes	
Flag	Varchar(1)	Attribute			

Table C.46. The Design Of Perpetrate_ Trans

Name	Type	Key Type	Reference	Not Null	Check
Studentid	Integer	PK	Student	Yes	
Perpetrateid	Integer	Attribute		Yes	
Perpetrate_Date	Date	Attribute		Yes	
Score	Integer	Attribute			
Perpetrate_Detail	Varchar(255)	Attribute			
Personnelid	Integer	Attribute			
Acyear	Integer	Attribute			
Acterm	Integer	Attribute			

Table C.47. The Design Of Person Entity

Name	Type	Key Type	Reference	Not Null	Check
Id	Integer	PK		Yes	
Entity_Type	Smallint	Attribute			

Table C.48. The Design Of Person_Entity_Group

Name	Type	Key Type	Reference	Not Null	Check
Id	Integer	PK		Yes	
Entity_Id	Integer	Attribute		Yes	
Group_Id	Integer	Attribute		Yes	

Table C.49. The Design Of Person_Info

Name	Type	Key Type	Reference	Not Null	Check
Id	Integer	PK		Yes	
Title	Varchar(30)	Attribute			
Firstname	Varchar(30)	Attribute		Yes	
Lastname	Varchar(50)	Attribute			
Email	Varchar(100)	Attribute			
Login_Id	Varchar(31)	Attribute			
Passwd	Varchar(50)	Attribute			
Flag	Char(1)	Attribute			
Passwd Encrypt	Varchar(50)	Attribute			

Table C.50. The Design Of Personnel

Name	Type	Key Type	Reference	Not Null	Check
Personnelid	Integer	PK		Yes	
Id	Char(12)	FK		Yes	
Personneltype	Smallint	Attribute		Yes	

Table C.50. The Design Of Personnel (Continue 1)

Name	Type	Key Type	Reference	Not Null	Check
Title	Varchar(30)	Attribute		Yes	
Firstname	Varchar(30)	Attribute		Yes	
Lastname	Varchar(50)	Attribute		Yes	
Gender	Char(1)	Attribute			
Title E	Varchar(30)	Attribute			
Firstname E	Varchar(30)	Attribute			
Lastname E	Varchar(30)	Attribute			
Email	Varchar(50)	Attribute			
Photograph	Blob	Attribute			
Status	Char(1)	Attribute			
Height	Float	Attribute			
Weight	Float	Attribute			
Addressdotnicile	Integer	Attribute			
Addresspresent	Integer	Attribute			
Birthdate	Date	Attribute			
Birth Provinceid	Smallint	Attribute			
Nationalityid	Smallint	Attribute			
Raceid	Smallint	Attribute			
Marrystatus	Smallint	Attribute			
Armystatus	Smallint	Attribute			
Citizenid	Char(13)	Attribute			
Idcardissue	Varchar(20)	Attribute			
Idcardissuedate	Date	Attribute			
Idcardexpiredate	Date	Attribute			
Indate	Date	Attribute			
Filldate	Date	Attribute			

Table C.50. The Design Of Personnel (Continue 2)

Name	Type	Key Type	Reference	Not Null	Check
Outdate	Date	Attribute			
Memo	Varchar(500)	Attribute			
Religionid	Smallint	Attribute			
Religiousnameid	Smallint	Attribute			
Duty	Varchar(50)	Attribute			
Schd_Priority	Integer	Attribute			
Insurancesocialid	Varchar(20)	Attribute			
Regulartype	Smallint	Attribute			
Flag	Char(1)	Attribute			
Personnelno	Integer	Attribute	Personal		
Insurancesocialdate	Date	Attribute			

Table C.51. The Design Of Personnel_Depailment

Name	Type	Key Type	Reference	Not Null	Check
Depattmentid	Integer	PK	Deal_ment	Yes	
Caption	Varchar(50)	Attribute			
Caption_E	Varchar(50)	Attribute			

Table C.52. The Design Of Personnel_Duty

Name	Type	Key Type	Reference	Not Null	Check
Personnelid	Integer	PK		Yes	
Dutyflag	Char(1)	Attribute		Yes	
Duty	Varchar(50)	Attribute		Yes	
Startdate	Date	Attribute		Yes	
Enddate	Date	Attribute			

Table C.53. The Design Of Personnel_Education

Name	Type	Key Type	Reference	Not Null	Check
Personnelid	Integer	PK	Personal	Yes	
Plevel	Smallint	FK		Yes	
Institutionname	Varchar(50)	Attribute			
Institutionplace	Varchar(50)	Attribute			
Education	Varchar(50)	Attribute		Yes	
Majoreducation	Varchar(50)	Attribute			
Minoreducation	Varchar(50)	Attribute			

Table C.54. The Design Of Personnel_Family

Name	Type	Key Type	Reference	Not Null	Check
Personnelid	Integer	PK	Personel	Yes	
Title	Varchar(30)	Attribute			
Firstname	Varchar(30)	Attribute		Yes	
Lastname	Varchar(50)	Attribute		Yes	
Gender	Char(1)	Attribute			
Addressid	Integer	FK			
Relation	Varchar(10)	Attribute		Yes	
Birthdate	Date	Attribute			
Nationalityid	Smallint	Attribute			
Raceid	Smallint	Attribute			
Religionid	Smallint	Attribute			
Career	Varchar(30)	Attribute			
Pposition	Varchar(30)	Attribute			
Education	Varchar(30)	Attribute			
Institutionname	Varchar(50)	Attribute			
Office	Varchar(100)	Attribute			

Table C.54. The Design Of Personnel Family (Continue)

Name	Type	Key Type	Reference	Not Null	Check
Office_Addressid	Integer	Attribute			
Religiousnameid	Smallint	Attribute			
Email	Varchar(50)	Attribute			
Workflag	Char(1)	Attribute			
Careerid	Integer	Attribute			

Table C.55. The Design Of Personnel Occupied

Name	Type	Key Type	Reference	Not Null	Check
Personnelid	Integer	PK		Yes	
Periodno	Smallint	Attribute		Yes	
Occupiedday	Integer	Attribute		Yes	

Table C.56. The Design Of Personnel_Payroll

Name	Type	Key Type	Reference	Not Null	Check
Personnelid	Integer	PK		Yes	
Paymonth	Smallint	Attribute		Yes	
Payyear	Integer	Attribute		Yes	
Payrolldate	Date	Attribute		Yes	
Moneysalary	Float	Attribute			
Special	Float	Attribute			
Providentfund	Float	Attribute			
Interest	Float	Attribute			
Share	Float	Attribute			
Bonus	Float	Attribute			
Other	Float	Attribute			
Tax	Float	Attribute			

Table C.56. The Design Of Personnel Payroll (Continue)

Name	Type	Key Type	Reference	Not Null	Check
Totalnet	Float	Attribute			
Relax	Float	Attribute			
Condition	Smallint	Attribute			
Comment	Varchar(100)	Attribute			
Flag	Smallint	Attribute			
Paytype	Smallint	Attribute			
Typeincome	Smallint	Attribute			
Typetaxp	Smallint	Attribute			

Table C.57. The Design Of Personnel_Section

Name	Type	Key Type	Reference	Not Null	Check
Psectionid	Integer	PK		Yes	
Caption	Varchar(50)	Attribute			
Caption_E	Varchar(50)	Attribute			

Table C.58. The Design Of Program

Name	Type	Key Type	Reference	Not Null	Check
Programid	Integer	PK	Program	Yes	
Caption	Varchar(50)	Attribute			
Programno	Smallint	Attribute		Yes	
Flag	Char(1)	Attribute		Yes	
Caption_E	Varchar(50)	Attribute			

Table C.59. The Design Of Receipt

Name	Type	Key Type	Reference	Not Null	Check
Receipttype	Smallint	PK		Yes	
Reference	Integer	Attribute		Yes	
Printdate	Date	Attribute		Yes	
Successflag	Char(1)	Attribute		Yes	
Receivestatus	Smallint	Attribute		Yes	
Remark	Varchar(50)	Attribute			
Receiptcode	Varchar(15)	Attribute		Yes	
Receiptnumber	Integer	Attribute		Yes	
Printtime	Integer	Attribute			
Paystatusno	Integer	Attribute			

Table C.60. The Design Of Room

Name	Type	Key Type	Reference	Not Null	Check
Roomid	Integer	PK		Yes	
Buildingid	Smallint	FK		Yes	
Caption	Varchar(30)	Attribute			
Roomno	Integer	Attribute			
Floor	Smallint	Attribute			
Use	Varchar(100)	Attribute			
Schd_Priority	Integer	Attribute			
Typeroom	Smallint	Attribute			

Table C.61. The Design Of Room Occupied

Name	Type	Key Type	Reference	Not Null	Check
Roomid	Integer	PK		Yes	
Periodno	Smallint	FK		Yes	
Occupiedday	Integer	Attribute		Yes	

Table C.62. The Design Of Schedule

Name	Type	Key Type	Reference	Not Null	Check
Classid	Integer	PK		Yes	
Periodno	Smallint	Attribute		Yes	
Clusterid	Integer				
Schd_Group_Id	Integer	FK			
Cal_Subj	Char(1)	Attribute			
Roomid	Integer	Attribute			
Personnelid	Integer	Attribute			
Fix	Char(1)	Attribute		Yes	
Subjectid	Integer	Attribute			
Typeperiod	Integer	Attribute			
Scheduleday	Integer	Attribute		Yes	

Table C.63. The Design Of Schedule _Stat

Name	Type	Key Type	Reference	Not Null	Check
Statdate	Date	PK		Yes	
Statscore	Float	Attribute		Yes	
Subjscore	Float	Attribute			
Subjgroupscore	Float	Attribute			
Teacherscore	Float	Attribute			

Table C.64. The Design Of Section

Name	Type	Key Type	Reference	Not Null	Check
Sectionid	Integer	PK		Yes	
Caption	Varchar(15)	Attribute			
Clevel	Integer	Attribute			
Subjectid	Integer	FK		Yes	
Flag	Char(1)	Attribute		Yes	
F 1max	Float	Attribute			
Flmin	Float	Attribute			
F 1 avg	Float	Attribute			
Summax	Float	Attribute			
Summin	Float	Attribute			
Sumavg	Float	Attribute			
F2max	Float	Attribute			
F2min	Float	Attribute			
F2avg	Float	Attribute			
Finalmax	Float	Attribute			
Finalmin	Float	Attribute			
Finalavg	Float	Attribute			

Table C.65. The Design Of Section_Peroid

Name	Type	Key Type	Reference	Not Null	Check
Sectionid	Integer	PK		Yes	
Periodid	Integer	FK		Yes	
Roomid	Integer	Attribute			

Table C.66. The Design Of Std Province

Name	Type	Key Type	Reference	Not Null	Check
Provinceid	Smallint	PK		Yes	
Caption	Varchar(20)	Attribute			
Caption_E	Varchar(30)	Attribute			

Table C.67. The Design Of Student

Name	Type	Key Type	Reference	Not Null	Check
Studentid	Integer	PK		Yes	
Id	Char(12)	FK		Yes	
Title	Varchar(30)	FK		Yes	
Firstname	Varchar(30)	Attribute		Yes	
Lastname	Varchar(50)	Attribute		Yes	
Gender	Char(1)	Attribute			
Classid	Integer	Attribute			
Classlevel	Smallint	Attribute			
Classroom	Smallint	Attribute			
Classno	Smallint	Attribute			
Programid	Integer	Attribute			
Title E	Varchar(30)	Attribute			
Firstname E	Varchar(30)	Attribute			
Lastname E	Varchar(50)	Attribute			
Photograph	Blob	Attribute			
Staytype	Smallint	Attribute			
Studytype	Smallint	Attribute			
Status	Char(1)	Attribute			
Addressreg	Integer	Attribute			
Addresspresent	Integer	Attribute			

Table C.68. The Design Of Student (Continue)

Name	Type	Key Type	Reference	Not Null	Check
Birthdate	Date	Attribute			
BirthProvinceid	Smallint	Attribute			
Nationalityid	Smallint	Attribute			
Raceid	Smallint	Attribute			
Religionid	Smallint	Attribute			
Bloodtype	Varchar(3)	Attribute			
Hospital	Varchar(30)	Attribute			
Hospital_Phone	Varchar(20)	Attribute			
Hospital_Detail	Varchar(70)	Attribute			
Inlevel	Smallint	Attribute			
Inyear	Smallint	Attribute			
Familystatus	Smallint	Attribute			
Familyincome	Smallint	Attribute			
Income	Smallint	Attribute			
Patron	Varchar(70)	Attribute			
Birthorder	Smallint	Attribute			
Brothercount	Smallint	Attribute			
Sistercount	Smallint	Attribute			
Bscareercount	Smallint	Attribute			
Bsfamilycarecount	Smallint	Attribute			
Memo	Varchar(500)	Attribute			
Bs In School	Varchar(200)	Attribute			
Oldschool	Varchar(50)	Attribute			
Lastlevel	Smallint	Attribute			
Lastgrade	Float	Attribute			
Religiousnameid	Smallint	Attribute			

Table C.69. The Design Of Student Class

Name	Type	Key Type	Reference	Not Null	Check
Studentid	Integer	PK	Student	Yes	
Classid	Integer	FK	Class	Yes	
Classno	Smallint	Attribute		Yes	
Flag	Char(1)	Attribute		Yes	T

Table C.70. The Design Of Student Testing

Name	Type	Key Type	Reference	Not Null	Check
Studentid	Integer	PK	Student	Yes	
Testingid	Integer	FK	Test	Yes	
Testdate	Date	FK		Yes	
Classid	Integer	Attribute	Class		
Result	Varchar(50)	Attribute			
More_Opinion	Varchar(50)	Attribute			
Teacherid	Integer	Attribute			

Table C.71. The Design Of Student_Dispostion

Name	Type	Key Type	Reference	Not Null	Check
Dispositiondate	Date	PK		Yes	
Studentid	Integer	FK	Student	Yes	
Particular	Varchar(100)	Attribute		Yes	
Receivename	Varchar(50)	Attribute			

Table C.72. The Design Of Student Insurance

Name	Type	Key Type	Reference	Not Null	Check
Paydate	Date	PK		Yes	
Studentid	Integer	FK	Student	Yes	
Particular	Varchar(100)	Attribute		Yes	
Amount	Float	Attribute			
Cashierid	Integer	Attribute			

Table C.73. The Design Of Student Parent

Name	Type	Key Type	Reference	Not Null	Check
Studentid	Integer	PK	Student	Yes	
Parentid	Integer	FK	Parent	Yes	
Isparent	Char(1)	Attribute		Yes	
Relation	Varchar(10)	Attribute		Yes	

Table C.74. The Design Of Student_ Paystatus

Name	Type	Key Type	Reference	Not Null	Check
Paystatusid	Integer	PK		Yes	
Studentid	Integer	Attribute		Yes	
Paidstatus	Integer	Attribute			
Acterm	Smallint	Attribute		Yes	
Acyear	Smallint	Attribute		Yes	
Paydate	Date	Attribute			
Editflag	Char(1)	Attribute			

Table C.75. The Design Of Student Paystatus_Detail

Name	Type	Key Type	Reference	Not Null	Check
Paystatusid	Integer	PK	Payment	Yes	
Paystatusno	Integer	FK		Yes	
Paylist	Varchar(1000)	Attribute			
Paydate	Date	Attribute			
Paytype	Integer	Attribute			
Paydetail	Varchar(150)	Attribute			
Totalamount	Float	Attribute			
Totalpaid	Float	Attribute			
Totalreciept	Float	Attribute			
Totalpaidcurr	Float	Attribute			
Totalrecieptcurr	Float	Attribute			
Flag	Char(1)	Attribute			
Paidstatus	Integer	Attribute			
Totalexceipt	Float	Attribute			

Table C.76. The Design Of Student_ Personality

Name	Type	Key Type	Reference	Not Null	Check
Studentid	Integer	PK	Student	Yes	
Personalitytype	Smallint	FK		Yes	
Acyear	Integer	Attribute		Yes	
Result	Smallint	Attribute			
More_Opinion	Varchar(50)	Attribute			

Table C.77. The Design Of Student Relation

Name	Type	Key Type	Reference	Not Null	Check
Id	Integer	PK		Yes	
Studentid	Integer	FK	Student	Yes	
Relationid	Integer	FK	Relation	Yes	
Rel_Studentid	Char(10)	Attribute			

Table C.78. The Design Of Student_Grade

Name	Type	Key Type	Reference	Not Null	Check
Studentid	Integer	PK	Student	Yes	
Subjectid	Integer	FK	Subject	Yes	
Normalgrade	Smallint	Attribute			
Repairgrade	Smallint	Attribute			
Leangrade	Smallint	Attribute			
Score	Float	Attribute			
Sectionid	Integer	Attribute	Sction		
Flag	Char(1)	Attribute			
Acyear	Integer	FK		Yes	
Acterm	Integer	FK		Yes	

Table C.79. The Design Of Subject

Name	Type	Key Type	Reference	Not Null	Check
Subjectid	Integer	PK		Yes	
Code	Varchar(10)	FK		Yes	
Code_E	Varchar(10)	Attribute			
Subjectgroupid	Integer	Attribute			
Subjecttypeid	Integer	Attribute			
Subjectlevel	Smallint	Attribute		Yes	

Table C.79. The Design Of Subject (Continue)

Name	Type	Key Type	Reference	Not Null	Check
Period	Smallint	Attribute			
Credit	Float	Attribute			
Grade	Char(1)	Attribute		Yes	
Flag	Char(1)	Attribute		Yes	
Caption	Varchar(100)	Attribute			
Prevsubjectid	Integer	Attribute			
Schd_Priority	Integer	Attribute			
Schd_Group_Id	Integer	Attribute			
Cal_Subj	Char(1)	Attribute			
Typeperiodnum	Smallint	Attribute			
Subjecttitleid	Integer	Attribute			
Caption_E	Varchar(100)	Attribute			
Studytype	Smallint	Attribute			

Table C.80. The Design Of Subject_Default

Name	Type	Key Type	Reference	Not Null	Check
Subjectid	Integer	PK	Subject	Yes	
Programid	Integer	FK	Program	Yes	
Clevel	Smallint	FK		Yes	
Term	Smallint	FK		Yes	
Subjectno	Smallint	Attribute			
Studytype	Smallint	Attribute			

Table C.81. The Design Of Subject_Default_Year

Name	Type	Key Type	Reference	Not Null	Check
Subjectid	Integer	PK	Subject	Yes	
Programid	Integer	FK	Program	Yes	
Clevel	Integer	Attribute		Yes	
Acyear	Integer	Attribute		Yes	
Acterm	Integer	Attribute		Yes	
Subjectno	Integer	Attribute			

Table C.82. The Design Of Subject_E

Name	Type	Key Type	Reference	Not Null	Check
Subjecttitleid	Integer	PK	Subject	Yes	
Caption	Varchar(100)	Attribute		Yes	
Flag	Char(1)	Attribute			
Subjecttitleno	Integer	Attribute			

Table C.83. The Design Of Subjectgroup

Name	Type	Key Type	Reference	Not Null	Check
Subjectgroupid	Integer	PK		Yes	
Caption	Varchar(30)	Attribute		Yes	
Flag	Char(1)	Attribute		Yes	
Caption_E	Varchar(30)	Attribute			

Table C.84. The Design Of Subjecttype

Name	Type	Key Type	Reference	Not Null	Check
Subjecttypeid	Integer	PK		Yes	
Caption	Varchar(30)	Attribute		Yes	
Flag	Char(1)	Attribute		Yes	
Caption_E	Varchar(30)	Attribute			

Table C.85. The Design Of Teach

Name	Type	Key Type	Reference	Not Null	Check
Personnelid	Integer	PK		Yes	
Sectionid	Integer	Attribute			
Subjectid	Integer	FK		Yes	
..kcterm	Integer	Attribute		Yes	
Acyear	Integer	Attribute		Yes	
Clevel	Integer	Attribute		Yes	
Classname	Varchar(15)	Attribute		Yes	

Table C.86. The Design Of Teacher Info

Name	Type	Key Type	Reference	Not Null	Check
Personnelid	Integer	PK	Personal	Yes	
Fulleducation	Varchar(20)	Attribute			
Majoreducation	Varchar(50)	Attribute			
Minoreducation	Varchar(50)	Attribute			
R8bid	Varchar(20)	Attribute			
Shorteducation	Varchar(10)	Attribute			
Psectionid	Integer	Attribute			
Depa ㅛ entid	Integer	Attribute			

Table C.87. The Design Of Termdetail

Name	Type	Key Type	Reference	Not Null	Check
Termdetailid	Integer	PK		Yes	
Caption	Varchar(50)	Attribute			
Flag	Char(1)	Attribute			
Noprint	Integer	Attribute		Yes	
Accounttype	Integer	Attribute		Yes	

Table C.88. The Design Of Termpayment

Name	Type	Key Type	Reference	Not Null	Check
Termpaymentid	Integer	PK		Yes	
Staytype	Smallint	Attribute			
Studytype	Smallint	Attribute			
Classlevel	Smallint	Attribute			
Classroom	Varchar(100)	Attribute			
Termdetailid	Integer	Attribute			
Printflag	Char(1)	Attribute			
Amount	Float	Attribute		Yes	
Acyear	Integer	Attribute			
Acterm	Integer	Attribute			
Flag	Char(1)	Attribute			

Table C.89. The Design Of Termscore

Name	Type	Key Type	Reference	Not Null	Check
Teststudentid	Integer	PK	Test Student	Yes	
Testsubjectid	Integer	FK	Test subject	Yes	
Score	Float	Attribute			

Table C.90. The Design Of Test Student

Name	Type	Key Type	Reference	Not Null	Check
Teststudentid	Integer	PK		Yes	
Numberid	Varchar(12)	FK		Yes	
Title	Varchar(30)	Attribute		Yes	
Firstname	Varchar(30)	Attribute		Yes	
Lastname	Varchar(50)	Attribute		Yes	
Oldschool	Varchar(50)	Attribute			
Catholie	Varchar(1)	Attribute			
Relation	Varchar(1)	Attribute			
Alumnus	Varchar(1)	Attribute			
Age	Varchar(1)	Attribute			
R eferperson	Varchar(100)	Attribute			
Moneyalms	Float	Attribute			
Choosetest	Varchar(1)	Attribute			
Transfer	Varchar(1)	Attribute			
Li Cleve]	Integer	Attribute			
Programid	Integer	Attribute			
Somescore	Float	Attribute			

Table C.91. The Design Of Test Subject

Name	Type	Key Type	Reference	Not Null	Check
Testsubjectid	Integer	PK		Yes	
Caption	Varchar(50)	Attribute		Yes	

Table C.92. The Design Of Test_Subject Default

Name	Type	Key Type	Reference	Not Null	Check
Testsubjectid	Integer	PK	Test_Subject	Yes	
Programid	Integer	FK	Program	Yes	
Clevel	Integer	Attribute		Yes	

Table C.93. The Design Of Testing

Name	Type	Key Type	Reference	Not Null	Check
Testingid	Integer	PK		Yes	
Caption	Varchar(100)	Attribute			

Table C.94. The Design Of Transcript

Name	Type	Key Type	Reference	Not Null	Check
Studentid	Integer	PK	Student	Yes	
Typetrans	Smallint	Attribute		Yes	
Savedate	Date	Attribute			
Memo	Varchar(5000)	Attribute			
Acyear	Integer	Attribute			
Bookid	Varchar(7)	Attribute			
Transcriptid	Varchar(7)	Attribute			
Transcripttype	Varchar(2)	Attribute		Yes	

Table C.95. The Design Of Web_Account

Name	Type	Key Type	Reference	Not Null	Check
Username	Varchar(8)	PK		Yes	
Pass	Varchar(8)	Attribute		Yes	

Table C.96. The Design Of Web_Constant

Name	Type	Key Type	Reference	Not Null	Check
Item	Varchar(10)	PK		Yes	
Ivalue	Varchar(15)	Attribute			

APPENDIX D

DATA DICTIONARY

Table D.1. Data Dictionary of Used Student Data Analysis System

Data	Definition
Age	The year of student Age
Absentdate	The date of student absent
Absentrequestid	The identification number of each absent request
Accounttype	The account type of each Student
Activityid	The identification number of each activity
Acyear	The activity of education each year
Address	The address of each student in Thai language
Address _E	The address of each student in English language
Addressid	The number of address of each student
Addresspresent.	The address of each parent
Alumnus	The record of each graduate student
Alumnus_Inyear	The year of each graduate student
Alumnus No	The number of each graduate student
Armystatus	The status of army of meal teacher
Attendantdate	The date of student attendant
Attendanttype	The type of student attendant
Birth Provinceid	The province of student born
Birthdate	The birthday of each student
Bloodtype	The blood type of each student
Classid	The identification of class room
Classlevel	The level of class room

Data	Definition
Classname	The name of class room
Classno	The number of class room
Code	The code of each subject in Thai language
Code _E	The code of each subject in English language
Comment	The comment of parent of each student
Datestart	The date of student register first time
Datetest	The examination date of student
Default_Score	The score of each subject of student
Departmentid	The identification of Department
District	The District of each student
Education	The name of education
Email	The email of contract
Enddate	The graduate of each student
Exam	The examination of each subject
Flavg	The average score of each subject for midterm 1st
F 1 max	The maximum score of each subject for midterm 1st
Flmin	The minimum score of each subject for midterm 1st
F2avg	The average score of each subject for final
F2max	The maximum score of each subject for final
F2min	The minimum score of each subject for final
Familyincome	The total income of each student family
Familystatus	The status of each student family
Finalavg	The average result of each subject for education year
Finalmax	The maximum result of each subject for education year

Data	Definition
Finalmin	The minimum result of each subject for education year
Firstname	The name of the Students in Thai language
Firstname E	The name of the Students in English language
Grade	The G.P.A of each student
Group_Id	The group of student in high school level
Height	The height of each student
Hospital	The hospital of each student
Hospital_Detail	The hospital address of each student
Hospital_Phone	The hospital telephone of each student
Lastgrade	The last grade of each student to study
Lastlevel	The last level of each student to study
Lastname	The Last name of each student in Thai language
Lastname E	The Last name of each student in English language
Login	The Login for web application of each student
Logindate	The Date of Login web application of each student
Nationality	The nationality of each student
Newschool	The new school of each school
Noprint	The error massage of billing
Office	The office of parent of each student
Office Addressid	The address office of parent of each student
Office_Phone	The office telephone of parent of each student
Outdate	The resign date of each student
Paidstatus	The payment status of each student

Data	Definition
Paydate	The payment date of each student
Paydetail	The payment detail of each student
Paylist	The payment listing of daily
Paymonth	The payment listing of month
Pay Type	The deposit that Student pays for reservation of each
Payrolldate	The payroll date of each teacher
Paystatusno	The reference number of each payment
Payyear	The payment year of each student
Personnelid	The identification of teacher
Photograph	The image of each student
Printdate	The date of report printing
Printtime	The time of report printing
Programid	The identification of Student program
Programno	The number of Student program
Provinceid	The identification of province
Relation	The relation of student
Religionid	The identification of religion
Religiousnameid	The name of religion
Result	The total score of each student
Roomid	The identification of student room
Savedate	The date of database recorded
Schedule	The schedule of each teacher
Schoolname	The name of school in Thai language
Schoolname_E	The name of school in English language

Data	Definition
Studentid	The identification number of each Student
Studytype	The type of each student
Subjectgroupid	The identification of subject group
Subj ectid	The identification of each subject
Subjectlevel	The level of each subject
Subjgroupscore	The score of subject group
Subj score	The score of each subject
Sumavg	The average of summary
Summax	The maximum of summary
Summin	The minimum of summary
Teacherid	The identification of teacher
Teacherscore	The student score from teacher
Term	The education time
Termdetailid	The detail of term
Termpaymentid	The identification of term payment
Transcriptid	The identification of transcript of student
Transcripttype	The type of transcript of student
Transfer	The database transfer
Username	The use name of web app;ication
Zipcode	The post code

APPENDIX E

STRUCTURE DESIGN

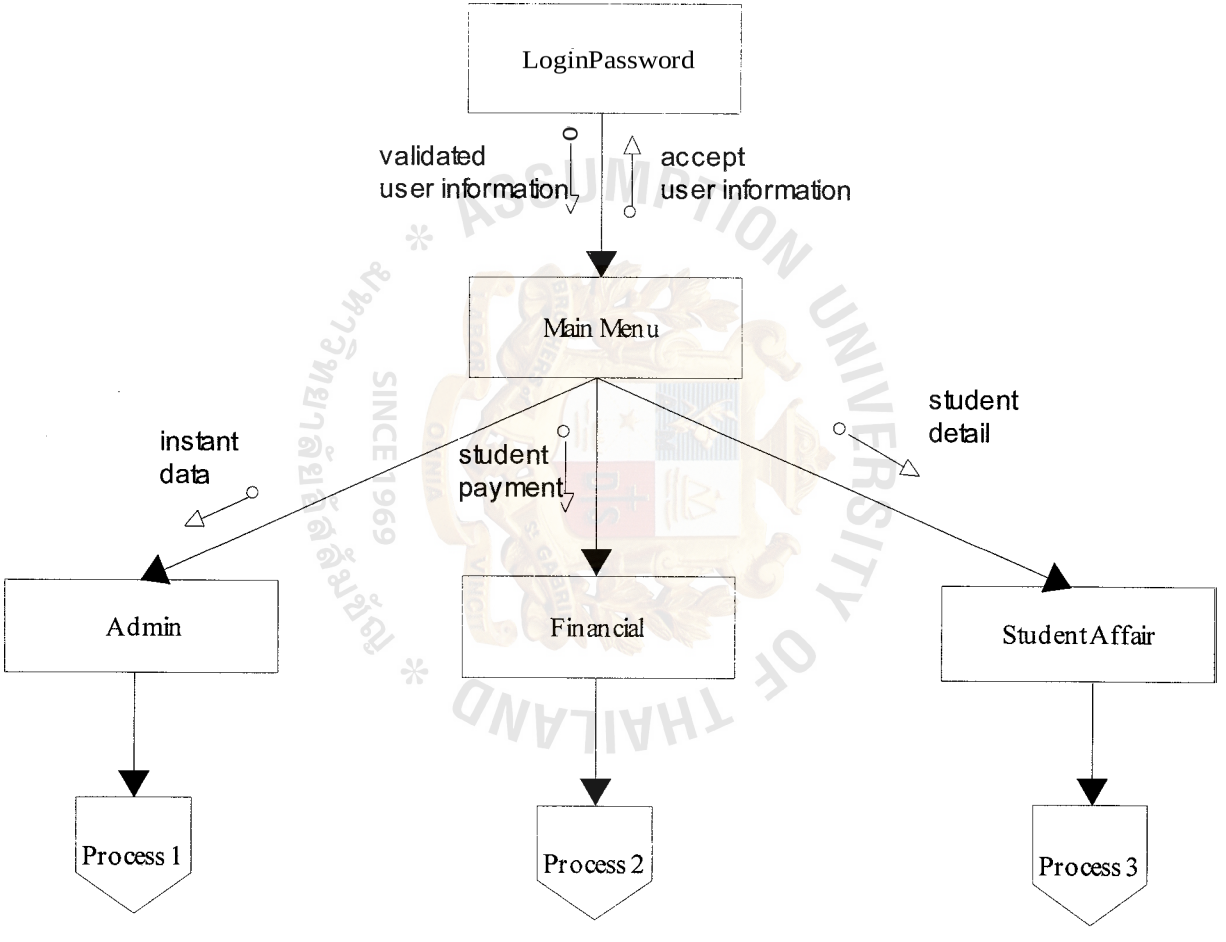
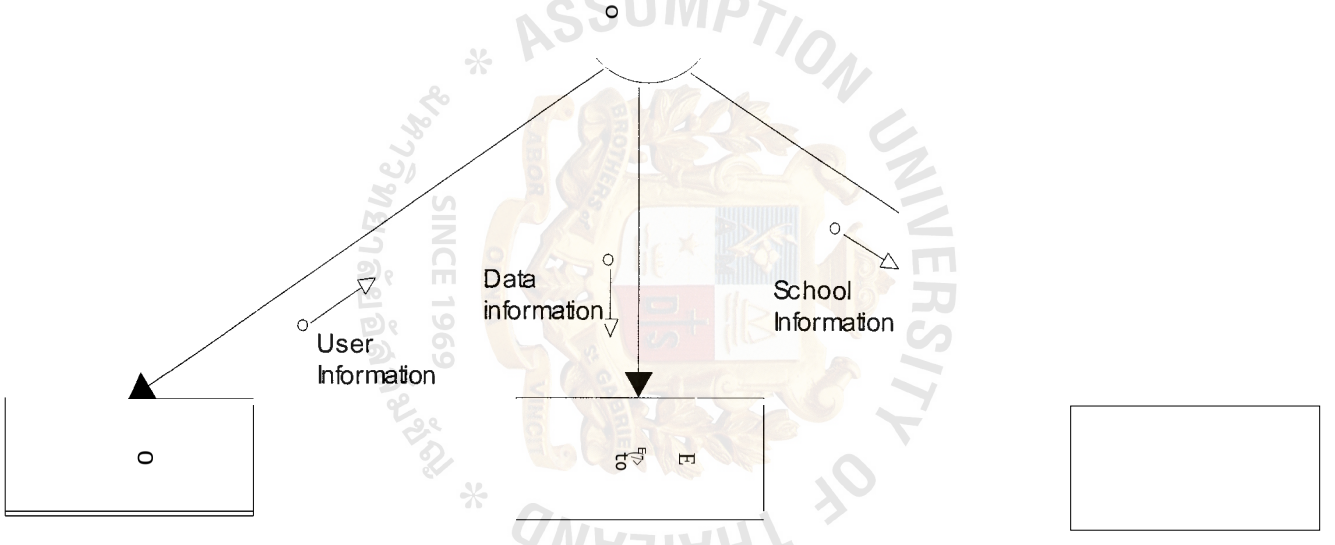
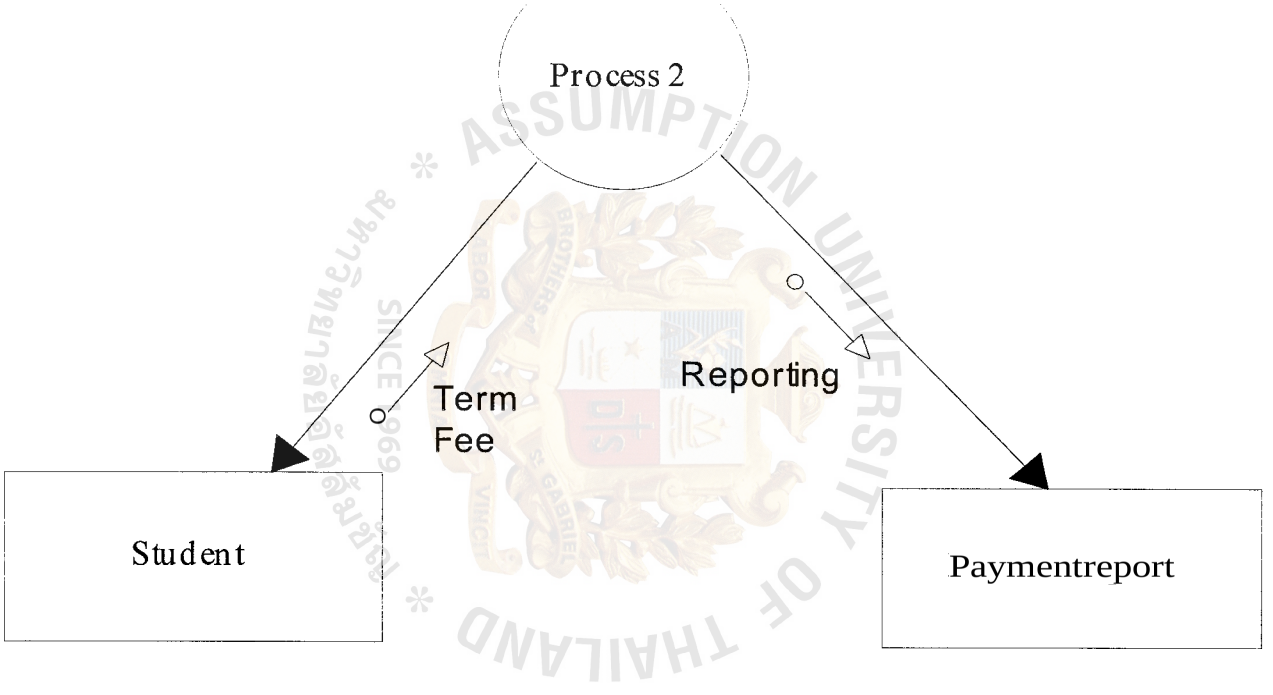


Figure E.1. Structure Design of Used Data Analysis System



Structure Design of Administration system



Structure Design of Financial Process

bA Structure Design of Student Affair Process

APPENDIX F

INPUT INTERFACE DESIGN

Figure F.1. Default Welcome Page

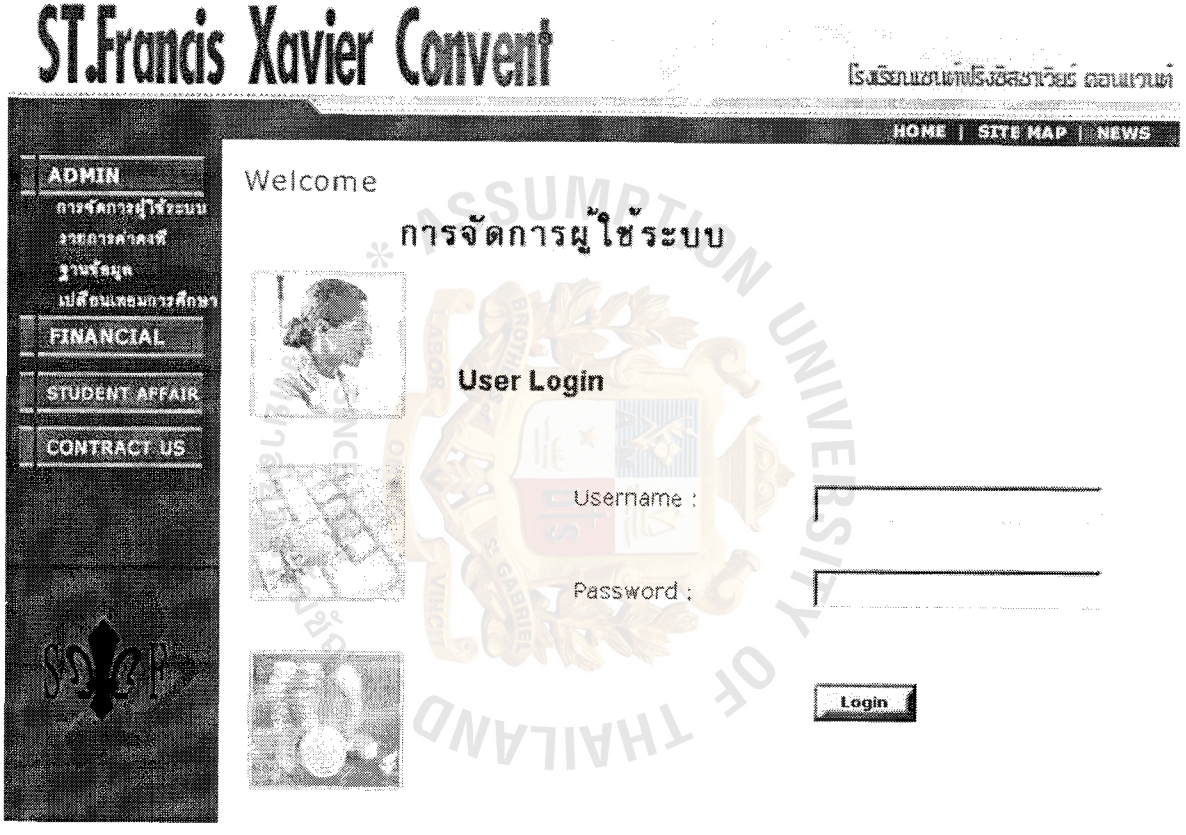


Figure F.2. Login Form

Figure F.3. Instant Data record

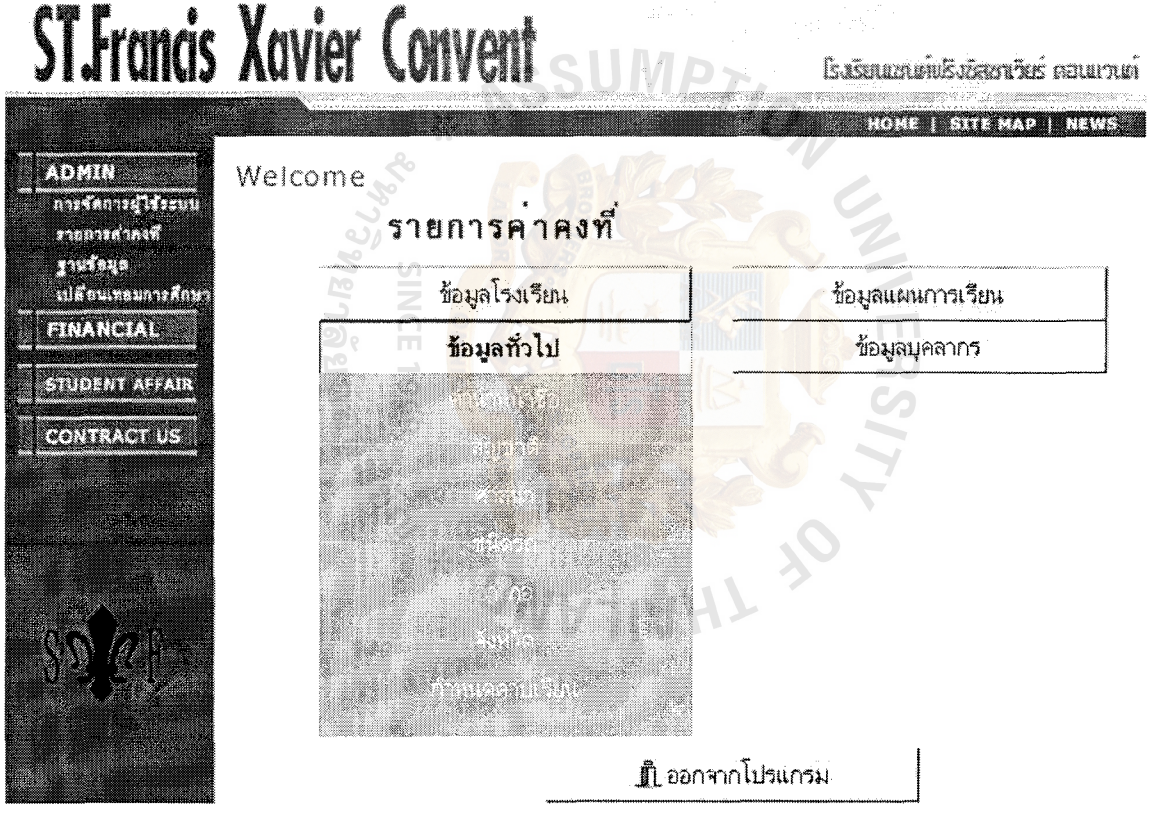


Figure F.4. School instant Data

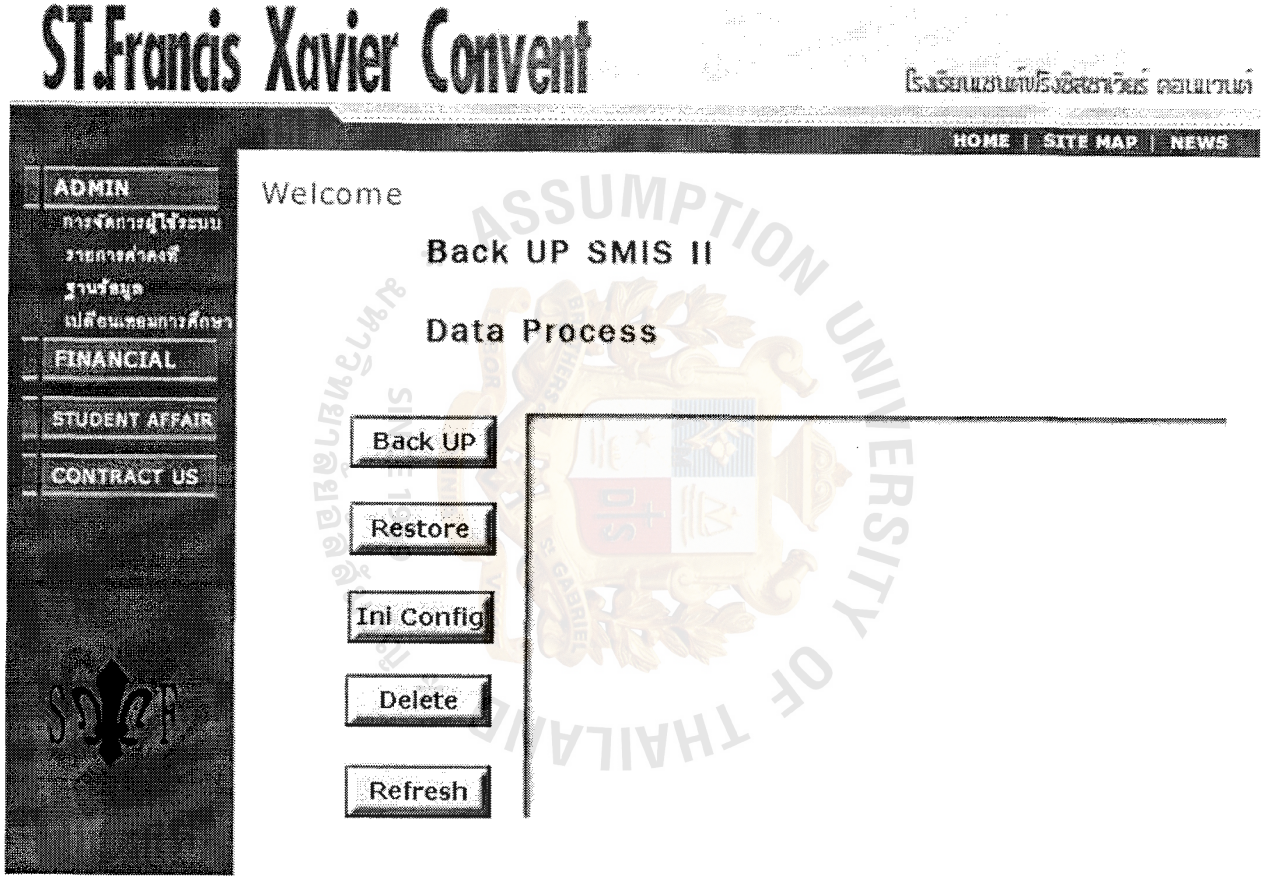


Figure F.5. Data Backup Process

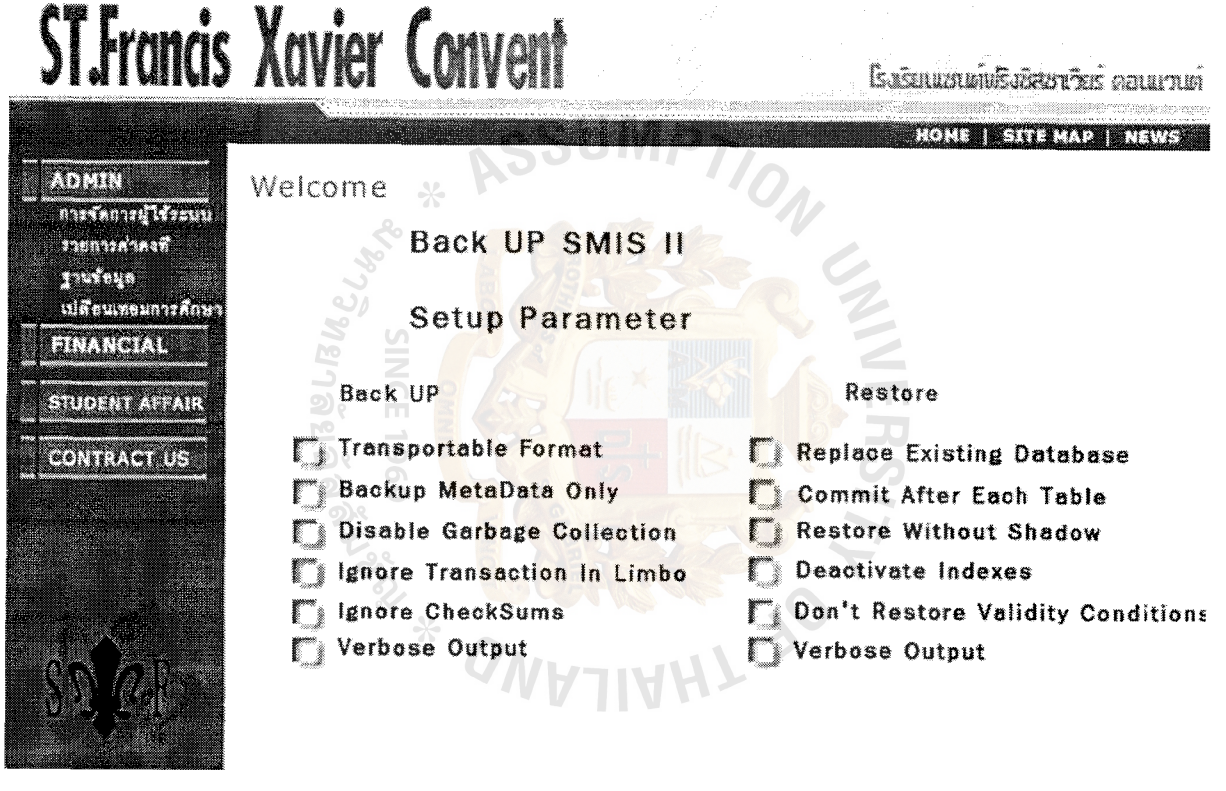


Figure F.6. Setup Parameter

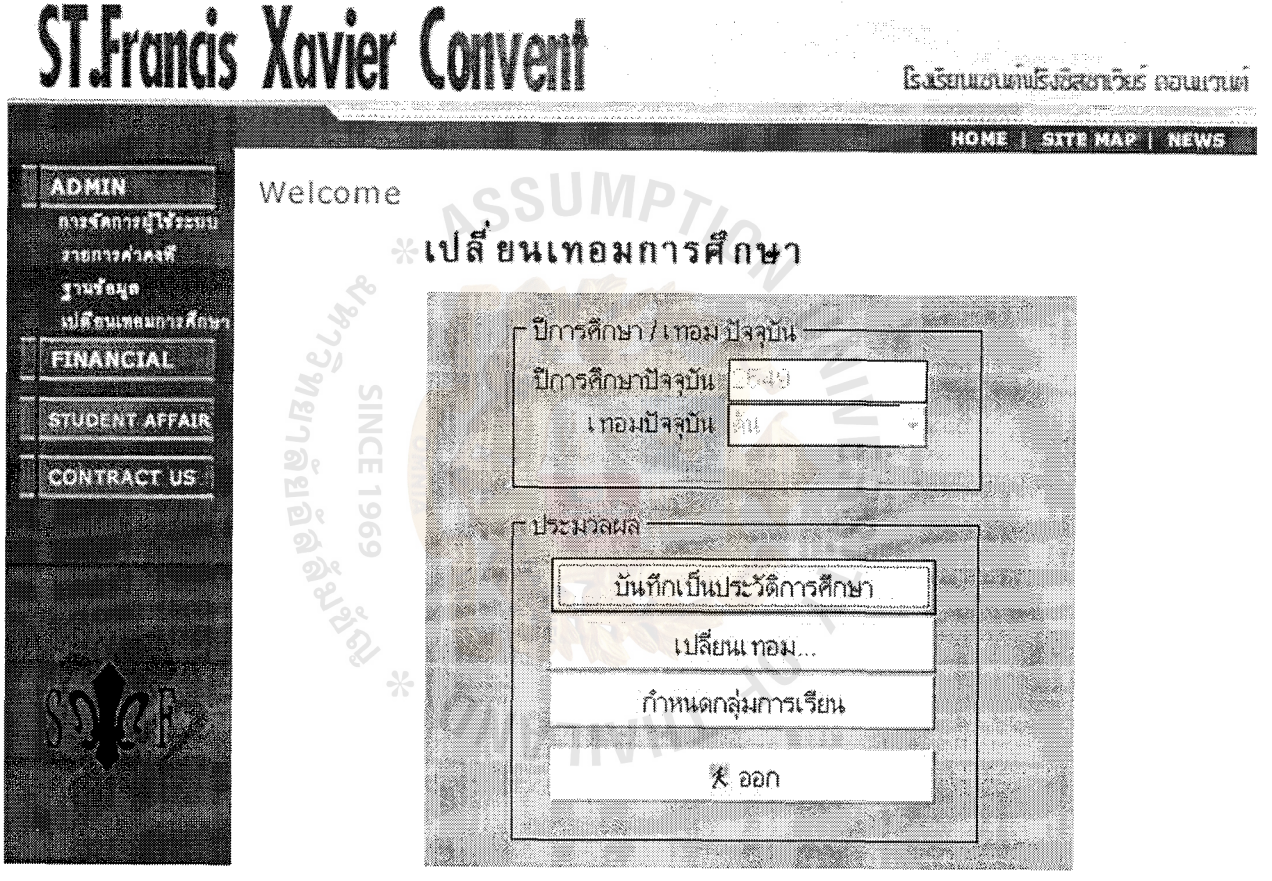


Figure F.7. Change Data Form

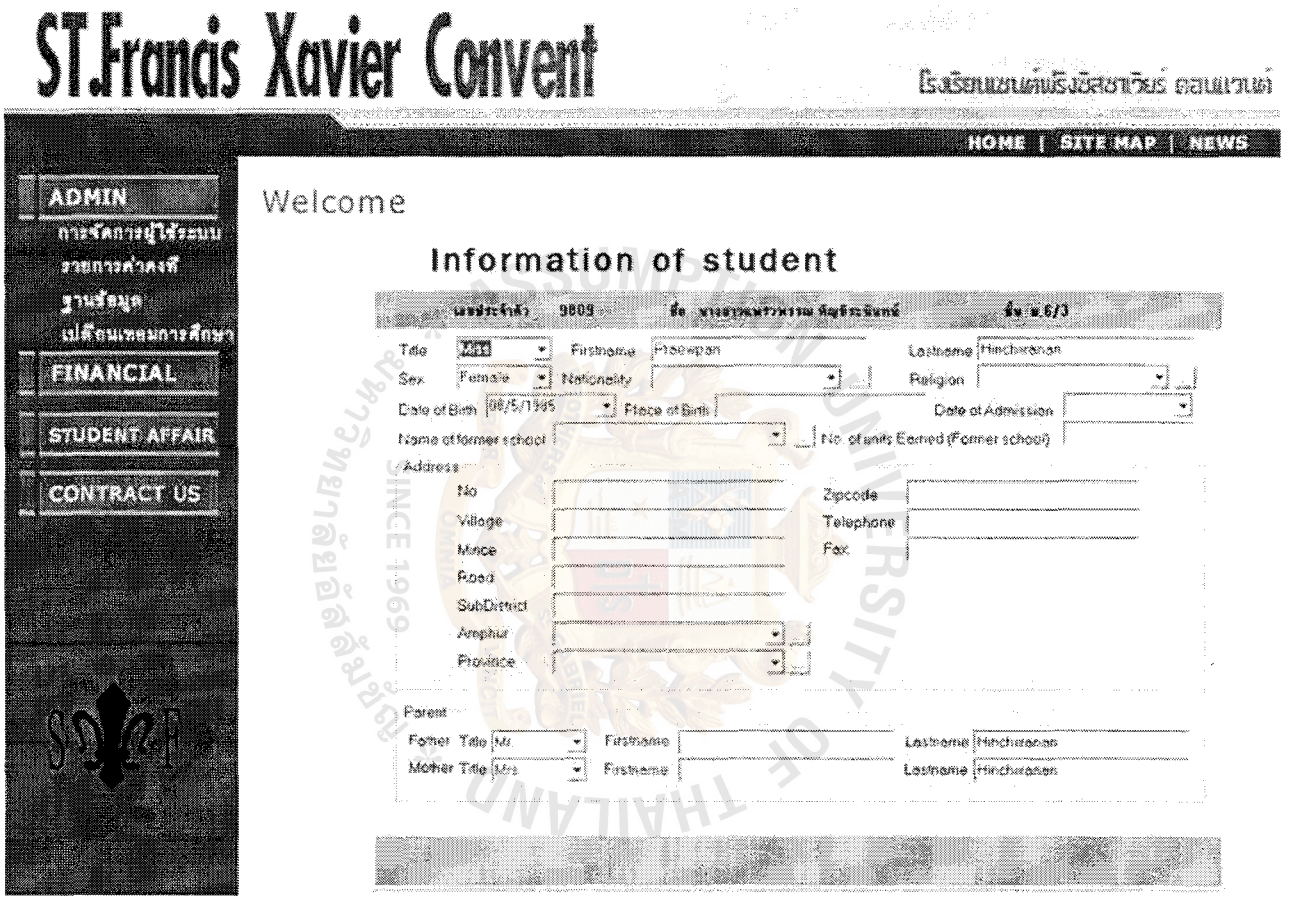


Figure F.8. Information of Student Form

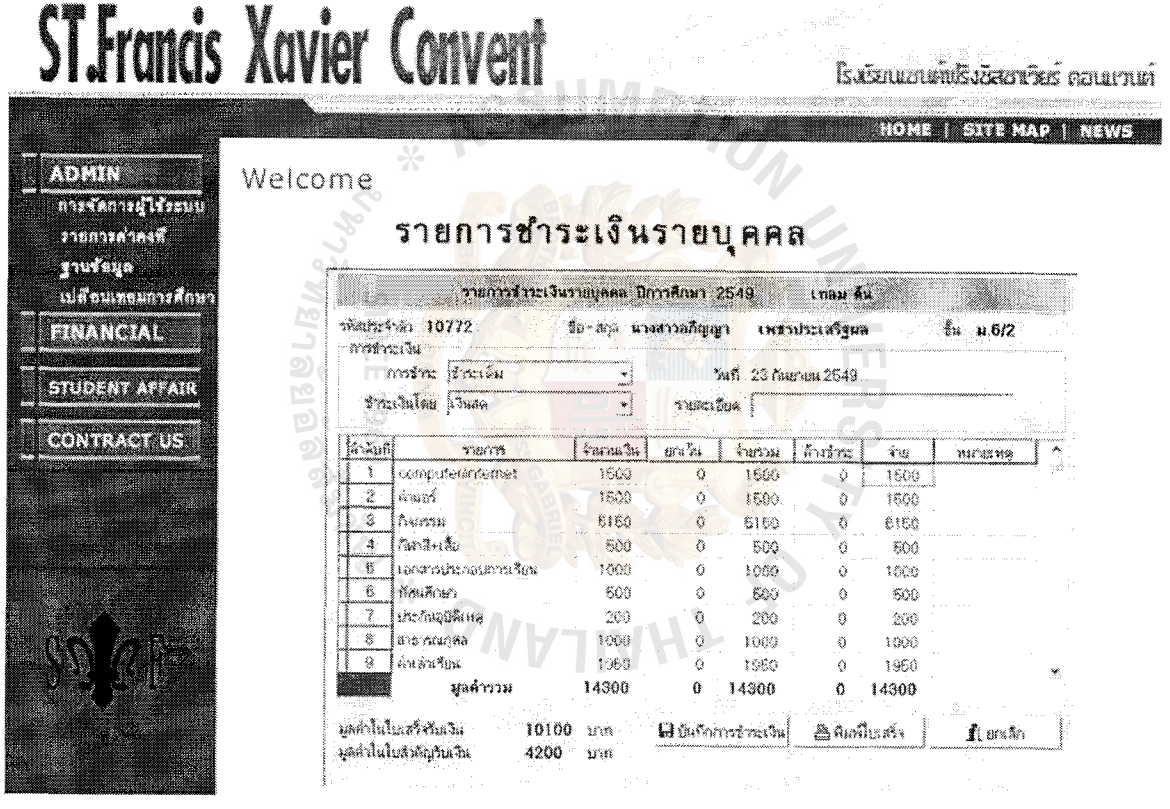


Figure F.9. Personal Payment Form

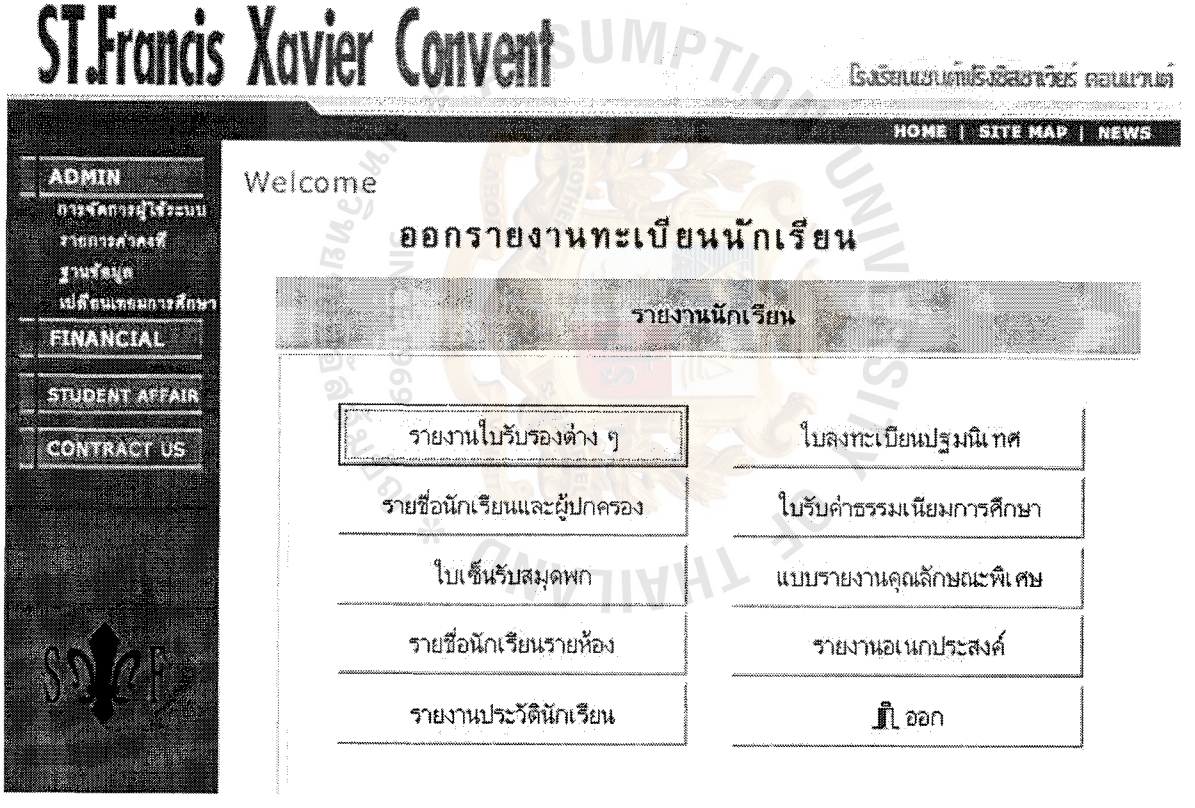


Figure F.10. Student Report Form

Figure F.11. Financial Report Form

Figure F.12. Honor Data Form

Figure F.13. Certificate Form

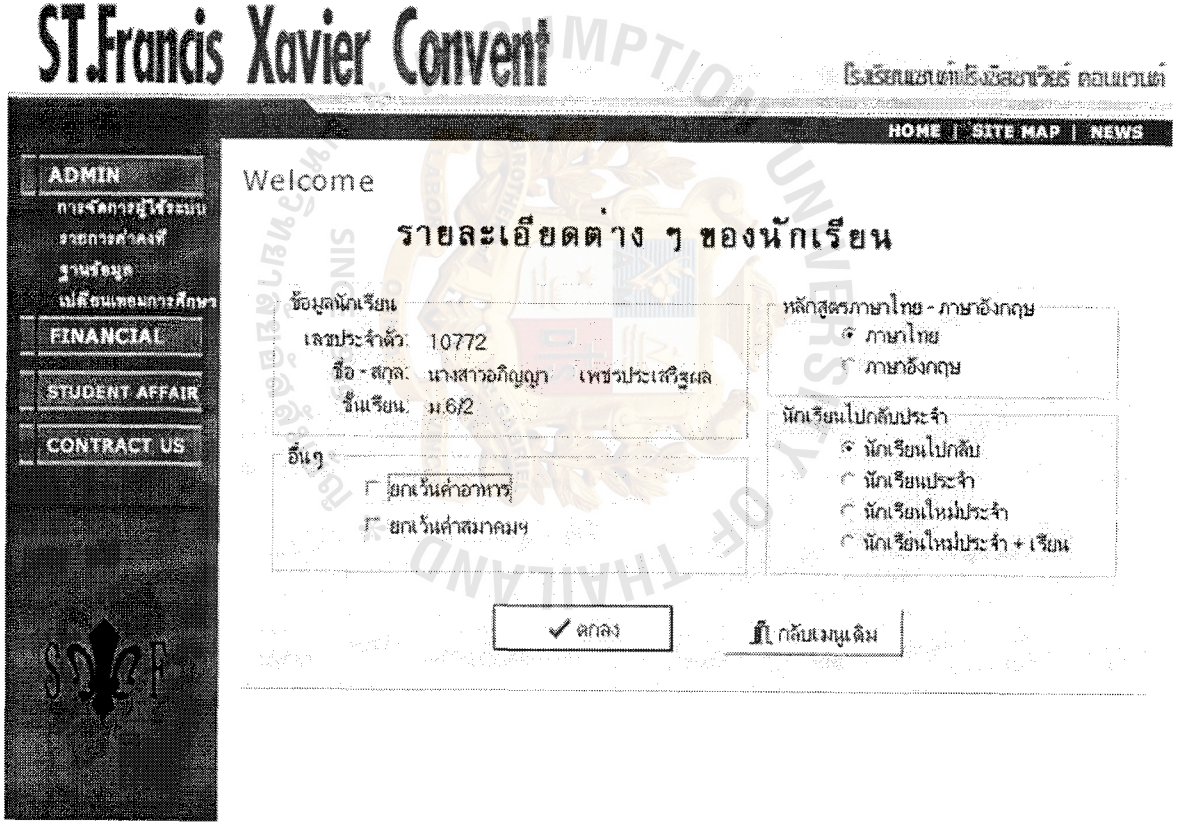


Figure F.14. Student Detail

APPENDIX G

REPORT DESIGN

โรงเรียนเซนต์ฟรังซีสซาเวียร์คอนแวนต์

รายชื่อนักเรียนค้างชำระค่าเล่าเรียน

ปีการศึกษา 2549 ภาคการเรียนที่ 2 ชั้นป.2/1

เลขที่	ชื่อ	นามสกุล	สถานะ
1	ด.ญ.ปณยา	ศิริเลิศวรกุล	ค้างชำระ
12	ด.ญ.ณัฐสินี	ทวีทรัพย์สุนทร	ค้างชำระ
13	ด.ญ.พัทธ์ศิรินทร์	พงษ์ลำเจียกงาม	ค้างชำระ
23	ด.ญ.ณัฐณิชา	ธนะปรัชญานันท์	ค้างชำระ
28	ด.ญ.สุภัทรา	แผ้วพนโรจน์	ค้างชำระ
43	ด.ญ.บุณยานุช	ยมศรีโชค	ค้างชำระ
47	ด.ญ.กฤตชญา	บนทิสกุล	ค้างชำระ

Figure G.1. Financial Report

๑

นางสาวชุติมา เตรัตนชัย

๓๐ กรกฎาคม ๒๕๒๘

เซนต์ฟรังซีสซาเวียร์คอนแวนต์

๑๔ มีนาคม ๒๕๔๕

Figure G.2. Certificate Report

ใบรับรองผลการเรียนระดับชั้นมัธยมศึกษาตอนปลาย

ขอรับรองว่า นางสาววรัญญา ปิ่นสำอางค์ เลขประจำตัว 10006
เกิดวันที่ 2 เดือน สิงหาคม พ.ศ. 2529 บิดาชื่อ นายอภิชา ปิ่นสำอางค์
มารดาชื่อ นางสุภามาศ ปิ่นสำอางค์ กำลังเรียนอยู่ในชั้นมัธยมศึกษาปีที่ 5/1
ปีการศึกษา 2546

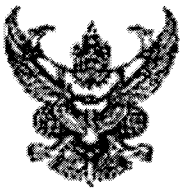
ออกให้ ณ วันที่ 8 พฤศจิกายน 2549

(ลงชื่อ).....
(นางสาวสายอรุณ ผิวเกลี้ยง)
ครูใหญ่

.....
(นางสุดา กิจบำรุง)
นายทะเบียน

(ใบรับรองนี้มีอายุ 60 วัน นับแต่วันออกให้)

Figure G.3. Student 1 Report



รบ.5-ป

ใบรับรองผลการเรียนระดับมัธยมศึกษาตอนปลาย

โรงเรียนแซนต์ฟรังซีสซาเวียร์คอนแวนต์

ขอรับรองว่า นางสาวรัญญา ชื่นสำอางค์ เลขประจำตัว 10008
เกิดวันที่ 2 เดือน สิงหาคม พ.ศ. 2529 บิดาชื่อ นายอภิชา ชื่นสำอางค์
มารดาชื่อ นางสุดาพร ชื่นสำอางค์ กำลังเรียนอยู่ในชั้นมัธยมศึกษาปีที่ 5

ออกให้ ณ วันที่ 8 เดือน พฤศจิกายน พ.ศ. 2548

รูปถ่าย
ขนาด 4 x 5 ซม.

ลงชื่อ.....
(นางสาวสายสุรุณ ลิ้มเกลี้ยง)
ครูใหญ่

.....
(นางสุดา คิดบำรุง)
นายทะเบียน

(ใบรับรองนี้มีอายุ 60 วัน นับแต่วันออกให้)

Figure G.4. Student 1 Report

โรงเรียนเซนต์ฟรังซีสซาเวียร์คอนแวนต์

ใบเซ็นรับสมุดพก ปีการศึกษา 2546

ชั้นมัธยมศึกษาปีที่ 5/3

เลขที่	เลขประจำตัว	ชื่อ - สกุล		วัน เดือน ปี	ชื่อผู้รับ
1	10203	นันท์	โพธิ์ทองสุข		
2	10289	ทิพมน	คำน้อยแก		
3	10317	ฑิตยา	เจริญสุขสกุลชัย		
4	10323	ปัญญาภรณ์	ศักดิ์วงศ์พาณิช		
5	10325	เกศรินทร์	แย้มพุธ		
6	10327	สุธาทิพย์	กันทีสิรบุตร		
7	10333	เพชรพลอย	บรรจงเลิศทร		
8	10336	อภิษฎา	ภูบุตร		
9	10338	ธนวีวรรณ	ปาริสุทธิวานิช		
10	10346	นางกัลยา	เตชวิศิษฐ์		
11	10362	ณัชชยา	ลิ้มโฆษิต		
12	10379	วลิดา	ธนพนบุรามั		
13	10381	อัญชลี	อินทิราวงศ์		
14	10409	วรานี	หลุยี		
15	10425	ผัสสุรัตดา	ศรีพงษ์ทัศ		
16	10433	นพวรรณ	วนิธรพนธ์		
17	10453	พิมพ์วรี	ระย้านาค		
18	10456	ธนพร	พิริยะเลิศประเสริฐ		
19	10458	ภัทรา	คันธิษาภรณ์		
20	10462	สุธา	เชี่ยวชาญโชติกุล		
21	11199	พัชรีดา	ลิ้มกอำไพ		
22	12243	กฤษณวรรณ	อารยพงศ์ลักษณ์		
23	12663	ปรียญา	ทาบัณฑ์		
24	12742	นิษาดา	ภาปิยนาฉนั		
25	13071	ธรรยา	แซ่อึ้ง		
26	13072	รุจาทิพย์	เติมผล		
27	13371	ธีรินทร์	ศรีประเสริฐ		
28	13374	อริยดาว	ไทยแสงฉล่ำ		

นางสาวชุติวรรณ วันหยุ   หน้า 1

Figure G.5. Student List 1

โรงเรียนเซนต์ฟรังซีสซาเวียร์คอนแวนต์

รายชื่อนักเรียน ปีการศึกษา 2546

ชั้นมัธยมศึกษาปีที่ 4/2

เลขที่	เลขประจำตัว	ชื่อ - สกุล												
1	10303	ศุภรัตน์ ทับประเทือง												
2	10308	ดวงทิพย์ นิติอนันนทชัย												
3	10512	ภัทรนันท์ ลิขิตการ												
4	10520	ลลิตทิพ เฉลิมรัตนา												
5	10523	เกตฤดี โกวิทวีรธรรม												
6	10527	อรินรัตน์ เอี่ยมพุทธิรัตน์												
7	10532	ชลิน ธีรานุกูล												
8	10535	ธงกมล อังบูรเทพ												
9	10562	อภิญญา ฉายสุวรรณโชติ												
10	10563	รัตญญู เพียรวนิช												
11	10564	พัชรา เรณุประดิษฐ์												
12	10572	ธีรนันท์ ทับศิริศักดิ์												
13	10576	กนนารถ ธนไพศาลศิริ												
14	10592	ธนิศา วรีรัตน์ทักษ์ชั้น												
15	10594	อภิญญา ธนุเดชโกศล												
16	10596	กีระนันท์ ศุภนันทฤกษ์												
17	10700	จิตินันท์ ธนชัยวิรัตน์												
18	10704	ทิพรัตน์ เชื้อรายสุวรรณ												
19	10712	สินี เลิศพัฒนกร												
20	10713	มนต์ชกานต์ ยิ่งวิลาศประเสริฐ												
21	10721	พรนภา ดวงสิทธิ์ศุภกุล												
22	10727	สุริเจ แสงศิริจันทร												
23	10729	อรพรรณ จุลนวิทยานุกูล												
24	10730	ภควดี นิปรีชา												
25	10731	ศิริกาญจน์ โรจนทาโรจ												
26	10733	ปัทมา อินอุนทการ												
27	10735	พริมดา ทับบัณฑา												
28	10740	วิริยา สัจจะวิริยะกุล												
29	10749	ธงกมลี สุขประเสริฐกุล												
30	10752	เมทริยา ดาวร												

อาจารย์ประจำชั้น นางเอื้องทิพย์ ธนธนบูรณ์

3 พฤศจิกายน 2549

หน้า 1

Figure G.6. Student List 2

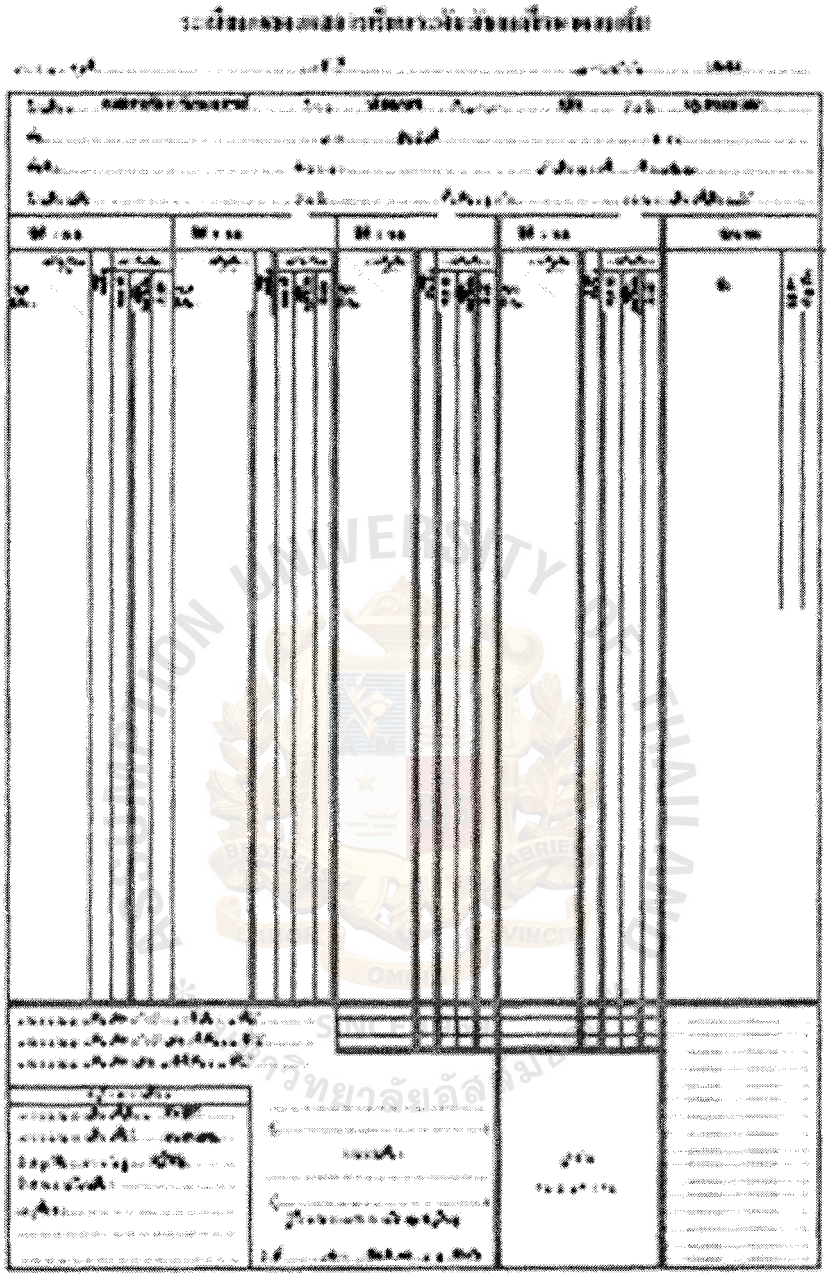


Figure G.7. Thai Transcript Report

Name: Miss [illegible] Admission No. 9744 Sex Female Nationality ______

Religion ______ Date of Birth July 30,1985 Place of Birth ______

Address ______

Name of Parents(or Guardian) ______ & ______

Date of Admission ______ Name of Former School ______

Grade 7-9 No. of Units Earned (Former School) ______

Title of Course				1999			2000		
	Code	Grade 7		Code	Grade 8		Code	Grade 9	
		Credit	Grade		Credit	Grade		Credit	Grade
Required									
				ART203	0.5	3	ART305	0.5	4
				ART204	0.5	3	ART306	0.5	3
				HPE203	0.5	4	HPE305	0.5	4
				HPE204	0.5	4	HPE306	0.5	3
				MAT203	1.5	3	SCI305	1.5	3
				MAT204	1.5	3	SCI306	1.5	2
				SCI203	1.5	3	SOC305	1.0	2
				SCI204	1.5	3	SOC306	1.0	3
				SOC203	1.0	2	THA305	2.0	3
				SOC204	1.0	3	THA306	2.0	2
				THA203	2.0	3			
				THA204	2.0	4			
				HPE013	0.5	3	HPE015	0.5	3
				HPE014	0.5	4	HPE016	0.5	3
				HPE023	0.5	4	HPE025	0.5	3
				HPE024	0.5	4	HPE026	0.5	4
				SOC029	1.0	2	SOC0210	1.0	4
				WKS013	1.0	3	SOC027	1.0	2
				WKS014	1.0	3	WKS521	1.0	3
							WKS522	1.0	3
Elective									
				ENG013	2.0	3	COM133	2.0	4
				ENG014	2.0	4	ENG015	2.0	3
				ENG022	1.0	3	ENG016	2.0	3
				ENG022A	1.0	4	ENG034	1.0	3
				MAT033	1.0	4	ENG034A	1.0	2
				MAT034	1.0	4	MAT021	1.0	4
				SCI013	1.0	3	MAT022	1.0	4
				SCI013	1.0	3	MAT011	2.5	4
				SOC0110	1.0	2	MAT012	2.5	3
				SOC0111	1.0	3	SCI017	1.0	3
				SOC0116	1.0	3	SCI019	1.0	2
				SOC0117	1.0	4	SOC0112	1.0	3
				SOC017	1.0	4	SOC0113	1.0	3
							SOC0118	1.0	4
							SOC0119	1.0	3
Activities									
									P
									P

Figure G.8. English Transcript Report

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