



# Personnel Information System for the Banking Business

By

Ms. Sarunya Wongpanich

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

Submitted in Partial Fulfillment  
of the Requirements for the Degree of  
Master of Science  
in Computer Information Systems  
Assumption University

July, 2000



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Project Title	Personnel Information System for the Banking Business
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Academic Year	July 2000

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The Graduate School of Assumption University has approved this final report of the three-credit course, CS 6998 System Development Project, submitted in partial fulfillment of the requirements for the degree of Master of Science in Computer Information Systems.

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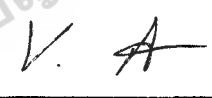
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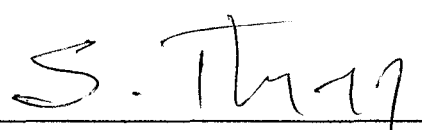
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July 2000

## ABSTRACT

This System Development Project provides the analysis, design and implementation of Personnel Information system. The analysis and design process covers the problem definitions, development planning, information gathering and understanding of existing system and the requirement. It also includes the design of the new system to solve the problem. The new system can reduce the operating costs and time consumption.

The scope of the project covers recording the employee information, new and existing employee promotion, employee record, employee training information, employee financial compensation, and employee loan information. It also covers the reports for the Management of the Banking Business.

The proposed computerized system will perform a different personnel information system in integrated and timely manner. It will improve the working methods, reduce redundancy process, and provide more accurate and up-to-date information for management. It also helps to conduct tactical and strategic planning by providing a relatively easy means to analyze, and query, also including the design of input screen which chooses Microsoft Visio 2000 SR-1 Technical as the program development tool on the computer network.



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## I. INTRODUCTION

### 1.1 Background of the Project

Information is all around us, yet unless it is put into logical order, information is useless. Organization will survive, grow and be competitive if they have qualified staff to work within. Many businesses concentrate on personnel management to regulate their human resources productively. This System Development Project provides the analysis, design and implementation of Human Resource Management system for the human resources of the Bank at Pattanakarn branch.

Human Resource Development Department is a major servicing department in the company. This department is responsible for all staff functions within the organization. The functions include recruiting, monitoring, developing as well as handling of staff information.

Because of the nature of business, our bank is aware of the need for precision and the development of human resources. That is why we have education and training center for external training, in-house training, long distance training through PC on-line. The scope of the project covers the recording of application information, employee information, and employee training information. They usually have problem in managing this information as collecting staff record, benefit information, training course information schedule etc. It is difficult to check the record of leave directly.

Computerized information system is introduced to solve problems and to manage limited resources more effectively to support the bank's needs.



## **1.2 Objective of the Project**

The objectives of the project on The Personnel Management System are as follows:

- (1) To study the existing system of the Human Resource Development Department
- (2) To identify opportunities for computerization
- (3) To analyze the current problems of the existing system
- (4) To find the best procedure to reduce processing time
- (5) To develop and implement the proposed computerized system to replace the existing system
- (6) To utilize the personnel information system to produce more reports for Management
- (7) To reduce process time for the system

## **1.3 Scope of the Project**

The scope of the project will cover all of the following:

- (1) Analyzing, designing and developing a computerized system for Personnel Information System
- (2) Preparing qualified person into new / vacant position
- (3) Maintaining Application Information
- (4) Managing, keeping and updating employee's information
- (5) Preparing benefit information
- (6) Preparing training information, providing training course to employees
- (7) Designing screen layout for users

Scope of the work will focus on the information system, which supports all the personal information and work operation.

#### **1.4 Project Plan**

The Gantt Chart of the Bank at Pattnakarn branch. In this case, it takes 4 months from the beginning until it is finished. The Gantt Chart is divided into 3 phases, which are:

(1) **System Analysis**

It consists of identifying the problems, identifying existing working process, and developing workflow of the system.

(2) **Detail Analysis and Design**

The researcher goes into detail analysis and design phase after the problems and requirement of the users are already known. The researcher would gather the detail and develop data flow diagram.

(3) **Implementation**

The researcher would go further to develop screen layout, data conversion, programming, testing and documentation. It is required to conduct maintenance activity after finishing implementation phases. This step deals with correcting the error.

## **II. EXISTING SYSTEM**

### **2.1 Background of the Organization**

The original Bank was established on January 27, 1945 in Ayudhya province, the ancient capital of Thailand, and commenced operations on April 1, 1945, starting with a capitalization of only 1 million Baht. The Bank's head was initially based in Ayudhya but was moved to Bangkok, the capital of Thailand, within a year of the Bank's establishment. The bank was located on Ratchawong Road and Anuwong Road in Lamphun-chai in 1948 and 1950, respectively.

When the Bank's business prospered, its headquarter was moved to Ploenchit road in 1970 to accommodate more customers. The bank's Ordinary Shares have been publicly listed on the Stock Exchange of Thailand since September 26, 1977 and registered as a public limited company in Thailand under the Public Limited Company Act on September 28, 1993 with an authorized share capital of Baht 8 Billion and an issued and paid-up share capital of Baht 4 billion.

In December 1996, the Bank moved to its new Head Office at the present location, 1222 Rama III road, Bang Phongphang, Yan Nawa, Bangkok 10120 and commenced its banking services on May 30, 1997. The Bank raised its paid-up capital through rights issues from 4 billion Baht to 5 billion Baht in July 1996 and again from Baht 10 billion in July 1996 and again from 5 billion Baht to 10 billion Baht in June 1998.

This bank is the fifth largest domestic commercial bank in terms of assets size in Thailand. As of December 31, 1999, had total assets of 441.59 billion Baht (US\$ 11.77 billion), loans (net of allowance for doubtful accounts) of 327.19 billion Baht (US\$ 8.72 billion) and deposits of 356.10 billion Baht (US\$ 9.50 billion).



The Bank provides full range of retail and corporate banking services to both individual and corporate customers. The Bank's retail banking activities include demand, savings and time deposits, lending service, bill payment services, investment banking, electronic banking and other services at any of its nation-wide branches.

As of December 31, 1999, this bank is the fifth largest branch network among Thai commercial banks, with 417 domestic branches located throughout Thailand. Of the Bank's domestic branch network, 167 branches (or approximately 40 % of Bank's total number of domestic branches) are concentrated in and around the Bangkok metropolitan area. The Bank's extensive branch network is supported by 421 automated teller machines ("ATM") nationwide. In addition to its domestic branch network, the Bank has branches in Hong Kong, Vientiane, Lao P.D.R. and the Cayman Islands.

As for the Banking Business, it has loan (net of allowance for doubtful accounts) of 2,138 million Baht and deposit of 1,360 million Baht as of April 2000, a Pattanakarn Branch was established 10 years ago and located on Pattanakarn road, Suanhlang, Bangkok. The present organizing of personnel information is still done manually, which is time –consuming, and causes great volume for paper work. The researcher has intention to develop the manual system to become a computerized one by designing the system and analyzing the existing system so as to transform it into the proposed system in this project.

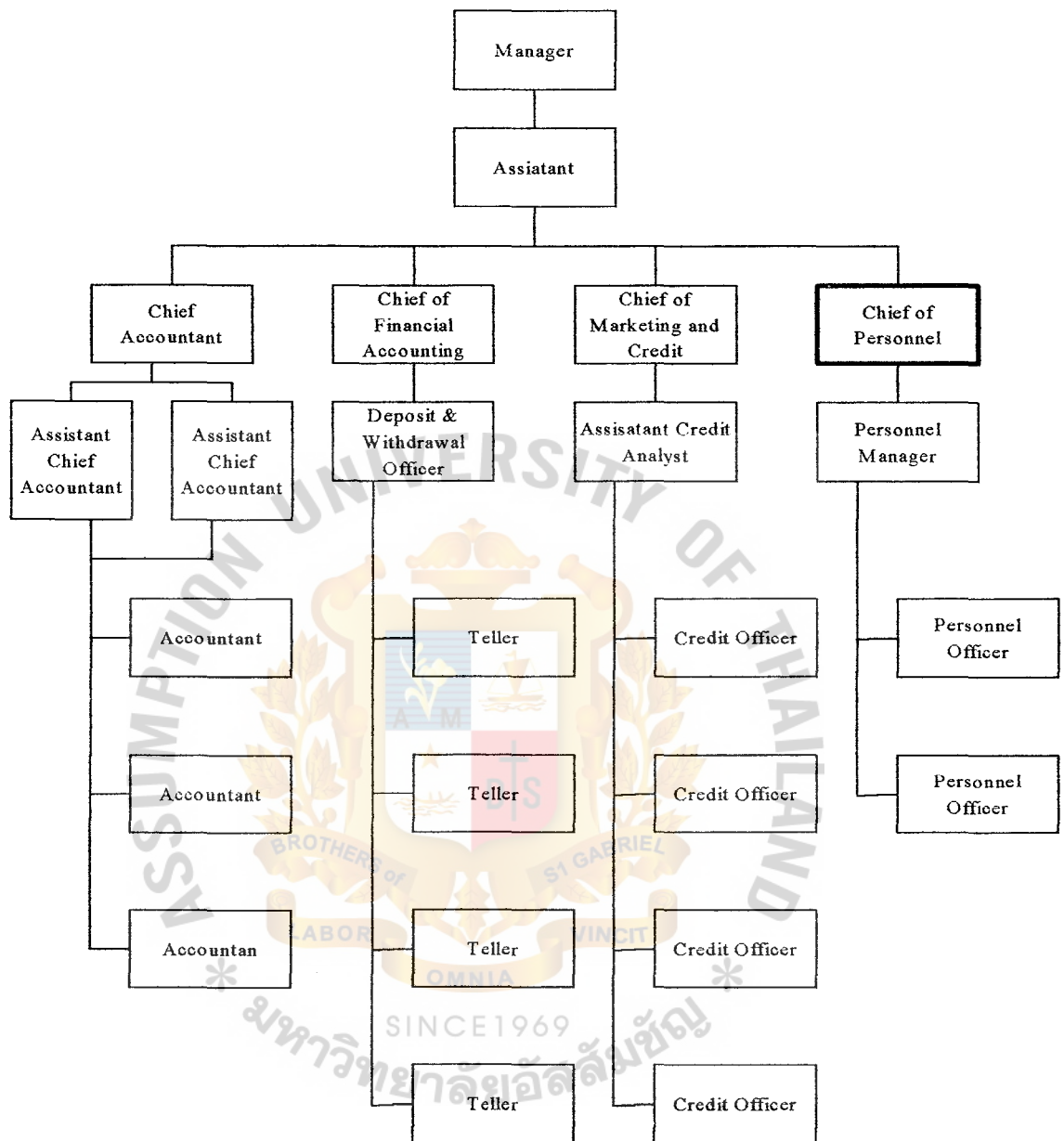


Figure 2.1. Organization Chart of the Bank at Pattanakarn Branch.

## 2.2 Exiting Business Function

The Bank at Pattanakarn branch, the operation will depend on the budget and the profit receives from running the business. The promotion and transfer employees depend on the capacity and address including the education of the employees. We emphasize on the personnel information system, which supports all the personnel information.

Main duties of this organization are:

- (1) To be responsible for recruitment work and transferring the existing employees
- (2) To record ,update and keep all employees data
- (3) To arrange training for employees
- (4) To record employees leave attendance
- (5) To compile data of working record, activity, education and inspection of all employees
- (6) To select employees for promotion
- (7) To be responsible for administration document function

There are many types of personnel administration documents.

- (a) employee's overtime document
- (b) employee's work time document
- (c) retirement document
- (d) employee's holiday document
- (e) employee's loan document
- (f) employee's medical treatment document

The work is concerned with administration document adding, and document change.

#### 2.2.1 The Existing Procedures

The current system is manual operation, because they are conservative they would not change any system if it is not necessary. Most of reports are recorded as documents. The information that management needs are the employee record, document record, etc.

The personnel officers have the responsibility to store the information, update the information, prepare reports, and search the information. They need all sources of personnel in order to store, update and search.

The personnel staff needs the proposed system that is the computerized system. The computerized system can help them work more efficiently and faster at high speed unlike the existing manual system.

The process of works are shown as:

- (1) Promoting new or existing employee promotion process
- (2) Preparing employee information
- (3) Preparing benefit information
- (4) Preparing training information
- (5) Preparing employee leave / vacation information
- (6) Employee record process
- (7) Employee loan process

#### 2.2.2 Output of the Existing System

There are the outputs from the manual operation by using the computer to key report such as:

- (1) Employee list, update employee record

- (2) Medical treatment report
- (3) Training report, employee training report
- (4) Employee loan record
- (5) Employee financial compensation record





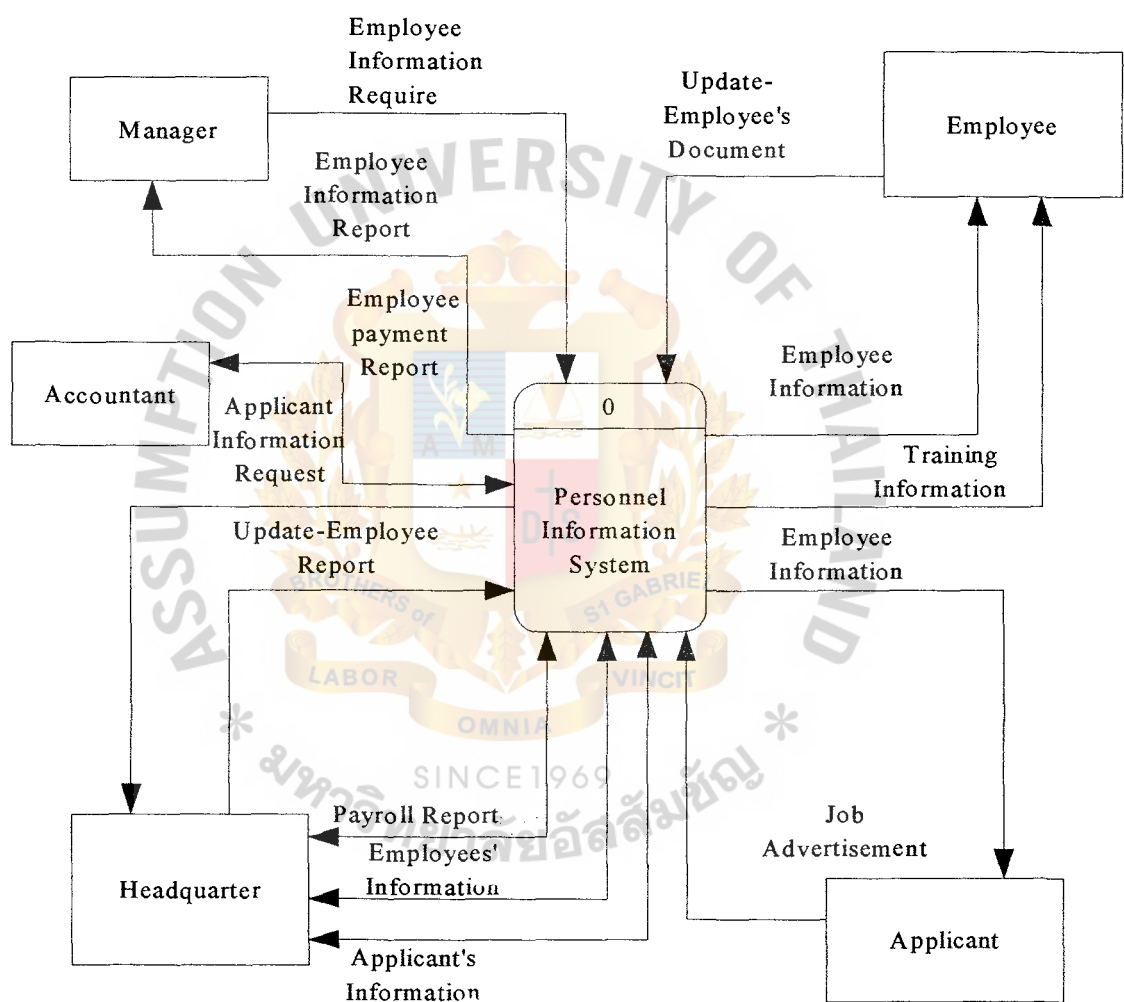


Figure 2.2. Context Diagram of Existing System.

Application Form  
Request

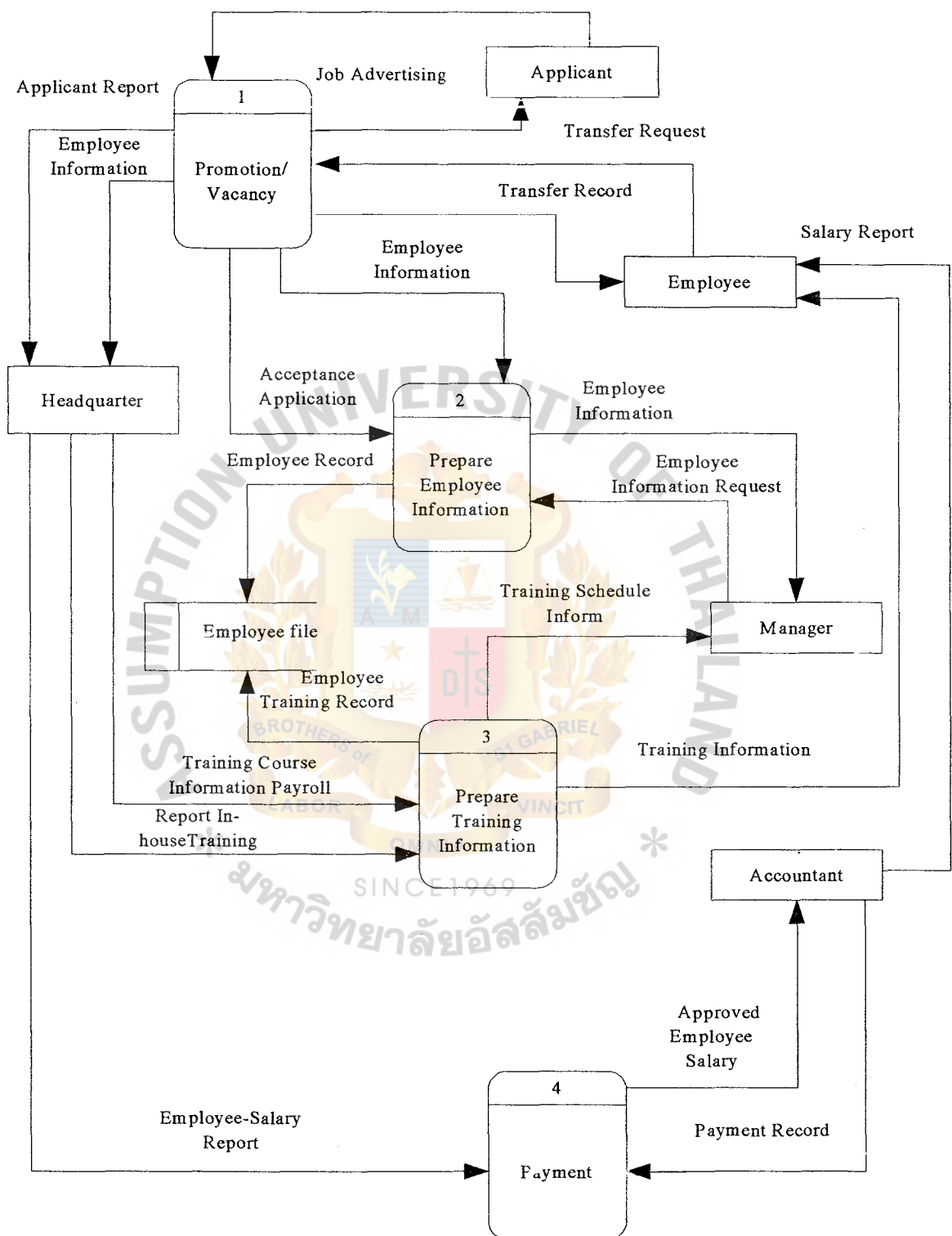
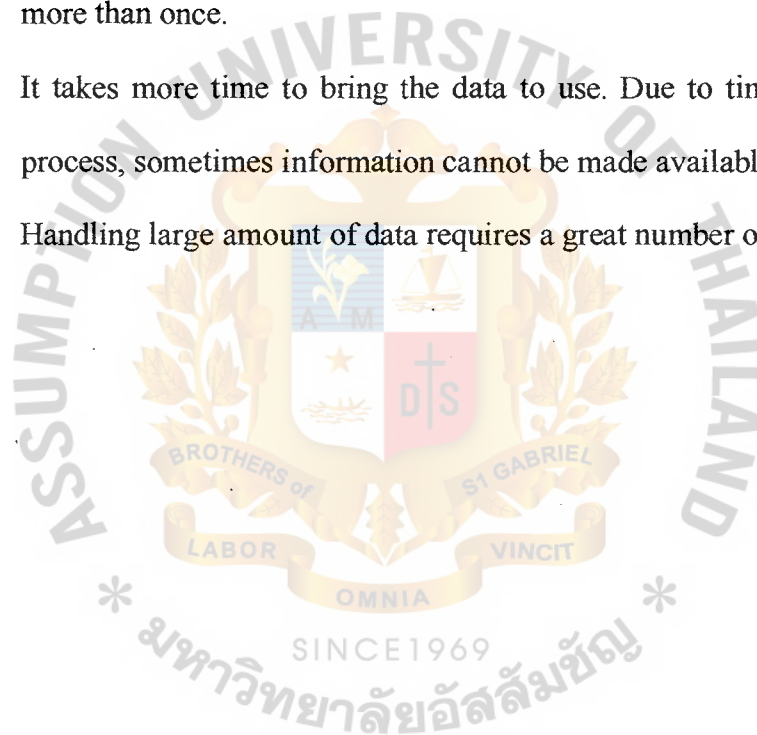


Figure 2.3. Data Flow Diagram Level 0 of Existing System.

### 2.3 Current Problems and Areas for Improvement

Current problems in the existing system of the Personnel Information System can be identified as follows:

- (1) Data recording on paper documents are regularly incorrect due to human errors because of existing manual system
- (2) The data cannot be updated for having no time and not enough personnel
- (3) Document filling is carried out manually. The same data may be entered more than once.
- (4) It takes more time to bring the data to use. Due to time consuming work process, sometimes information cannot be made available in time.
- (5) Handling large amount of data requires a great number of staffs.



### **III. PROPOSED SYSTEM**

#### **3.1 User Requirement**

The user requirement is very important in system analysis, therefore the requirement of the user needed for the proposed system has to be carefully analyzed. To solve the problem, the new personnel system is proposed.

The user of the Personnel Information System is the person who takes care of and is responsible for all jobs and data management of the system. The user requirements for the proposed system are the information system specification that users would like to get from the personnel information for the Bank at Pattanakarn branch. The following are the main requirements:

- (1) New system should provide up to date and accurate information
- (2) The ability to choose the required data
- (3) The ability to report the clients of the personnel data
- (4) Easy to use, familiarity with the system
- (5) Easy to maintain
- (6) Security and operation control should be included
- (7) More reliable and consistent procedure to eliminate error

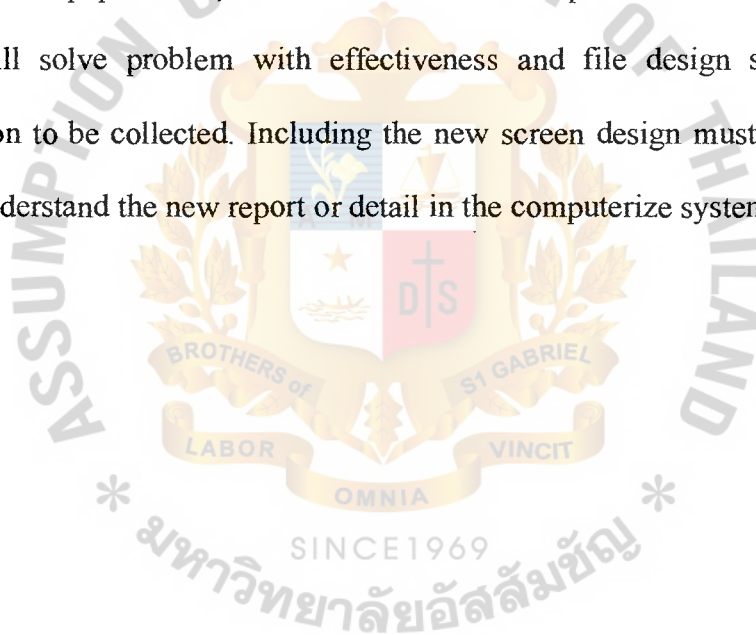
The main required data in Personnel Information System are:

- (1) Employee data
- (2) Education data
- (3) Promotion record
- (4) Loan record
- (5) Leave and late data
- (6) Training record

- (7) Benefit record
- (8) Vacation record

Due to the traditional work process, Personnel staff works manually in keeping the data. Then the user requirements of proposed system of personnel staff call for new computerized system, instead of manual system. When the management would like to approve the financial compensation and check these records, the Personnel staff has to search the data from document, which is very time consuming.

So, the user requirements are that all the data must be kept in the computer, which can reduce the paper work, and reduce work load of personnel staff. The new database design will solve problem with effectiveness and file design should have proper information to be collected. Including the new screen design must be easy to use and easy to understand the new report or detail in the computerize system.





## 3.2 System Design

System design is the evaluation of solutions and the specification of a detailed computer-based solution. Often technologies are in place or specified by predefined technology architecture. In other case, the analyst must select or supplement the technology. In all cases, system design is built on the knowledge derived from system analysis.

The key term, system analysis, primarily focuses on the logical, implementation-independent aspects of a system (the system's technical specifications).

### 3.2.1 Candidate Solution

From the business requirement, first is identifying alternative candidate solutions. It simply defines possible candidate solution to be considered.

(1) Candidate solution 1:

The Bank of Ayudhaya, Pattanakarn branch uses manually operated Personnel information system as existing system. The solution that we would like to propose is using Microsoft Access 6.0 with standalone computer system to help customize faster processing activities and make reliable personnel report.

(2) Candidate solution 2:

The candidate solution will use Microsoft Access 6.0 and computer network system (LAN) for more efficient interaction between officers and executives. The Bank of Ayudhaya, Pattanakarn branch uses computer network (LAN) to implement personnel activities quickly and share computer resources.

(3) Candidate solution 3:

The candidate solution that would improve our system is bringing Internet to support the personnel Information system, the use of JAVA Language and Internet Explorer Browser for better graphical user interface, which support the amount of users and faster processing operations. The manager, executive and officer can get personnel information easily anything and anywhere by using Internet.

### 3.2.2 Candidate System Matrix

A Matrix is a useful tool for effectively capturing, organizing, and communicating the characteristics of candidate solutions. The characteristics of candidate system matrix consist of the following:

- a) Portion of System Computerized
- b) Benefits
- c) Servers and Workstations
- d) Software Tools Needed
- e) Application Software
- f) Method of Data Processing
- g) Output devices and Implications
- h) Input Devices and Implications
- i) Storage Devices and Implications

Table 3.1. Candidate System Metrix.

Characteristics	Candidate 1	Candidate 2	Candidate 3
Portion of System Computerized	The solution helps user easily process personnel activities.	Custom solution can facilitate the user as candidate 1 and provide Online Access.	Same as candidate 2
Benefit	This solution can be implemented Quickly and reduce paper work manual system.	Fully supports user required business processes for The Bank of Ayudhaya, Pattanakarn branch plus more efficient interaction with office and executive.	Same as candidate 2
Servers and workstation	Pentium II	Technique all architecture dictates Pentium III MS Window NT class servers and Pentium III, Window 98 and Microsoft office 97 Standard version on workstation.	Same as candidate 2
Software Tools Needed	Ms Access for customization of package to provide report writing and integration.	Same as candidate 1	Java Language Internet explore
Application Software	Custom Solution	Same as candidate 1	Same as candidate 1
Method of Data Processing	Standalone	Client/Server	Same as candidate 2
Output Devices and Implications	Epson LQ 2550	1) Hp Laser Jet 2100/M/TN 1) Dot Matrix 24 Epson 1050	Same as candidate 2
Input Devices and Implications	Keyboard & mouse	Same as candidate 1	Same as candidate 1
Storage Devices and Implications	MS SQL Server DBMS with 100GB arrayed capacity	Same as candidate 1	Same as candidate 1

### 3.2.3 Feasibility Analysis of Candidate System

During the system selection, the system analyst identifies candidate system solutions and then analyzes those solutions for feasibility. Each candidate must be analyzed for feasibility, after alternative candidate design solutions have been identified. There are four feasibility criteria.

- (1) Operational feasibility
- (2) Technical feasibility
- (3) Economic feasibility
- (4) Schedule feasibility



Table 3.2. Feasibility Analysis Matrix.

Feasibility Criteria	Weight	Candidate 1	Candidate 2	Candidate 3
Operational feasibility	30%	Only support PIS requirement and current PIS process would have to be modified to take advantage of software functionality. Score : 65	Full support user requires functionality Score : 95	Same as candidate 2 Score : 95
Technical feasibility -technology  -Expertise	30%	The present, our system still using manual system that make the process very slow and using a lot of paper, then we choose to use standalone computerize system with (Microsoft access, which is a mature technology base on version number Score : 45	Microsoft Window NT with Microsoft Access can implement the activities quickly and share online resources and Microsoft Office 98 required. Programmer required setting up (LAN) net work system. Score : 100	Java Language and Internet explorer need for and support to many users.  Require training JAVA Language Internet Explorer expertise to perform modification for integration Score : 80
Economic Feasibility -Cost of develop: -payback period (discounted): Net present value:	30%	Approximately 310,000 Baht Approximately 3.2 years  Approximately 163,867 Baht Score : 65	Approximately 347,680 Baht Approximately 2.9 years  Approximately 289,886 Baht Score : 85	Approximately 380,000 Baht Approximately 3.5 years  Approximately 160,208 Baht Score : 75
Schedule	10%	Less than 3 mths Score : 90	5-8 mths Score : 85	6-9 mths Score : 75
Ranking	100%	61.5	92.5	82.5



After analyzing, we decided to select the candidate solution 2. The proposed system is based on computerized system. All data will be kept into the database. The network system is designed to be used by many users. With the technology of Windows NT Server 5.0, the proposed system also has high level of security.

The proposed system is designed according to the work to be done by the person who is responsible for the personnel data. This work includes the following:

#### Overview of the proposed system

##### Process 1.0 Promoting new or vacant position

- (1) Selecting qualified existing employee
- (2) Preparing the employee and new employee detail for promotion and vacant position
- (3) Promoting existing employee
  - a) Preparing promotion testing
  - b) Announcement for the staff promotion
  - c) Verifying qualified employee from experience, education and training
- (4) Work on probation for promotion or new employee
- (5) Preparing report

##### Process 2.0 Employee record, updating employee Information

- (1) Collecting detailed information of employee record from Maintaining Application Information
- (2) Assigning employee ID
- (3) Classifying employee status
- (4) Recording Employee information
  - (a) Employee record adding

- (b) Updating position record
  - (c) Leave, retirement record
  - (d) Employee's loan record
- (5) Preparing report

#### Process 3.0 Maintaining application information

- (1) Receiving application information
- (2) Updating application information
- (3) Preparing report

#### Process 4.0 Preparing Benefit Information

- (1) Receiving compensation request
- (2) Classifying document
- (3) Updating information
- (4) Approving compensation request
- (5) Preparing and producing compensation report

#### Process 5.0 Preparing loan information

- (1) Receiving loan document
- (2) Checking limit amount of loan evidence
- (3) Loan approval from manager
- (4) Preparing and producing loan report

#### Process 6.0 Preparing training Information

- (1) Receiving training course program, In-house training course, External training course, then selecting appropriate staff and reporting to manager
- (2) Preparing training course, seminar for employee
- (3) Updating employee information, staff record for training

- (4) Giving training to employee

Report to manager

Process 7.0 Preparing employee Leave / Vacation and record

- (1) Gathering leave, vacation, retirement document
- (2) Verifying leave, vacation, retirement record
- (3) Updating leave, vacation, retirement record
- (4) Employee record of vacation, retirement
- (5) Producing report to manager

### 3.2.5 Application Architecture

General Design or application architecture of the systems defines the technologies to be used as one, more, or all information system of its data, process, interface, and network components.

- (1) Network Architecture

The Bank at Pattankarn branch will use Distributed Data (Two Tired Client/Server) in LAN environment. This architecture places the personnel information system's store data on Microsoft SQL Server. We will use local area network for connecting the clients to server. Pentium III 600, MS Windows NT class servers and Pentium II 600, MS Window NT 5.0 workstation as clients. The clients in the distributed database solution typically run the business logic of the information system application. The advantage of distributed database computing is to separate data and business logic to isolate each from changes to other, to make the data more available to users and to retain the data integrity of the headquarter.

## (2) Database Architecture

The Pattanakarn branch uses distributes Database Management System as Microsoft SQL Server and uses Microsoft Access as PC DBMS. Distributes DBMS also provides more sophisticated backup, recovery, security, integrity and processing. The other advantage is it reduces the data traffic on the network.

## (3) Interface Architecture

The Pattanakarn branch chooses to use online processing system with graphical User Interfaces as User Interface Technology. Online systems provide a conversational dialogue between the user and computer. Errors can be identified and corrected more quickly.

## (4) Process Architecture

The Pattanakarn branch will use SDEs for Two-Tiered Client/Server. SDE for Two-Tiered Client/Server application consists of a client-based programming language with built-in SQL connectivity to server database engines.

### 3.2.5 Logical Data Model in Third Normal Form

The technique used to improve a data model in preparation for database design is called data analysis. The specific technique is called normalization. Data analysis is a process that prepares a data model for implementation as a simple, nonredundant, flexible, and adaptable database. Normalization is a three-step technique that places the data model into first normal form, second normal form, and third normal form.

After normalizing the data model in the 1NF, it is found that the values of all nonprimary key attributes are dependent on the full primary key, not just part of it. So

the data model is already in Second normal form. An entity in the third normal form if it is already in 2 NF and the values of its nonprimary key attributes are not dependent on any other non-primary key attributes. Any nonkey attributes that are dependent on the other nonkey attributes must be moved or deleted. Then, new entities and relationships may have to be added to the data model.

After normalizing the data model in the 2 NF, it is found that the values of its nonprimary key attributes are not dependent on any other non-primary key attributes. So, the data model is already in the third normal form.





### **3.3 Input Design**

The input media and methods are serving an important goal-capture and getting the data into format suitable for the computer. The accurate data is so critical for successful processing, file maintenance, and output. We should also learn about human factors and internal controls for input design.

### **3.4 Output Design**

Output is the most visible component of a working information system, and the justification for the system. During system analysis, we defined output needs and requirement. The data and report are typically categorized and summarized to indicate trends and potential problem.

Now that we have defined what the information will be stored on, we need to determine exactly how the information will appear.

The following are many report designs of this personnel information system for the Bank at Pattanakarn branch.

- (1) Employee Report
- (2) Education of Employee Report
- (3) Employee Training Report
- (4) Training Course Report
- (5) Experience of Employee Report
- (6) Financial Compensation Report
- (7) Late Report
- (8) Leave/Vacation Report
- (9) Leave/Vacation Allowance Report
- (10) Loan Report

(11) Personal Information Report

(12) Promotion Report

### **3.5 Structure Chart**

The final step is concerned with software design. After designing the database, input, and output, we need to know how the programming specifications are presented to the computer programmer for implementation.

The structure chart will present how the program has been partitioned into smaller more manageable modules, the hierarchy and organization of those modules, and the communication interfaces between modules. They are used to graphically depict a module design of a program. The structure chart is the primary tool used in the structured design. There are 7 processes of structure chart for the personnel information system of Pattankarn branch as follows.

- (1) Process of promoting New, Existing Employee function.
- (2) Process of employee record, and update employee information function.
- (3) Process of maintaining employee/application information function.
- (4) Process of Benefit or financial compensation function.
- (5) Process of loan function.
- (6) Process of training function.
- (7) Process of leave/vacation record function.

### 3.6 Hardware and Software Requirement

Currently the Pattanakarn branch has Windows 95 and Microsoft Office 95 standard version on workstation, which will be used for implementing this system as LAN terminal. Such a computer system can be found easily on the market and allows much application software to run on. The proposed system requirements are classified in to 2 parts:

#### 3.6.1. Hardware Requirements

- |  |        |
|--|--------|
| (1) PC Client  | 3 Sets |
| <ul style="list-style-type: none"><li>- CPU: Pentium III 600</li><li>- RAM: 32 MB</li><li>- Hard Disk : 4.3 GB ULTRA ATA</li><li>- Floppy Disk Drive: 1.44 MB</li><li>- CD ROM Drive 50X</li><li>- Monitor 15" Digital</li><li>- Keyboard Win 98</li><li>- Mouse</li></ul> |        |
| (2) Database Server  | 1 Set  |
| <ul style="list-style-type: none"><li>- CPU: Pentium III 600</li><li>- RAM: 256 MB</li><li>- Hard Disk: 10.2 GB ULTRA ATA</li><li>- Floppy Disk Drive: 1.44 MB</li><li>- CD ROM Drive 50X</li><li>- Monitor 15" Digital</li><li>- Keyboard Win 98</li></ul>                |        |

- Mouse
- (3) Network Peripherals 4 Sets
  - Ethernet LAN Card
  - Thin Coaxial Cable(100 Meters)
  - Jack-BNC(4 pieces)
  - Terminator(2 pieces)
- (4) Printers
  - Laser Printer: Hp Laser Jet 2100/ M/ TN 1 Set
  - Dot Matrix 24 Epson 1050 1 Set

### 3.6.2 Software Requirements

- (1) Operating system
  - Microsoft Windows 98
- (2) Network System Software
  - Microsoft Windows NT server 4.0
- (3) System Development software
  - Microsoft Access 98

The proposed system will offer high-speed communication in the computer network with using LAN. The server will use Microsoft Windows NT 5.0. The operating system of clients will use Microsoft Windows 98. Database of clients will use Microsoft Access 98. This computer system configuration will increase the work performance and the problem of security will be solved. The Figure 3.82 shows the network configuration of the proposed system.

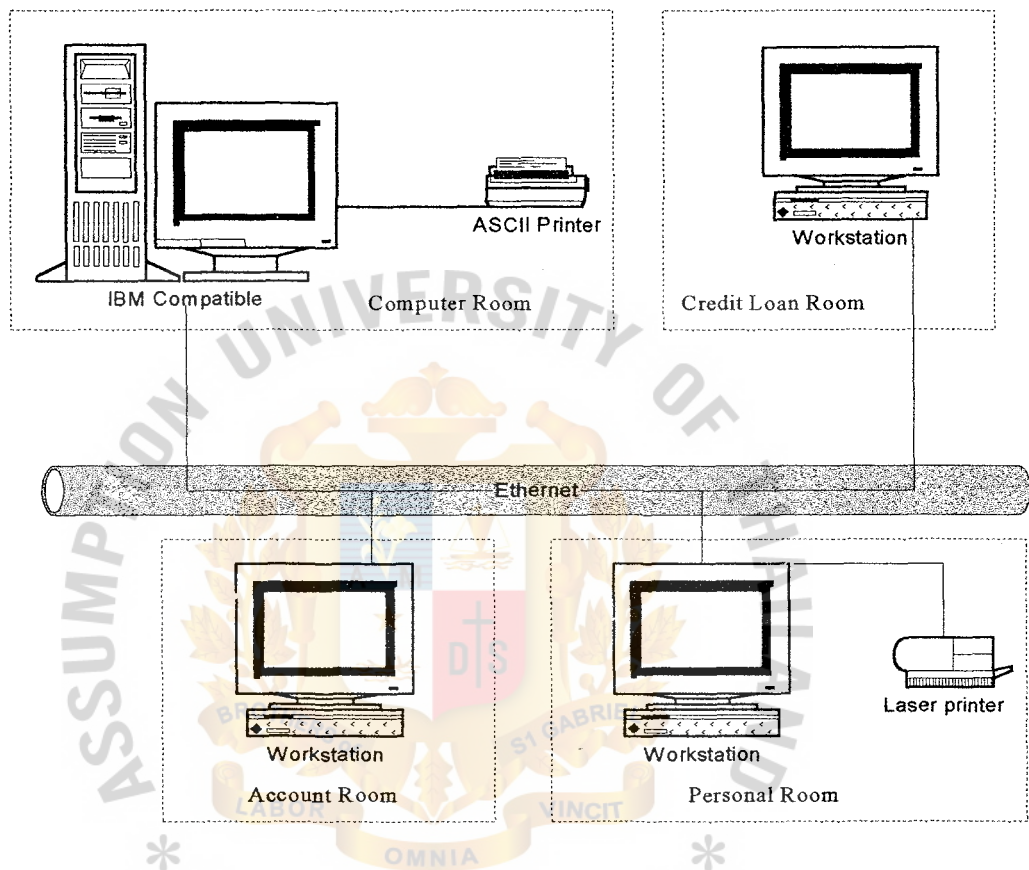


Figure 3.1. Network Configuration.

### 3.7 Security and Control

Since the data of personnel is very important and sensitive one, the security and control in the proposed system need to be included in the system. Updating and modifying by unauthorized person may cause damage to the system. Then the security system is brought to user.

Checking the authority of person to access the system is done by using password before entering the system. So the application has also set security for different levels of users. That means only authorized persons can have access to system.

Allowing the data entry, modification and correction must be made only by authorized persons. The authorization to access depends on the duties of each user as follows:

- (1) Staff: The user has authorization to use only some area of the system. Such as Teller, will have personal card to sign on and sign off. No one could access into the system, but only those people.
- (2) Supervisor and Manager: These users have authorization to use all of the area in the system.

Every user is responsible for their card and ID, or password. The copy of the program and data files should be kept in the secondary storage media in case the program runs a failure of loss data. All backup copies should be kept in safe places. The system Anti Virus Scan, will be done for virus. Scanning is done overtime when system is booting. With this security control, the user who has no authorization will not be able to get into the system.



### 3.8 Cost/Benefit Analysis

For the proposed system cost, the main category costs are decomposed into 3 groups. Concerning this proposed system, it will be necessary to purchase new computer, server, network equipment.

#### 3.8.1 Annual Operation Cost

- Paper (size A4)	
(10Ream @ 120 Baht)	1,200 Baht
- Continuous Paper	
(9" * 11", 10Boxes @ 100 Baht)	1,000 Baht
- Diskettes	
(High Density 3.5" 10Boxes @ 160)	1,600 Baht
- Maintenance Cost	12,000 Baht
- Miscellaneous Cost	500 Baht
- Peopeware	55,200 Baht
- Ribbon	300 Baht
- Ink Cartridges	1,400 Baht
Total Annual Operation Cost	73,200 Baht

#### 3.8.2 Investment Cost

- Hardware:	
(1) SQL Server 1 set @ 120,000 Baht	120,000 Baht
(2) PC Client 3 sets @ 28,600 Baht	85,800 Baht
(3) Network Peripheral	
- Ethernet LAN Card 4 sets @ 3,000 Baht	12,000 Baht
- Thin Coaxial Cable 100 Meters @ 40 Baht	4,000 Baht

-	Jack BNC 4 pieces @ 35 Baht	140 Baht
-	Terminator 2 pieces @ 120 Baht	240 Baht
(4)	Printer	
-	Dot Matrix Printer 1 Set @ 12,000 Baht	12,000 Baht
-	HP Laser Jet 2100/M 1Set @ 21,000Baht	21,000 Baht
-	Software	
(1)	Microsoft Window 98, 4 Sets @ 8,500 Baht	34,000 Baht
(2)	Microsoft Window NT 4.0	
	1 Set @ 30,000	30,000 Baht
(3)	Microsoft Office 97, 4 Sets @ 6,955	27,820 Baht
-	Installation Cost	10,680 Baht
	Total Investment Cost	347,680 Baht
3.8.3 Implementation Cost		
-	Conversion Cost (Peopleware)	19,000 Baht
-	Personnel training Cost	25,000 Baht
	Total Implementation Cost	44,000 Baht

This new computerized system can help to reduce workload, give faster response time, reduce paper work, and the other problems of the existing system.

The benefits can be divided into tangible and intangible ones. From the proposed system the following benefits can be obtained.

#### 3.8.4 Tangible Benefits

-	Saving on training Cost	30,000 Baht
-	Reducing paper work	25,000 Baht
-	Time –saving	57,000 Baht

- Reduce cost of error 54,000 Baht

Total Tangible Benefits 166,000 Baht

### 3.8.5 Intangible Benefits

- (1) Reducing work load
- (2) Faster response time
- (3) Improving efficiency of operations
- (5) Improving accuracy in calculating
- (6) Standardization and systematic record keeping
- (7) Providing less paper work
- (8) Ability to make reports for the requested period

### 3.8.6 Payback Period

Payback Period is determined by calculating the number of years required for accumulation of earning sufficiently to cover the cost of the proposed system. The formula to calculate Payback Period is shown underneath:

Formula is 
$$P = \frac{I}{(1-T)R}$$

P = Payback Period

I = Investment

R = Average annual return on investment

T = Corporate tax rate in percentage

(30%)

$$\text{Payback Period} = \frac{347,680}{(1-0.30)148,000}$$

The Payback Period (after tax) for the proposed system is 3.3 years.

Table 3.3. Cost Comparison between the Existing System and Proposed System.

Cost Items	Years				
	1	2	3	4	5
<u>Existing System:</u>					
Manpower					
- Supervisor	180,000	198,000	217,800	239,580	263,538
- Staffs	419,000	460,900	506,990	557,689	613,458
(10% yearly increase)					
Office Equipment Cost (5% yearly increase)	20,000	20,000	20,000	20,000	20,000
Office Supply Cost (5% yearly increase)	30,000	33,000	36,300	39,930	43,923
Utility Cost (5% yearly increase)	42,000	46,200	50,820	55,902	61,492
Total Cost (Baht)	691,000	758,100	831,910	913,101	1,002,411
Accumulative Cost (Baht)	691,000	1,449,100	2,281,010	3,194,111	4,196,522
<u>Proposed System:</u>					
Hardware Cost	51,036	51,036	51,036	51,036	51,036
Software Cost	18,500	18,500	18,500	18,500	18,500
Installation Cost	10,680	-	-	-	-
Development Cost	115,000	-	-	-	-
Office Equipment Cost	20,000	20,000	20,000	20,000	20,000
Manpower					
- Supervisor	200,000	210,000	220,500	231,525	243,101
- Staffs	240,000	252,000	264,600	277,830	291,722
Maintenance Cost (10% yearly increase)	24,000	26,400	29,040	31,944	35,138
Office Supplies Cost (5% yearly increase)	50,000	52,500	57,750	63,525	69,878
Training Cost	21,000	11,000	11,000	11,000	11,000
Utility Cost (5% yearly increase)	60,000	63,000	69,300	76,230	83,853
Total Cost (Baht)	800,216	704,436	741,726	781,590	824,228
Accumulative Cost (Baht)	800,216	1,504,652	2,246,378	3,027,968	3,852,196

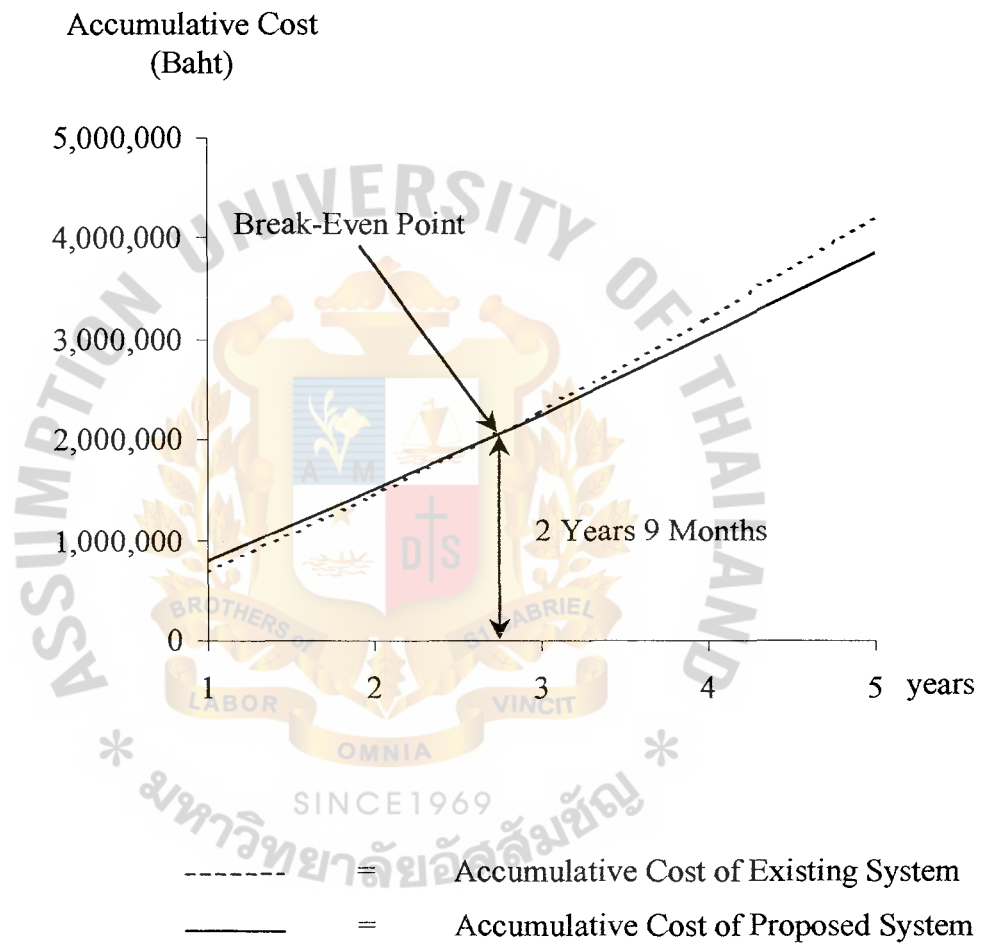


Figure 3.2. Break-Even Chart.

## IV. PROJECT IMPLEMENTATION

### 4.1 Overview of Project Implementation

After management has accepted the hardware, software and the new system, the system implementation phase of development begins. It replaces an existing manual system with an automatic system. The proper implementation is essential for the Bank at Pattanakarn branch to provide a reliable system to meet the organization's requirements. The implementation phase of the project includes the following:

- (1) Program Coding
- (2) Program testing
- (3) Installing the system
- (4) Training the user of the system
- (5) Conversion of the system

#### 4.1.1 Program Coding

The application system is written in this phase. Coding is the process of writing instructions that can be run on computer hardware. It is an important point to user forms whatever business function is being computerized. A program module should execute a self-contained function within a program.

System specifications completed during analysis and design are needed for programmers to code the program and design such as data dictionary, process specification, file and database design, screen design and report design. Including input and output, those functions can be read, performing edit checks, writing record, and doing calculation. The Personnel Information system uses the Microsoft Access as application generator.



#### 4.1.2 Program Testing

The purpose of program testing is to reveal error in programs. It consists of using a new program which appear to be working correctly with sample data. System testing is a critical process for system development. The proposed system will be tested before implementation. There are many kinds of testing as follows:

(1) System testing

With this system testing, all modules are integrated and tested. The system testing involves the whole system, integrating all modules. It is used to find discrepancies between the system objectives, current specifications, and system documentation

(2) Unit testing

The unit testing is conducted first on each module, independently of one another, to locate errors. The errors in coding and logic that are contained within the modules are initially avoided.

(3) Peak Load Testing

This testing is used to determine whether the system will handle the great volume of activities.

(4) Performance Time Testing

This testing determines the length of time used by the system to process transaction data.

(5) Procedure testing

This testing determines the clarity of documentation in operation that has users do exactly what the manual system requires.

(6) Storage Testing

This testing determines the capacity of the system to store transaction data on a disk or in other files. The system is tested whether it can handle high volume of activities at a satisfactory level. They are able to access the server and operating transactions such as retrieving, updating data, and doing inquiry and reports.

(7) Human Factor Testing

This is to test how the user will use the system when processing the data or preparing the reports.

(8) Backup/recovery Testing

This plan includes testing the restart of the system in case of the computer failure. The basic goal is to make sure that files can be recovered and the system be restarted in case of disaster.

#### 4.1.3 Installing the system

Since the existing system is the manual system there are only a few steps for installing the system. The installation will follow parallel conversion method, incase there is some problem or error in processing the proposes system, the current system is still being used without loss of time.

During the installation period, the system analyst and programmer have to make sure that they have followed the following steps:

- (1) Preparing the installation plan by making a list of all files that will be installed.
- (2) All the necessary data must be prepared to ensure that all records will be entered or keyed into the system and should be grouped together. So that it

is not difficult to check if there is any records missing during the keying process.

- (3) Write procedure to explain what is to be done for the person who is response to handle it.
- (4) During the Installation stage, the system analyst and programmer try not to disturb with the current system, which is the day-to-day business task.
- (5) The system analyst should check with the user of the Bank to ensure that all the site preparation is finished, including electrical line.
- (6) System, utilities, application software should be installed.

#### 4.1.4 Training the User of the System

Everyone who will be affected by the new system should have an opportunity to participate in training. It is an essential part of project implementation. In the training course it should be explained how to use the system with user manual and how to fill data into the screen. They should know in detail how to use the system. If people do not understand the new procedure, they will be responsible for conducting or if they are ensured about how the new system will affect their job, they will be more likely to sabotage its performance than to make it work.

#### 4.1.5 Conversion of the System

System conversion processes are direct conversion, parallel conversion, phased conversion, and pilot studies. Direct Conversion is the quickest, but riskiest, conversion approach; in the approach, the old system is turned off whether new systems are run concurrently until management is assured that the new system is functioning properly. In the phased approach, applications are gradually and systematically moved from the old to the new system. With pilot study, the new system is tried out in one location

before being implemented throughout the organization. After conversion, the system should be reparallel to ensure the complete operation between the current system and the new system.

## **4.2 Test Plan and Results**

The primary concern is the compatibility of individual module that has been designed with different specification for data length, type and data element name. The test is designed to determine whether specific goals and objectives meet the Personnel Information System.

The accuracy of computer processing time estimates vary throughout time record and analysis. The essential purpose of a system test is to test the system as a whole. The testing is required for more than one test for computer application. After the first test is completed, the proposed system is modified, and the modified system is then restarted.

The parallel testing is the best way to estimate actual operation of the system, In parallel testing the proposed system operates along with the existing system, and thus system accuracy is cross-checked.

Conversion includes the creation of all required masters and transaction files, establishing back up copies of master files and database. Data conversion is carefully planned and also crosschecked to see that it is done correctly, and completely of the new system on the real operation in comparison with the current system. Conversion to full operation of the new system could not occur until all system tests have been completed satisfactorily and no further modification is required.

## **V. CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Conclusions**

In the present time business is expanding rapidly day by day. The existing manual operations are inefficient and several problems are found. The most important problems are time-consuming in operating and retrieving personnel information, inconsistent and redundant information, and large volume of paper.

In the proposed system, it can reduce the manpower and operation cost. It increases the efficiency for internal operations and also meets the user requirements. The desired output report can be generated from well-designed screen easily. The information of the proposed system will be more accurate and up-to-date.

The security and control include data accuracy control, backup copies, user authorization and installation of hardware and software. The use of passwords can protect unauthorized access and the source documents are given to the interrelated sections.

All of information will be shared by using LAN System. It can provide several benefits compared with existing system as follows:

Table 5.1. Degree of Achievement between the Proposed System and the Existing System.

Process	Existing System	Proposed System
Employee Record Process	10 mins.	5 mins.
Promotion Record Process	15 mins.	8 mins.
Training and Development Process	1 hr.	35 mins.
Financial Compensation Process	20 mins.	8 mins
Loan Process	40 mins.	20 mins.
Leave/Vacation record Process	20 mins	7 mins.
Total	3 hrs. 30 mins.	1 hr. 43 mins.

## 5.2 Recommendations

As the business grows, the need for developing the information system will also grow. The proposed system aims to serve and help improve the internal operation. Computerized system can not only get rid of some awesome and time-consuming tasks as collecting data or generating reports, but it also increases the efficiency and effectiveness of staff.

The problem of existing system is not on the manual system itself, but also the people. Employee training is important to prevent the same problem occurred in the new system. The job description for each user needs to be specified. It will help to reduce the error and problem. Some training course should be provided for only authorized officer who operates to retrieve and update the personnel information. More recommendation for proposed system that is needed for future development is all system in the organization should be linked to share information together.





**APPENDIX A**  
**PAYBACK ANALYSIS**

Table A.1. Payback Analysis for Candidate Solution 1, in Baht.

Cost items	Years					
	0	1	2	3	4	5
Investment Cost	-310,000					
Operation Cost		-40,000	-44,000	-48,400	-53,240	-58,564
Discount Factor for 12%	1.000	0.893	0.797	0.712	0.636	0.567
Time-adjusted cost	-310,000	-35,720	-35,068	-34,461	-33,861	-33,206
Cumulative Time-adjusted cost over lifetime	-310,000	-345,720	-380,788	-415,249	-449,109	-482,315
Benefits derived from operation of new system	0	150,000	165,000	181,500	199,650	219,615
Discount Factor for 12%	1.000	0.893	0.797	0.712	0.636	0.567
Time-adjusted cost	0	133,950	131,505	129,228	126,977	124,522
Cumulative Time-adjusted cost over lifetime	0	133,950	265,455	394,683	521,660	646,182
Cumulative lifetime time-adjusted cost+benefit	-310,000	-211,770	-115,333	-20,566	72,551	163,867
Net Present Value of this alternative						163,867

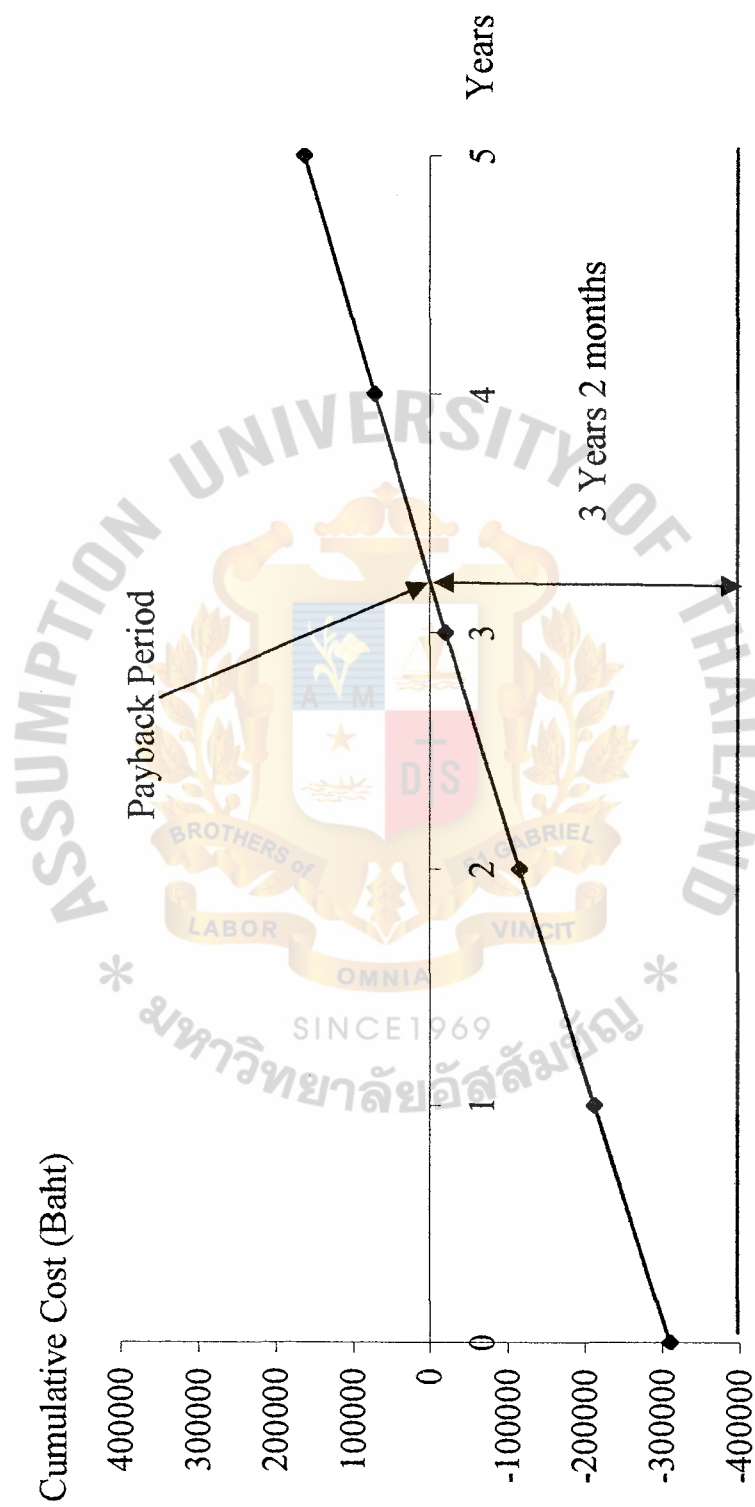


Figure A.1. Payback Analysis Graph for Candidate Solution 1.

Table A.2. Payback Analysis for Candidate Solution 2, in Baht.

Cost items	Years					
	0	1	2	3	4	5
Investment Cost	-347,680					
Operation Cost		-18,000	-19,800	-21,780	-23,958	-26,354
Discount Factor for 12%	1.000	0.893	0.797	0.712	0.636	0.567
Time-adjusted cost	-347,680	-16,074	-15,781	-15,507	-15,237	-14,943
Cumulative Time-adjusted cost over lifetime	-347,680	-363,754	-379,535	-395,042	-410,279	-425,222
Benefits derived from operation of new system	0	166,000	182,600	200,860	220,946	243,041
Discount Factor for 12%	1.000	0.893	0.797	0.712	0.636	0.567
Time-adjusted cost	0	148,238	145,532	143,012	140,522	137,804
Cumulative Time-adjusted cost over lifetime	0	148,238	293,770	436,783	577,304	715,108
Cumulative lifetime time-adjusted cost+benefit	-347,680	-215,516	-85,764	41,741	167,025	289,886
Net Present Value of this alternative						289,886

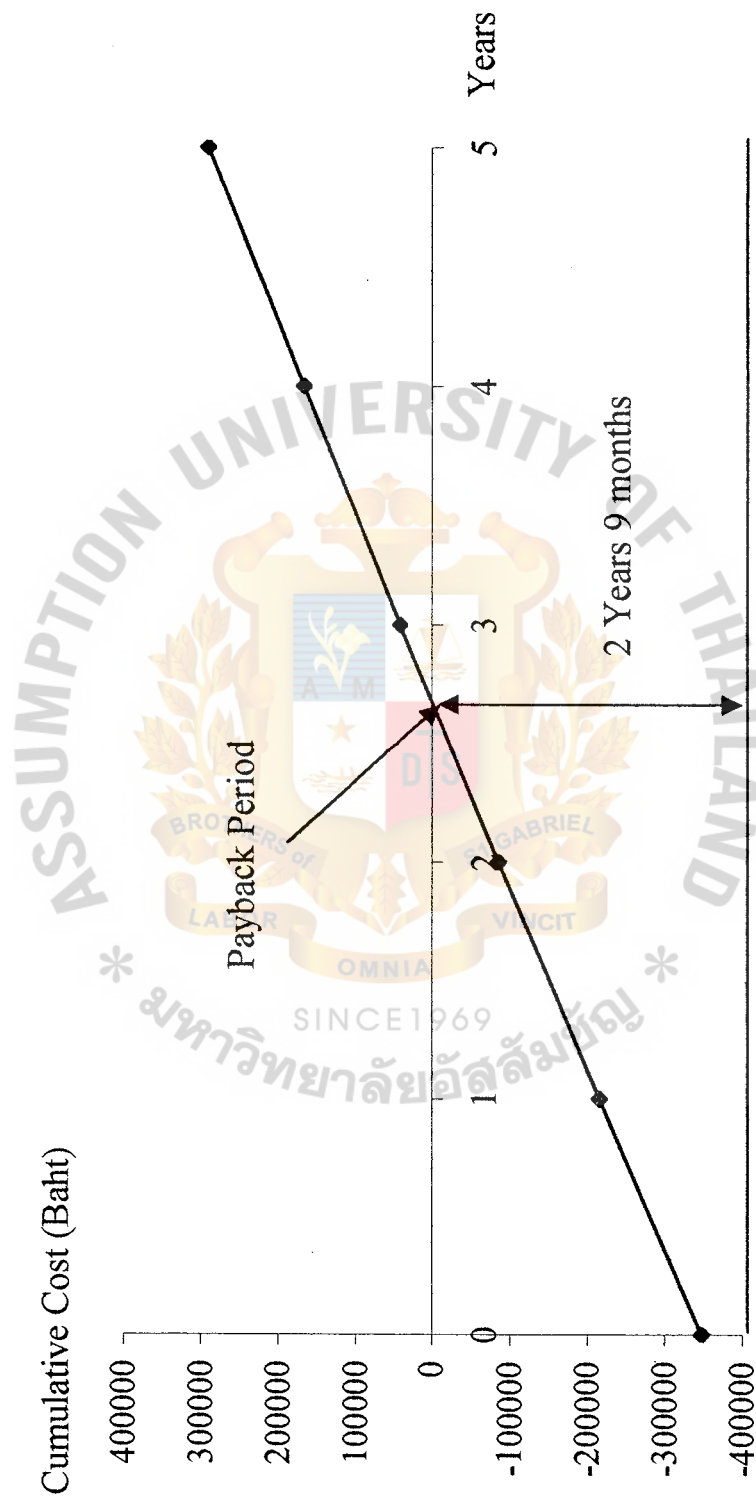


Figure A.2. Payback Analysis Graph for Candidate Solution 2.

Table A.3. Payback Analysis for Candidate Solution 3, in Baht.

Cost items	Years					
	0	1	2	3	4	5
Investment Cost	-380,000					
Operation Cost		-43,600	-47,960	-52,756	-58,032	-63,835
Discount Factor for 12%	1.000	0.893	0.797	0.712	0.636	0.567
Time-adjusted cost		-38,935	-38,224	-37,562	-36,908	-36,194
Cumulative Time-adjusted cost over lifetime	-380,000	-418,935	-457,159	-494,721	-531,629	-567,824
Benefits derived from operation of new system	0	169,000	185,900	204,490	224,939	247,433
Discount Factor for 12%	1.000	0.893	0.797	0.712	0.636	0.567
Time-adjusted cost	0	150,917	148,162	145,597	143,061	140,294
Cumulative Time-adjusted cost over lifetime	0	150,917	299,079	444,676	587,737	728,032
Cumulative lifetime time-adjusted cost+benefit	-380,000	-268,018	-158,080	-50,045	56,108	160,208
Net Present Value of this alternative						160,208



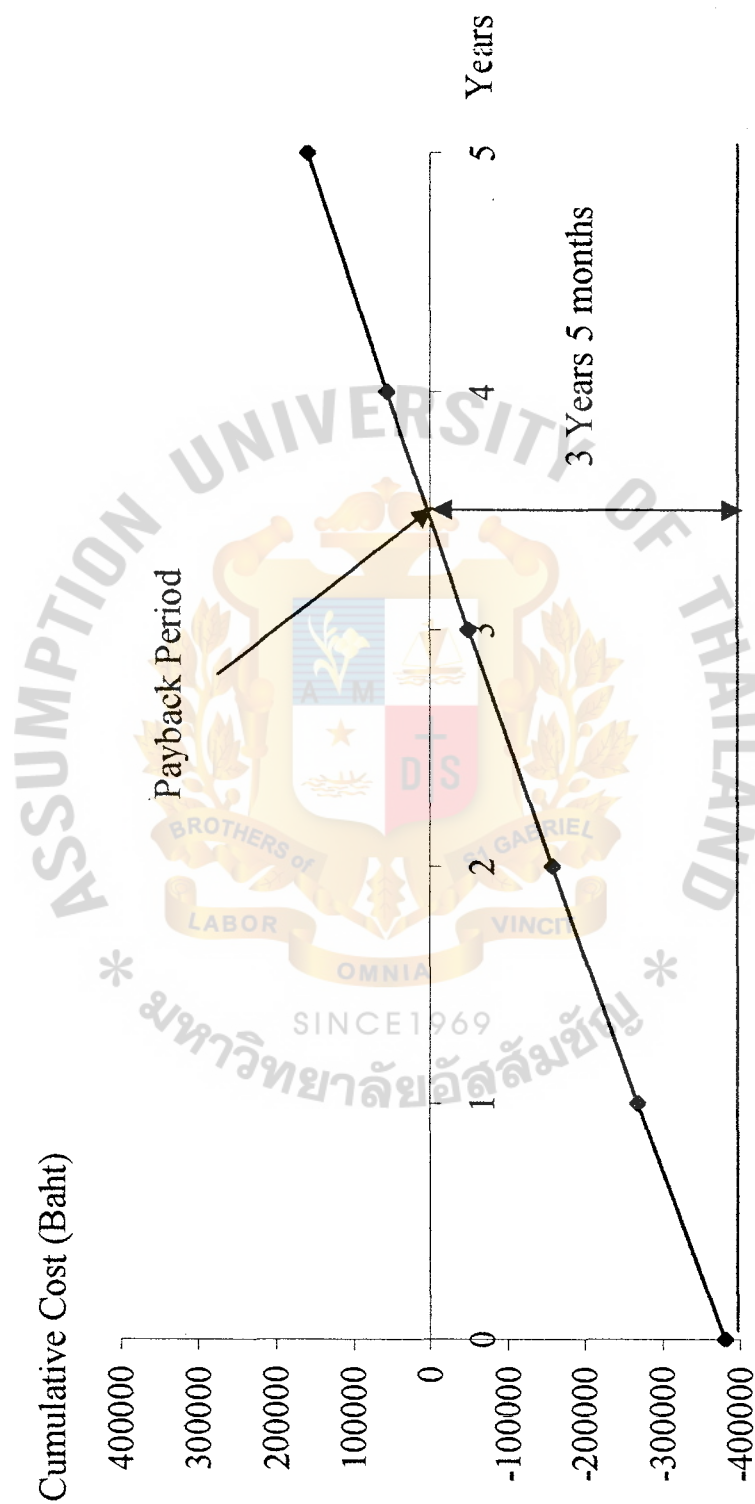
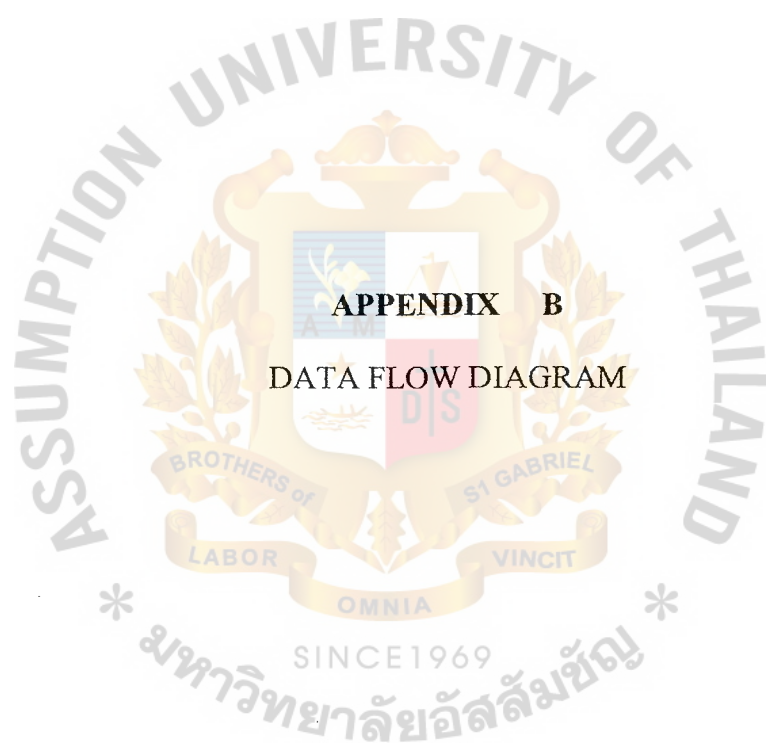


Figure A.3. Payback Analysis Graph for Candidate Solution 3.



**APPENDIX B**  
DATA FLOW DIAGRAM

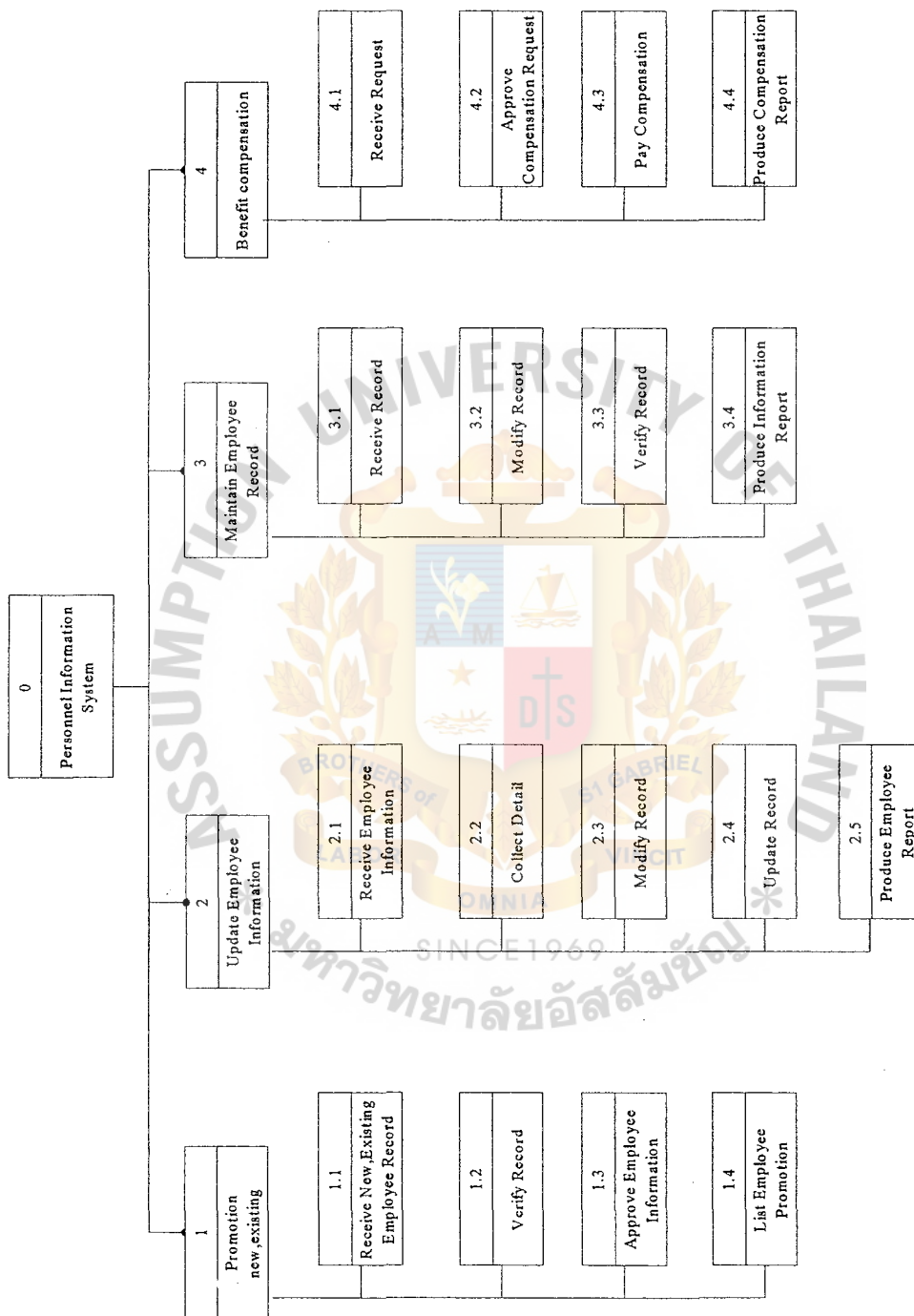


Figure B.1. Function Decomposition Diagram of Proposed System (Process 1, 2, 3, 4).

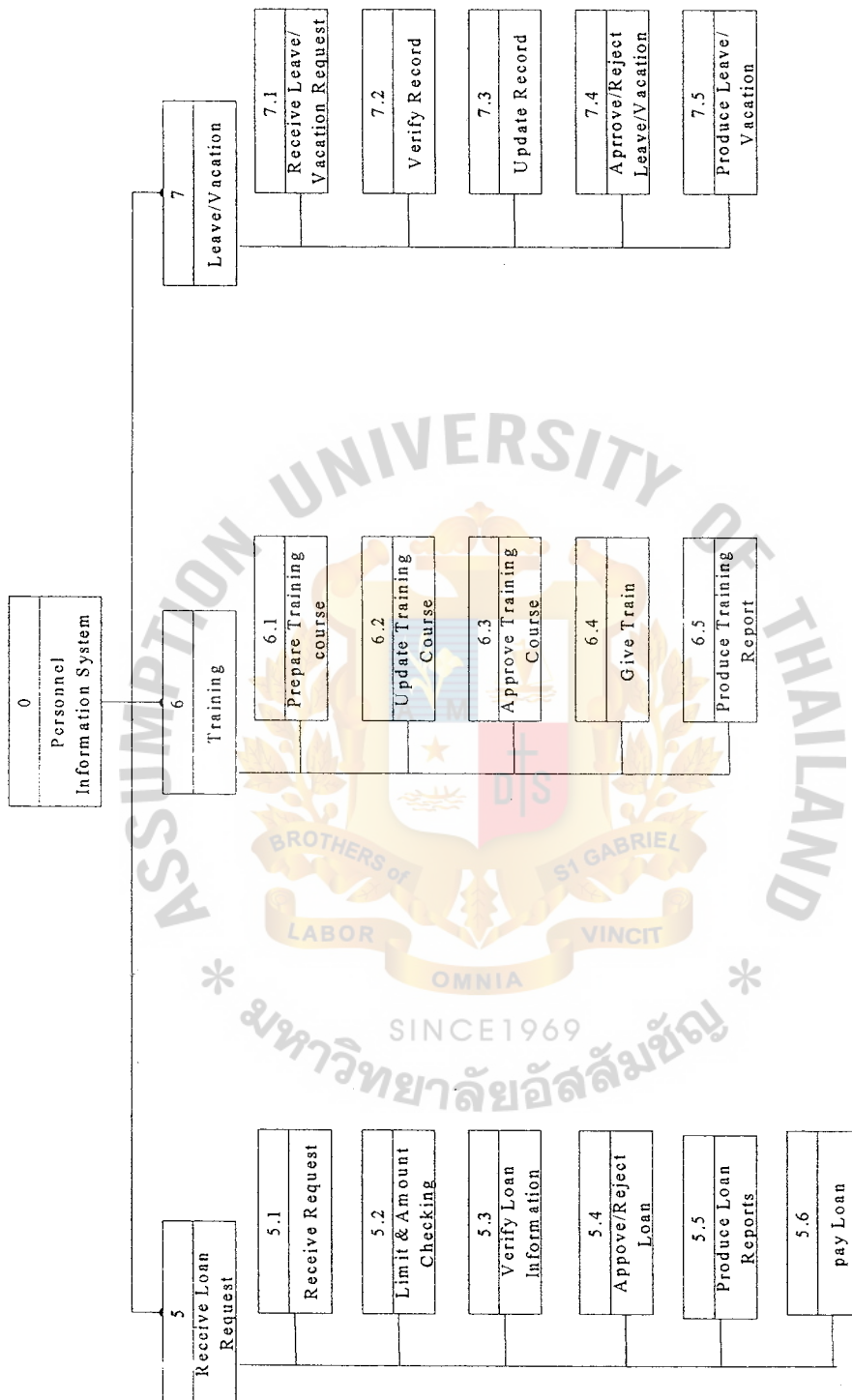


Figure B.2. Function Decomposition Diagram of Proposed System (Process 5, 6, 7).

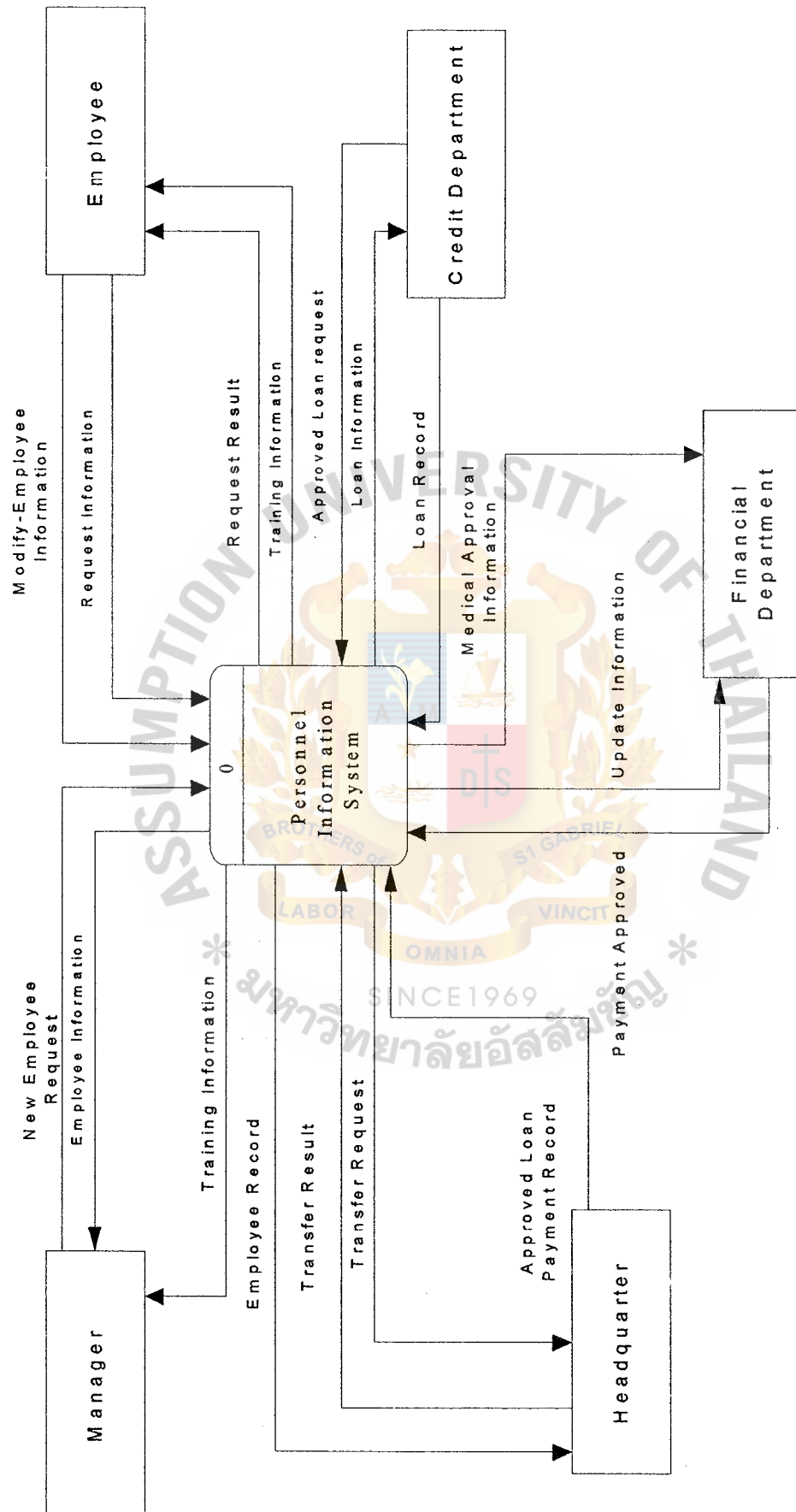


Figure B.3. Context Diagram of Proposed System.

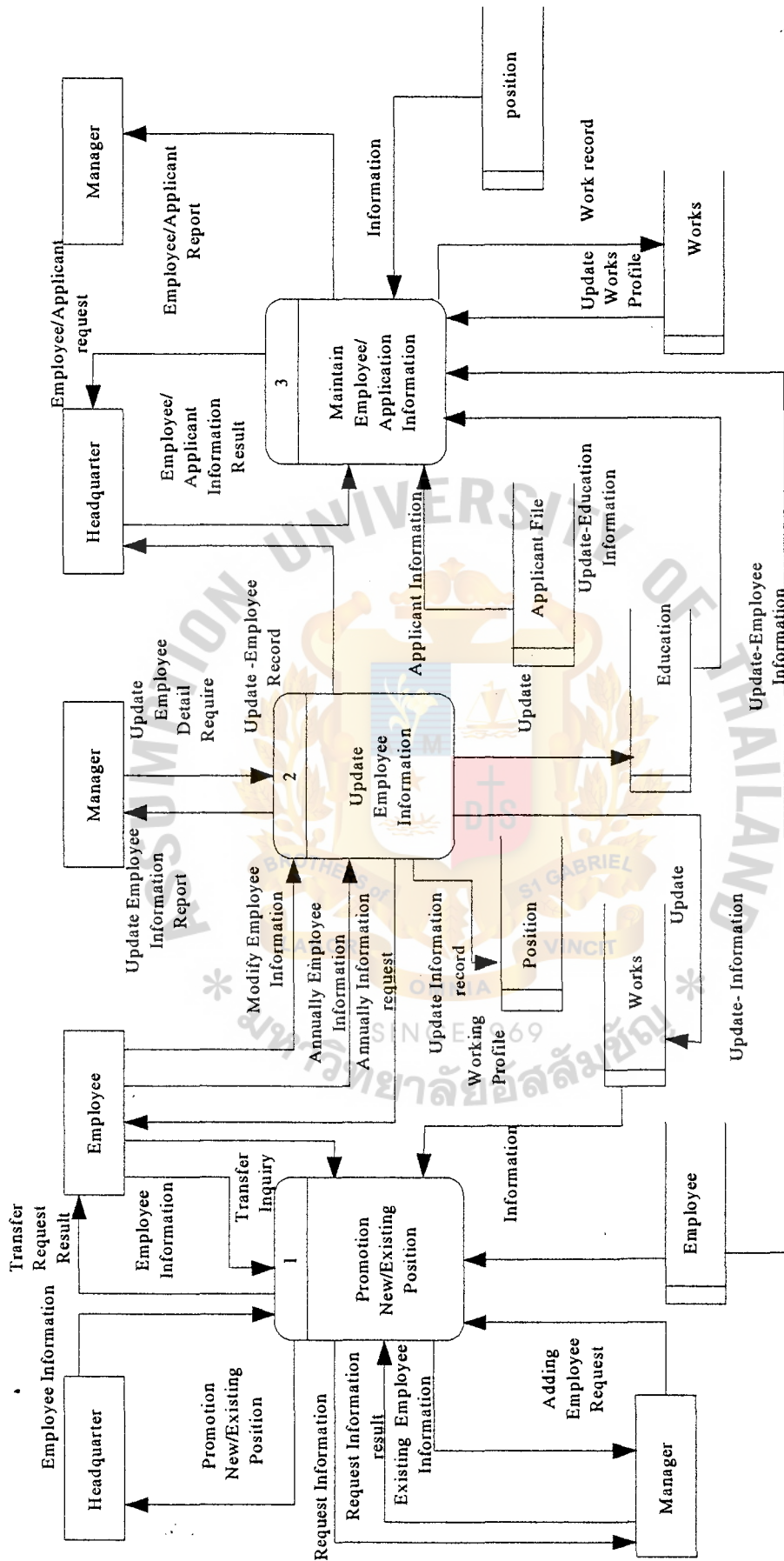


Figure B.4. Data Flow Diagram Level 0 of Proposed System (Process 1,2,3).



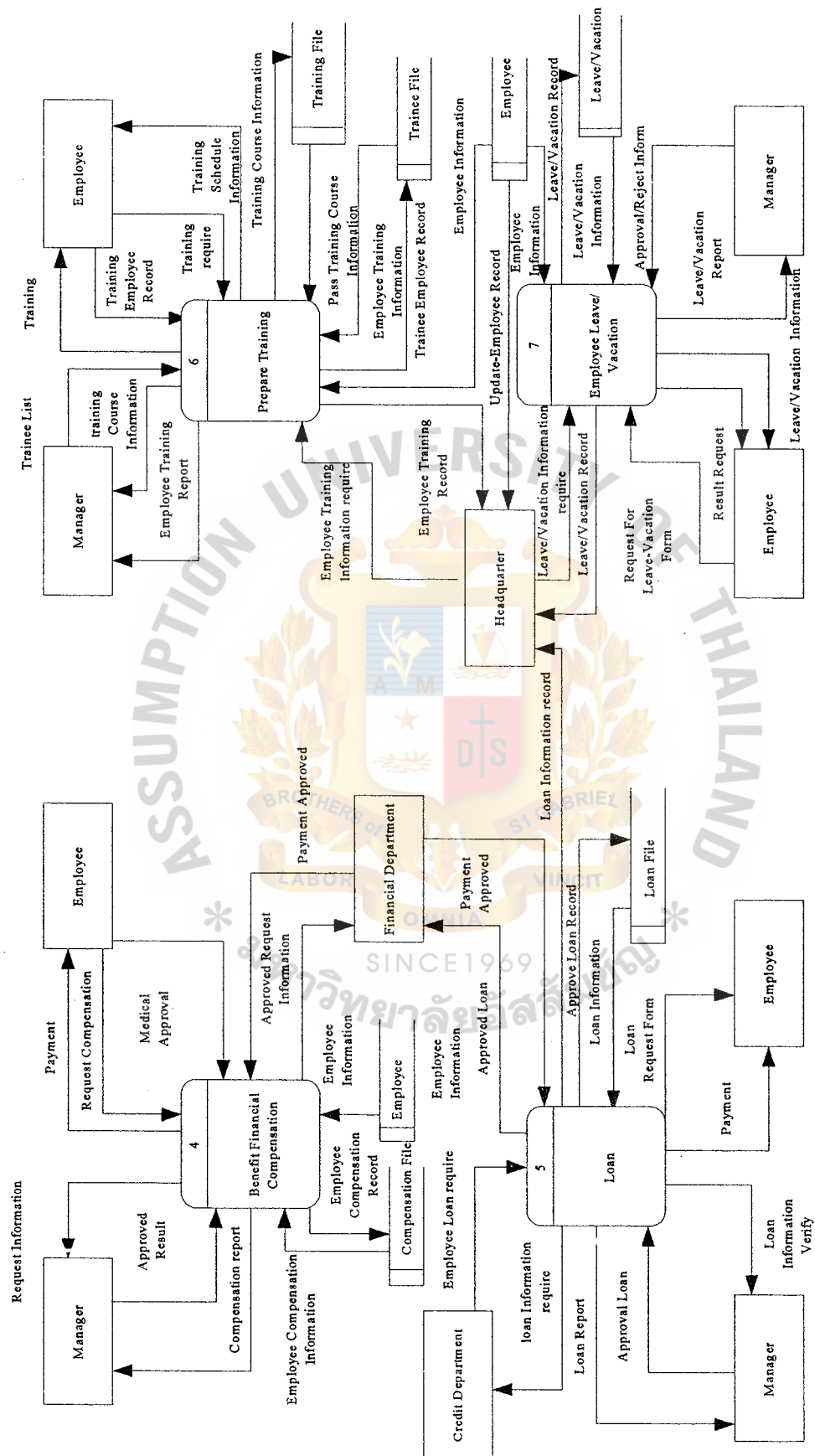


Figure B.5. Data Flow Diagram Level 0 Proposed System (Process 4, 5, 6, 7).

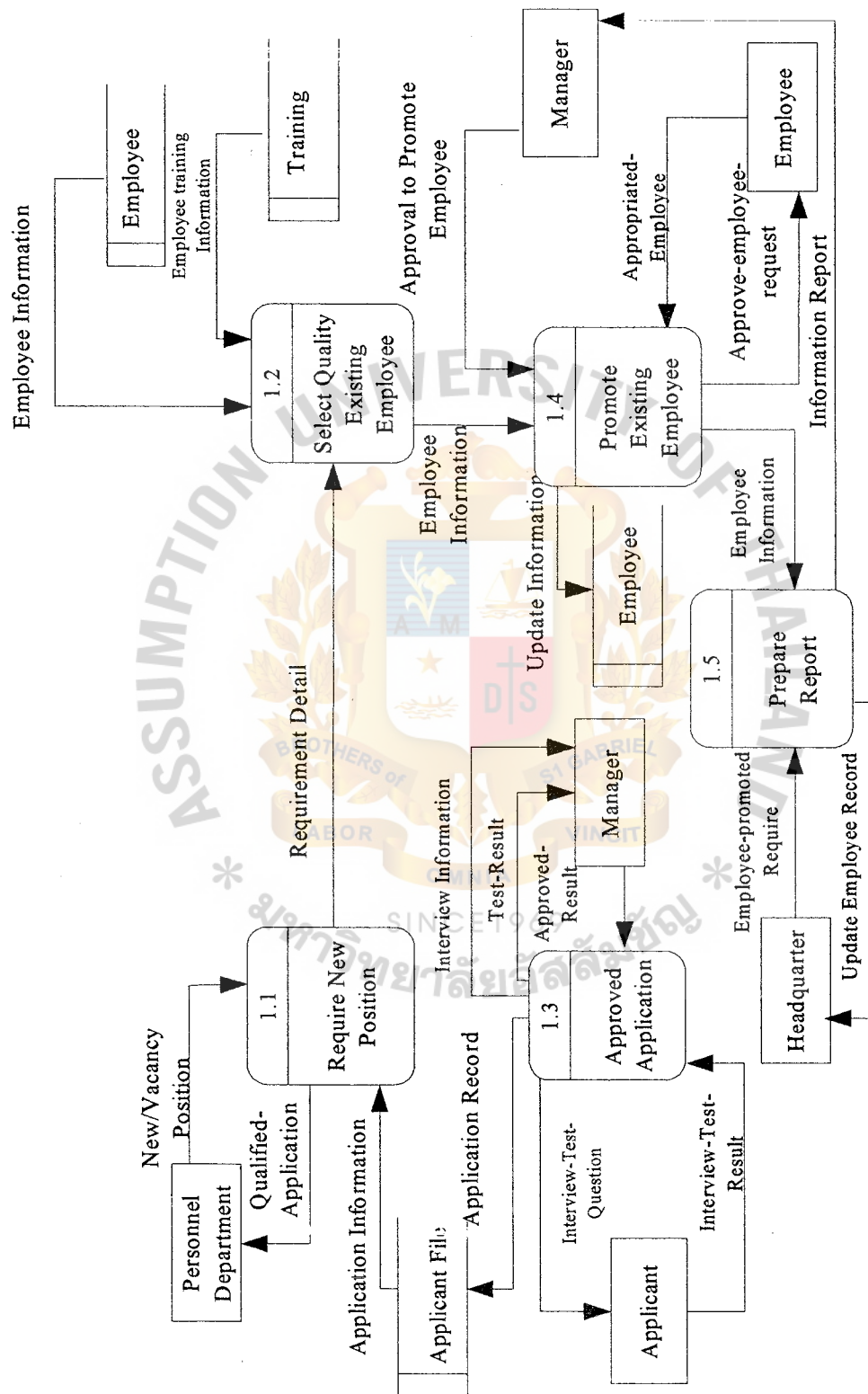


Figure B.6. Data Flow Diagram Level 1 Process 1 Promotion.

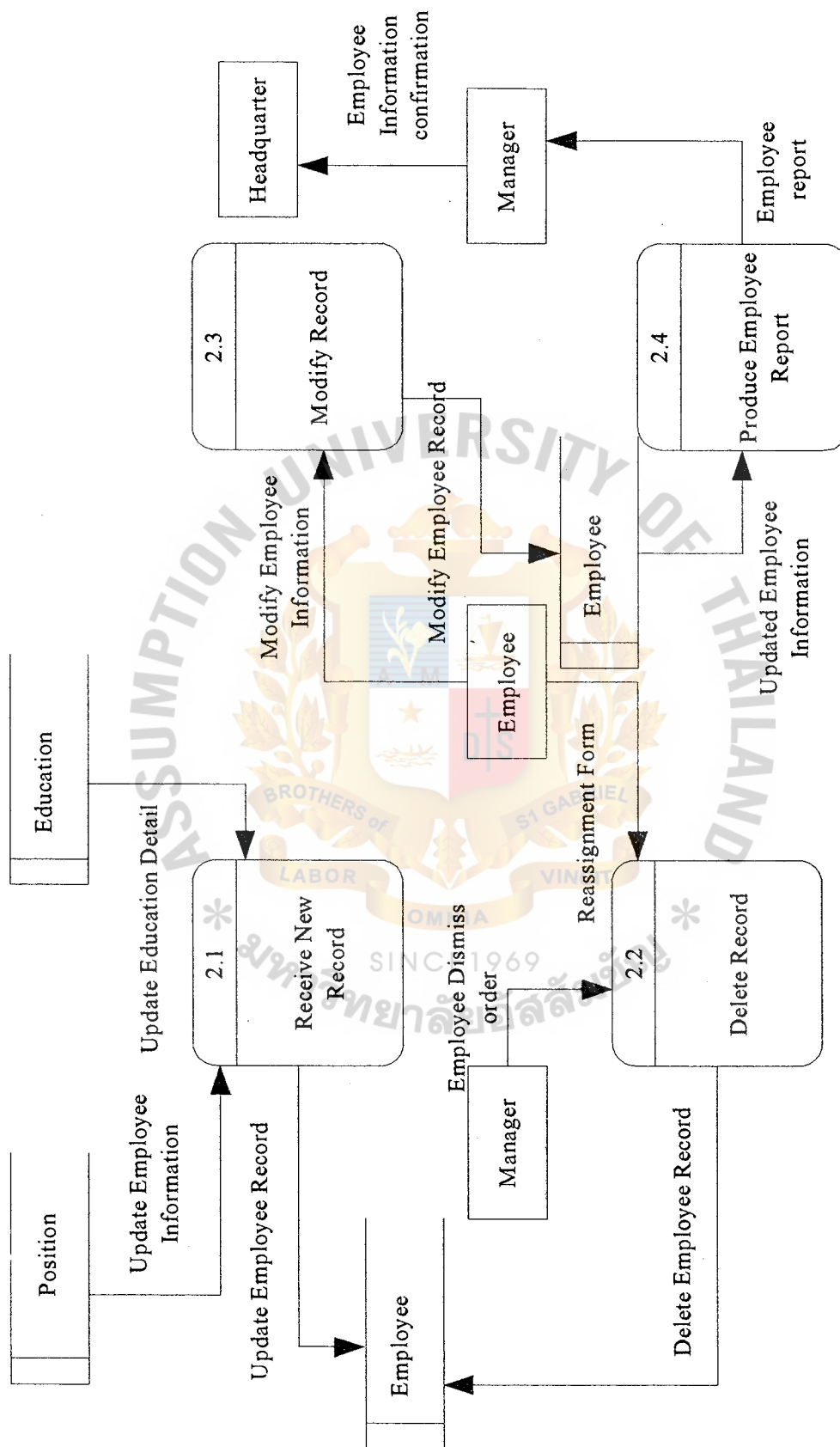


Figure B.7. Data Flow Diagram Level 1 Process 2 Employee Record.

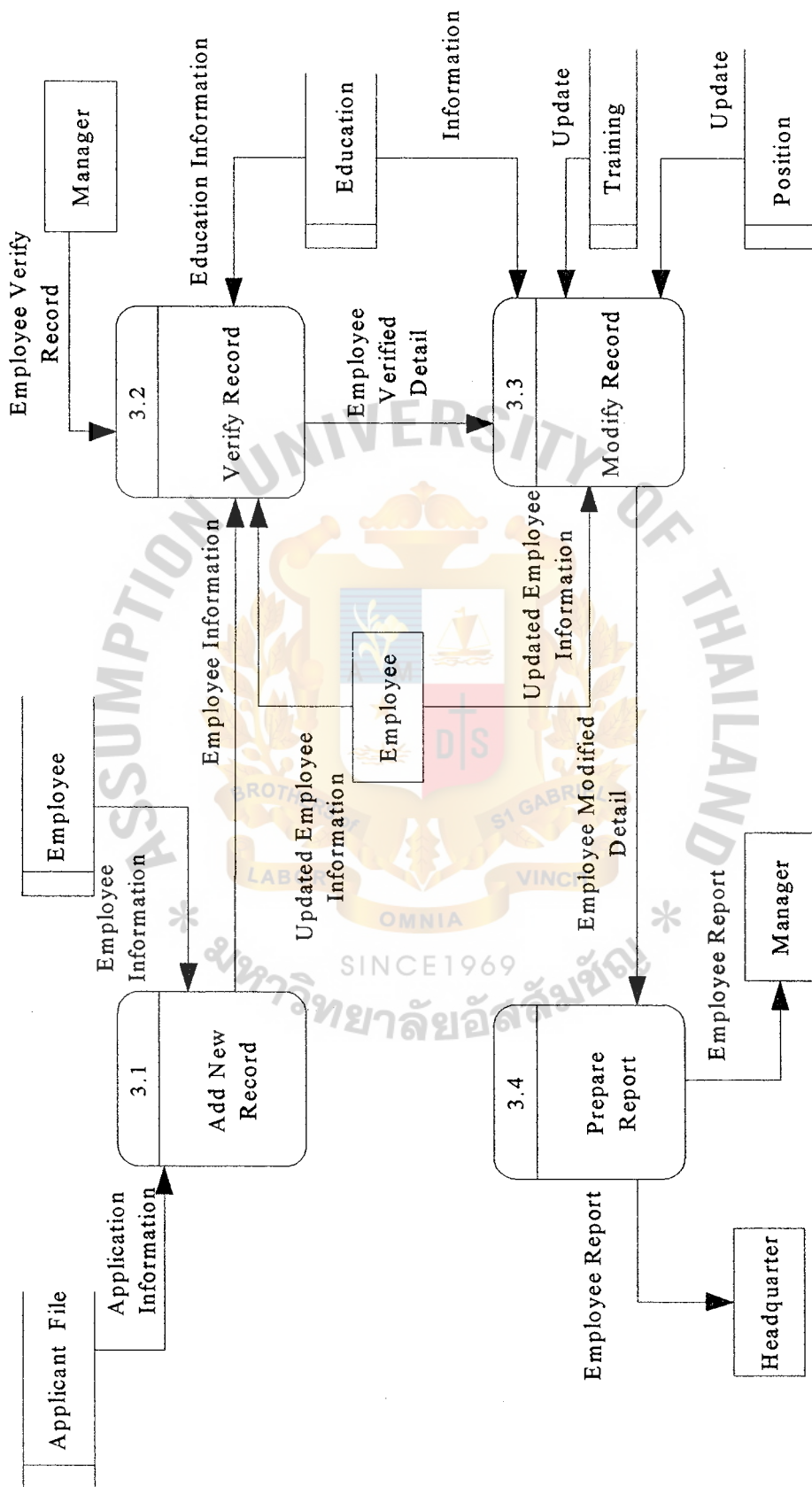


Figure B.8. Data Flow Diagram Level 1 Process 3 Maintain Employee Information.

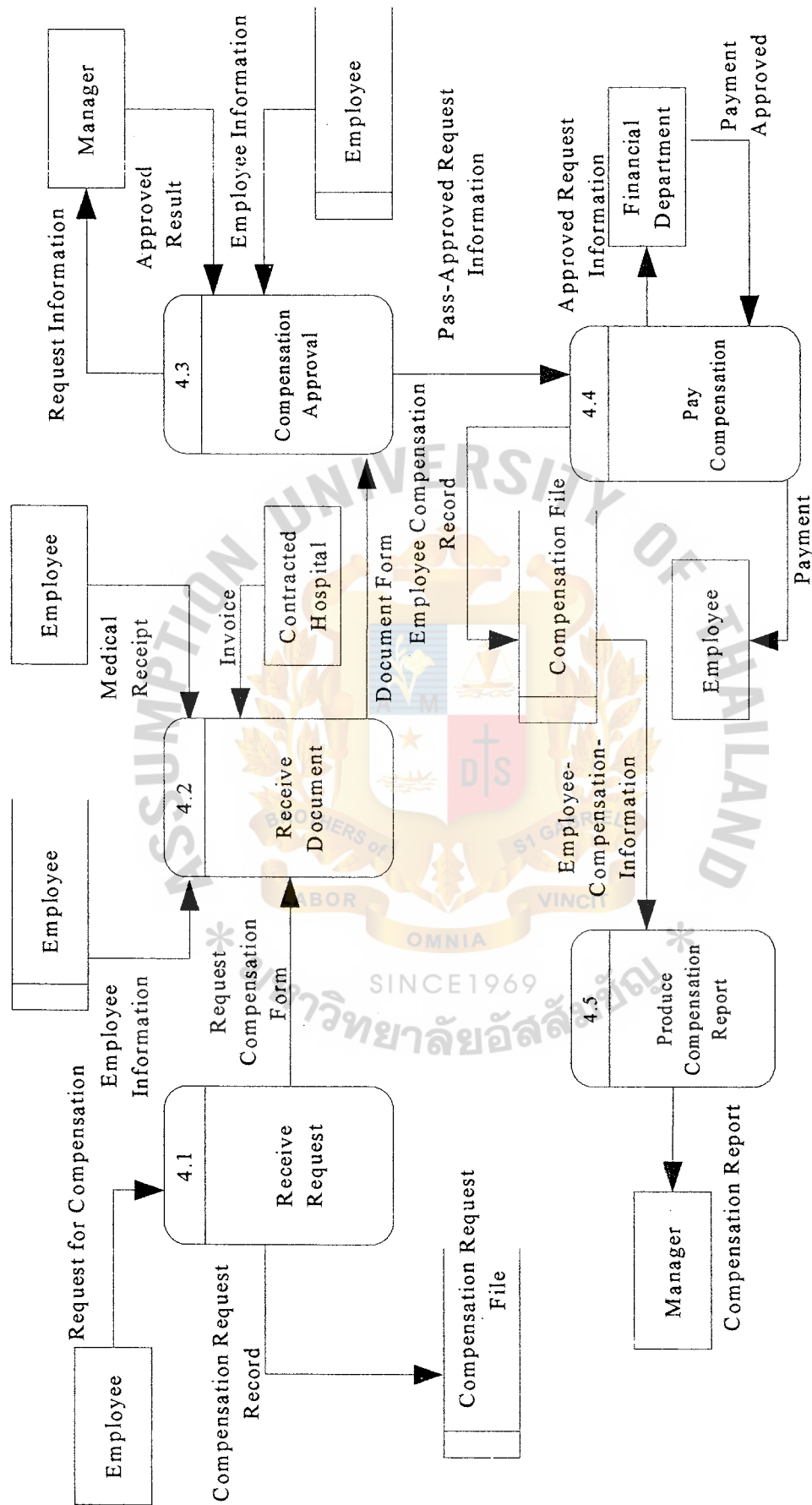


Figure B.9. Data Flow Diagram Level 1 Process 4 Financial Compensation.

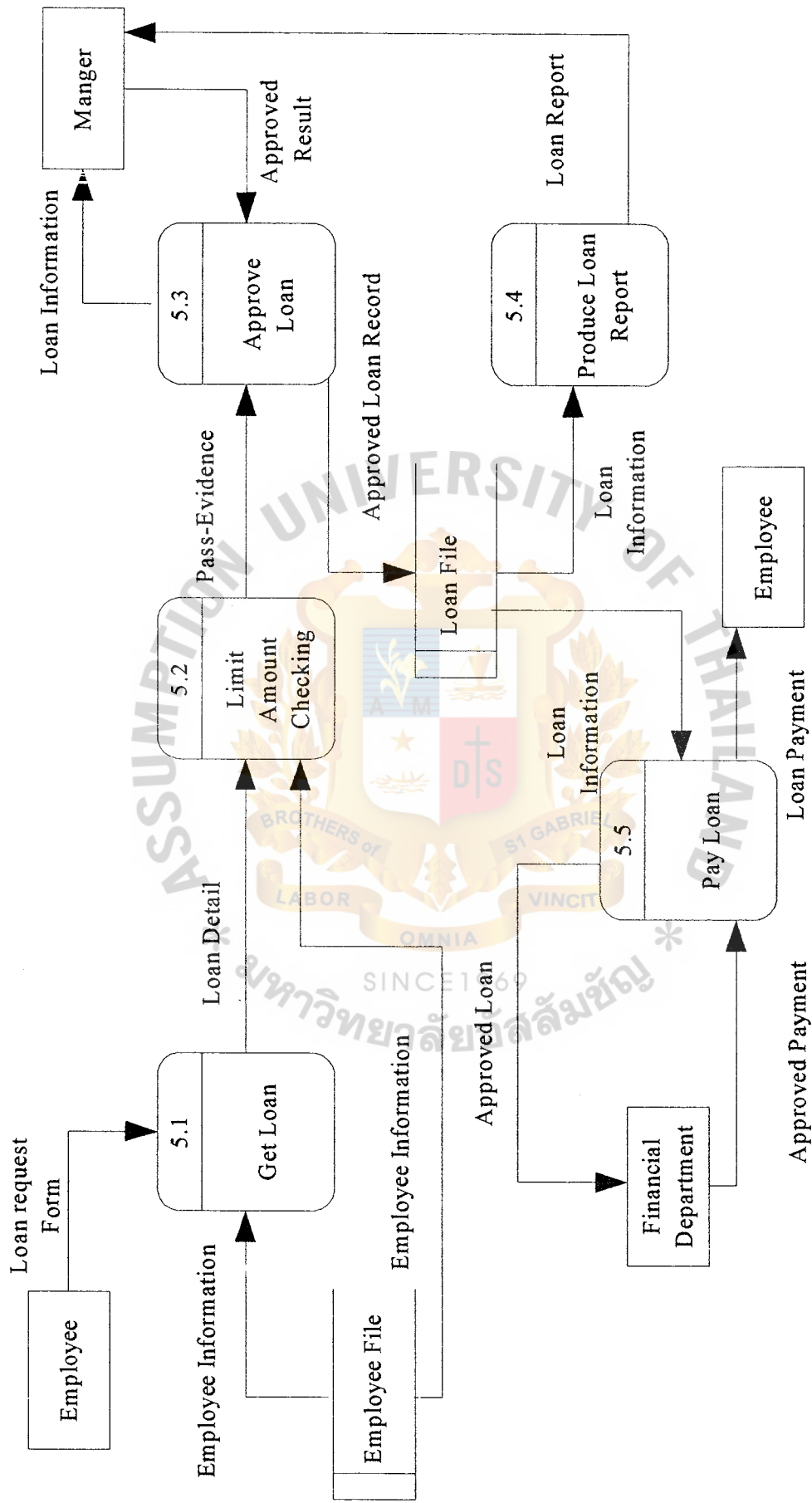


Figure B.10. Data Flow Diagram Level 1 Process 5 Loan.



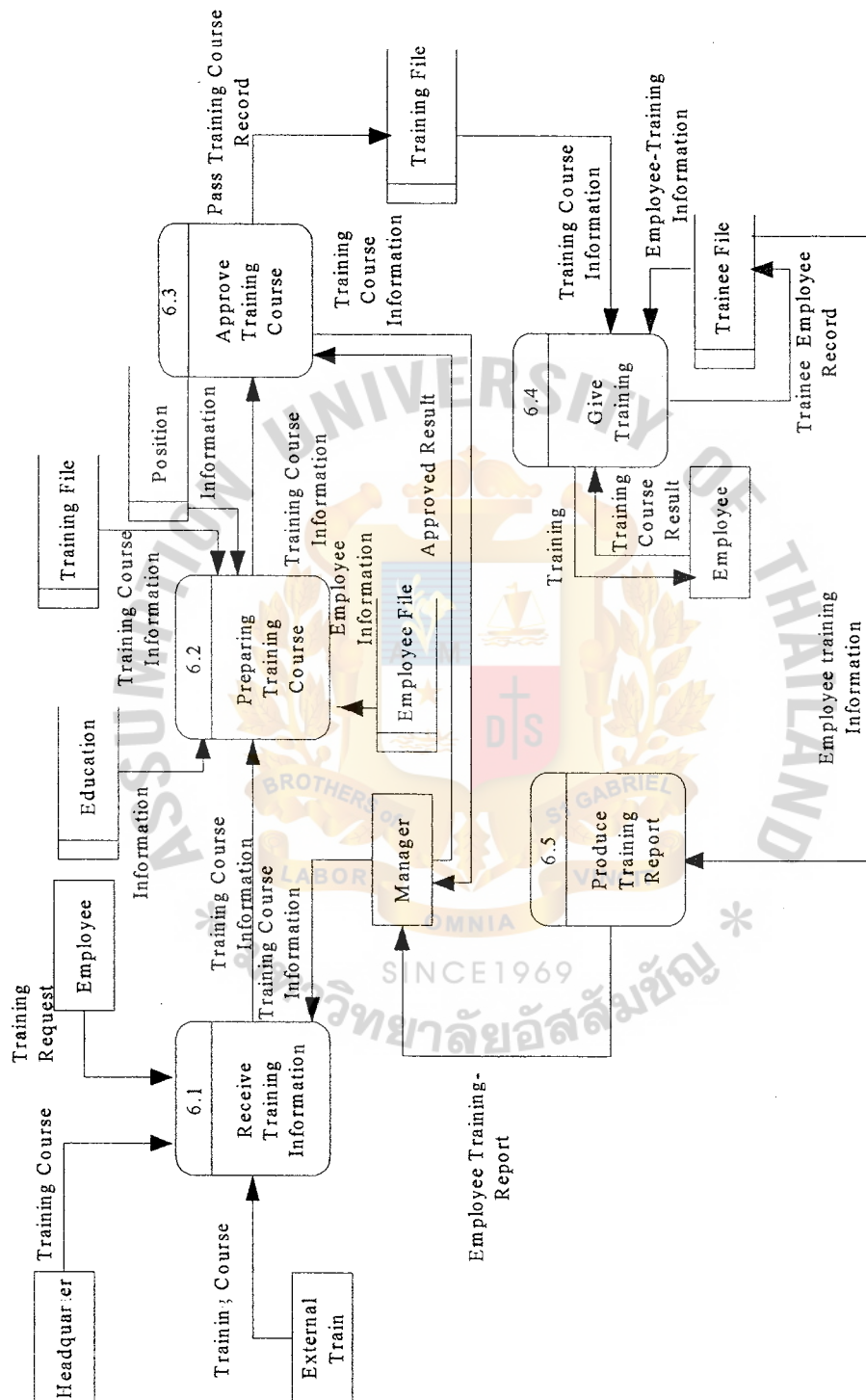


Figure B.11. Data Flow Diagram Level 1 Process 6 Training.

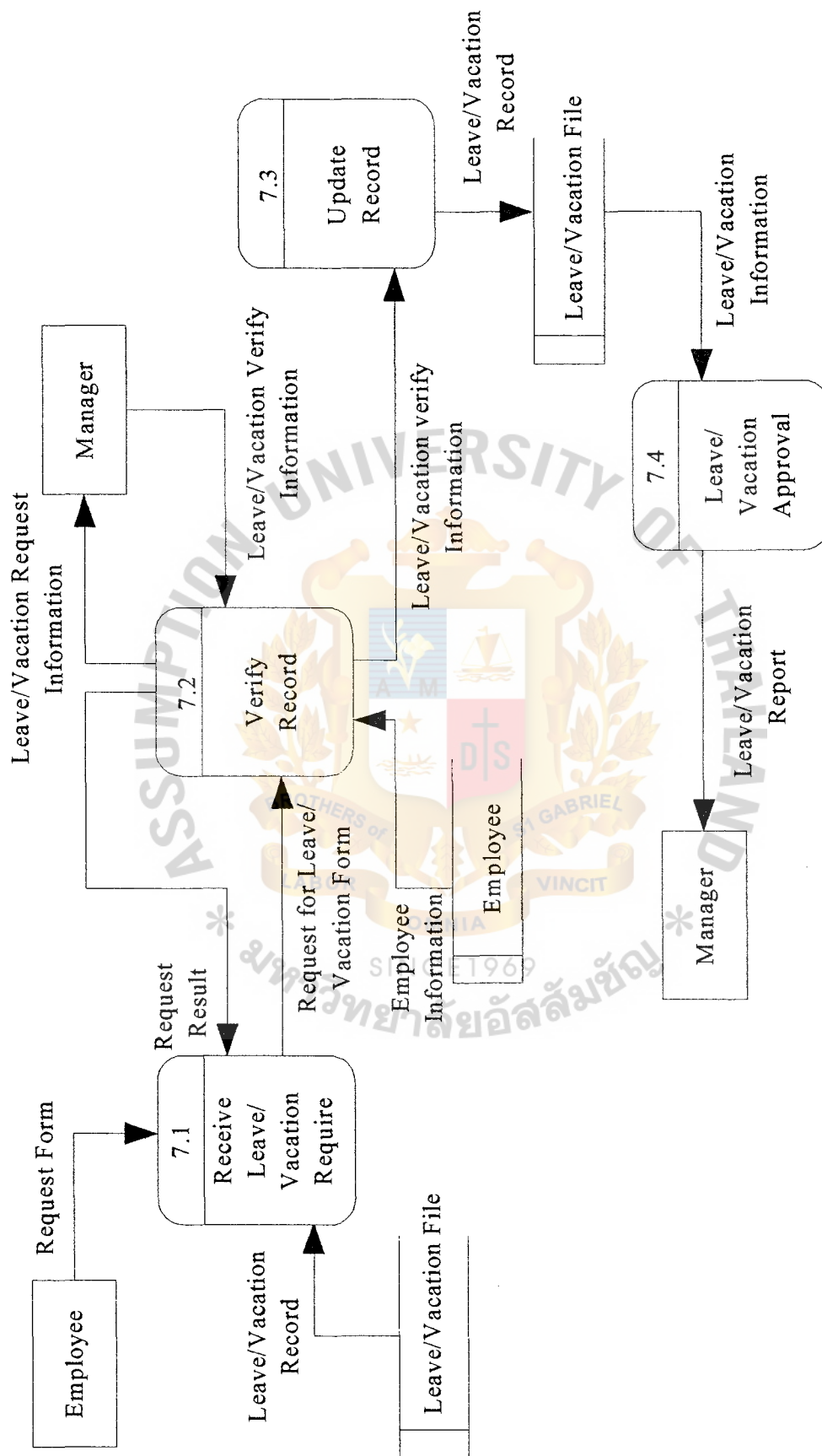
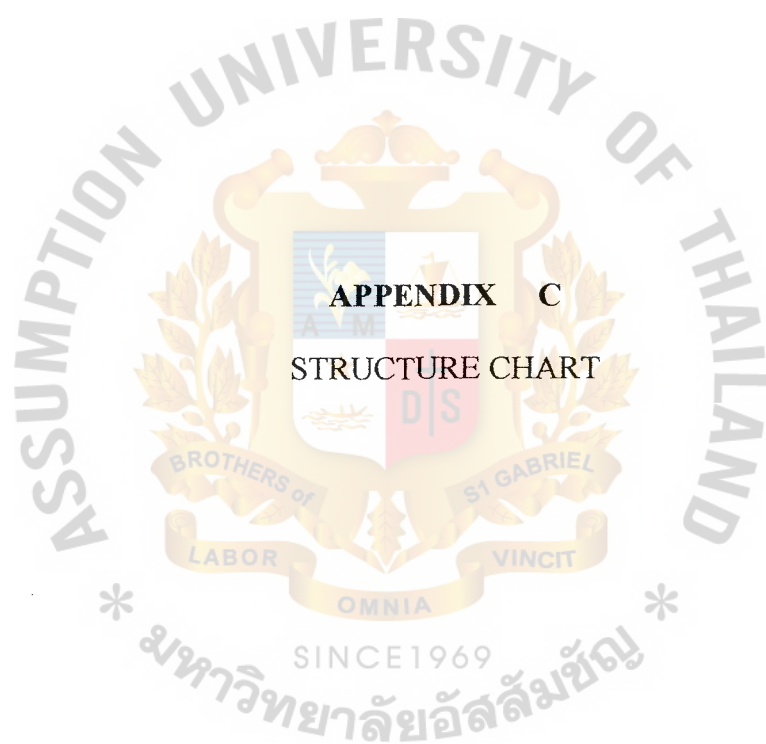


Figure B.12. Data Flow Diagram Level 1 Process 7 Leave/Vacation.



**APPENDIX C**  
**STRUCTURE CHART**

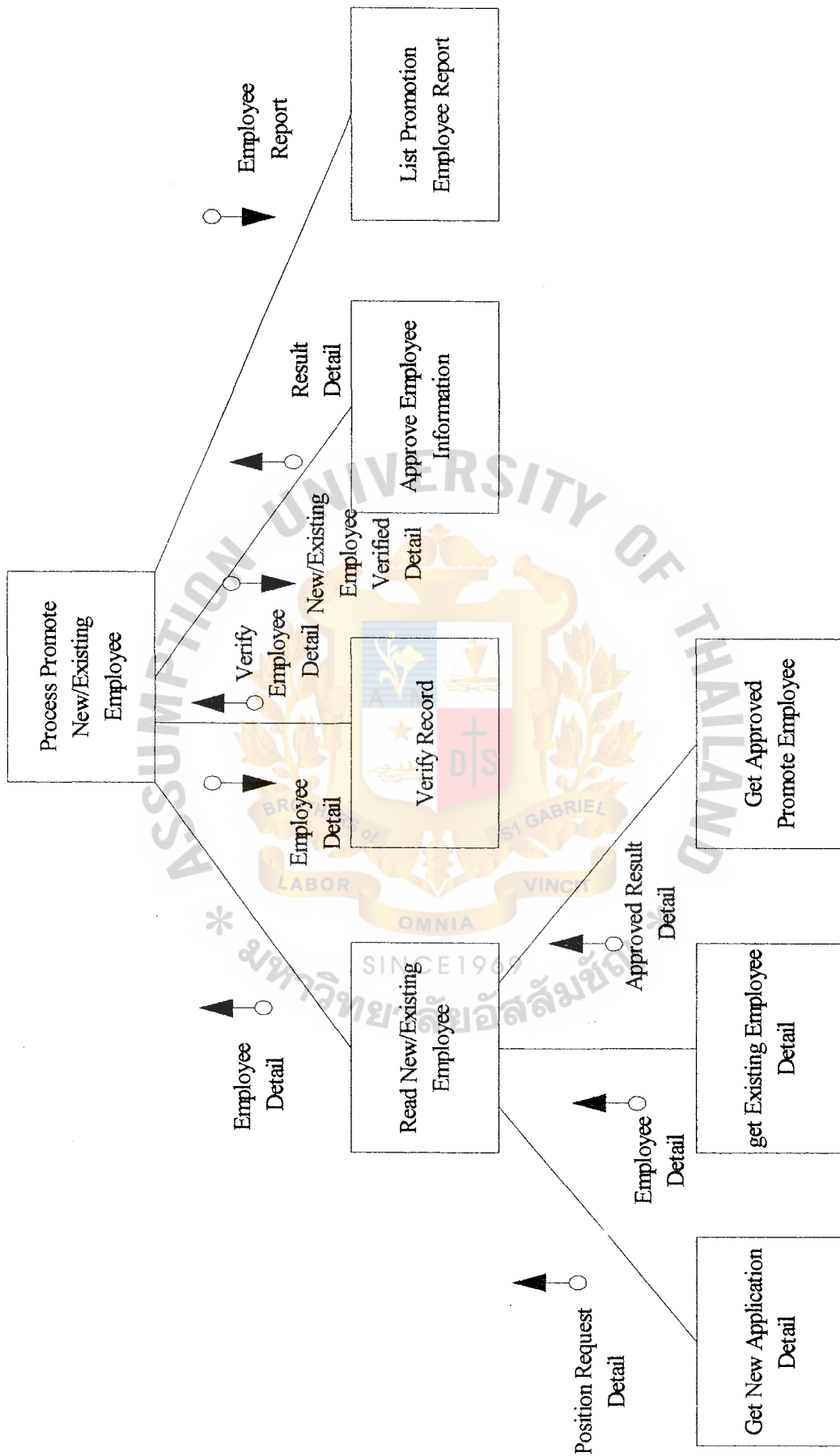


Figure C.1. Structure Chart of Promotion Process.

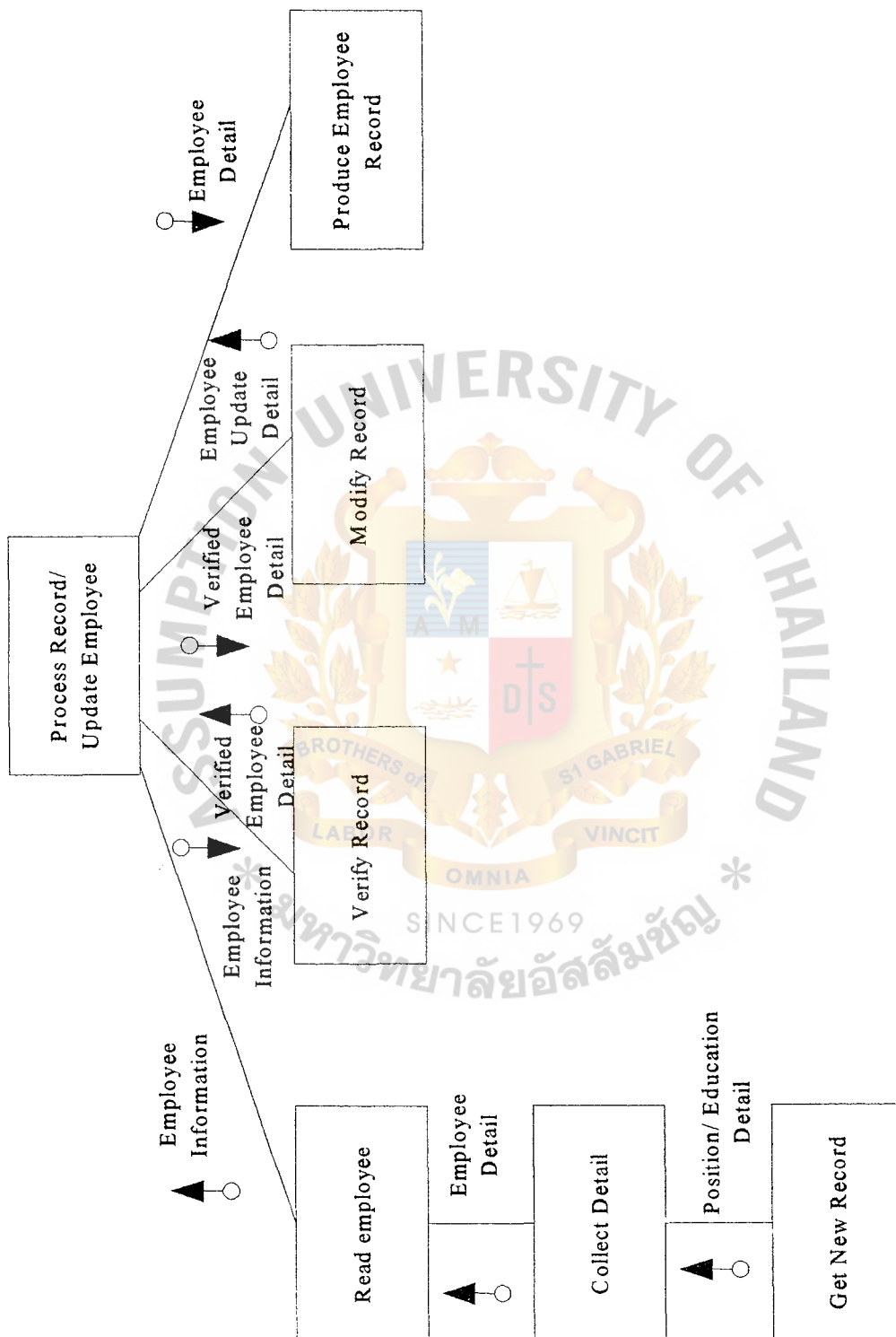


Figure C.2. Structure Chart of Employee Record Process.





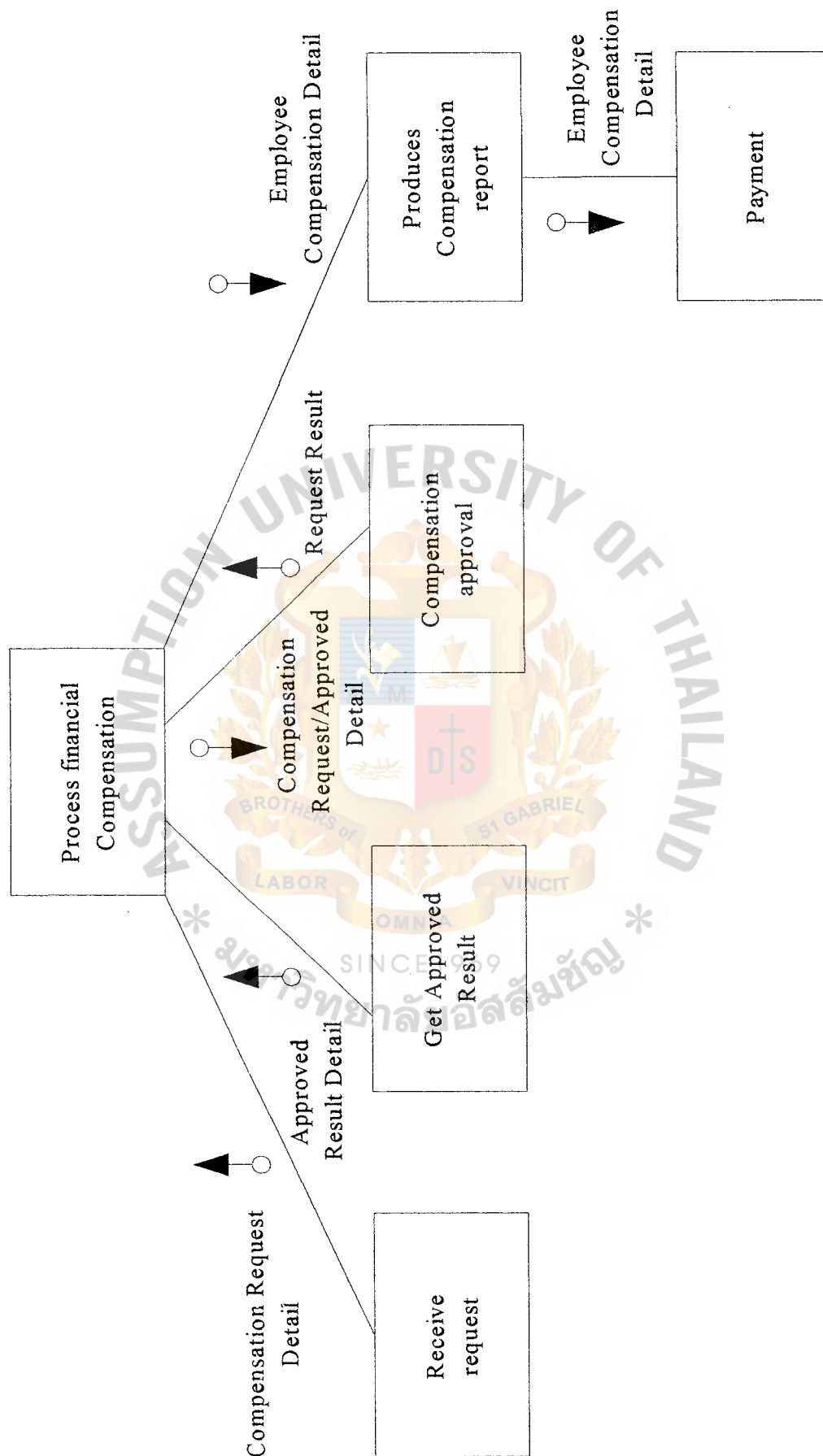


Figure C.4. Structure Chart of Financial Compensation Process.

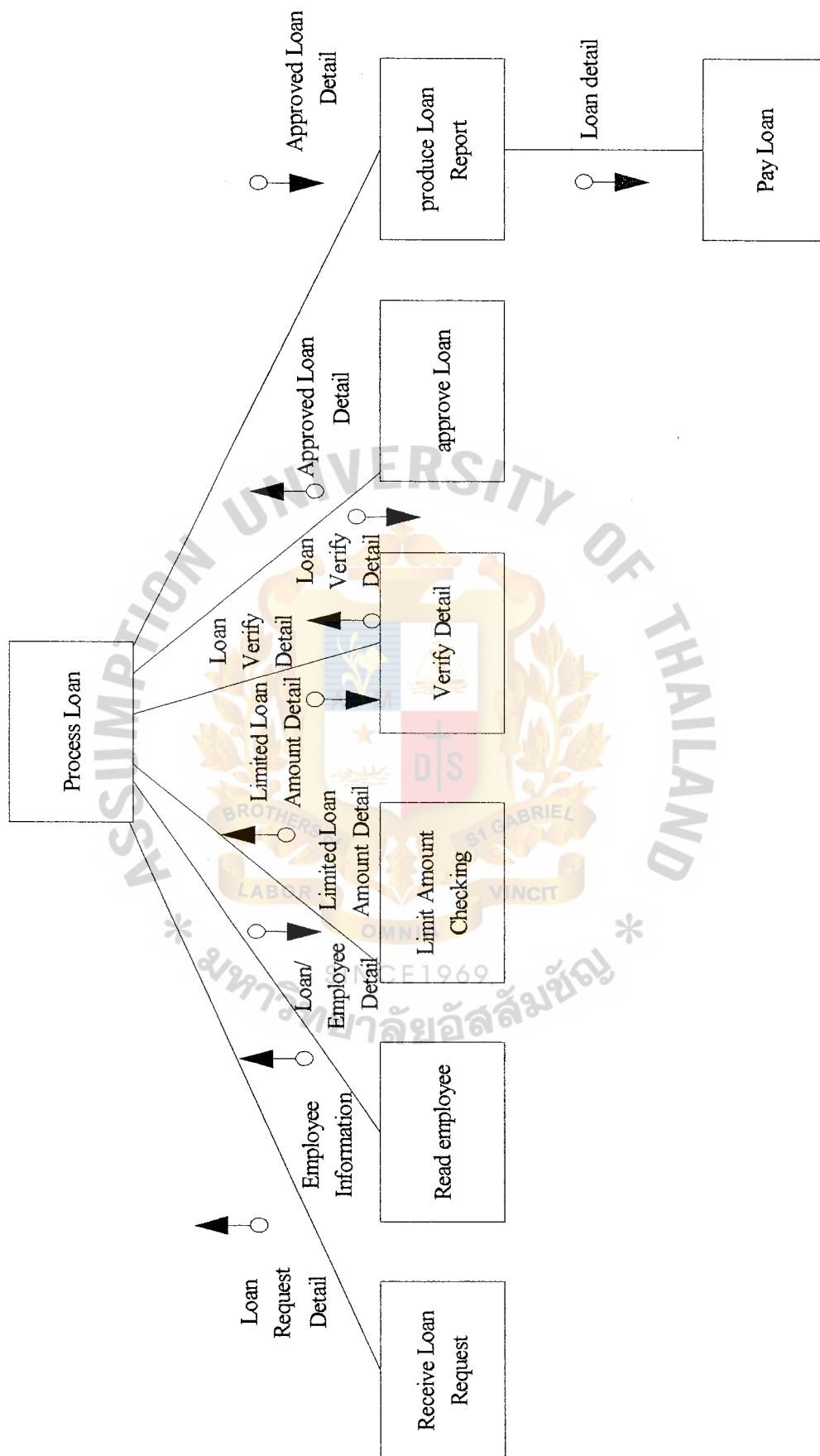


Figure C.5. Structure Chart of Loan Process.

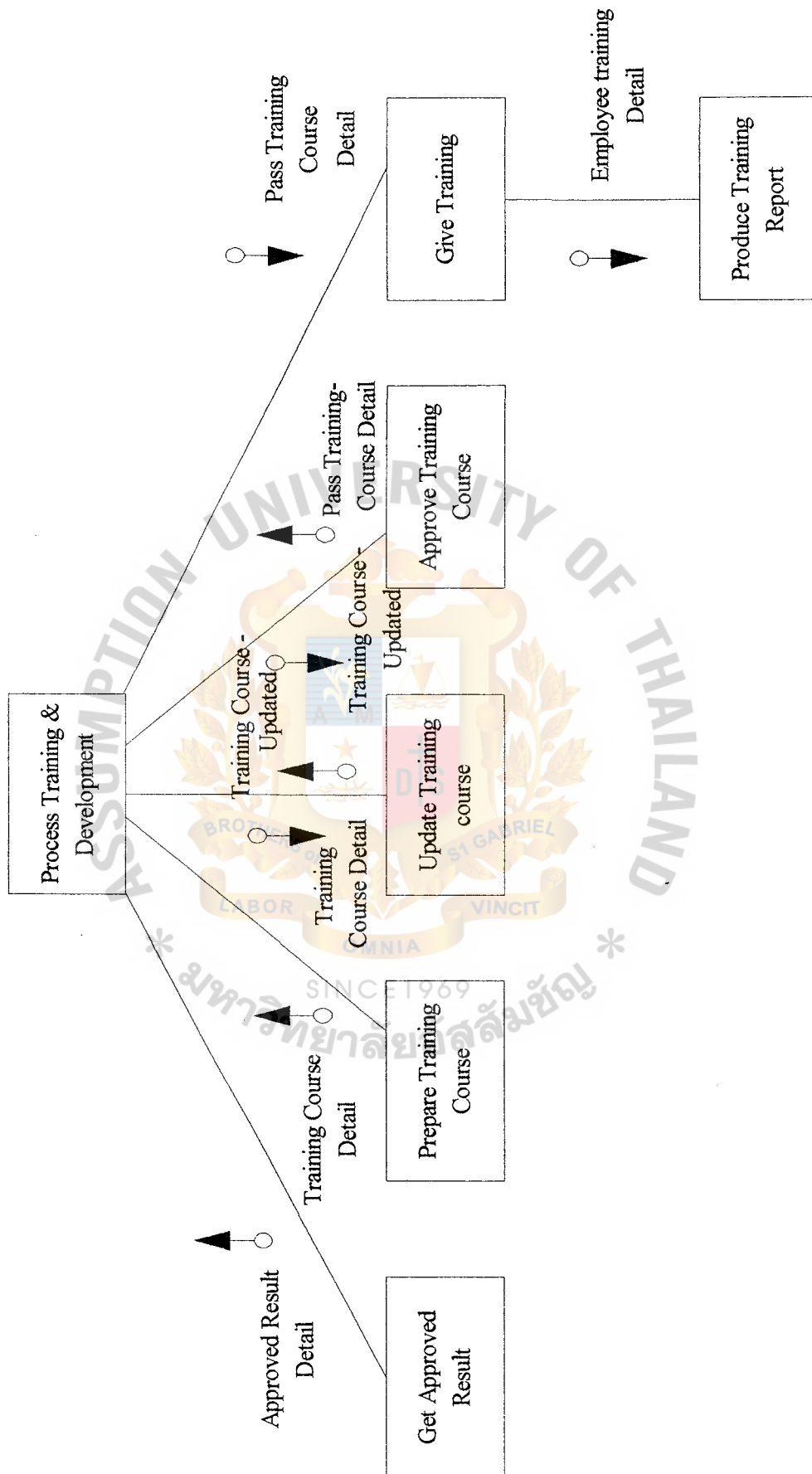


Figure C.6. Structure Chart of Training Process.

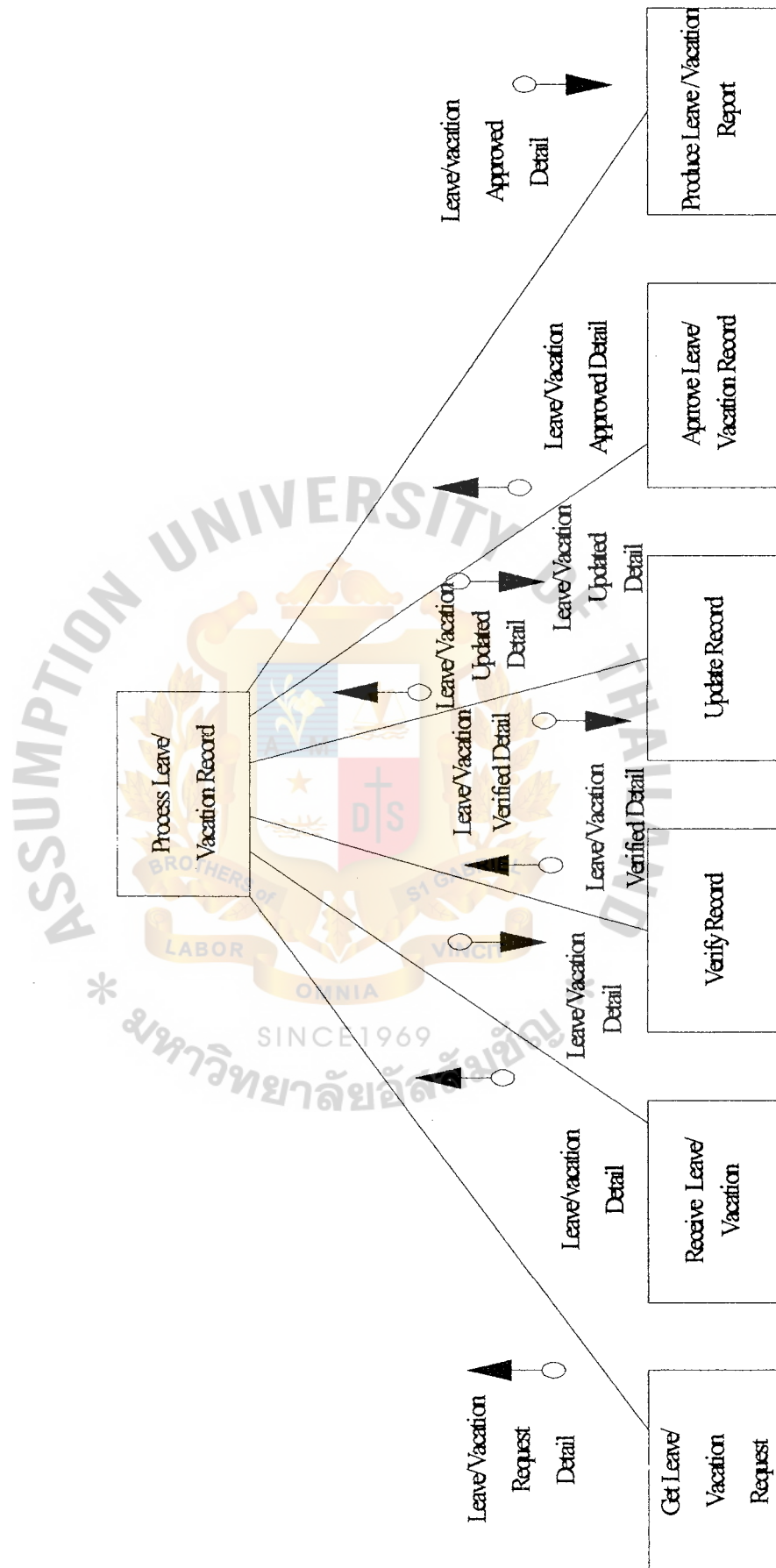


Figure C.7. Structure Chart of Leave/Vacation Process.



**APPENDIX D**  
**DATABASE DESIGN**

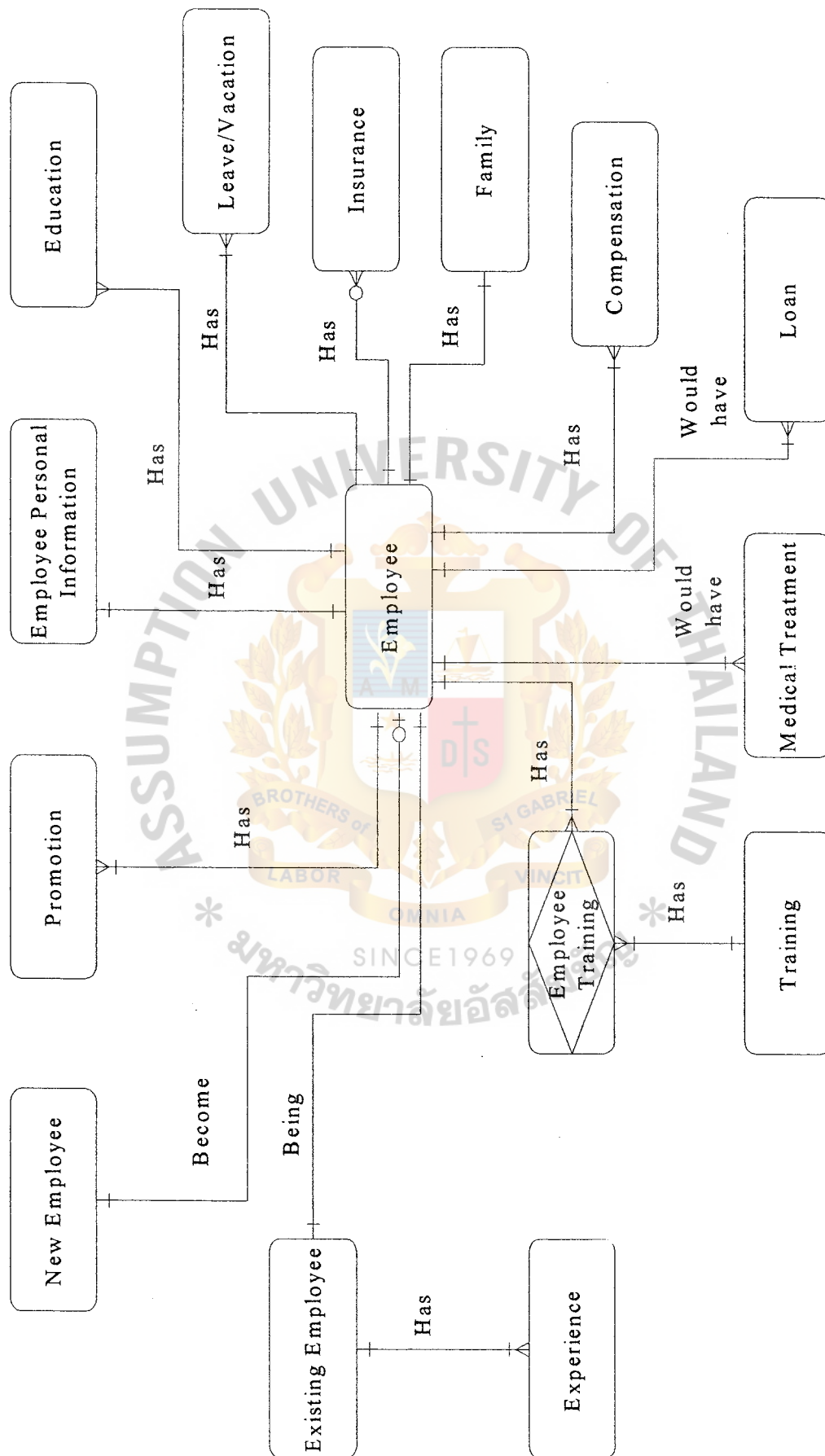


Figure D.1. Logical Data Model in Third Normal Form.



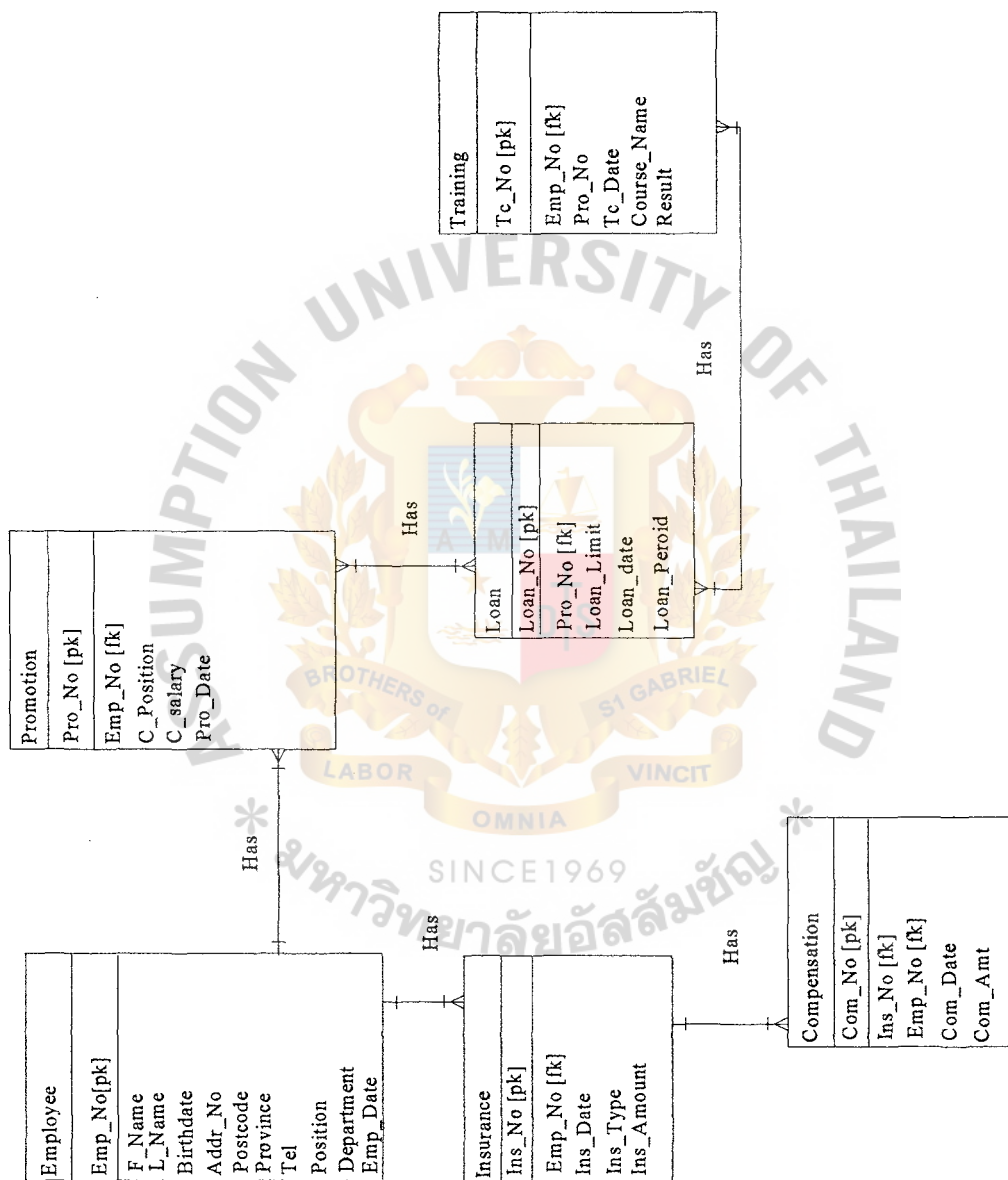


Figure D.2. Fully Attribute Data Model.



**APPENDIX E**  
**PROCESS SPECIFICATION**

## PROCESS SPECIFICATION

Process (E.1.)

Promotion

Description:

Require new and existing employee information to post on the vacancy position.

Process No. 1

Location:

DFD Level 1 Process 1 Promotion new and existing employee (1)

Input Flows:

Application Information

New/Vacancy Position

Employee Information

Employee-Training Information

Approval to promote Employee

Interview-Test-Result

Approved-Result

Appropriate Employee

Output flows:

Qualified-Application

Employee Information Record

Approve-Employee Request

Update Information

Application record

Test- Result

Interview-Test-Question

Update-Employee-Record

Promotion Employee Report

---

Process (E.2.)

Employee Record

Description:

Receive pass applicant and existing employee information record into employee file.

Process No. 2

Location:

DFD Level 1 Process 2 Employee Record (2)

Input Flows:

Applicant-Information

Pass-Information

Reassignment-Form

Employee-Dismiss-Order

Modify-Employee-Information

Update-Employee-Information

Update-Education-Detail

Output Flows:

Update-Employee-Record

Delete-Employee-Record

Modify-Employee-Record

Employee Report

## Employee Information Confirmation

Process (E.3.)

Maintain employee Information

Description:

Process that keeps all employee information.

Process No. 3

Location:

DFD Level 1 Process 3 Maintain Employee Information (3)

Input Flows:

Employee Information

Application Information

Employee-Verify Record

Education Information

Training-Information

Update-Employee-Position

Output Flows:

Employee-Verified-Detail

Employee-Modified- Detail

Employee Report

---

Process (E.4.)

Financial Compensation

Description:

Receive compensation request, approve, pay the money to employee and keep employee compensation record into compensation file.

Process No. 4

Location:

DFD Level 1 Process 4 Financial Compensation (4)

Input flows:

Request for Compensation

Request Compensation-Form

Employee Information

Medical Receipt

Invoice

Approved-Result

Payment-Approval

Document Form

Output Flows:

Compensation-Request-Record

Pass-Approved-Request Information

Approved-Request Information

Employee-Compensation Record

Compensation Information

Payment

Compensation Report

---

Process (E.5.)

Loan

Description:

Receive loan request, approve the loan limit and give loan to employee.

Process No. 5



Location:

DFD Level 1 Process 5 Loan (5)

Input Flows:

Loan-Request-Form

Employee Information

Approved-result

Loan Detail

Approved-Payment

Pass-Evidence

Output Flows:

Approved-Loan Record

Loan Information

Loan Payment

Approved-Loan

Loan Report

---

Process (E.6.)

Training

Description:

Prepare training course, receive training request from employee and give training.

Process No. 6

Location:

DFD Level 1 Process 6 Training (6)

Input flows:

Training-Course Information

Training-Request

Employee Information

Approved-Result

Position-Information

Employee-Training Information

Output Flows:

Pass-Training Course Record

Trainee Employee Record

Give Training

Employee-Training-Report

Training-Course-Information

---

Process (E.7.)

Leave/Vacation

Description:

Process that keep about leave/late/vacation record of employee.

Process No. 7

Location:

DFD Level 1 Process 7 Leave/Vacation (7)

Input Flows:

Leave/Vacation-Information

Modify-Employee-Information

Employee Information

Leave/Vacation –Verify-Information

Leave/Vacation-Result

Output flows:

Leave/Vacation Request-Information

Leave/Vacation-Report

Leave/Vacation-Record

Result-Request





**APPENDIX F**  
**INPUT DESIGN**

Microsoft Access - [Password Menu : Form]

File Edit View Insert Format Records Tools Window Help

A BANK AT  
PATTANAKARN BRANCH

User Name

Password

OK Cancel Exit

Date

Time

Figure F.1. Input Screen of Password Menu.



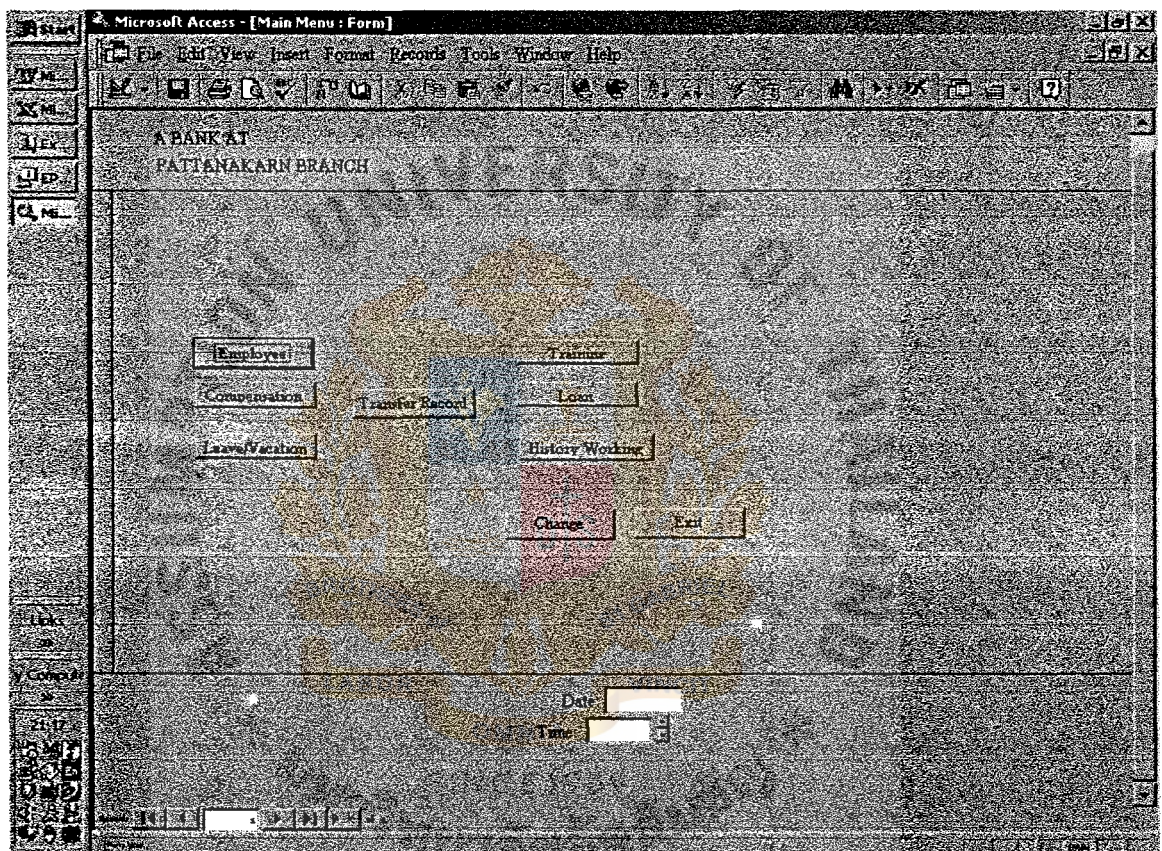


Figure F.2. Input Screen of Main Menu.



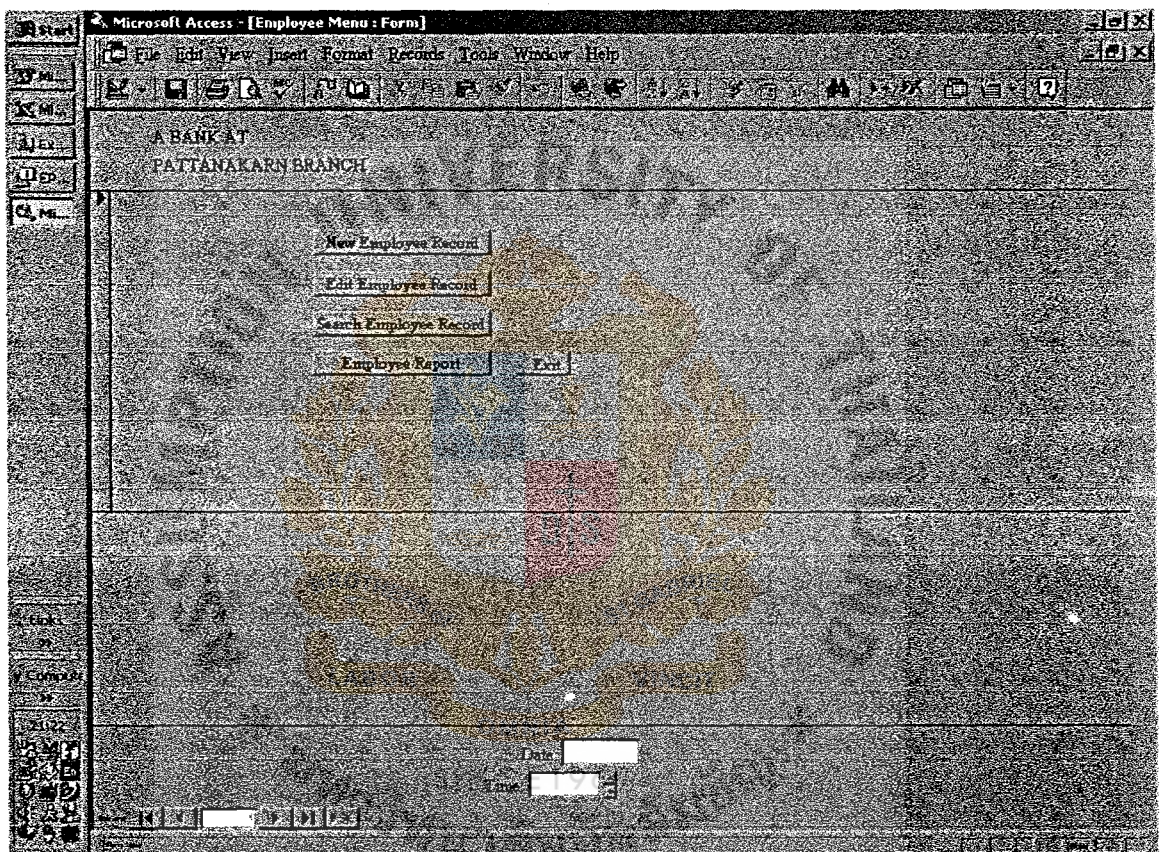


Figure F.3. Input Screen of Employee Menu.



Microsoft Access - [Record input screen : Form]

File Edit View Insert Format Records Tools Window Help

A BANK AT  
PATTANAKARN BRANCH

ID Code:

Name/Surname:  Date of birthday:

Position:  Sex:

Department:  Province:

Address:  Tel:

Employee Data:  Postcode:

Query Code:  Search:

Date:

Time: 9:30

Figure F.4. Input Screen of Employee Record.



Microsoft Access - [Input Screen and Edit Employee's Education Record : Form]

File Edit View Insert Format Records Tools Window Help

A BANK AT  
PATTANAKARN BRANCH

Degree:  Save

Institution:  Add

Major:  Delete

KGPA:  Edit

Cancel Close

Date:

Time:

Microsoft Access

Figure F.5. Input Screen and Edit Employee's Education Record.



Microsoft Access - [Work Experience Input Screen : Form]

File Edit View Insert Format Records Tools Window Help

A BANK AT  
PATTANAKARN BRANCH

Company	<input type="text"/>	<input type="button" value="Back"/>
Position	<input type="text"/>	
Salary	<input type="text"/>	<input type="button" value="Next"/>
Period	<input type="text"/>	
Training Course	<input type="text"/>	<input type="button" value="Exit"/>

Date

Time

Page 1 of 1

Figure F.6. Input Screen of New and Edit Employee's Experience Record.



Microsoft Access - [Input Screen of New Employee : Form]

File Edit View Insert Format Records Tools Window Help

A BANK AT  
PATTANAKARN BRANCH

Name	<input type="text"/>	Department	<input type="text"/>	
Surname	<input type="text"/>	Branch	<input type="text"/>	OK
Occupation	<input type="text"/>			Cancel
Position	<input type="text"/>			Exit
Sex	<input type="radio"/> Male <input type="radio"/> Female			
Date	<input type="text"/>	Time	<input type="text"/>	

Figure F.7. Input Screen of New Employee Form.



Microsoft Access - [Input & Edit Employee's Personal Information : Form]

File Edit View Insert Format Records Tools Window Help

A BANK AT  
PATTANAKARN BRANCH

Age	<input type="text"/>	Sex	<input type="text"/>
Birthday	<input type="text"/>	Blood Group	<input type="text"/>
Military Status	<input type="text"/>	Social Security No.	<input type="text"/>
Tax No.	<input type="text"/>		
Provident Fund No.	<input type="text"/>		

Back Finish Exit

Date

Time

Figure F.8. Input and Edit Employee's Personal Information.



Microsoft Access - [Input Screen of Seach Employee Record : Form]

File Edit View Insert Format Records Tools Window Help

A BANK AT  
PATTANAKARN BRANCH

Employee No.

Name  Search

Surname  Exit

Date

Time

Figure F.9. Input Screen of Search Employee Record.



Microsoft Access - [Input Screen of Employee Report : Form]

File Edit View Insert Format Records Tools Window Help

A BANK AT  
PATTANAKARN BRANCH

Employee No.

Employee Name

Employee Surname

Date

Time

Figure F.10. Input Screen of Employee Report.



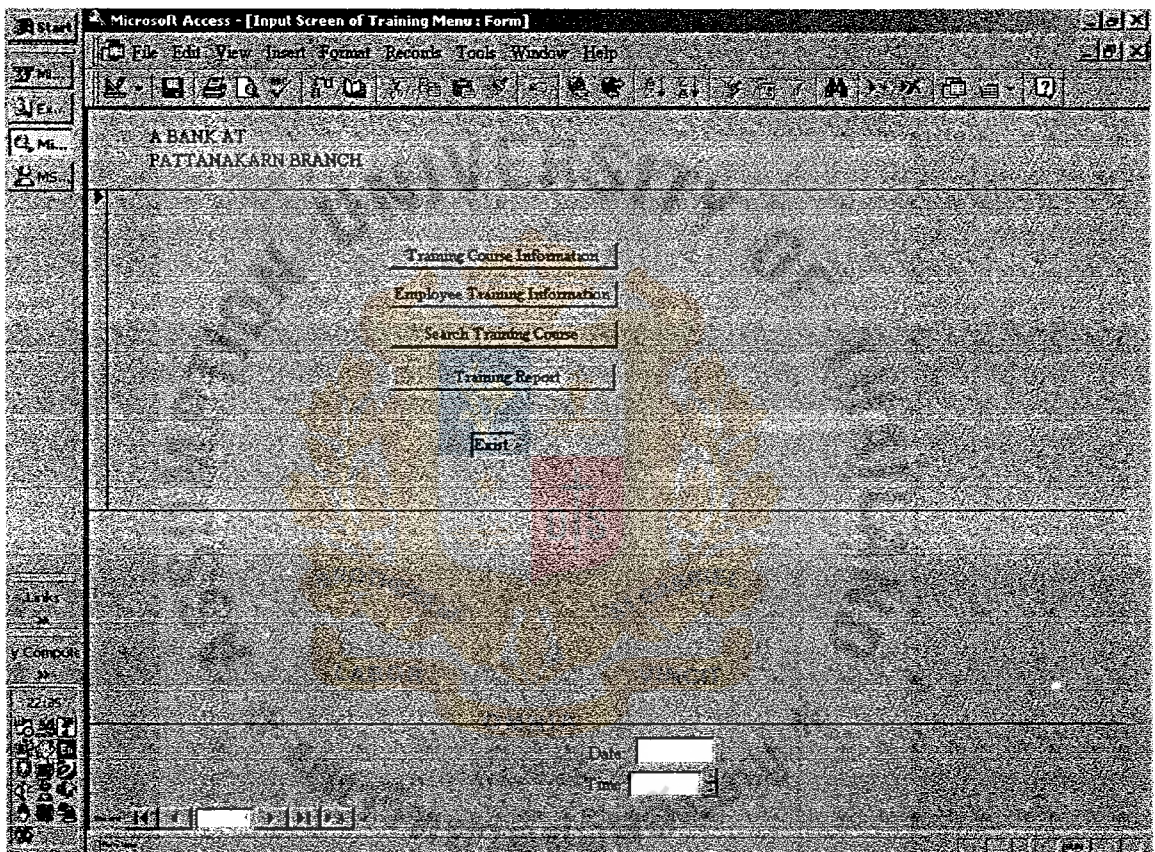


Figure F.11. Input Screen of Training Menu.



Microsoft Access - [Training Input Screen : Form]

File Edit View Insert Format Records Tools Window Help

A BANK AT  
PATTANAKARN BRANCH

Training Course No.  Course No.

Course Length

Training Date

Number of Trainers  OK Cancel

Instructor

Date

Time

Figure F.12. Input Screen of Training Course Record.



Microsoft Access - [Input Screen of Employee Training Record : Form]

File Edit View Insert Format Records Tools Window Help

A BANK AT  
PATTANAKARN BRANCH

Employee No.	<input type="text"/>	Employee Name	<input type="text"/>
Training Course No.	<input type="text"/>	Course Name	<input type="text"/>
Training Date	<input type="text"/>	Results	<input type="text"/>

OK Cancel Exit

Date   
Time

Figure F.13. Input Screen of Employee Training Record.



Microsoft Access - [Input Screen of Search Training Course : Form]

File Edit View Insert Format Records Tools Window Help

A BANK AT  
PATTANAKARN BRANCH

Training Course No.

Course Name

Search Exist

Date

Time

Figure F.14. Input Screen of Search Training Course.



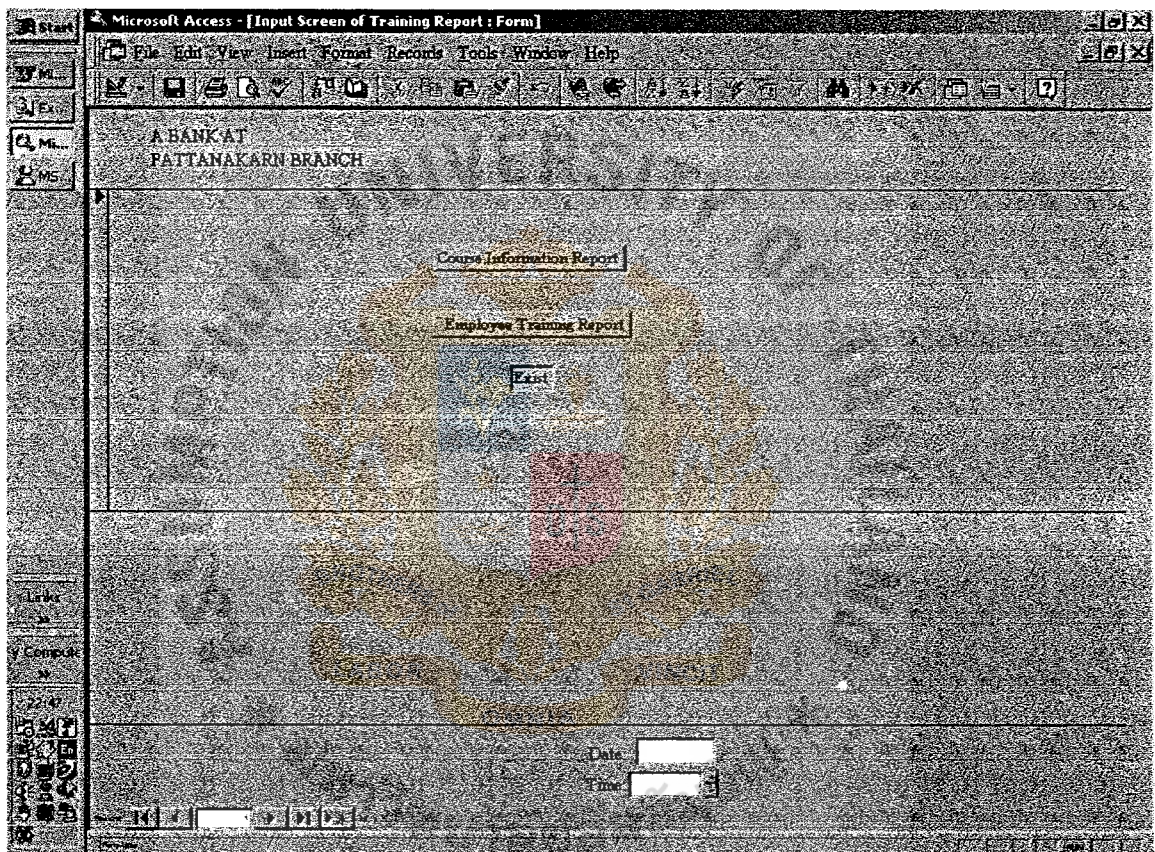


Figure F.15. Input Screen of Training Report.



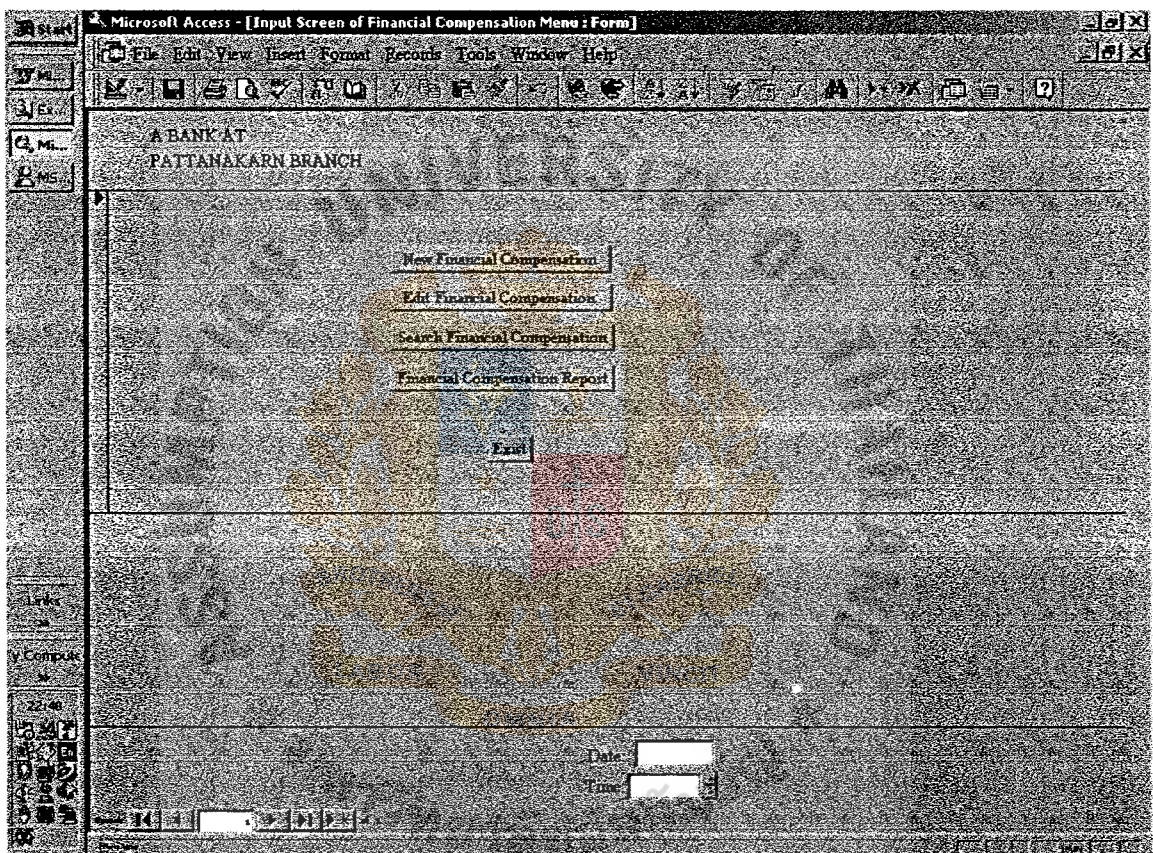


Figure F.16. Input Screen of Financial Compensation Menu.



Microsoft Access - [Input Screen of New&Edit Financial Compensation Record : Form]

File Edit View Insert Format Records Tools Window Help

A BANK AT  
PATTANAKARN BRANCH

Employee No.  Financial Compensation No.

Employee Name  Financial Compensation Date

Insurance Amount

Financial Compensation Amount

Date

Time

Figure F.17. Input Screen of New and Edit Financial Compensation Record.



Microsoft Access - [Input Screen Of Search Financial Compensation : Form]

File Edit View Insert Format Records Tools Window Help

A BANK AT  
PATTANAKARN BRANCH

Employee No.

Employee Name

Financial Compensation No.

Date

Time

Figure F.18. Input Screen of Search Financial Compensation.



Microsoft Access - [Input Screen of Financial Compensation Report : Form]

File Edit View Insert Format Records Tools Window Help

A BANK AT  
PATTAMAKARN BRANCH

Employee No.

Employee Name

Financial Compensation No.

Date

Time

Figure F.19. Input Screen of Financial Compensation Report.



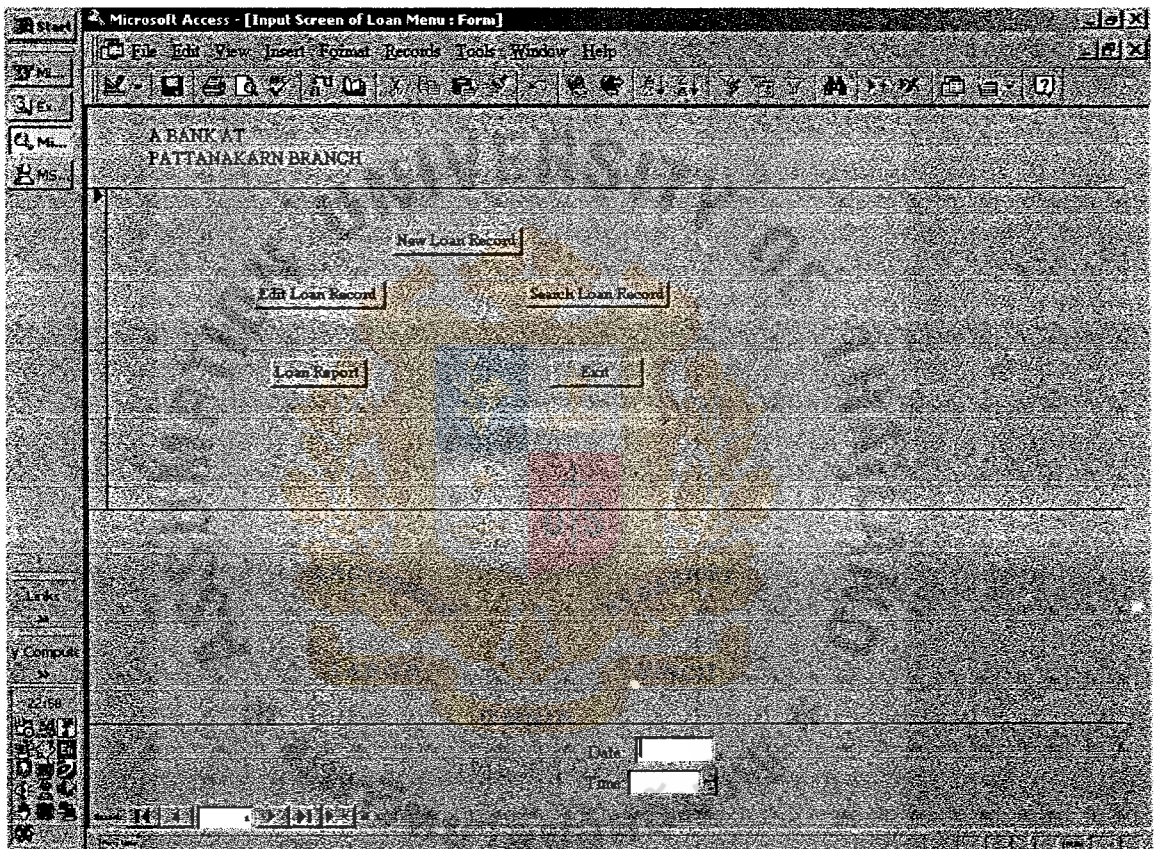


Figure F.20. Input Screen of Loan Menu.



Microsoft Access - [Input Screen of New&Edit Loan Record : Form]

File Edit View Insert Format Records Tools Window Help

A BANK AT  
PATTANAKARN BRANCH

Loan No.	<input type="text"/>	Loan Limit	<input type="text"/>
Employee No.	<input type="text"/>	Period of Loan	<input type="text"/>
Employee Name	<input type="text"/>	Loan Type	<input type="text"/>
Date of Loan	<input type="text"/>	Interest Rate	<input type="text"/>

Add Cancel Exit

Date

Time

Figure F.21. Input Screen of New and Edit Loan Record.



Microsoft Access - [Input Screen of Search Loan Record : Form]

File Edit View Insert Format Records Tools Window Help

A BANK AT  
PATTANAKARN BRANCH

Employee No.

Employee Name

Loan Serial No.

Date

Time

Figure F.22. Input Screen of Search Loan Record.



Microsoft Access - [Input Screen of Loan Report : Form]

File Edit View Insert Format Records Tools Window Help

A BANK AT  
PATTANAKARN BRANCH

Employee No:

Employee Name:

Loan No:

Date:

Time:

Figure F.23. Input Screen of Loan Report.



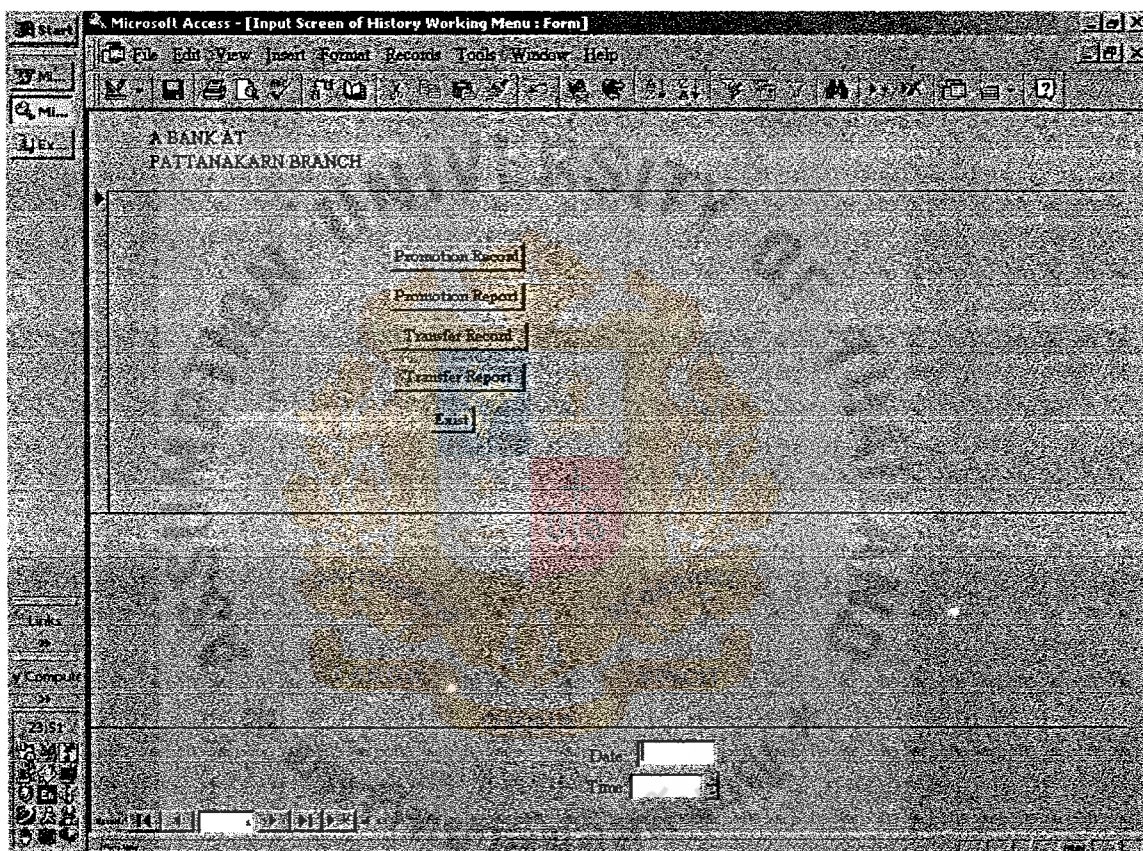


Figure F.24. Input Screen of History Working Menu.



Microsoft Access - [Input Screen of Promotion Record : Form]

File Edit View Insert Format Records Tools Window Help

A BANK AT  
PATTANAKARN BRANCH

Promotion No.	<input type="text"/>	Employee No.	<input type="text"/>
Employee Name	<input type="text"/>	Surname	<input type="text"/>
Current Position	<input type="text"/>	New Department	<input type="text"/>
New Position	<input type="text"/>	Promotion Date	<input type="text"/>
Current Salary	<input type="text"/>	New Salary	<input type="text"/>

New Save Cancel Print

Date:   
Time:

Figure F.25. Input Screen of Promotion Record.



Microsoft Access - [Input Screen Of Transfer Record : Form]

File Edit View Insert Format Records Tools Window Help

A BANK AT  
PATTANAKARN BRANCH

Transfer No.	<input type="text"/>	Transfer Date	<input type="text"/>
Employee No.	<input type="text"/>	Employee Name	<input type="text"/>
Sex	<input type="text"/>	Age	<input type="text"/>
Current Address	<input type="text"/>	Date Transfer	<input type="text"/>
Branch	<input type="text"/>	Period	<input type="text"/>
New Address	<input type="text"/>	<input type="button" value="New"/> <input type="button" value="Save"/> <input type="button" value="Cancel"/> <input type="button" value="Exit"/>	
Branch	<input type="text"/>		

Date

Time

Figure F.26. Input Screen of Transfer Record.



Microsoft Access - [Input Screen of Promotion Report : Form]

File Edit View Insert Format Records Tools Window Help

A BANK AT  
PATTANAKARN BRANCH

Employee No.

Employee Name

Employee Surname

Preview Print Print All Exit

Date

Time

Figure F.27. Input Screen of Promotion Report.



Microsoft Access - [Input Screen of Transfer Report : Form]

File Edit View Insert Format Records Tools Window Help

A BANK AT  
PATTANAKARN BRANCH

Employee No.

Employee Name

Employee Surname

Preview Print Print All

Exit

Date

Time

Figure F.28. Input Screen of Transfer Report.



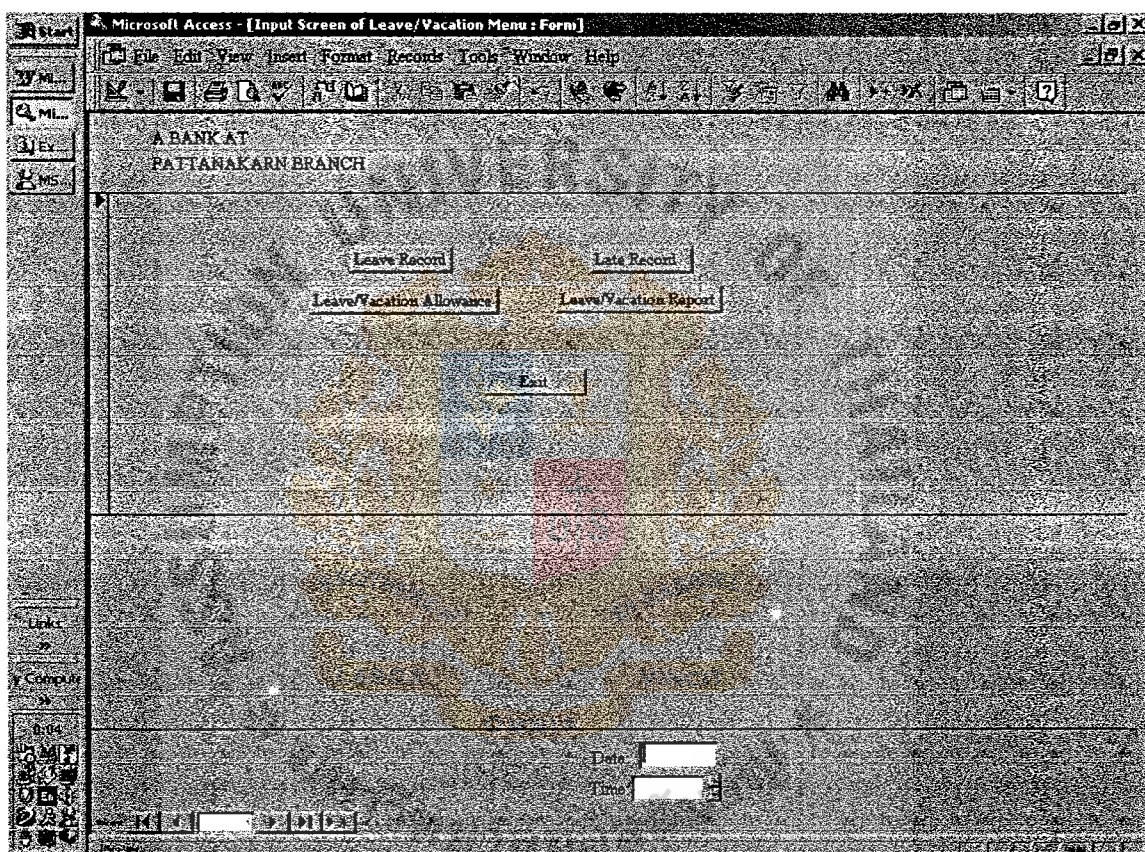


Figure F.29. Input Screen of Leave/Vacation Menu.



Microsoft Access - [Input Screen of Leave Record : Form]

File Edit View Insert Format Records Tools Window Help

A BANK AT  
PATTANAKARN BRANCH

Employee No.

Employee Name  Employee Surname

From  Address

To

☐ Sick ☐ Vacation ☐ Business ☐ Casual

Reason of Leave

New Cancel

Save Exit

Date

Time

Figure F.30. Input Screen of Leave Report.



Microsoft Access - [Input Screen of Late Record : Form]

File Edit View Insert Format Records Tools Window Help

A BANK AT  
PATTANAKARN BRANCH

Employee No.	<input type="text"/>	New
Employee Name	<input type="text"/>	Save
Employee Surname	<input type="text"/>	Cancel
Lated Date	<input type="text"/>	Exit
Time	<input type="text"/>	

Date

Time

Figure F.31. Input Screen of Late Record.



Microsoft Access - [Input Screen of Leave/Vacation Allowance : Form]

File Edit View Insert Format Records Tools Window Help

A BANK AT  
PATTANAKARN BRANCH

Employee No.	<input type="text"/>	Days	New
Total Late Allowance	<input type="text"/>	Days	Save
Total Sick Allowance	<input type="text"/>	Days	Cancel
Total Business Allowance	<input type="text"/>	Days	Exit
Total Casual Allowance	<input type="text"/>	Days	

Date

Time

Figure F.32. Input Screen of Leave/Vacation Allowance.



Microsoft Access - [Input Screen of Leave/Vacation Report : Form]

File Edit View Insert Format Records Tools Window Help

A BANK AT  
PATTANAKARN BRANCH

Employee Name:

Employee Surname:

Employee No.:

Preview Print Print All Exit

Date:

Time:

Figure F.33. Input Screen of Leave/Vacation Report.



**APPENDIX G**  
**OUTPUT DESIGN**

The Bank at Pattanakarn Branch

Promotion Report

No.	Name	Surname	Employee No.	Promotion Date	Training date	Result	Current Position	Current Salary	New Position	New Salary	Department
1	Adam	Lee	1001	13/1/00	12/6/99	xxx	Cashier	12,000	Assistant	99,999	Account
2	Vasana	Tanarong	1002	15/1/99	13/6/99	xxx	Teller	9,000	xxx	99,999	Cash
3	Jinda	Dauduang	1003	12/6/00	14/6/99	xxx	Teller	9,000	Chasier	99,999	Cash
4	Linda	Taisup	1004	20/2/00	15/6/99	xxx	Accountant	11,000	Assistant	99,999	Account
5	Tamrong	Hunho	1005	30/6/99	16/6/99	xxx	Manager	26,000	xxx	99,999	xxx
6	Darun	Jinmanee	1006	3/5/00	17/6/99	xxx	Creditor	12,000	xxx	99,999	Credit Loan
7	Danai	Data	1007	1/4/00	18/6/99	xxx	Creditor	12,000	xxx	99,999	Credit Loan
8	Pichat	Srithong	1008	23/3/00	19/6/99	xxx	Creditor	12,000	xxx	99,999	Credit Loan
9	Chaiyong	Dumrong	1009	2/2/00	20/6/99	xxx	Accountant	11,000	xxx	99,999	Account
10	Linda	Siripat	1010	3/5/00	21/6/99	xxx	Teller	8,600	xxx	99,999	Cash
Total xxx Persons											

Figure G.1. Promotion Report.



The Bank at Pattanakarn Branch

Employee Report

No.	Name	Surname	Employee No.	Department	Position	Date Employee
1	Adam	Lee	1001	A101	Cashier	15/1/91
2	Vasana	Tanarong	1002	A102	Teller	16/2/93
3	Jinda	Dauduang	1003	A103	Teller	15/2/97
4	Linda	Taisup	1004	A104	Accountant	26/2/98
5	Tamrong	Hunho	1005	A105	Manager	3/5/96
6	Darun	Jinmanee	1006	A106	Creditor	3/5/97
7	Danai	Dara	1007	A107	Creditor	4/1/99
8	Pichat	Srithong	1008	A108	Creditor	22/9/95
9	Chaiyong	Dumrong	1009	A109	Accountant	2/5/97
10	Linda	Siripat	1010	A110	Teller	2/3/94
Total xxx Persons						

Figure G.2. Employee Report.

The Bank at Pattanakarn Branch

Education of Employee Report

No.	Name	Surname	Employee No.	Degree	Major	Institution	G.P.A.	Graduated Year
1	Adam	Leu	1001	Bachelor	Insurance	ABAC	99.99.99	1996
2	Vasana	Tanarong	1002	Bachelor	Business	Sukotai	99.99.99	1997
3	Jinda	Dauduang	1003	Bachelor	Business	Ramkumhang	99.99.99	1995
4	Linda	Taisup	1004	Bachelor	Business	Sukotai	99.99.99	1994
5	Tamrong	Hunho	1005	Master	Statistic	Thammasat	99.99.99	1993
6	Darun	Jinmanee	1006	Bachelor	Art	Thammasat	99.99.99	1995
7	Danai	Dara	1007	Master	Account	Ramkumhang	99.99.99	1994
8	Pichat	Snithong	1008	Master	Account	Ramkumhang	99.99.99	1998
9	Chaiyong	Dumrong	1009	Bachelor	Account	Ramkumhang	99.99.99	1994
10	Linda	Siripat	1010	Bachelor	Account	Ramkumhang	99.99.99	1993
Total xxx Persons								

Figure G.3. Education of Employee Report.

The Bank at Pattanakarn Branch

Experience of Employee Report

No.	Name	Surname	Employee No.	Address	Company	Position	Period	salary	Reason of resign
1	Adam	Lee	1001	xxxx	xxx Co.	Cashier	12/6/99	99,999	xxxxxxx
2	Vasana	Tanarong	1002	xxxx	xxx Co.	Teller	13/6/99	99,999	xxxxxxx
3	Jinda	Dauduang	1003	xxxx	xxx Co.	Teller	14/6/99	99,999	xxxxxxx
4	Linda	Taisup	1004	xxxx	xxx Co.	Accountant	15/6/99	99,999	xxxxxxx
5	Tamrong	Hunho	1005	xxxx	xxx Co.	Manager	16/6/99	99,999	xxxxxxx
6	Darun	Jinmanee	1006	xxxx	xxx Co.	Creditor	17/6/99	99,999	xxxxxxx
7	Danai	Dara	1007	xxxx	xxx Co.	Creditor	18/6/99	99,999	xxxxxxx
8	Pichat	Srithong	1008	xxxx	xxx Co.	Creditor	19/6/99	99,999	xxxxxxx
9	Chaiyong	Dumrong	1009	xxxx	xxx Co.	Accountant	20/6/99	99,999	xxxxxxx
10	Linda	Siripat	1010	xxxx	xxx Co.	Teller	21/6/99	99,999	xxxxxxx
Total xxx Persons									

Figure G.4. Experience of Employee Report.



The Bank at Pattanakarn Branch

Financial Compensation Report

No.	Name	Surname	Employee No.	Financial Compensation No.	Financial Compensation Date	Insurane Amount	Financial Compensation Amount
1	Adam	Lee	1001	xxxx	xxx Co.	Cashier	12/6/99
2	Vasana	Tanarong	1002	xxxx	xxx Co.	Teller	13/6/99
3	Jinda	Dauduang	1003	xxxx	xxx Co.	Teller	14/6/99
4	Linda	Taisup	1004	xxxx	xxx Co.	Accountant	15/6/99
5	Tamrong	Hunho	1005	xxxx	xxx Co.	Manager	16/6/99
6	Darun	Jinmanee	1006	xxxx	xxx Co.	Creditor	17/6/99
7	Danai	Dara	1007	xxxx	xxx Co.	Creditor	18/6/99
8	Pichat	Srithong	1008	xxxx	xxx Co.	Creditor	19/6/99
9	Chaiyong	Dumrong	1009	xxxx	xxx Co.	Accountant	20/6/99
10	Linda	Sirpat	1010	xxxx	xxx Co.	Teller	21/6/99
Total xxx Persons							

Figure G.5. Financial Compensation Report.

The Bank at Pattanakarn Branch

Employee Training Report

No.	Name	Surname	Employee No.	Course Name	Training Course No	Training date	Result
1	Adam	Lee	1001	A101	AH102-458	12/6/99	xxx
2	Vasana	Tanarong	1002	A102	AH102-459	13/6/99	xxx
3	Jinda	Dauduang	1003	A103	AH102-460	14/6/99	xxx
4	Linda	Taisup	1004	A104	AH102-461	15/6/99	xxx
5	Tamrong	Hunho	1005	A105	AH102-462	16/6/99	xxx
6	Darun	Jinmanee	1006	A106	AH102-463	17/6/99	xxx
7	Danai	Dara	1007	A107	AH102-464	18/6/99	xxx
8	Pichat	Srithong	1008	A108	AH102-465	19/6/99	xxx
9	Chaiyong	Dumrong	1009	A109	AH102-466	20/6/99	xxx
10	Linda	Siripat	1010	A110	AH102-467	21/6/99	xxx
Total xxx Persons							

Figure G.6. Employee Training Report.

The Bank at Pattanakarn Branch

Personal Information report

No.	Name	Surname	Employee No.	Age	Sex	Birth Date	Marital Status	Military Status	Social Security No.	Blood Group
1	Adam	Lee	1001	38	F	1/173	Married	xxx	99-999-99	A
2	Vasana	Tanarong	1002	27	M	2//972	Single	xxx	99-999-100	A
3	Jinda	Dauduang	1003	32	M	5/5/71	Single	xxx	99-999-101	O
4	Linda	Taisup	1004	33	F	26/7/74	Single	xxx	99-999-102	B
5	Tamrong	Hunho	1005	29	F	25/1/73	Married	xxx	99-999-103	B
6	Darun	Jinmanee	1006	27	F	28/1/69	Married	xxx	99-999-104	B
7	Danai	Dara	1007	26	F	2/1/71	Single	xxx	99-999-105	AB
8	Pichat	Srithong	1008	28	F	3/12/74	Single	xxx	99-999-106	B
9	Chaiyong	Dumrong	1009	31	F	12/12/73	Single	xxx	99-999-107	A
10	Linda	Siripat	1010	32	F	5/9/72	Single	xxx	99-999-108	O
Total xxx Persons										

Figure G.7. Personal Information Report.



The Bank at Pattanakarn Branch

Loan Report

No.	Name	Surname	Loan No.	Loan Type	Loan Date	Period of Loan	A guarantee	Loan Amount	Interest Rate	Installment
1	Adam	Lee	235-4	xxxx	99/99/99	999	xxxx	xxxx	8.70%	xxxx
2	Vasana	Tanarong	235-5	xxxx	99/99/100	999	xxxx	xxxx	8.70%	xxxx
3	Jinda	Dauduang	235-6	xxxx	99/99/101	999	xxxx	xxxx	8.70%	xxxx
4	Linda	Taisup	235-7	xxxx	99/99/102	999	xxxx	xxxx	8.70%	xxxx
5	Tamrong	Hunho	235-8	xxxx	99/99/103	999	xxxx	xxxx	8.70%	xxxx
6	Darun	Jinmanee	235-9	xxxx	99/99/104	999	xxxx	xxxx	8.70%	xxxx
7	Danai	Dara	235-10	xxxx	99/99/105	999	xxxx	xxxx	8.70%	xxxx
8	Pichat	Srithong	235-11	xxxx	99/99/106	999	xxxx	xxxx	8.70%	xxxx
9	Chaiyong	Dumrong	235-12	xxxx	99/99/107	999	xxxx	xxxx	8.70%	xxxx
10	Linda	Siripat	235-13	xxxx	99/99/108	999	xxxx	xxxx	8.70%	xxxx
Total xxx Persons										

Figure G.8. Loan Report.

The Bank at Pattanakarn Branch

Late Report

No.	Name	Surname	Employee No.	Late Date	Total Number of Late
1	Adam	Lee	1001	99/99/99	99,999
2	Vasana	Tanarong	1002	99/99/100	99,999
3	Jinda	Dauduang	1003	99/99/101	99,999
4	Linda	Taisup	1004	99/99/102	99,999
5	Tamrong	Hunho	1005	99/99/103	99,999
6	Darun	Jinmanee	1006	99/99/104	99,999
7	Danai	Dara	1007	99/99/105	99,999
8	Pichat	Snithong	1008	99/99/106	99,999
9	Chaiyong	Dumrong	1009	99/99/107	99,999
10	Linda	Siripat	1010	99/99/108	99,999
Total xxx Persons					

Figure G.9. Late Report.

The Bank at Pattanakarn Branch

Leave/Vacation report

No.	Name	Surname	Employee No.	Leave/Vacation Dated Form	Leave/Vacation Dated To	Total Number of Leave/Vacation
1	Adam	Lee	1001	99/99/99	99/99/99	999
2	Vasana	Tanarong	1002	99/99/100	99/99/99	999
3	Jinda	Dauduang	1003	99/99/101	99/99/99	999
4	Linda	Taisup	1004	99/99/102	99/99/99	999
5	Tamrong	Hunho	1005	99/99/103	99/99/99	999
6	Darun	Jimmanee	1006	99/99/104	99/99/99	999
7	Danai	Dare	1007	99/99/105	99/99/99	999
8	Pichat	Srithong	1008	99/99/106	99/99/99	999
9	Chaiyong	Dumrong	1009	99/99/107	99/99/99	999
10	Linda	Siripat	1010	99/99/108	99/99/99	999
Total xxx Persons						

Figure G.10. Leave/Vacation Report.



The Bank at Pattanakarn Branch

Leave/Vacation Allowance Report

No.	Name	Surname	Employee No.	Total Allowance	Total Sick Allowance	Total Business Allowance	Total Vacation Allowance
1	Adam	Lee	1001	999	999	999	999
2	Vasana	Tanarong	1002	999	999	999	999
3	Jinda	Dauduang	1003	999	999	999	999
4	Linda	Taisup	1004	999	999	999	999
5	Tamrong	Hunho	1005	999	999	999	999
6	Darun	Jinmanee	1006	999	999	999	999
7	Danai	Dara	1007	999	999	999	999
8	Pichat	Srithong	1008	999	999	999	999
9	Chaiyong	Dumrong	1009	999	999	999	999
10	Linda	Siripat	1010	999	999	999	999
Total xxx Persons							

Figure G.11. Leave/Vacation Allowance Report.

# Training Course Report

[illegible]

Figure G.12. Training Course Report.



## APPENDIX H

### KEY-BASED DIAGRAM



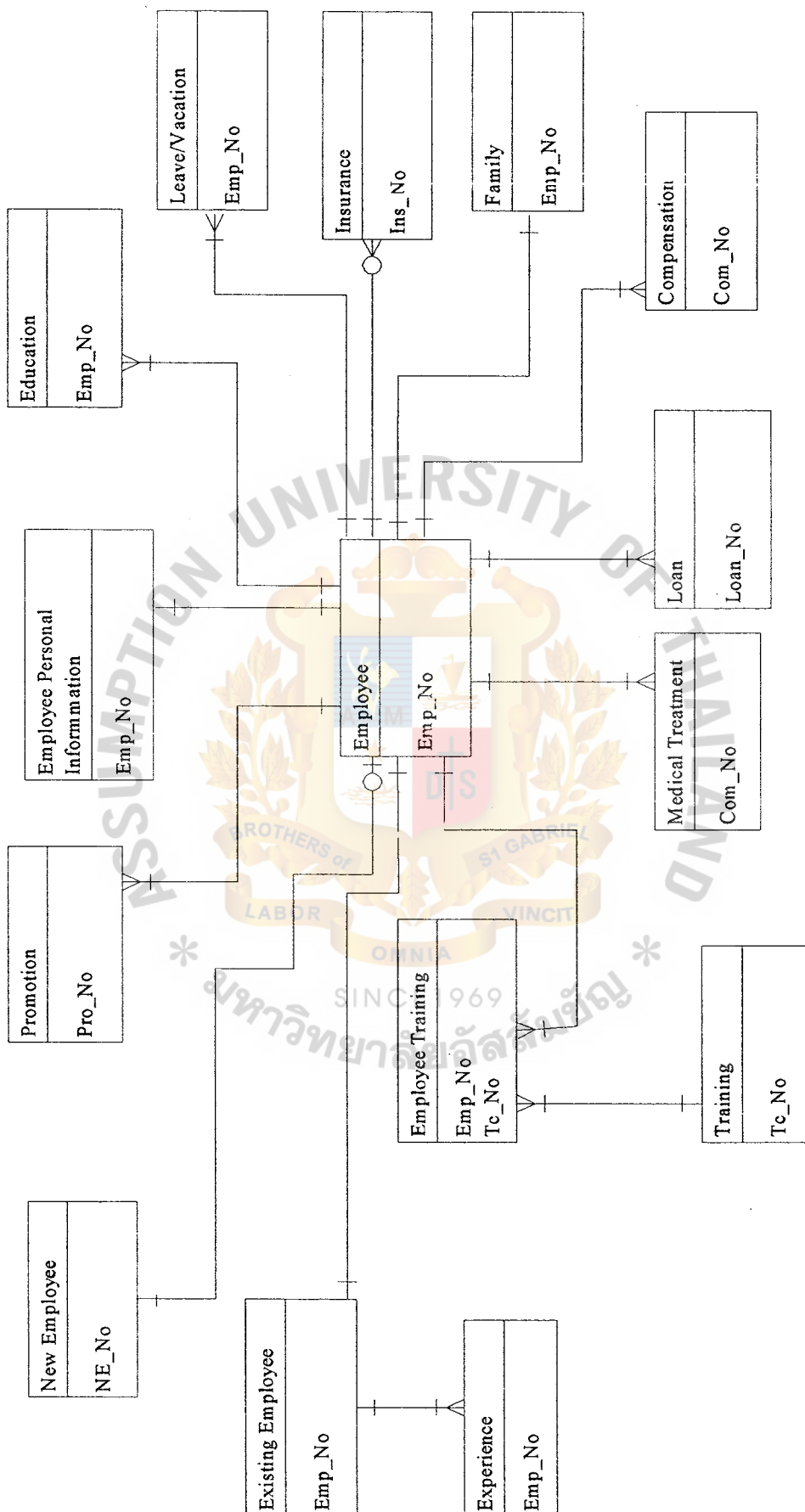


Figure H.1. Key-Based Entity Relationship Diagram (ERD).



**APPENDIX I**  
**FILE STRUCTURE**

Table I.1. File Structure of Employee File.

FILE STRUTURE			
FILE NAME: EMPLOYEE FILE			
FIELD NAME	TYPE	WIDTH	DEC
Emp_No	NUMERIC	7	
F_Name	CHARACTER	20	
L_Name	CHARACTER	20	
Birthdate	DATE	8	
Addr_No	NUMERIC	7	
Province	CHARACTER	10	
Postcode	NUMERIC	5	
Tel	NUMERIC	7	
Position	CHARACTER	20	
Department	CHARACTER	20	
Emp_Date	DATE	8	

Table I.2. File Structre of Insurance File.

FILE STRUCTURE			
FILE NAME: INSURANCE FILE			
FIELD NAME	TYPE	WIDTH	DEC
Ins_No	NUMERIC	10	
Emp_No	NUMERIC	7	
Ins_Date	DATE	8	
Ins_Type	CHARACTER	20	
Ins_Amount	NUMERIC	10	2



Table I.3. File Structure of Compensation.

FILE STRUTURE			
FILE NAME: COMPENSATION FILE			
FIELD NAME	TYPE	WIDTH	DEC
Com_No	NUMERIC	8	
Emp_No	NUMERIC	7	
Ins_No	NUMERIC	10	
Com_Date	DATE	8	
Com_Amount	NUMERIC	10	2

Table I.4. File Structure of Loan.

FILE STRUCTURE			
FILE NAME: LOAN FILE			
FIELD NAME	TYPE	WIDTH	DEC
Loan_No	NUMERIC	7	
Pro_No	NUMERIC	7	
Loan_Limit	NUMERIC	10	2
Loan_Type	CHARACTER	20	
Loan_Period	DATE	8	
Loan_Date	DATE	8	

Table I.5. File Structure of Promotion.

FILE STRUCTURE			
FILE NAME: PROMOTION FILE			
FIELD NAME	TYPE	WIDTH	DEC
Pro_No	NUMERIC	7	
Emp_No	NUMERIC	7	
C_Position	CHARACTER	20	
C_Salary	NUMERIC	10	2

Table I.6. File Structure of Training.

FILE STRUCTURE			
FILE NAME: TRAINING FILE			
FIELD NAME	TYPE	WIDTH	DEC
Tc_No	NUMERIC	8	
Emp_No	NUMERIC	7	
Pro_No	NUMERIC	7	
Tc_Date	DATE	8	
Course_Name	CHARACTER	20	
Result	CHARACTER	10	







Table J.1. Data Dictionary.

FIELD NAME	DESCRIPTION	DATA STORE
Emp_No	Identification of Employee	Employee File
F_Name	Employee's First Name	Employee File
L_Name	Employee's Last Name	Employee File
Birthdate	Employee's Birthday	Employee File
Position	Employee's Range Career	Employee File
Department	Each Part of Organization for Employee	Employee File
Emp_Date	First Date of being Employee	Employee File
Ins_No	The Number or Code of Policy	Insurance Flie
Ins_Date	The Due Date of Policy	Insurance Flie
Ins_Type	Class or Kind of Policy	Insurance Flie
Ins_Amount	Total Sum or Value of Policy	Insurance Flie
Pro_No	Identification of Promotion	Promotion File
Loan_No	Identification of Loan	Loan file
Com_No	Identification of Compensation	Compensation File
Tc_No	Identification of training	Training File
Loan_Limit	Amount of Loan	Loan file
Loan_Type	Class or Group of Loan	Loan file
Loan_Period	Length or Portion of Time for Loan	Loan file
Loan_Date	Due Date of Loan	Loan file
Com_Date	The Specific Date of Compensation	Compensation File
Com_Amount	Total Sum of Compensation	Compensation File
Tc_Date	Start Date of Training	Training File
Course_Name	The Identify of Training Course	Training File
Result	Effect or Outcome of Employee"s Train	Training File

Table J.1. Data Dictionary ( Continued).

FIELD NAME	DESCRIPTION	DATA STORE
C_Position	Current Employee's Position	Promotion File
C_Salary	Current Employee's Salary	Promotion File
Transfer	Transfer in or out from the Organization	Employee File



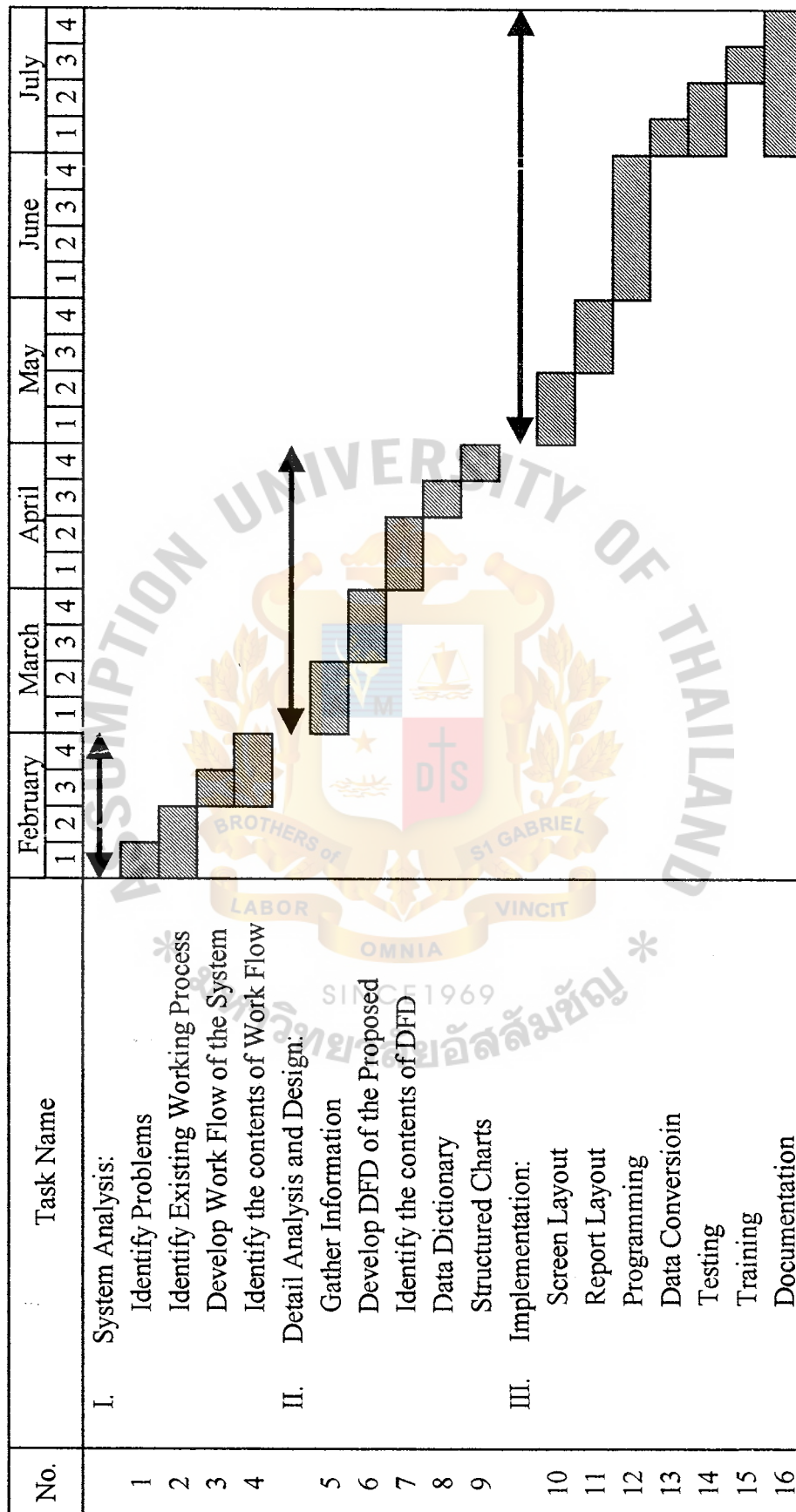


Figure K.1. Project Plan.

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