FRONT OFFICE INFORMATION SYSTEM FOR SEA FRONT THAI RESORT

by

Ms. Rojana Phattanaphiboolphol

A Final Report of the Six-Credit Course
CE 6998 - CE 6999 Project

Submitted in Partial Fulfillment
of the Requirements for the Degree of
Master of Science
in Computer and Engineering Management
Assumption University

July 2002

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Project Title	Front Office Information System for Sea Front Thai Resort
Name	Ms. Rojana Phattanaphiboolphol
Project Advisor	Air Marshal Dr. Chulit Meesajjee
Academic Year	July 2002

The Graduate School of Assumption University has approved this final report of the six-credit course, CE 6998 – CE 6999 PROJECT, submitted in partial fulfillment of the requirements for the degree of Master of Science in Computer and Engineering Management.

Approval Committee:

(Air Marshal Dr. Chulit Meesajjee)
Advisor

(Prof.Dr. Srisakdi Charmonman)
Chairman

(Dr. Chamnong Jungthirapanich)
Dean and Co-advisor

(Assoc.Prof. Somchai Thayarnyong)
MUA Representative

July 2002

ABSTRACT

The system development of this project presents the analysis, design and implementation plan of a computerized system for front office operation and management. This project is implemented to improve the existing front office information system. The business world has undergone a technological revolution. The availability of low cost, sophisticated microcomputers has allowed even the smallest businesses to automate their record keeping processes. In the past, every record such as guest form, customer files and payroll reports all had to be prepared by hand, however; companies can now purchase relatively inexpensive hardware and develop a computerized system which will accomplish all these tasks and many more.

The front office process, which is both labor and data intensive, was a logical choice for computerization. Many steps in the front office cycle are repetitive and time consuming. In addition, with the need for information to be timely and complete, computers facilitate processing large volumes of data in the shortest possible time.

To produce the information for decision-makers in the company, MySQL is chosen as the development tool because it is not too expensive and can support the number of transactions. Furthermore, it is easy to be used on modification as well as on interface between programs.

ACKNOWLEDGEMENTS

The writer is indebted to the following people. Without them, this project would not have been possible.

She wishes to express sincere gratitude to Air Marshal Dr. Chulit Meesajjee, her advisor for his valuable suggestions and extremely useful guidance toward this project. Without him, her project will not be completed. She would like to express appreciation to her Dean, Dr. Chamnong Jungthirapanich for his constructive comments and advice throughout this project. She would like to express appreciation to the other project committee members of the Graduate School of Assumption University who are Prof. Dr. Srisakdi Charmonman, Assoc.Prof. Somchai Thayarnyong MUA Representative, Asst.Prof.Dr. Vichit Avatchanakorn who taught her in system analysis to deeply understand how to analyze and develop a computerized information system and other lecturers in the classes that she does not mention here.

Moreover, she would like to thank Mr. Sumate Vachilagoon, the Managing Director of Sea Front Thai Resort, who gave her very useful information on front office system. His valuable answers and time that he gave her are a part of this project.

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I. INTRODUCTION

1.1 Background of the Project

Resort business is a major business in supporting the rapid growth of this industry. This project is developed to replace the resort reservation process of Sea Front Thai Resort with equivalent computerized system including enhanced functions and features. Resort business comprises those businesses that provide services, primarily accommodations, food and beverages, not only to those travelling for pleasure, but also the business travelers. Travelers can use more time for relaxing at resort, which has good environment and view.

Regardless of how the resort is organized, front office is always an essential focal point or the nerve center of any resort operation. Being the nerve center of a modern resort has the fact that front office must be aware of what is happening at virtually every level of the resort's organization structure. One of the negative aspects is that the front office also serves as a point for guest complaints. One of the major source of complaints related to the front office are those having to do with the accuracy of guest and details of attendant.

The front office is not only responsible for the reservation and registration. So front office is the main part and important for the resort system. Other functions that are the responsibilities of the front office include providing information on resort services, coordination of guest services, charting of room status reports, maintenance of guest accounts and settlement and collection of guest accounts.

Because front office operation functions concern with a great deal of the room status information, the outstanding balance, the guest information, front office staffs

usually has problem in managing these information. To correct this problem computer information technology usage is introduced in many firms.

By making use of computer-based information system, the difficulty of controlling and operating those tasks can be greatly reduced. Instead of having to handle massive paperwork, perform repetitive and tedious tasks, and be very fastidious with the task of room assignment, a well-designed computer information system can handle it all.

The system presented in this project is not designed for a specific organization resort. Rather, it aims to serve the common functions of resort activities at the front office. The information processed in those activities tends to be almost the same for medium sized resorts.

1.2 Objectives of the Project

The main objective of the project is to develop and arrange a computerized system for the guest of Sea Front Thai Resort because the number of guests is great while the overall processes are done manually.

This system is aimed to support the front office information system. The objectives of the project are as follows:

(1) To reduce and compare cost and benefit between manual and computerized system.

(2) To analyze the existing system and design the new computerized system for more effective works.

(3) Determine and analyze business and user's requirements in front office resort management system.

(4) To improve staff's capacities.

(5) Design an information system to assist the front office operations in resort business.

(6) Reduce the redundant workflow.

1.3 Scope of the Project

This project focuses only on front office management, so the project will cover the major part of front office resort management and operation as follows:

(1) To manage and keep the guest's information who checks-in and out for the resort.

(2) Checking the room status for availability.

(3) Supporting information for front office management.

(4) Recording the information for guest service.

(5) To keep guest's information who made reservation.

(6) To reduce all redundant data or unnecessary workflow in the system.

(7) Develop the system documentation and a new database system, which can be used for keeping.

1.4 Deliverables

The deliverables for the front office information system are as follows:

(1) Project Introduction

  (a) Background of the project

  (b) Objectives of the project

  (c) Scope of the project

(2) The Existing System

  (a) Background of the organization

  (b) Existing business function

  (c) Current problems and areas for improvements

(d) Existing computer system

(3) The Proposed System

(a) System specification (User requirement)

(1) Context diagram

(2) Data flow diagram

(b) System analysis and design

(c) Hardware and software requirement

(d) Security and controls

(e) Cost/ benefit analysis

(4) Project Implementation

(a) Overview of project implementation

(b) Test system

(c) Conversion

(5) Conclusions and Recommendations

1.5 Project Plan

This project plan of Sea Front Thai Resort: Front Office Information System is given in Figure 1.1.

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No.	Task Name	May				June				July				August			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
	I. Analysis of the Existing System																
1	Define the Objective and Scope																
2	Survey Problems and Opportunities																
3	Plan the Project																
4	Analyze Business Process																
5	Analyze Problems and Opportunities																
6	Outline Business Requirements																
	II. Analysis and Design of the Proposed System																
7	Cost and Benefit Analysis																
8	Data Flow Diagram Design																
9	Program Design																
10	Database Design																
11	Interface Design																
12	Report Design																

Figure 1.1. Gantt Chart for System Development.

No.	Task Name	May				June				July				August			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
	III. Implementation of the Proposed System																
13	Construct the Database																
14	Coding																
15	Testing																
16	Hardware Installation																
17	Software Installation																
18	Train Users																
19	Conversion																

Figure 1.1. Gantt Chart for System Development. (Continued)

II. THE EXISTING SYSTEM

2.1 Background of the Organization

2.1.1 General Information

Sea Front Thai Resort Hotel was established at Krabi in 1995, facing the Andaman sea and located right in the center of Ao Nang with a lush mountain greenery rising behind it. Ao Nang Sea Front Thai Resort, "The Pearl of Ao Nang" is an exclusive boutique resort that offers a warm traditional Thai atmosphere from the very first sight, nice and private. An ideal place to completely relax while enjoying the sun, sand, pool and sea. The famous interesting place at Ao Nang for providing service, food and beverage to the guests. 95% of guests are foreigners. For the system that we use now, there are front officers to operate all processes that occurred when guests come in and out. Every step of the process is a manual system. An information system is an integration of system components, such as processes, data, networks and technology that helps to improve day to day operation and decision making processes. The major operation of front officers in the reservation system are guest check in and out, special services and responsible for processing billing and payment and generate the daily report to accounting department. All guests are both walk in and reservation guests. There are 100 rooms available. The first floor is hotel lobby, restaurant, and coffee shop. The second floor is meeting room. The third floor is Thai traditional massage and hotel office. The other floors are hotel rooms. The swimming pool is near the restaurant and the pool bar. There are special services that are provided for guests, which are as follows:

(a) International fax and telephone

(b) Luggage storage

(c) Tour desk for local and international travel arrangement

A typical middle sized hotel is divided into six major departments, as follows:

(1) Food and Beverage Department:

This department is responsible for providing food and beverage to the resort's guests both normal service and banquet. Pool bar is included in this department.

(2) Sales and Marketing Department:

This department is responsible for guests who made the reservation and convention service. Its main responsibilities are making marketing plan of resort.

(3) Room Department:

Room service is very important in a fine resort. The rooms department performs the lodging function of a resort, the room department generates more revenue than other departments. This is especially difficult to coordinate with other phases of resort operation, particularly during peak hour demand. Essential factors of good service are quick delivery to the room, keeping food hot, good presentation.

The front office is one of the departments within the rooms department. Reservations must be accepted, guests must be hospitably received and assigned clean rooms, the status of available and occupied rooms must be kept current, guests must receive mail and phone messages promptly, and guest questions must be answered.

(4) Accounting Department:

This department is responsible for recording financial transactions, preparing and interpreting financial statements, providing management with

timely reports of operating results. Responsibilities also include payroll preparation, accounts receivable, and accounts payable.

(5) Personnel Department:

This department is responsible for human resources of the resort. Resorts have increased their investment in depending on human resource management. The size and budgets of human resources department have grown steadily, along with their responsibility and influence.

(6) Maintenance Department:

The resort's maintenance department is responsible for maintaining a property's structure and electrical and mechanical equipment. The front office must efficiently exchange information with a representative of the maintenance department to ensure guest satisfaction.

The organization chart will be shown in Figure 2.1.

2.2 The Existing Business Function

The system they use now is manual; it means the organization is small. The current system requirement is only paper, pencil and calculator. The process begins when tit receives contact from agencies or customers. The reservation department will check if rooms are available for sale. The front office staff is the public's main contact with the resort. The staff members handle registration of new guests, greet guests on arrival, dispense keys, handle incoming and outgoing mail, take messages for guests, provide information, listen to complaints, and handle check-out procedures when guests depart.

These processes, sometimes take a great amount of time until staff can find available rooms and make a response to customers' request. During these operations, it is likely that agencies or customers will cancel their reservations because of slow

response or they have found available accommodation at the competitor's. One other event is that when front office is busy with many tasks, guests waiting to do just one interaction with the front staff will take too much time in the queue and may result in unsatisfied consideration of company services. The following personnel may be employed in the front office:

(a) Front office manager

(b) Assistant front office manager

(c) Front desk representatives

(d) Night auditor

(e) Switchboard operator

(f) Cashier

(g) Uniformed service

A 40 hours workweek is the typical workload for front office employees in most resorts. Federal and state wage and hour laws apply to the front office, and, in addition, some properties are bound by union contracts and rules. A front office employee may be assigned to any one of the property's workshifts, depending on the needs of the front office and the staff member's availability. Traditional front office workshifts are:

Day shift	7:00 a.m. - 3:00 p.m.
Evening shift	3:00 a.m. - 11:00 p.m.
Night shift	11:00 a.m. - 7:00 a.m.

The business functions in a resort organization consists of guest registration or check-in, room management, guest account and expenses. These functions can be described by the functions carried out by departments' staffs.

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The front office manager

The front office manager has a wide range of responsibilities. A front office manager must maintain a high level of efficiency among the front office staff, make effective decisions regarding reservation policies and room assignments, and handle guest problems and complaints. It is the duty of a typical front office manager to define reservations policies and set quotas, with the goal of maintaining maximum room occupancy. To perform this duty, the manager must continually monitor arrivals, departures, and cancellations.

The front office manager confers regularly with the sales and marketing department for updates on special group reservations, billing agreements, potential peak periods, and general forecasts. The manager must also maintain close communication with the housekeeping division about room status and check regularly with the accounting department for information about special billing requirements and problems.

The assistant front office manager

An assistant front office manager who is responsible for coordinating front desk operations may aid the department. The assistant manager also monitors guest accounts and payments, and authorizes cheques and special credit procedures. Other duties of an assistant manager include reviewing reservations for the current day and preparing daily room occupancy forecasts.

Front desk representatives

When a guest arrives at the resort, the front desk representatives are responsible for verifying reservation information, checking credit identification and authorization, assigning rooms, and dispensing room keys.

When a guest is ready to depart, the front office representative must prepare, verify, and arrange the guest check. Other duties may include checking the room rack at the beginning of the shift, reviewing reservations for the current date, and communicating with housekeeping division regarding occupancy forecasts and room needs.

The night auditor

A night auditor must perform the duties of a front desk representative at night and the bookkeeping function i.e., prepares the machine balance report. When front desk activity slackens, the night auditor begins to audit, or trace the posting of the previous day's transactions to verify their accuracy. The night auditor calculates the total charges owed to the resort and incurred by guests during the previous business day. Total payments received from guests during the day are subtracted from the total charges to determine the daily balance. The balance represents the amount that is still owed to the resort for the previous day's transactions.

Switchboard operator

Switchboard operators seldom come face-to-face with guests. Nonetheless, these front office personnel play an important role in representing the resort to guests. A friendly and courteous tone of voice is all-important for this position. Clear and distinct speaking-as well as attentive, objective listening-are skills that operators use to put callers at ease and obtain accurate, complete information.

Cashier

A front desk cashier is responsible for checking out departing guests, posting charges, verifying the guest check, and handling payments. The cashier may be responsible for calculating the charges.

2.3 Current Problems and Areas of Improvements

The clerical staff that performs the reservation function handles a number of tasks that are important to the orderly accumulation and dissemination of reservation information to the appropriate department. In a reservation process, the following difficulties rise:

(a) Extremely difficult to control accuracy of reservation records

(b) Making a reservation is time consuming and prone to error

(c) Difficult to handle reservation years in advance

(d) Complicate between room department and sales and marketing department

(e) A lot of paper work involved

(f) Difficult to determine room availability during high season

A guest will encounter many employees during a resort stay. Guests will speak to or see reservations agents, door attendants, front desk agents, room attendants, and food and beverage servers. All these employees and more assist guests at various stages of the guest cycle: pre-arrival arrival, occupancy, and departure. Guest account settlement depends on an effective front office accounting system that maintains accurate guest folios, verifies and authorizes a method of settlement, and resolves discrepancies in account balances. Generally, the front office finds it most effective to settle guest's account while the guest is still in the resort. A guest can settle an account by paying cash, charging the balance to a credit card, deferring payment to an approved direct billing, or using a combination of payment methods.

Effective front office operations depend on accurate room status information. When guest checks out and settles his or her account, the front desk agent performs several important tasks. The most highly visible duty of the front office is to register and checkout guests. Check-in and checkout procedures consist of several steps, each of

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which is important to efficient room management and the maintenance of a pleasant and orderly atmosphere at the front office. The following are the problems normally found at the front office:

(a) Guests have to wait for quite a while when the front office is busy

(b) Preparing arrival list is very time consuming

(c) Error in reservation can make guest registration process difficult

(d) Room assignment task is tedious in order to select the most appropriate room

(e) Repletion task of guest account balance update is required every day

(f) Room status determination can be quite confusing to hotel staff

(g) Preparation of guest departure list is time consuming

(h) Preparing summary of accounting information is difficult

(i) Extremely difficult to prepare statistical and management report

From all problems the front office has to deal with, the proposed system to overcome the problems the front office has to deal with, the proposed system will improve efficiency and effectiveness in front office operations and also solve the existing problems.

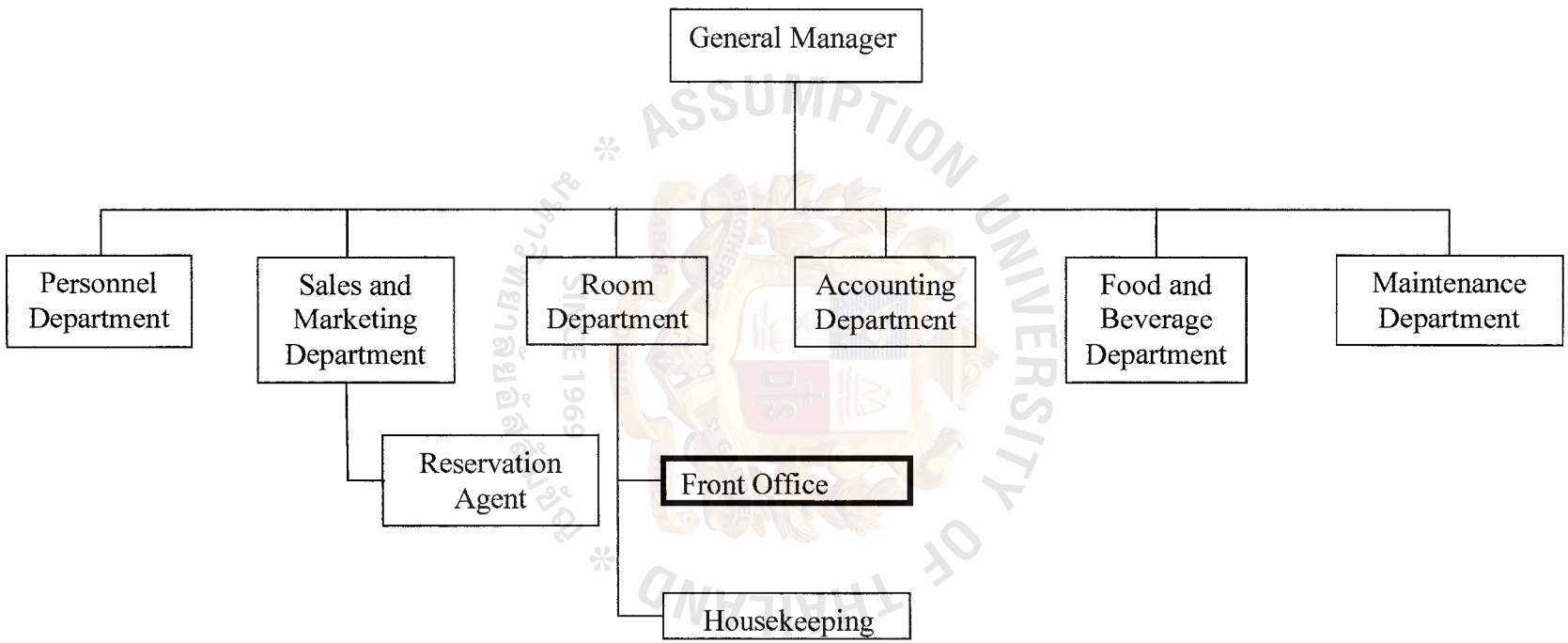

Figure 2.1. Organization Chart of the Sea Front Thai Resort.

III. THE PROPOSED SYSTEM

3.1 User requirement

The purpose of Resort's Front Office Information System is to computerize resort's front office processes and to maintain information needed for the operation and management. This includes reservation, guest registration, room management, check-out, and guest accounting. The main requirements for the system purposed are to have all the processes related to the front office functions automated, the desired reports can be produced, and information of the system can be viewed through the enquiry screen.

In the reservation system, the reservation staff handles guest communication and correspondence regarding reservations at the resort. Those contacts with potential guests can be made through correspondence in the form of mail, telephone or fax. On the basis of this information, the staff creates and maintains reservation records for all advance reservations in the hotel. Once the information has been collected, staff members produce the appropriate confirmations and/or guarantees to the requester. As a part of reservations responsibilities, they track future room availability and may initiate forecast of room's sales and occupancy. Finally, on the day the guest is expected, the reservation staff will bring forward reservations, to the front office. This may be in the form of a physical reservation card or document or simply the release of temporal information in the hotels data processing system. The following are the principles of the system as they relate to reservations:

(a) Contain a complete inventory of rooms available by type and rate

(b) Information on projected occupancy, remaining availability by room type

(c) Information projected arrival listing

(d) Information on room revenue

(e) Be able to handle reservations years in advance

(f) Room can be assigned in advance

(g) Automatic room assignment

At the front desk, the functions are concerned with guest registration, check-out, handle guest enquiry and room management. The registration process begins with the front desk representative inquiring whether the guest has a reservation. If the response is positive, the representative locates the reservation record and reviews it. If the response is negative, the representative checks room availability. A registration form is presented to the client for signature. The representative confirms the information in the reservation record, including the number of persons in the party, the estimated departure date, room type or rate requested, and any room extras or options. Next, the method of payment is determined. After approving the method of payment, the front desk representative locates an available room with the proper rate, room type, and location and makes a room assignment. When guests check-out, guest folio is retrieved, the length of the guest's stay is verified, the representative should confirm that all charges for telephone, food and beverage service and so forth, have been posted to the guest account. If any last minute charge was made, the amount should be added to the account at this time. On the bill presented to the guest or guest check, the amount of any advanced deposit, prepayment is subtracted from the charges to determine the balance due. The front desk representative or the cashier handles the guest's payment. When payment is received, a paid receipt is produced. If the charges are to be billed to a corporate account, the guest check must be signed by the guest to verify the amount, which context diagram is shown in Figure 3.1. The followings are the basic requirements for front desk operations:

(a) Be able to handle guest without reservation as quickly as possible

(b) Make the formalities of arrival at the resort as swift and efficient as possible

(c) Can quickly determine room availability

(d) Guest information and balance can be reviewed'

(e) Room status determination

(f) Efficient room assignment

(g) Up to date guest account balance information

(h) Information projected on guest's room occupancy

(i) Storing guest message

(j) Summary information projected for auditor

3.2 System Analysis and Design

3.2.1 Application Architecture

(1) Network Architecture

In the information system's database, software, and interfaces are distributed across a network of clients and servers that communicate and cooperate to achieve system objectives as follows:

(a) Local Area Network (LAN) is designed to allow resources to be shared and communicate between each workstation or personal computer and the server (two-tiered Client/Server). This LAN, which is set up in one building of the hotel, links a work group of task-related computers.

(b) The system used a LAN, which is based on a Bus Topology to share resources such as hardware (e.g., a printer), software (e.g., an application program), or data of each department. By installing the system with bus topology, its backbone cable can easily add another PCs in the system. However, the bus topology itself does not ensure

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the transmission medium is accessed and used in a fair way of connection. Thus, by the use of a control (permission) token, the data are transmitted in a way of controlled access to a defined set of rules understood and adhered to by all personal computers or workstation connected to the medium. This is technically called Tenbase T. The Tenbase T combines the physical configuration of Ethernet (a bus topology) and the collision-free (predictable delay) feature of token ring. Network configuration of proposed system is shown in Figure 3.2.

(2) Database Architecture

The database system can be based on a number of different approaches, including in particular the relational approach. It can be thought of as a computerized record-keeping system and structure of stored files. A given stored file in Front Office Information System can be physically implemented in storage in the following way:

(a) By using Database Server controlled by Microsoft SQL can reduce the traffic congestion in network system. The MS SQL is a database management system (DBMS), which is the software to handle requests form the users to retrieve, update, or delete existing data in the database, or to add new data to the database.

(b) The relational model is used to represent the relational approach, which is the dominant trend in the marketplace today. The relational approach is easily the most important (and this state of affairs is not likely to change in foreseeable future). In a relational system, the user sees the data as a table and the operations available to the user for

dealing with the data standard language for dealing with relational system. Moreover, SQL, which is used in relational approach, is the standard language for dealing with relational system in Microsoft SQL program.

(c) Database system can also be conveniently thought of as consisting of a server (the DBMS itself) and a set of clients (the applications). Client and server can often run on separate machines, thus providing one simple kind of distributed processing. In general, each server can serve many clients, and each client can behave as if it were dealing with a single server on a single machine, regardless of the actual physical state of affairs-then we have a truly distributed database system.

(3) Interface Architecture

In the proposed system, there are a number of information needs to be processed automatically by a computer. Since some of the information is very sensitive to changes, it is important that editing has been made immediately in the system, such as the number of guests in the resort. Therefore, the hotel will use on-line processing. Data are to be keyed in using keyboard.

(4) Process Architecture

The process architecture of an application is defined in terms of the software languages and tools that will be used to develop the business logic and application programs. We implement the process architecture in centralized computing and distributed presentation as recommended below:

(a) The system application programs consist of Software Development Environments (SDEs) for two-tiered client/server programming

languages. We use Microsoft's Visual Basic 6.0 and Microsoft's Access 97 or to provide rapid application development (RAD) for quickly building the graphic user interface (GUI) that will be replied and executed on all of the client PCs.

(b) The MS Visual Basic, MS Access and automatic connect with SQL commands and generates SQL codes for the above GUI and associated system events (such as mouse-click), and subsidiary displays the result of the user's requirement.

3.2.2 Data Flow Diagram of Proposed System

Using data flow diagrams, this section provides a logical view of the Front Office Information System. The proposed system is presented by using the data flow diagram as a tool that allows us to picture a system as a network of functional processes, connected to one another by pipelines and holding tanks of data, which are presented in Appendix A Data Flow Diagram. Furthermore, the Front Office Information System's processes, inputs, outputs and files are summarized in the form of Process Specification, which are presented in Appendix H Process Specification.

3.2.3 Database Design

Database should be designed to meet Normalization that is a technique for organizing data attributes in the form that is stable, flexible, and adaptive. Normalization is a three-step technique that places data model into first normal form, second normal form and third normal form. They are described as follows:

(1) First Normal Form: This phase is to make sure that there is no repeating group in database design.

(2) Second Normal Form: To be in the second normal form, it must be in first normal form with an addition that it is fully functional dependent. All non-

key attributes (those that are not primary keys) must be fully dependent in the primary key and not just a part of it.

(3) Third Normal Form: To be in third normal form, it must be in second normal form with an addition that there is no transitive FD. Transitive FD is when an attribute is dependent on a non-key attribute.

After normalizing our logical data model, there has already mapped in the third normal form. Database design for proposed system is shown in Appendix C and its data dictionary is shown in Appendix F.

3.2.4 Structure Design

This is the top-down hierarchy of modules. The result can be evaluated accordingly to ensure the best modular design for the program.

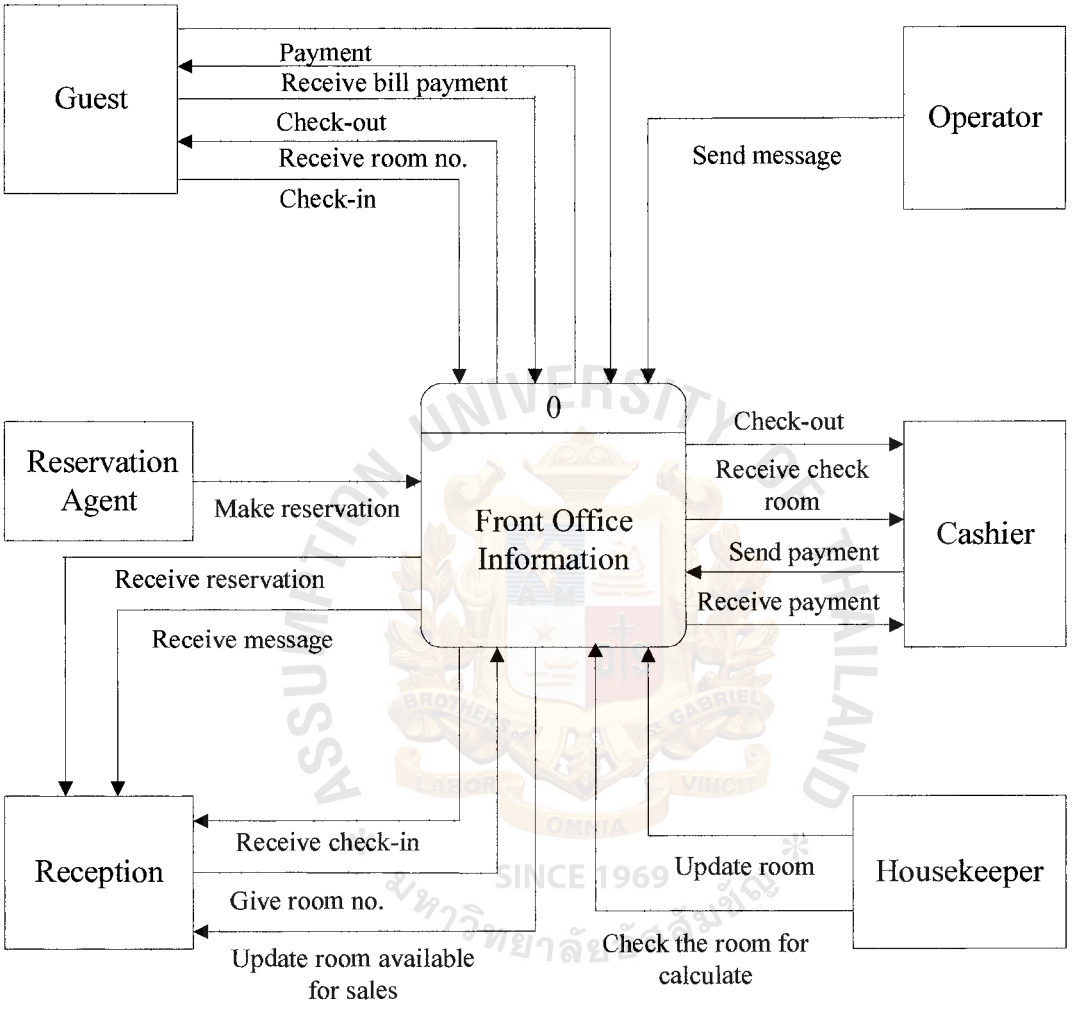
Structure chart is used to depict a modular design of a program. It shows how the program has been partitioned into smaller, more manageable module, organization of those modules and the communication interfaces between modules. Structure charts of program are shown in Appendix B.

3.2.5 Input and Output Design

The output designs are shown in Appendix D and interfaces of input designs are shown in Appendix I.

3.2.6 File Layout

The file layouts are shown in Appendix E.



Figures 3.1. Context Diagram of Sea Front Thai Resort.

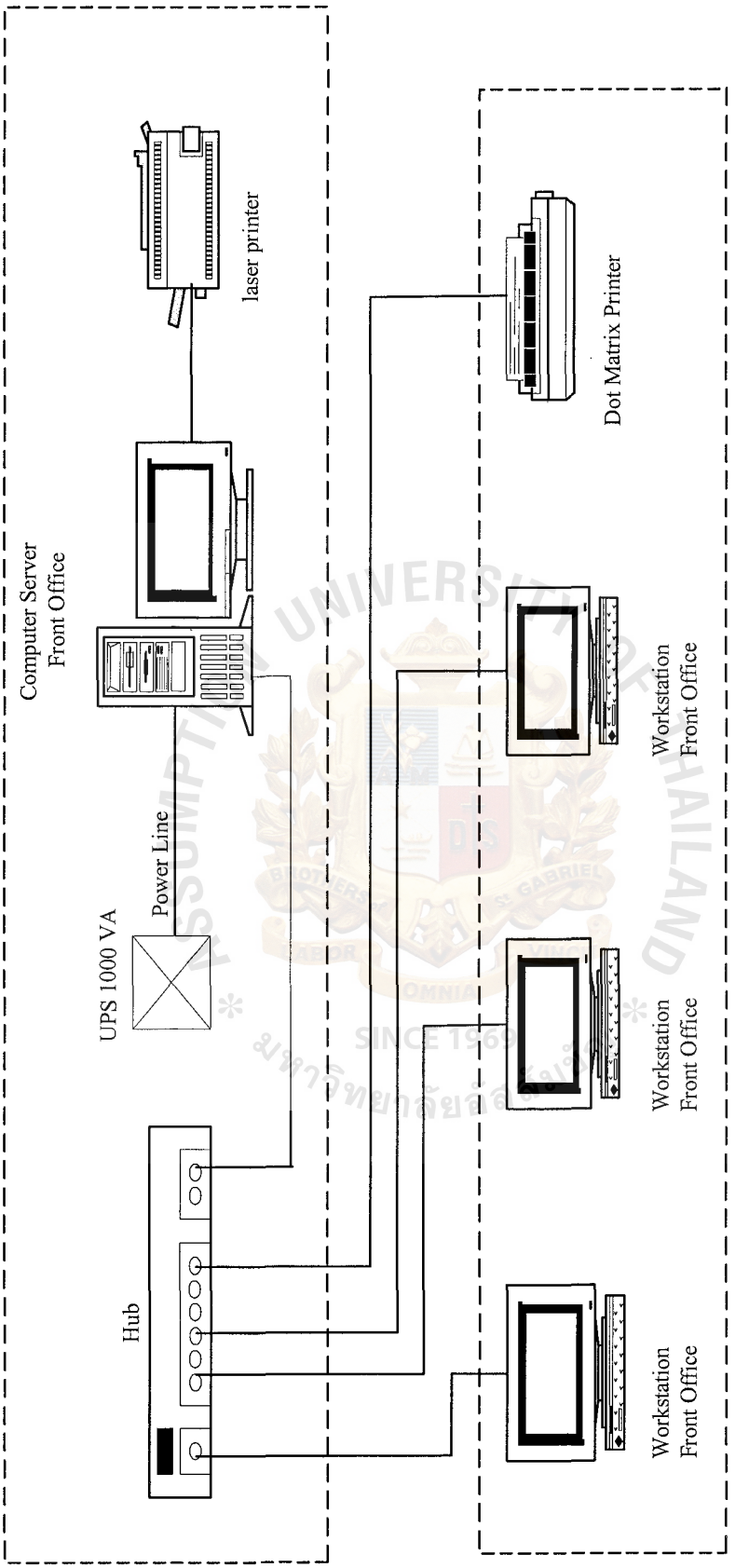


Figure 3.2. Local Area Network of Sea Front Thai Resort.

3.3 Hardware and Software Requirement

The over all system will consist of a server computer which stores the database of the system and client computer in which the staff operates on. All the computers are connected together and form a local area network. The server software selected is Microsoft Windows 2000 Server. The Windows 2000 Server is also used as a network operating system. On the client, the software runs on Microsoft Window 2000 Professional. The development tool is Microsoft Visual Basic and the database used is Microsoft Access version 4.

In the system design session, the need for discussion in system requirement has to be minimal in budget and the system function has to work properly in online immediate processing mode.

3.3.1 Alternative Candidate Solutions

During the system selection phase, to identify the possible system and analyze relevant solutions are recommended to best suit and are optimized in budget and usage. To compare the alternative solution, candidate system matrix will show the comparison to find out the best and most appropriate among each criteria of possible solution and the characteristic of each candidate is further evaluated and identified with feasibility checkpoints in the system development.

By considering the selected solution, the matrix provides the overview all these characteristics concerning the portion of computerized system, benefits, servers and workstations, software tools needed, application software, method of data processing, output devices and implications, and storage devices and implications. These are the priority of the implementation of the system design. The Candidate matrix is shown in Table 3.1.

Table 3.1. Candidate Matrix.

Characteristics	Candidate 1	Candidate 2	Candidate 3
Portion of System Computerized	Front Office control process	Express package from business software	Same as Candidate 2
Benefits	To gain competitive advantage and fasten processing	To support business process	To support business process
Servers and Workstations	Intel PentiumIIII Processor 2.2 GHz.,Ram 256 MB for server, Pentium Celeron Processor 1.1 GHz., RAM 128 MB for client	Same as Candidate 1	AMD Athlon 800 MHz., RAM 256 MB for server AMD K 6-3 450 MHz., RAM 128 MB for client
Software Tools Needed	MS Window 2000 server as O/S (server), MS Window 2000 SE as O/S (client), MS Visual Basic 6.0 Application Development as Application Program	MS Window 2000 as O/S, and Ms Access 6.0 Application Development as Application Program	MS Window 2000 server as O/S (server), MS Window 2000 SE as O/S (client), Adobe GoLIve! (web development tool), Active Server Pages, and MS Internet Explorer 5.5
Method of Data Processing	Online Client/Server and real-time updating	Same as Candidate 1	Same as Candidate1
Output Devices and Implications	HP Laser Jet 2100 and Dot Matrix Printer Epson LQ 2170i	Same as Candidate 1	Same as Candidate 1
Input Devices and Implications	Keyboard and mouse	Same as Candidate 1	Same as Candidate 1
Storage Devices and Implications	MS Visual Basic	Oracle 6.0	Microsoft Access97
Training	To train the actual employees in the resort	To train the new employees who have some knowledge	Same as Candidate 1
Technical Staff	To hire the new employees who have the knowledge	Actual employees in the resort	Same as Candidate 1

3.3.2 Hardware Requirement

(1) Server 1 set

(a) CPU Intel Pentium IIII Processor 2.2 GHz.

(b) Memory 256 MB SDRAM PC 133

(c) Harddisk 40 GB Seagate

(d) Monitor 15" Sumsung 1024x768

(e) Floppy Disk Drive for 3.5" 1.44 MB

(f) CD-Read/Write Drive 4X or higher

(g) Casing with 230 Watts Poer Supply

(h) Keyboard 104 keys support window 98

(i) Mouse

(j) Ethernet LAN Card

(2) Client 3 sets

(a) Pentium Celeron Processor 1.1 GHz

(b) Memory 128 MB SDRAM PC 133

(c) Harddisk 20 GB Seagate

(d) Monitor 15" Sumsung 1024x768

(e) CD-Read/Write Drive 4X or higher

(f) Floppy Disk Drive for 3.5" 1.44 MB

(g) Casing with 230 Watts Poer Supply

(h) Keyboard 104 keys support Window 98

(i) Mouse

(j) Ethernet LAN Card

(3) Connecting Devices and others

(a)	HUB transferred rate 10 Mbps	1 set
(b)	LAN cable wire	100 Meters
(c)	UPS 1000 VA (for 4 sets + printer)	1 set
(d)	Laser Printer HP Laser Jet 2100	1 set
(e)	Dot Matrix Printer Epson LQ 2170i	1 set

3.3.3 Software Requirement

The software used in the system is divided into Operating System (O/S) software and Application software. The recommendation of software selection conforms to solution two of the alternative solution to be the best appropriate solution in the section 3.3.4 Cost/Benefit Analysis.

(1) Server

(a) O/S software: Microsoft Windows 2000 Server

(b) DBMS: Microsoft Visual Basic 6.0

(c) Application software: Microsoft Office 2000 Standard

(2) Client

(a) O/S software: Microsoft Windows 2000 Professional

(b) Application software: Microsoft Office 2000 Standard

3.4 Security and Control

By the control, the access of unauthorized persons may cause problems. In addition, the data security and data integrity are more seriously controlled. It is important to separate people who might collude. Thus, the system development project team must be separated from the operating departments. Moreover, no one in the system development project team should have the custody of assets or should be able to authorize transactions, initiate master file changes, or reconcile output control. Also, to

the extent possible, programmers and front desk should be separated, as a combination of two skills could be disastrous for internal control.

Furthermore, it is important to limit the scope of individual programmers. Programmers and system analysts should not be allowed to use programs they wrote or designed, and they should not be allowed to operate the computer.

General controls are designed to ensure that information processing takes place in a reasonably controlled and consistent environment. These controls have an impact on the effectiveness of the application controls and processing functions that involve the use of the front office information system. These can be separated into several categories in the proposed system.

(1) Systems development and maintenance controls.

These controls are to ensure that the new system and system changes are properly authorized, tested, and approved for release. Normally, the representative of the each department user, particularly the accounting staff should participate in the development and also should be involved in the decision making.

(2) System document controls

The Front Office Information System should be documented adequately to provide a basis for effective operation, use, audit, and possible future system enhancement. So, the project implementers have to prepare the system document for later use. It is a good evidence that management takes seriously on the need for adequate documentation. These controls mitigate the risks that personnel are not properly trained, the system does not meet the need of organization and users. The resources are also used effectively.

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(3) Database controls

The information within the database must be restricted to prevent unauthorized changes from occurring and to prevent unauthorized access to confidential information. Most database management systems have their own security subsystem to divide the level of authorization for each user. The database administrator should specify which users should access to appropriate data and operations to perform their tasks.

(4) Input controls

Data should be verified to provide an appropriate data entry. To input the data into the file, the program should take action with the data entry on editing or error checking. Some common types of editing checks are validating data type, field length, combination of fields, completeness of data, account number or code, and reasonable numeric amounts.

(5) Processing controls

The purpose of processing controls is that there is no transaction processed more than once and all processing is accurate and complete. Written procedure should guide the staff to process in the same processing operation and make it available for all relevant staff.

(6) File controls

File controls are used to protect stored data from unauthorized access, improper processing, illegal modification, data loss and damage. The custody of file should be assigned the unique code and stored in a proper location that is free from fire, flood, or any physical hazard.

The responsibility of file maintenance should be arranged to ensure that the correct file is used in processing operation in a proper manner use.

(7) Output controls

Output controls are designed to ensure that output from the system is accurate and provided in a proper form used. Printed output produced by a computer should bear header and trailer pages. The header page indicates the data of processing, unique number of record, and the title of the output. The trailer page shows the end-of –report symbol on end line to be noticed.

3.5 Cost/Benefit Analysis

One of the important criteria of system development and implementation is the comparison of costs between the existing system and a proposed system. It is to evaluate that how much different on cost, benefit and the worthiness of using the new system. A comparison is made on any aspects such as investment, operating cost, benefit of both tangible and intangible, and so forth.

3.5.1 Cost Analysis

To invest in the new system, the cost of the new system will include the cost of system development (analysis, design, and implementation), cost of hardware and software used, operation cost (for examples: labor cost, maintenance cost, and so forth), and other related expenses. Thus, the hardware devices and software costs will be estimated before comparison and break-even analysis.

(1) Hardware Cost

Table 3.2. The Software Specification, Baht.

Hardware	Specifications	Quantity	Total amount
Case	ATX From Factor for Server	1	6,000
	ATX From Factor	3	7,000
Mother Board	LEMEL Board for PentiumIIII Intel Chipset (Server)	1	7,500
	LEMEL Board for P-III/Celeron Intel Chipset (Cliets)	3	18,500
CPU	Intel PentiumIIII Processor 2.2 GHz. (Server)	1	22,000
	Intel Celeron Processor 1.1 GHz. (Clients)	3	21,500
Memory	Kingstons SD-RAM-133 MHz. 256 MB. (Server)	1	4,500
	Kingstons SD-RAM-133 MHz. 128 MB. (Clients)	3	7,500
Hard Disk Drive	Seagate Barracuda 40 GB. 7200 rpm (server)	1	5,500
	Seagate Barracuda 20 GB. 7200 rpm (clients)	3	12,000
Floppy Disk Drive	Samsung 1.44 MB. 3.5"	4	2,500
CD-RW Drive	ACER 20x10x40 (Server's BACKUP)	1	5,500
Mouse	Standard Mouse	4	1,200
Keyboard	Standard Windows Keyboard	4	1,000
Display Card	Nvidia RIVA TNT2 16 MB. AGP 4X	4	6,000
Display	Monitor CTX 1555 15"	4	19,600
Printer	HP Laser Jet 1100, 600x600 dpi	1	15,700
	Epson LQ-670 Dot Matrix	1	15,900
Eternet Card	SureCom 10/100 Mbps Base-TX	4	3,500
LAN cable wire	AMP Standard CAT-5 100 Meters	1	5,000
HUB	LinkSys 10/100 Switches Dual Speed 8 Ports	1	7,500
UPS	PC Smart 1000	1	9,000
Total			185,900

(2) Software Cost

Table 3.3. The Software Specification, Baht.

Software	Specifications	No. of license	Amount
Operating System	Microsoft Windows 2000 Server	1	10,000
	Microsoft Windows 2000 Professional	3	24,000
Application Software	Microsoft Office 2000 Standard	4	28,000
Programming Tool	Microsoft SQL Server 7.0	1	12,000
Virus Protection Software	McAfee Virus Scan	4	7,400
Total			81,400

(3) Cost of the Existing System

Table 3.4. The Existing System Cost Analysis, Baht.

Cost Items	Years				
	1	2	3	4	5
Fixed Cost					
Typewriter 2 units@9,000	18,000.00	-	-	-	-
Calculator 5 units@2,000	10,000.00	-	-	-	-
Total Fixed Cost	28,000.00	-	-	-	-
Operating Cost					
Salary Cost:					
Front Office Manager 1 person@22,000	22,000.00	24,200.00	26,620.00	29,282.00	32,210.20
Assistant Manager 1 person@18,000	18,000.00	19,800.00	21,780.00	23,958.00	26,353.80
Staff:					
Employee 12 persons@8,000	96,000.00	105,600.00	116,160.00	127,776.00	140,553.60
Total monthly salary cost	136,000.00	149,600.00	164,560.00	181,016.00	199,117.60
Total Annual Salary Cost	1,632,000.00	1,795,200.00	1,974,720.00	2,172,192.00	2,389,411.20

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Table 3. 4. The Existing System Cost Analysis, Baht. (Continued)

Cost Items	Years				
	1	2	3	4	5
Office Supplies & Miscellaneous Cost:					
Stationary Per Annual	12,000.00	13,200.00	14,520.00	15,972.00	17,569.20
Paper Per Annual	40,000.00	44,000.00	48,400.00	53,240.00	58,564.00
Utility Per Annual	15,000.00	16,500.00	18,150.00	19,965.00	21,961.50
Miscellaneous Per Annual	15,000.00	16,500.00	18,150.00	19,965.00	21,961.50
Total Annual Office Supplies & Miscellaneous Cost	82,000.00	90,200.00	99,220.00	109,142.00	120,056.20
Total Annual Operating Cost	1,714,000.00	1,885,400.00	2,073,940.00	2,281,334.00	2,509,467.40
Total Existing System Cost	1,742,000.00	1,885,400.00	2,073,940.00	2,281,334.00	2,509,467.40

Table 3.5. Five Years Accumulated Existing System Cost, Baht.

Year	Total Existing System Cost	Accumulated Cost
1	1,742,000.00	1,742,000.00
2	1,885,400.00	3,627,400.00
3	2,073,940.00	5,701,340.00
4	2,281,334.00	7,982,674.00
5	2,509,467.40	10,492,141.40
Total	10,492,141.40	-

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(4) Costs of the Proposed System

Table 3.6. The Proposed System Cost Analysis, Baht.

Cost Items	Years				
	1	2	3	4	5
Fixed Cost					
Total Hardware Cost	37,180.00	37,180.00	37,180.00	37,180.00	37,180.00
Total Maintenance Cost	-	-	-	15,000.00	13,000.00
Total Software Cost	25,400.00	25,400.00	25,400.00	25,400.00	25,400.00
Implementation Cost:					
Advanced Training Cost	60,000.00	-	-	-	-
Basic Training Cost	30,000.00	-	-	-	-
Coding and Testing Cost	32,000.00	-	-	-	-
Set up Cost	26,000.00	-	-	-	-
Total Implementation Cost	148,000.00	-	-	-	-
People-Ware Cost:					
System Analyst 1 person@25,000(4months)	100,000.00	-	-	-	-
Programmer 1 persons@20,000(2months)	40,000.00	-	-	-	-
IT Specialist 1 person@20,000(4 months)	80,000.00	-	-	-	-
Total People-Ware Cost	220,000.00	-	-	-	-
Total Fixed Cost	430,580.00	62,580.00	62,580.00	77,580.00	75,580.00
Operating Cost					
People-Ware Cost:					
Front Office Manager 1 person@20,000	20,000.00	22,000.00	24,200.00	26,620.00	29,282.00
Assistant Manager 1 person@15,000	15,000.00	16,500.00	18,150.00	19,965.00	21,961.50
Staff:					
IT Specialist 1 person@20,000	20,000.00	22,000.00	24,200.00	26,620.00	29,282.00
Employee 6 persons@8,000	48,000.00	52,800.00	58,080.00	63,888.00	70,276.80
Total Monthly Salary Cost	103,000.00	113,300.00	124,630.00	137,093.00	150,802.30
Total Annual Salary Cost	1,236,000.00	1,359,600.00	1,495,560.00	1,645,116.00	1,809,627.60

Table 3.6. The Proposed System Cost Analysis, Baht. (Continued)

Cost Items	Years				
	1	2	3	4	5
Office Supplies & Miscellaneous Cost:					
Stationary	12,000.00	6,600.00	7,260.00	7,986.00	8,784.60
Paper	15,000.00	12,100.00	13,310.00	14,641.00	16,105.10
Utility	100,000.00	110,000.00	121,000.00	133,100.00	146,410.00
Miscellaneous	22,000.00	11,000.00	12,100.00	13,310.00	14,641.00
Annual Office Supplies & Miscellaneous Cost	169,000.00	139,700.00	153,670.00	169,037.00	185,940.70
Total Operating Cost	1,405,000.00	1,499,300.00	1,649,230.00	1,814,153.00	1,995,568.30
Total Computerized System Cost	1,835,580.00	1,561,880.00	1,711,810.00	1,891,733.00	2,071,148.30

Table 3.7. Five Years Accumulated Computerized System Cost, Baht. (Continued)

Year	Total Computerized Cost	Accumulated Cost
1	1,835,580.00	1,835,580.00
2	1,608,080.00	3,443,660.00
3	1,762,630.00	5,206,290.00
4	1,947,635.00	7,153,925.00
5	2,132,640.50	9,286,565.50
Total	9,286,565.50	-

3.5.2 Benefit Analysis

Benefit analysis can be divided into two categories, tangible benefits and intangible benefits shown as follows:

(1) Tangible Benefits: This type of benefit can be measured in value. The proposed system has annual benefits from the following:

(a)	Reduction of stationery and paper usage	32,000 baht
(b)	Reduction of human labor	1,590,000 baht
(c)	Reduction of duplication work (900 hours@280)	255,000 baht
(d)	Reduction of information look up (740 hours@240)	180,000 baht
	Total Tangible Benefits	2,057,000 baht

(2) Intangible Benefits

(a) The manipulated information is more accurate than that of the existing system.

(b) The format of output is more formal than that of the existing system.

(c) It is easier and quicker to search for the required information.

(d) It is easier and quicker to produce the report

3.5.3 Payback Analysis

Payback analysis is a technique for determining if and when an investment will pay for itself. On the other hand, it determines how much time will lapse before accrued benefits overtake accrued and continuing costs. This period of time is called the payback period. The payback period can be calculated as following:

$$P = L + \frac{C}{A}$$

Where

P = Payback period

L = Last year of negative cash flow difference

C = Cumulative difference last negative year

A = Absolute value of cumulative difference

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The payback period of the proposed system can be calculated as follows:

L = 2 years

C = 78,010.90 Baht

A = 269,181.66 Baht

Therefore $P = L + \frac{C}{A}$

P = 2.2 years

The payback period of the proposed system is 2.2 years. Payback analysis and Payback period for all candidates are shown in Appendix G.

3.5.4 Net Present Value (NPV)

Net Present Value is a sophisticated capital budgeting technique, which is calculated by subtracting the project's initial investment from the present value of cash inflows discounted at a rate to the firm's cost of capital. If NPV is positive, investment is good. Otherwise, the investment is bad. The basic formula for NPV is as follows:

$$NPV = \frac{R}{(1+k)^1} + ... + \frac{R}{(1+k)^n} - PV$$

Where NPV = Net Present Value

PV = Cost of the new system

R = Annual cash flow (saving)

N = Number of years

K = Annual rate of interest

NPV of proposed system can be calculated as follows:

PV = 7,916,434.68 Baht

R = 2,057,000 Baht (increase 10% per annual)

N = 5 years

K = 12%

Therefore $NPV = \frac{R}{(1+k)^1} + \ldots\ldots + \frac{R}{(1+k)^n} - PV$

NPV = 963,199.26 Baht

3.5.5 Breakeven Analysis

Breakeven analysis is a technique, which is used to find the period that accumulative cost of current system is equal to accumulate cost of new system. The point that they are equal is called breakeven point. The comparison of the system costs between computerized cost and existing cost is shown in Table 3.8. Breakeven point between manual system and computerized system is shown in Figure 3.3.

Table 3.8. The Comparison of the System Cost, Baht.

Year	Accumulated Manual Cost	Accumulated Computerized Cost
1	1,742,000.00	1,835,580.00
2	3,627,400.00	3,443,660.00
3	5,701,340.00	5,206,290.00
4	7,982,674.00	7,153,925.00
5	10,492,141.40	9,286,565.50

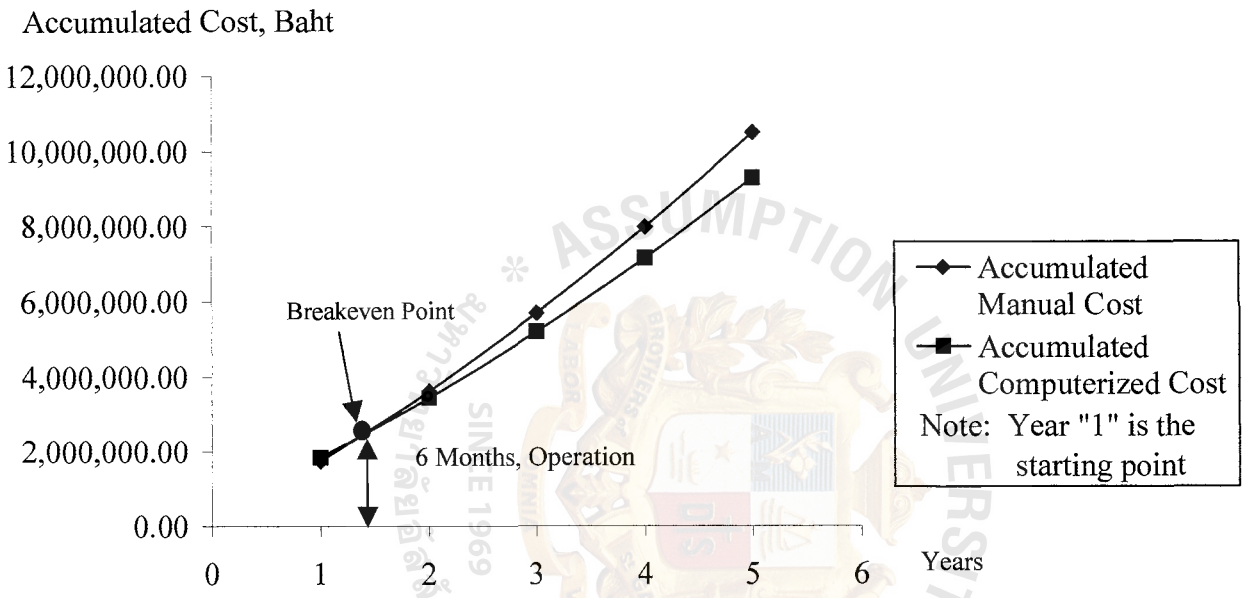

Figure 3.3. Cost Comparison between Manual and Computerized System.

IV. PROJECT IMPLEMENTATION

4.1 Overview of Project Implementation

The primary step of the implementation is to transform the modules to be codes computer can execute. The system specifications, data dictionary, process specification, file and database, input and output designs are involved in its implementation. After the completion of the analysis and design of the proposed system, some staff of the resort can participate in systems development on prior sections. A staff or a front desk can further become a system specialist and could be the development team member who completes the system design, or could be the system programmer who codes the computer programs.

As a consultant, the staff could be called in to complete the design, help prepare the forms, or help plan, conduct, and evaluate the system implementation, particularly when the Front Office Information System is being implemented. The staff could be the project team leader and have control over the final design, testing, and acceptance of the new system. As a member of the implementation team, the staff could help design system inputs and outputs or specify testing criteria. Whether or not the staff is a team member, he might be a system user, and thus would be trained in the use of the new system. Finally, the auditor would evaluate conversion plans and conversion test results and would review systems development documentation for completeness and conformity to organization standards.

As the definition, system implementation is a set of procedures performed to complete the design contained in the approved system design document and to test, install, and to use the new or revised information system. The implementation goals are as follows:

(a) Complete, as necessary, the design contained in the approved system design document. For example, the detailed contents of new or revised documents, computer screens, and files must be laid out and created.

(b) Write, test, and document the programs and procedure required by the approved system design document.

(c) Ensure, by completing the preparation of user manual and other documentation and by educating and training personnel, that the organization's personnel can operate the new system properly.

(d) Determine, by thoroughly testing the system, that system satisfies the user's requirement.

(e) Ensure a correct conversion by planning, controlling, and conducting an orderly installation of the new system.

The implementation plan is necessary to achieve the system implementation goal stated above. The approach to implementation could be a parallel approach, which provides the most control of both the old and the new system that operate together for a time. This provides more control because the old system is not abandoned until users are satisfied that the new system adequately replaces the old.

The system implementation ends with the operation of the new or revised system and with the submission of the project complementation activities and provides document for operating the new system and for conducting the post-implementation review and systems maintenance.

4.2 Test System

Beyond testing program modules, the entire system is tested to determine that it meets the requirements established by the user and that it can be used and operated to the satisfaction of both users and system operators. The system developers, by the

developers and users carry out testing together and finally by the users. The more closely the test can simulate a production environment (for examples: people, machine, data, input, and so forth), the more representative the test will be and the more conclusive the results will be. Each test consists of the following steps:

(a) Specify test conditions.

(b) Review test conditions (such as walkthrough)

(c) Create test data.

(d) Execute data.

(e) Evaluate results.

Several types or levels of tests are usually completed before a system can be implemented. From the user's point of view, the system test, the acceptance test, and the operations test are the most important factors to determine whether the system equipments are satisfactory.

4.3 Conversion

The existing system is a manual system, there are only a few steps for installing the system. However, this process should be planned carefully. Missing something might cost the company unrecoverable information. To make sure everything is correct, the conversion will use parallel approach.

After all the previous design steps have been completed and signed off, the organization must carefully convert to the new system. Conversion includes converting the files, converting the processes, and completing the documentation. Controls must be in place to ensure the accurate, complete, and authorized conversion of the files and programs.

As the existing files are mapped into the new system, it has to ensure that the files are converted accurately.

4.4 Training

After installing the proposed system, the company needs to train reservation staff and manager how to use the program. The training period can be divided into three phrases.

(a) Training and giving knowledge to the users so that they can run the system without any usage problem.

(b) Starting to use the new system in full-scaled run.

(c) Giving them practices with sample data and watching their learning progress.

(d) Checking feedback and evaluating the effectiveness of the training.

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V. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The existing manual operations are inefficient and several problems are found. The major problems are time-consuming in operating, large volume of paper, and cannot simultaneously be shared along several departments that cause difficulty in good services for the guests. The Management Information System (MIS) can play an important role in the development of the strategic plan and in monitoring ongoing operations in the company to measure attainment of business plan. The Front Office Information System is also a MIS that is a type of today's business basis to operate system whether the business involves in buying or selling merchandise or services.

It is mentioned before that this system will not be relevant to the business if the system that has been analyzed and designed improperly, and the investment in the system implementation will be worth nothing to the business strategy. Whether the system is meant to the business or users, the information system should be considered by the use of decision-making tools at a real-time processing.

As a designer of a subsystem of Front Office Information System, it has been obvious that the front desk brings to bear his knowledge of front office principles, information system, and system development methods. On the other hand, the designed system makes it easier to operate in a real world business environment.

Furthermore, this project is designed and implemented on a through understanding of both business and the company in which it operates basis. As the business grows and engages in different activities, the Front Office Information System is one of the business strategies to achieve its goals in better decision making with information,

systematic working with controlled environment, assessment criterion on the system operations, improving an up-to-date information system, and so forth.

With confidence and expectation of success, the project management is used to control the overall tasks to complete within the frame, limited budget and limited resources. In addition, to answer the goals of this project, it fulfills the entire task achievement and depicts a turnkey system-developing model. However, the project is needed to continue with the development life cycle as the business always keeps changing and participating that users may have other requirements to help them with a better solution to compete with other the company's policy.

Table 5.1. The Degree of Achievement of the Proposed System.

Process	Existing System	Proposed System
Respond to Guest Requests	20 mins.	5 mins.
Request for Reservation	20 mins.	5 mins.
Check-in for Guest	10 mins.	5 mins.
Check-out for Guest	15 mins.	5 mins.

This proposed system also achieves the business solution that increases revenue because this business is service and guests want to get the service. When receptions do not waste time to search for and input the information, receptions can have more opportunity to serve other guests so the response will be reduced from 20 minutes to 5 minutes. Due to the new technology in Front Office, guests will be satisfied and recommend other potential guests to Sea Front Thai Resort. The cost of paper and

APPENDIX A

DATA FLOW DIAGRAM

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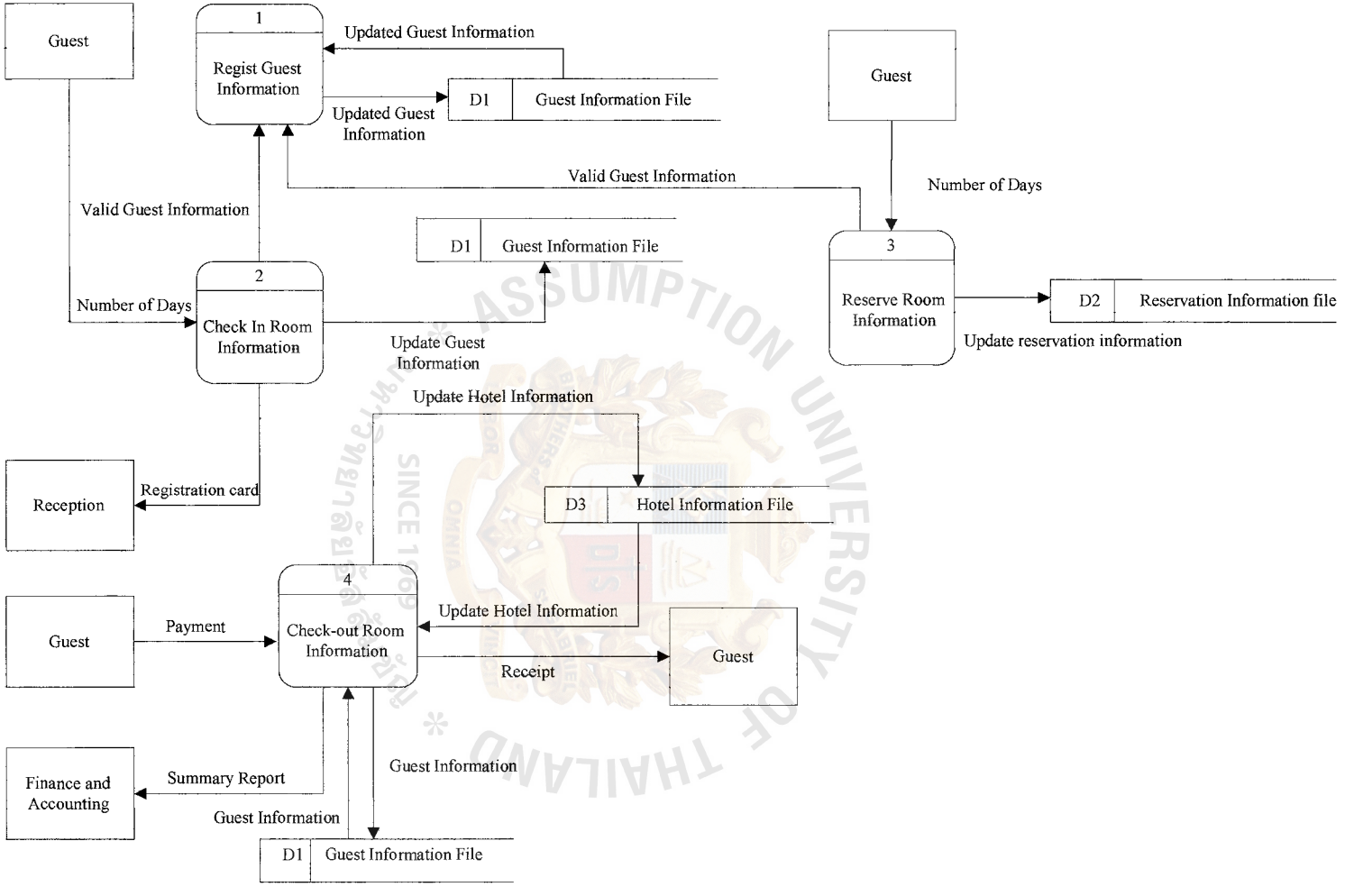

Figures A.1. Level 0 Data Flow Diagram of Front Office Information System.

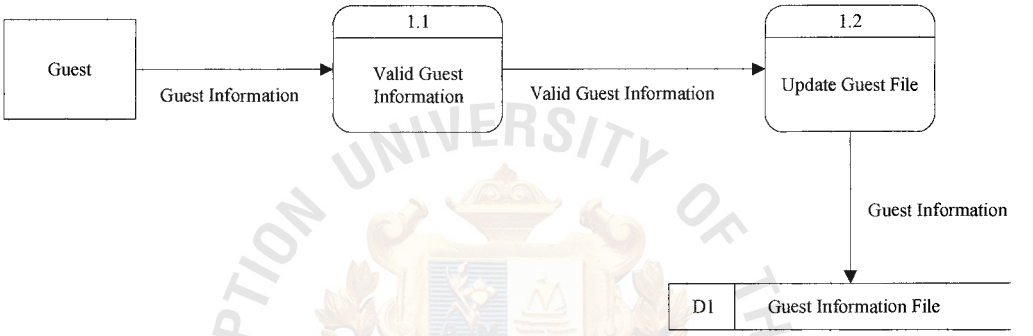

Figure A.2. Regist Guest Information System.

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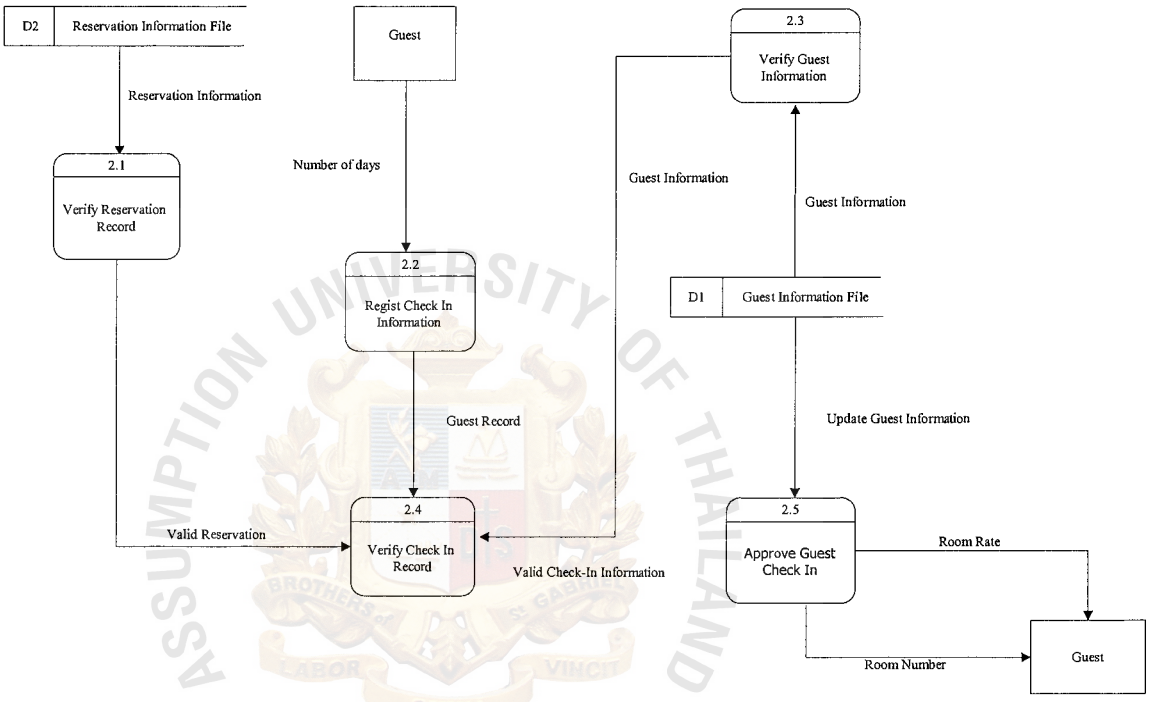

Figure A.3. Level 1 Data Flow Diagram of Check In Information System.

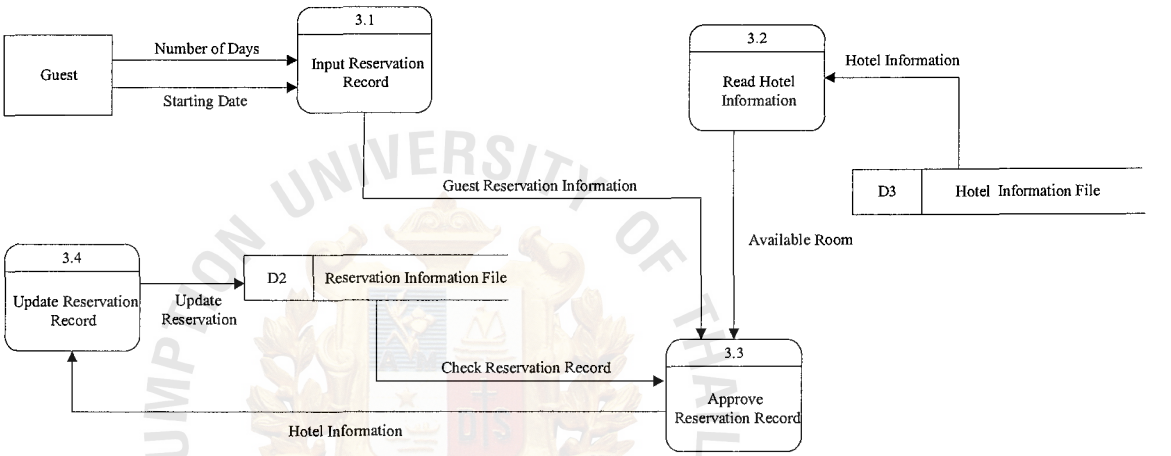

Figure A.4. Level 1 Data Flow Diagram of Reservation Information System.

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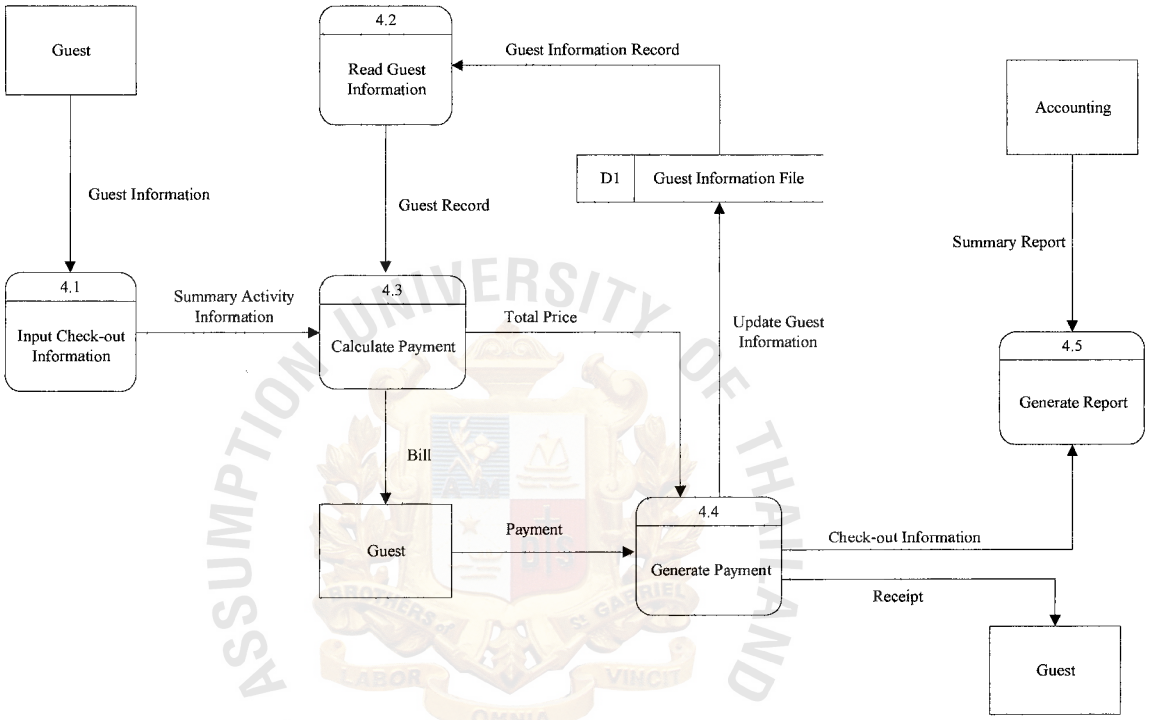

Figure A.5. Level 1 Data Flow Diagram of Check out Information System.

St. Gabriel's Library, Au

APPENDIX B

STRUCTURE CHART

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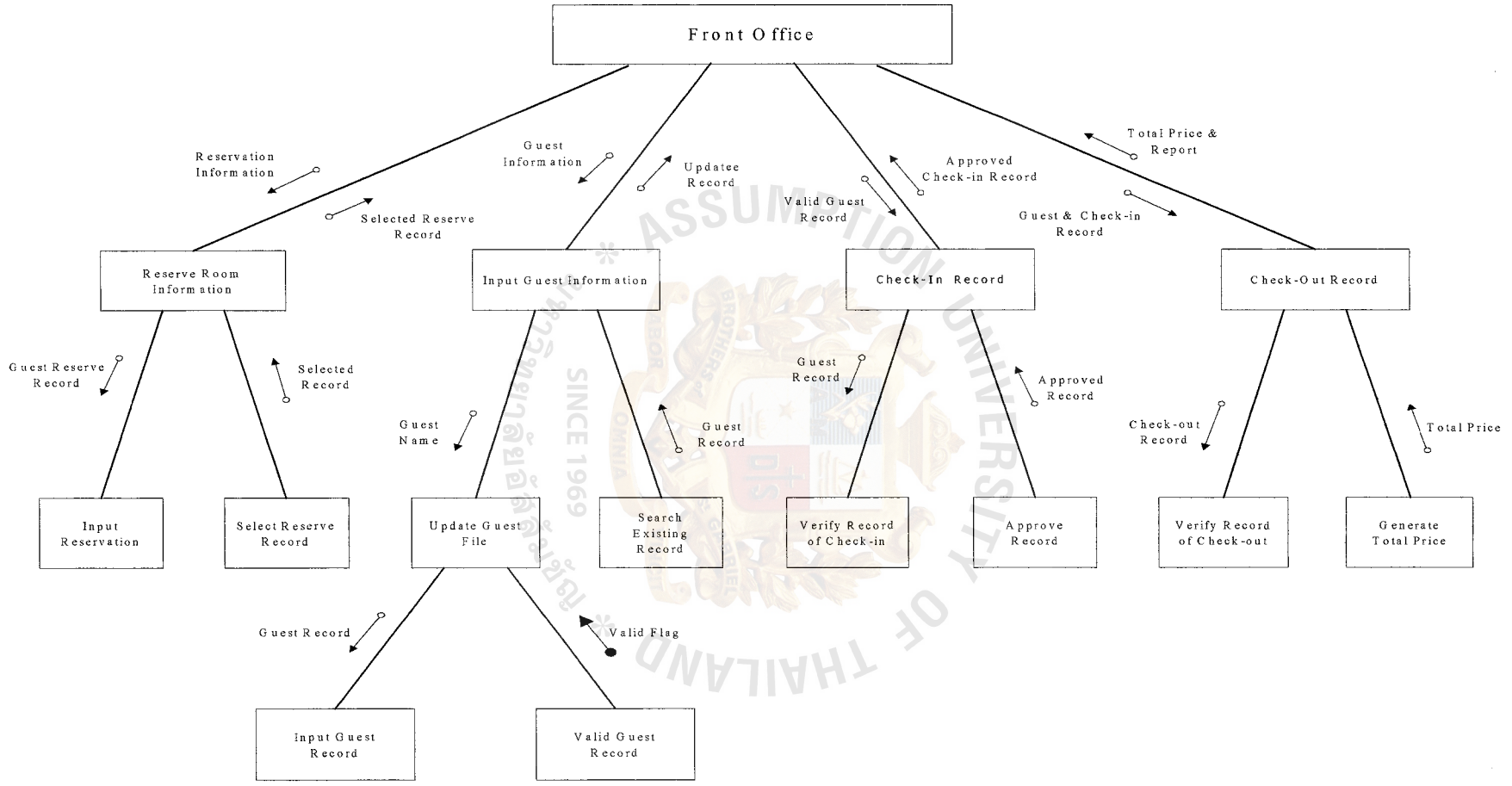

Figure B.1. Structure Chart of Front Office Information System.

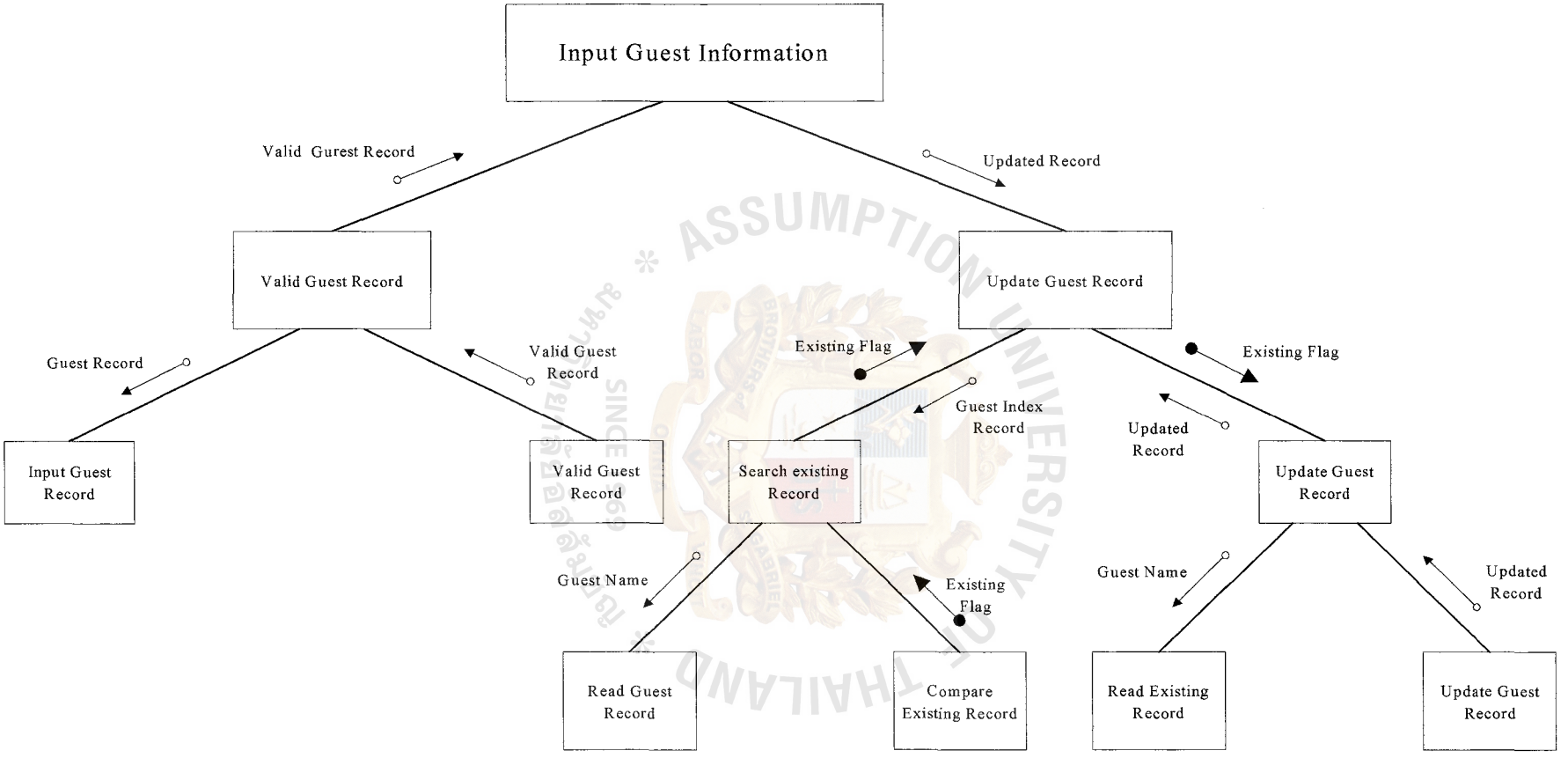

Figure B.2. Structure Chart of Input Guest Information System.

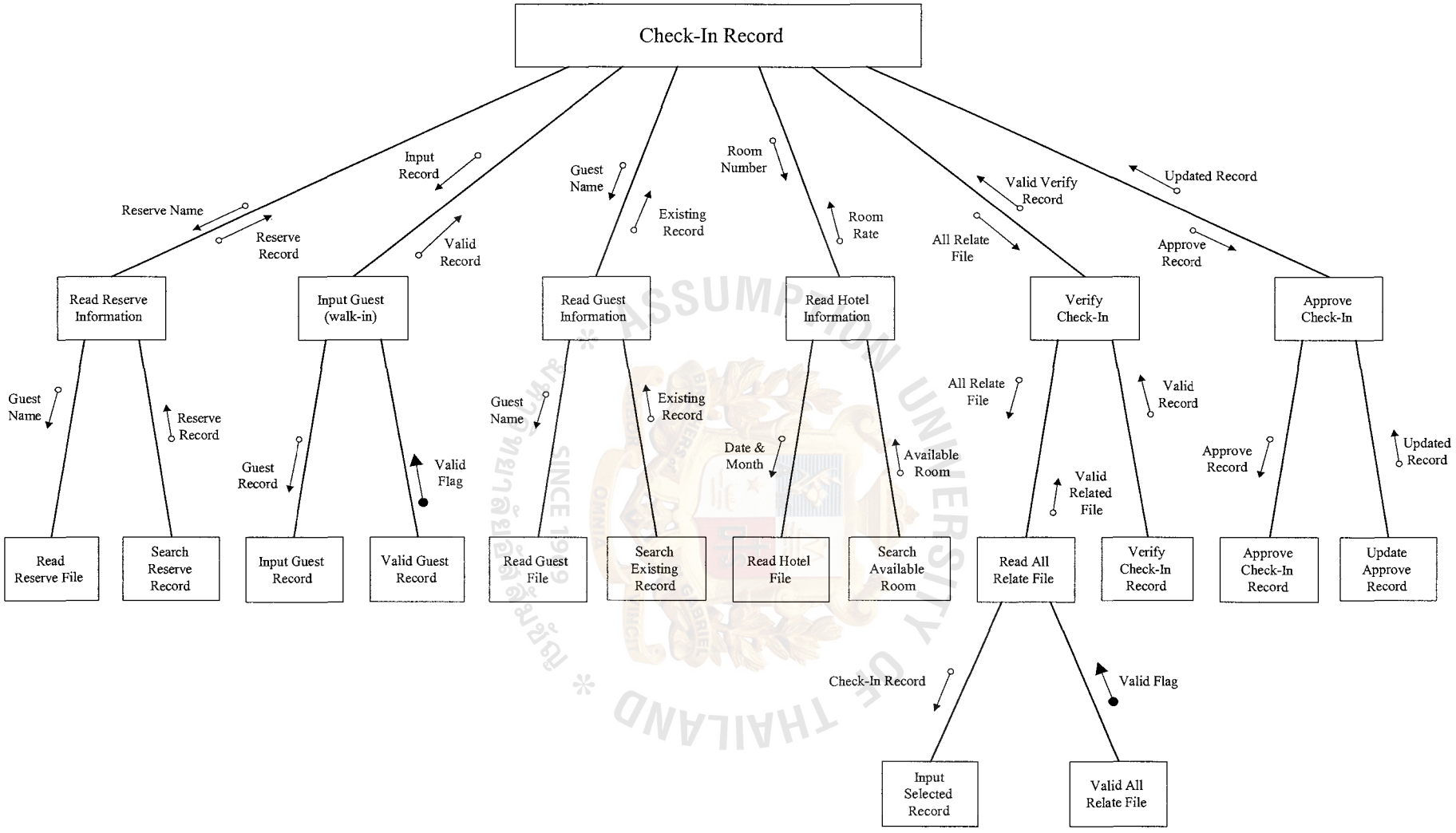

Figure B.3. Structure Chart of Check-In Information System.

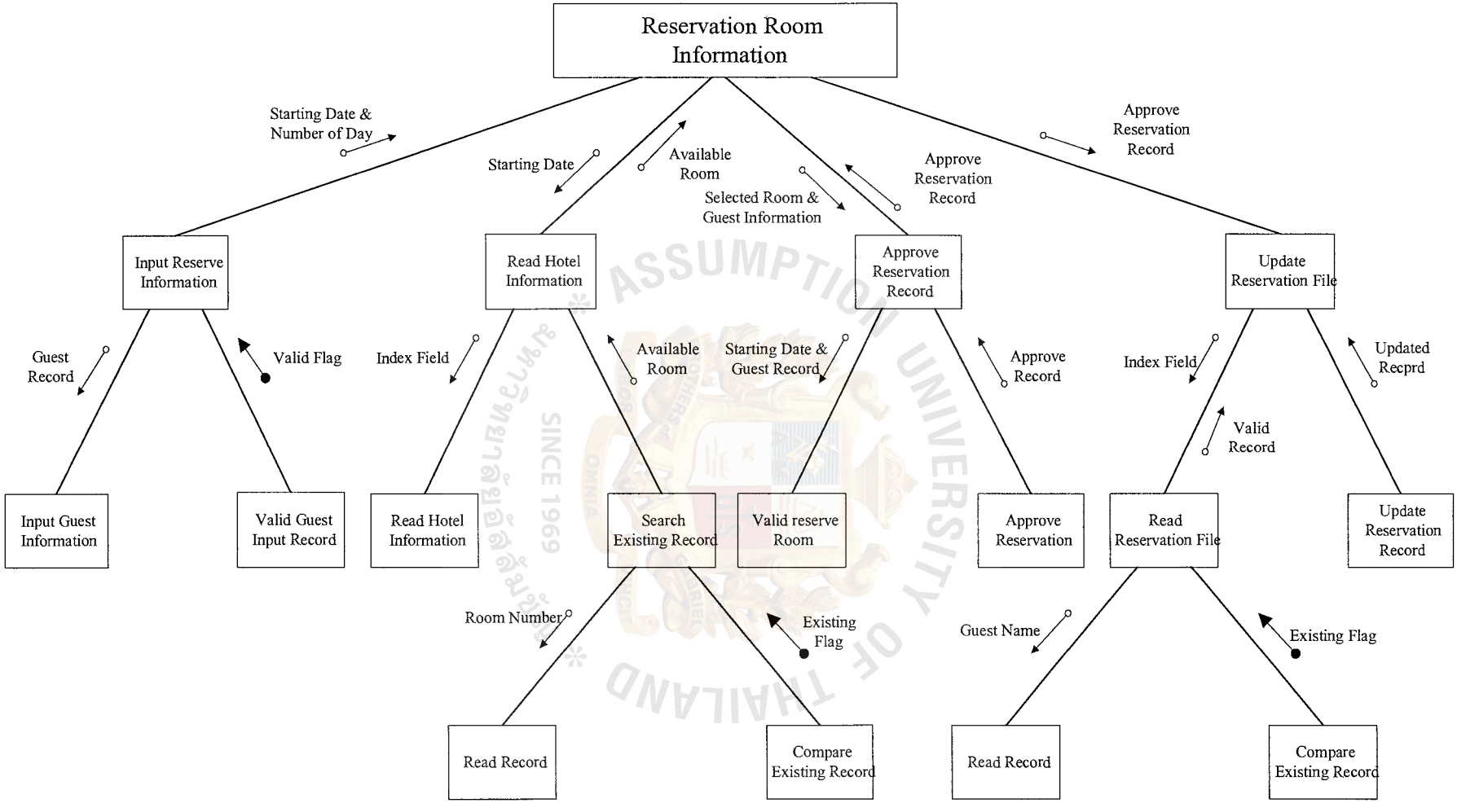

Figure B.4. Structure Chart of Reservation Information System.

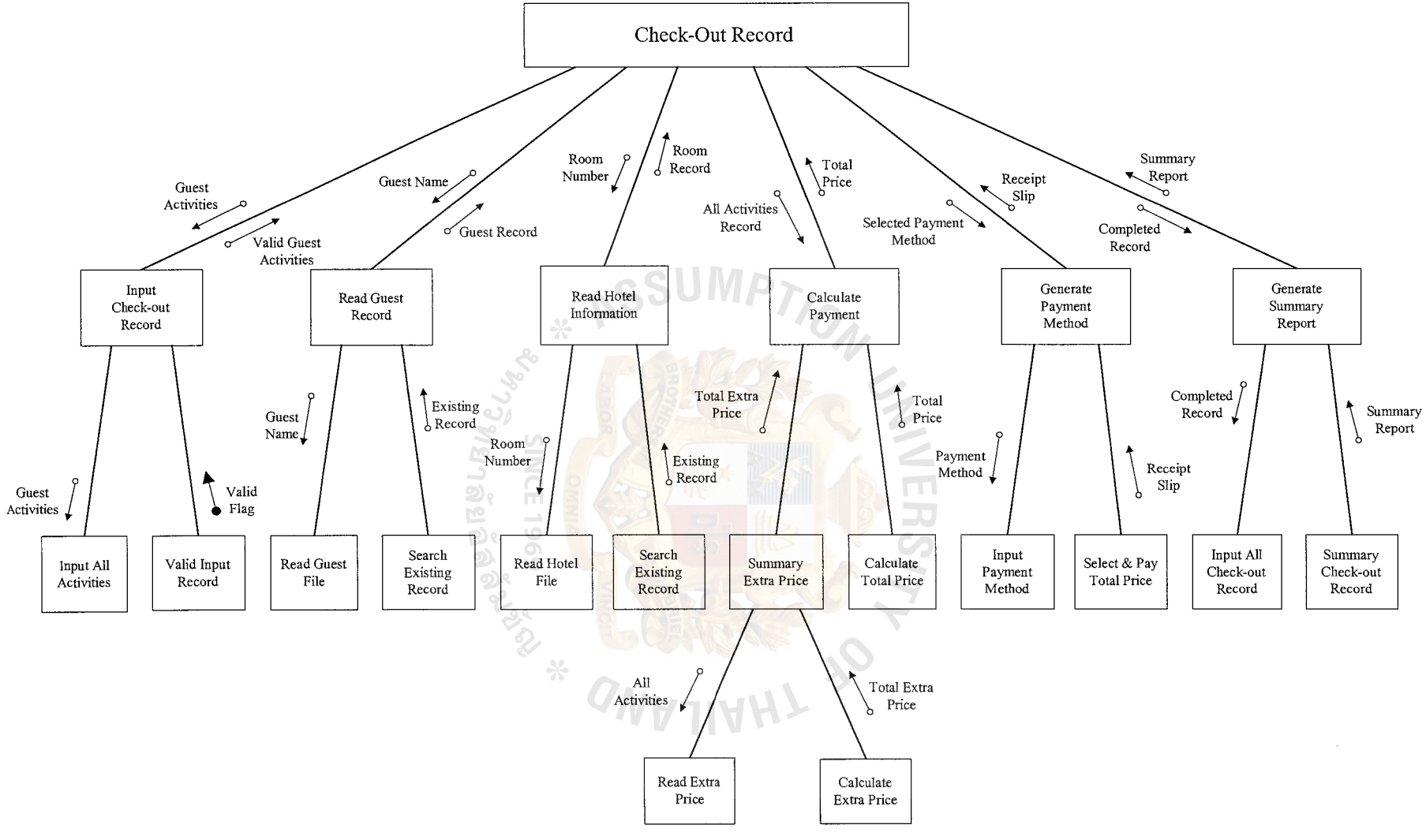

Figure B.5. Structure Chart of Check-Out Information System.

APPENDIX C

ENTITY RELATIONSHIP DIAGRAM

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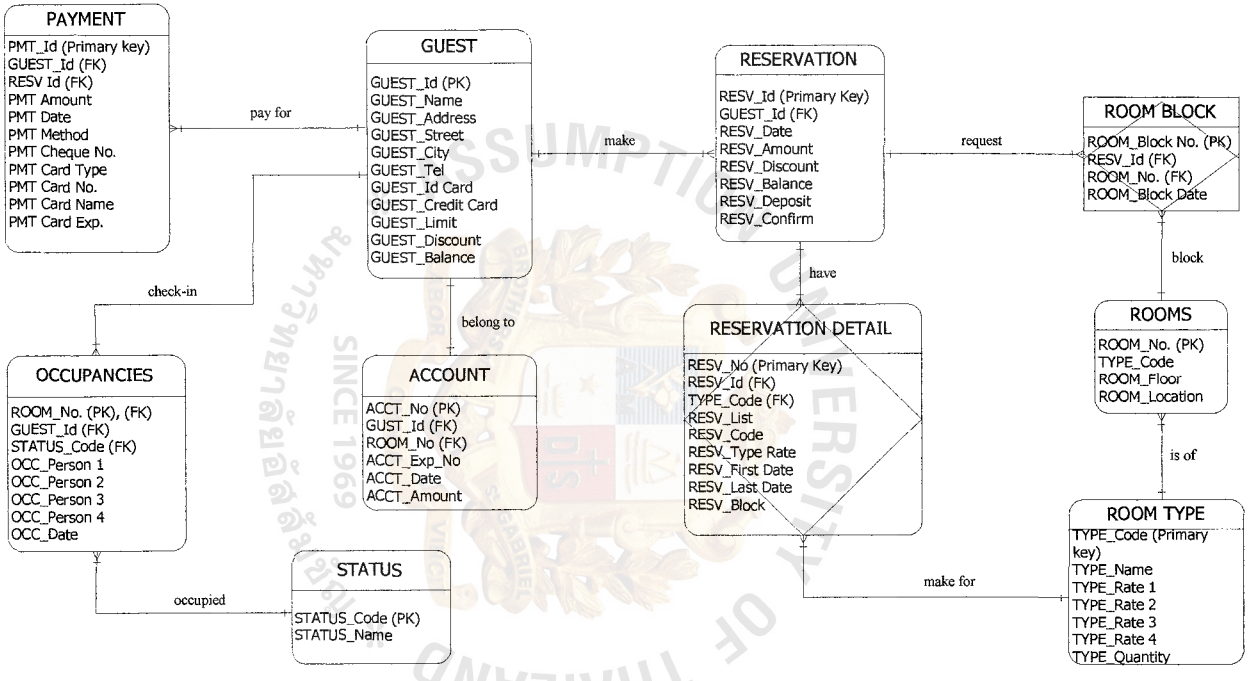

Figure C.1. Entity Relationship Diagram of Front Office Information System.

APPENDIX D

OUTPUT REPORT

ASSUMPTION UNIVERSITY OF THAILAND
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SEA FRONT THAI RESORT

GUESTS ARRIVAL LIST

DATE 10/10/2002 TOTAL: 6 PAGE 01

NO.	RESV #	NAME	RATE	LEN	#RMS	C/F	NOTE
1	00-01-0002	John Backtu	1,100.00	3	1	Y	
2	00-02-0157	จริยา จึงวัฒนา	2,200.00	2	2	Y	
3	00-03-0942	นควัตร โชคอนันต์	900.00	1	1	N	
4	00-04-0024	Linly Vinsor	1,400.00	2	3	Y	
5	00-05-0089	Lucky Willson	1,100.00	4	5	N	
6	00-08-0112	วิโรจน์ ลิตตรานพ	900.00	2	2	N	

Figure D.1. Guest Arrival List Report.

SEA FRONT THAI RESORT

GUESTS DEPARTURE LIST

DATE 28/11/2002 TOTAL: 7 PAGE 02

NO.	CUST#	NAME	ROOM NO.	NOTE
1	00-01-0125	สมศรี มนูกุล	A124	
2	00-02-1201	July M. Mash	B200	
3	00-04-0167	รัชดา โชคทวี	A132	
4	00-05-0002	David Backham	C323	
5	00-06-0187	Janny Spaindy	A131	
6	00-07-0029	สมบูรณ์ บุญพิทักษ์	B241	
7	00-08-0124	Scoth Marhill	B245	

Figure D.2. Guest Departure List Report.

SEA FRONT THAI RESORT ROOM STATUS REPORT		
DATE 19/10/2002		PAGE 01
ROOM NO.	STATUS	REMARK
A121	VR	
A122	VR	
A123	OD	
A124	VD	
A125	OD	
A126	DND	
A127	CO	
A128	OO	Water leaking in the bathroom
A129	VC	
A130	VD	
NOTE: VR: vacant&ready, VC: vacant&clean, VD: vacant&dirty, OR: occupied&ready, OC: occupied&clean, OD: occupied&dirty, CO: check-out, OO: out of order, DND: do not disturb, V/O: status unclear		

Figure D.3. Room Status Report.

SEA FRONT RESORT ROOM'S MOVEMENTS REPORT				
FROM 11/10/2021 TO 11/10/2002				PAGE 01
ACTIVITY	ROOM NO.	DATE	TIME	CUSTOMER NAME
Check-in	A122	11/10/02	9:25	Smart Bardrih
Check-in	C301	11/10/02	10:30	Joey Squaremach
Check-in	B214	11/10/02	11:00	สมาน มากนคร
Check-out	A124	11/10/02	12:00	Smith Marhill
Check-out	C312	11/10/02	13:00	สมร คุณากุล
Check-out	C309	11/10/02	13:20	Paul Smith
Check-out	B210	11/10/02	13:20	Jane Chaly

Figure D.4. Room Movement Report.

SEA FRONT THAI RESORT RESERVATION TALLY SHEET DATE 22/08/2002			
DETAILS	SUPERIOR DELUXE ROOM	SUPERIOR DELUXE FAMILY ROOM	GUEST HOUSE
WALK-INS	18	8	2
OVERSTAYS	5	1	0
UNDERSTAYS	0	0	0
EARLY ARRIVALS	1	0	0
CANCELLATION	3	1	0
NO-SHOWS	1	1	0

Figure D.5. Reservation Tally Sheet.

SEA FRONT THAI RESORT

DAILY RESERVATION REPORT

DATE 08/10/2002

RESERVATION NO.	CUSTOMER NO.	NAME	TYPE	LEN	RATE	DATE	C/F	ROOM	REMARK
01-11-0010	01-08-0022	ยงยุทธ รัตนปิยะ	N	2	10/10/2002	10/10/01	N	2	
01-11-0011	01-08-0110	รัชนีกร ไตรรัตนพันธ์	N	2	11/10/2002	14/10/01	N	2	
01-11-0012	01-08-0142	วรุธ เอกอารีจิตต์	N	1	11/10/2002	11/10/01	Y	1	
01-11-0013	01-08-0111	ไตรภพ แซ่ลิ้ม	N	3	12/10/2002	10/11/01	N	2	
01-11-0014	01-08-0019	สถาพร ลิ้มสุวรรณกุล	N	2	13/10/2002	22/10/01	Y	1	
01-11-0015	01-08-0016	เอกชัย พ่วงศิริ	N	4	15/10/2002	30/10/01	N	2	

Figure D.6. Daily Reservation Report.

SEA FRONT THAI RESORT

ROOM AVAILABILITY REPORT

MONTH 09/2002

TYPES	1	2	3	4	5	6	7	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Superior Deluxe Room	102	203	203	210	199	190	120	129	200	210	197	106	95	150	201	195	168	200	208	98	168	199	200	210	186	144	95	155	200
Superior Deluxe Family Room	16	35	35	33	36	30	25	26	30	33	33	33	30	35	35	34	30	34	34	36	28	35	30	32	33	28	34	30	32
Guest House	15	8	10	16	15	15	16	15	15	16	16	15	12	16	16	15	15	16	16	16	16	15	16	16	16	15	16	16	16
	7	8	8	8	8	7	8	8	8	8	5	5	7	8	8	8	6	8	8	8	8	7	8	8	8	5	8	8	8

Figure D.7. Room Availability Report.

SEA FRONT THAI RESORT GUEST ACCOUNT BALANCE REPORT					
DATE 25/09/2002					PAGE 01
RESERVATION NO.	CUSTOMER NO.	NAME	ROOM	BALANCE	TOTAL
01-01-0104	01-01-0119	Jack Micheal	B201		2,200
01-01-0028	01-01-0112	Velly Guardshak	A101		2,500
01-02-0042	01-02-0045	สมฤดี กล่มน้อย	C301		900.00
TOTAL					5,600.00

Figure D.8. Guest Account Balance Report.

SEA FRONT THAI RESORT

CUSTOMER'S BILL

CUSTOMER NO. 01-02-0120 DATE 17/04/2002 PAGE 01

สมาน โชติสุวรรณ ROOM NO. B217

149 ซอย 27 ถนน รามคำแหง CREDIT CARD: VISA

หัวหมาก เขตบางกะปิ CREDIT CARD NO. 4534-0964-0225-6466

กรุงเทพมหานคร 10140

Tel. (02)716-1035

DATE	DESCRIPTION	REF.ROOM	AMOUNT
17/04/2002	Room Charge		2,200.00
17/04/2002	Coke (Mini-Bar)		30.00
15/09/2002	Minenal Water (Mini-Bar)		20.00
	TOTAL		2,250.00
DISCOUNT	0%		
VAT	7%		371.42
BLANCE DUE			2,621.42

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Figure D.9. Guest's Bill.

SEA FRONT THAI RESORT

DAILY LIST OF REVENUE REPORT

DATE 22/09/2002 PAGE 01

INVOICE NO.	RESERVATION NO.	CUSTOMER NO.	NAME	MTD	AMOUNT
01-01-0011	00-01-0123	01-01-0509	ศุภกร บุณภักสร		1,000.00
01-01-0012	01-02-0023	01-01-0085	March Michael		2,400.00
01-01-0013	01-02-0019	01-02-0011	ขนิษฐา วรรณนพ		1,500
01-01-0014	01-02-0128	01-02-0665	Smith Coch		12,000.00
01-01-0015	01-02-0289	01-01-0111	Cherry Chell		3,800.00
01-01-0016	01-02-0300	01-02-0520	ประจักษ์ มนูกุล		2,800.00
TOTAL					23,500.00

Figure D.10. Daily List of Revenue Report.

APPENDIX E

FILE LAYOUT

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Table E.1. Guest File.

No.	Fieldname	Width	Type	Valid	Description
1	G#	7	Character	YYXXXXXX	Guest Number
2	Gname	30	Character		Guest name
3	Pass_No	16	Character		Passport number
4	Address	50	Character		Address of guest
5	Nationality	25	Character		Nationality of guest
6	Payment_Method	2	Character	CR (credit), CA (cash)	How to pay cash / credit
7	Deposit		Numeric		Deposti cash of payment when guest checks-in

Table E.2. Hotel File.

No.	Fieldname	Width	Type	Valid	Description
1	R#	3	Character		Room number
2	R_Type	2	Character		Type of each room
3	R_Rate		Numeric		Room rate for each room type
4	Check_in_date	8	Date	DD/MM/YY	Check_in date
5	Check_out_date	8	Date	DD/MM/YY	Check_out date
6	Reserve_Flag	2	Character	(Y/N)	Reserve Flag for hotel reservation

Table E.3. Reception File.

No.	Fieldnam	Width	Type	Valid	Description
1	Rept_ID	6	Character		Running number reception_employee
2	Rept_name	25	Character		Name of reception employee
3	Position	20	Character		Position of each employee

Table E.4. Department File.

No.	Fieldname	Width	Type	Valid	Description
1	Dept_name	15	Character		Name of each department
2	Dept_tel	4	Character		Extention telephone number
3	Number_of_employee		Numeric		Number of person in each department

Table E.5. Check_In File.

No.	Fieldname	Width	Type	Valid	Description
1	Gname	30	Character		Guest name
2	R#	3	Character		Room number
3	Check_in_date	8	Date	DD/MM/YY	Check in date
4	Check_out_date	8	Date	DD/MM/YY	Experted check out date
5	Number_of_person		Numeric		Number of person in each room

Table E.6. Check-Out File.

No.	Fieldname	Width	Type	Valid	Description
1	Gname	30	Character		Guest number
2	R#	3	Character		Room number
3	Check_out_date	8	Date	DD/MM/YY	Check out date
4	Total_price		Numeric		Total price of each room
5	Payment_Method	2	Character	CA (cash), CR (credit)	Credit card or Cash

Table E.7. Reservation File.

No.	Fieldname	Width	Type	Valid	Description
1	RV_name	30	Character		Reservation name
2	Number_of_days		Numeric		Expected number of day to stay
3	Start_date	8	Date	DD/MM/YY	Starting date for
4	No_ot_Room		Numeric		Number of Room
5	R_rate		Numeric		Room rate for reservation
6	Reception_ID	6	Character		Employee who make reservation

Table E.8. Extra-Charge File.

No.	Fieldname	Width	Type	Valid	Description
1	R#	3	Character		Room number
2	Gname	30	Character		Name of guest
3	Service_charge		Numeric		Service Charge 10%
4	Govern_tax		Numeric		Government Tax 10%
5	Laundry		Numeric		Total laundry price
6	Others		Numeric		Others price
7	Food		Numeric		Total of food price
8	Telephone		Numeric		Total Telephone price
9	Miscelleneous		Numeric		Total of Miscelleneous price
10	Total_price_room		Numeric		Total price room

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APPENDIX F

DATA DICTIONARY

DATA DICTIONARY

acc_amt	=	*amount of expense or account activity of a guest*
		units: baht
acc_date	=	*the date that account item occurred*
acc_desc	=	*description of the expense or account activity*
acc_enq_request	=	*a flag to initiate guest account enquiry program*
acc_note	=	*long description or remark of account item*
acc_time	=	*the time that account tiem occurred*
acc_details	=	*information about expenses of guest in each room*
accepted_revs_details	=	*information about reservation that has been verified*
acc_reports	=	*information about guest's account on a hardcopy*
bill	=	*a details of guest account presented to a guest*
cancellation_req	=	*a cancellation request from guest*
change_req	=	*guest request to change information about reservation*
check_in_details	=	*a necessary information for guest check_in*
check_out_enquiry	=	*an enquiry request for a list of guest check_out*
check_out_enq_res	=	*a list of guest check_out as response to enquiry*
check_out_req	=	*a request for checking out by a guest*
check_out_enq_req	=	*a flag to initiate guest departure list enquiry program*
confirmation	=	*a confirmation on reservation from guest*
confirmation_updated	=	*change information on reservation record*
credit_card_details	=	*information about credit card used to payment*
guest_address	=	*guest contact address*
guest_balance	=	*amount of account balance of a guest*

guest_card_name	=	*name appear on the credit card*
guest_card_exp	=	*expired date of a credit card*
guest_card_no	=	*guest's credit card number*
guest_card_type	=	*type of guest's credit card used for payment*
guest_city	=	*country of a guest address*
guest_country	=	*country of a guest address*
guest_dis	=	*percentage discount for a guest *range: 0-100*
guest_home_tel	=	*guest home phone number*
guest_id	=	*identification of hotel's guest*
guest_id_card	=	*type of identification card of a guest* {"Id card/Passport"}
guest_id_card_exp	=	*expired date of guest's id card*
gues_limit	=	*credit limit of a guest*
guest_note	=	*long description or any remark of a guest*
gues_street	=	*a street of a guest address*
guest_type	=	*a classification of a guest*
guest_zip	=	*postal code*
daily_of_rev_report	=	*daily information of hotel's revenue*
daily_of_rev_report_ request	=	*a request to produce daily list of revenue report*
daily_revs_report	=	*daily list of revenue report*
daily_revs_report_req	=	*daily information about reservation*
deposit	=	*a request to produce daily reservation report*
exp_depart	=	*amount of money paid for room in advance*
		total number of guest expected to depart

exp_amount	=	*total amount of expenses*
guest_arrival_list	=	*a list of guests expected to arrival today*
guest_department_list	=	*a list of guests expected to depart today*
housekeeper_report	=	*a list of room to be cleaned from housekeeper*
invoice	=	*an information about expenses and payment*
len	=	*a period of time that guest expected to stay*
new_room_no	=	*a room number to be reserved for a reservation*
occ_first_date	=	*first date that a room is occupied*
occ_note	=	*long description or any remark of the room*
occ_person 1	=	*a name of a person staying in a room*
occ_person 2	=	*a name of a person staying in a room*
occ_person 3	=	*a name of a person staying in a room*
occ_peson 4	=	*a name of a person staying in a room*
payment	=	*information of payment made by guest*
payment_details	=	*details information about item or invoice*
payment_method	=	*information about how payment will be made*
pmt_amount	=	*amount due to be paid by a guest*
pmt_card_name	=	*name appeared in credit card used for payment*
pmt_care_no	=	*number of credit card used for payment*
pmt_card_type	=	*type of credit card used for payment*
pmt_cheque_no	=	*number of cheque used for payment*
pmt_date	=	*date that a payment is made*
pmt_id	=	*identification or invoice number of a payment*
pmt_method	=	*method of payment made by a guest*
resv_req	=	*a request by guest for room reservation*

resv_response	=	*a response to guest about request for reservation*
resv_date	=	*a date that rooms are reserved for*
resv_amount	=	*expected total of amount or reservation*
		units: baht
resv_balance	=	*amount of balance of a reservation after discount*
resv_confirmed	=	*indication of confirmation for a reservation*
resv_date	=	*date that a reservation was made*
resv_deposit	=	*amount of a deposit for a reservation*
resv_dis	=	*percentage discount given for a reservation*
room	=	*information of rooms in the hotel*
room_block	=	*information of rooms block are reserved*
room_enquiry	=	*an enquiry request to see a room status*
room_expense	=	*total amount of room's cost*
room_floor	=	*floor number that a room is located*
room_location	=	*location of a room in the hotel*
room_no	=	*number of room for sale*
room_note	=	*long description or any remark of a room*
room_sale	=	*number of sales of room type in a month*
room_sale_report	=	*information about room's status*
room-type	=	*information of type of room in the hotel*
room_mov_report_req	=	*a request to produce room movement report*
room_rate	=	*a rate quoted for a guest*
room_report	=	*information about room's hotel on a hardcopy*
resv_block	=	*flag indication whether a specific room is required*
resv_list	=	*identification of reservation details*

resv_first_date	=	*first date that a room is reserved by a guest*
resv_last_date	=	*last date that a room is reserved by a guest*
resv_note	=	*long description or any remark of reservation details*
resv_quantity	=	*quantity of a type of room reserved by a guest*
resv_total	=	*total amount of money for rooms reserved*
resv_type_rate	=	*rate quoted for a type of room's reservation*
sales_report	=	*information about sales of room on a hardcopy*
status_code	=	*current status of a room*
		{VR/VC/VD/OR/OC/OD/CO/OO/DND/VO}
status_name	=	*description of room's status*
status_note	=	*long description or any remark of a status*
total_arrival	=	*total number of guest arrived during a shift*
total_balance	=	*total amount of guest account balance*
		units: baht
total_card	=	*total money received as a payment by credit card*
		units: baht
total_cash	=	*total cash received by during a shift*
		units: baht
total_depart	=	*total number of guest departure during a shift*
total_resv	=	*total number of reservation during a shift*
total_payment	=	*total amount of payment from guest*
total_room_sale	=	*number of room sales in a month*
total_bill_to	=	*total amount of money billed to guests*
type_code	=	*identification of types of room that the hotel has*
type_name	=	*description the type of room*

type_note	=	*long description or any remark for a room type*
type_quantity	=	*total number of type rooms available for sale*
type_rate 1	=	*a rate of type room*
type_rate 2	=	*a rate of type room*
type_rate 3	=	*a rate of type room*
type_rate 4	=	*a rate of type room*
update_guest_acc	=	*changed information about guest account*
update_guest	=	*changed information for updating guest record*
update_resv	=	*changed information for updating reservation record*
update_room_details	=	*changed information for updating room record*
update_room_status	=	*changed of room status*
update_room_block	=	*changed information about block of room*

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APPENDIX G

PAYBACK ANALYSIS

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Table G.1. Cost of Alternative Candidate 1, Baht.

Cost Items	Description	Amount	Unit Price	Price
1. Development Cost:	1.1 Personnel Cost:			
	System Analysis (150 hrs./ea)	1	370.00	55,000.00
	System Designer (150 hrs./ea)	1	370.00	55,000.00
	IT Specialist (180 hrs./ea)	2	250.00	90,000.00
	Programmer (180 hrs./ea)	2	200.00	72,000.00
	Subtotal 1:			273,000.00
	1.2 Expense:			
	Training Cost	8	15,000.00	120,000.00
	Coding and Testing Cost	1	45,000.00	45,000.00
	Installation Cost	1	25,000.00	25,000.00
	Subtotal 2:			180,000.00
	1.3 New Hardware:			
	Server (Pentium III 800)	1	74,250.00	74,250.00
	Work Station (Celeron 600)	3	38,000.00	114,000.00
	Hub Service (8 ports)	1	1,400.00	1,400.00
	LAN Cable Wire	1	6,000.00	6,000.00
	UPS (1000 VA)	1	9,500.00	9,500.00
	HP LaserJet	1	25,000.00	25,000.00
	Epson LQ 670	1	15,500.00	15,500.00
	Subtotal 3:			245,650.00
	1.4 New Software:			
	Server Software	1	30,850.00	30,850.00
	DBMS Client Software	3	16,850.00	50,550.00
	Subtotal 4:			82,550.00
	Total Development Cost			791,200.00

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Table G.1. Cost of Alternative Candidate 1, Baht. (Continued)

Cost Items	Description	Amount	Unit Price	Price
2. Operating Cost:	2.1 Personnel Cost:			
	IT Specialist	1	290,000.00	290,000.00
	Manager	1	290,000.00	290,000.00
	Assistant Manager	1	170,000.00	170,000.00
	Employee	8	110,000.00	110,000.00
	Subtotal 1:			
	2.2 Maintenance:			
	Hardware Maintenance	-	-	18,000.00
	Software Maintenance	-	-	5,000.00
	Subtotal 2:			20,000.00
	Total Operating Cost			1,654,000.00
	Total Project Annual Cost			2,445,200.00

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Table G.2. Payback Analysis of Alternative Candidate 1, Baht.

Cost Items	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Development Cost	-791,200.00	-	-	-	-	-
Operating and Maintenance Cost	-	-1,654,000.00	-1,819,400.00	-2,001,340.00	-2,201,474.00	-2,421,621.40
Discount Factors (12%)	1.000	0.893	0.797	0.712	0.636	0.567
Time-Adjust Costs (Adjusted to Present Value)	-791,200.00	1,477,022.00	-1,450,061.80	-1,424,954.08	-1,400,137.46	-1,373,059.33
Cumulative Time-Adjusted Costs Over Lifetime	-791,200.00	-2,268,222.00	-3,718,283.80	-5,143,237.88	-6,543,375.34	-7,916,434.68

Remark: Operating and Maintenance Cost Estimated Annual Growth Rate 10%

Benefit Derived from Operation of New System	-	2,057,000.00	2,262,700.00	2,488,970.00	2,737,867.00	3,011,653.70
Discount Factors (12%)	1.000	0.893	0.797	0.712	0.636	0.567
Time-Adjust Benefits (Adjusted to Present Value)	-	1,836,901.00	1,803,371.90	1,772,146.64	1,741,283.41	1,707,607.65
Cumulative Time-Adjusted Benefit Over Lifetime	-	1,836,901.00	3,640,272.90	5,412,419.54	7,153,702.95	8,861,310.60

Remark: Benefits Derived from Operation of New System Estimated Annual Growth Rate of 10%

Cumulative Lifetime Time-Adjusted Cost+Benefits	-791,200.00	-431,321.00	-78,010.90	269,181.66	610,327.61	944,875.92

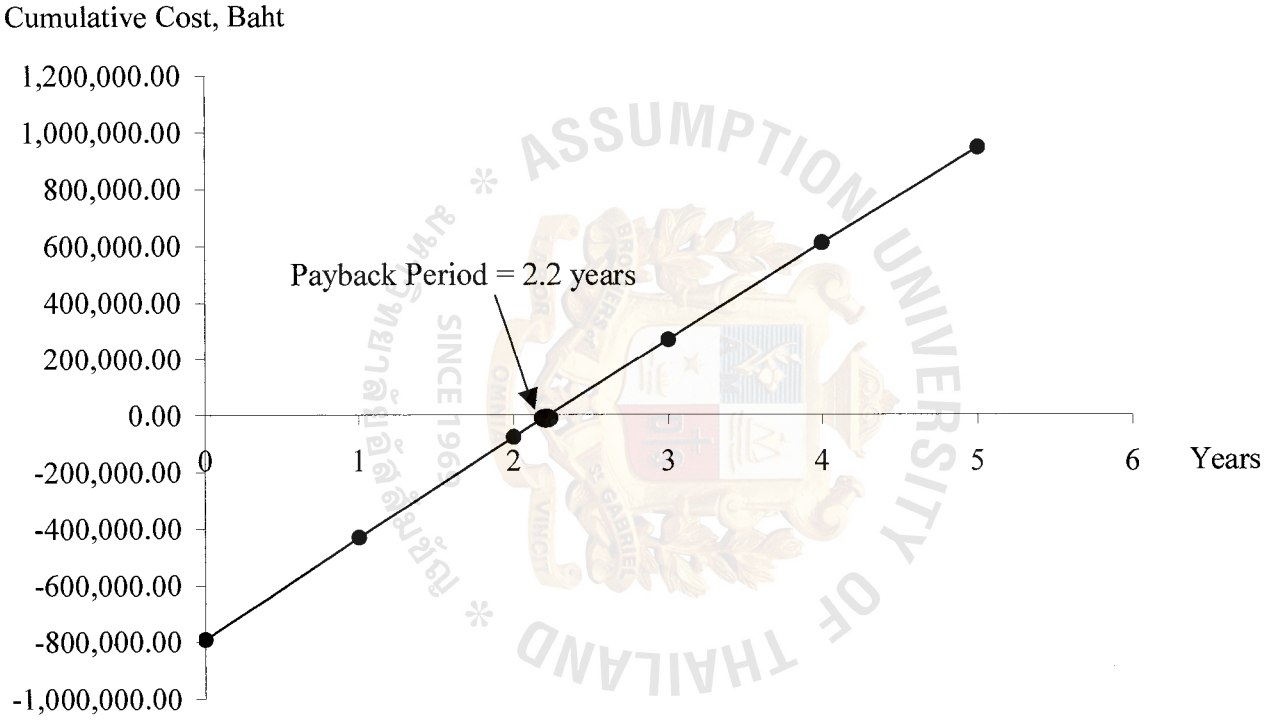

Figure G.1. Payback Period of Candidate 1.

Table G.3. Cost of Alternative Candidate 2, Baht.

Cost Items	Description	Amount	Unit Price	Price
1. Development Cost:	1.1 Personnel Cost:			
	System Analysis (150 hrs./ea)	1	370.00	55,500.00
	System Designer (150 hrs./ea)	1	370.00	55,500.00
	IT Specialist (180 hrs./ea)	2	250.00	90,000.00
	Programmer (150 hrs./ea)	2	200.00	72,000.00
	Subtotal 1:			273,000.00
	1.2 Expense:			
	Training Cost	12	18,000.00	216,000.00
	Coding and Testing Cost	1	45,000.00	45,000.00
	Installation Cost	1	24,000.00	24,000.00
	Subtotal 2:			285,000.00
	1.3 New Hardware:			
	Server (Pentium III 800)	1	147,000.00	147,000.00
	Work Station (Celeron 600)	7	45,500.00	318,500.00
	Hub Service (8 ports)	1	1,400.00	1,400.00
	LAN Cable Wire	1	6,000.00	6,000.00
	UPS (1000 VA)	2	9,500.00	19,000.00
	HP LaserJet	1	25,000.00	25,000.00
	Epson LQ 670	3	15,500.00	46,500.00
	Subtotal 3:			563,400.00
	1.4 New Software::			
	Server Software	1	32,000.00	32,000.00
	DBMS Client Software	7	16,850.00	117,950.00
	Subtotal 4:			149,950.00
	Total Development Cost			1,271,350.00

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Table G.3. Cost of Alternative Candidate 2, Baht. (Continued)

Cost Items	Description	Amount	Unit Price	Price
2. Operating Cost:	2.1 Personnel Cost:			
	IT Specialist	2	330,000.00	660,000.00
	Manager	1	290,000.00	290,000.00
	Employee	5	144,000.00	720,000.00
	Subtotal 1:			1,670,000.00
	2.2 Maintenance :			
	Hardware Maintenance	-	-	36,000.00
	Software Maintenance	-	-	12,000.00
	Subtotal 2:			48,000.00
	Total Operating Cost			1,718,000.00
	Total Project Annual Cost			2,989,350.00

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Table G.4. Payback Analysis of Alternative Candidate 2, Baht.

Cost Items	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Development Cost	-1,271,350.00	-	-	-	-	-
Operating and Maintenance Cost	-	-1,718,000.00	-1,889,800.00	-2,078,780.00	-2,286,658.00	-2,515,323.80
Discount Factors (12%)	1.000	0.893	0.797	0.712	0.636	0.567
Time-Adjust Costs (Adjusted to Present Value)	-1,271,350.00	-1,534,174.00	-1,506,170.60	-1,480,091.36	-1,454,314.49	-1,426,188.59
Cumulative Time-Adjusted Costs Over Lifetime	-1,271,350.00	-2,805,524.00	-4,311,694.60	-5,791,785.96	-7,246,100.45	-8,672,289.04

Remark: Operating and Maintenance Cost Estimated Annual Growth Rate 10%

Benefit Derived from Operation of New System	-	2,057,000.00	2,262,700.00	2,488,970.00	2,737,867.00	3,011,653.70
Discount Factors (12%)	1.000	0.893	0.797	0.712	0.636	0.567
Time-Adjust Benefits (Adjusted to Present Value)	-	1,836,901.00	1,803,371.90	1,772,146.64	1,741,283.41	1,707,607.65
Cumulative Time-Adjusted Benefit Over Lifetime	-	1,836,901.00	3,640,272.90	5,412,419.54	7,153,702.95	8,861,310.60

Remark: Benefits Derived from Operation of New System Estimated Annual Growth Rate of 10%

Cumulative Lifetime Time-Adjusted Cost+Benefits	-1,271,350.00	-968,623.00	-671,421.70	-379,366.42	-92,397.50	189,021.56

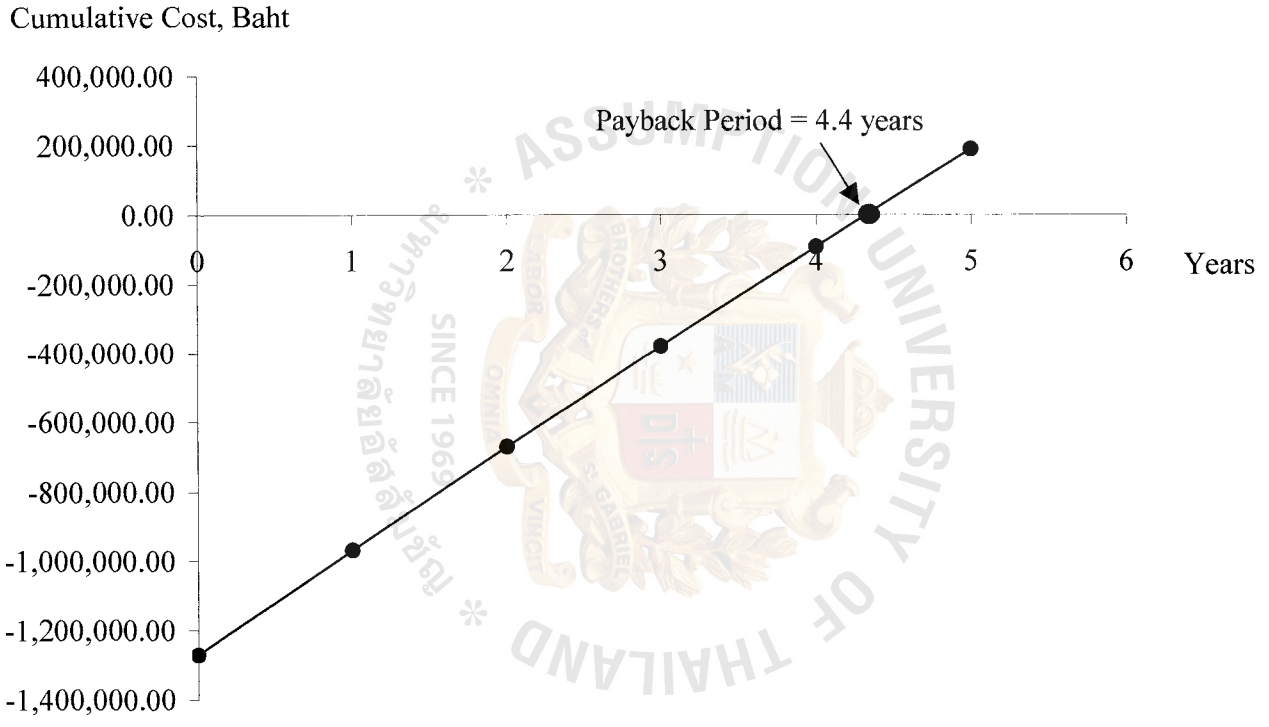

Figure G.2. Payback Period of Candidate 2.

Table G.5. Cost of Alternative Candidate 3, Baht.

Cost Items	Description	Amount	Unit Price	Price
1. Development Cost:	1.1 Personnel Cost:			
	System Analysis (150 hrs./ea)	1	370.00	55,500.00
	System Designer (150 hrs./ea)	1	370.00	55,500.00
	IT Specialist (180 hrs./ea)	2	250.00	90,000.00
	Programmer (180 hrs./ea)	2	200.00	72,000.00
	Subtotal 1:			273,000.00
	1.2 Expense:			
	Training Cost	10	11,000.00	110,000.00
	Coding and Testing Cost	1	45,000.00	45,000.00
	Installation Cost	1	25,000.00	25,000.00
	Subtotal 2:			180,000.00
	1.3 New Hardware:			
	Server (Pentium III 800)	1	95,000.00	95,000.00
	Work Station (Celeron 600)	7	22,000.00	154,000.00
	Hub Service (8 ports)	1	1,400.00	1,400.00
	LAN Cable Wire	1	6,000.00	6,000.00
	UPS (1000 VA)	3	9,500.00	285,000.00
	HP LaserJet	1	25,000.00	25,000.00
	Epson LQ 670	2	15,500.00	31,00.00
	Subtotal 3:			340,900.00
	1.4 New Software:			
	Server Software	1	14,535.00	14,535.00
	DBMS Client Software	7	9,000.00	63,000.00
	Subtotal 4:			
	Total Development Cost			871,435.00

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Table G.5. Cost of Alternative Candidate 3, Baht. (Continued)

Cost Items	Description	Amount	Unit Price	Price
2. Operating Cost:	2.1 Personnel Cost:			
	IT Specialist	1	330,000.00	330,000.00
	IT Assistant	2	160,000.00	320,000.00
	Manager	1	300,000.00	300,000.00
	Employee	6	122,000.00	732,000.00
	Subtotal 1:			1,682,000.00
	2.2 Maintenance:			
	Hardware Maintenance	-	-	38,500.00
	Software Maintenance	-	-	20,000.00
	Subtotal 2:			58,500.00
	Total Operating Cost			1,740,500.00
	Total Project Annual Cost			2,789,935.00

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Table G.6. Payback Analysis of Alternative Candidate 3, Baht.

Cost Items	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Development Cost	-1871,435.00	-	-	-	-	-
Operating and Maintenance Cost	-	-1,740,500.00	-1,914,550.00	-2,106,005.00	-2,316,605.50	-2,548,266.05
Discount Factors (12%)	1.000	0.893	0.797	0.712	0.636	0.567
Time-Adjust Costs (Adjusted to Present Value)	-871,435.00	-1,554,266.50	-1,525,896.35	-1,499,475.56	-1,473,361.10	-1,444,866.85
Cumulative Time-Adjusted Costs Over Lifetime	-871,435.00	-2,425,701.50	-3,951,597.85	-5,451,073.41	-6,924,434.51	-8,369,301.36

Remark: Operating and Maintenance Cost Estimated Annual Growth Rate 10%

Benefit Derived from Operation of New System	-	2,057,000.00	2,262,700.00	2,488,970.00	2,737,867.00	3,011,653.70
Discount Factors (12%)	1.000	0.893	0.797	0.712	0.636	0.567
Time-Adjust Benefits (Adjusted to Present Value)	-	1,836,901.00	1,803,371.90	1,772,146.64	1,741,283.41	1,707,607.65
Cumulative Time-Adjusted Benefit Over Lifetime	-	1,836,901.00	3,640,272.90	5,412,419.54	7,153,702.95	8,861,310.60

Remark: Benefits Derived from Operation of New System Estimated Annual Growth Rate of 10%

Cumulative Lifetime Time-Adjusted Cost+Benefits	-871,435.00	-588,800.50	-311,324.95	-38,653.87	299,268.44	492,009.24

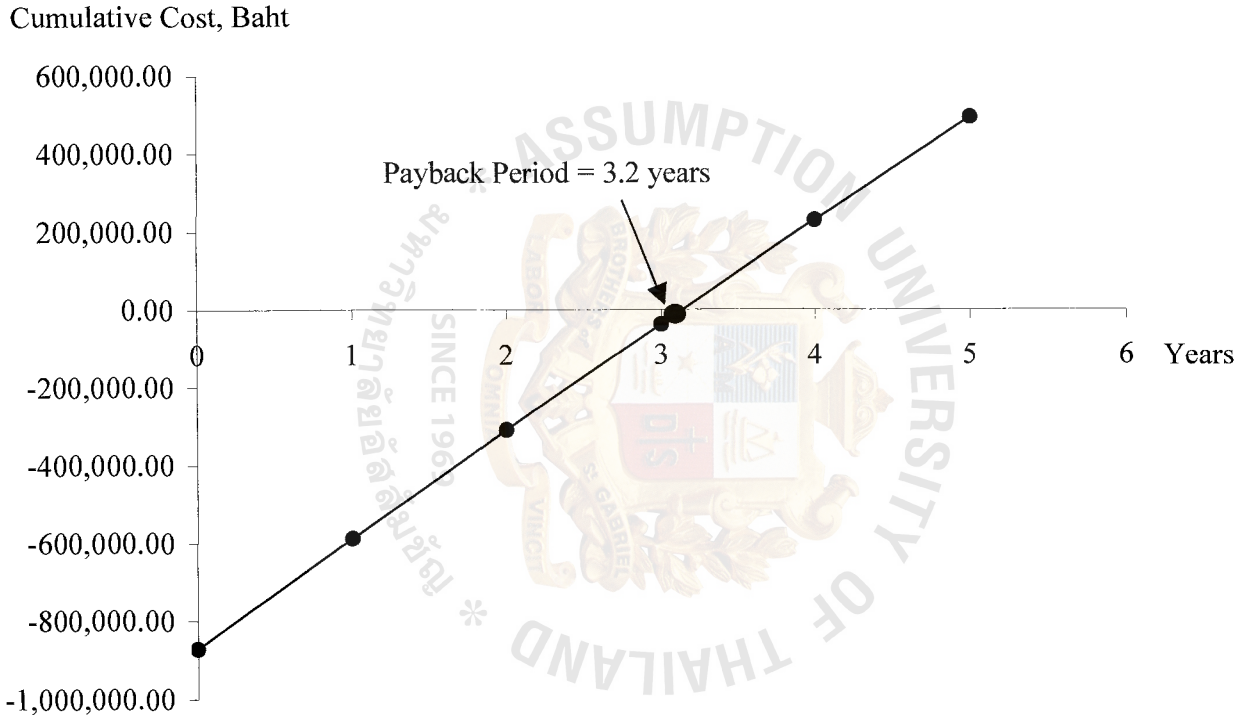

Figure G.3. Payback Period of Candidate 3.

APPENDIX H

PROCESS SPECIFICATION

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Table H.1. Process Specification of Process 1.0.

Items	Description
Process Name:	Regist Guest Information
Data In:	(1) Valid Guest Information (2) Update Guest Information
Data Out:	Update Guest Information
Process:	(1) Get guest information (2) Update guest information
Attachment:	(1) Data Store D1

Table H.2. Process Specification of Process 2.0.

Items	Description
Process Name:	Check-In Room Information
Data In:	Number of Days
Data Out:	(1) Update Guest Information (2) Valid Guest Information (3) Registration Card
Process:	(1) Get guest information (2) Update guest information (3) Send registration card
Attachment:	(1) Data Store D1 (2) Guest

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Table H.3. Process Specification of Process 3.0.

Items	Description
Process Name:	Reserve Room Information
Data In:	Number of Days
Data Out:	(1) Valid Guest Information (2) Update Reservation Information
Process:	(1) Receive Information of Guest (2) Send Guest Information (3) Update Reservation Information
Attachment:	(1) Data Store D2 (2) Process 1.0 Input Guest Information

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Table H.4. Process Specification of Process 4.0.

Items	Description
Process Name:	Check-Out Room Information
Data In:	(1) Number of Days (2) Update Reservation Information (3) Update Guest Information
Data Out:	(1) Room Number (2) Room Rate (3) Update Guest Information (4) Update Hotel Information (5) Registration Card
Process:	(1) Get guest information (2) Send room rate and room number (3) Update hotel information (4) Send registration card
Attachment:	(1) Data Store D1 (2) Data Store D3 (3) Reception (4) Guest

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St. Gabriel's Library, Au

Table H.5. Process Specification of Process 1.1.

Items	Description
Process Name:	Valid Guest Information
Data In:	Guest Information
Data Out:	Valid Guest Information
Process:	(1) Get guest information (2) Accept guest information
Attachment:	(1) Process 1.2 Update Guest File

Table H.6. Process Specification of Process 1.2.

Items	Description
Process Name:	Update Guest File
Data In:	Valid guest information
Data Out:	Guest information
Process:	(1) Get guest information (2) Update guest information
Attachment:	(1) Data Store D1

Table H.7. Process Specification of Process 2.1.

Items	Description
Process Name:	Verify Reservation Record
Data In:	Reservation Information
Data Out:	Valid Reservation
Process:	(1) Receive reservation information (2) Accept reservation
Attachment:	(1) Process 2.4 Verify Check-In Record

Table H.8. Process Specification of Process 2.2.

Items	Description
Process Name:	Regist Check-In Information
Data In:	Number of Days
Data Out:	Check-In Guest Record
Process:	(1) Accept walk-in guest information (2) Send check-in guest record
Attachment:	(1) Process 2.4 Verify Check-In Record

Table H.9. Process Specification of Process 2.3.

Items	Description
Process Name:	Verify Guest Information
Data In:	Guest Information
Data Out:	Guest Information
Process:	(1) Read existing guest record (2) Send guest information
Attachment:	(1) Process 2.2 Verify Check-In Record

Table H.10. Process Specification of Process 2.4.

Items	Description
Process Name:	Verify Check-In Record
Data In:	(1) Valid Reservation (2) Check-In Guest Record (3) Guest Information (4) Guest Record
Data Out:	Valid Check-In Information
Process:	(1) Receive reservation (2) Accept walk-in guest information (3) Receive guest information (4) Receive hotel information
Attachment:	(1) Process 2.5 Approve Check-In Information

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Table H.11. Process Specification of Process 2.5.

Items	Description
Process Name:	Approve Check-In Information
Data In:	Valid Check-In Information
Data Out:	(1) Update Guest Information (2) Room Rate (3) Room Number (4) Update Hotel Information
Process:	(1) Approve check-in information (2) Send update guest information (3) Send room rate and room number (4) Send update hotel information
Attachment:	(1) Guest (2) Data Store D1

Table H.12. Process Specification of Process 3.1.

Items	Description
Process Name:	Input Reservation Record
Data In:	(1) Number of Days (2) Starting Date
Data Out:	Guest Reservation Information
Process:	(1) Accept number of days (2) Accept starting date (3) Send guest reservation information
Attachment:	(1) Process 3.5 Approve Reservation Record

Table H.13. Process Specification of Process 3.2.

Items	Description
Process Name:	Read Hotel Information
Data In:	Hotel Information
Data Out:	Available Room
Process:	(1) Receive resort information (2) Check room available
Attachment:	(1) Process 3.5 Approve Reservation Record

Table H.14. Process Specification of Process 3.3.

Items	Description
Process Name:	Approve Reservation Record
Data In:	(1) Guest Reservation Information (2) Available Room (3) Check Reservation Record
Data Out:	Reservation Information
Process:	(1) Get guest reservation information (2) Update available room (3) Update existing record (4) Send reservation information
Attachment:	(1) Process 3.4 Update Reservation File

Table H.15. Process Specification of Process 3.4.

Items	Description
Process Name:	Update Reservation File
Data In:	Reservation Information
Data Out:	Update Reservation
Process:	(1) Get reservation information (2) Update reservation information
Attachment:	(1) Data Store D2

Table H.16. Process Specification of Process 4.1.

Items	Description
Process Name:	Input Check-Out Information
Data In:	Guest Activity Information
Data Out:	Summary Activity Information
Process:	(1) Record the activity of guest (2) Send summary activity information
Attachment:	(1) Process 4.3 Calculate Payment

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Table H.17. Process Specification of Process 4.2

Items	Description
Process Name:	Read Guest Information
Data In:	Guest Information Record
Data Out:	Guest Record
Process:	(1) Get guest information (2) Send guest record
Attachment:	(1) Process 4.3 Calculate Payment

Table H.18. Process Specification of Process 4.3.

Items	Description
Process Name:	Calculate Payment
Data In:	(1) Guest Record (2) Summary Activity Information
Data Out:	Total Price
Process:	(1) Record the activity of guest (2) Calculate total price
Attachment:	(1) Process 4.4 Generate Payment

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Table H.19. Process Specification of Process 4.4.

Items	Description
Process Name:	Generate Payment Method
Data In:	(1) Total Price (2) Payment Method
Data Out:	(1) Update Guest Information (2) Update Hotel Information (3) Summary Check-Out Information (4) Receipt Slip
Process:	(1) Get amount (2) Update guest information (3) Update hotel information (4) Send summary report (5) Send slip
Attachment:	(1) Guest (2) Process 4.5 Generate Report

Table H.20. Process Specification of Process 4.5.

Items	Description
Process Name:	Generate Report
Data In:	(1) Summary Check-Out Information (2) Receipt Slip
Data Out:	Summary Report
Process:	(1) Get summary check-out information (2) Receive receipt slip (3) Send summary report
Attachment:	(1) Accounting

APPENDIX I

USER INTERFACE DESIGN

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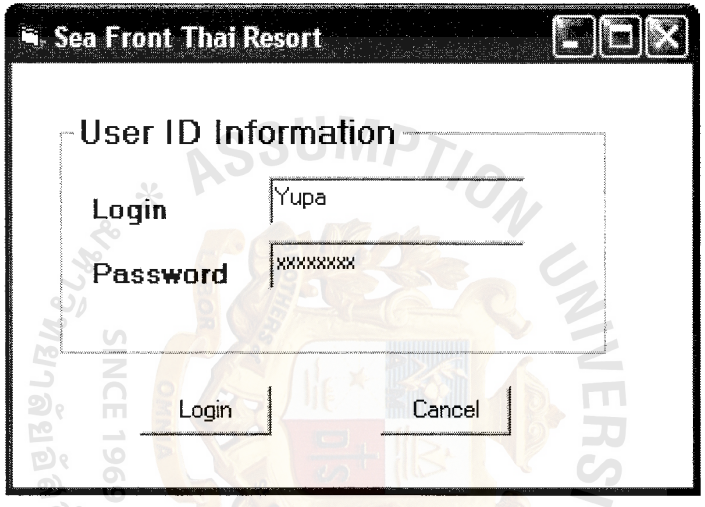

Figure I.1. User ID Information.

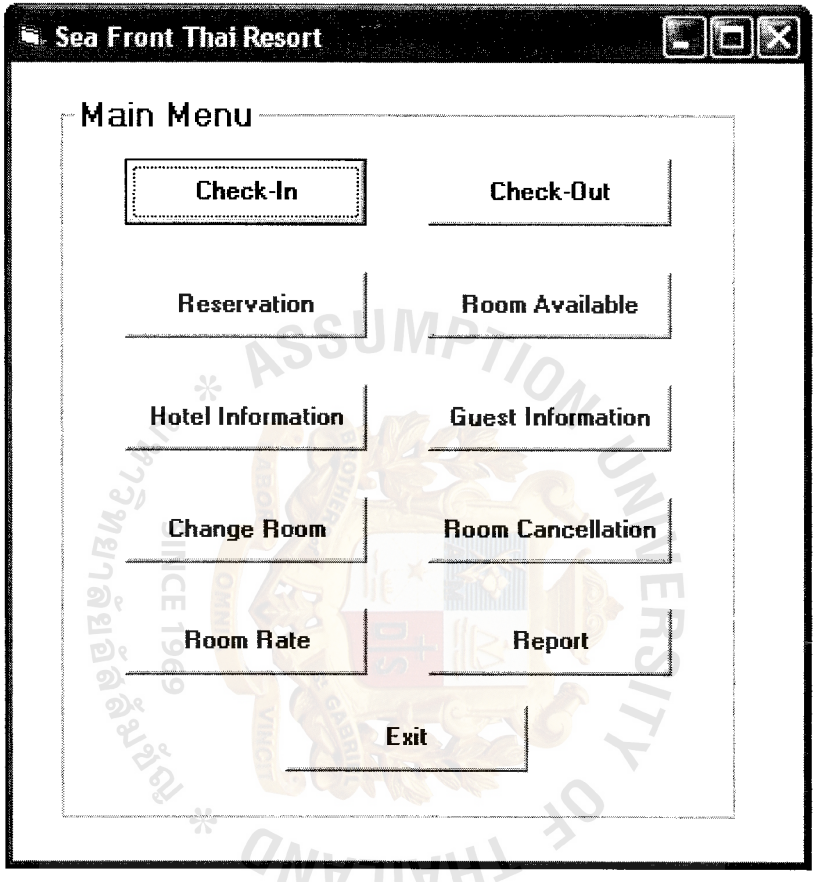

Figure I.2. Main Menu.

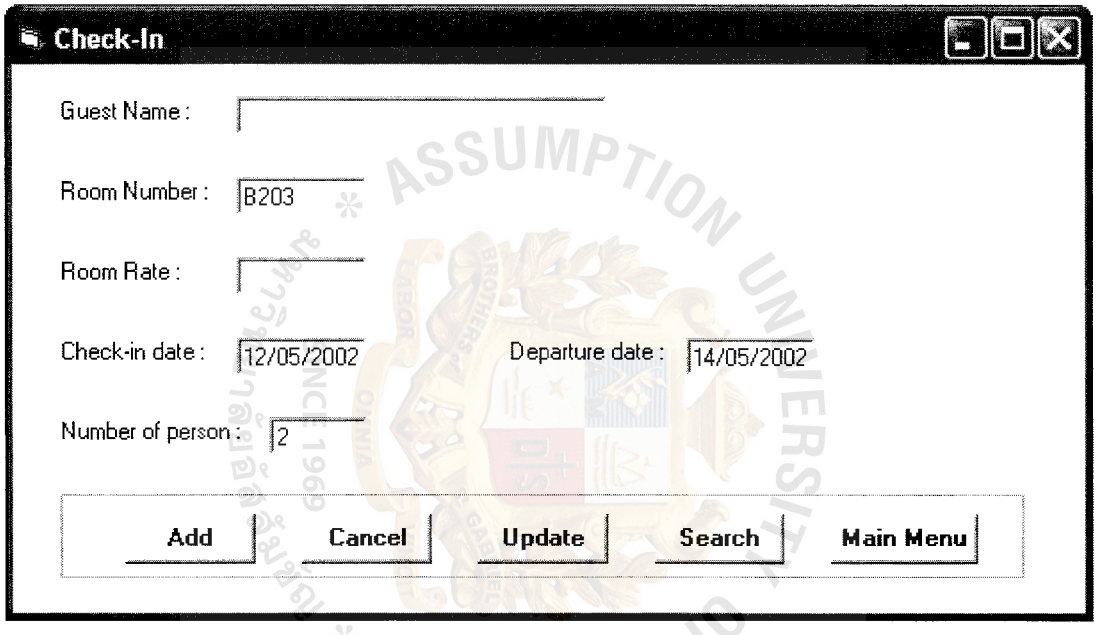

Figure I.3. Check-In Record.

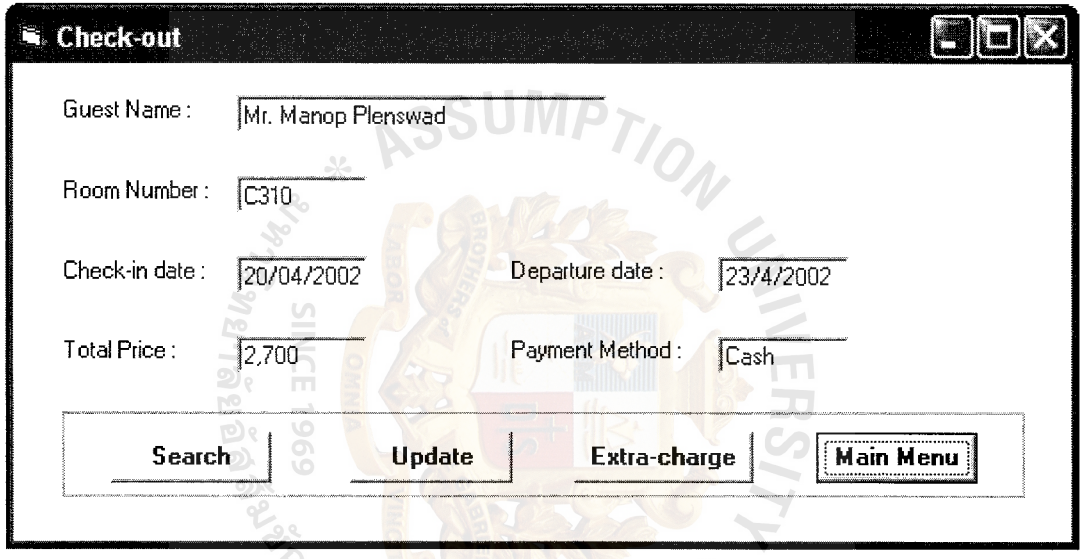

Figure I.4. Check-Out Record.

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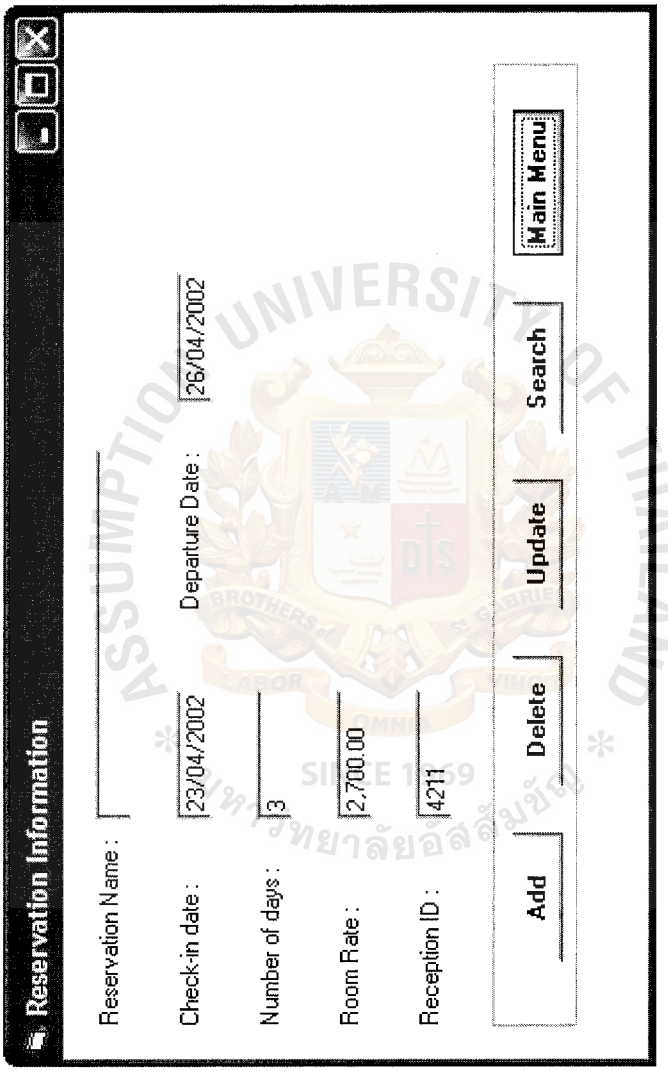

Figure I.5. Reservation Information.

Figure I.6. Room Available.

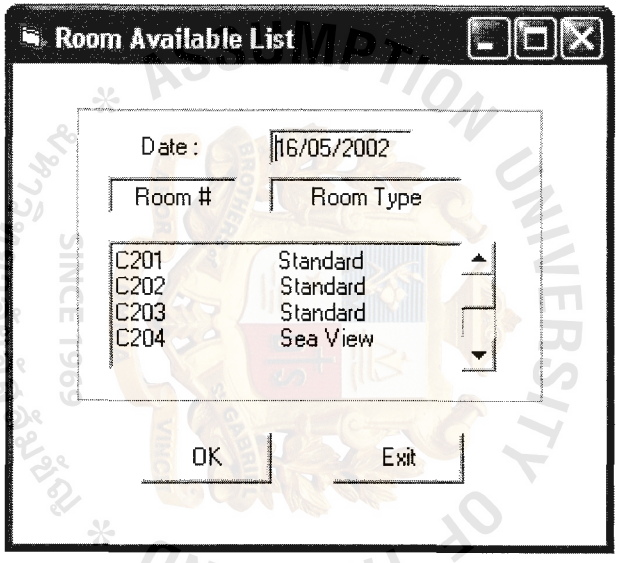

Figure I.7. Room Available list.

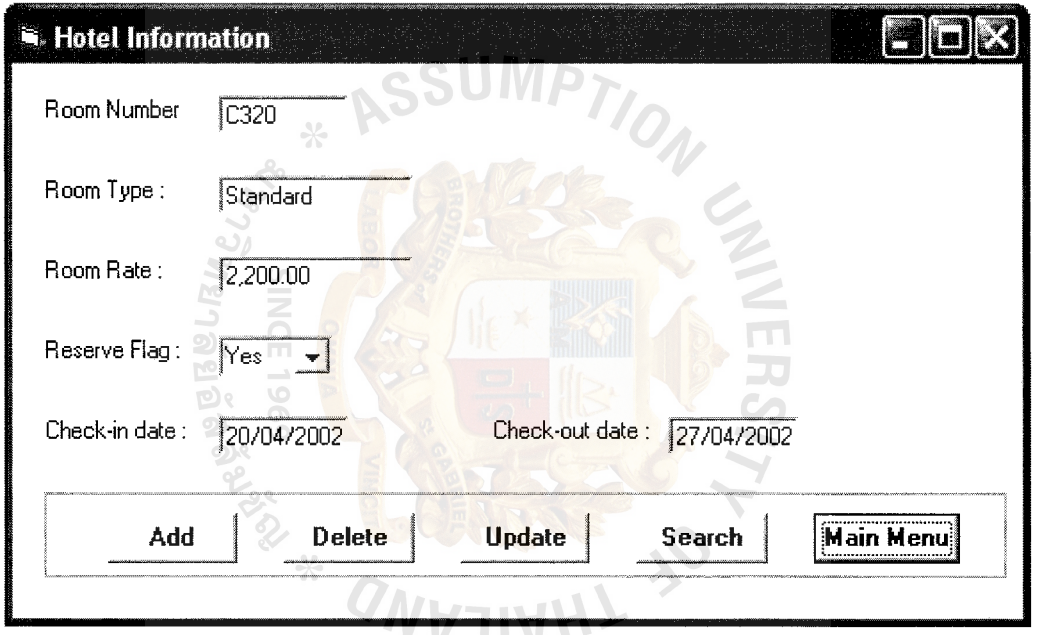

Figure I.8. Hotel Information.

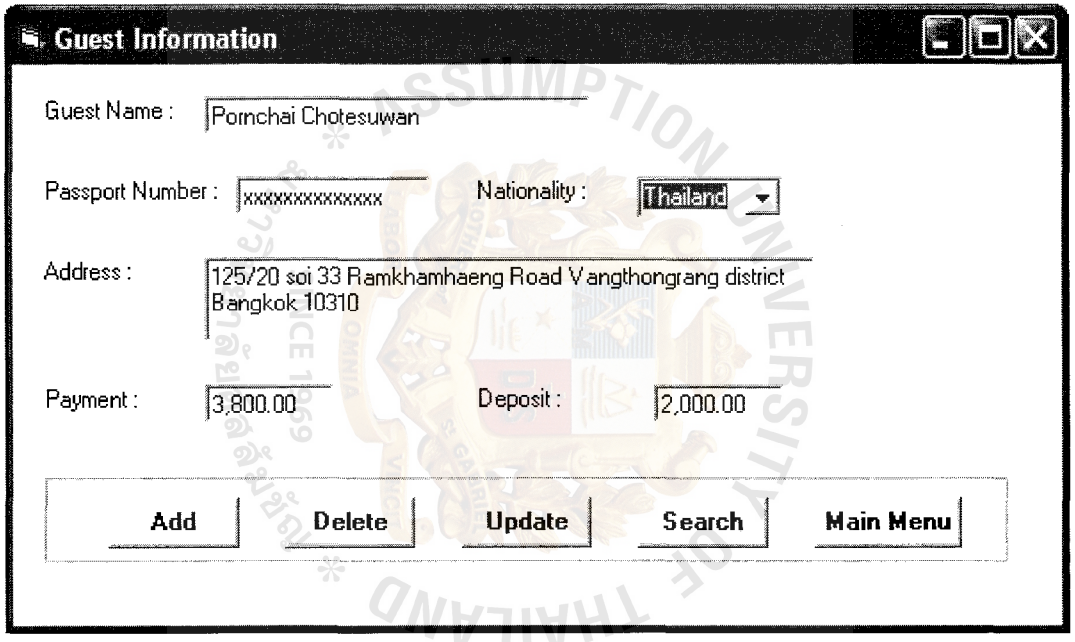

Figure I.9. Guest Information.

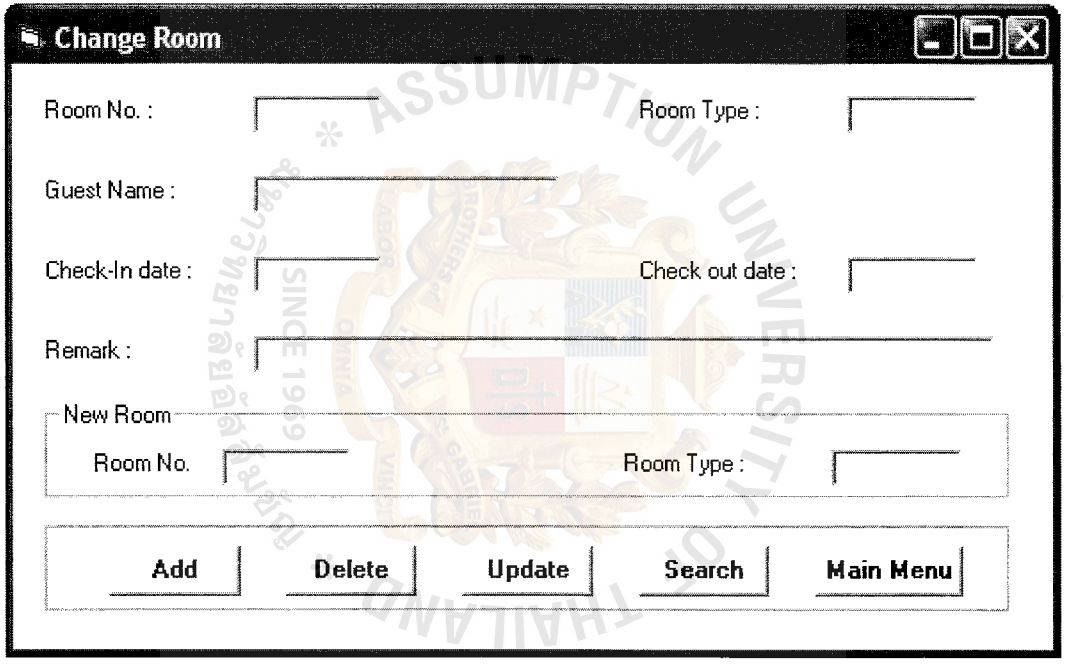

Figure I.10. Change Room.

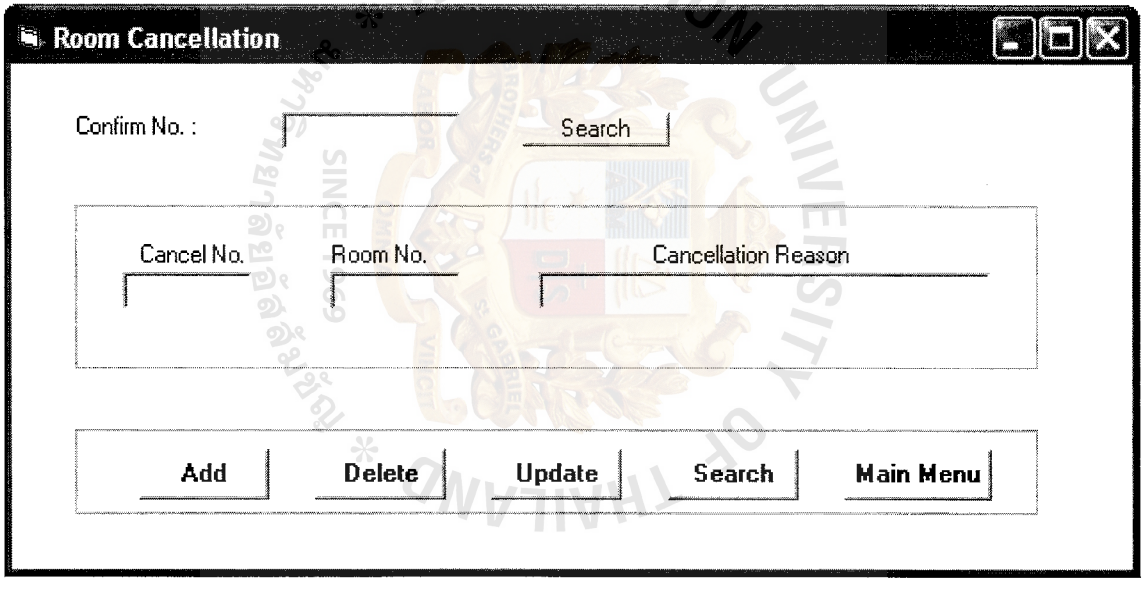

Figure I.11. Room Cancellation.

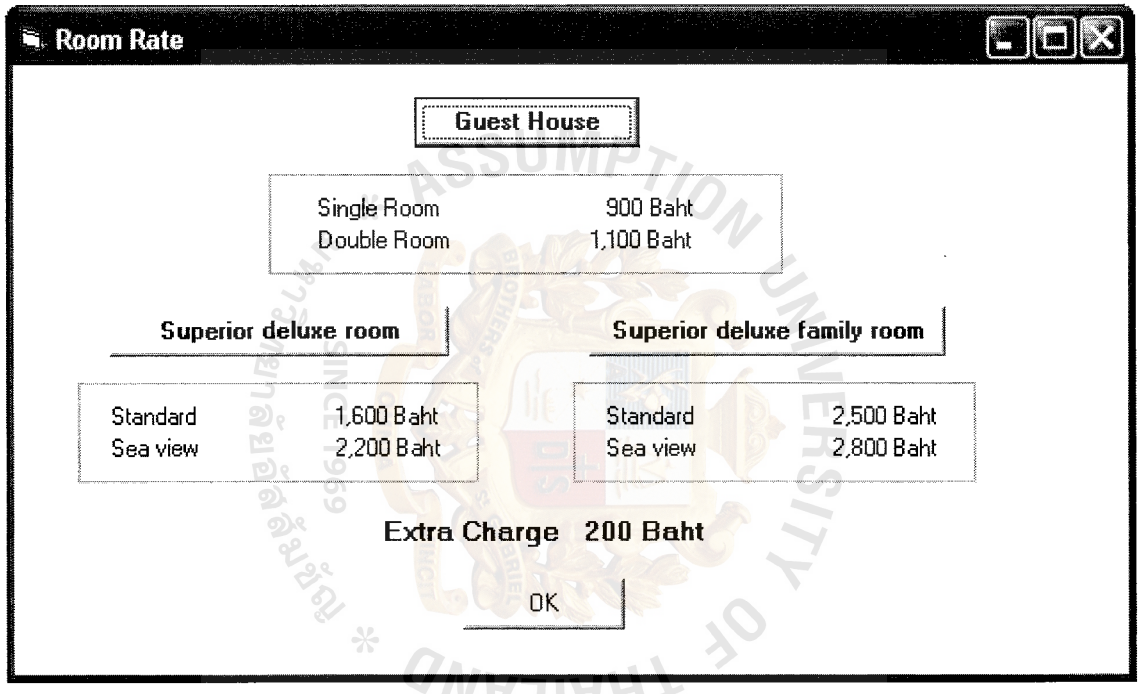

Figure I.12. Room Rate.

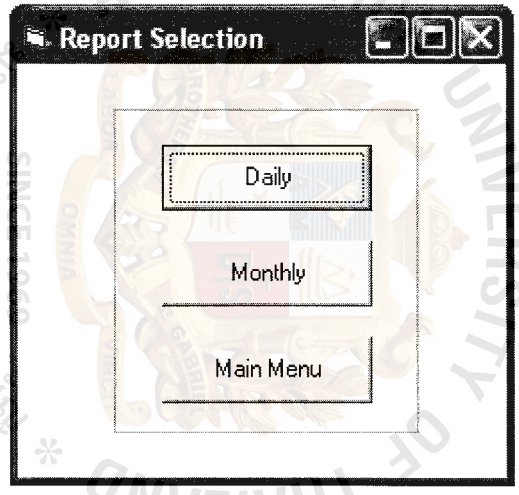

Figure I.13. Report Selection.

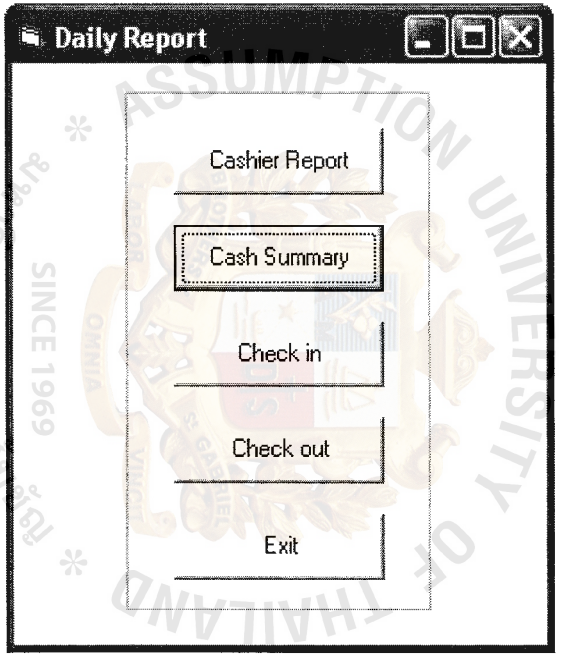

Figure I.14. Daily Report.

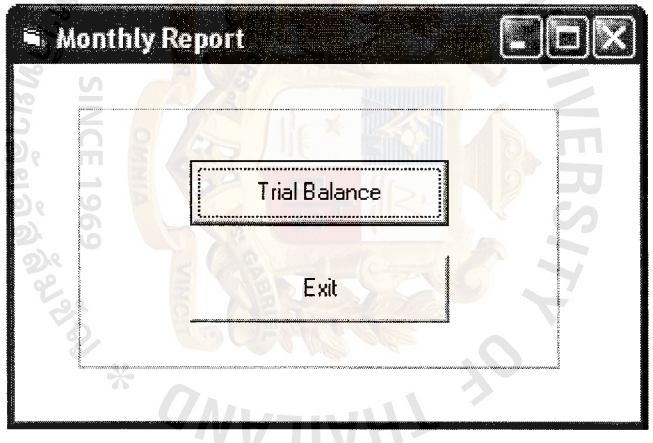

Figure I.15. Monthly Report.

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