

Residential Sales Information System

by

Ms. Worranee Pranee

A Final Report of the Six-Credit Course
CS 6998-CS 6999 System Development Project

Submitted in Partial Fulfillment
of the Requirements for the Degree of
Master of Science
in Computer Information Systems
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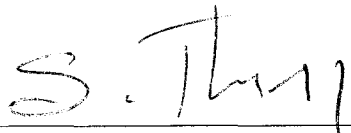
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The Graduate School of Assumption University has approved this final report of the six-credit course, CS 6998 – CS 6999 System Development Project, submitted in partial fulfillment of the requirements for the degree of Master of Science in Computer Information Systems.

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ABSTRACT

The Sales and Marketing Department of Quality Home Co., Ltd. is operating residential information system to improve the existing manual system.

In the present economic situation, residential market is very competitive. Special stress has been laid on controlling cost of construction and reducing unnecessary expenses. The sales information system should be fast, accurate and efficient and it should reduce costs involved and increase productivity so that it can help company to be competitive and different from other competitors in residential market. The company realized the importance to achieve these by developing a computer information system.

The computerized system can improve information system to be accurate, efficient and reduce the response time for customer service. In addition it can solve problems of redundant and incorrect data. Therefore, a new system is designed to be a competitive advantage to the company's business, and with a strategy promoting sales of company's products and improve customer's satisfaction. This system covers analysis, design and implementation of Sales and Marketing information system with user friendly interface design, and provides the report for management for planning and decision-making business processes.

ACKNOWLEDGEMENTS

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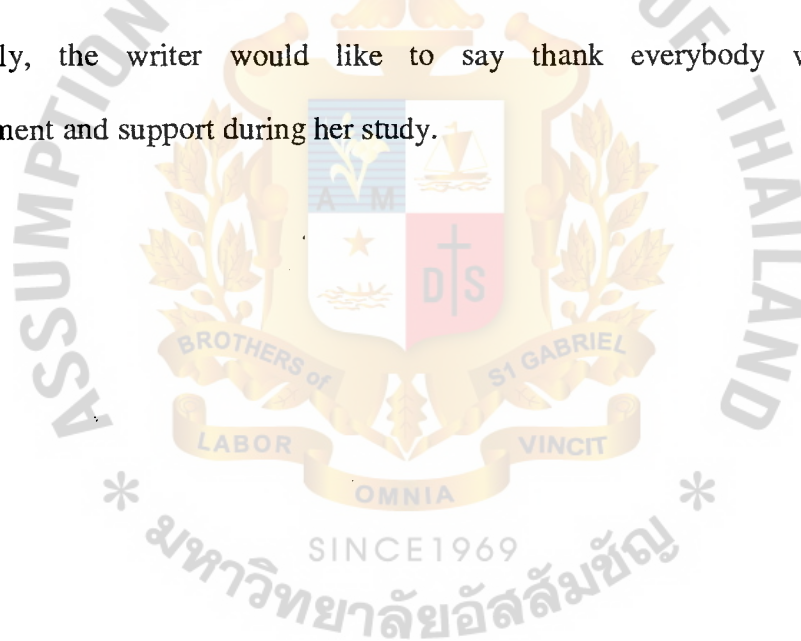


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I. INTRODUCTION

1.1 Background of the Project

A sales and marketing department is very important for bringing good business to a company. Manual, operations of sales and marketing routines have many problems. Information is not up-to date, the system does not respond in time for customer service, and with manual system it needs a lot of effort to make accurate decision. These problems can cause far reaching effects on business. Sometimes it is required to feed data into computers and then analyze it due to human limitation of analyzing a large amount of data accurately and quickly. Since at one or other point of time, we have to feed data for analysis purpose, it is better that we capture the data and when it is generated and analyze this captured data whenever requirement arises.

The computerized system for sales and marketing operation can provide information to improve service and support management in decision-making for the strategic planning of a company. Information at the right time not only provides the effectiveness to the routine operation but also satisfies the customers.

1.2 Objectives

The objectives of this project are as follows:

- (1) To analyze the existing system, identify problem and users requirement.
- (2) To identify business requirement.
- (3) To design the new computerized system for improving the effectiveness of work and response requirements of users.
- (4) To support the ever increasing information within sales and marketing department.

- (5) To improve data collection and data sharing among related departments for reducing repetition of work.
- (6) To reduce human error and minimize the paper work.
- (7) To implement a new system to compute cost, benefit, customer payment and tax.
- (8) To increase efficiency and effectiveness in the sales and marketing department and organization.

1.3 Scope

The project will cover only the major part of Residential Sales Information System, which includes.

- (1) Studying the problem of existing system in sales and marketing department and design a new system, which is appropriate for user requirement.
- (2) Supporting the new system of Residential Sales Information System by designing database that can collect, and manipulate information.
- (3) Designing the user interface, which is easy to use for users who are not familiar with computer.
- (4) Designing the report for the manager to analyze, management, and the decision-making of organization.

1.4 Deliverables

The deliverables for Residential Sales Information System of Quality Home Co., Ltd. are as follows:

- (1) Project Introduction
 - (a) Background of the project
 - (b) Objectives
 - (c) Scope
- (2) The Existing System
 - (a) Background of the organization
 - (b) Existing business function
 - (c) Current problems and areas for improvement
 - (d) Existing computer system
- (3) The proposed system analysis and design document.
 - (a) Screen Display Design
 - (b) Structure Chart of Process
 - (c) Data flow Diagram
 - (d) Process Specification
 - (e) Database Design
 - (f) Report Design
 - (g) Hardware and Software requirement
 - (h) Security and Controls
 - (i) Cost/benefit analysis
- (4) The proposed system input and output design.
 - (a) Customer buying
 - (b) Project buying

- (c) House type buying
- (d) Customer booking
- (e) Customer buying contract
- (f) Cancel booking
- (g) Cancel contract
- (h) Customer payment
- (i) Transfer ownership
- (j) Sales Staff booking
- (5) The new information report design.
 - (a) Customer report
 - (b) Project report
 - (c) Type of home report
 - (d) House booking report by customer
 - (e) Signed contract report by customer
 - (f) Customer payment report
 - (g) House booking report by sales staff
 - (h) House transfer report
 - (i) House transfer report by project
 - (j) Monthly signed contract report
 - (k) Cancel booking report
 - (l) Cancel contract report
- (6) Project Implementation
 - (a) Overview of project implementation
 - (b) Test plan and results
- (7) Conclusions and Recommendations

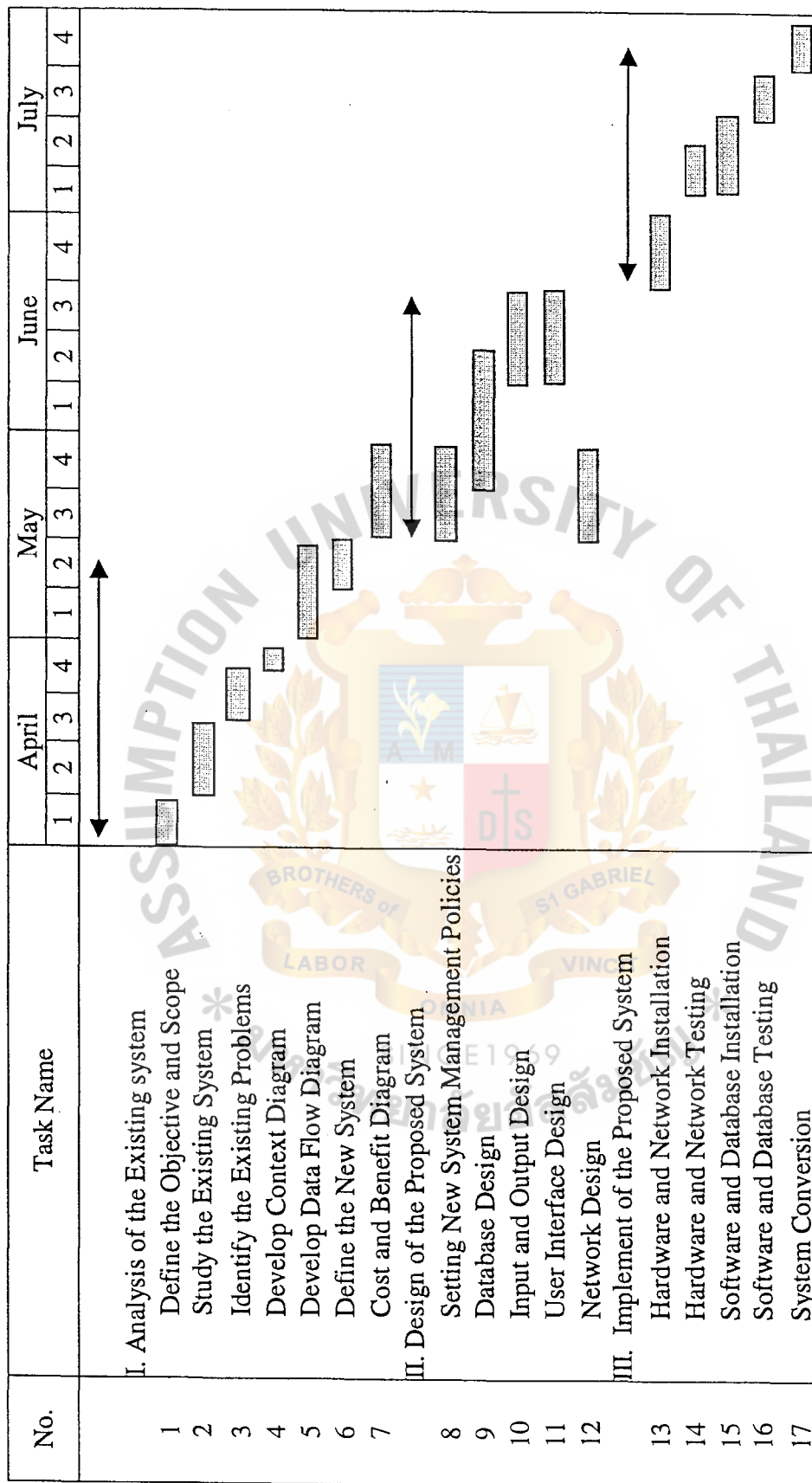


Figure 1.1. Project Plan of Residential Sales Information System.

II. THE EXISTING SYSTEM

2.1 Organization Background

Quality Home Co., Ltd. is a real-estate company, which was established in 1990. Company has four projects in Phuket, and Bangkok. There are two projects in Phuket, the First one is “Ban Sai Lom” which is composed of 700 units of home and the other one is “Ban Sai Mai” which is composed of 1,500 units of home. In Bangkok, company has 2 projects, the first project is “Ban Sai Nam” which is composed of 700 units of home and the other project name is “Ban Sai Far” which is composed of 1,500 units of home. All projects have 2 types of houses-single-story houses and double-story houses. The four styles of homes are named as Palichard, Krew, Tantawan, and Maliwan. In addition the company provide club house, garden and security service.

The head office of Quality Home Co., Ltd. is located on 30,000 square meter of prime business location at 24, Ratchadapisak Road, Huaykwang, Bangkok. The project, Ban Sai Lom, in Phuket is located on 196, Sriwalai Road, Muang, Phuket and the site project in Bangkok is 243, Vibhavadee-Rangsit Road, Bangkok, Donmuang, Bangkok.

Quality Home Co., Ltd. has divided company's work in 6 departments. Each department has its clear job and responsibility as indicated below:

(1) Human Resource Department

The department is responsible for human resource of the company, and keeps and maintains employee information. It provides required training to employees from time to time.

(2) Financial and Accounting Department

The department deals with all jobs such as making general accounting standard, producing payrolls for all employees, taxation and invoice.

(3) Law Department

The department is responsible for preliminary outline of contracts.

(4) Sales and Marketing Department

The department handles and provides sales and promotion services for customers. It handles all reservations and records and all information from customers with plans for advertisement.

(5) Construction Department

The department handles requirements of construction, addition and decoration of homes from customers.

(6) Purchase Department

The department is responsible for handling all requests, purchase orders, and provides material orders.

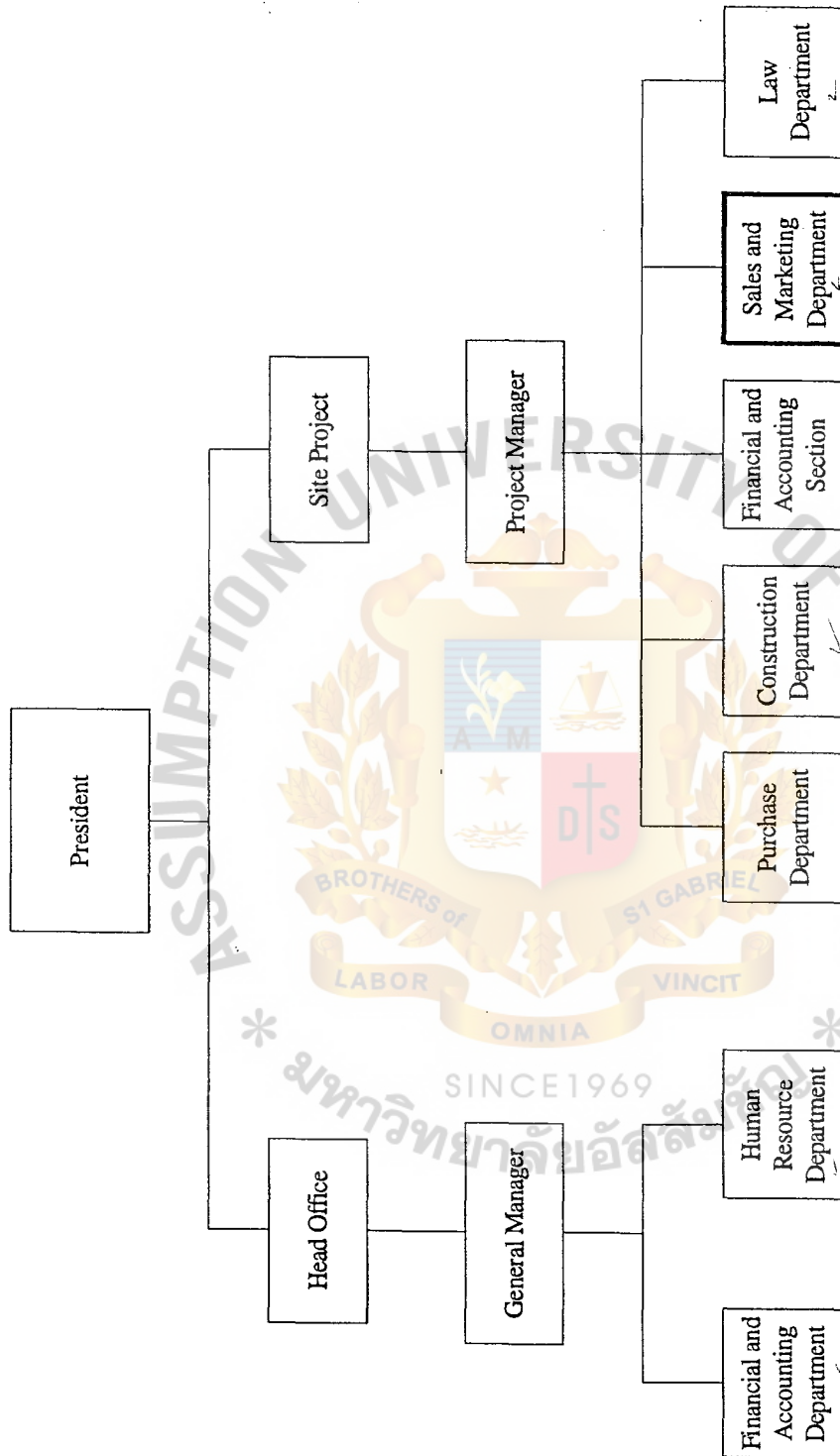


Figure 2.1. Organization Chart of the Quality Home Co., Ltd.

2.2 Existing Business Function

The existing system of Quality Home Co., Ltd. is a manual system so the information is not up-to-date most of time and lack of accuracy. There are a lot of paper copies in many forms distributed in the organization so the business can lose records.

The main business of the company is selling home so the sales system is the heart of the business. If the business system still uses manual operation, the problem will remain and business will not be run smoothly and efficiently which would lead to decrease in the profitability of the company. Therefore, the development of the computerized system is the best way to enhance the business process.

2.3 Current Problems and Areas for Improvement

Nowadays, the real-estate business situation is very competitive. Quality Home Co., Ltd. has to find business problems that can be decrease the sales. The current problems should be investigated and defined. Then, the company can analyze the opportunities of the business to find a chance for improvement. To start a new proposed system and improve the existing system, it should classify the problems in details to find the solution to support the goals of the business. The problems of the current system are as follows:

- (1) The redundancy in operation usually happens. The same operation is repeated manually, due to the lack of good information system.
- (2) The information is not incomplete, incorrect, and not up-to-date.

The workflow in the organization is not efficient and effective so the current system can cause unsatisfactory in communicating with the customers. By using a lot of paper for many forms in the organization, the cost of paper will be high.

It is difficult for the manager to make a decision. All problems can make business loss so the proposed system should be implemented.

2.4 Existing Computer System

The existing system of the company is done manually. Some computerized system parts in each department within organization are not connected together.

Information is kept in excel file and some information in paper work so the company can lose some information and has high cost for paper work. All information in the company cannot be shared to another department so the process of work can not support efficient performance.



III. THE PROPOSED SYSTEM

3.1 System Specification

The existing manual system at Quality Home Co., Ltd. is analyzed to identify the business problems and to define user's requirement. System Analysis is very important activity that takes place when new information system is being built or existing ones are changed. It is a process to determine what the system does and what is required of it. It is necessary to determine the requirements of users of a new system and understanding of the existing system and its problems to design and eventually build a usable system. It is a general practice to conduct feasibility study of the new system, evaluating the problems, analyzing requirements preparing drafts for the proposed system, evaluating and validating the logical design and logical design specifications. To meet user's requirements, a new computerized system is developed. The major requirements are illustrated in Table 3.1 with candidate 1, candidate 2 and candidate 3 compared.

Table 3.1. Requirement for New Proposed System Alternative.

No.	Requirement	Category	Candidate1	Candidate2	Candidate3
1	Order Information must be input through computer accurately and efficiently	E	X	X	X
2	The system's data must be linked together and shared throughout the system	E	X	X	X
3	Data must be interface via on-line processing	E	X	X	X
4	Data can be easily retrieved to analyze and generate reports	E	X	X	X
5	Computerized device must print correct details of orders for payment	E	X	X	X
6	The system must allow only authorized persons to use the software and make entries.	E	X	X	X
7	The system must be user friendly	E	X	X	X
8	Orders and sales should tracked efficiently	D	X	X	X

Legend E: Essential, D: Desirable

3.2 Candidate Solution

In this chapter, we concentrate on business problems to improve our business by specifying the business requirements for the target solution. To increase the efficiency of our business process, we have to analyze and define candidate technical solutions during system analysis to achieve the business goals.

At present, Quality Home Co., Ltd. uses a manual system that has only easy calculation, and time-consuming tedious paper flow process. Three possible alternative candidate solutions are identified to be used for a new system.

Two of them are off-the shelf software package that is a purchase solution and modified as per user requirement. However, for the user, the requirement is specific (the real estate business) and to change the off-shelf software it is important to do more than 50% of modifications so it is better to create the company's own software. Software which will be specific to the user requirements (i.e. real-estate business) is created and user's required business processes are completely supported. This custom solution can implement as fast possible the research, design and coding of the application software. The cost of investment is not high although it is necessary to code it by the company because the system is not more complicated to implement as compared to the package solution. The software will be implemented in client-server mode so all sales persons can use this from any computer on the LAN. For the maintenance, system administrator is used to take care of it.

3.3 System Design

System design begins by using identified system problems to develop objectives for the new system. It produces the new logical model (What the system will do?) then produces physical alternative (How the system will work?) finally, chooses a new physical model by taking economic& social factor in to consideration. It translates users' requirement and constraints into technical solutions. It designs the computer files, databases, inputs, outputs, screens, networks, and programs that will meet the systems users' requirements. It also integrates the technical solution back into the day of business environment.

After getting the best evaluated alternate solution to fulfill the company's business requirement and specify the computer base solution, the design and integrated requirement are involved to develop technical design specifications. That means the identified system analyst is ready to be constructed.

To construct the proposed system the system is divided into 5 different parts, which will be the main focus to guide the technical details. These are processes to illustrate a system design by orderly drawing process design, input and output design, user interface, software design and database design. Refer to Appendix A for further details.

(1) Process Design

The process design is depicted in the form of data flow diagrams (DFDs) that is the technique for organizing and documenting the structure and flow of data through the system's process. As these pictures define the entire business process, the project scope of the system is first examined to look for the information about interface focus that is a document in context diagram. After identifying context diagram, the sales and marketing operation information system can be divided into subsystem data flow diagram in lower level that shows data flow details to specify deeper information of each subsystem. Combining these subsystems, the whole process system (level 0) is obtained. Finally, this data flow diagram (Logical DFDs) which is introduced for the business requirements can be used to develop a technical design (Physical DFD's) to implement the proposed system.

(2) Database Design

According to the company's business requirements, useful information is classified into a related data structures that has been analyzed to be ready for implementation as a simple, non-redundant, flexible database. Now it is ready to design Entity Relation Diagram (ERD) which is used for creation of database. The data are described in terms of entities and relationship among them that satisfy system users requirements. The entity relation diagram is shown in Appendix D.

(3) Input and Output Design

It is true that, to reduce errors during data-feeding, the input should be simple and clear. Collecting data correctly is the essence of the system, but this should not make the input system overly complex. The data captured will reflect the accuracy of reports generated by database. To provide data on-line, Local area network (LAN) is very helpful since users can input and output the data through any computer on the Network. The input and output are designed so that users can easily and efficiently capture and use data.

(4) User Interface

The user interface provides a friendly ease of use by application to process inputs and obtain outputs. User interface for this system has many screens for accomplishing system goals. The user interface is shown in Appendix A.

(5) Software design

The software design is a final step in designing the system. Upon finishing the design of database, input and output and user interface, it is

necessary to select appropriate software and hardware equipments that should be installed for system to work. The program specifications are produced and provided to the programmers to do the coding.

The structure design is used to deal with the size and complexity of selected program. This technique will assist the computer programmers to design the program as a top-down hierarchy of modules that present the result in a computer program, which is easier to implement and maintain. Typically, structured design requires data flow diagrams to construct, the structure chart, which helps understanding modular design of the system.

3.4 Hardware and Software Requirement

For any system to perform optimally, a decision to select hardware and software is very important. Since the cost of hardware is reasonable as compared to the cost of hardware earlier, it is better to select good hardware for good performance. The high quality hardware and software improves systems performance, reduces the maintenance cost and reduces the losses by reducing system down time.

The new system requires only one server to provide services required by clients. The database must be robust, secure and easy to maintain. Tables 3.2 and 3.3 shows details of selected hardware and software.

Table 3.2. The Hardware Specification for Sales and Marketing Information System Server.

Hardware	Specifications
CPU	1200 MHz Pentium IV or higher
Cache	512 MB or higher
Memory	256MB 133 MHz, SD RAM
Hard Disk	40 GB, 7200 RPM
CD-ROM Drive	52X or higher
Floppy Drive	1.44 MB
Network Adapter	Ethernet 10/100 Mbs
Display Adapter	SVGA Card
Monitor	15" colour monitor
Printer	HP Laser jet 4050
Hub	10/100 mbps 24 ports
UPS	APC 1000 VA

Table 3.3. The Software Specifications for the Sales and Marketing Information System Server.

Software	Specification
Operating System	MS Windows 2000 Server
Database server	Oracle 8i
Development tools	Developer 6i

The proposed system has 7 client computers in marketing department. All the computers will be connected to server through Local area network (LAN) The hardware and software specifications for client computers is shown in Tables 3.4 and 3.5.

Table 3.4 The Hardware Specification for Client Computers.

Hardware	Specifications
CPU	1000 MHz Pentium IV or higher
Cache	256 MB or higher
Memory	128MB 133 MHz, SD RAM
Hard Disk	20 GB, 7200 RPM
CD-ROM Drive	52X or higher
Floppy Drive	1.44 MB
Network Adapter	Ethernet 10/100 Mbs
Display Adapter	SVGA Card
Monitor	15" colour monitor

Table 3.5 The Software Specifications for the Sales and Marketing Information System Client Computer.

Software	Specification
Operating System	MS Windows 2000
Web browser	MS Internet explorer 5.5 or higher

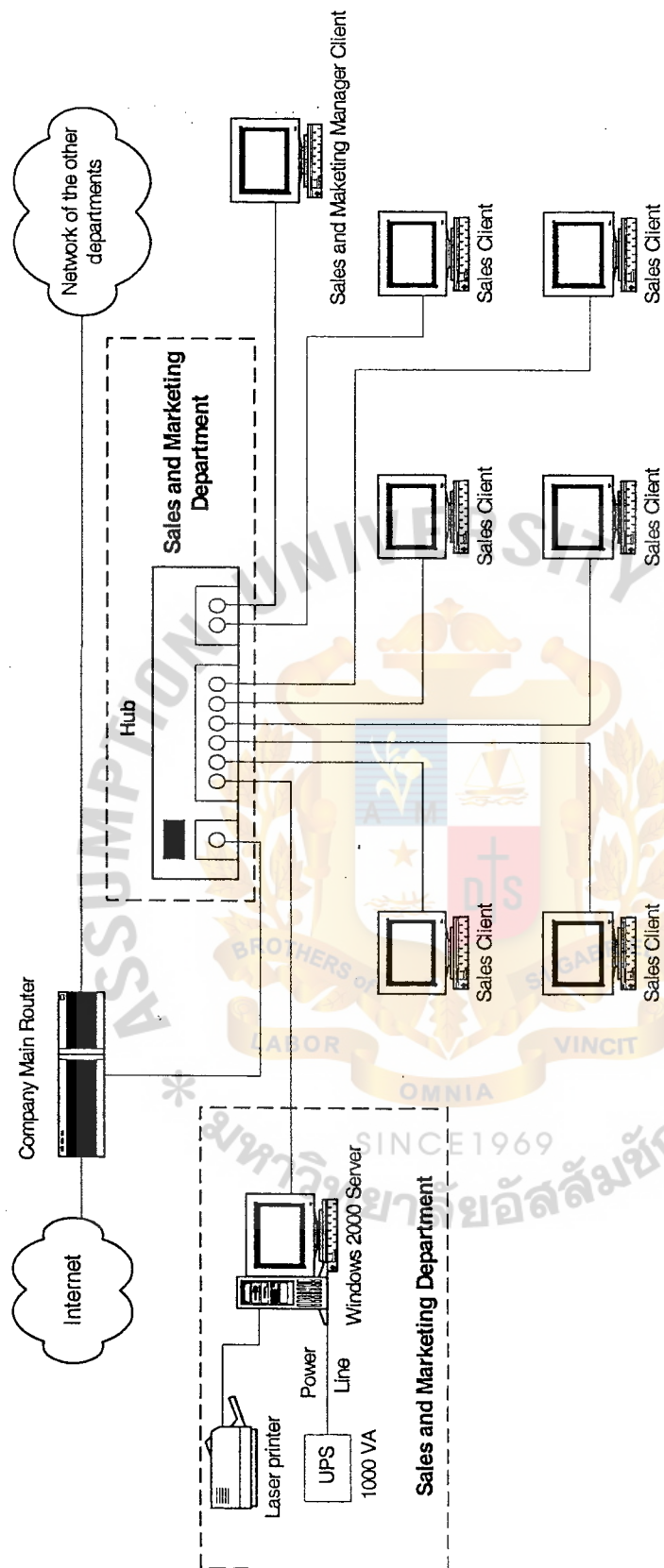


Figure 3.1. The Hardware Configuration of Sales and Marketing Department.

3.5 Security Control

The security control is a significant feature of the proposed system and very important for all business processes. Broadly the security control can be classified into 2 groups of processes occurring in the system as follows:

(1) Order Process

This system will be used by the sales staff of the company, who will talk to the customers and book order. While booking the order, it is ensured by the system that data can be captured completely and accurately without any extra effort.

(2) Data processing

The data is very dynamic. For example, there can be some price changes or sales people give special discounts. These features will require password to operate or change the information. Once data is entered, the user name will be embedded with that data so that at later stage it can be checked by whoever has entered that data.

3.6 System Cost Analysis

- (1) Estimated Cost for Residential Sales Information System Alternative (Candidate1).

Table 3.6. Estimated Projected Cost, Baht.

Cost Items	Description	Amount	Unit Price (/Hr.)	Price
1. Development Cost	1.1 Personnel Cost:			
	Project Manager(550hrs.ea)	1	150.00	82,500.00
	System Analyst(550hrs.ea)	3	100.00	165,000.00
	Database Specialist(180hrs./ea)	1	135.00	24,300.00
	Network Technical Crew(120hrs./ea)	1	85.00	10,200.00
	Subtotal 1:			282,000.00
	1.2 Expenses:			
	IT Education Co Ltd Software Training (3 hrs./class)	7	3,000.00	21,000.00
	Administration of Windows 2000 for Server Training (15,000 Baht/student)	1	5,000.00	5,000.00
	Subtotal 2:			26,000.00
	1.3 New Hardware & Software			
	Server Computer(1800 MHz. Intel Pentium IV Processor)	1	126,000.00	126,000.00
	Server Software (Operating System, Misc.)	1	15,750.00	15,750.00
	DBMS Server Software	1	75,000.00	75,000.00
	Client Computer (Pentium III)	7	25,000.00	175,000.00
	Client Software(OS mist.)	7	4,500.00	31,500.00
	Network Equipment	1	7,500.00	7,500.00
	UPS	1	3,500.00	3,500.00
	Subtotal 3:			434,250.00
	Total Development Cost			742,250.00
2. Operating Cost	2.1 Personnel Cost:			
	Programmer (50 hrs.ea)	1	100.00	10,000.00
	Subtotal 1:			10,000.00
	2.2 Maintenance:			
	Maintenance for Server System			10,000.00
	Maintenance for Client System			5,000.00
	Maintenance for Network Equipment	1		5,000.00
	Subtotal 2:			20,000.00
	Total Operating Cost			30,000.00
	Total Protect Annual Cost			772,250.00

Table 3.7. Payback Analysis of Residential Sales Information System (Candidate1), Baht.

Cost Items	Years				
	0	1	2	3	4
Development Cost	-772,250.00	-	-	-	-
Operation & Maintenance Cost	-	-30,000.00	-31500.00	-33,075.00	-34,728.75
Discount factors for 12%	1.000	0.893	0.797	0.712	0.636
Time-Adjusted costs (adjust to present value)	-772,250.00	-26,790.00	-25,105.50	-23,549.40	-22,087.49
Cumulative time-adjusted Costs over lifetime	-772,250.00	-799,040.00	-824,145.50	-847,694.90	-869,782.39
Benefits derived from Operation of new system	-	500,000.00	550,000.00	600,000.00	650,000.00
Discount factors for 12%	1.000	0.893	0.797	0.712	0.636
Time-Adjusted costs (adjust to present value)	0.00	446,500.00	438,350.00	427,200.00	413,400.00
Cumulative time-adjusted benefits over lifetime	0.00	446,500.00	884,850.00	1,312,050.00	1,725,450.00
Cumulative lifetime time adjusted cost + benefit	-772,250.00	-352,540.00	60,704.50	464,355.10	855,667.62
					1,231,891.85

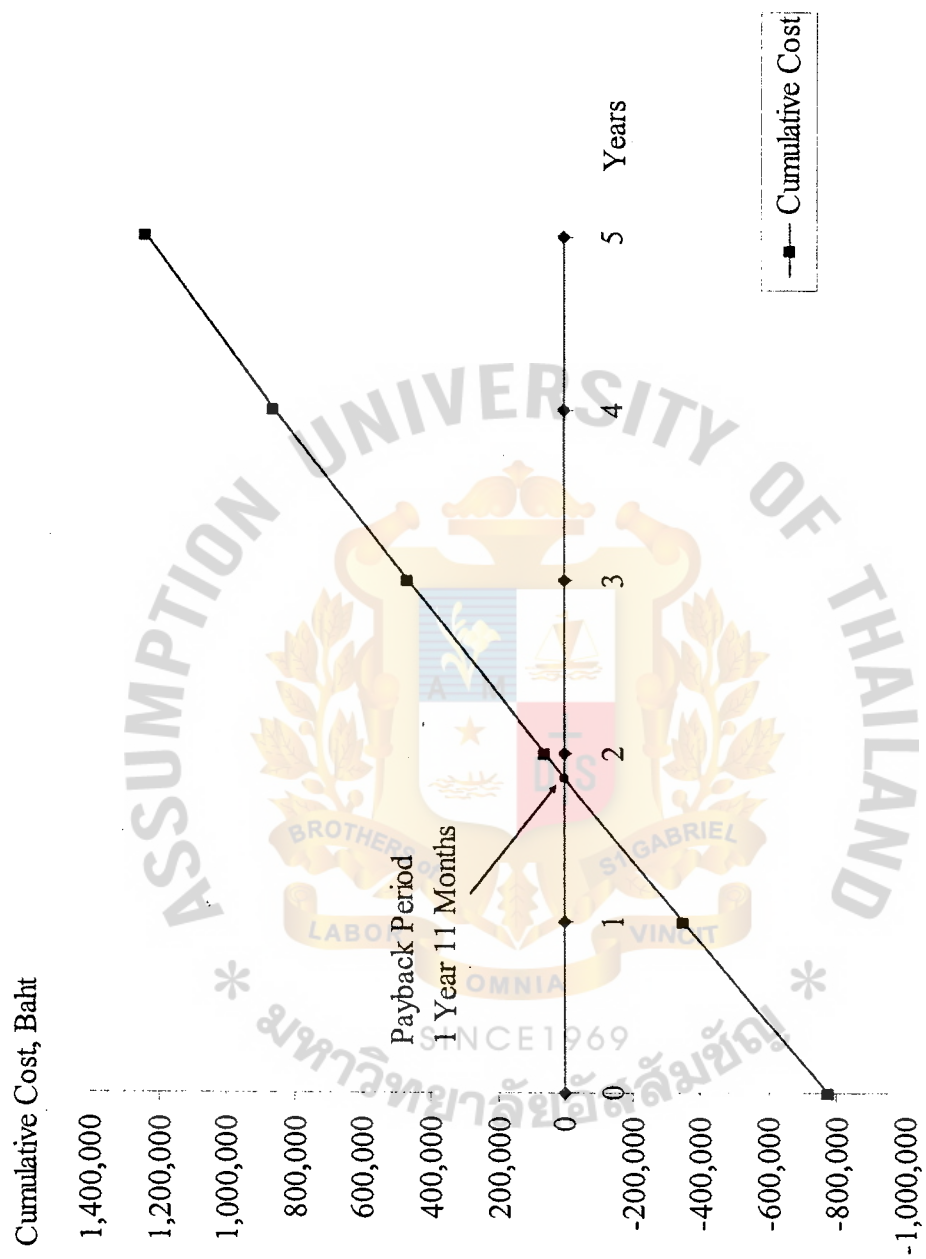


Figure 3.2. Payback Analysis of Residential Sales Information System (Candidate 1).

(2) Estimated Cost for Residential Sales Information System (Candidate 2).

Table 3.8. Estimated Project Cost, Baht.

Cost Items	Description	Amount	Unit Price (/Hr.)	Price
1. Development Cost	1.1 Personnel Cost:			
	Project Manager(575hrs.ea)	1	175.00	100,625.00
	Programmers 3 (575hrs.ea)	3	125.00	215,625.00
	Database Specialist(180hrs./ea)	1	160.00	28,800.00
	Network Technical Crew(120hrs./ea)	1	110.00	13,200.00
	Subtotal 1:			358,250.00
	1.2 Expenses:			
	IT Education Co Ltd Software Training (3 hrs./class)	7	3,500.00	24,500.00
	Administration of Windows 2000 for Server Training (15,000 Baht/student)	1	5,500.00	5,500.00
	Subtotal 2:			30,000.00
	1.3 New Hardware & Software			
	Server Computer(1800 MHz. Intel Pentium IV Processor)	1	129,000.00	129,000.00
	Server Software (Operating System, mist)	1	18,250.00	18,250.00
	DBMS Server Software	1	78,500.00	78,500.00
	Client Computer (Pentium III)	7	26,500.00	185,500.00
	Client Software(OS mist.)	7	4,750.00	33,250.00
	Network Equipment	1	7,750.00	7,750.00
	UPS	1	3,750.00	3,750.00
	Subtotal 3:			456,000.00
	Total Development Cost			844,250.00
2. Operating Cost	2.1 Personnel Cost:			
	Programmer (50 hrs.ea)	1	125.00	6,250.00
	Subtotal 1:			6,250.00
	2.2 Maintenance:			
	Maintenance for Server System			12,000.00
	Maintenance for Client System			6,000.00
	Maintenance for Network Equipment	1		5,000.00
	Subtotal 2			23,000.00
	Total Operating Cost			29,250.00
	Total Project Annual Cost			873,500.00

Table 3.9. Payback Analysis of Residential Sales Information System (Candidate 2), Baht.

Cost Items	Years					
	0	1	2	3	4	5
Development Cost	-873,500.00	-	-	-	-	-
Operation & Maintenance Cost	-	-30,000.00	-31,500.00	-33,075.00	-34,728.75	-36,465.19
Discount factors for 12%	1.000	0.893	0.797	0.712	0.636	0.567
Time-Adjusted costs (adjust to present value)	-873,500.00	-26,790.00	-25,105.50	-23,549.40	-22,087.49	-20,675.76
Cumulative time-adjusted costs over Lifetime	-873,500.00	-900,290.00	-925,395.50	-948,944.90	-971,032.39	-991,708.15
Benefit derived from operation of new system.	-	500,000.00	550,000.00	600,000.00	650,000.00	700,000.00
Discount factors for 12%	1.000	0.893	0.797	0.712	0.636	0.567
Time-Adjusted costs (Adjusted to present value)	0.00	446,500.00	438,350.00	427,200.00	413,400.00	396,900.00
Cumulative time-adjusted benefits over lifetime.	0.00	446,500.00	884,850.00	1,312,050.00	1,725,450.00	2,122,350.00
Cumulative lifetime adjusted cost + benefits.	-873,500.00	-453,790.00	-40,545.50	363,105.10	754,417.61	1,130,641.85

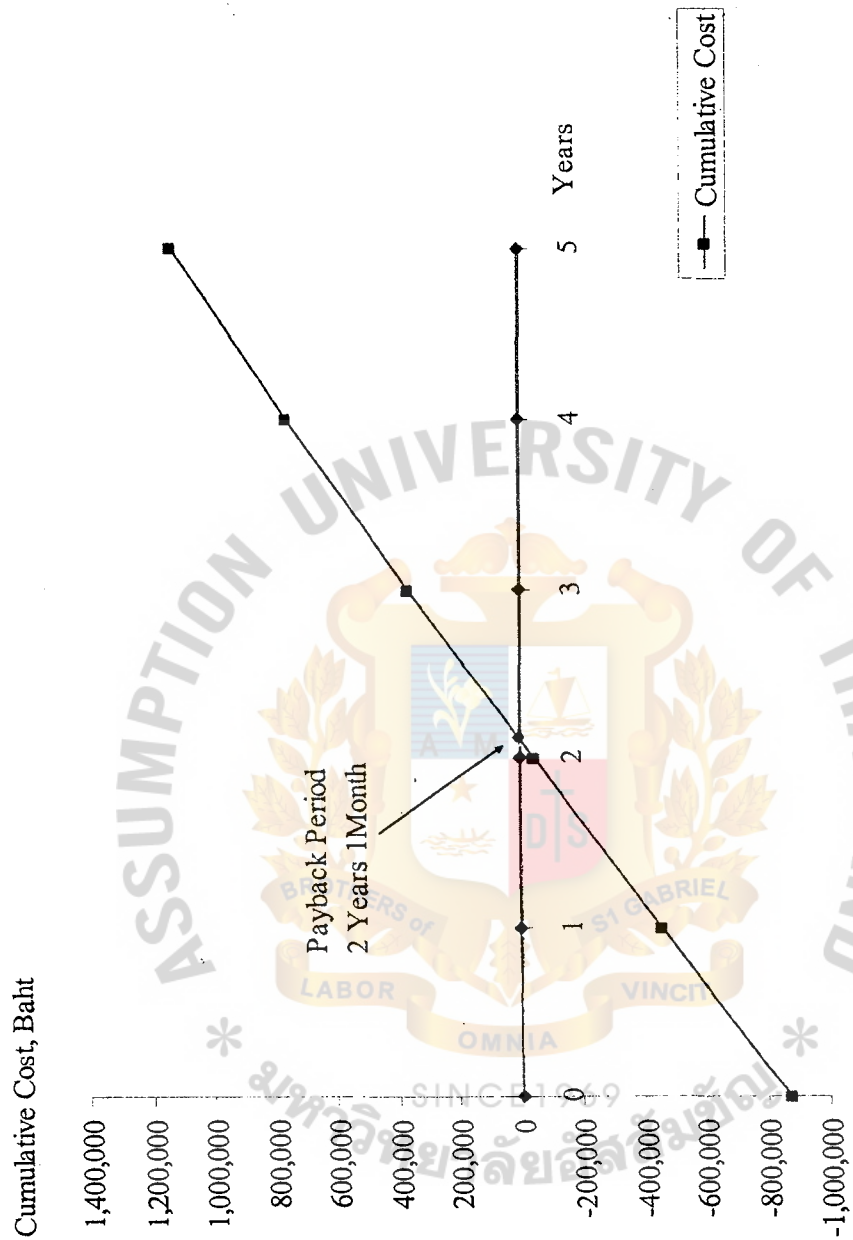


Figure 3.3. Payback Analysis of Residential Sales Information System (Candidate 2).

(3) Estimated Cost for Residential Sales Information System (Candidate 3).

Table 3.10. Estimated Project Cost, Baht.

Cost Items	Description	Amount	Unit Price (/Hr.)	Price
1. Development Cost	1.1 Personnel Cost:			
	Project Manager(620hrs.ea)	1	200	124,000.00
	Programmers (620 hrs. eac)	3	150	279,000.00
	Network Technical Crew(120hrs./ea)	1	150	18,000.00
	Subtotal 1:			421,000.00
	1.2 Expenses:			
	IT Education Co Ltd Software Training (3 hrs./class)	7	6,500	45,500.00
	Administration of Windows 2000 for Server Training (15,000 Baht/student)	1	20,000	20,000.00
	Subtotal 2:			65,500.00
	1.3 New Hardware & Software			
	Server Computer(1800 MHz. Intel Pentium IV Processor)	1	134,820	134,820.00
	Server Software (Operating System, mist)	1	16,853	16,852.50
	DBMS Server Software	1	116,550	116,550.00
	Client Computer (Pentium III)	7	33,705	235,935.00
	Client Software(OS mist.)	7	6,179	43,254.75
	Network Equipment	1	13,482	13,482.00
	UPS	1	11,235	11,235.00
	Subtotal 3:			572,129.25
	Total Development Cost			1,058,629.25
2. Operating Cost	2.1 Personnel Cost:			
	Programmer (50 hrs.ea)	1	268	13,375.00
	Subtotal 1:			13,375.00
	2.2 Maintenance:			
	Maintenance for Server System			15,000.00
	Maintenance for Client System			8,000.00
	Maintenance for Network Equipment	1		5,000.00
	Subtotal 2			28,000.00
	Total Operating Cost			41,375.00
	Total Protect Annual Cost			1,100,004.25

Table 3.1.1. Payback Analysis of Residential Sales Information System (Candidate 3), Baht.

Cost Items	Years					
	0	1	2	3	4	5
Development Cost	-1,100,004.25	-	-	-	-	-
Operation & Maintenance Cost	0.00	-30,000.00	-31500.00	-33,075.00	-34,728.75	-36,465.19
Discount factors for 12%	1.000	0.893	0.797	0.712	0.636	0.567
Time-Adjusted costs (adjust to present value)	-1,100,004.25	-26,790.00	-25,105.50	-23,549.40	-22,087.49	-20,675.76
Cumulative time-adjusted costs over lifetime	-1,100,004.25	-1,126,794.25	-1,151,899.75	-1,175,449.15	-1,197,536.64	-1,218,212.40
Benefits derived from operation of new system	-	400,000.00	450,000.00	500,000.00	550,000.00	600,000.00
Discount factors for 12%	1.000	0.893	0.797	0.712	0.636	0.567
Time-Adjusted costs (adjust to present value)	0.00	357,200.00	358,650.00	356,000.00	349,800.00	340,200.00
Cumulative time-adjusted benefits over lifetime	0.00	357,200.00	715,850.00	1,071,850.00	1,421,650.00	1,761,850.00
Cumulative lifetime time adjusted Cost + benefit	-1,100,004.25	-769,594.25	-436,049.75	-103,599.15	224,113.36	543,637.60

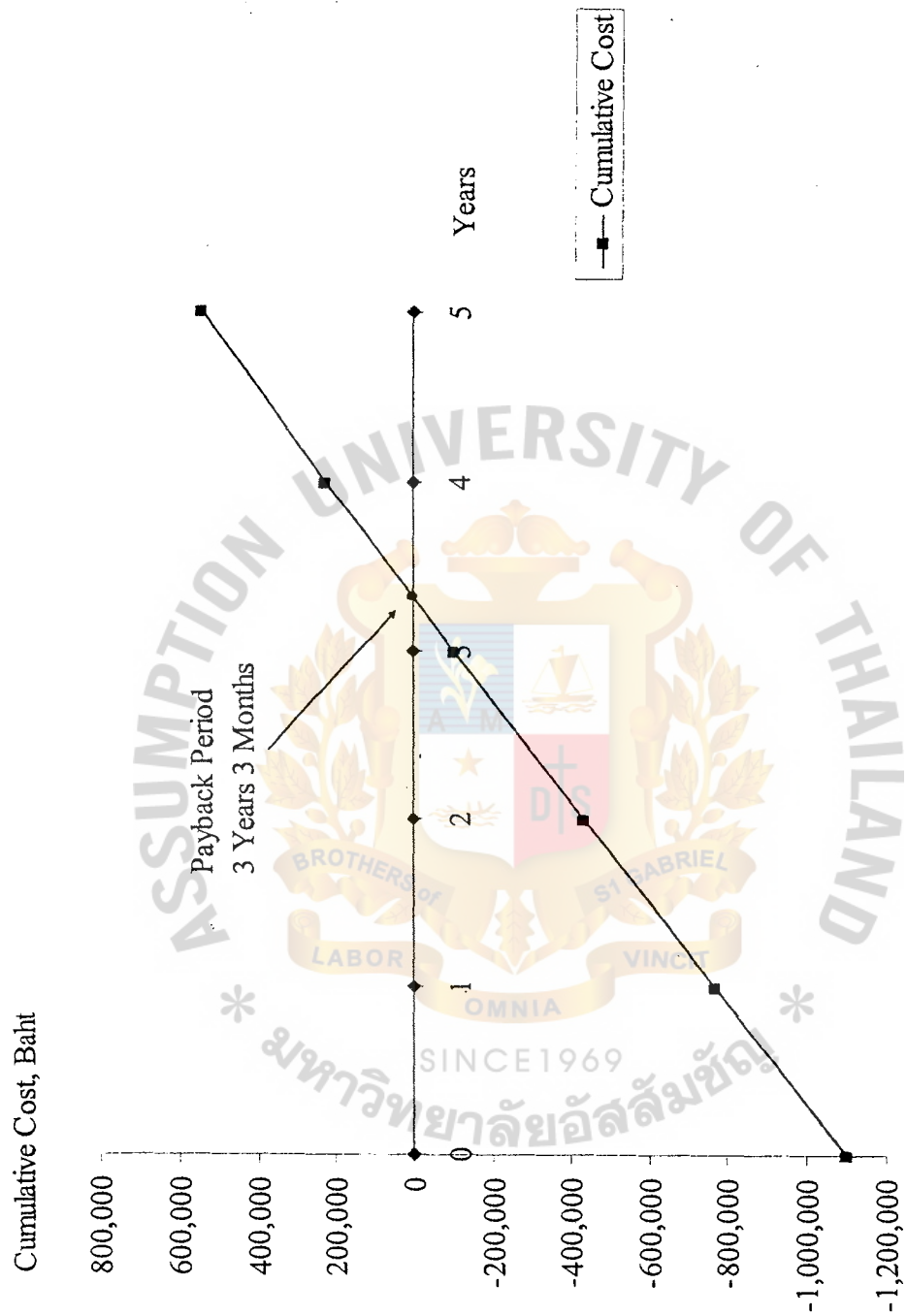


Figure 3.4. Payback Analysis of Residential Sales Information System (Candidate 3).

(4) Benefit Analysis

Having evaluated 3 candidates it is found that candidate 1 the most suitable. The potential benefits are higher profits and lower cost.

Additionally, the benefits are classified as tangible and intangible.

For tangible benefits, the profit gained from the new system operation increases compared to the existing system. Although in the first year of the implementation of the system we have to pay high cost, the monthly and annual savings for the next years will reduce salary of sales staff, save expenses, and increase sales etc.

For the intangible benefits, this system can improve customer and goodwill. The computerized system will improve accuracy and speed to serve customers.

Table 3.12. Manual System Cost Analysis, Baht.

Cost items	Years				
	1	2	3	4	5
<u>Fixed Cost</u>					
Typewriters 12 units @7000	84,000	-	-	-	-
Calculators 12 units@2000	24,000	-	-	-	-
Total Fixed Cost	108,000	0	0	0	0
<u>Operating Cost</u>					
Salary Expenses					
Manager					
Sales and marketing 1 Person@35,000	35,000	38,500	42,350	46,585	51,244
<u>Staff:</u>					
Sales Persons 11 persons@10,000	10,000	121,000	133,100	146,410	161,051
Total Monthly Salary Cost	145,000	159,500	175,450	192,995	212,295
Total Annual Salary Cost	1,740,000	1,914,000	2,105,400	2,315,940	2,547,534
<u>Office Supplies & Misc. Costs:</u>					
Stationary 2,000 per Month	2,000	2,100	2,205	2,315	2,431
Paper 3,000 per Month	3,000	3,150	3,308	3,473	3,647
Utility 2,000 per Month	2,000	2,100	2,205	2,315	2,431
Misc. 2,000 per Month	2,000	2,100	2,205	2,315	2,431
Total Supply & Misc. Cost Monthly	9,000	9,450	9,923	10,419	10,940
Total Supply & Misc. Cost Annual	108,000	113,400	119,070	125,024	131,275
Total Annual Operating Cost	1,848,000	2,027,400	2,224,470	2,440,964	2,678,809
Total Manual Systems Cost	1,956,000	2,027,400	2,224,470	2,440,964	2,678,809

Table 3.13. Computerized System Cost Analysis, Baht.

Cost Items	Years				
	1	2	3	4	5
Fixed Cost					
Hardware Cost :					
Computer Server Cost	126,000	-	-	-	-
Client Computer Cost	175,000	-	-	-	-
Network Equipments Cost	7,500	-	-	-	-
UPS Cost	3,500	-	-	-	-
Total Hardware Cost	312,000	0	0	0	0
Maintenance Cost					
Hardware Maintenance Cost	30,000	-	-	33,000	36,300
Software Maintenance Cost	-	-	-	14,100	15,510
Total Maintenance Cost	30,000	0	0	47,100	51,810
Software Cost					
Computer Server Cost	15,750	-	-	-	-
Client Software Cost	31,500	-	-	-	-
Application Software Cost	282,000	-	-	-	-
DBMS Software Cost	75,000	-	-	-	-
Total Software Cost	404,250	0	0	0	0
Training Cost	26,000	-	-	-	-
Total Training Cost	26,000	-	-	-	-
Implementation Cost					
Total Implementation Cost	772,250	0	0	47,100	51,810
Total Fixed Cost	772,250	0	0	47,100	51,810
Operating Cost					
Salary Expenses					
Manager					
Sales and Marketing 1 Person @35,000	35,000	38,500	42,350	46,585	51,244
Staff :					
Sales Persons 8 persons@8,000	64,000	70,400	77,440	85,184	93,702
Total Monthly Salary Cost	99,000	108,900	119,790	131,769	144,946
Total Annual Salary Cost	1,188,000	1,306,800	1,437,480	1,581,228	1,739,351
Office Supplies & Msc. Costs					
Stationary 2,500 per Month	2,500	2,625	2,756	2,894	3,039
Paper 3,000 per Month	3,000	3,150	3,308	3,473	3,647
Utility 4,000 per Month	4,000	4,200	4,410	4,631	4,862
Miscellaneous 1,500 per Month	1,500	1,575	1,654	1,736	1,823
Total Supply & Msc. Cost Monthly	11,000	11,550	12,128	12,734	13,371
Total Supply & Msc. Cost Annual	132,000	138,600	145,530	152,807	160,447
Total Annual Operating Cost	1,320,000	1,445,400	1,583,010	1,734,035	1,899,798
Total Computerized Systems Cost	2,092,250	1,445,400	1,583,010	1,781,135	1,951,608

Table 3.14. Five Years Accumulated Computerized Cost, Baht.

Year	Total Computerized System Cost	Accumulated Computerized System Cost
1	2,092,250.00	2,092,250.00
2	1,445,400.00	3,537,650.00
3	1,583,010.00	5,120,660.00
4	1,781,134.50	6,901,794.50
5	1,951,607.63	8,853,402.13
Total	8,853,402.13	-

Table 3.15. Five Years Accumulated Manual System Cost, Baht.

Year	Total Manual System Cost	Accumulated Manual System Cost
1	1,956,000.00	1,956,000.00
2	2,027,400.00	3,983,400.00
3	2,224,470.00	6,207,870.00
4	2,440,963.50	8,648,833.50
5	2,678,808.68	11,327,642.18
Total	11,327,642.18	-

Table 3.16. The Comparison of the System Costs between Computerized System and Manual System, Baht.

Year	Accumulated Manual System Cost	Accumulated Computerized System Cost
1	1,956,000.00	2,092,250.00
2	3,983,400.00	3,537,650.00
3	6,207,870.00	5,120,660.00
4	8,648,833.50	6,901,794.50
5	11,327,642.18	8,853,402.13

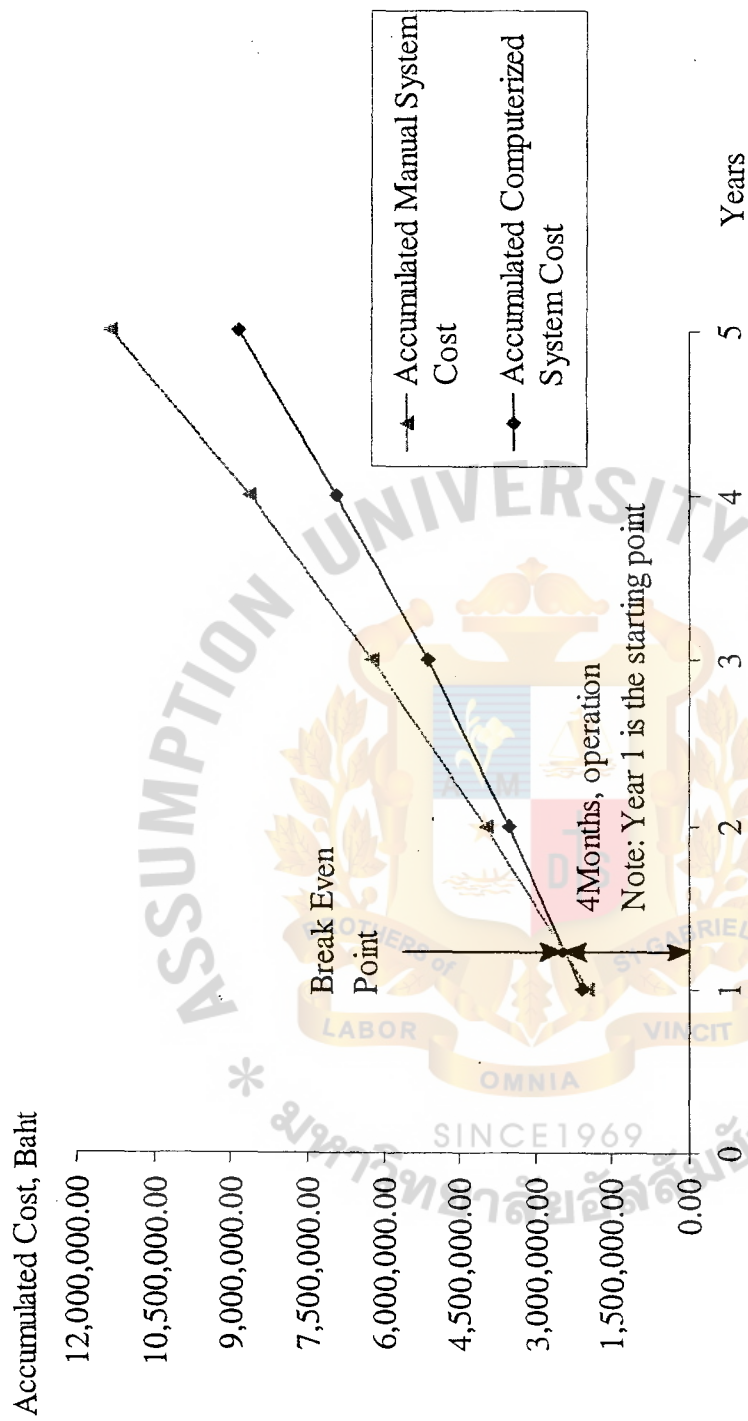


Figure 3.5. Cost Comparison between Manual and Computerized System.

IV. PROJECT IMPLEMENTATION

4.1 Overview of Project Implementation

Upon finishing the design of the new system, it comes to implementation. It translates a technical plan into a usable software. It means, the construction of the new system and the delivery of that system are translated into production address data, processes, interface, and geography primarily from the system building perspective.

It consists of acquisition of equipments, programming, testing and conversion. The system acquisition involves the purchase of package software, hardware and software services. Another important part of systems acquisition is the actual purchase of goods and services from vendors to get the best products at a reasonable price. System conversion makes the acquired hardware and software and coded and tested computer program operational. Alternatives are considered if the new system is judged to be effective and work better than the existing system then testing procedure is operated until it is finally satisfactory. Then tanning will be arranged accordingly. These factors are discussed in detail in the following sections.

4.2 Coding

As the company is using the manual system it is necessary build a new system from scratch. The product application is coded Oracle 8i for database and Developer 6i are applied to create application. The database is installed on the server. The application is coded to run on the client side. Coding is done to ensure that multiple clients can connect to the database at the same time, while integrity of data is not compromised.

4.3 Hardware and Software Installation

To build the network, the company needs to buy server and client computers, and network devices to connect each other and to communicate each other. To provide the system on network, new Local Area Network (LAN) is created so that Oracle 8i database can be installed on the server and application is configured on the server. Clients can connect to the application program through the network and can use any computer to access the database.

The MS Windows 2000 operating system is used for the networking purposes. Oracle 8i database is installed at server and client applications is installed at the client computers. MS office 2000 is also installed at client computers for other office work. Norton Enterprises Anti-Virus program is installed and configured to provide protection against virus for the network.

4.4 Test Plan

After software installation, the next step is to test the system, for which the test plan is divided into 3 steps.

Sub Testing

Since the system is made up of several modules combined together and will provide different functionalities of the proposed application. Tests on individual modules are done to test whether they are functioning well while working on individual basis.

Unit or Program Testing

In this test, various modules which have been tested positively are integrated together as one unit. Rigorous testing are conducted on combined units to test whether they are able to function properly.

System Testing

This test is performed to ensure that application programs written in isolation work properly when integrated and work as single system. For this first database is started and initialized with some test data, application software is run at the client computers and data is fed simultaneously to check integrity of data. Various features of application are checked step by step.

4.5 Conversion

Parallel conversion is a good plan. This approach has overlapped time to ensure that software is running to the satisfaction of the user, and problem, if any, is rectified before the old system is terminated completely. Both old and new systems are used for some period of time for users to gain confidence in the new system and smooth functioning of the office work. The conversion plan is completed in 10 days and has become fully functional.

V. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

Nowadays business is very competitive. Companies make every effort to provide all the services they can to their customers. Information Technology has greatly helped achieving goals of timely, accurate information based on which companies make strategies. With reduction cost of hardware, more and more companies have changed their way of working from manual to computerized system to make accurate and efficient working environment.

With implementation of the new computerized system, working of the company will improve which in turn will be able to serve customers better. The system uses Intel Pentium IV CPU and MS Windows 2000 server which are reasonably priced. The system has Graphical user interface (GUI), which is very user friendly so users are happy to use the new system. The company is set to gain competitive advantage from its competitors since very few companies in this field are using computerized system. For the first year, the investment is quite high as compared to the manual system, but the new system considerably reduces the cost in the long run and the company stands to gain benefits on this account. This system reduces the time required to close the sales considerably and inter-department work is fast since everyone is using the online network system. Most updated information is available to every authorized person which gives staff opportunity to perform their work. Since the information captured is accurate, it helps staff make plans according to the requirements and wastage is minimum, which in turn help saving cost.

The new system ensures that system helps fast, accurate functioning of the office which increases revenue and increases general services to the customers. The degree of achievement of proposed system is shown in Table 5.1.

Table 5.1. The Degree of Achievement of Proposed System.

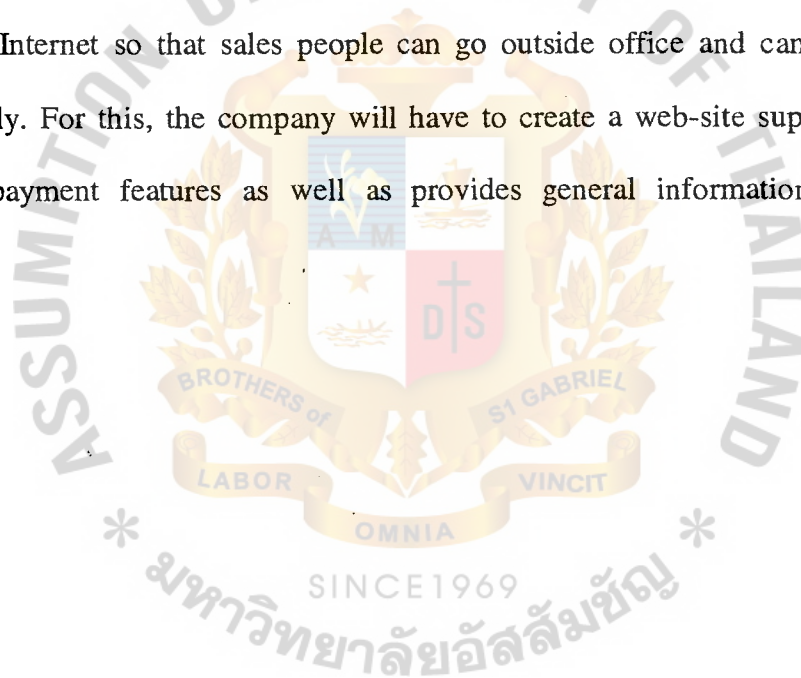
Process	Existing System	Proposed System
Selling data caption process	At least 30 minutes	2 minutes
Collection data caption process	At least 1 hour	2 minutes
Payment checking process	At least 1 hour	Less than 2 minutes
Sharing information process	At least 1 hour	3 minutes

- (1) Selling data caption process: The proposed system is able to keep all sales information of products, so it is easy to extract the needed information from this system.
- (2) Collection data caption process: For the new information system, on-line data caption of the company will be arranged and kept in form of database management system, that is easy to maintain, retrieve, modify and manage for large information.
- (3) Payment checking process: The new system can check the total payment made for a house so that this house can be transferred. If the house payment is not completed the program will give message that payment has not been completed for this house.
- (4) Sharing information process: The computerized information system increases performance of the company to collaborate all information along related departments.

5.2 Recommendations

More and more offices go for complete automation. These companies are able to provide good services to their customers, hence able to have big market share. As customers use more and more IT products, They are very much active and have the latest information. To serve such customers, the companies have change the way they

provide information to the public. For example, more and more companies are providing information on the Internet so that anyone can visit their website and have required information. Needless to say, companies which are not providing information to the customers are losing potential customers. Not only the customers can visit the web-site of the company and can have information they require, but also they can place orders online which greatly reduces the cost of sales. Customers can go to the web site and can contact the online customer service representatives and get answers to their queries. It will be better for the company to provide information about their products and services by creating a web-site. In the future the company can modify the system to be on the Internet so that sales people can go outside office and can conduct sales conveniently. For this, the company will have to create a web-site supporting on-line booking, payment features as well as provides general information to the public.





APPENDIX A
USER INTERFACE DESIGN



Figure A.1. Login Screen.

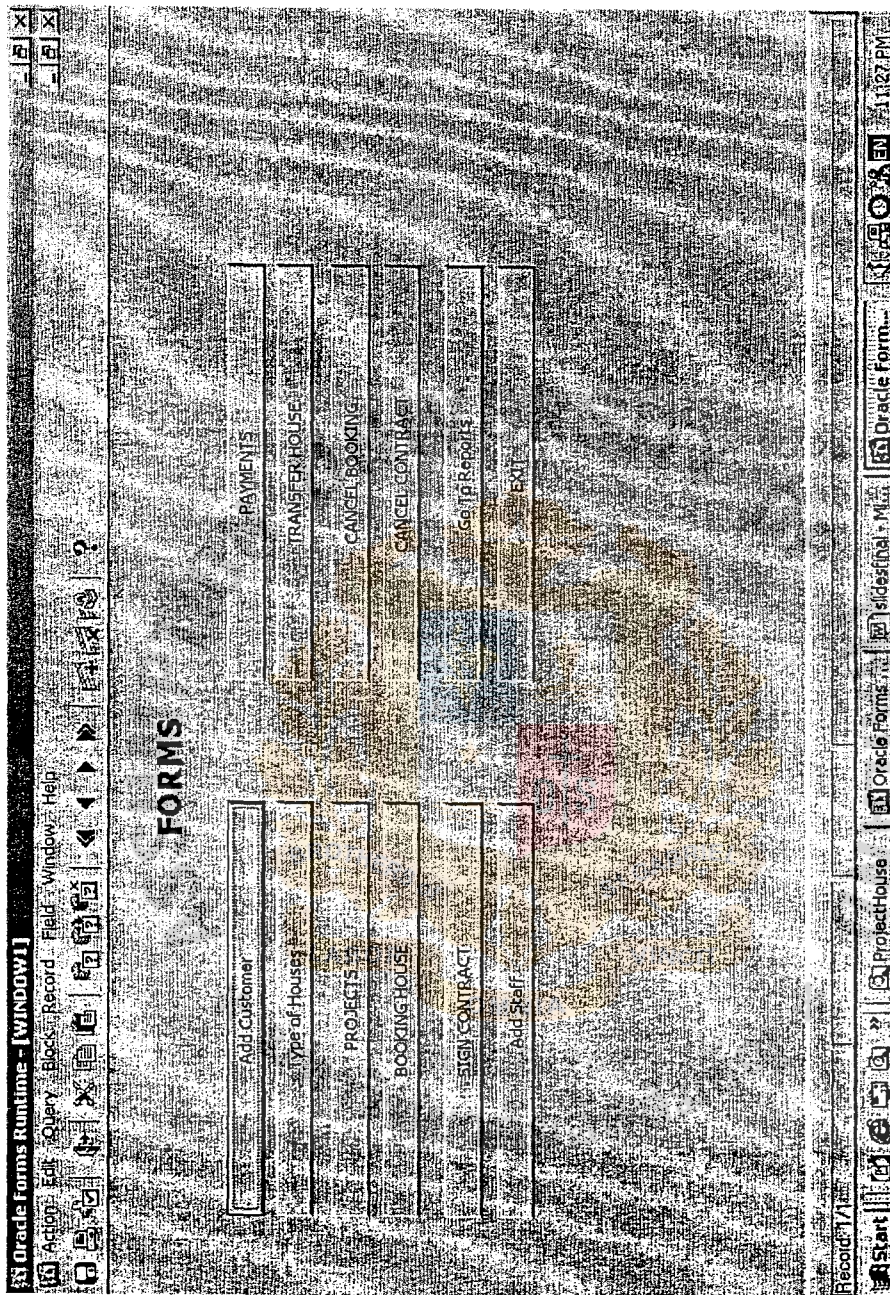


Figure A.2. Main Menu Forms.

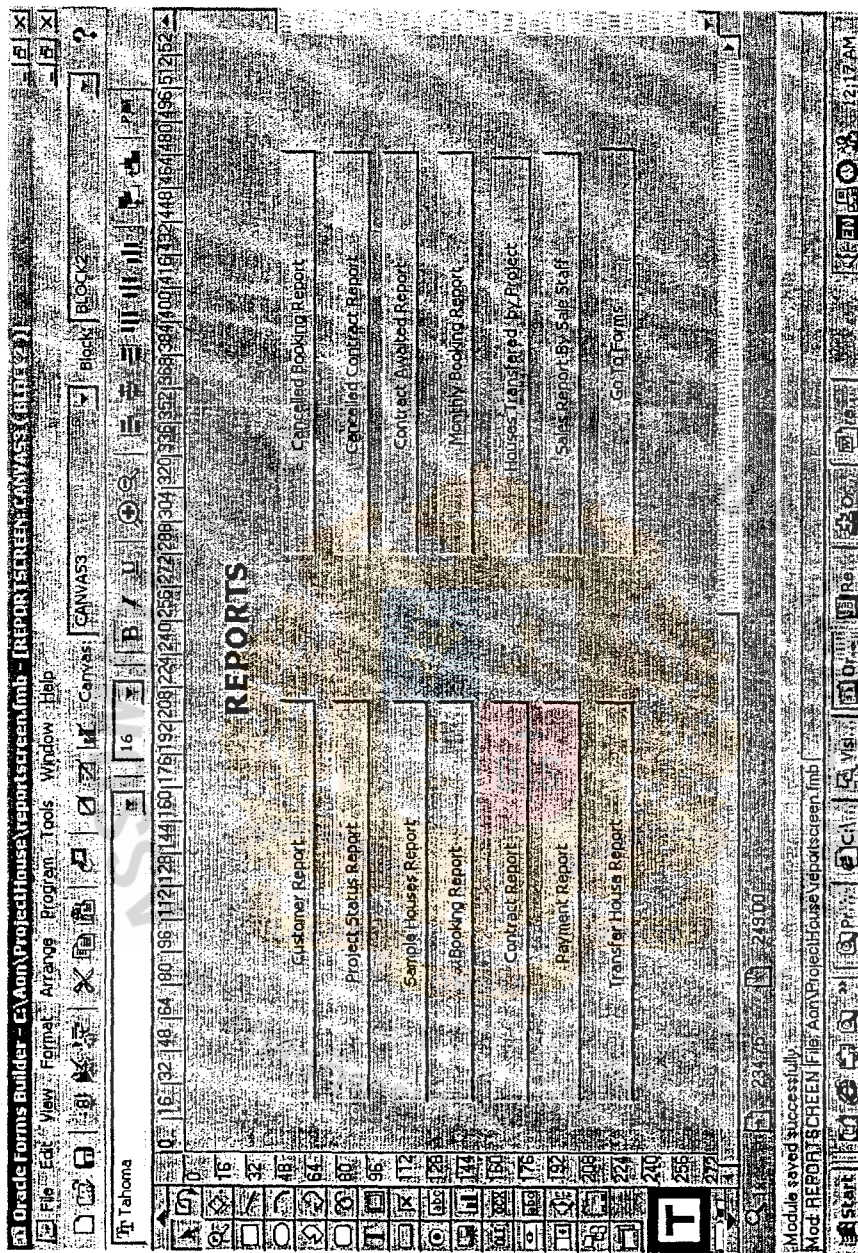


Figure A.3. Main Menu Reports.

Oracle Forms Runtime - [WINDOW1]

Action Edit Query Block Record Field Window Help

Record: 1/1

Start Oracle Forms 4.1i ProjectHouse Oracle Forms 4.1i Oracle Form... 11:20 AM

STAFF

Staff ID	Aon
Staff Name	Morrane Prance
Password	***
Status	Active

Figure A.4. Staff Account Entry.

Oracle Forms Runtime - [WINDOW1]

Action Edit Query Block Record Field Window Help

Record 1/7

Start

ProjectHouse

Oracle Forms

slides (n)

Min

Oracle Form

10:53 PM

PROJECT DETAILS

Project ID: 1

Project Name: Ban Sai Lom

Description: Phuket

Total houses: 700

Houses Sold: 4

Balance: 596

Status: Active

Figure A.6. Project Entry.

Oracle Forms Runtime - [WINDOW1]

File Edit View Query Block Record Field Window Help


Type of Houses

House ID	P102
House Name	Palchard
House Description	Single storey 3 bedrooms, 1 bathroom
Covered Area	100 Square Meter
Cost Price	1,990,000
Sales Price	2,150,000
Construction Time	6 Months
Status	ACTIVE



Record: 1/1

Start Oracle Forms... Oracle Form... Sidesfina... M... Project house... Oracle Form... 0:55 PM

Figure A.7. Sample House Entry.

Oracle Forms Runtime - [WINDOW1]

Action Edit Query Block Record Field Window Help

BOOKINGS

Booking ID	P6	Project ID	1	Sales Price	2,150,000
Book Data	P9-JUN-2002	Plot ID	6	Booking Amount	50,000
Customer ID	1	House ID	P-102	Discount Amount	100,000
First Name	Mr. Somsak	House Name	Pellchard	Contract Amount	215,000
Last Name	Pontapong	House Description	Single storey 3 bedrooms, 1 bathroom	Number of Installments	10
ID Card No.	3120100415974	Covered Area	100 meter square	Installment Amount	21,500
Address	123/B Tiwanon Rd.	Construction Time	6 months	Transfer Amount	1,785,000
Province	Northburi	Contract Date	09-JUL-2002	Balance Amount	2,100,000
Phone	02-5249874	Status	ACTIVE	Staff Name	AOB
Email	somsak@siam.co.th				

Record 1/1

Start Oracle Forms Projecthouse Sides - Micros Oracle Form...

Figure A.8. Booking Houses.

Oracle Forms Runtime - [WINDOW1]

File Edit Query Block Record Field Window Help

Payment ID: 22 Project Name: Ban Sai Long First Name: Mr. Sornlek Last Name: Sornlek

Payment Date: 18-JUN-2002 Plot ID: P-102 Sub District: Nong

Contract ID: 1 House ID: P-102 Price: 2150000 Province: Nonthaburi

Payment Type: Installment Payment Discount: 1500000

Payment Amount: 21,600.00 Booking Amount: 50000

Status: Active

House Address: 72/8 Tiwanon Rd. Phone: 12-2241874 Email: sornlek@slam.co.th

Record: 1/1

Start Oracle Forms... Project House Oracle Forms... Oracle Forms... 11:00 PM

Figure A.10. Entering Payment Details.



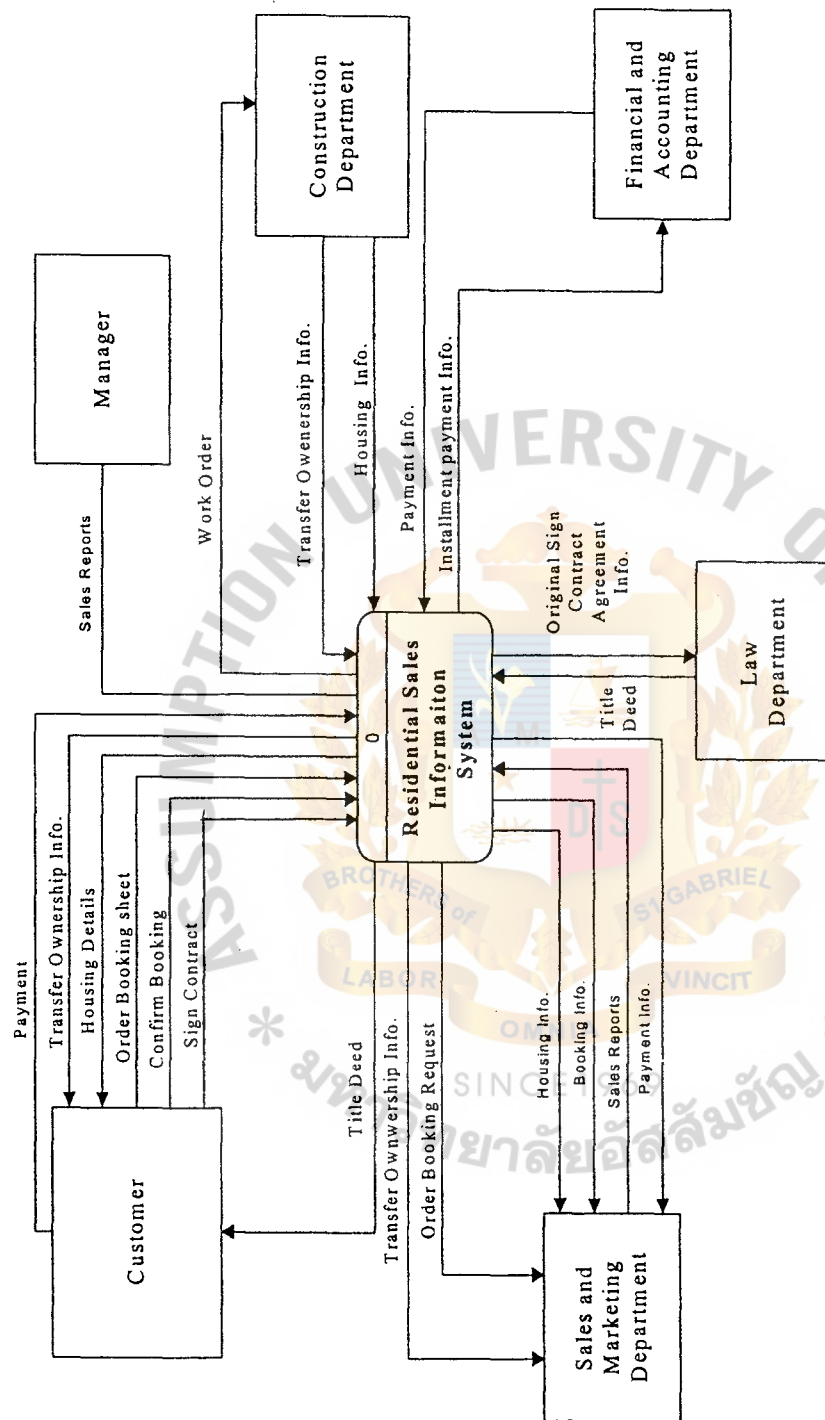


Figure B.1. The Context Diagram of Residential Sales Information System.

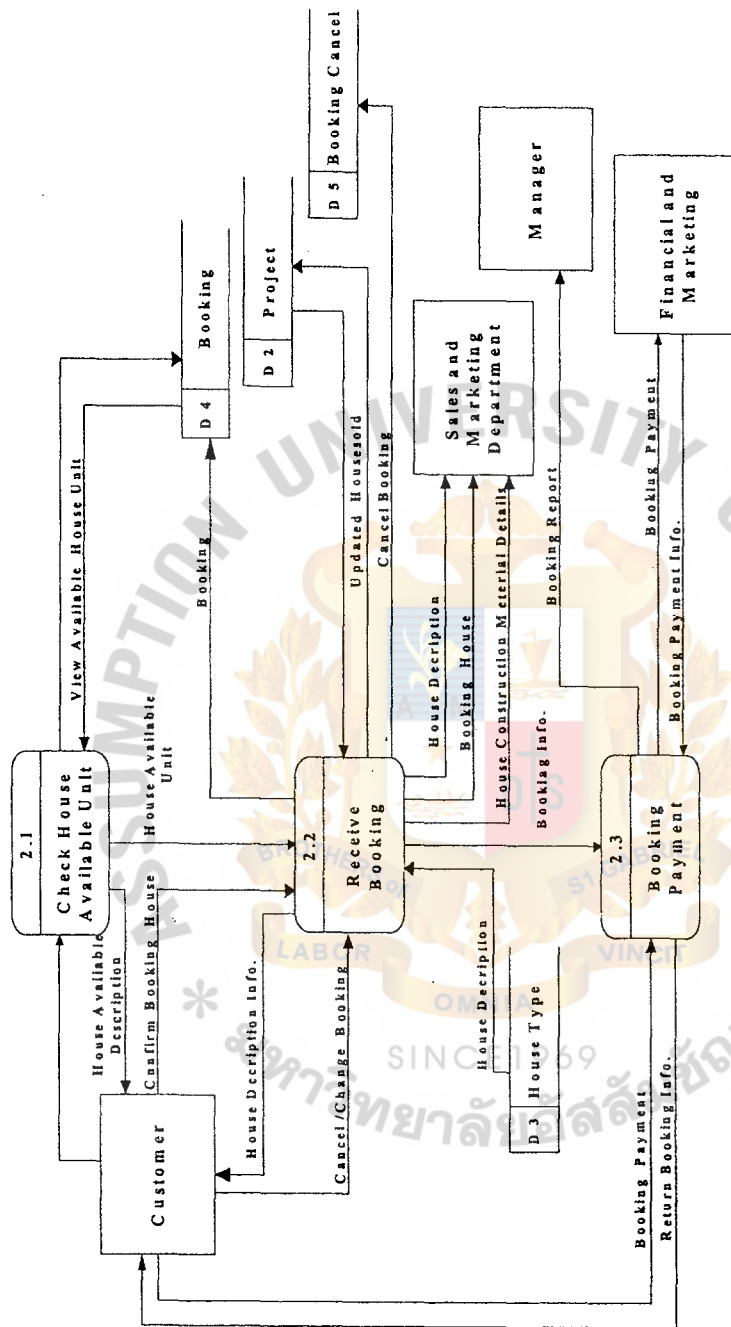


Figure B.3. Data Flow Diagram of Make Booking Subsystem.

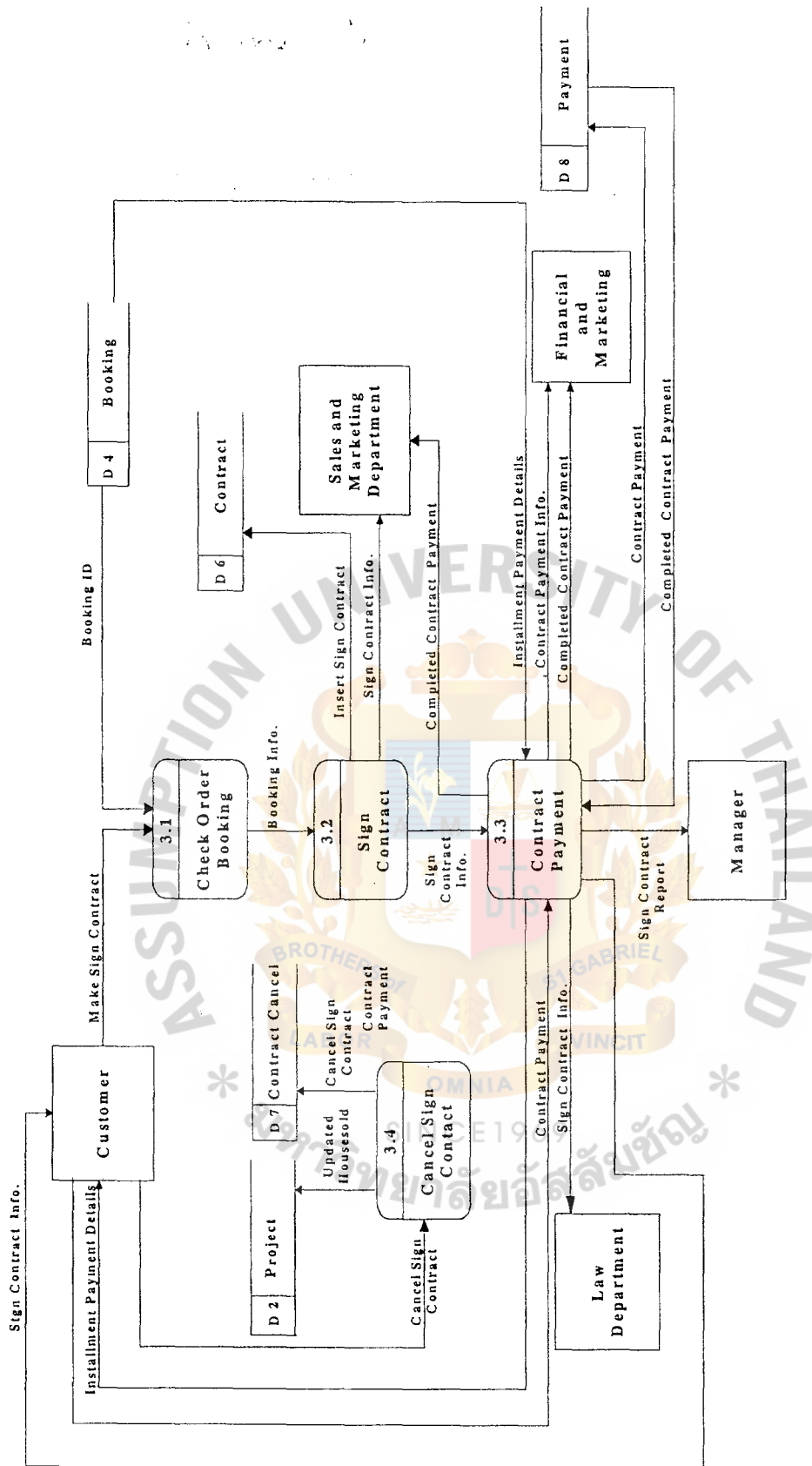


Figure B.4. Data Flow Diagram of Make Contract Subsystem.

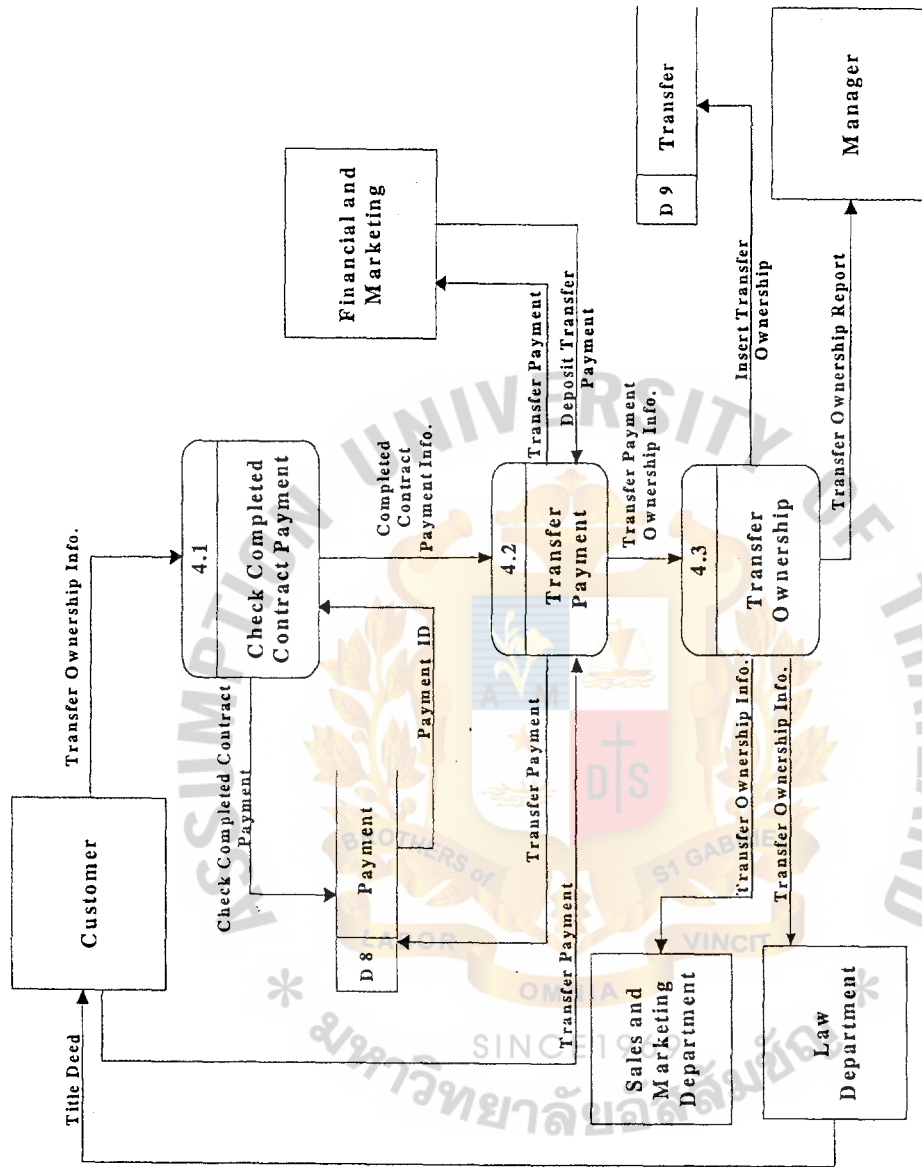


Figure B.5. Data Flow Diagram of Transfer Ownership Subsystem.

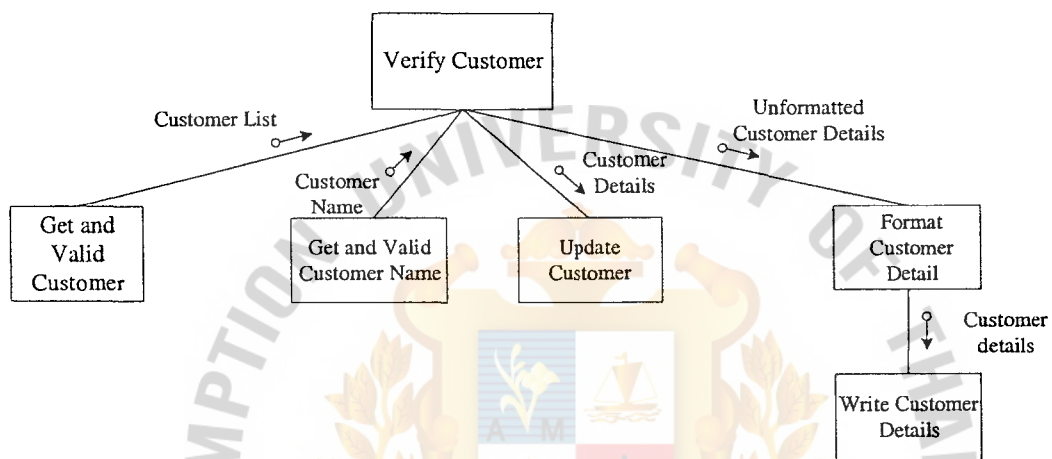


Figure B.6. The Structure Chart of Verify Customer Subsystem.

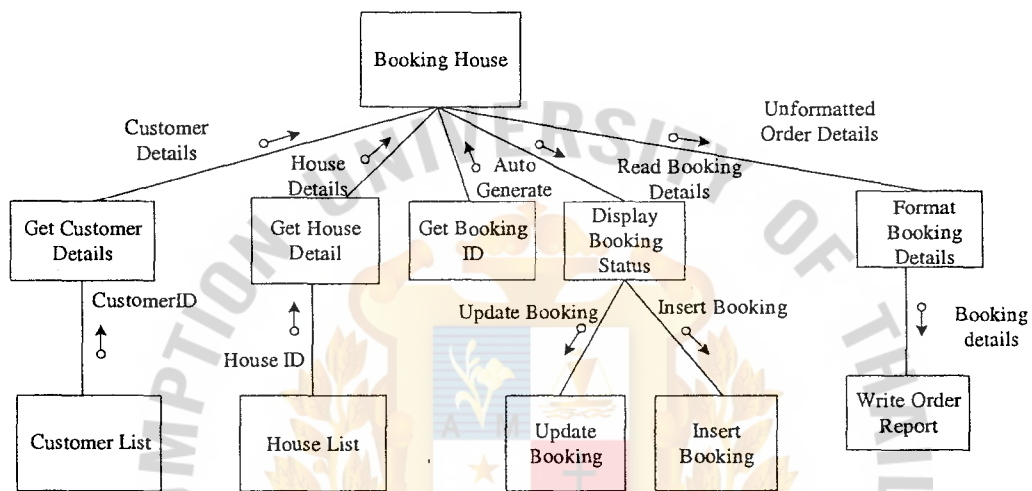


Figure B.7. Structure Chart of Booking House Subsystem.

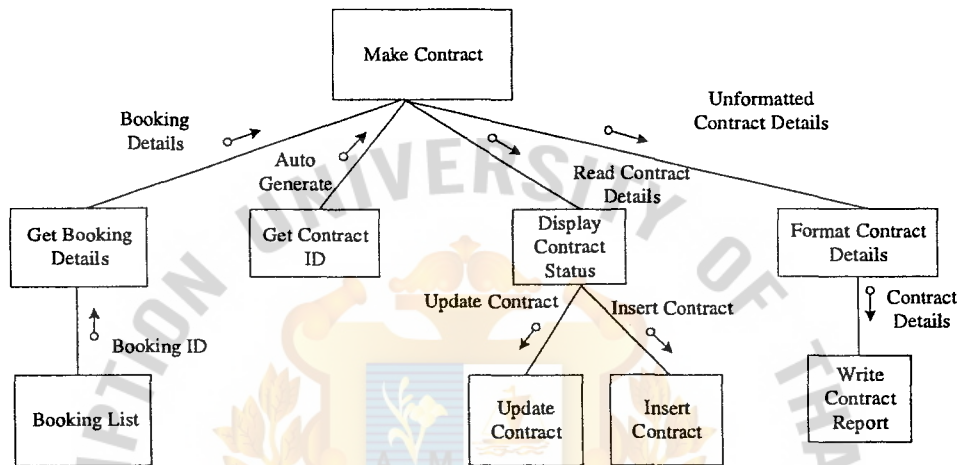


Figure B.8. The Structure Chart of Make Contract Subsystem.

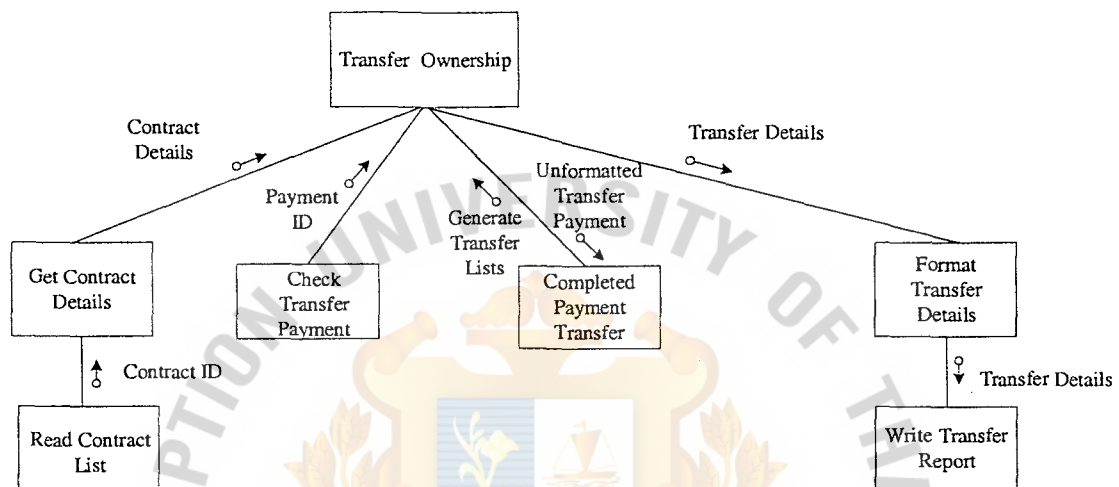


Figure B.9. Structure Chart of Transfer Ownership Subsystem.



APPENDIX C

PROCESS SPECIFICATION DESIGN

PROCESS SPECIFICATION

Table C.1. Process Specification of Check Order Keying Process.

Items	Description
Process Name:	Check Available Unit
Data In:	Customer Order Request
Data Out:	Available Unit Project Information House Type Information
Process:	<ol style="list-style-type: none"> 1. Receive order from customer 2. Check project and house status If there are available then 3. Display these houses available unit and description
Attachment:	Project database House type database

Table C.2. Process Specification of Check Order Booking Process.

Items	Description
Process Name:	Check Status Customer
Data In:	Customer information
Data Out:	Customer status information
Process:	<ol style="list-style-type: none"> 1. Receive customer information 2. Check status customer with customer database 3. If new customer then create new customer record in customer database
Attachment:	Customer Database

Table C.3. Process Specification of Booking Process.

Items	Description
Process Name:	Print Booking Order
Data In:	Customer order booking information
Data Out:	Booking information Booking payment information
Process:	<ol style="list-style-type: none"> 1. Receive confirm booking information 2. Update project and house status 3. Record booking information in booking database 4. Check booking payment detail 5. Record customer booking payment in payment database
Attachment:	Project database House type database Booking database Payment database

Table C.4. Process Specification of Customer Make Contract Process.

Items	Description
Process Name:	Make Contract
Data In:	Customer booking information
Data Out:	Contract information Contract payment information
Process:	<ol style="list-style-type: none"> 1. Receive confirm booking information 2. Check contract information 3. Record contract information in contract database
Attachment:	Contract database Booking database

Table C.5. Process Specification of Checking Payment Process.

Items	Description
Process Name:	Completed Install Payment
Data In:	Customer payment deposit
Data Out:	Transfer owner house information
Process:	<ol style="list-style-type: none"> 1. Receive deposit install payment information 2. Update payment in payment database if install payment complete then 3. Display transfer information
Attachment:	Payment database Transfer database

Table C.6. Process Specification of Checking Transfer Process.

Items	Description
Process Name:	Transfer Ownership
Data In:	Transfer payment deposit
Data Out:	Title deed Transfer house information
Process:	<ol style="list-style-type: none"> 1. Receive transfer payment deposit information if it completed then 2. Check transfer details from transfer database 3. Record transfer house ownership information 4. Update project and house status 5. Generate title deed
Attachment:	Transfer database Project database House type database



APPENDIX D
DATABASE DESIGN

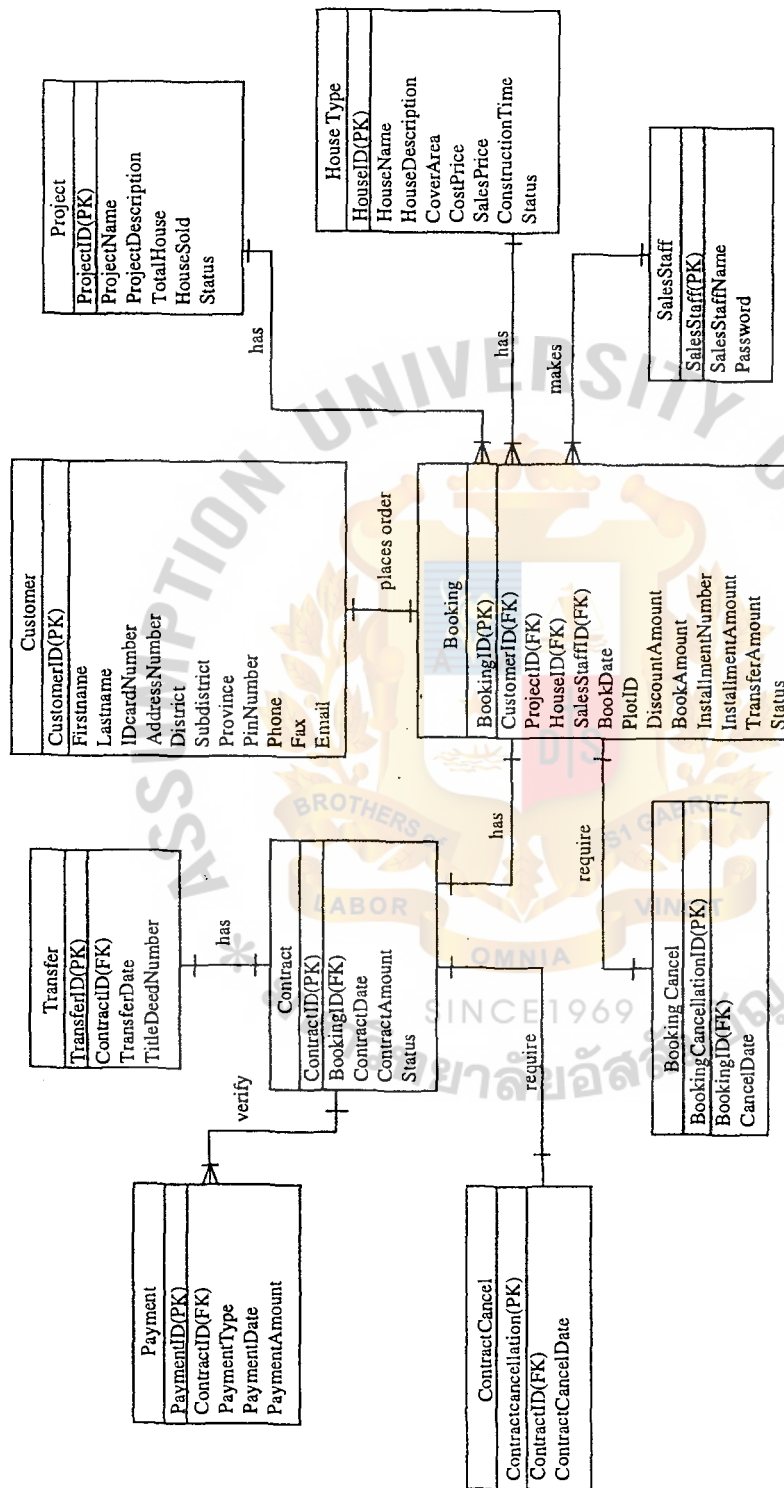


Figure D.1. Entity Relationship Diagram of Residential Sales Information System.

Table D.1. Structure of HouseType Table.

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to Table	Check	Key Type
1	houseId	varchar2(10)	Y	Y		Booking		Primary Key
2	houseName	varchar2(30)						Attribute
3	houseDesc	varchar2(50)						Attribute
4	coverArea	number(5,2)						Attribute
5	costPrice	number(8,2)						Attribute
6	salesPrice	number(8,2)						Attribute
7	constTime	number(8,2)						Attribute
8	status	varchar2(1)					Y	Attribute

Table D.2. Structure of Customer Table.

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to Table	Check	Key Type
1	customerId	varchar2(30)	Y	Y		Booking		Primary Key
2	firstname	varchar2(30)						Attribute
3	lastname	varchar2(30)						Attribute
4	Idcardno	number(10)						Attribute
5	stadd	varchar2(50)						Attribute
6	dist	varchar2(30)						Attribute
7	subdist	varchar2(30)						Attribute
8	province	varchar2(30)						Attribute
9	pin	number(8)						Attribute
10	phone	number(10)						Attribute
11	fax	number(10)						Attribute
12	email	varchar2(30)						Attribute

Table D.3. Structure of Project Table.

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to Table	Check	Key Type
1	projectId	Varchar2(10)	Y	Y		Booking		Primary Key
2	Projectname	Varchar2(30)						Attribute
3	Projectdescription	Varchar2(50)						Attribute
4	totalhouses	Number(3)						Attribute
5	housesold	Number(3)						Attribute
6	status	Varchar2(1)					Y	Attribute

Table D.4. Structure of Booking Table

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to Table	Check	Key Type
1	bookingId	varchar2(10)	Y	Y		Contract		Primary Key
2	customerid	varchar2(10)	Y	Y				Foreign Key
3	projectId	varchar2(10)	Y	Y				Foreign Key
4	houseid	varchar2(10)	Y	Y				Foreign Key
5	staffid	number(8)						Foreign Key
6	bookdate	date						Attribute
7	plotid	varchar2(10)						Attribute
8	discountamount	number(8)						Attribute
9	bookamount	number(8)						Attribute
10	installmentnumber	number(3)						Attribute
11	installmentamount	number(8)						Attribute
12	transferamount	number(8)						Attribute
13	status	varchar2(1)					Y	Attribute

Table D.10. Structure of SalesStaff Table.

No	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to Table	Check	Key Type
1	Salestaffid	varchar2(10)	Y	Y		Booking		Primary Key
2	Salestaffname	varchar2(20)						Attribute
3	Password	varchar2(10)						Attribute



Quality Home Co., Ltd.

Date 12/6/02

Customer ID	Customer Name	Customer Surname	ID Card No.	Address Number	Sub District	District	Province	Post Code	Phone Number	Fax Number
1	Mr. Saroj	Rojnucharin	3120512940012	12 Soi3	Huamark	Bangkapi	Bangkok	10240	02-3004593	02-7192978
2	Mr. Pransuang	Cheanninsri	3120100520001	87/13/16 Sukhapiban2	Klongkum	Bungkum	Bangkok	10300	01-7324964	-
3	Mrs. Siriporn	Nilgianskul	3120758048612	119/9 Ramall	Samsean	Dusit	Bangkok	10700	02-8845128	02-4359026
4	Ms. Umaporn	Waiwitlikhit	3120212345677	61/3	Bangmod	Jomthong	Bangkok	10150	01-2323333	02-8956312
5	Mr. Tharadol	Kunathikom	3120477245012	336 Ladprao 63	Chokchai4	Ladprao	Bangkok	10230	02-5140664	02-9332308
6	Mr. Paiboon	Singsri	3120200367894	45/8 Ladprao63	Bangkhen	Bangkapi	Bangkok	10310	02-9331189	-
7	Ms. Krissana	Khemaudom	3120578945612	191/3 Thoethai	Phayathai	Ratchateve	Bangkok	10160	01-8603123	02-53535312

Figure E.1. Customer Report.

Quality Home Co., Ltd.

Project ID	Project Name	Description	Total Houses	Houses Sold	Status
1	Ban Sai Lom	20 Rai Phuket	700	4	Yes
2	Ban Sai Mai	40 Rai Phuket	1,500	5	Yes
3	Ban Sai Nam	20 Rai Bangkok	700	1	Yes
4	Ban Sai Far	40 Rai Bangkok	1,500	1	Yes

Figure E.2. Projects Report.

Home Quality Co., Ltd.





House ID: P-101 House Name: Palichard House Description: Two Stories 3 bedrooms, 1 bathroom Cover Area : 100 square meter Cost Price: 1,990,000 Baht Sales Price: 2,150,000 Baht Construction Time: 6 Months	
House ID: P-102 House Name: Palichard House Description: Two Stories 3 bedrooms, 2 bathrooms Cover Area : 120 square meter Cost Price: 2,400,000 Baht Sales Price: 2,640,000 Baht Construction Time: 11 Months	
House ID: K-101 House Name: Krew House Description: Two stories 3 bedrooms, 2 bathrooms Cover Area: 120 square meter Cost Price : 8,200,000 Baht Sales Price: 11,000,000 Baht Construction Time: 12 Months	
House ID: T-101 House Name: Tantawan House Description: Two stories 3 bedrooms 2 bathrooms Cover Area: 120 square meter Cost Price : 3,900,000 Baht Sales Price: 4,500,000 Baht Construction Time; 12 Months	

Figure E.3. Types of Houses Report.

Quality Home Co., Ltd.

Date 30 June 02

Project Name: Ban Sai Far

Booking ID	Book Date	House ID	House Name	Plot ID	Sales Price	Customer ID	Customer Name	Phone	Booking Amount
1	4 June 02	P-102	Parichard	1	2,640,000	2	Mr.Pransuang	01-7324964	50,000

Total Houses Booked: 1

Total Booking Amount : 50,000 Baht

Project Ban Sai Lom

Booking ID	Book Date	House ID	House Name	Plot ID	Sales Price	Customer ID	Customer Name	Phone	Booking Amount
1	6 June 02	K-101	Krew	15	11,000,000	5	Ms. Umaporn	01-2323232	50,000
2	11 June 02	T-101	Tantawan	11	4,500,000	6	Mr. Paiboon	02-5140664	50,000
3	16 June 02	P-102	Parichard	50	2,640,000	8	Ms. Krissana	02-4574541	50,000
4	28 June 02	P-101	Parichard	87	2,150,000	3	Mrs. Siriporn	02-8845128	50,000

Total Houses Booked: 5

Total Booking Amount: 200,000 Baht

Figure E.4. Houses Booked Report.

Quality Home Co., Ltd.

Project Name: Ban Sai Far

Contract ID	Contract Date	House ID	House Nmae	Plot ID	Sales Price	Customer ID	Customer Name	Phone	Contract Amount
1	4 July 02	P-102	Parichard	1	2,640,000	2	Mr. Pransuang	01-7324964	264,000

Total Customer made contract: 1

Total Contract Amount : 264,000 Baht

Project Ban Sai Lom

Contract ID	Contract Date	House ID	House Nmae	Plot ID	Sales Price	Customer ID	Customer Name	Phone	Contract Amount
1	4 July 02	P-101	Parichard	1	2,150,000	2	Mr. Pransuang	01-7324964	215,000
2	6 July 02	K-101	Krew	15	11,000,000	5	Ms. Umaporn	01-2323232	11,000
3	11 July 02	T-101	Tantawan	11	4,500,000	6	Mr. Paiboon	02-5140664	450,000
4	16 July 02	P-102	Parichard	50	2,640,000	8	Ms. Krissana	02-4574541	264,000
5	28 July 02	P-101	Parichard	87	2,150,000	3	Mrs. Sirporn	02-8845128	215,000

Total Customer Signed Contract: 5

Total Contract Amount: 1,254,000 Baht

Figure E.5. Signed Contract Report

Quality Home Co., Ltd.

Project Name Ban Sai Lom

House ID P-101 Name Parichard Sale Price : 2,640,000 Plot ID:1

Customer ID:1 Customer Name : Mr. Paiboon

Payment ID	Payment Type	Payment Date	Payment Amount
1	Contract	4/7/02	26,400
2	Installment	4/8/02	26,400
3	Installment	4/9/02	26,400
4	Installment	4/9/02	26,400
5	Installment	4/9/02	26,400
6	Installment	4/9/02	26,400
7	Installment	4/9/02	26,400
8	Installment	4/9/02	26,400
9	Installment	4/9/02	26,400
10	Installment	4/9/02	26,400
11	Transfer	4/9/02	237,600
Total			2,640,000

Figure E.6. Payment Report.

Quality Home Co., Ltd.

Staff name AON

Booking ID	Booking Date	House ID	Plot ID	Customer ID	Customer Name	Phone	Booking Amount	Project Name
1	4/3/02	P-101	22	5	Mr. Tharadol	01-2323232	50,000	Ban Sai Lom
3	4/5/02	P-101	15	6	Mr. Paiboon	02-5140664	50,000	Ban Sai Lom
4	25/5/02	P-102	20	5	Mr. Tharadol	01-2323232	50,000	Ban Sai Nam
5	30/6/02	T-101	11	1	Mr. Saroj	02-3004593	50,000	Ban Sai Lom
12	1/7/02	K-101	5	3	Mrs. Siriporn	02-8845128	50,000	Ban Sai Mai
15	15/8/02	P-102	32	5	Mr. Tharadol	01-2323232	50,000	Ban Sai Lom

Total Booking: 6

Total Booking Amount: 300,000 Baht

Staff Name AOR

Booking ID	Booking Date	House ID	Plot ID	Customer ID	Customer Name	Phone	Booking Amount	Project Name
14	30/8/02	K-101	50	10	Mr. Pong	01-4561231	50,000	Ban Sai Lom
15	30/8/02	T-101	62	2	Mr. Pransuang	01-7324964	50,000	Ban Sai Lom
16	30/8/02	P-101	9	8	Ms. Krissana	02-4574541	50,000	Ban Sai Lom

Total Booking: 3

Total Booking Amount: 150,000 Baht

Figure E.7. Booking Report by Sales Staff.

Quality Home Co., Ltd.

Transfer ID	Transfer Date	Title Deed No.	Transfer Amount	Project Name	House ID	Plot ID	Customer Name	Phone
1	1/2/02	11115	2,367,000	Ban Sai Lom	P-101	21	Mr. Paiboon	02-8541472
2	4/2/02	11116	1,735,000	Ban Sai Lom	P-102	12	Mrs. Nongnoi	01-3321456
3	15/3/02	11117	2,367,000	Ban Sai Lom	P-101	9	Mr. Sarinee	01-7894561
4	20/4/02	11118	4,582,000	Ban Sai Lom	T-101	2	Mr. Sombat	02-3365487
5	1/5/02	11119	4,582,000	Ban Sai Lom	T-101	30	Mr. Suwannmaree	02-9770731

Total Transfer: 5

Total Transfer Amount: 15,633,000 Baht

Figure E.8. Houses Transfer Report.

Quality Home Co., Ltd.

Project Name: Ban Sai Lom

Transfer ID	Transfer Date	Title Deed No.	Transfer Amount	House ID	Plot ID	Customer Name	Phone
1	1/2/02	11115	2,367,000	P-101	21	Mr. Paiboon	02-8541472
2	4/2/02	11116	1,735,000	P-102	12	Mrs. Nongnoi	01-3321456
3	15/3/02	11117	2,367,000	P-101	9	Mr. Sarinee	01-7894561
4	20/4/02	11118	4,582,000	T-101	2	Mr. Sombat	02-3365487
5	1/5/02	11119	4,582,000	T-101	30	Mr. Suwannmaree	02-9770731

Total Transfer: 5

Total Transfer Amount: 15,633,000 Baht

Project Name: Ban Sai Far

Transfer ID	Transfer Date	Title Deed No.	Transfer Amount	House ID	Plot ID	Customer Name	Phone
6	11/2/02	11121	2,367,000	P-101	21	Mr. Parakit	01-2311235
7	4/2/02	11116	1,735,000	P-102	12	Mrs. Supin	01-5691120

Total Transfer : 2

Total Transfer Amount : 4,102,000 Baht

Figure E.9. Houses Transferred by Project.

Quality Home Co., Ltd.

Date 30 June 02

Project Name: Ban Sai Far

Booking ID	Book Date	House ID	House Name	Plot ID	Sales Price	Customer ID	Customer Name	Phone	Booking Amount
1	4 June 02	P-102	Parichard	1	2,640,000	2	Mr. Pransuang	01-7324964	50,000

Total Houses Booked: 1

Total Booking Amount : 50,000 Baht

Project Ban Sai Lom

Booking ID	Book Date	House ID	House Name	Plot ID	Sales Price	Customer ID	Customer Name	Phone	Booking Amount
1	4 June 02	P-101	Parichard	1	2,150,000	2	Mr. Pransuang	01-7324964	50,000
2	6 June 02	K-101	Krew	15	11,000,000	5	Ms. Umaporn	01-2323232	50,000
3	11 June 02	T-101	Tantawan	11	4,500,000	6	Mr. Paiboon	02-5140664	50,000
4	16 June 02	P-102	Parichard	50	2,640,000	8	Ms. Krissana	02-4574541	50,000
5	28 June 02	P-101	Parichard	87	2,150,000	3	Mrs. Siriporn	02-8845128	50,000

Total Houses Booked: 5

Total Booking Amount: 250,000 Baht

Figure E.10. Monthly Booking Report.

Quality Home Co., Ltd.

Project Name : Ban Sai Far
Plot ID:1

Booking Cancellation ID	Cancellation Date	House ID	Sales Price	Customer Name	Surname	Phone
1	5/6/02	P-102	2,150,000	Mr. Saroj	Rojnuchari	02-3004593

Total Sales Price 2,150,000 Baht
Number of House : 1
Count : 1

Project Name : Ban Sai Mai
Plot ID:4

Cancellation ID	Cancellation Date	House ID	Sales Price	Customer Name	Surname	Phone
2	12/7/02	K-101	11,000,000	Mrs. Panida	Indhasorn	02-6695105

Total Sales Price: 11,000,000 Baht
Number of House : 1
Count : 1
Total Count: 2
Total Sales Price: 13,150,000

Figure E.11. Cancel Booking Report.

Quality Home Co., Ltd.

Project Name : Ban Sai Lom 1
Plot ID: 2

Contract Cancellation ID	Cancellation Date	House ID	Contract Amount	Customer Name	Surname	Phone
1	4/6/02	P-102	215,000	Mr. Somsak	Pinsuwan	01-9856985

Total Contract Amount: 215, 000 Baht
Number of House : 1
Count : 1

Figure E.12. Cancel Contract Report.



Table F.1. Data Dictionary of Residential Sales Information System.

Field Name	Meaning
HouseId	Identity number of house
HouseName	Common name of house
HouseDesc	Description of house indicating number of rooms, bathrooms etc.
CoverArea	Covered area of house
CostPrice	Cost price of house
SalesPrice	Sales price of house
ConstTime	Time to build house
Status	Is this house on list of houses sold now
CustomerId	Identification Number of Customer
FirstName	First name of customer
LastName	Last name of customer
Idcardno	Identity card number of customer
Stadd	Street address of customer
Dist	District of customer
Subdist	Sub district of customer
Province	Province of customer
Pin	Pin code of customer
Phone	Phone number of customer
Fax	Fax number of customer
Email	Email of customer
ProjectId	Identity number of project
ProjectName	Name of the project
ProjectDescription	Description of project
TotalHouses	Total number of houses in project
HousesSold	Total number of houses sold in project
BookingId	Identity number of booking of house
StaffId	Identity number of staff
BookDate	Date on which booking was made
PlotId	Identity number of plot for which booking was made
DiscountAmount	Discount offered
BookAmount	Amount of booking
InstallmentNumber	Number of installments of house
InstallmentAmount	Amount of one installment
TransferAmount	Amount payable at time of transferring house
ContractId	Identity number of contract
ContractDate	Date on which contract was made
ContractAmount	Amount payable at signing contract
PaymentId	Identity number of payment
PaymentDate	Date on which payment was done

Table F.1. Data Dictionary of Residential Sales Information System (continued).

Field Name	Meaning
TransferId	Identity number of transfer
TitleDeedno	Title dee number
BookingCancellationId	Identity number of cancelling booking
CancelDate	Date on which cancellation was done
ContractCancellationId	Identity number of contract cancellation
SalesStaffId	Identity number of sales staff
Password	Password of staff



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