General Ledger Accounting System for Securities Company

By

Ms. Naruemol Intarathanee

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

Submitted in Partial Fulfillment
of the Requirements for the Degree of
Master of Science
in Computer and Engineering Management
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Project Title   General Ledger Accounting System for Securities Company

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Academic Year   March 1999

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

Approval Committee:

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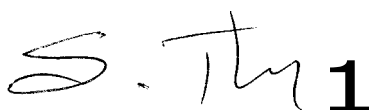(Prof Dr. Srisakdi Charmonman)
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March 1999

ABSTRACT

Accounting is an aid to understanding economic events. Always view accounting as a tool that enhances our understanding of economic events. After this transaction, are we better off or worse off? We believe that accounting provides a way to understand what is happening and to answer that question. Knowledge of accounting for business is worthwhile because all of us relate to companies in one or more of the following ways: investors, managers, customers, auditors, and so on.

This project is the new development of General Ledger Accounting System for securities firm which is implemented on IBM Risc 6000 using Informix 4GL. This project covers the structured analysis, design techniques, and implementation of a General Ledger System for a security company. The scope of the project concerns with the interactive processing to update daily, monthly, and yearly of the General Ledger System with daily transactions in order to provide the financial information reports to the top management and other departments for decision making.

First the existing system is studied and analyzed, problems are identified and the new system is designed to solve or minimize the problems. The functions of the system are designed to be user friendly and utility of the operating system make comfortable to the users. Users can produce output, update, reverse update in re-post transactions in a short time. Special attention is given to develop the new General Ledger System to meet user's requirement and to interface between other systems with database system design.

ACKNOWLEDGEMENTS

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I. INTRODUCTION

This section contains the background, the objectives, the scope, the deliverables, and the plan of the project.

1.1 Background of the Project

General Ledger System seems to be the heart of the overall system. Many data are passed from several sections to integrate at the Finance and Accounting Department. In the same way many reports and financial statements are generated and are delivered to related users. So it needs to have the efficiency General Ledger system to provide the valuable result for support decision making.

The current General Ledger System of the company does not fulfill the user requirements and the year 2000 problem. The other important reason is the need to develop the new system via Informix-4GL. It leads to ease of use when the program modification occurs or the user requirements change. Because the existing system is developed on the third language-RPG so there are several problems about the program modification and support.

The top management has an agreement to set up the new General Ledger. System that has a complete system with efficiency and effectiveness. For better performance control, it is reasonable to develop a new General ledger System via Informix-4GL on the IBM RISC 6000 the same as the other applications of the company.

1.2 Objective of the Project

The objectives of the project on the General Ledger System of the Securities Trading Company are as follows:

(a) To study the existing computerized General Ledger System.

(b) To analyze the existing problems and user requirements
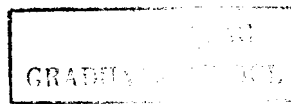
(c) To design a new computerized General Ledger System

(d) To convert the General Ledger System on IBM AS/400 into new General

Ledger System based on IBM RISC 6000 using Informix-4GL.

(e) To implement the General Ledger System

(f) To provide the effective system that

     (1)   Edits transaction process for validating error before updating.

     (2)   Reruns transactions after being updating that can return steps of

        transaction efficiently.

     (3)   Secures in different ways such as data, access control.

     (4)   Maintain the program for users.

(g) To speed up process, streamlining a process through elimination of

unnecessary or duplicated steps.

(h) To provide financial information report for top management to make

decision on time.

(i) To eliminate some constraints in the old system and reduce time of manual

processing into interactive computerized system.

     (1)   Voucher preparation.

     (2)   Withholding Tax Report.

     (3)   Interactive reports by users.

1.3 Scope of the Project

This project will cover major parts of General Ledger System for a securities

company which are as follows:

   (a)   To enter data of G/L Transaction.

   (b)   To print voucher listing.

   (c)   To update (Posting) G/L Master files.

(d) To print system interface reports.

(e) To process month end routine.

(0 To issue financial reports such as Trial Balance, Balance Sheets, Earning

Statement, Input-Output Tax Report, Withholding Tax Report, and so on.

(g) To process year-end routine.

(h) To process file maintenance.

1.4 Deliverables

The deliverables of the project are as follows:

(a) Online processing that a user can obtain current information at any time.

(b) Better management control and higher database security.

(c) Reduced time to produce financial reports.

(d) Higher maintenance and control capabilities when any problem occurs.

(e) User friendly system and user commitment.

(f) Maintainability which refers to the completeness of documentation and the

degree of modularity.

1.5 Project Plan

The project plan is shown in Figure 1.1.

	Sep 1998	Oct 1998	Nov 1998	Dec 1998	Jan 1999	Feb 1999	Mar 1999
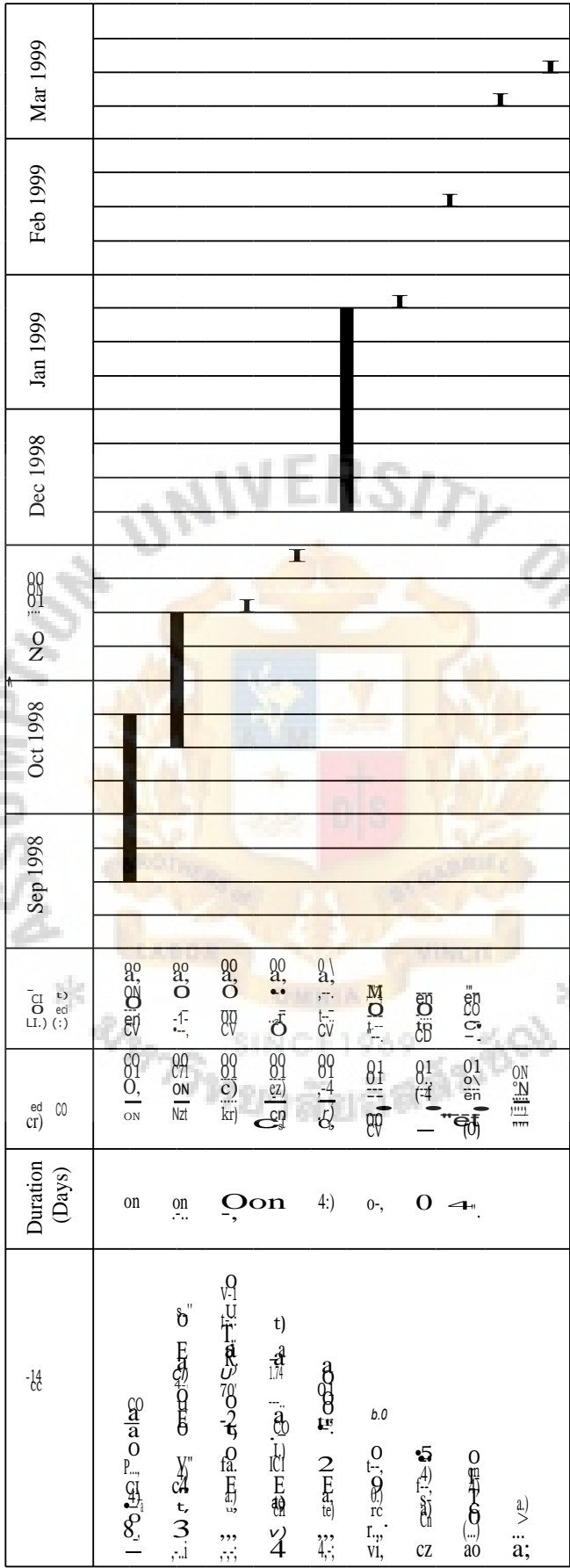
Figure 1.1. Gantt Chart of General Ledger Project Plan.

II. LITERATURE REVIEW

The project team was assigned recently to analyze the present situation and to make detailed recommendations for a new accounting system. Interviewing key men and related users were completed, and the types of accounting information were needed together with data gathered on the strengths and weakness of the existing accounting system. At the end of the engagement, the project team presented upper management with a proposal for the new system.

The project team's first task was to define the overall structure of the new accounting system and to break it down into subsystems for design purposes. A top-down strategy was adopted, in which the conceptual design was to be done first, followed by the detailed design. The system's inputs, processes, and outputs were designed and documented. Prototypes of several input subsystems were provided to users during the design phase to obtain feedback on the acceptability of the design.

In all, the design work started immediately after the upper management had approved its proposal for the implementation of the new system. However, the time for hardware and software acquisition are cut down because the new system can share the same resources as another existing system. Coding and testing of the software have been completed for two months, and the intervening period allows the project team to get rid of any bugs out from the initial applications.

Conversion of the general accounting data started next and went smoothly for two weeks. Improved operating procedures were implemented to avoid a repetition of such incidents. The users, for the most part, were satisfied with the new system. The operation and accounting department worked very well, eliminating difficulties that had existed for several years.

An effective accounting information system is carefully planned, designed, and implemented to meet the needs of the company and its users. A new accounting system may have to be developed, even though the existing systems may not have reached the ends of their useful lives. Alternatively, the need for change may stem from technological advances. A company may decide to upgrade its accounting system to take advantage of new information technologies that will streamline its internal operations or improve its competitive position.

The term *system development* refers both to the development of completely new systems and also to the major modification of existing systems. Developing a new accounting system does not necessarily mean starting *a fresh.* Many accounting software systems can be bought in the form of canned packages. But an accounting system consists of more than computer software and the hardware platform on which it will run. It includes the procedures for capturing input data and distributing and using the outputs.

Because the effectiveness and efficiency of the accounting system is so important to an organization's operations, accountants, and management level are naturally concerned that system development be successful. Some consideration factors for successful system development are as follows:

(a)   Cost Effectiveness

It must be at a reasonable cost. Normally, we can divide this cost into two types. The first, the initial cost and the last is the ongoing costs of operation and maintenance.

(b)   Flexibility

It is in terms of growth potential, ability to accommodate a variety of hardware and software products. The accounting system should be capable

of adapting to changing requirements, growth of the organization, demands for new kinds of information. On the other hand, flexibility in the initial design may save major redesign or replacement of major hardware components within the expected lifetime of the overall system.

(c)   Simplicity

The complication of the system design may impress the users, auditors, and related people and cause them to resist. Mostly, people are likely to be impressed by functional simplicity. The system should be easy to operate and service. Moreover, it should be audited without forcing auditors to adopt excessive testing procedures. Finally, it will decrease the ongoing cost and audit fees through the system's lifetime.

(d)   Reliability

To enhance the users' confidence, the accounting system should be operated reliably and provide high quality data. Problems of unreliability can be traced to unwarranted complication in the design. The system should be robust in its handling of exceptional transactions.

(e)   User acceptance

If the system can make the users' job easier and win their support, that system will be accepted. Normally, users feel disenfranchised when new systems are developed without their participation and so they become further alienated from them. The best way to solve this problem is to encourage active user participation in system development.

(0 Management commitment

It is important that top management must commit itself and the organization to developing the new system. If top management is unwilling to give the

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project full support, the new system is doomed. However, this commitment should be communicated to the lower levels of the management and operating employees. During system development, the problems may be exacerbated. The employees may be unable or unwilling to learn new skills. The responsibilities for dealing with people and problem solving mostly rest with top management.

Accounting

Accounting is the process of identifying, recording, summarizing, and reporting economic information to decision-maker.

Financial Accounting

Financial Accounting is the field of accounting that serves external decision-maker, such as stockholders, suppliers, banks, and government agencies. It focuses on the specific needs. So to use financial accounting effectively, you must also understand the underlying business transactions that gives rise to the economic information.

General Accounting

Private accounting functions include recording the company's transaction, preparing reports for management, and classifying and summarizing transaction data for the preparation of financial statements. It is difficult to distinguish clearly between general accounting and other private accounting activities because the accounting data recorded from transaction forms the basic database from which other phases draw relevant information.

Cost Accounting

Cost Accounting deals with the collection, allocation, and control of the cost of producing specific products and services. It is important to know the cost of each

business operation and manufacturing process in order to make sound business decisions.

Accounting Data Processing Cycle

The cycle consists of the following steps:

(1)   Transactions affecting the company are identified and source documents are prepared.

(2)   Transactions are analyzed on the basis of the source documents and are recorded in the accounting system.

(3)   Results of the transactions are summarized in the accounts.

(4)   At the end of the accounting period, financial statements are prepared from the accumulated data.

The Accounting Data Processing Cycle is illustrated in Figure 2.1. which provides an overview of the accounting cycle. (Nash and Heagy 1993)

Accounting as an aid in decision making

Accounting helps decision making by showing where and when money has been spent and commitments have been made, by evaluating performance, and by indicating the financial implications of choosing one plan rather another. Accounting also helps predict the future effects of decisions, and it helps direct attention to current problems, imperfections, and inefficiencies, as well as opportunities.

Accounting provides techniques and procedures for accumulating and reporting financial data. The ultimate goal of accounting is to provide internal and external decision-makers with usable financial information.

Decision-makers generally follow a five-step process in making and executing decisions.

(a) Establish goals;

(b)   Consider various alternatives for reaching the goals;

(c)   Make decisions;

(d)   Implement these decisions; and

(e)   Evaluate the results of decisions; revise goals are needed.

Thus, the decision-making process may be illustrated as in Figure 2.2.

Table 2.1. Factors for Successful System Development.

Primary Factors	Secondary Factors
Cost effectiveness	Low initial cost
	Low operating cost
	Low maintenance cost
Flexibility	Growth potential
	Able to adapt to changing requirements
	Not restricted to one hardware or software product line
Simplicity	Conceptually simple
	No unwanted features
	Easy to operate
	Easy to service
	Easy to audit
Reliability	Low downtime
	High quality information
	Able to handle exceptions
User acceptance	Compatible with organizational environment
	Satisfies organization's needs
	Satisfies users' needs
	Make users' jobs easier
	Acceptable charging system
Management commitment	Commitment to system development
	Support for the project
	Commitment communicated to lower levels
	Prompt response to actual or potential people problems

Start of the accounting period   Start of the accounting data processing cycle   **-4**

Step 1 - Transactions occur and information is collected through use of source documents.

Step 2 - Transactions are analyzed on the basis of the source documents.

During the accounting period   Step3 - Transactions are recorded in journals.

Step 4 - Journal entries are posted to ledgers.

Step 5 - Trial balance is prepared.

Step 5A - Worksheet is prepared. (The preparation of a worksheet is optical. If a worksheet is not used, a trial balance is prepared from which the rest of the cycle is completed.)

Step 6 - Adjusting entries are journalized and posted.

At the end of the accounting period   Step 7 - Financial statements are prepared.

Step 8 - Closing entries are journalized and posted.

Step 9 - Post-closing trial balance is prepared.

End of the Accounting period   To the next period to be repeated.

Figure 2.1. Accounting Data Processing Cycle.

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Information

inputs

Setting goals → Consideration of Alternatives → Decision is made → Decision is implemented

Revised goals

Res4Its are evaluated and feedback provided
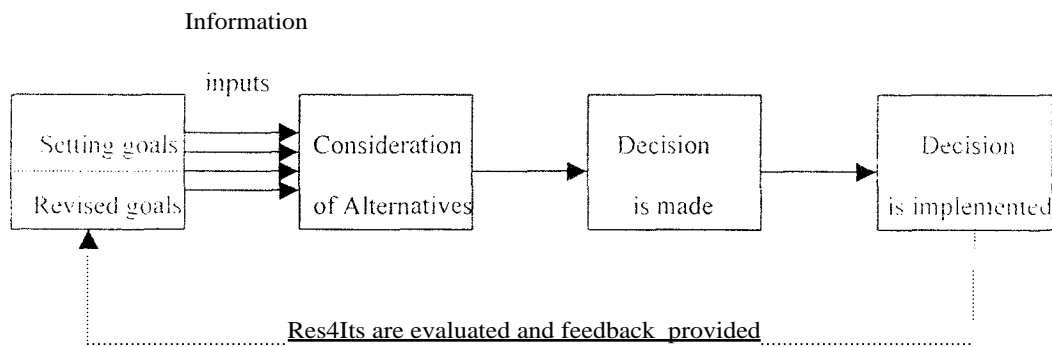
Figure 2.2. Decision-Making Process.

The Recording Process

The sequence of steps in recording transactions is illustrated in Figure 22.

Transaction

V

Documentation

Journal

V

Ledger

Trial Balance

Financial Statemen
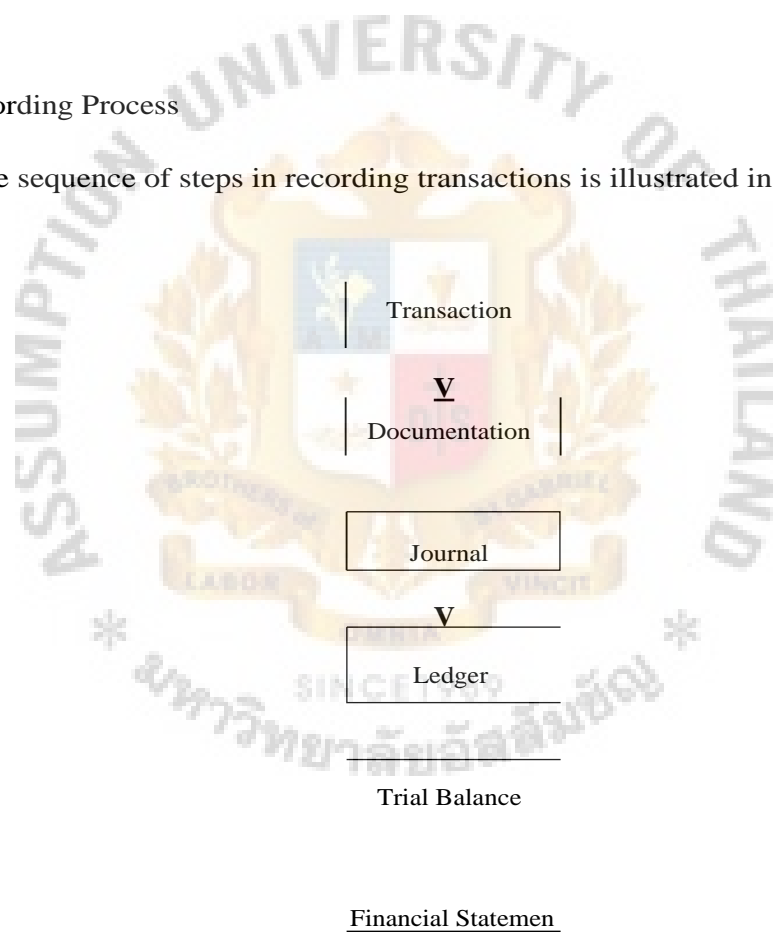
Figure 2.3. The Recording Process.

.1 he recording process begins with source documents. fixample 01 source

documents includes sale slips or invoices and check stubs. Source documents are kept

on file so they can be used to verify the details of a transaction and the accuracy of subsequent records if necessary. The general journal is basically a diary of all of the events in an entity's life. Each transaction is listed in its entirety in one place in the journal.

When transactions are entered into the ledger, they are not entered in a single place. They are divided up into the components that affect the various accounts and entered under the appropriate accounts. Information in the ledger is updated periodically by recording each piece of each transaction from the journal in the ledger account where it belongs.

The preparation of the Trial Balance is a simple listing of the accounts in the general ledger together with their balances. This listing aids in verifying clerical accuracy and in preparing financial statements. Although they are required to produce financial statement only once a quarter for external reporting. Some companies prepare financial statements more frequently for management's benefit.

Posting Transactions to the Ledger

Posting is the transferring of amounts from the journal to the appropriate accounts in the ledger. Transactions from the journal are often posted to several different accounts, but keying allows users to find all the components of the transactions in the ledger no matter where they start. It also helps auditors to find and correct errors and reduces the frequency if initial errors.

When a journal entry contains an error, the entry can be erased or crossed out and corrected if the error is discovered immediately. However, if the error is detected later, typically after posting to ledger accounts, the accountant makes a correcting entry, as distinguished from a correct entry. Basically, the idea behind correcting entries is to

counteract the erroneous entries into the incorrect accounts and to make sure that all correct accounts are either credited or debited.

Adjustments to the Accounts

Adjustments are also called *"adjusting entries".* It helps assign the financial effects of implicit transactions to the appropriate time periods. The adjustments are made in the form of journal entries that are recorded in the general journal and then posted to the general ledger. After recognizing these adjustments for implicit transactions, the balances in the general ledger accounts will be updated through the end of the period and can be used for preparing financial statements.

The final aim of the various steps in the recording process is to prepare of accurate financial statements on accrual basis. To accomplish this goal, the process must include adjustment entries to record implicit transaction. So the final step in the recording process can be divided further as in Figure 2.4.

Each adjusted entry affects at least one income statement account — a revenue or an expense — and one balance sheet account — an asset or a liability. No adjusting entry debits or credits cash. Because cash transactions are explicit transactions that are routinely recorded as they happen. The end-of-the period of the adjustment process is reserved for the implicit transactions that must be recognized by the accrual basis of accounting. (Gelinas and Oram 1996)

As the project team has mentioned before, General Ledger System will be implemented on IBM Risc 6000 using Informix-4GL. For better understanding, the next section will be an overview of Informix and family.

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Ledger

Unadjusted
Trial Balance

Journalize and
Post Adjustments

V

Adjusted
Trial Balance

Financial
Statements
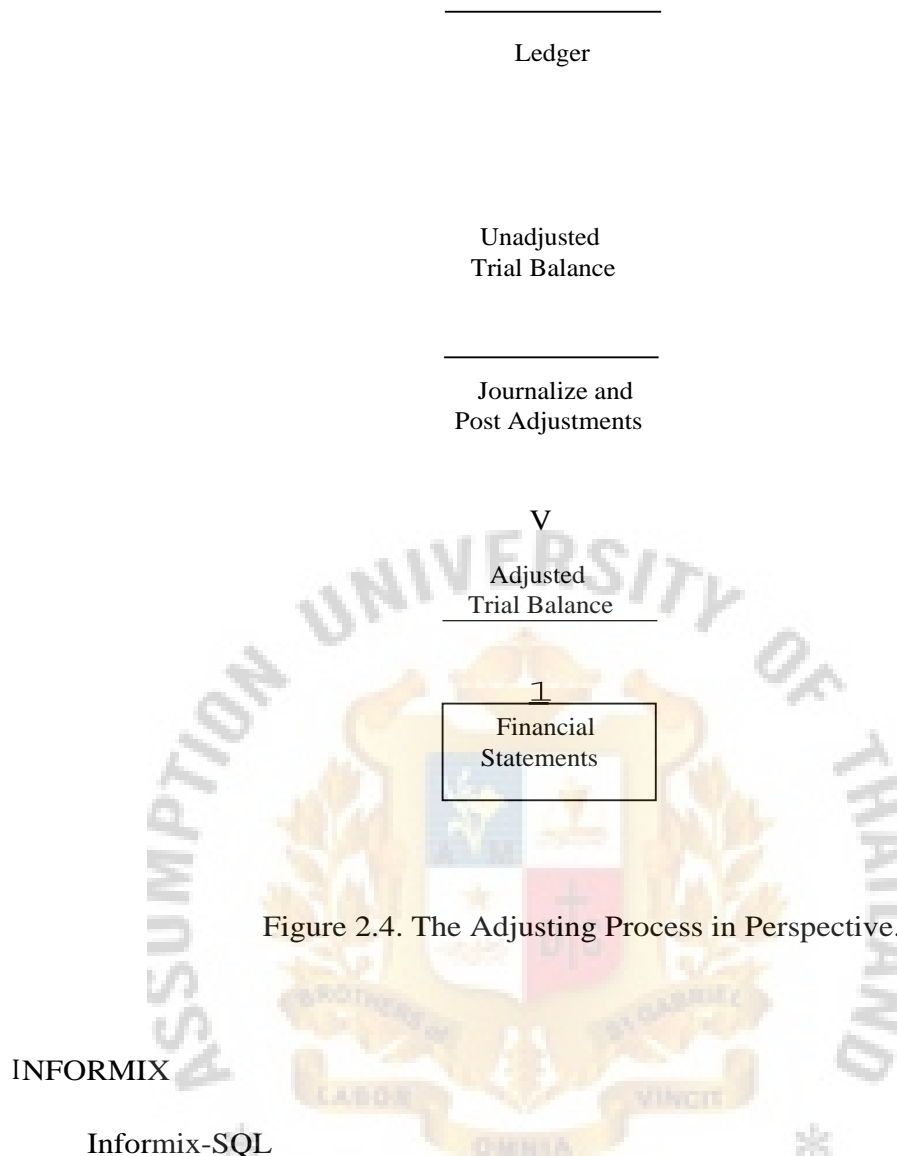
Figure 2.4. The Adjusting Process in Perspective.

INFORMIX

Informix-SQL

It is a relational database management system that provides a complete set
of tools for manipulating relational databases. Informix-SQL provides the non-
programming user with a complete set of tools for handling database. The
database engine can be changed completely without the user being aware of the
change. Informix-SQL is based on standard SQL as the language that actually
changes the database. (Allen and Bambara 1997)

Informix-4GL

Informix-4GL is a fourth generation language built upon SQL. It uses the
same basic style of forms and report as Informix-SQL, but it allows the

programmer to write code to do all sorts of things that simply cannot be expressed in Informix-SQL. It is a valuable prototyping tool for software developers. Informix-4GL is designed for programmers to use to generate highly customized applications for end users.

Informix-4GL product family gives you tools to create database applications. Informix-4GL Rapid development System and Informix Interactive Debugger provide an environment for developing applications. Informix-4GL Compiler provides high-performance application execution in the production environment. For building menus, forms, screens, or reports, Informix-4GL performs all development functions and allows for integration between them.

Informix-4GL has pop-up windows, color, built-in help, nonprocedural report specifications, and other facilities for creating customized applications. Moreover, creating your own ring menus and using flexible scrolling arrays are possible to increase productivity during development and production.

There are several definitions of a database, in a conclusion a database refers to a collection of data that is kept in long-term storage that is structured so that information can be retrieved from it. The data may come from many different places but someone will have decided which facts should be stored in the database, and will have ensured that the data are collected, organized and entered into the database.

The data has to be organized in different ways to allow users to retrieve the information they require, and that the different organizations are suitable for answering some enquiry and not for answering others. Relational databases are the easiest to understand and they are also at least as powerful as any of the others.

A relational database stores the data as a set of tables. The user does not see the relational database as anything other than a collection of tables. Each table is a collection of columns, with headings that identify what information appears in each column. There are rows of data underneath the headings that represent different objects. Each row in a table is distinct, a row of data can be identified by quoting the value stored in each column of the row.

At least, one set of columns in a table can be used to identify any row in the table uniquely. This group of columns is called the *primary key*. All the non-primary key columns in a table should say something about the primary, the whole primary key and nothing but the primary key.

There are alternative nomenclatures for the objects described as tables, columns and rows, as shown in Table 2.2.

Table 2.2 Alternative Terms of Tables, Columns, and Rows.

Mathematical Term	Ordinary Name	Alternative Name
Relation	Table	File
Attribute	Column	Field
Attribute value	Value	Value
Tuple	Row	Record
Domain	Column type	Field type

There are many types of data used in Informix-SQL as in Table 2.3.

Table 2.3 Data Types.

Data Types	Used for
char	Text, Alpha-numeric Code
integer	numbers —2147483647 to 2147483647
smallint	numbers —32767 to 32767
decimal	numbers include decimal points
date	calendar dates
money	numbers with the number of digits specified by the user
serial	unique numbers that are assigned by the system.

Informix-Online Dynamic Server Process Architecture

Online is database server, which means that it acts as a liaison between a user and a database. Online is responsible for reading and writing data to and from database, controlling and optimizing access to the database, and protecting and preserving the integrity of the data. (Leffler 1991)

Informix-Online Dynamic Server uses a multithreaded architecture (Figure 2.5). The fewer processes can handle the work load of hundreds, even thousands of the users. These database server processes are called *virtual processors,* or *i'ps.* A vp belongs to a

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vp *class,* which has a responsibility for a set of tasks. The virtual processors are normal UNIX processes. These processes make up the database server, or Online system.

| Application Process | Application Process |

| The Database Server |
| Virtual Processor | Virtual Processor | Virtual Processor |
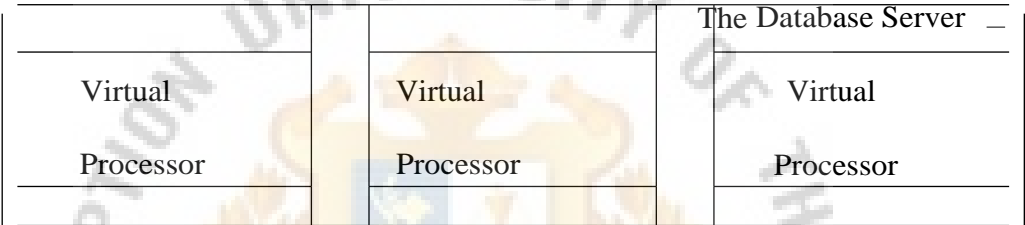
Figure 2.5. The Informix-Online Database Server Process Architecture.

A *thread* is an entity in a virtual processor that has its own context, meaning its own pointer to a place in the code (program counter) and its own data variables. At any time, only one thread within the process is running, while the others must wait. A multi-threaded process cuts down on the operating system overhead, as UNIX sees to and administers only one process. When the thread completes its work, the thread lets another thread *"take over"* the process. In this way, one process is running on behalf of more than one user. All the multithreading activities are internal to the INFORMIX database server. Each application process connecting to the database server is known as a session. The session has one or more threads associated with it. The threads are responsible for executing the SQL statements requested by the application.

III. THE EXISTING SYSTEM

3.1   Background of the Organization

With intention to innovate quality products by professional teams from every business unit, together with a strong hold to business integrity. The company continually provides on-going quality enhancement and development programmer for its human resources. These programmers include orientation of corporate policies & corporate culture.

The company must be able to project itself to the investing public as a solid and competent organization. Public confidence placed upon the company's management, account officers and staff is vital for the success and survival of modern-day securities business firms.

General Ledger System is improved for better enhancement and the growth of the company. The appropriate General Ledger System can he the factor to help the company to reach the predefined goals and objectives. Because it provides a lot of information for decision-makers.

The company is continually upgrading the Information Technology Department by employing sophisticated technology to streamline our operations and build up a complete customer database to provide investors with a high degree of professionalism. The company is prepared to offer services in various forms as follows:

Securities Trading Service

Customers from both within and outside the country who are interested in investing in the Stock Exchange of Thailand will find that the company provides quality and reliable services with several years of experience in securities brokerage. Consequently, as another stepping stone of a securities company, the company has

recently complete tested the trading stock via the internet. So the company is ready to offer high quality and efficient financial and investment products.

Securities Research Service

Currently, the working teams are structured to be suitable with the market condition and several experienced. Skillful research personnel are prepared to provide various kinds of advice and information on securities, such as fundamental and technical analysis, financial statement analysis and projections, timely and accurate news, both domestically and internationally to investors from both within and outside the country.

Investment Banking Service

The company provides investment-banking services for Thai organization that requires financial resources for business operation. The services include:

(a) Financial advisory for SET and OTC listing, investment-projects, joint ventures, and financial restructuring.

(b) Financial advisory for mergers and acquisitions.

(c) Feasibility studies of projects.

(d) Selling agent for public offering of shares and other financial instruments.

Money Market Service

The company provides money market service to individuals, corporations, commercial banks, and financial institutions by buying and selling various kinds of financial papers such as bill of exchange as well as government bond. state enterprise bond, and corporate bond. The company concerns mainly about benefits to the customers, together with integrity and fairness of business conduct. The organization chart of the company is shown in Figure 3.1.

Board of Director

MC

Marketing	Operation	Inf. Technology	Research	Risk Mcz,mt Compliance	Cor)orate Affairs
NI	Operations	Sys Dev.	Senior Analyst	Comp lance Internal Audit	Pitman Resource
N2	Cash Mgmt	Sys Operation	Analyst	Credit Control	Training Center
N3	Accounting + FC	MIS	Economist Recovery	Legal Loans	General Service
N5		Network + OA	Supporting Staff		Corporate Pr.
N6					

Institution

Private Fund

Figure 3.1. Organization Chart.

3.2 Existing Business Functions

The existing General Ledger System is based on IBM AS/400 with RPG language and stand alone PCs which used for generating required reports. Moreover, the account staffs produce ad-hoc reports to support top management, auditors, Securities Exchange of Thailand, and Revenue Department.

The existing functions of the General Ledger System are as follows:

(1)　Prepare vouchers and key in transactions

The vouchers come from many related departments. The account staffs are responsible for filling in some part and check the signature for completeness before keying in transactions.

(2)　Print voucher listing

After the transactions have recorded, the voucher listing will he used for checking the correctness by the account staffs. The voucher listing must equal to the whole vouchers per day that are recorded.

(3)　Merge Transactions

After the process of securities back office on IBM RISC 6000 at the end of each day, the sales trade transactions will be prepared as part of input of the existing General Ledger System. The data will be in the form of text file. The computer operator will be responsible for data conversion to the form that IBM AS/400 can operate everyday. This step will be processed in the next morning so the day end process is always delayed by at least one day. Because the day-end process of securities back office is normally completed in the night of a day.

(4)　Post Accounts and Print Daily reports

After data conversion from the securities back office has been made, the General Ledger System day end process will follow. The daily reports will be generated for the account staffs.

(5) Process Month End

  (a)   Back up data before month end process

  (b)   Posting month-end

  (c)   Back up data after posting

  (d)   Print Monthly reports

  (e)   Prepare data and environment for next month

(6) Process Year End

  (a)   Back up data before year-end process

  (b)   Posting year-end

  (c)   Back up data after posting

  (d)   Print Chart of Accounts

  (e)   Prepare data and environment for the beginning of year

(7)   Maintain Files

To maintain all required data that the account staffs have authority such as

  (a)   Account Name and other description

  (b)   Product Code information

  (c)   Cost Center information

  (d)   Report line in special reports

  (e)   Budget information

(8)   Print required reports

Print reports for top management, auditors, Revenue Department, and Securities Exchange of Thailand. Each report has its own format and pattern so it is difficult for editing rapidly. Some complex reports are processed in PCs for better performance and control. So the account staffs still do manual process which is a time consuming process.

3.3 Existing Problems

After studying and analyzing the existing system, several specific problems can be identified:

(a) The main problem is the uncomfortable process for generating general ledger report and all related information. Because the existing system is run on IBM AS/400 that is a different machine from the other application system (IBM Risc 6000).

(b) The current General Ledger System is a software running on batch mode. Backing up of data before accounts posting is a must. Nevertheless, the accounting staff sometimes neglects the procedures, which will result in adjusting, and re-posting of accounts impossible. All posted transaction are deleted from transaction files and can be restored only by the pre-posted data by an operator.

(c) Delays throughout the progress continue to cause problems. Time is lost capturing the data, reconciling several accounts, for example:

(1) Bank reconciliation.

Generally, bank accounts should be reconciled monthly, but with the current manual reconciliation, we cannot meet the schedule.

(2) Input — Output Tax preparation.

Norrta1)., the account staffs take time to check correctness for Tax reports. Moreover, they have done reports completely on date line.

(3) MIS reports.

They are always finished a week after month-end process. So they may not cope with the current situation. Finally, the management level may make some mistake on decision.

(4) Some reports are responsible for the operator's duty.

In this case, the account staff must to contact directly to the operator. They cannot generate all those reports themselves so it is not convenient anymore.

(d) The account staffs still do the manual process using PCs for management reports, so redundancy occurs.

3.4 The Existing Computer Information System

Securities Trading System

(a) Exchange and OTC (BSDC)

(b) Small Medium Enterprise

(c) Sub Broker Support

Securities Back Office

(a) Settlement, Custodian, payment and collection

(b) Margin loan (P/N, Cash Margin)

(c) Credit Balance

(d) Central Customer Database

(e) Interfacing-Direct Dr / Cr to Customer Account

Registrar System

    (a)   Debenture

    (b)   Open End Fund Registrar

Customer Information System

Executive Information System

Online Analysis Processing (OLAP)

PC/Base Application

    (a)   Portfolio Management

    (b)   Staff Loan

    (c)   Fixed Asset

    (d)   Initial Public Offering

    (e)   Book Building

IV. DESIGN OF THE PROPOSED SYSTEM

This section consists of user requirements, system analysis and design, proposed functions, proposed database, user interface design, output reports, proposed system configuration, and security and control.

4.1   User Requirements

After reviewing the situation, the management decided to alleviate most of the current problems by integrating all related system and upgrading the batch General Ledger System to an on-line communication network. All of the user requirements are obtained from the user themselves and the existing system evaluation. The system must have the following capabilities:

(a)   Ability to adjust the posting transactions without restoring the back-up data.

(b)   On-line updating of data entry. All relevant accounts balance will be adjusted immediately, thus, the financial statement can be generated accordingly.

(c)   Since, information for General Ledger is a database for financial management analysis, the transfer of files to other software application; e.g., spreadsheet must be possible. With the capability, it \\ill minimize the work duplication in our organization.

(d)   Generation of relevant reconciliation reports, e.g.. bank reconciliation, prepaid withholding tax, etc.

(e)   Generation of additional management financial reports in order to support management's decision making.

(f)   To decrease the operation time of the users for waiting for all related transactions from securities back office. Because they can be generated automatically to be some of the input of the new system.

(g)   To get higher efficiency and effectiveness from the system which provides current and accurate information.

(h)   To have a user-friendly system that is easy to understand and to perform.

(i)   To get the high security control including the prevention of damage that may happen to data. In addition, it should have more reliable and consistent procedure to eliminate error.

(j)   To have a good database management which can manage the large volume of data easily and rapidly. Including the information sharing among several systems at the same time.

4.2 System Analysis and Design

System Analysis

In this part, the objective of system analysis is to gather facts that provide a thorough understanding of both business's information requirements and the sources of that information. System analysis may be performed when a new system is installed or when an existing system is evaluated. System analysis is a study of how the company's business functions are performed in order to determine the best comEnations of personnel, forms, records, procedures, and equipment.

Effective system analysis requires reliable information about the organization, its long-term needs, and the information system including accounting system that meets those needs. A range of techniques is used for this purpose, including the review of existing documentation, observation, interviews,

and questionnaires. Observation is useful to judge attitudes and to determine whether applicable policies and procedures are being followed.

Interviews play a major role in system analysis. They help to establish long-, medium-, and short-range system objectives and to determine the extent to which an existing accounting system meets those objectives.

The system's organizational environment is documented using a graphical modeling techniques used to present the internal and external entities in the system's environment and the flows of data. Functional requirements are performed in the form of data flow diagram to specify the needs of the system.

System Design

Once we understood how the system works and what are the requirements and functions to fulfill the needs of users. We go to the step of system design. System design is a creative process that seeks to establish an effective and efficient basis for meeting the system requirements. A design includes a consideration of the personnel required to operate system, the business forms needed to document transactions, the accounting records and procedures to be used to process data, the reports to be prepared for interest parties, and any automated features of the system. The accounting system must be designed to capture transaction and other input data, to store and retrieve the data as needed. For more detail steps in system design will be described in further section.

Furthermore, the internal controls must also be made to protect the accounting system and the organization's resources. The horizontal sequencing of Subsystem design is shown in Figure 4.1. Horizontal sequencing is among subsystem at the same level in the hierarchical structure whereas vertical sequencing refers to the different levels of subsystem is shown in Figure 4.2.

```
                    ┌──────────┐
                    │Processing│
                    │  Design  │
                    └──────────┘
                         │
┌─────┐   ┌────────┐     │            ┌────────┐
│User │   │ Output │─────┤            │ Input  │
│Requi│───│ Design │     │            │ Design │
│rement│  └────────┘     │            └────────┘
└─────┘                  │
                    ┌──────────┐
                    │File or Data│
                    │Base Design │
                    └──────────┘
```
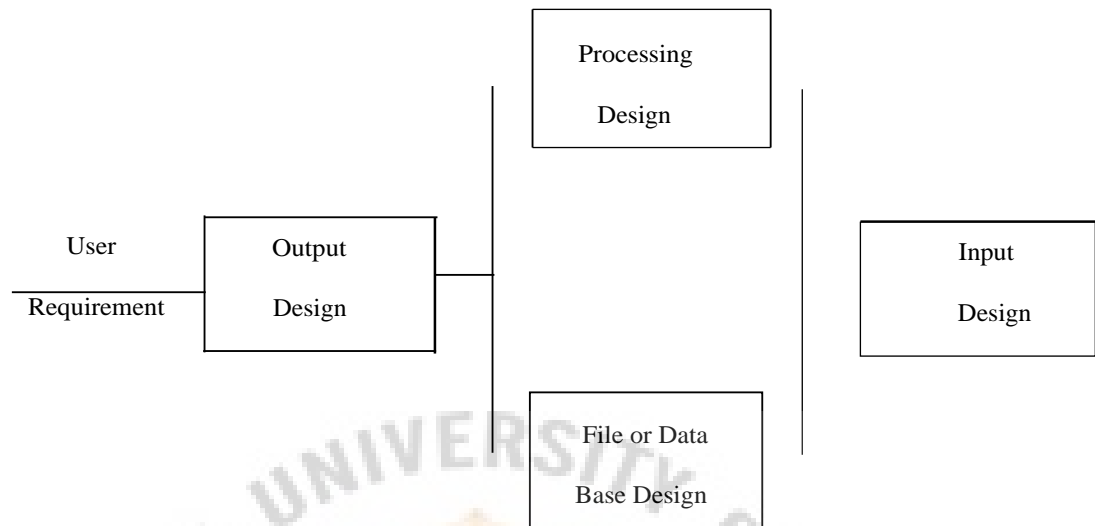
Figure 4.1 Horizontal Sequencing of Subsystem Design.

Horizontal sequencing is among subsystem at the same level in the hierarchical structure whereas vertical sequencing refers to the different levels of subsystem is shown in Figure 4.2. Detailed design starts with user requirements and works backward through the system, from the output necessary to meet those requirements. to the processes and files or database, and finally to the inputs.

The objectives of system design are as follows:

(a)   Simple

The new system should be as simple as possible. If the designs start to get too complicated, something has gone wrong somewhere. Then, stop and rethink the design.

(b)   Capable

The new system should handle the present and the foreseeable future. The company's growth rate is also a consideration. Program flexibility

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and file sizes should be able to handle the present volume of

transactions and the future volume.

(c)   Modifiable

The new system should be easily modified because there is no way a

system can be adequate forever. A good system design at the time will

save a great deal of work later.

(d)   Cost - Effective

The new system should be cost—effective. So project team designs to

keep information always current by on-line transaction processing

(OLTP).

(e)   Testable

The new system should be easy to test. The establishing of separate

programs is implied to accomplish identifiable tasks. So it is possible

to test each program separately as it is written.

Highest conceptual layers

(the accounting system

as a whole)

Intermediate layers

(cycles and applications)

Lowest detailed layer

(e.g., an input screen, a file, or a report)
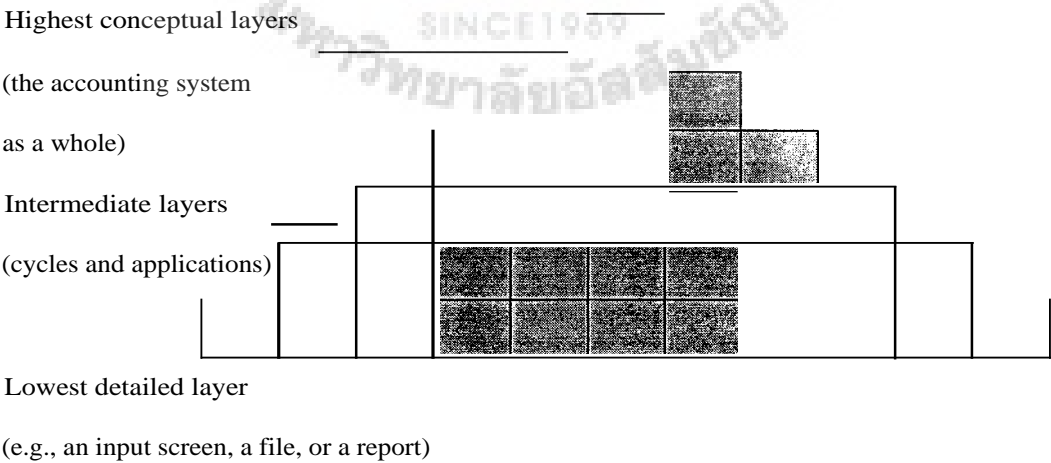
Figure 4.2. Vertical Sequencing of Subsystem Design.

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4.3 The Proposed Functions

(1)   Verify G/L Transaction

Each authorized user will use this function to gather any voucher from related parties and entry in. Including the sales trade transaction from Securities Back Office **will** be generated to be the input of this function. The verification process **will** be performed and then the only correct data will be generated to the General Ledger System transaction through posting.

(2)   Print Voucher Listing

After completing the data entry, each user must print voucher listing for checking the correctness and keeping in the form of hard copy for later use by auditor or required parties. This report shall list the transaction details of the user who logs in.

(3)   Post or Update Account Summary

An authorized user will be responsible to post sales trade transactions to the General Ledger only. This function requires the user confirmation because the transferred transactions may have some error. Sometimes they need some correction. Other transactions that have entered the system will update the related fields immediately.

(4)   Print System Interface

This function offers daily reports such as Validation Report, Journal Report, Cash Book, Trial Balance, Balance Sheet, and Input-Output Tax Report. The users can be offered the current reports and the adjustment will be made available when the user wants.

(5)   Process Month End

The monthly summary reports can be printed out after the users have finished their transactions on the last day of the month. Before the month-end process, the users must check out the correctness. Normally, the adjustment will be taken for the balance. The confirmation of the month-end process will be the request to the operator to do month-end process. It will change system date for the first working day of the next month. In addition, the amount initialization will be processed for the next month.

(6) Issue Financial and Management Reports

The user can use this function to print out the financial and management reports for the usage such as Balance Sheet and Balance Sheet in details, Earning Statement and Earning statement in details.

(7) Process Year End

This function automatically provides steps to initiate the value amount for the beginning of the next year. The backup data will also be performed by the operator.

(8) Maintain Files

This function is used to add, change, and delete data into the allowed tables such as Account Master File, Product Code File, Report Line File, Vendor Master File, Input-Output Tax File, and so on.

From the above, proposed functions are shown in data flow diagrams which are used as a tool for structured analysis and design. Figure 4.3. is General Ledger System Level 0 data flow diagram and Figure 4.4.- 4.11. are data flow diagrams level 1 of each process.
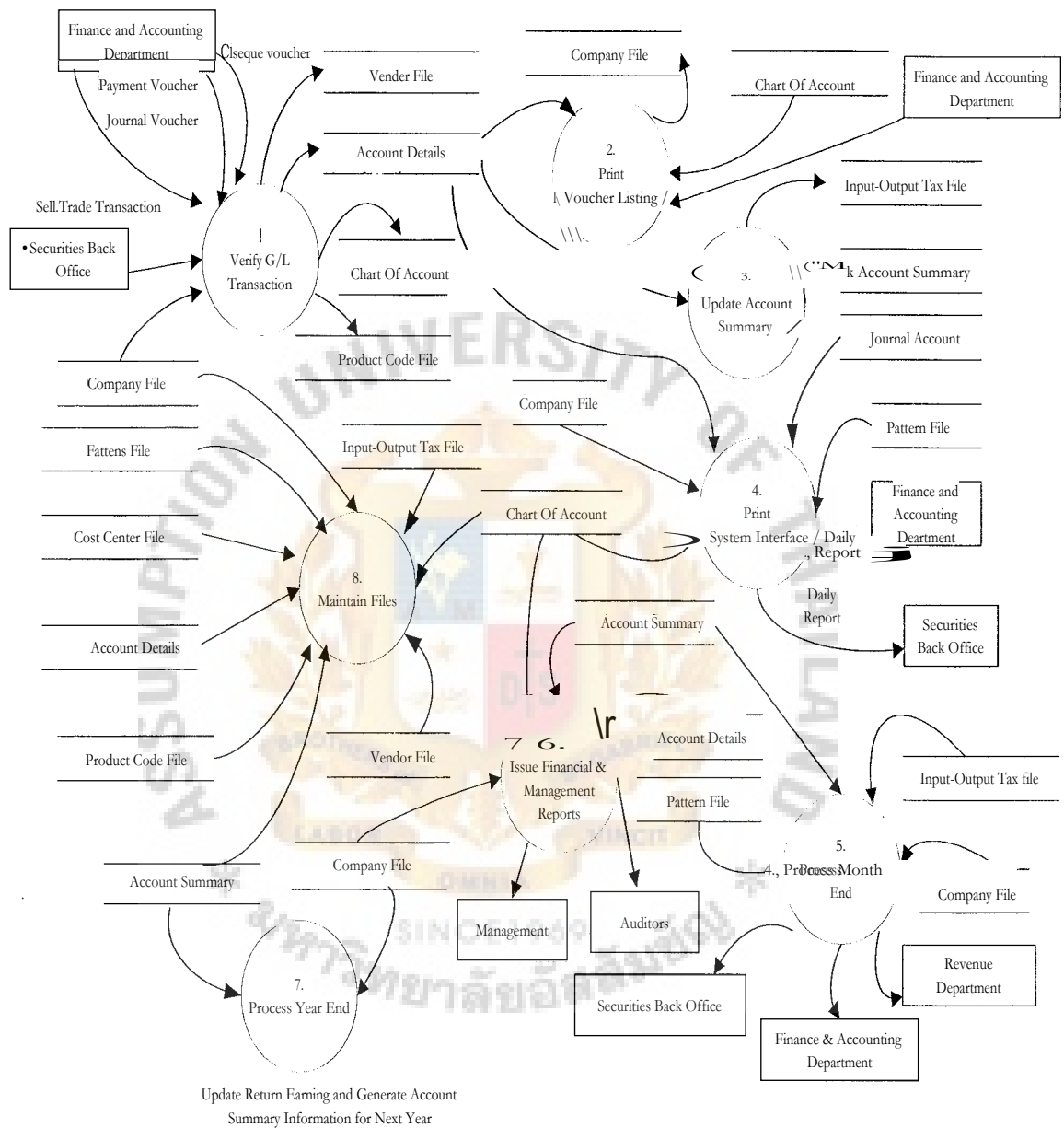
Figure 4.3. General Ledger System Level 0 Data Flow Diagram.

Vendor File

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Validate Current Date and Batch#

1.3
Validate G/L
Data and
Batch #

Chart Of
Account

Finance And
Accountіng
Department

Vendor
Information

Chart Information

Company
File

Cheque
Voucher

Validate Account
Details Information

Company Information

1.4
Vali date
Account
\ Code and
Prkiduct id

Securities
Back Office

Classify
Voucher

Product Code
File

Sell Trade Transaction

Creat/M
G/I, Date

\ Account Details Information

2.0
Print
Voucher

Account Details Information

Account
Details

1.5
Record
Account
\ Details

Company Information

Company
File

Figure 4.4. DFD Level 1 of Process 1.0 Verify G/L Transaction.

Specific Account Details Information

2.1
Get Company
Information

Company Information

2.3
Check
Account
Name

Chart Information

Company
Information

Specific Account Details
Information and Account Name

Chart of
Account

Company
File

2.2
Select
Account
Details

Account Details Information

2.4
Generate
Voucher
Listing

Company Information

Account
Details

3.0
Update
Account
Summary

Account Details Information

Finance and
Accounting
Department :

Figure 4.5. DFD Level 1 of Process 2.0 Print Voucher Listing.
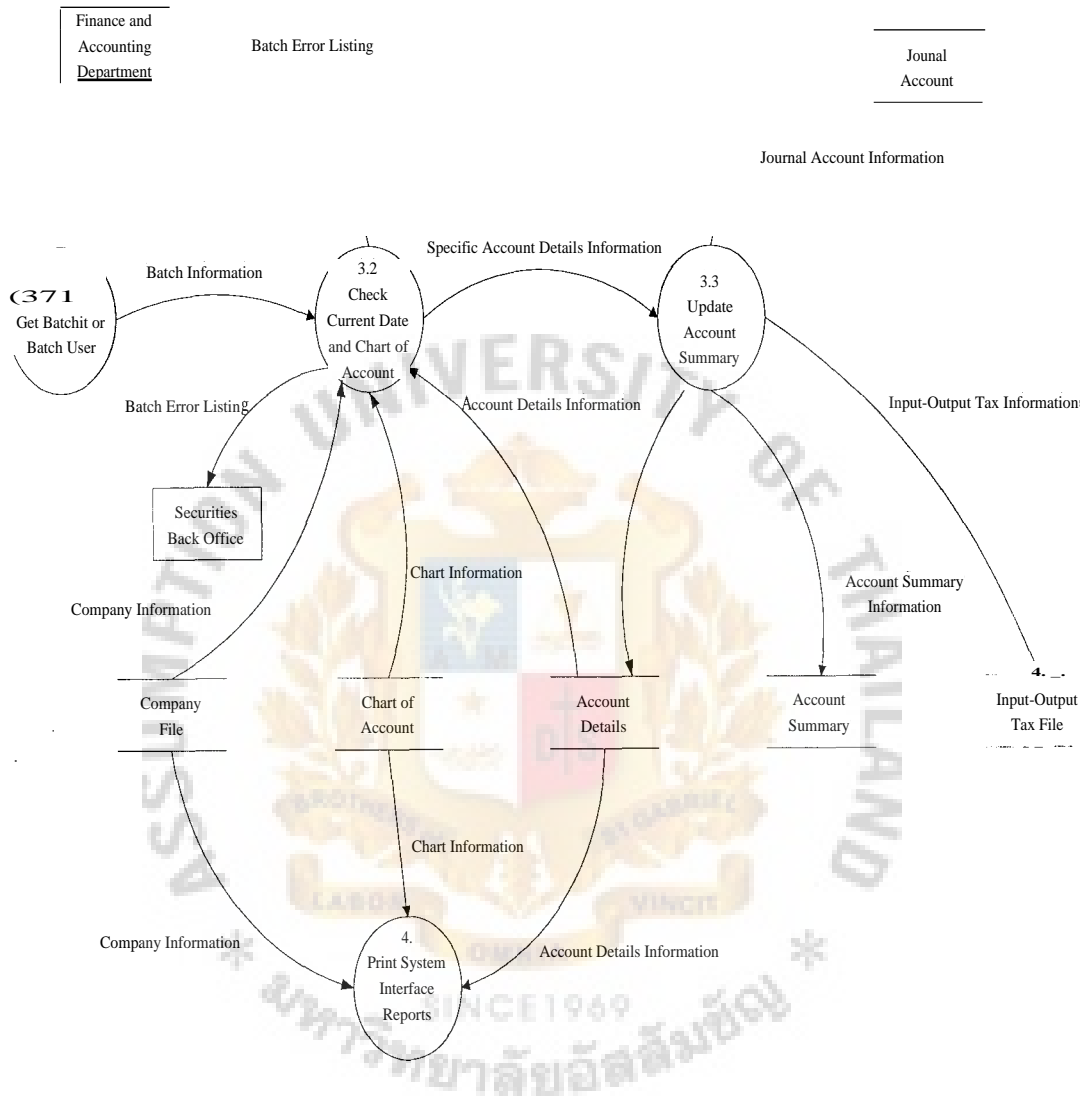
Figure 4.6. DFD Level 1 of Process 3.0 Update Account Summary.
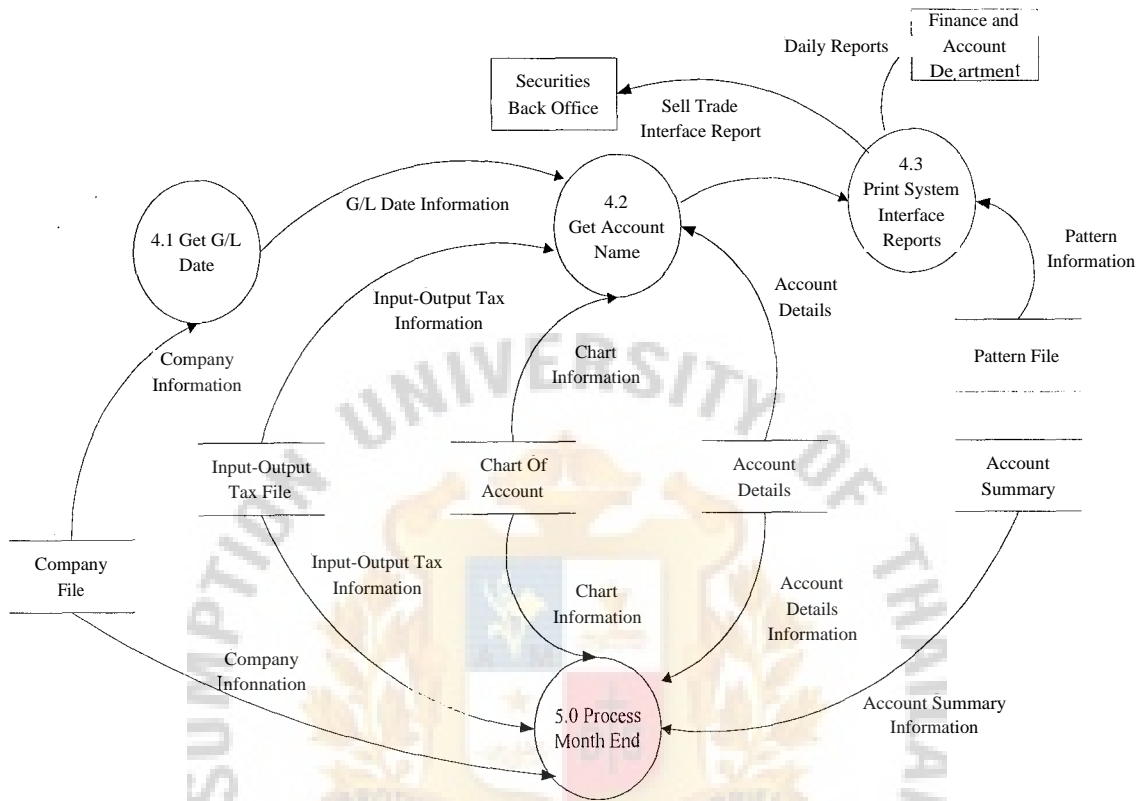
Figure 4.7. DFD Level 1 of Process 4.0 Print System Interface.

Figure 4.8. DFD Level 1 of Process 5.0 Process Month End.
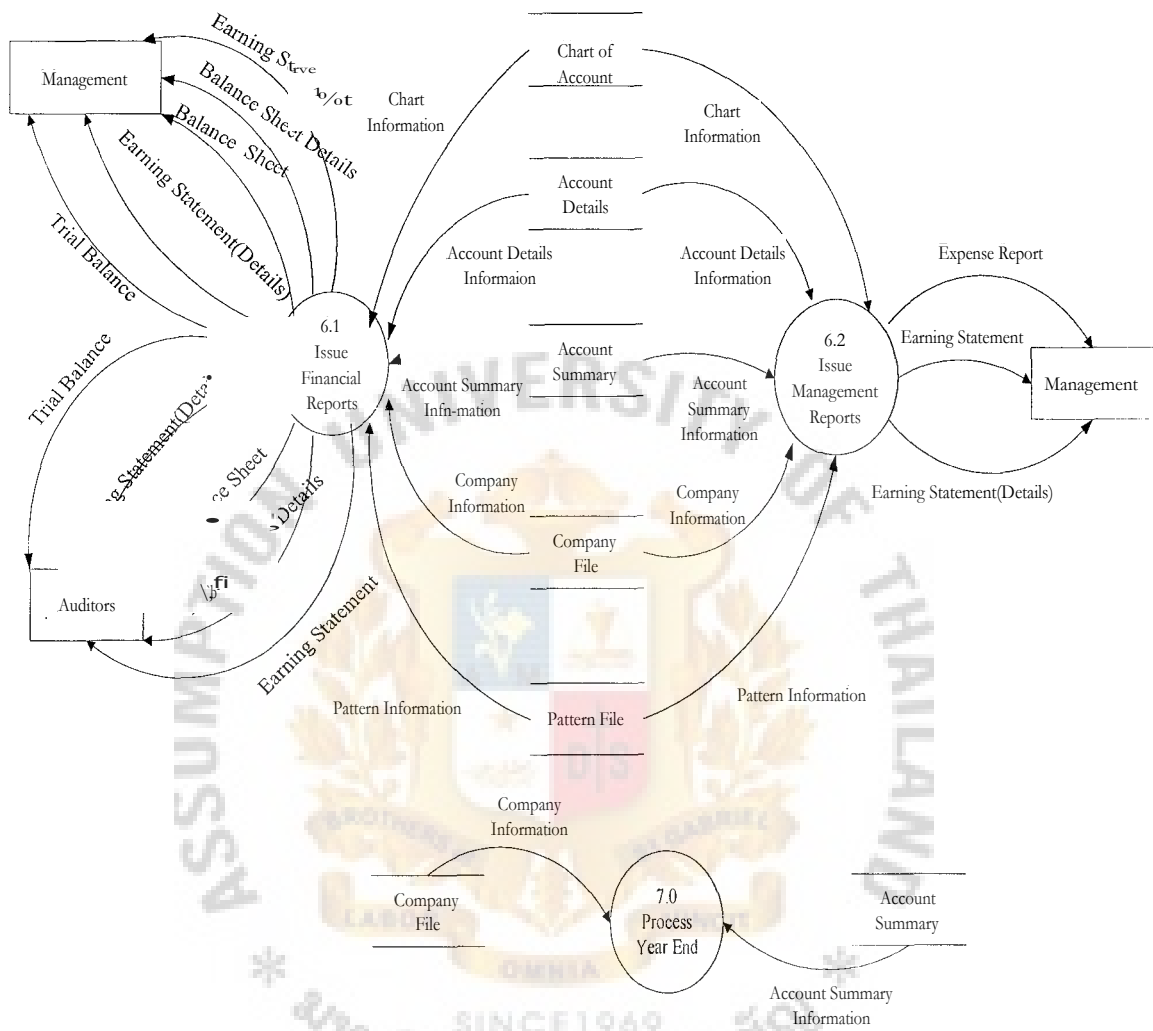
Figure 4.9. DFD Level 1 of Process 6.0 Issue Financial and Management Report.
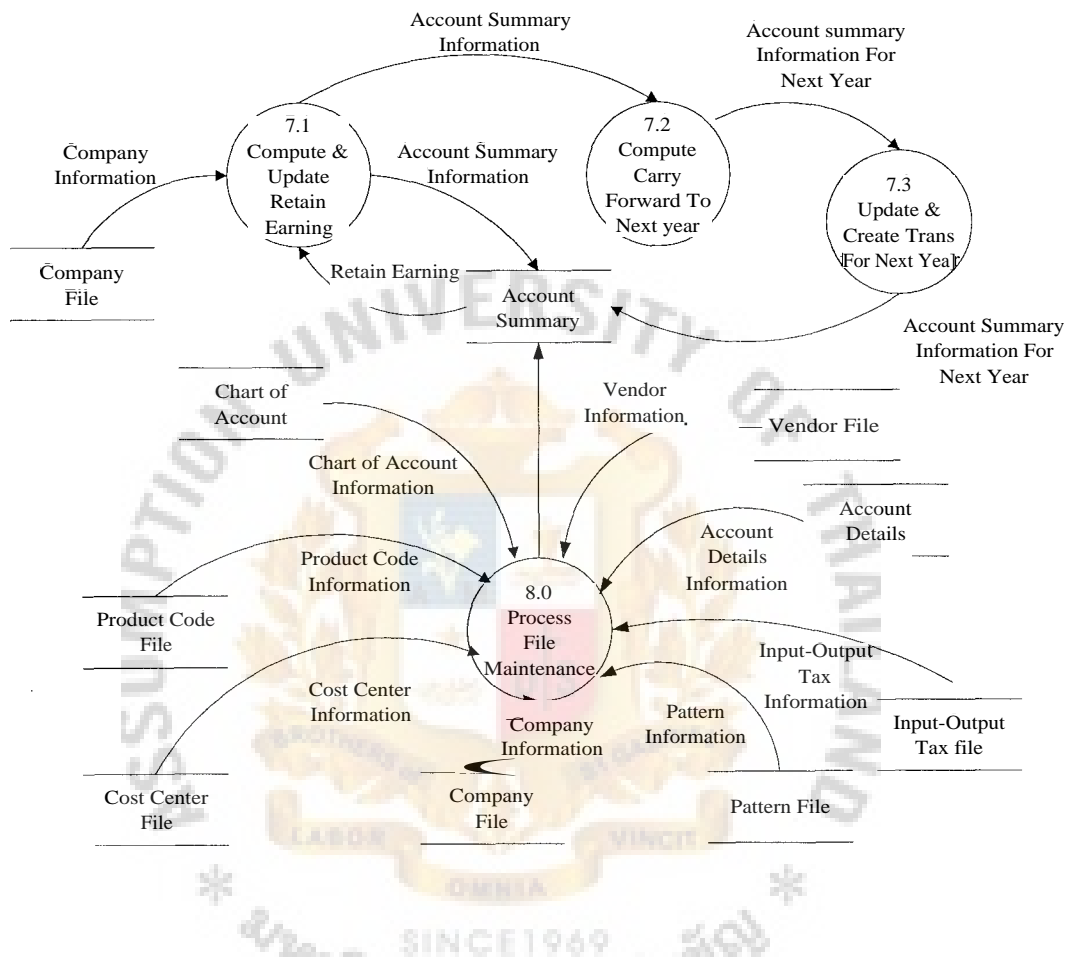
Figure 4.10. DFD Level 1 of Process 7.0 Process Year End.
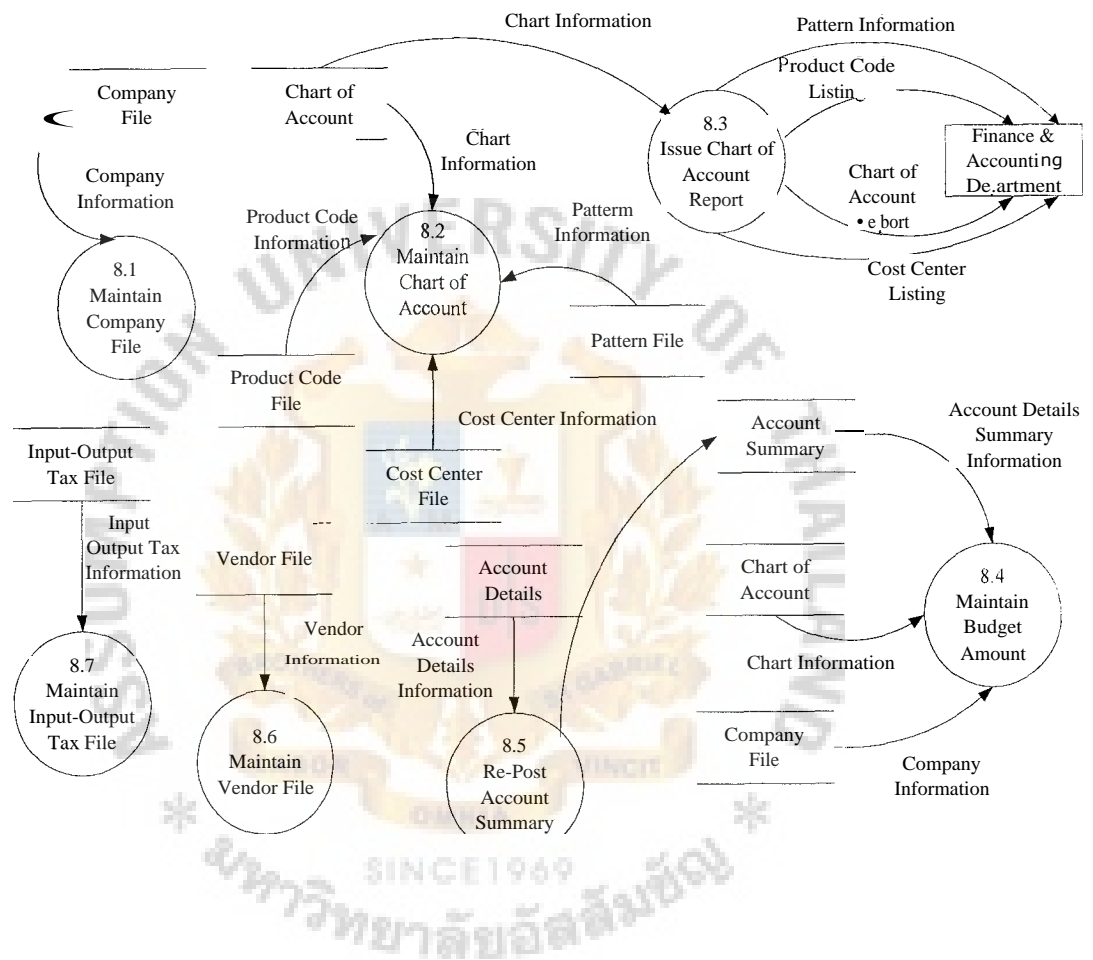
Figure 4.11. DFD Level 1 of Process 8.0 Maintain Files.

4.4 The Proposed Database

This part will display all files used in the system. The selection of files and access methods for the General Ledger **is** aimed at providing efficient capability while minimizing the redundancy between files. In the new proposed system, the relational database approach is used because it has a powerful tool, Structured Query Language (SQL), that allows operations to get the answers quickly and easily.

Relational Database Management Systems is based on tables in rows and columns, with operations defined in those tables. RDBMS can apply mathematical operations and strict logic to them. It is the easiest to query and to modify the structure of, but is the slowest in processing transactions. Because the ease of use is so important to most computer users and developers, it is general enough to represent most types of data and it is flexible because the tables can be restructured.

Some reasons for using Relation Database Management

    (a)   Programming Simplification

        Because RDBM is normally supplied with all storage, retrieval, and similar processes already in place, these can easily be incorporated in the program code, thereby simplifying the writing of application programs.

    (b)   Data Independence

        Application programs are in dependent of the physical structure of the data. Therefore, the physical structure of the data in the database can be changed without necessitating a change in the application programs that access the data.

    (c)   Data Integration

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Data elements can be combined in virtually limitless ways. Different application programs and interactive queries can perceive the same data in different configurations, as needed.

(d)   Data Quality and Efficiency

The data base concept is that each data element need to be stored only once and that multiple programs can access every data element, as needed.

(e)   Data Security

Security features can prevent unauthorized access or inadvertent contamination of data. Users who do not have a legitimate need for specific data may not be allowed access to that data. Moreover, of the data that can be accessed, only specific operations on the data may be authorized such as read, write, and update.

The database files in the proposed system can be categorized into four types as follows:

(a)   Master files

Master files contain permanent data relating to such entities as account master file, vendor master file. Each record in a master file contains data on a particular entity.

(b)   Transaction files

Transaction files capture detailed transaction data. Essential elements in a transaction file's record are the transaction date, amounts, and a reference to an account, a vendor, or some similar entity. The transaction data are posted to related master files, after which the transaction files are purged and reused. Data from a given transaction file may be posted to two or more

master files while data from two or more transaction files may be posted to one master file.

(c)   Archive files

Archive files are files of copies of files that provide a permanent record of the transactions captured during an accounting period or the account balance at the beginning or end of the period. Normally, archive files are accessed only infrequently. When auditors become interested in the accounting period, they may retrieve and analyze the records in the file as part of an audit procedure.

(d)   Backup files

Backup files are duplicate copies of a file that are made for security reasons. They are placed in some safe location, such as magnetic tape. They can be in some less expensive medium than the original files

All file layouts are presented in Appendix A.

4.5 User Interface Design

A new General Ledger System is developed on IBM Risc 6000 using Informix 4-GL. This new system is more efficient and effective than that of the old system. Project team changes the system from batch mode to interactive mode so it offers users much more accurate and on-line information.

The user interface should be designed to facilitate accurate capture of input data and conversion to machine-readable form. Prototyping is used to develop and test user interfaces such as screen. A project team, using the guidelines presented here, develops a preliminary screen design. The screen design is improved as users begin to use the prototype, and it is finalized with a formal testing process.

The forms should meet the following criterias:

(a)   Be easy to complete and use.

(b)   Minimize the errors that can be made in completing a form and keying
       from a completed form.

(c)   Not contain too many data or be too sparse or too busy.

(d)   Enhance speed and accuracy through the use of defaults.

In the proposed system, the system date is retrieved from the control date
table. It may not be the same date as the current date of the system because the
General Ledger System is not closed on the same day-end process. Figure 4.12
presents the first menu in General Ledger System.
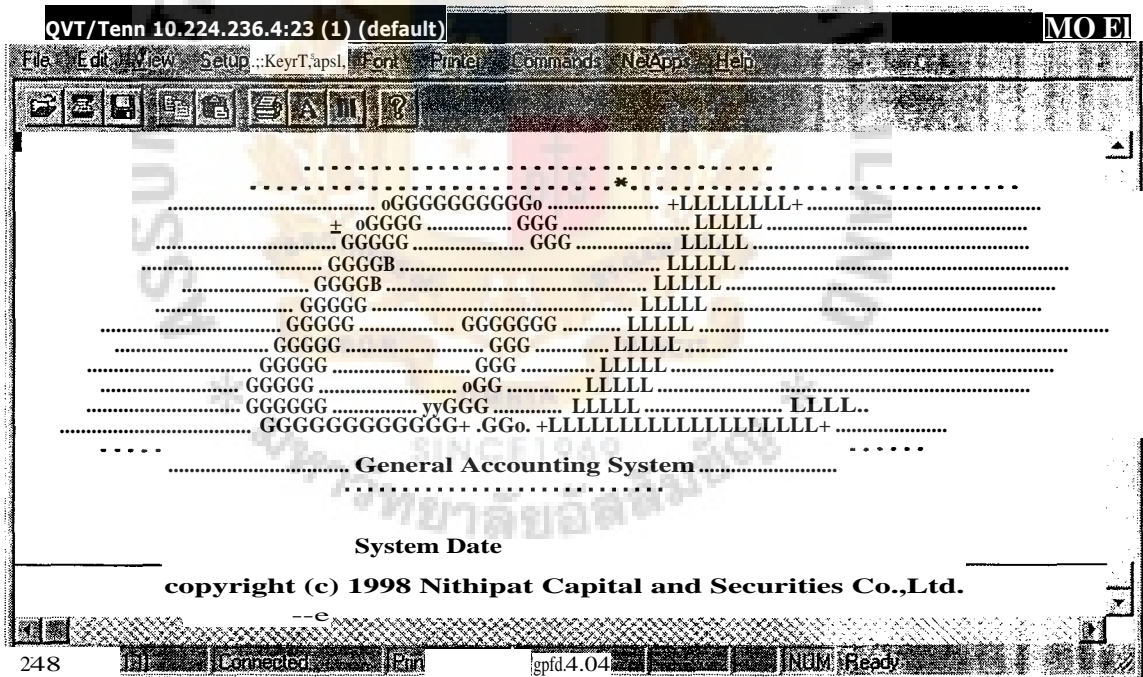
Figure 4.12. First Menu in General Ledger System.

There are three main functions for the user menu in Figure 4.13.

(1)   Reference Information

For Maintaining (Add, Update, and Delete) all authorized tables such as

Account Master File, Vendor Master File, Report Line Reference. This

function updates data immediately as the user presses a specific key.

(2)   Daily Menu

For all activities in a day, it starts from transaction entry through daily

reports.

(3)   Monthly Menu

All activities in month-end process consist of monthly reports, and special

reports for external used.

Figure 4.13. Three Main functions for User Menu.

The system enables users to maintain many required tables. This feature can help to decrease operating time because user has authority to do it himself and it is also on-line update information. Those tables are Account Master File, Vendor Master File, Expense Master File and so on. The Reference Information Menu is shown in Figure 4.14.

Figure 4.14. Reference Information Menu.

Whenever you make an account maintenance, the report ID will occur. You can press F4 for viewing Report ID Description, F5 for adding new account record, and F6 for retrieving the existing account record for maintenance If you don't select report ID, it means your new account will not be linked to predefined reports. Actually, You must return to this function to add report line again. Account maintenance is shown in Figure 4.15.

Figure 4.15. Maintenance Account.

For Vendor Maintenance function, the user is allowed to maintain (Add, Change, and Delete) Vendor Master File. This information will be used for Tax reports for internal usage and government agency. In this screen, it requires some information for completeness as follows:

(a)   Vendor Title

(b)   Vendor Name

(c)   Address 1

(d)   Personnel Type   "N" for   Non-Personnel

                                "P" for   Personnel

(e)   Withholding flag   "0" for   No withholding tax

                                "1" for   Withholding tax

   F5 for Add new vendor record F6 for retrieve the existing vender record

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The vendor maintenance menu is presented in Figure 4.16.


```
III WI/Term - 10.224.236.4:23 (1) [default]
File   Edit   View   Setup   Keymaps   Font   Printer   roinfi1.rds   NetApps   Help

GLED040                NITHIPAI CAPITAL AND SECURITIES CO.,LTD.
00 naruemol                   Maintenance Uendors                    01/03/2000

   Uendor ID.
   Title
   Name                                                                    ]
   Surname                                                                 ]
   Address 1    I                                                          ]
                                                                           ]
   Address 2                                                               ]
                                                                           ]
   Zipcode      I    I                    W/H Flag    I I
   Uendor Type    I ]
   Reference ID. / Tax ID.

24x80   [23:1]   Connected      FrihteL0        -;Otf              NUM Ready
```
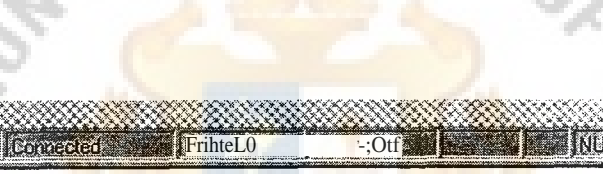
Figure 4.16. Maintenance Vendor.

In daily menu, G/L transaction entry (Figure 4.17) is used for key-in transaction.
The voucher number is automatically generated by the system. If the users have
transaction with withholding tax or Input tax, they must select vendor Id from the table
that the system provides. If there is not the required vendor, the user must add a new
vendor in the vendor maintenance menu because all these tax transactions will be
printed out for Revenue agency used.

After transaction per voucher has finished, the system will automatically check
the balance between credit and debit. If it does not balance, error message will be shown
and the user must correct it.

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Figure 4.17. G/L Transaction Entry.

After the transaction of each batch number has finished, he / she must print out the validated report for checking the correctness. The validated report layout will be shown in Appendix B. If there are some errors, the user must return to the same menu. In day-end process, the computer operator will print out for all daily reports for house keeping. However, the daily reports can be called immediately by users via screen or hard copy because all transactions are processed in online mode.

Sales trade transaction, the imported data from securities back office will not update the trial balance automatically because they may be adjusted. So adjusting transaction will be performed until all transaction are completed. A validate report can be printed out for checking as the general transaction. In this case, the transaction will be posted to General Ledger System manually from the daily menu in Figure 4.18.
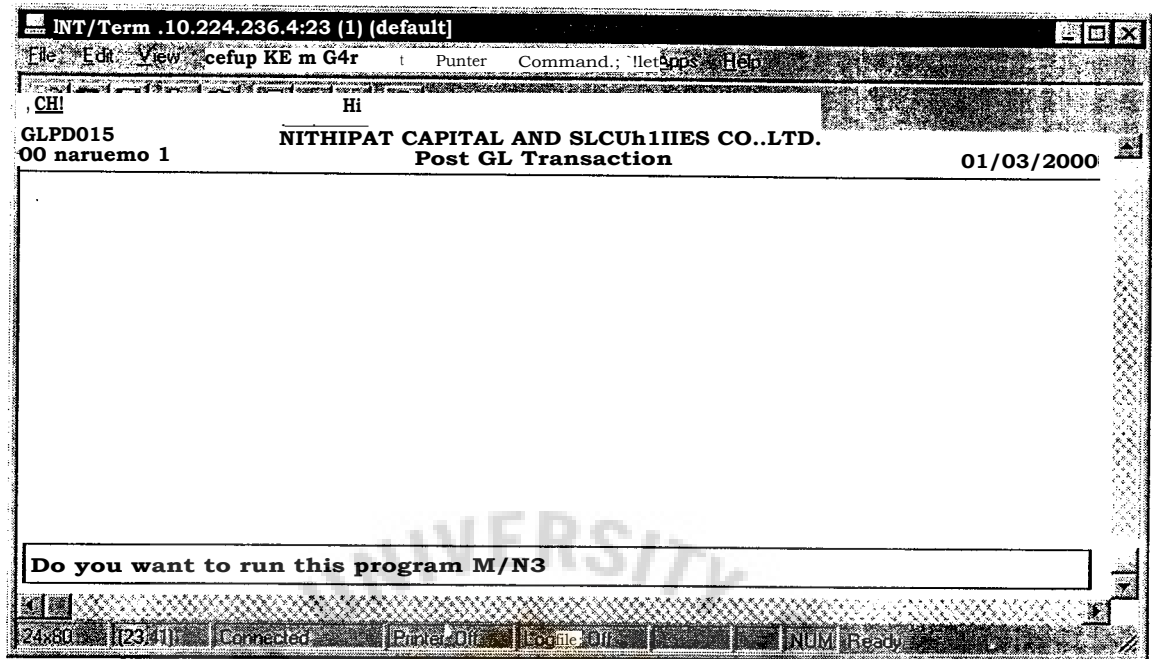
Figure 4.18. Post G/L Transaction.

Post G/L transaction is used to post transaction into two cases

(1)   To post imported transaction (sales trade transaction) from securities

        back office.

(2)   To post the general transaction. At the beginning of each month, users

        are always busy with preparing the month-end reports whereas all

        daily transactions will be entered via the G/L transaction entry but

        without updating the trial balance. Whenever the month-end reports

        have finished, all transactions will be posted day by day via Posting

        G/L Transaction Menu.

    After all the related users check the correctness of the transactions on each day,

the computer operator will perform closing day-end process via Post G/L Day-end as

shown in Figure 4.19. The current date will be skipped to the next workday. The daily

transaction file will be cleared and all transactions will be appended to history

transaction file. Finally, the General Ledger System is ready for keying the new day's transactions.
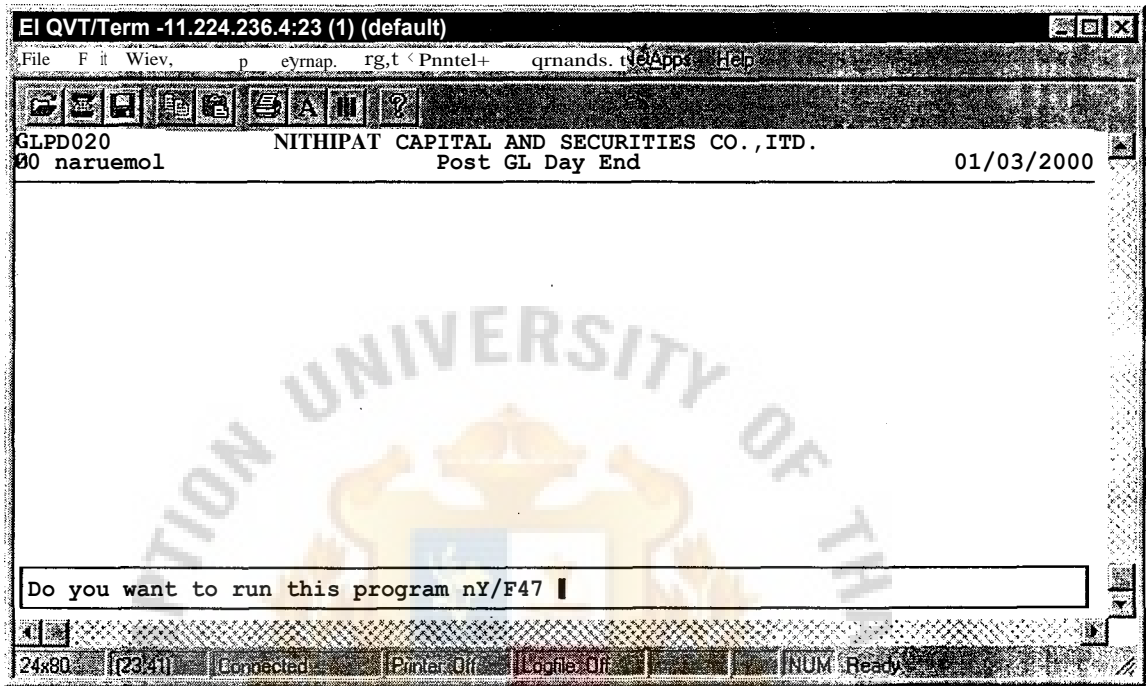
Figure 4.19. Post G/L Day-end.

On the day of month-end, the computer operator must perform Post G/L Month-end Function as shown in Figure 4.20. This function will generate monthly summary files for later use. Especially, the financial and management reports will retrieve the information from those files.

However, some functions must be performed by the computer operator because the users have limit authorization to access files. Sometimes, it seems to be a problem for communicating between users and the computer operator but it leads to better security.

File   Edit   View   Setup   Keymaps   Font   Printer   Commands   NetApps   Help

GLPtiViie
/00 naruemol

NITHIPAT CAPITAL AND SECURITIES CO.,LTD.
Post GL Month End

01/03/2000

Do you want to run this program ?[Y/N]

2.fir0   (23:41)   Connected   Printer Off   Logfile Off   NUM   Ready
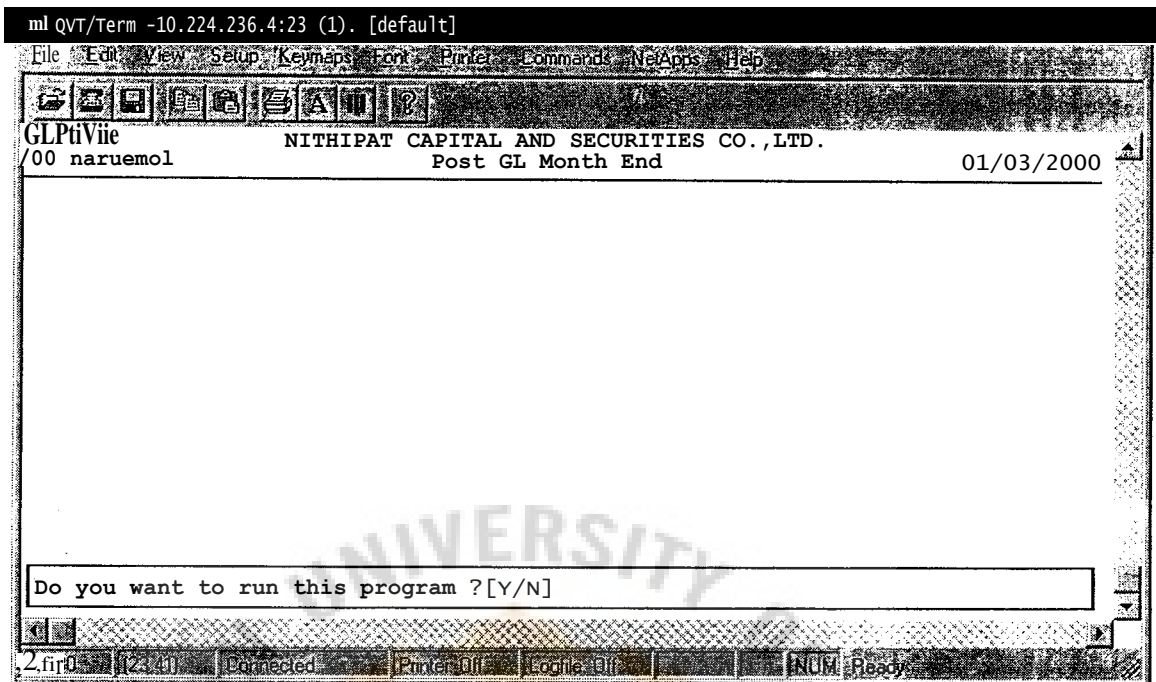
Figure 4.20. Post G/L Month-end.

4.6 Output Reports

The output reports are classified into daily and monthly reports.

Daily reports consist of

    (a)   Validation Report

    (b)   Journal Report

    (c)   Cash Book

    (d)   Trial Balance

    (e)   Input-Output Tax Report

Monthly reports consists of

    (a)   Balance Sheet

    (b)   Balance Sheet (Details)

    (c)   Earning Statement

    (d)   Earning Statement (Details)

_____gm, LITRAI-

   (e)   SET 2

   (f)   SET 2 (Details)

   (g)   SET 2/1

   (h)   SET 2/1 (Details)

   (i)   Ledger By Account Number

   (j)   Withholding Tax Report

All the report layouts are shown in Appendix B and the authorized users can select all these reports from their menus any time as they want.

4.7 Proposed System Configuration

The proposed system is operated with a mini-computer system with storage for data and printer for output printing report. Software requirement is developed for this system specifically.

Hardware Specification

   (a)   IBM Rise 6000 Model J40

   (b)   Hard disk 21 Gigabytes

   (c)   RAM 128 M

   (d)   Terminal for window 95

   (e)   Printer Cito 800 lines per minute

Operating System   Unix

Software Application Informix-4GL

Utility Program   Informix-SQL

However, the other existing system performance will not be effected by the General Ledger System because it will be operated on a different machine (IBM Risc 6000 Model H58). Actually, J40 machine is used for testing the environment so routine activities can be performed smoothly.

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4.8 Security and Control

The security and control is one of the most important parts of the system. The access of unauthorized persons may cause problems. In addition, the data security and data integrity are more serious control. It is important to separate people who might collude. Thus, the IT project team must be separated from the operating departments. In addition, no one in the IT project team should have 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 accountants should be separated, as a combination of the two skills could be disastrous for internal control.

It is also 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 accounting information system. These can be separated into several categories in the proposed system.

    (a)   System Development and maintenance controls

    (b)   System documentation controls

    (c)   Database controls

    (d)   Input Controls

    (e)   Processing Controls

    (f)   File Controls

    (g)   Output Controls

Security and Control in details are presented in Appendix C.

V. PROJECT IMPLEMENTATION

5.1 Testing the Data and Programs

The objective of the testing is to determine whether the proposed system programs correctly handle valid and invalid transactions. The tester designs both valid and invalid transactions or test data to process through the system. If the application software properly processed the test data, the tester compares the actual results with what the results should be and examines the error listing. Test data should test all possible types of transactions including those that should trigger a response from programmed controls, such as range and limit checks.

The programmer's supervisor should review each program the programmer writes, and some other qualified employee should conduct the final testing of the program. Also one programmer should not write all the programs for a sensitive module.

Another important condition for testing is for the year 2000 or Y2K problem. So the Securities Exchange of Thailand has set the trigger date table for the guideline. The trigger date for Y2K testing is shown in Table 5.1. Therefore, our proposed system has already been tested beyond that condition.

5.2 Implementation

After the project team has accepted the test results of all data and programs, including user training, most of the users are familiar with the new system so the parallel run will begin. The conversion plan is provided for converting data from the old system to the new system. The project team plans to have parallel run for awhile and a cut-over. Finally, the implementation will reach the objectives of the business function.

Table 5.1. Trigger date for Application Software and Developed Software Testing.

Date	Reasons
Apr 9,1999	Some programs use Julian Date which is the day of 99 of the year 1999 then the data will be 9999. Several programs will use this number to be the condition for the end of data.
Sep 9,1999	Some programs use Gregorian then it will be the day of 99 of month 9 of year 99.
Dec 31,1999	The last day of the year 1999.
Jan 1,2000	The beginning of the year 2000 and it is Saturday.
Jan 4,2000	The first work day of the year 2000.
Feb 29,2000	The year 2000 is a leap year so check whether it is the day of 60 of Julian date.
Mar 1,2000	Is it a Wednesday?

Several types or levels of tests are usually completed before a system can be implemented. From the users' point of view, three of these tests are the most important.

(1) The System test verifies the new system against the original specifications. These tests are conducted first by the development team and then by the users with the assistance of the team.

(2) The acceptance test is a user-directed test of the complete system in a test environment. The purpose is to determine from the user's perspective whether all components of the new system are satisfactory. The user tests the

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adequacy of the system both manually and automated components; of the manuals and other documentation; and of the training the user received.

(3) Operations test or environmental test runs a subset of the system in the actual production environment. This final test determines whether the new equipment and other factors in the environment such as data entry areas, document and report deliveries are satisfactory.

5.3 System Evaluation

System evaluation must be performed when the new system has been in operation long enough. Usually post-implementation takes approximately six months after the new system has operated. Some reasons to perform system evaluation are as follows:

(a) To analyze the system in operation to determine whether the system can be improved.

(b) To analyze the system development process to see if any lessons can be learned from the company's experience.

(c) To determine whether the user is satisfied with the new system.

(d) To evaluate the quality of the new system's documentation, training programs, and file conversion.

(e) To make any other recommendations that might improve the operation of the system or the development of other information system.

However, evaluation is very difficult to do well. Since if it has been performed by the people who designed the system or the people who operate it. Sonie tasks that must be included in the evaluation are reviewing the documentation, internal control, and experience of users for the new system. The result can then be the basis for the system analysis of the next system or improvements in the system development process.

After all, applications must be adapted to a changing environment and improved over time. There are three types of maintenance activities:

(1)   Corrective maintenance must be performed to fix errors and accounts for 17% of the maintenance cost.

(2)   Perfective maintenance is conducted to improve the performance of an application and accounts for 60% of the maintenance cost.

(3)   Adaptive maintenance adjusts applications to reflect changing business needs and environmental challenges. This accounts for 18% of the maintenance cost.

The goals of system maintenance focus on many categories:

(a)   Accomplish system changes quickly and efficiently.

(b)   Prevent system changes from causing other system problems.

(c)   Make system changes that are in the organization's overall best interest.

(d)   Perfect systems development and system maintenance procedures by collecting and using information about system changes.

VI. CONCLUSIONS AND RECOMMENDATIONS

6.1   Conclusions

System Development Project is normally established with the confidence and expectation of success. Necessary resources include funding, people, and the required types of experience and skills. Most of all, the user commitment is one of the factors to be considered.

User participation helps ensure good communications between those who develop the system and those who will use it. Give users a voice in development decision and take advantage of users' special insights into the operation of the system. User participation is particularly important during system analysis, when requirements are being identified, and during implementation, when users should help test and evaluate the new system. During system design, users both on and off the project can assist by evaluating prototypes and providing feedback on the acceptability of the proposed features.

This project followed system development life cycle concept as detailed in the past section. The project management is used to control the overall tasks to complete within the time frame and limited resources. In addition, to provide better performance and protection, this project pays much attention to verification and testing of the year 2000 problem. So the damage of the company's businesses will not happen at all.

6.2 Recommendations

The General Ledger Accounting System is designed and implemented based on a thorough understanding of both business and the company in which it operates. As the business grows and engage2   different activities, the accounting system must be revised frequently to accommodate both a larger volumes of transaction and changes in

nature of those transactions. Expanding and revising the chart of accounts is just one of the changes that is required in an accounting system.

The project team must recognize the importance of effectively training personnel and should use a variety of formal and informal training techniques. These include courses conducted in-house; self-study courses; and on-the-job training directed by supervisors or co-workers. To keep employees professionally competent in their fields, effective training must be an ongoing process, rather than a one-time effort.

Therefore, the design of an accounting system is not an one-time process. It requires continuous refinement to ensure that the system's capability is compatible with the changing needs of the business it serves. Five recommendations for a successful project are:

(a)   Keep the CEO and top management involved.

(b)   Empower the project team to make decisions.

(c)   Forge a business / technical partnership.

(d)   Bring the best people into the project.

(e)   Continue to develop the initial vision.

Most of all you must know yourself, know your organization, know your product I service, know your customers, and know your competitors.

APPENDIX A

FILE LAYOUT

Table A.1. Account Budget.

Table Name	abud
Description	Account Budget
Index	comp_id
	branch
	prod_code
	acct_type
	acct_group
	acct_no
	acct_dgt

Item	Column Name	Type	Length	Description
1	comp_id	char	3	Company **ID**
2	branch	char	2	Branch
3	prod_code	char	2	Product Code
4	acct_type	char	1	Account Type
5	acct_group	char	3	Account Group
6	acct no	char	3	Account Number
7	acct_dgt	char	1	Account Check Digit
8	bud_alloc	money	16,2	Budget Allocation Amount
9	eff date	date		Effective Date
10	del_flag	char	1	Delete Flag

Table A.2. Account Expense.

Table Name	aexp
Description	Account Expense
Index	comp_id
	branch
	prod_code
	acct_type
	acct_group
	acct_no
	acct_dgt

Item	Column Name	Type	Length	Description
1	comp_id	char	3	Company ID
2	branch	char	2	Branch
3	prod_code	char	2	Product Code
4	acct_type	char	1	Account Type
5	acct_group	char	3	Account Group
6	acct_no	char	3	Account Number
7	acct_dgt	char	1	Account Check Digit
8	exp_alloc	money	16,2	Expense Allocation Amt
9	eff date	date		Effective Date
10	del_flag	char	1	Delete Flag

Table A.3. Batch Control.

Table Name	bat			
Description	Batch Control			
Index	batch_no			

Item	Column Name	Type	Length	Description
1	batch_no	char	1	Batch Number
2	runno	char	5	Running

Table A.4. Company Information.

Table Name	cmp
Description	Company Information
Index	comp_id

Item	Column Name	Type	Length	Description
1	comp_id	char	3	Company ID
2	comp_name	char	60	Company Name
3	addrl	char	60	Address Linel
4	addr2	char	60	Address Line2
5	telno	char	20	Telephone Number
6	zipcode	char	5	Zipcode
7	ctrl_date	date		Control Date
8	back date	date		Previous Date
9	del_flag	char	1	Delete Flag

Table A.5. Current Trial Balance.

Table Name	ctb
Description	Current Trial Balance
Index	comp_id
	branch
	prod_code
	acct_type
	acct_group
	acct_no
	acct_dgt

Item	Column Name	Type	Length	Description
1	comp_id	char	3	Company ID
2	branch	char	2	Branch Number
3	prod_code	char	2	Product Code
4	acct_type	char	1	Account Type
5	acct_group	char	3	Account Group
6	acct_no	char	3	Account Number
7	acct_dgt	char	1	Account Check Digit
8	amount	money	16,2	Amount
9	ytd_bal	money	16,2	Year-to-date Balance
10	monl	money	16,2	Balance of month(i-1)
11	mon2	money	16,2	Balance of month(i-2)
12	mon3	money	16,2	Balance of month(i-3)
13	mono	money	16,2	Balance of month(i-4)
14	mons	money	16,2	Balance of month(i-5)
15	mon6	money	16,2	Balance of month(i-6)
16	mon?	money	16,2	Balance of month(i-7)
17	mon8	money	16,2	Balance of month(i-8)

Table A.5. Current Trial Balance (Cont.).

Item	Column Name	Type	Length	Description
18	mon9	money	16,2	Balance of month(i-9)
19	mon10	money	16,2	Balance of month(i-10)
20	monl 1	money	16,2	Balance of month(i-11)
21	mon12	money	16,2	Balance of month(i-12)
22	del_flag	char	1	Delete Flag

Table A.6. Month End Trial Balance.

Table Name	etb
Description	Month-end Trial Balance
Index	end_date

Item	Column Name	Type	Length	Description
1	end_date	date		End of month
2	comp_id	char	3	Company ID
3	branch	char	2	Branch Number
4	prod_code	char	2	Product Code
5	acct type	char	1	Account Type
6	acct_group	char	3	Account Group
7	acct no	char	3	Account Number
8	acct_dgt	char	1	Account Check Digit
9	amount	money	16,2	Amount
10	ytd_bal	money	16,2	Year-to-date Balance
11	monl	money	16,2	Balance of month(i-1)
12	mon2	money	16,2	Balance of month(i-2)
13	mon3	money	16,2	Balance of month(i-3)
14	mon4	money	16,2	Balance of month(i-4)
15	mons	money	16,2	Balance of month(i-5)
16	mon6	money	16,2	Balance of month(i-6)
17	mon?	money	16,2	Balance of month(i-7)
18	mon8	money	16,2	Balance of month(i-8)
19	mon9	money	16,2	Balance of month(i-9)
20	monl 0	money	16,2	Balance of month(i-10)
21	monl 1	money	16,2	Balance of month(i-11)
22	mon12	money	16,2	Balance of month(i-12)
23	del_flag	char	1	Delete Flag

Table A.7. Expense Rate.

Table Name	exp
Description	Expense Rate
Index	exp_id

Item	Column Name	Type	Length	Description
1	exp_id	char	3	Expense ID
2	exp_name	char	60	Expense Name
3	exp_rate	money	6,2	Expense Rate
4	del_flag	char	1	Delete Flag

Table A.8. History G/L Transaction.

Table Name	hlg
Description	History GL Transaction
Index	comp_id
	branch
	vouch_no
	batch_no
	tran_date
	prod_code
	acct_type
	acct_group
	acct no
	acct_dgt

Item	Column Name	Type	Length	Description
1	comp_id	char	3	Company ID
2	branch	char	2	Branch
3	vouch no	char	5	Voucher Number
4	batch_no	char	1	Batch Number
5	tran_date	date		Transaction Date
6	prod_code	char	2	Product Code
7	acct_type	char	1	Account Type
8	acct_group	char	3	Account Group
9	acct no	char	3	Account Number
10	acct_dgt	char	1	Account Check Digit
11	amount	money	16,2	Amount
12	cheq_no	char	7	Cheque Number
13	cheq_date	date		Cheque Date
14	cd tlag	char	1	Credit or Debit Flag

Table A.8. History G/L Transaction (Cont.).

Item	Column Name	Type	Length	Description
15	vat amt	money	16,2	VAT Amount
16	vat_rate	money	6,2	VAT Rate
17	payto	char	60	Pay to
18	narration	char	120	Narration
19	post_date	date		Post Date
20	userid	char	10	User ID
21	del_flag	char	1	Delete Flag

Table A.9. History Trial Balance.

Table Name	htb			
Description	History Trial Balance			
Index	tran_date			
	comp_id			
	branch			
	prod_code			
	acct_type			
	acct_group			
	acct no			
	acct_dgt			

Item	Column Name	Type	Length	Description
1	trap_date	date		Transaction Date
2	comp_id	char	3	Company 1D
3	branch	char	2	Branch
4	prod_code	char	2	Product Code
5	acct_type	char	1	Account Type
6	acct_group	char	3	Account Group
7	acct_no	char	3	Account Number
8	acct_dgt	char	1	Account Check Digit
9	amount	money	16,2	Amount
10	ytd_bal	money	16,2	Year-to-date Balance
11	del_flag	char	1	Delete Flag

Table A.10. Journal G/L Transaction.

Table Name	jlg
Description	Journal GL
Index	comp_id
	branch
	vouch_no
	batch-no
	prod_code
	acct_type
	acct_group
	acct_no
	acct_dgt

Item	Column Name	Type	Length	Description
1	comp_id	char	3	Company ID
2	branch	char	2	Branch
3	vouch_no	char	5	Voucher Number
4	batch no	char	1	Batch Number
5	tram date	date		Transaction Date
6	prod_code	char	2	Product Code
7	acct_type	char	1	Account Type
8	acct_group	char	3	Account Group
9	acct_no	char	3	Account Number
10	acct_dgt	char	1	Account Check Digit
11	amount	money	162	Amount
12	cheq_no	date	7	Cheque Number
13	cheq_date	date		Cheque Date
14	cd_flag	char	1	Credit or Debit Flag
15	vat_amt	money	16.2	VAT Amount

Table A.10. Journal G/L Transaction (Cont.).

Item	Column Name	Type	Length	Description
16	vat_rate	money	16,2	VAT Rate
17	payto	char	60	Pay to
18	narration	char	120	Narration
19	post_date	date		Post Date
20	userid	char	10	User ID
21	del_flag	char	1	Delete Flag

Table A.11. Journal Tax Transaction.

Table Name	jtax
Description	Journal Tax Transaction
Index	comp_id
	branch
	vouch_no
	batch-no
	prod_code
	acct_type
	acct_group
	acct no
	acct_dgt

Item	Column Name	Type	Length	Description
1	comp_id	char	3	Company ID
2	branch	char	2	Branch
3	vouch_no	char	5	Voucher Number
4	run_no	char	5	Running Bumber
5	batch no	char	1	Batch Number
6	trap date	date		Transaction Date
7	prod_code	char	2	Product Code
8	acct_type	char	1	Account Type
9	acct_group	char	3	Account Group
10	acct no	char	3	Account Number
11	acct_dgt	char	1	Account Check Digit
12	amount	money	16,2	Amount
13	cheq_no	char	7	Cheque Number
14	cheq_date	date		Cheque Date
15	cd flag	char	1	Credit or Debit Flag

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Table A.11. Journal Tax Transaction (Cont.).

Table Name	jtax
Description	Journal Tax Transaction

Item	Column Name	Type	Length	Description
16	vat amt	money	16,2	VAT Amount
17	vat rate	money	16,2	VAT Rate
18	payto	char	60	Pay to
19	narration	char	120	Narration
20	vendor _id	char	5	Vendor Ill
21	exp jd	char	3	Expense ID
22	side	char	1	Input Tax / Output Tax
23	post_date	date		Post Date
24	userid	char	10	User ID
25	del_flag	char	1	Delete Flag

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Table A.12. Log Journal.

Table Name	ling
Description	Log Journal
Index	act_date
	act userid
	action

Item	Column Name	Type	Length	Description
1	act_date	date		Date
2	act userid	char	10	User ID
3	action	char	1	Add / update / delete
4	comp_id	char	3	Company ID
5	branch	char	2	Branch
6	vouch no	char	5	Voucher Number
7	run no	char	5	Running Number
8	batch no	char	1	Batch Number
9	trap date	date		Transaction Date
10	prod_code	char	2	Product Code
11	acct_type	char	1	Account Type
12	acct group	char	3	Account Group
13	acct no	char	3	Account Number
14	acct_dgt	char	1	Account Check Digit
15	amount	money	16,2	Amount
16	cheq_no	char	7	Cheque Number
17	cheq_date	date		Cheque Date
18	cd_flag	char	1	Credit or Debit Flag
19	vat amt	money	16,2	VAT Amount
20	vat rate	money	16,2	VAT Rate
21	payto	char	60	Pay to

Table A.12. Log Journal (Cont.).

Item	Column Name	Type	Length	Description
22	narration	char	120	Narration
23	post_date	date		Post Date
24	userid	char	10	User ID
25	del_flag	char	1	Delete Flag

Table A.13. Query List Condition.

Table Name	list			
Description	Query List Condition			
Index				

Item	Column Name	Type	Length	Description
1	tabname	char	20	Table Name
2	frmhead	char	79	Title Window Name
3	frmname	char	20	Form Name
4	frmrow	smallint		No. of rows in Window
5	frmcol	smallint		No.of columns in Window
6	frmfield	smallint		Selected Fields
7	selection	char	640	Condition
8	lengthretl	smallint		Return Variable 1 Length
9	lengthret2	smallint		Return Variable 2 Length

Table A.14. Account Master.

Table Name	mac			
Description	Account Master			
Index	acct_type			
	acct_group			
	acct_no			
	acct_dgt			

Item	Column Name	Type	Length	Description
1	acct_type	char	1	Account Type
2	acct_group	char	3	Account Group
3	acct_no	char	3	Account Number
4	acct_dgt	char	1	Account Check Digit
5	acct name	char	60	Account Name
6	del_flag	char	1	Delete Flag

Table A.15. Log Account Master.

Table Name	lmac
Description	Log Account Master
Index	tran_date
	action
	acct_type
	acct_group
	acct no
	acct_dgt
	rep_id

Item	Column Name	Type	Length	Description
1	userid	char	10	User ID
2	sysdate	date		System Date
3	progname	char	10	Program Name
4	trandate	date	1	Transaction Date
5	action	char	1	Action
6	acct_type	char	1	Account Type
7	acct_group	char	3	Account Group
8	acct no	char	3	Account Number
9	acct_dgt	char	1	Account Check Digit
10	acct_name	char	60	Account Name
11	rep_id	char	3	Report ID
12	o_acct_name	char	60	Old Account Name
13	o_rep_line	decimal	8,3	Old Report Line
14	o_rep_col	smallint		Old Report Column
15	o_del_flag	char	1	Old Delete Flag
16	nacctname	char	60	New Account Name
17	n_rep_line	decimal	8,3	New Report Line

Table A.15. Log Account Master (Cont.).

Item	Column Name	Type	Length	Description
18	n_rep_col	smallint		New report Column
19	n_del_flag	char	1	New Delete Flag

Table A.16. Log Process.

Table Name	1ps
Description	Log Process
Index	user id

Item	Column Name	Type	Length	Description
1	userid	char	**10**	User ID
2	sysdate	date		System Date
3	progname	char	10	Program Name
4	trandate	date	1	Transaction Date

Table A.17. Vendor Master.

Table Name	mvd
Description	Vendor Master
Index	vendor id

Item	Column Name	Type	Length	Description
1	vendor id	char	5	Vendor ID
2	type	char	1	Vendor Type
3	title	char	20	Title Name
4	name	char	60	Name
5	surname	char	60	Surname
6	addrl	char	120	Address Line 1
7	addr2	char	120	Address Line 2
8	zipcode	char	5	Zipcode
9	ref id	char	15	Reference ID
10	tax id	char	15	Tax ID
11	tax flag	char	1	VAT Flag
12	del_flag	char	1	Delete Flag

Table A.18. Report Format.

Table Name	rfmt
Description	Report Format
Index	rep_id

Item	Column Name	Type	Length	Description
1	rep_id	char	3	Report ID
2	rep_name	char	60	Report Name
3	rep_table	char	10	Report Table
4	del_flag	char	1	Delete Flag

Table A.19. Reference Report Line.

Table Name	rrep			
Description	Reference Report line			
Index	acct_type			
	acct_group			
	acct_no			
	acct_dgt			

Item	Column Name	Type	Length	Description
1	acct_type	char	1	Account Type
2	acct_group	char	3	Account Group
3	acct_no	char	3	Account Number
4	acct_dgt	char	1	Account Check Digit
5	rep _id	char	3	Report ID
6	rep_line	integer	8,3	Report Line
7	rep_col	smallint		Report Column
8	del_flag	char	1	Delete Flag

Table A.20. Report Line Summary.

Table Name	rsum
Description	Report Line Summary
Index	rep_id

Item	Column Name	Type	Length	Description
1	rep_id	char	3	Report ID
2	seq_no	smallint		Sequence Number
3	col no	smallint		Column Number
4	start_line	integer		Start Line
5	end_line	integer		End Line
6	to_line	integer		To Line
7	action	char	1	Action
8	del_flag	char	1	Delete Flag

Table A.21. Default Value.

Table Name	tdef
Description	Default value
Index	fldname
	dependon

Item	Column Name	Type	Length	Description
1	fldname	char	18	Field Name
2	dependon	char	30	Depend on
3	defaultval	char	60	Default Value
4	possible	char	100	Possible

Table A.22. Holidays.

Table Name	**thd**			
Description	Holidays			
Index				

Item	Column Name	Type	Length	Description
1	holidaydate	date		Holiday Date

Table A.23. Menu.

Table Name	tmenu
Description	Menu
Index	menulevel

Item	Column Name	Type	Length	Description
1	menulevel	char	18	Menu Level
2	menucall	char	18	Menu Call
3	menuseq	char	1	Menu Sequence
4	menuname	char	50	Menu Name
5	menuparm	char	18	Menu Parameter

Table A.24. Message.

Table Name	tmsg	
Description	Message	
Index	msggrp	
	msgno	

Item	Column Name	Type	Length	Description
1	msggrp	char	2	Message Group
2	msgno	char	3	Message Number
3	seq	smallint		Sequence
4	message	char	70	Message Description

Table A.25. Program Permission.

Table Name	tperm
Description	Program Permission
Index	userid

Item	Column Name	Type	Length	Description
1	userid	char	8	User ID
2	progname	char	20	Program Name
3	permadd	char	1	Add Permission
4	permupd	char	1	Update Permission
5	permdel	char	1	Delete Permission
6	perminq	char	1	Inquiry Permission

Table A.26. Print Property.

Table Name	tprn
Description	Printer Property
Index	pm_name

Item	Column Name	Type	Length	Description
1	prn_name	char	20	Printer Name
2	type	char	40	Alias Printer Name
3	pm_command	char	40	Printer Command
4	pm_command_noth	char	40	Printer Command No Thai
5	outfile_path	char	40	Outfile Path
6	cpi10	char	20	10 Character Per Inch
7	cpi12	char	20	12 Character Per Inch
8	cpi15	char	20	15 Character Per Inch
9	cpi17	char	20	17 Character per Inch
10	cpi20	char	20	20 Character Per Inch
11	nothai_cpi 10	char	20	10 CPI No Thai
12	nothai_cpi2	char	20	12 CPI No Thai
13	nothai_cpi5	char	20	15 CPI No Thai
14	nothai_cpi7	char	20	17 CPI No Thai
15	nothai_cpi20	char	20	20 CPI No Thai
16	ret_code	char	20	Return Code

Table A.27. Program Print Format.

Table Name	tprn_prg
Description	Program Print Format
Index	prg_name
	userbranch

Item	Column Name	Type	Length	Description
1	prg_name	char	20	Program Name
2	userbranch	char	2	User Branch
3	prn_name	char	20	Printer Name
4	prn_command	char	40	Printer Command
5	p_size	char	3	Printer Size
6	c_size	char	20	Character Size
7	out flag	char	1	Output Flag
8	set_line_flag	char	1	Set Line Flag

Table A.28. Program Description.

Table Name	tprog
Description	Program Description
Index	progname

Item	Column Name	Type	Length	Description
1	progname	char	**18**	Program Name
2	programtype	char	1	Program Type
3	progdesc	char	50	Program Description

Table A.29. Program Posted.

Table Name	tps
Description	Program posted
Index	tran_date

Item	Column Name	Type	Length	Description
1	tran_date	date		Transaction **Date**
2	progpost	char	8	Program Posted

Table A.30. Voucher Control.

Table Name	trn			
Description	Voucher Control			
Index				

Item	Column Name	Type	Length	Description
1	trap date	date		Transaction Date
2	runno	integer		Running Number

Table A.31. User Name.

Table Name	tus
Description	User Name
Index	comp_id
	userid

Item	Column Name	Type	Length	Description
1	comp_id	date	3	Company ID
2	userid	char	10	User ID
3	username	char	50	User Name
4	usertname	char	50	User Thai Name
5	userbranch	char	2	User Branch
6	authlevel	char	1	Authority Level

APPENDIX B

OUTPUT REPORTS

N ITH IPAT CAPITAL AND SECURITIES CO LTD.

Validation Report

As of : 30/11/1998

Branch : 00

Batchtt	Voucher#	Prod Code	Account#	Cheque #	Credit	Debit	Description
*** Batch 1 ***							
	00000	00	2-311-010-9	0	231,457,575.27	0.00	InfinirittatitiltlfAtf
	00000	00	2-311-010-9	0	152,554,221.79	0.00	nunisinTr.filiriqu
	00000	00	2-311-090-1	0	38,785.50	0.00	ritinliiiinfilranIu
	00000	00	2-622-017-8	0	91,157.27	0.00	nr.inlrimfint⁻aitifu
	00000	00	2-622-070-7	0	231,457,575.27	0.00	nun⁻Il9⁻lr.:rill⁻Ou
	00000	00	1-421-010-8	0	0.00	31,457,575.27	Tityriiii7niTinutlu
	00000	00	1-112-029-2	0	0.00	309,841,449.57	riffrnririnttfiltif.4.1
	00000	00	2-622-070-7	0	0.00	231,457,575.27	Tit.ln⁻⁵⁻nzeil1tiOu
	00000	05	1-112-500-2	0	0.00	12,409,025.05	snuniriiTzfiir⁻Ou
	00000	00	1-113-600-9	0	0.90	10,780,014.80	liunisii?:;fillitn:fu
	00000	00	1-112-022-7	0	0.00	19,653,675.14	riuniriiiiztinetuii;t1
			Total		615,599,315.10	615,599,315.10	

Figure B.1. Validation Report.

NITHIPAT CAPITAL AND SECURITIES CO..LTD.

Journal Report

As of : 30/11/1998

Branch : 00

!terns	Batch#	Voucher#	Prod Code	Cheque#	Description	Debit	Credit	Balance
1.	1-111-010-3		tlthiet					
	2	00000	00	0	nunalluiar..fiartaiu	208,267.25	0.00	
	3	37673	00	00000000	111I7nmREVERSE ritTng141398Fl. t1B27.11.41	0.00	50,000.00	
	3	37675	00	00000000	tlrnelistlanaVaitluelmtilasulfri?	0.00	72,890.00	
	3	37677	00	00000000	14qjt14811112111171URPililettlf114	0.00	118,414.00	
	3	37678	00	00000000	ClunTtlain6ilailuarartiatuatn/	0.00	198.069.00	
					Total	208,267.25	439,373.00	23 i.105.75CR
2.	1-112-012-8		tlur.lansuana? - 1..n44ort(o1n14n4t4)					
	C	00398	00	09999999	raga/AEU 2⁷/₁₁/419323 , 324 niiiiinAr"-im	0.00	1,545.00	
	C	00398	00	09999999	nitiriMADJ 2⁷/₁₁/41#323.324 nitititaiim	0.00	600.754.00	
					Total	0.00	602,299.00	602,299.00CR
3.	1-112-022-7		iludinttlierd - s.nronitoo (o1111R814)					
	2	00000	00	0	runa7firivr,fiarnalu	0.00	287,726.47	
	2	00000	00	0	7111817iBiarzrialnuifu	441.85	0.00	
	1	00000	00	0	runaNianfiati[1titt	0.00	19,653.675.14	
	2	00000	00	0	runlriusillviivitn/u	18,915,274.21	0.00	
	J	00104	00	00000000	TFBAUTO TRANSFER	13,004,000.00	0.00	
	B	00383	00	09999999	t51414'101iN2 t514t51uu fFuT911t4	0.00	100,000.00	
	B	00387	00	00000000	tit] 30/11/41937674111J 30/11/41837674 oauTatirijiirtot	4,844.25	0.00	
	3	37677	00	00000000	urtirt481192111illuomniatuaNa?	118,414.00	0.00	
	3	37680	00	00003636	6ranoth.l.Frion914584 30.11.41 elvt4n11luTFB	0.00	15.539.062.50	
	3	37692	00	00000000	KTT.TDBfuom.iutgourt.o.41KTT,TOB	322,767.12	0.00	
	3	37693	00	00000000	BOA1JfURATEatii1ti13.50%Lu3¹/0BOA	131,547.94	0.00	

[GLRD020] reported by prt   Run Date 09/04/99 17:00:56   Page 1

Figure B.2. Journal Report.

NiTHIPAT CAPITAL AND SECURITIES CO.,LTD.

Cash Book

As of : 30/11/1998

Branch : 00

Batchli Voucher#	Description	Cheq#	Debit	Credit	Balance
1-111-010-3	clt.lfi61				
	*** B/F ***				389,373.00
2	00000 nunithrinsz,14319E4u	0	208,267.25	0.00	
3	37673 t1 tort REVERSE wlfing141395m.41027.11.41	00000000	0.00	50,000.00	
3	37675 LIvanis faiirmimlutiouilsirwriT	00000000	0.00	72,890.00	
3	37677 14E01 4111121"r1atai6n3ittiVii:	00000000	0.00	118,414.00	
3	37678 nuns 6lt1611¯414riftwih6unf1n	00000000	0.00	198.060 00	
	C/F ***		208,267.25	439.373.40	158,267.25

EGLRD030 J reported by pit   Run Date 09/04/99 17:01:22   Page :

Figure B.3. Cash Book.

NITHIPAT CAPITAL AND SECURITIES CO.,LTD.

Trial Balance

As of : 04/12/1998

Branch : 00

| Account# Account Name | This Month | | Previous Month | Difference |
	Debit	Credit	Amount	
1-111-010-3 nufit#	0.00	28,154.00	0.00	
Total By Group of Account	0.00	28,154.00		
•, 12-022-7 iludlasirmil - s.aiinsgru (tnintio34)	195,154.00	0.00	0.00	
1-112-029-2 iitichnsuimi - s Am u rn rirati(taiillln491)	0.00	23,594,437.85	0.00	
1-112-500-2 Outlinsuiers -s.malri (H0)1#111	0.00	2,234.214.45	0.00	
1-112-501-0 Ciudin8wir,15-s.nturrt(Fici) u/t2	0.00	35,347.60	0.00	
1-112-503-6 Ciud instrifilT -5.nlAtmi (02)	0.00	804,000.00	0.'0	
1-112-504-4 nurlinswinii 8.111415111 (N3)	0.00	1,120,000.00	0.00	
1-112-506-9 nudinsuims s.nvoill (N5)	0.00	480.000.00	0.00	
1-112-507-7 auchnsuifriT E. nvolvi (N6)	0.00	3,398,000.00	0.00	
1-112-511-9 nudinstrinir - s.nriviu(e)Tintrom)	0.00	390,000.00	0.00	
Total By Group of Account	195,154.00	32,055.999.90		
1-113-022-6 auffintelnifritl- 5.nanAnu (erilnAtim)	0.00	167,010.00	0.00	
1-113-600-9 nuchntamlival- s.n/4t.)111 (H0) IA)	6,085.970.00	0.00	0.00	
1-113-607-4 iitgliatE041ifvittl- 8.1Yif..friitil9ti (fir1IPT2)	0.00	103,824,814.99	0.00	
1-113-608-2 6ur.linctunfral s.lnurririltri(1tiunu)	319,630.64	0.00	0.00	
Total By Group of Account	6.405,600.64	103,991,824.99		
1-212-040-8 vittirMiviikomr-tiktu(Aakt)k).041Thillf.1	40,000.00	0.00	0.00	
Total By Group of Account	40,000.00	0.00		
1-324-104-7 klartatim	101,150,000.00	0.00	0.00	
otal By Group of Account	101,150,000.00	0.00		
1-371-101-5 fd0lIfi611'111[041411'181'0C11141)flAblrifilYtIlliill	0.00	2,591,402.69	0.00	
Total By Group of Account	0.00	2,591,402 69		

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Figure B.4. Trial Balance.

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NITHIPAT CAPITAL AND SECURITIES CO.,LTD.

Input Tax Report

As of :24/02/1999

Branch OO   Tax Id : 3011708903

Tax Invoice Date Seq.	Description	Value of Goods / Services	Prepaid Tax Amount	Tax Invoice	Remark	VAT
01/12/1998 1	VV. 19198190 MAY	167.73	16.77	filulivi7v¯ifvraltiztloi		10%
01/12/1998 2	u9n.19190190 Lf18111	84.09	8.41	9·198·11119"17018113401::9101 011.41 111019		10%
01/12/1998 3	u9n.19190190 tfltl'M	84.09	8.41	fnuityclilfrnufIzeim		10%
01/12/1998 4	u'en. 101.90100 01011	167.73	16.77	919fl".11111"01118011.10:41¯18 914 10,11 rib 41		tO
01/12/1998 5	u9n.191900110 011ii111	167.73	16.77	419f1111111'00181¯3,10::918 ill 10,11 ¦f111.41		10%
01/12/1998 6	110n.191601981 varaii	84.09	8.41	¦hurillin171‡16113.18:0191V4U.41 f1r101		10%
01/12/1998 7	u9ri.19191111111 lt)01A	167.73	16.77	filulmmilfringizeiol		10%
01/12/1998 8	van. ltuutitnet lfitilt)'	84.09	8.41	filuiall1110T901:5918		10%
	Total By Date	1,00728	100.72			
02/12/1998 9		100.00	10.00	Hiiiiiinir Trivi		10%
02/12/1998 10	1.34¶1un 41r1m	500.00	50.00	10011V/11⟨A⟩		10%
02/12/1998 11	wan. 198 len Minī	460.10	46.04	fi¯rieirilutizqUnrculthll		10%
02/12/1998 12	Waft Wei Iiii it glIni	460.40	46.04	iwyviiiial		10%
02/12/1998 13	urn	500.00	50.00	IlfuLllulgto		10%
	Total By Dale	2.020.80	202.08			

Figure B.S. Input Tax Report.

NITHIPAT CAPITAL AND SECURITIES CO.,LTD.

Output Tax Report

As of : 22/02/1999

Branch : 00   Tax Id: 30117081103

Tax Invoice Date Seq.	Description	Value of Goods / Services	Prepaid Tax Amount	Tax Invoice	Remark	VAT
22/02/1999 1	14111 ti4Ems	155.00	15,50	CN-19990222-00001	00001	10%
22/02/1999 2	1114 iluttniziovi	340.00	34.00	CN-19990222-00007	00002	10%
22/02/1999 3	5411 9141114914117-	55.00	5.50	CN-19990222-00007	00003	10%
22/02/1999 4	uld El1 ouallawvi	55.00	5.50	CN-19990222-00007	00004	10%
22/02/1999 5	mi 111 iluttilivioi	272.00	27.20	CN-19990222-00007	00005	1034
22/02/1999 6	1419 ruing orsnomumi	62.50	6.25	CN-19990222-00009	00006	10%
22/02/1999 7	1414 01111 LonguAwri	562.50	56.25	CN-19990222-00012	00007	10-f1
22/02/1999 8	1114 azria toratiiimfi	590.00	59.00	CN-19990222-00012	00008	10%
22/12/1999 9	U/li 8111019 Liletvisrfma	50.00	5.00	CN-19990222-00018	00009	10%
22/02/1993 10	1.411 11V0411 iocurru	71.25	7.13	CN-19990222-00025	00010	10%
22/02/1999 11	1114 1484Y71 qamtri	52.5C	5.25	CN-19990222-00025	00011	10%
22/02/1999 12	U14 117` 0411'111411119	55.00	5.50	CN-19990222-00025	00012	10%
22/02/1999 13	1414 10041/1 i14411/11	115.00	11.50	CN-19990222-00025	00013	10%
22/02/1999 14	14141111 f]13/ u91iO4	3.85	0.38	CN-19990222-00026	00014	10%
22/02/1999 15	5411911 6111 111iiO4	7.69	0.77	CN-19990222-00026	00015	10%
22/02/1999 16	5414A11 gel 1141101	7.69	0.77	CN-19990222-00026	00016	10%
22/02/1999 17	11141111 11131 4141104	23.08	2.31	CN-19990222-00026	00017	10%
22/02/1999 18	1114E111 IV31 441.184	7.69	0.77	CN-19990222-00026	00018	10%
22/02/1999 19	U14 11717111161F191Pc	175.00	17.50	CN-19990222-00033	00019	10%
22/02/1999 20	1.1111110 ellns rilannapir	837.50	83.75	CN-19990222-00040	00020	10 41
22/02/1999 21	14141111 A1I17 rimitaim	880.00	88.00	CN-19990222-00040	00021	10%
22/02/1999 22	11111 fillr1117[71	91.88	9.19	CN-19990222-00041	00022	10%
22/02/1999 23	13111 1171:]11111411114:fnl;	110.00	11.00	CN-19990222-00044	00023	10%
22/02/1999 24	U111 1111117 0111)114111	2,600.00	260.00	CN-19990222-00053	00024	10%
22/02/1999 25	U141111 *el nirelropre	147.50	14.75	CN-19990222-00055	00025	10%
22/02/1999 26	1.414 orimilipintifomnip	70.00	7.00	CN-19990222-00056	00026	10%
22/02/1999 27	1114 141nsni Kakit:vim:fp	72.50	7.25	CN-19990222-00056	00027	10%
22/02/1999 28	11111 919149 181Tom911	345.00	34.50	CN-19990222-00057	00028	10%

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Figure B.6. Output Tax Report.

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NITHIPAT CAPITAL AND SECURITIES Co .LTD.

BALANCE SHEET

As of 29/02;2000

	MAY APR MAR	FEB	JAN	DEC	NOV	OCT	SEP	AUG	JUL	JUN
ASSETS										
CASH AND DEPOSITS AT FINANCIAL INSTITUTIONS		47.371,586								
LOAN TO FINANCIAL INSTITUTIONS										
INVESTMENT IN SECURITIES										
Securities for trading										
Securities for investment										
Total investment in securities										
Less : Allowance for diminution in value of securities										
Net investment in securities										
ACCOUNTS WITH SECURITIES COMPANIES										
SECURITIES BUSSINESS RECEIVABLES AND										
ACCRUED INTEREST RECEIVABLES										
Securities business receivables										
Accrued interest receivables										
Total securities business receivables										
and accrued interest receivables										
Less : Allowance for doubtful accounts										
Net securities business receivables										
and accrued interest receivables										
EQUIPMENT - net										
UNAMORTISED STOCK EXCHANGE MEMBERSHIP FEE										
BILL DISCOUNT										
Bill discount-net										
Less : allowance for possible loan losses of bill discount										
Net bill discount										
LOAN TO STAFF										
OTHER ASSETS										
TOTAL ASSETS		47,371,586								
LIABILITIES AND SHAREHOLDER'EQUTITY										
BORROWINGS										
From banks		3,900,826								
From financial institution										
From foreign										
Total borrowings		3,900.826								
SECURITIES SOLD UNDER REPURCHASE AGREEMENT										
ACCOUNTS WITH SECURITIES COMPANIES										
CUSTOMERS' ACCOUNTS										
ACCRUED INTEREST PAYABLE										
ACCRUED EXPENSES										
OTHER LIABILITIES										
TOTAL LIABILITIES		3,900,826								

Figure B.7. Balance Sheet.

SHAREHOLDS' EQUITY

  Share capital

    Authorized share capital,issued and paid up

      100,000,000 ordinary shares of Baht 10 each

  Retained eamings(defici0

    Unrealised loss on securities for investment

TOTAL SHAREHOLDERS' EQUITY

TOTAL LIABILITIES AND SHAREHOLDERS' EQUITY   3,900,826

"" End of Report —

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Figure B.7. Balance Sheet (Cont.)

```
NITHIPAT CAPITAL AND SECURITIES CO.,LTD.               ____      _____
BALANCE SHEET (DETAIL)
As of 04/12/1998
_ _ _ _ _ _ _ _ _ _ _ _ _                              ____      _____
        NC NAME                    A/C CODE      AMOUNT              TOTAL
_ _ _ _ _ _ _ _ _ _          _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
     ASSETS
CASH AND DEPOSITS AT FINANCIAL INSTITUTIONS
  Clue                             1-111-010-3      -18,154.00
  auchnsuipms - s.nanslym (Wringtiv)   1-112-022-7   205,154.00
  audlnttunfriti- s.aRnsiviu (t'1111h1.1)  1-113-022-6  -157,010.00
           s.nvolyi (HO) W11        1-113-600-9     6,095,970.00
  audlntinfrii.16-        (t11142)   1-113-607-4  -103,814,814.99
  43whattuviNtis.biitlYrifili16(Thunia)  1-113-608-2   329,630.64
   TOTAL **                                                    -97,359,224.35
  Securities for trading
  IlanViiiti`imMikm(tOltk)(411114n14516   1-212-040-8   50,000.00
  ** TOTAL **                                                     50,000.00
  Bill discount-net
  hoaufitaci                         1-324-104-7   101,160.000.00
  t+vidiotheillmillffiladvamairieliTnlyau  1-371-101-5  -2,581,402.69
  ** TOTAL **                                                   98,578,597.31
OTHER ASSETS
  mi434tiFilffilf (48)               1-811-026-2      11,030.36
  ** TOTAL **                                                      11,030 36
       LIABILITIES AND SHAREHOLDER'EQUTITY
  From banks
  Clur.linsuvrts - s.lnurntrentr(8lingpnleT)  1-112-029-2  -23.584.437.85
  Cluthnstrwns -5.nvogri (HO) u/11   1-112-500-2   -2,224,214.45
  autlinsinpns-s.nv4im(H0) u/12      1-112-501-0      -25.347.60
  Clucl-InsInern -s.nvoirl (N2)      1-112-503-6     -794,000.00
  lout] tnsli1 Y1  5.n54ol1t (N3)    1-112-504-4   -1,110,000.00
  CiudinsulAis s.nvoirn (N5)         1-112-506-9     -470,000.00
           s. ns4LYlVI (146)         1-112-507-7   -3,388,000.00
  Cluchnstrifils - sfivivoirrnietrgeij  1-112-511-9  -380,000.00
  — TOTAL "                                                   -31,975,999.90


_ _ _ _ _ _ _ _ _ _ _ _ _ _    _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
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_ _ _ _ _ _ _ _ _ _ _ _ _ _    _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
```

Figure B.8. Balance Sheet (Details).

NITHIPAT CAPITAL AND SECURITIES CO.,LTD.

EARNINGS STATEMENTS

As ofThid12/1998

	DEC	NOV	OCT	SEP	AUG	JUL	JAN-JUN	JAN-DEC
SECURITIES BUSINESS INCOME								
Brokerage fees	598	-10,000						-9A02
Fees and services income								
Gain(lom) on trading in securities	-1,500	-10.000						-11,500
Interest and dividend on securities								
Interest on margin leans								
Total securities business income	-9(12	-20,000						- 20,902
SECURITIES BUSINESS EXPENSES								
Interest en borrowings								
Brokerage expenses								
Total securities business expenses								
Net securities business income	-902	-20.000						-20,902
BAD DEBT AND DOUBTFUL ACCOUNTS								
Net securities business income after bad debt								
and doubtful accounts	-9)12	-20,000						-20,902
INTEREST RECEIVABLES								
OTHER INCOME	6,596	-20,000						-(3.41)4
OPERATING EXPENSES								
Personal expenses	15,736	10,000						25,736
Pennies and equipment expenses	197,561	20,000						217,561
Taxes and duties								
Unamortised stuck exchange membership fee								
Other expenses	130	10,000						10.130
Total operating expenses	213,426	40,000						253,420
EARNINGS BEFORE INCOME TAX	-207,733	-80,000						-287,733
CORPORATE INCOME TAX								
NET LOSS FOR THE PERIOD	-207,733	-90,0181						-297,733
PROFIT "LOSS) PER SHARE								

". End of Report

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Figure B.9. Earning Statement.

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NITHIPAT CAPITAL AND SECURITIES CO.,LTD.

EARNINGS STATEMENTS (DETAIL)

As of 31/12/1998

NC NAME	A/C CODE	AMOUNT	TOTAL
Brokerage fees			
Pi'11.11f11111q	4-212-010-5	598.00	
"TOTAL**			598.00
Fees and services income			
frarrOnr.A1ninstaintoieIChl	4-311-050-1	-4,708.71	
fnlyrimpaq-mn-o4fmnr.virAll	4-311-050-1	4,706. /1	
**TOTAL **			
Gain(loss) on trading in securities			
qlsinonwilnn141intniti'mthiti	4-211-030-4	-1.500.00	
** TOTAL —			-1.500.00
OTHER INCOME			
ri')utiolfufraiitmoi mriesqininlu	4-111-451-3	1,887.68	
rilllinwehvilnniAnna')Ciu	4-311-050-1	4,708.71	
** TOTAL **			6,596.3)
Personal expenses			
Fin4'11	5-111-015-3	15,736.28	
** TOTAL **			15,736.28
Permis?,s and equipment expenses			
	5-112-010-3	103,536.00	
	5-112-040-0	94,025.36	
** TOTAL **			197.561.36
Other expenses			
Fii8Si3ACIEJIALLflrISIMS (^{6}nYlii16)	5-114-020-0	130.00	
** TOTAL **			130.00

*** End of Report""

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Figure B.10. Earning Statement (Details).

5111.11u41uni15iiu un.2

tu Tuft 31 Su71Fiu 2541

1. Ciurmunniudinsuinn
   1.1 tiummtaziludinvultiis   6,630,754.64
   1.2 511./filliillaflIn114111/111411   6.630,754.64
2. Vlӑt9159l1 111511111i11,4101:1111.1till
3. 1110411U11111A"fl115114
   3.1 11&111TWITs1110
      3.1.1 riAfrnivitiTsulnuaziiiiiviatiidatilli
      3.1.2 1451151T11(184411`110449`15411111:11ilillintill
   3.2 narrni91i110fl1111
      3.2.1 1151111NA111111111i1.111   50,000.00
      3.2.2 414
      3.23 ItaflllTIVAU   50,000.00
   3.3 510011drilklafil
      3.3.1 suentiluttmillantako
      3.3.2 iiinutittlitetonisaftfillt&iniitti
      3.3.3 DU 9   50,000.00
4. priflliiiniAnvirvori
   4.1 4011511/1r1141111filZt4
   4.2 1111141171l.11l10414aDYIT116
   4.3 1.10/thr.lii14113179111&191TV14
   4.4 6'14 9
   4.5 inn 9104C/4145N
   4.6 VIti
5. tit! 01015 itazOn74
   5.1 YIWU 01015
   5.2 ih15ti15t1i1iiiitulaz:01fil5
   5.3 Onsui
6. ?hill TY11.1f1.1 9
   6.1 11014414511
   6.2 8l1f410&1411111
   6.3 1ini1U5on15piolitv11
   6.4 iltittiOnfl   98,578,597.31
   6.5 gu 9   11,030.36   98,589,627.67
      513.12f1171171ti Ole 1 114 110 6)   ⁻105.270,382.31

viinn5nn'inn intim fain
tonuiturollauna.2
tu -lA 31 fulifui 2541

___

miiituunzthuvetgotru

7.11**4 1 1**

7.1 inortnifinonauluiltztnn

7.1.1 1111f11111iiiiTtl   135.965,978.89

7.1.2 rfilgunistiuOu   135,965,978.89

7.2 91119641.118111ff   135,965,978.89

8. tanniiitivinIntsiltitgtinstArefiu

9 thiiillattliThr¹716

9.1 intntionfmtimunbit

9.2 it!!

9.3 ilujitzwinutioninti

to. urtaudu

to] nooniohnitu

10.2 orriunzillitsitognito   (20,393.73)

10.3 *11111414Y111=1,1114119*

10.4 Mel   9,429,995.20   9,409,601.47

11 tiluto461106

11.1 **trutrau**j onnzniou too &min)

watittfunz 10.00 Inn)

11.2 quifiniinionnullou..... tru)

tuatinTun- **inn)**

11.3 thalpf1111U

11.4 1111i1104

11.5 audisetit¹lAnntstiotillstini

11.6 tilltrinintatSongtsnottnitatts

11.7 fillitil1;41i10151T0lifi011441141148tf

11.8 titUtzu-innt111114;011S14 u.n 2/1 11M1)

11.9 110111I0̊U

1111116RUll=i11111046101TU elle 7 54 tip 11)   145,375,580.36

mutontl

tiunintrinintoin:4441niuniini   13

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NIMIPAT CAPITAL AND SECURITIES CO.,LTD.

2¯8w111111ZMAU 1111.2 (Detail)

As of 12/1998

MC NAME	A/C CODE	AMOUNT	TOTAL
1.1 aurtounztluthnsumrts			
tiudinsunsis - s.nrineku orrtniifo	1-112-022-7	205,154.00	
auFlineautriitti- 1.nprem (HO) 11/11	1-113-600-9	6,095,970.00	
auflineounfritis.bunnsaisti(leutiu)	1-113-608-2	329,630.64	
" TOTAL "			6,630,754.64
3.2.1 riftmiittlittmaciuu			
rannfri09miztiltsuoles1Wmtginrifyi6	1-212-040-8	50,000.00	
" TOTAL"			50,000.00
6.4 ill-14MM			
	1-324-104-7	101,160,000.00	
thimefutinvidlatrisanotrunstmau	1-371-101-5	(2,581,402.69)	
** TOTAL			98,578,597.31
6.5 igu 1			
tasting¯Au (ifts)	1-811-026-2	11,030.36	
" TOTAL "			11,03036
7.1.1 810811rnittif			
1411101	1-111-010-3	(18,154.00)	
thihnsums -1.1runnolat6ginintplik	1-112-029-2	(23584,437.85)	
authnsumm -1.triami (HO) veil	1-112-500-2	(2,224,214.45)	
tiliffinsyttris-s.ol4rm(Hts)11/12	1-112-501-0	(25,347.60)	
authnswurrs -2.nvisnyt (N2)	1-112-503-6	(794,000.00)	
tiutlinsms¯r4 is.nvsnri (N3)	1-112-504-4	(1,110,000.00)	
tiutlinsum¯ss impairs (N5)	1-112-506-9	(470,000.00)	
Liudinsums t. nuans (N6)	1-112-507-7	(3,388,000.00)	
sluthnsulms - is.nvilntorsingswio	1-112-511-9	(380,000.00)	
tiuthneouvriirti- smistillnu ortis'imo	1-113-022-6	(157,010.00)	
authrseouniitsi- virstrrotihs6(4710.12)	1-113-607-4	(103,814,814.99)	
" TOTAL "			(135,965,978.89)
10.2 nit'uovi-441ust1410			
ingin of 11i1UBu 3	2-621-030-2	1,801.60	
nigin tuiti¯ottatis	2-621-050-0	8,651.93	
Alkali¯84u (iriu)	2-621-060-9	9,940.20	
" TOTAL "			20.393.73
10.4 gui			
	2-622-010-3	248.00	
ilgsilitmonyssiginenru	2-622-070-7	(9,430.243.20)	
" TOTAL "			(9,429,995.20)
." End of Report*"			

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Figure B.12. SET 2 (Details).

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	IRDUU (A)	tlatitIrlf11(B)
I. 51014AsiistuTnniiul	985.68	(29,014.32)
1.1 tilUitnal	598.00	(9,402.00)
1.2 (iill(9rninu)innflirileintnirlonilui	(1,500.00)	(11,500.00)
1.3 7701bilbinitrltnnt0 UiThD		
1.4 titentffattlASU		
1.5 sentiflutittlutuflairmtlunqulutanfliiul	1,887.68	(8,112.32)
2. filliliwilairnEnnflui		
2.1 fientitnin6111		
2.2 filumniMuaniissluniflu		
3. filitiOnctet•tantirltv		
4. fillf9ieihtiNaD4	213,427.64	253,427.64
4.1 fiigiumitntiirenliu (9nnu flu)	15,736.28	25,736.28
4.2 filhanuumniudiuilvnis		
43 Alan	197,561.36	217,561.36
4.4 filtdOurnii		
4.5 fillfihthiiiitilltaThdli	130.00	10,130.00
5. 1101g(fill'Ailtalt	4,708.71	(5,291.29)
6. frillorwrporioufiin⁻nlilulkatrinfrnrimu	(207.733.25)	(287.733.25)
7. viiniculultt		
8. sionisim		
9. frill(inoniu)tini	(207,733.25)	(287,733.25)

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Figure B.13. SET 2/1.

NITHIPAT CAPITAL AND SECURITIES CO.,LTD.

sivictiar.filliiiin **MIL** va.vi (Detail)

As of 12/1998

A/C NAME	A/C CODE	AMOUNT	TOTAL
1.1 141U1M1111			
flIUItINUI	4-212-010-5	598.00	
** TOTAL **			598.00
1.2 ifillemnpolinnivisointni5milmi			
iiillinsinuvinnwrioviantirrnrvici	4-211-030-4	(1,500.00)	
** TOTAL **			(1,500.00)
1.5 flOntiitittazauUmmoinilua4lulumAnTirel			
eiluaofinimionsi mirrisnilau	4-111-451-3	1,887.68	
** TOTAL **			1,887.68
4.1 iillihuitiultivyninyru Ormlu flu)			
41914	5-111-015-3	15,736.28	
** TOTAL **			15,736.28
4.3 filth			
flIHil	5-112-010-3	103,536.00	
firiom1enuani1l45f111101,117	5-112-040-0	94,025.36	
** TOTAL **			197,561.36
4.5 illiiiitifiltimuudu			
fiisslutrunutardinis (nintrrtio	5-114-020-0	130.00	
** TOTAL **			130.00
5. sialkfilliiiitodu			
	4-311-050-1	4,708.71	
** TOTAL **			4,708.71

*** End of Report ***

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Figure B.14. SET 2/1 (Details).

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NITHIPAT CAPITAL AND SECURITIES CO.,LTD.

Ledger by Account

As of : 04/12/1998

Branch : 00

Items Batch# Voucher# Prod Code Cheque#	Description	Debit	Credit	Balance
1. 1-111-010-3 alltfti				
	••• pap •••	10,000.00	0.00	10,000.00
3 00052	tfb-lhiurfnikIntOSM n2	0.00	28,154.00	
	••• op •••	10,000.00	28,154.00	18,154_00CR
2. 1-112-022-7 l104108U1R11 - s.nitnlyiu (tnviiiim)				
	••• Bip •••	10,000.00	0.00	10,000.00
J ' 00015	scb-latitiU auto	167,000.00	0.00	
3 00052	ttb-lhatlItalfratilffr1 n2	28,154.00	0.00	
	••• cif •••	205,154.00	0.00	205,154.00
3. 1-112-029-2 iluilinsmfm - 3.I11trn1tii8ti(Unimpl4r1)				
	••• B/F •••	10,000.00	0.00	10,000.00
K 00009 5492462 4E41	togiu inn inn.iumelinso tiolilaiiu Eo515.75	0.00	97,416,438.40	
K 00011 -i1u9112	sniublitti quieunta 691517%	1,100s00.00	0.00	
J 00015	scb-itilltitt auto	73,505,06435	0.00	
A 00029 94 5491752 450144	29/12 ilitliiiilriftratiii	0.00	55,000.00	
3 00054 5492518	-iltriblziat-intiUoltntonihilfritl	0.00	30,728,063.80	
3 00055 -1tr4tiu 7r11LAUTO		30,000,000.00	0.00	
	••• CIF •••	104,615,064.35	128,199,502.20	23,584,437.85CR

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Page : 1

Figure B.15. Ledger by Account.

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NITHIPAT CAPITAL AND SECURITIES CO.,LTD.

Withholding TAX Report (3)

As of : 04/12/1998

Branch : 00

Tax Id : 3011708903

Seq.	Name Address	Tax ID.	Date	Type	Description Amount	Tax Amount
	I. cooperatieve centrale		02/12/1998	Others	3%	515,464.00	15,463.92
	2. tilT11 10 MI lorf leffig fit%		04/12/1998	Others	3%	14,440.00	433.20
	3. 1131711 lefilTiati fritifi		04/12/1998	Others	3%	258,840.00	7,765.20
	Total				788,744.00	23,662.32

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Page : 1

Figure B.16. Withholding Tax Report.

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APPENDIX C

SECURITY AND CONTROL

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 representatives of user departments particularly from the accounting department should participate in the development and also should be involved in the decision making. The detail control is presented in Figure C.1.

SYSTEM DEVELOPMENT AND MAINTENANCE CONTROLS

(a)   Authorization of the new system and changes

(b)   System development life cycle methodology

(c)   Written specifications

(d)   User, internal auditor, external auditor participation

(e)   Formal Testing and approval

(f)   Steering committee

Figure C.1. System Development and Maintenance Controls.

System Documentation Controls

Accounting system should be documented adequately to provide a basis for effective operation, use, audit, and possible future system enhancement. So the project team has already prepared system document for later use. It is a good evidence that management takes seriously the need for adequate documentation. These controls mitigate the risks that personnel are not properly trained, the system does not meet the

organization's and users' needs, and the system resources are used ineffectively. The control details are shown in Figure C.2.

```
┌─────────────────────────────────────────────────────────┐
│          SYSTEM DOCUMENTATION CONTROLS                  │
├─────────────────────────────────────────────────────────┤
│                                                         │
│          (a)    Preparation standards                   │
│                                                         │
│          (b)    Approval standards                      │
│                                                         │
│          (c)    Maintenance standards                   │
│                                                         │
│          (d)    Dissemination standards                 │
│                                                         │
│                                                         │
└─────────────────────────────────────────────────────────┘
```

Figure C.2. System Documentation Controls.

Data Base Controls

The information within the data base must be restricted to prevent unauthorized changes from occurring and to prevent unauthorized access to confidential information. Most data base management systems have their own security subsystems that provide for user authorization. The data base administrator (DBA) specifies which users have access to what data and what operations users may perform on what data.

Input Controls

Input controls deal with the authorization, capture of, entry, and verification of input data. In this section, it covers to data and file maintenance.

With authorization controls, the authority is delegated to users at different levels by upper management. Specific authorization applies to one and only one transaction and is granted on a case-by-case basis.

```
┌─────────────────────────────────────────────────────┐
│              DATA BASE CONTROLS                      │
├─────────────────────────────────────────────────────┤
│                                                     │
│        (a)    User Authentication                   │
│                                                     │
│        (b)    Allowable user functions              │
│                                                     │
│        (c)    Creation of audit trail               │
│                                                     │
│        (d)    Logical views                         │
│                                                     │
│        (e)    Data encryption                       │
│                                                     │
└─────────────────────────────────────────────────────┘
```

Figure C.3. Data Base Controls.

Data capture controls, data can be recovered from source documents in the event that subsequent, processed versions of the data are lost, damaged, or destroyed. Source documents also provide a starting point for verification. In this project, now we put more interest in direct electronic data capture in favor of source documents. Direct electronic entry saves time and may help reduce transcription errors. But the data may be lost if the system goes down soon after entry or if a secondary storage device malfunctions before the records can be backed up. To solve this problem, redundant storage may be needed. At the same time we still have the source documents for reference.

Data Verification Controls: most programs provide for some forms of program editing or error checking. Some common types of editing checks are as follows:

(a)   Valid data type

(b)   Valid field length

(c)   Valid combination of fields

（d）　Completeness of data

（e）　Valid account number or code

（f）　Reasonable numeric amounts

Processing Controls

The purposes of processing controls are that no transaction processed more than one and all processing are accurate and complete.

Written Procedure, can guide the staffs and ensure uniform, effective, and efficient processing of data. Procedure should be prepared for each compliance. Moreover, it should be prepared for each step in every manual processing operation. Procedure manuals should be made available to all relevant personnel.

Pre-numbered Documents, such as invoice order and check, are used extensively to keep track of transactions and to ensure that all authorized transactions are processed once and only once. Pre-numbered documents, along with proper form control, help reduce the risk of insertion of unauthorized transactions.

Visual Checking and Document Audits: Visual checking usually depends on experienced people for spotting data that *"look wrong"*. Document audits verify all the data contained in the document set.

Redundant Processing is an advantage in real-time system in which there is a loss of data caused by the system's malfunction.

Input Controls

(a) Authorization Controls

      General authorizations

      Specific authorizations

      Authorization Codes

(b) Data Capture Controls

      Source documents

      Electronic data capture

      Redundant storage devices

(c) Data Entry Controls

      Screen Input prompts

      Screen Menus

(d) Data Verification Controls

      Valid data type

      Valid field length

      Valid combination of fields

      Completeness of data

      Valid Account number or code

      Reasonableness of number amounts

Figure C.4. Input Controls.

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Processing Controls

(a)   Written Procedures

(b)   Pre-numbered Documents

(c)   Visual Checking

(d)   Document Audits

(e)   Redundant Processing

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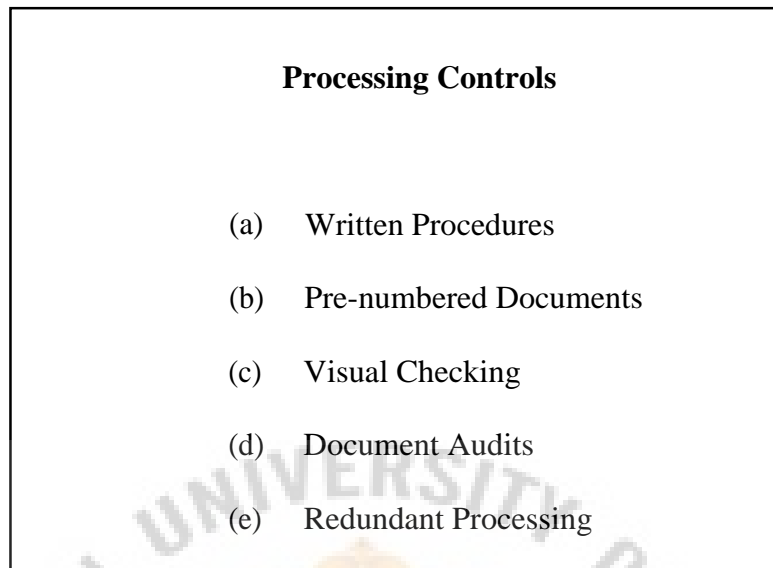
Figure C.5. Processing Controls.

File Controls

File controls are used to protect stored data from unauthorized access, improper processing, illegal modification, loss, and damage.

File Custody Controls, the custody of files should be assigned to a librarian who releases it to authorized users. Files also should be stored in a location that is free from fire and flood hazards. Responsibility for file maintenance should be assigned to appropriate individuals.

File Processing Controls are to ensure that the correct file is used in processing operation and that it is used in the correct manner. In the real-time processing, the before and after-images of records should be maintained. In system with the complicated data structures, utility programs should be run routinely to verify the integrity of index files, pointers, and other linkages.

File Backup Controls, should be performed routinely, and the backup copies should be stored in a secure, off-site location. The backup medium should provide the

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appropriate readability characteristics and should minimize costs. So the magnetic tape is the most popular machine-readable backup medium. Diskette is another alternative medium when the data is small. The frequency of backup operation depends on the volatility of the files in question and reloading data in the event of data loss or damage.
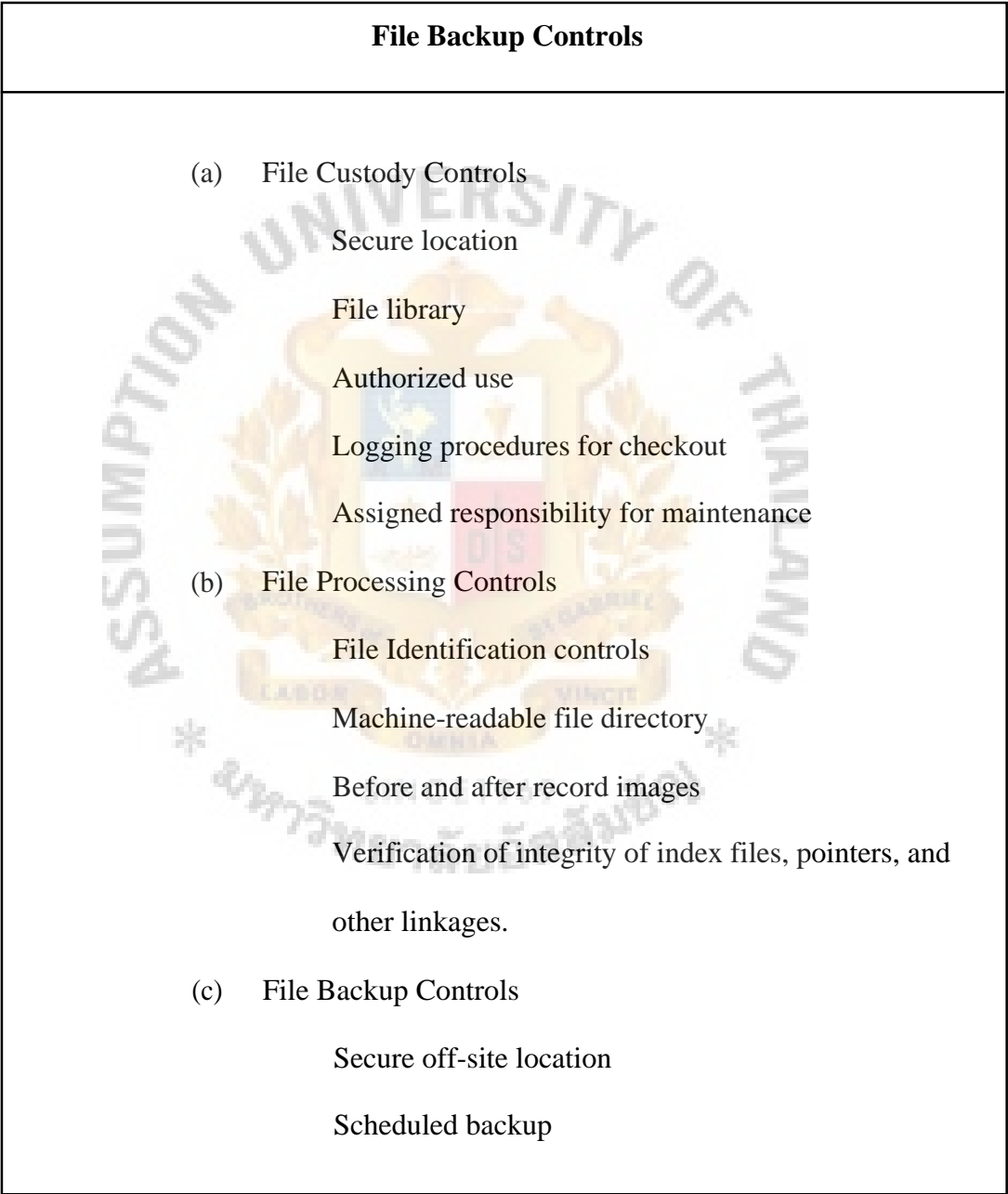

File Backup Controls

(a)　File Custody Controls

　　　　Secure location

　　　　File library

　　　　Authorized use

　　　　Logging procedures for checkout

　　　　Assigned responsibility for maintenance

(b)　File Processing Controls

　　　　File Identification controls

　　　　Machine-readable file directory

　　　　Before and after record images

　　　　Verification of integrity of index files, pointers, and

　　　　other linkages.

(c)　File Backup Controls

　　　　Secure off-site location

　　　　Scheduled backup

Figure C.6. File Backup Controls.

Output Controls

Output controls are to ensure that output from the accounting system is complete, accurate, and appropriately used. Printed output produced by a computer should bear header and trailer pages. The header page should indicate the date of processing, the running number, and the title of the output. The trailer page should show the message *"End of Report",* the number of pages of output and the summary figures In the case of output displayed in a screen, trailer screen forms can serve the same purpose.

Output Controls
(a) Complete ness and Accuracy Controls
Header and Trailer
(b) Output Security Controls
Minimum number of copies
Authorized procedures for disposal of excess output
Privacy of terminals
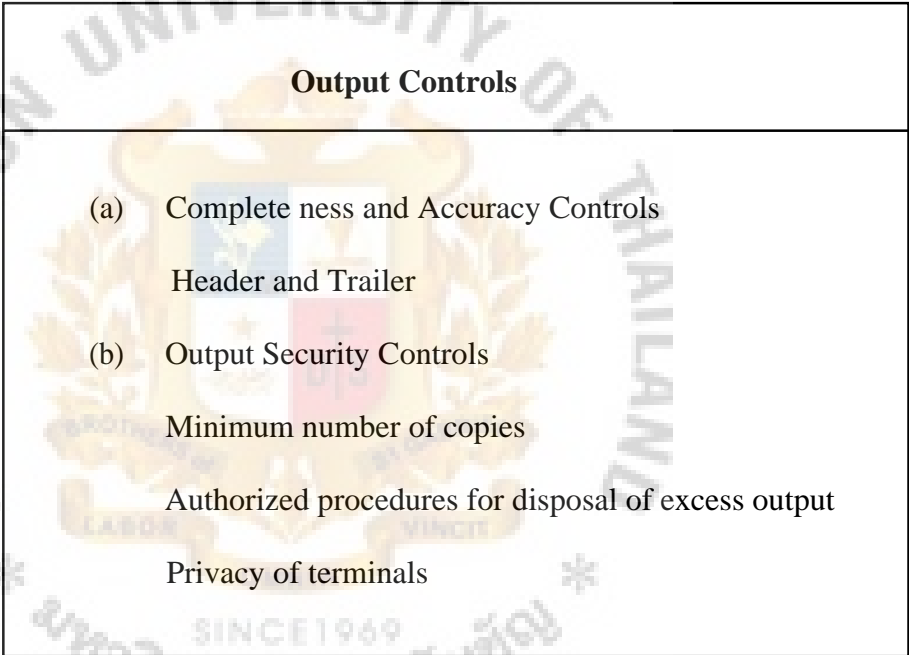
Figure C.7. Output Controls.

APPENDIX D

GENERAL LEDGER SYSTEM CIRCUMSTANCES

In accounting environment, there are many technical terms used in accounting system. For better understanding, the definitions and circumstances of general key words will be described.

Budgeting

Budgeting is the phase of accounting that deals with the preparation of a plan or forecast of future operations. Its primary function is to provide management with a projection of the activities necessary to reach established goals.

Accounts Receivable

Accounts receivable arises from the sales of goods and services. Although businesses would prefer to collect the sales price at the time of sales, experience has shown that extending credit can sometimes significantly increase revenue and net income. No business wants to extend credit to a customer who is unlikely to pay the account when due.

Accounts Payable

Accounts Payable are amounts owed to creditors for the purchase of merchandise, supplies, and services in the normal course of business.

The Balance Sheet

A financial statement that shows the financial status of a business entity at a particular instant time. It is always dated. Also, the left and the right sides are always kept in balance. The element in the balance sheet form the balance sheet equation:

$$\text{Assets} \quad = \quad \text{Liabilities} + \text{Owner's equity}$$

Assets

Assets are economic resources that are expected to benefit future cash inflows or help reduce future cash outflows.

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Liabilities

Liabilities are economics obligations of the organization to outsiders, or claims against its assets by outsiders.

Owners' equity

Owners' equity is the residual interest in, or remaining claims against, the organization's assets after deducting liabilities. When the business is first started, the owners' equity is measured by the total amount invested by the owners.

$$\text{Owners' equity} = \text{Assets} - \text{Liabilities}$$

Depreciation

Depreciation is the systematic allocation of the acquisition cost of long-lived or fixed assets to the expense accounts of particular period that benefit from the use of the assets. As the asset is being used, more and more of its original cost is transferred from an asset account to an expense account.

Useful life (economic life)

Useful life 'is the time period over which an asset is depreciated.

Income Statement

Income Statement is a report of all revenues and expenses pertaining to a specific time period. It measures performance, in terms of revenues and expenses, over a span of time, whether it be a month, a quarter, or longer. Therefore the income statement must always indicate the exact period covered.

Net income

Net Income is the famous "bottom line" on an income statement — the remainder after all expenses have been deducted from revenue.

The balance sheet provides a snapshot of an entity's financial position at an instant of time. In contrast, the income statement provides more of a moving picture of events over a span of time.

Journalizing Transactions

Journalizing is the process of entering transactions into the journal. A journal entry is an analysis of all the effects of a single transaction on the various accounts, uslially accompanied by an explanation. In each transaction, this analysis identifies the accounts to be debited and credited.

Chart of Accounts

Chart of Account is a numbered or coded list of all account titles which to make recording and understanding recording easier. Although an outsiders will not know what each code means without referring to the chart of account, accounting employees become so familiar with the various codes that they think, talk, and write in terms of account numbers instead of account names.

Long-lived assets

Long-lived assets are resources that are held for an extended time, such as land, buildings, equipment, natural resources, and patent. These help produce revenues over many periods by facilitating the production and sale of goods or services to customers.

Tangible assets (fixed assets)

Tangible assets mean the physical items that can be seen and touched, such as land, natural resources, building, and equipment.

Intangible assets

Intangible assets mean rights or economic benefits, such as franchises, patents, trademarks, copyrights, and goodwill that are not physical in nature.

Expenditures

Expenditures are purchases of goods or services, whether for cash or on credit. Asset related expenditures that will benefit more than the current accounting year are capitalized (that is, added to an asset account) such capital expenditures add new fixed assets or increase the capacity, efficiency, or useful life of an existing fixed asset. In contrast, expenditures that provide a benefit lasting one year or less are charged as expenses in the current year. (Granof and Bell 1992)

APPENDIX E

Y2K PROBLEM

The Year 2000 Problem is both trivial and overwhelming at the same time. Unless fixed in time, almost all older mainframe computer software systems, many PCs and software programs, and millions (perhaps billions) of embedded semiconductor chips potentially could crash on January 1,2000 simply because the new year will appear as *"00"* in the standard two-digit year field and will be read erroneously as 1900. Undoubtedly, most of the systems will be fixed in time. But even if only a small percentage fail, the resulting disruptions are bound to cause some trouble, and worse if the minority of non-compliant Y2K systems have an adverse Domino Effect on compliant ones. The Year 2000 problem is easy enough to describe. Most computer systems represent dates in the format MMDDYY, where 12/31/98 represents December 31, 1998. The century is not represented in the date and we simply assume that 12/31/98 refers to a date in the twentieth century. Most computer programs that perform arithmetic and logic operations on these date fields use only the last two digits of the year when they make their calculations. As' long as all the dates in question are in the same century this works fine. Problems arise however when the century changes. Subtracting 12/31/98 from 12/31/00 to determine someone's age for example, does not produce the correct answer of 2. It actually produces a result of -98.

This problem alone poses a serious threat. What happens when major businesses can't depend on their financial records? Testing is much more time-consuming than repairing non-compliant code. This might not be a problem for some stand-alone systems. However, the majority of software programs are part of a bigger corporate, industrial, national, and even global network. They often depend on input information generated by other programs. They must all remain compatible as they are fixed. There is no single way of fixing existing applications and databases. (Wilson, Tim, and staff http://wwwyanew.com)

There are two common approaches:

(1)   The most obvious is to add two digits to the year field.

(2)   **The windowing technique analyzes the two-digit year field and automatically recognizes years under a specified number (say 60) as being 20yy, while years over are 19yy. Windowing is not always feasible, e.g., when birth dates are part of a database.**

All Y2K fixes require repetitive, time-consuming testing each time an application is modified to be Y2K compliant to make sure it works with linked internal and customer-based and vendor-based applications that might have been repaired with a different technique. Also known as the Y2K problem, IT departments everywhere are confronting what they can no longer deny: big things can and will happen to every sort of software application when the calendar year 2000 arrives. (William, Mullen, Christan, and Dobbins http://www.y2k.com)

The magnitude of the Problem

Although the problem is easy to describe, it is very difficult to solve for a number of reasons, and can be likened to looking for a needle in a haystack. The visual image of looking through hay is not difficult to conjure up but the painstaking execution of the solution is awesome. The sheer size of the problem is the first of these. Dates are everywhere, which means that all program code must be examined to determine if a change is necessary. Most large corporations and government agencies have thousands of programs containing millions of lines of code.

The awareness of Y2K Problem

We conducted division level meetings throughout the systems organization in

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order to raise the awareness level. As part of this, we ran pilots, where representative programs were selected, and all time used to modify them for date changes was logged and accounted for. From our actual experience, individual divisions could then extrapolate from the pilot code to what they would need to allocate and only then did the magnitude of the problem begin to surface. At a time of downsizing and streamlining, and trying to do more with less, came a project with *"no perceived benefit"* to our user community. For the hundreds of workyear we must expend there is no added functionality. The divisions are currently examining their software and establishing schedules and resource estimates for making the coding changes. Those people that were unaware of the problem or skeptical of the effort that will be required were gradually converted to a different viewpoint when they were presented with the long list of activities that must be undertaken to solve this problem. A key piece of our strategy was to create a *"sense of urgency"*.

Solving the Year 2000 problem is not major *"rocket science"*. **It is a** combination of common sense and, more importantly, very hard work. While there are a myriad of software products which promise to solve your problems overnight, the practices involved in the development of your *"legacy"* systems conspire to thwart any automated process. The successful companies will be those which allocate resources early on and identify the significant problems. The really successful companies will be those who also commit to serious testing, to solid standards for the future and to eliminating the problems once and for all.

Beyond the securities trading firm, all activities are involved with Stock Exchange of Thailand (SET). Certainly, Y2K problem is in the duty of SET to control every member to perform correctly. SET has established the standard and regulations to solve

the Y2K problem. It is a *"must"* activity that all members must follow. There are six steps that all SET members must report their progress and performance periodically.

(1) Organization Awareness

This section aims to show that company is alert to the Year 2000 Problem. So the company must perform as follows:

(a)　Verification an organization awareness

(b)　The management support and setting down their names

(c)　Setting Y2K Steering Committee from each department in the organization such as Finance & Accounting, Human Resource, Information Technology and so on.

(d)　Setting the project team to performY2K problem solving.

(e)　To prepare organization chart and job description of every member in a team.

(f)　Setting internal auditor or compliance officer to ensure that the company has performed to the predefined plan and report to the top management monthly.

(g)　To define Y2K plan in the condition of limited time, budget, and personnel.

(h)　To monitor the progress of Y2K problem solving.

(2) Assessment

Because the Y2K problem has a wide side effect, assessment is one of the important steps for completeness solving. So assessment should specify the problem clearly including its affection. The best way is to assess each system as follows:

(a) **Inventory**

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Inventory of workgroup will be verified carefully by hardware, embedded system, operating system, network operating system, database management system, application software and developed software. System flow will be created and marked up for some affected parts.

(b) Impact Analysis

The analysis will be directly reported to management level as follows:

(1) Level of impact and potential

(2) The ability of company to control problem

(3) The procedures when the problem occurs

(4) The law and regulation that the company will be responsible for

(5) The business damage and cost

(6) The ease and hardship to get rid of the problem

(7) The company image

(c) Assessment by system

Critical system is the major businesses system of the company that will be the causes of company damage if they are affected from Y2K problem. In addition, it will damage the outsiders such as the investors, Stock Exchange of Thailand (SET), Thailand Securities Depository Company Limited for Depositors (TSD).

List of Critical System of common securities company

(1) Front Office System

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(2)   Back Office System

(3)   Registrar System

(4)   Bill of Exchange System

(5)   General Ledger System

(d) Renovation / Resolution

(1)   Action Plan

(2)   Methodology

(3)   Appropriate personnel

(4)   Consultant

(5)   Record for Updating / Cancellation / Correction

(e) Testing / Validation

(1)   Master Test Plan of every system with specified date,

time, place, responsibility center, and related people.

(2)   Test Script

(3)   Tools in testing

(4)   Record and assure test result

(5)   Testing

        (5.1) Software Unit Testing (Developed Software)

        (5.2) Software Integration Testing

        (5.3) System Acceptance Testing

        (5.4) End-to-End Testing

(6)   Backup & Restore Test

(f) Contingency Plan

(1)   To anticipate the problem may be occurs

(2)   To assess the risk

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(3)　To set up recovery system center

(4)　To collect data details such as source code, database, file organization, file structure, database structure, data flow diagram.

(5)　To prior the essential recovery

(6)　Daily Backup and System Backup

(7)　Testing the contingency plan

(8)　To revise and update the contingency plan

(9)　Training the users

(10)　Contingency Plan Report for management level

Implementation

The company has many post-tested devices and systems so it is very important to implement them for business survival. So the company must perform as follows:

(1)　Installation

Installation of the system such as Operating System, Network Operating System, Database Management System, Backup System include the target date

(2)　Monitor

The continuous monitoring will be taken at least 15 days after implementing the new system and must record the results monthly.

(3)　Configuration Management

There should be standardization to ensure that the updating / adding devices and system follow the Stock Exchange of Thailand Standard and regulation.

(4) Training

The user manual and training plan for the new system.

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