



# AN ELECTRONIC DOCUMENT HANDLING SYSTEM FOR A WHOLESALE COMPANY

by

Mr. Pol Sobhakvichitr

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

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

November, 2000



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Project Title            An Electronic Document Handling System for A Wholesale Company

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Academic Year        November 2000

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

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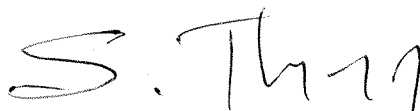
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## ABSTRACT

Nowadays computerized systems provide the communication and analytic power that firms need for conducting trade and managing businesses. The power of computer hardware and software are available to support management decision-making which helps the firm in strategic planning.

The main objective of the development is to create a new system that allows the company to have more opportunity for growth and expansion by the computerized system. The project focuses on designing a new system that improve the existing operation of the company data and document control system instead of using manual operation with standalone computers.

The proposed system is developed in accordance with the systems analysis and design techniques. It covers the user requirements, analysis, design, hardware and software requirement, security and control, cost and benefit analysis, and system implementation. The new system will serve computerized operations and produce input, process and generate output more efficiently.



## ACKNOWLEDGEMENTS

The writer would like to thank to the numerous individuals who contributed to the preparation of this project report. First and foremost he would like to acknowledge the advice and guidance of his advisor for this project, Assoc.Prof.Dr. Suphamit Chittayasothorn, for spending his valuable time on suggestions and advice for the preparation of this project.

Furthermore, the writer would like to offer a very special thanks to Prof.Dr. Srisakdi Charmonman, Air Marshal Dr. Chulit Meesajjee and all other project committee members of the Graduate School of Computer Information Systems at Assumption University, for their approval.

Finally, thanks are extended to Rev.Bro. Phillip Bernard and the writer's family for their love and support and to all others who have helped with the completion of this project.

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# I. INTRODUCTION

## 1.1 Background of the Project

The Electronic Document Handling System is a project development for Emporium Jewelry Factory Co., Ltd. It basically involves dealing directly with various kinds of document processing; including receiving orders, sending out Proforma Invoice, getting the Order Confirmation, processing the Production Order, arranging the Production Quality Control, generating Shipping Documents, etc. The larger the system becomes the more data it would handle too.

At the moment, all the computers are used individually as standalones. As a consequence, there are several problems such as data inaccuracy, too much paper work, data redundancy, lost of data, etc. These cause a great number of errors in business transaction documentation.

The Electronic Document Handling System should be able to solve such problems, to some extents. It will integrate all the data entries into one standard and generate consistent outputs/reports which means that the data will only be entered into the system at one time and then will later generate various reports for different functions accurately with much less paper usage. Moreover, different authorized persons will also have different right levels to access the system database as well. In addition, the management will be able to retrieve ad-hoc reports in order to do the company's planning at anytime.

## 1.2 Project Objectives

The main objectives of this project are to design the **Electronic Document Handling System** from standalone computer to client-server, to produce a computerized database system which contains all the necessary information instead of saving data files in Microsoft

Excel 97 and Microsoft Word 97 format, consisting of the following:-

Analyzing documents including: Proforma Invoice, Production Order, Invoice FOB, Invoice CIF, Request Form: Freight and Insurance Rate, Request Form: Bank Statement, Packing Ticket, Shipping Authorization and Request of Air Way Bill No., Shipment Confirmation Letter, and others.

The main objectives of this project are listed below;

- (1) To analyze the existing system.
- (2) To be able to identify the problems and requirements of users.
- (3) To design and purpose a new integrated system.
- (4) To implement a new integrated system.
- (5) To eliminate any operation flaws and increase the existing system effectiveness and efficiency.
- (6) To increase the security of the system.
- (7) To improve accuracy of the stock system.
- (8) To reduce all redundant data and unnecessary work in the stock system
- (9) To be able to provide the queries and ad-hoc summary reports to the management.

### **1.3 Project Scope**

The Electronic Document Handling System involves the processing of collected information, updating files, issuing official documents, generating summary reports and forecasting sales volume. This project will be developed via Microsoft Access 97, as a tool. The new system will also be an on-line system which provides up-to-date information. Consequently, the developed system will produce more accurate output and faster processing as well as some certain ad-hoc summary reports for the management.

This project will have a coverage of the followings:

- (1) Collecting information about customers, salespersons, employees, products, orders, various forms of documents, production information
- (2) Designing a method to process documents in such a way that all data should come from the same source, and the same data should be entered only one time.
- (3) Designing certain new reports including monthly and annual reports; such as Customer List Report, Production Report, Product Report, Sales Summary sort by Customer, Sales Summary sort by Sales Executive, Sales Summary sort by Country, Sales Summary sort by Shipment Date, Sales Summary sort by Type of Product, Sales Summary sort by Type of Gold, Sales Summary sort by Type of Stones

#### **1.4 Deliverables**

The deliverables of the project are as follows:

- (1) A software application, written by MS-Access 97, developed on PC platform with user manual of the system operation.
- (2) Screen layouts of the software application for user interface.
- (3) Various hard copy layout, as follows:
  - (a) Proforma Invoice
  - (b) Production Order
  - (c) Invoice FOB
  - (d) Invoice CIF
  - (e) Request Form: Freight and Insurance Rate
  - (f) Request Form: Bank Statement

- (g) Packing Ticket
- (h) Shipping Authorization and Request of Air Way Bill No.
- (i) Shipment Confirmation Letter
- (j) Customer List Report
- (k) Production Report
- (l) Product Report
- (m) Sales Summary sort by Customer
- (n) Sales Summary sort by Sales Executive
- (o) Sales Summary sort by Country
- (p) Sales Summary sort by Shipment Date
- (q) Sales Summary sort by Type of Product
- (r) Sales Summary sort by Type of Gold
- (s) Sales Summary sort by Type of Stones



## II. THE EXISTING SYSTEM

### 2.1 Background of the Company

Company: Emporium Jewelry Factory Co., Ltd.

Location: 999 Silom Road, Bangrak, Bangkok 10500

Tel : (662) 2345000 (10 Lines)

Fax : (662) 2346000 (3 Lines)

Product: Yellow Gold, White Gold, Platinum set with Diamonds & Precious Stones.

Emporium Jewelry Factory Co., Ltd. is one of the biggest jewelry manufacturers in Thailand. It has been exporting fine gold, set with diamonds and precious stones, for more than 25 years. Basically, the company is doing wholesaling to the worldwide market through various exhibitions.

There are several departments in Emporium Jewelry Factory Co., Ltd. as shown in Figure 2.1.

#### (1) Export Department

Export Department, basically, handles international wholesale transactions and deals with almost all kinds of document processing; including receiving orders, sending out Proforma Invoices, getting the Order Confirmation, processing the Production Order, arranging the Production Quality Control, generating Shipping Documents, etc.

#### (2) Production Department

Production Department can also be called the "Factory". In general, the Production Department receives Production Orders from the Export Department and then manufactures merchandise according to the order. At

the end of the production, it will calculate the price of each piece of merchandise.

This is because the same merchandises cost differently due to the different gold weight. Even if it is a very minimal difference, gold is relatively expensive and must be charged accordingly. Eventually the production will notify the export department of the finished merchandises including its price.

(3) Packing Division

Packing Division receives “Packing Instruction” from Export Department. It will pack and give the ready-packed merchandises to the Shipping Agent, according to the Packing Instruction.

(4) Financial and Accounting Department

The Financial and Accounting Department deals with all figures in the company such as marking general accounting standard, payroll for all staff, payment for debt, payment for tax. However, this department will not be mentioned in this project.

(5) Marketing Department

Marketing Department is responsible for retail sales, domestically. It mostly handles local trade exhibitions.

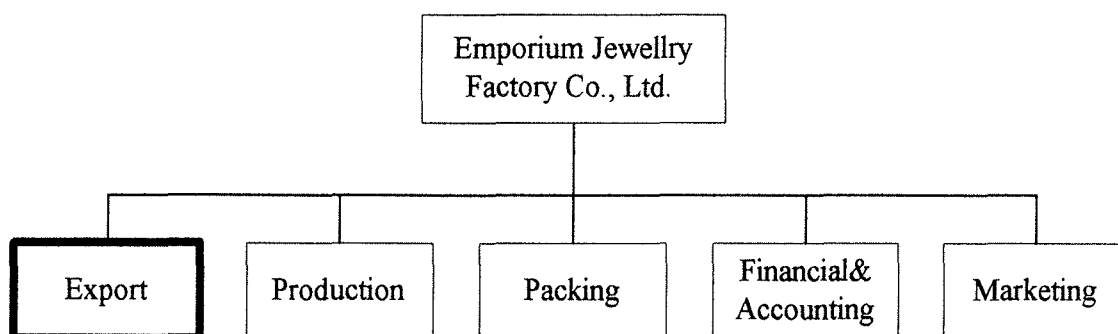


Figure 2.1. Organization Chart.

## **2.2 Existing Business Function**

The existing business functions of Emporium Jewelry Factory Co., Ltd. are partially computerized and can be summarized as follows:

### **Process 1. Accept Order and Generate Proforma Invoice**

During this stage, the salesperson initiates contact with the customer via various media. The customer will place an order via several means; such as phone, fax, e-mail, mail, etc. The salesperson will create Proforma Invoice by using Microsoft Excel 97 and then fax to the customer to request the order confirmation.

### **Process 2. Accept Order Confirmation and Process Production Order**

After the customer confirms the order, the salesperson will make a production order for such the customer and forward it to the production department.

### **Process 3. Receive the Notice of Order Completion and Make an Invoice (FOB)**

After the production is completed, the production department will notify the export department. The export department will also obtain the product price and make an Invoice (FOB) in order to request the cost of freight and insurance from the Shipping Agent.

### **Process 4. Make an Invoice (CIF) and request for payment**

When the export department receives cost of freight and insurance from Shipping Agent, it will generate an Invoice (CIF) and send to the customer in order to request for payment.

### **Process 5. Confirm the Payment and Prepare to Ship the Merchandise**

When the export department receives the copy of Money Transfer from the customer, it will ask for the bank statement from the local bank to verify the payment. Afterward, it will authorize the packing instruction to the Packing Division. Moreover it will also instruct the

Shipping Agent to get the goods.

#### Process 6. Confirm the Shipment

When the goods have been shipped to the customer, the export department will verify the shipment with the customer via shipping confirmation along with the Air Way Bill No. that is obtained from the Shipping Agent.

#### Process 7. Make Reports

At the end of each month, the export department will make a summary report of the total monthly sales to be submitted to the management.

### **2.3 Current Problems and Area for Improvements**

#### **2.3.1 Current Problems**

The current problems of the existing manual system can be summarized as follows:

- (1) Staffs take much time for the following tasks
  - (a) Checking availability of product after accepting order from customers.
  - (b) Calculating the remaining quantity of each product and minimum safety stock of the products.
  - (c) Preparing reordered product report for purchasing department.
  - (d) Preparing reports for management team.
- (2) Human errors can occur from:
  - (a) Counting quantity of products.
  - (b) Calculating quantity of remaining products.
  - (c) Preparing documents
  - (d) Forgetting to record sold and or received products.
  - (e) Products stolen from the warehouse
- (3) The quantity of each product is not up-to-date.



All the products will be checked for minimum safety stock until the end of the day. This might cause inventory shortage.

(4) Lack of good planning

The calculation of the products needed is done manually and randomly. There is no systematic planning, so the information base is almost useless for decision making, forecasting, and controlling process.

### 2.3.2 Areas for Improvement

- (1) The improvement of the inventory information system will prepare calculation of stock automatically and correctly by using computer-based system. the staffs can check the availability of product from the inventory system. They also prepare all the reports quickly and easily. Thus, the proposed system takes less time for doing those tasks and also satisfies customers with better services.
- (2) Inventory shortages will be reduced. The staffs can retrieve inventory information from the new system. Hence, they can view the level of current stock of each product at any time and then make a reorder report immediately.
- (3) The organization can reduce human labor and human errors by using the new system.
- (4) The daily work is more systematic. The new system provides more reliable and correct information for decision-making and forecasting for the management team.

### III. THE PROPOSED SYSTEM

#### 3.1 User Requirements

##### Output Requirements

- (1) Customer List
- (2) Proforma Invoice
- (3) Production Order
- (4) Invoice FOB
- (5) Invoice CIF
- (6) Request Form: Freight and Insurance Rate
- (7) Request Form: Bank Statement
- (8) Packing Ticket
- (9) Shipping Authorization and Request of Air Way Bill No.
- (10) Shipment Confirmation Letter
- (11) Customer List Report
- (12) Production Report
- (13) Product Report
- (14) Sales Summary sort by Customer
- (15) Sales Summary sort by Sales Executive(s)
- (16) Sales Summary sort by Country
- (17) Sales Summary sort by Shipment Date
- (18) Sales Summary sort by Type of Product
- (19) Sales Summary sort by Type of Gold
- (20) Sales Summary sort by Type of Stones

## 3.2 System Design

### 3.2.1 Functions of Purposed System

One of the project development processes is that the analyst needs to gather opinions from system users, system owners, and all other parties who will somehow utilize the purposed system.

The functions of the proposed system could be designed, as follows:

#### Process 1. Accept order and generate Proforma Invoice

During this stage, the salesperson initiates contact with the customer via various media. The customer will place an order via several means; such as fax, mail, e-mail, phone, etc. The salesperson will enter the detail of the order into the system. It will basically contain the information regarding the customer, salesperson and details of the order. Afterward the Proforma Invoice will automatically be generated. And the salesperson will fax such the Proforma Invoice to the customer in order to inquire for the order confirmation.

#### Process 2. Accept Order Confirmation and process Production Order

After the customer confirms the order, the salesperson will make a production order for the customer and forward it to the production department. This particular production order will also be automatically created by the system.

#### Process 3. Receive the notice of order completion and make an Invoice (FOB).

After the production is completed, the production department will notify the export department. The export department will also obtain the product price. The salesperson will enter the price of each product into the system in order to obtain an Invoice (FOB). The salesperson will forward the Invoice (FOB) to the Shipping Agent in order to inquire about the cost of freight and insurance.

Process 4. Make an Invoice (CIF) and request for payment.

When the export department receives the cost of freight and insurance from the Shipping Agent, the salesperson it will enter such cost of freight and insurance and command the system. The application will retrieve data from the Invoice (FOB) and the inform of freight and insurance cost and then generate Invoice (CIF). The salesperson sends Invoice (CIF) to the customer in order to request payment.

Process 5. Confirm the payment and prepare to ship the merchandise.

When the export department receives the copy of Money Transfer from the customer, it will enter the No. of Money Transfer and the system will automatically produce the "Bank Statement Request Form". This document will be sent to the local bank in order to request verification of the payment.

After the company receives the proper bank statement of the Money Transfer, the salesperson will enter the data to the system, and the system will generate "Packing Instruction" to the Packing Division and "Shipping Instruction" to the Shipping Agent. Eventually the goods will be shipped to the customer.

Process 6. Confirm the Shipment.

When the goods has been shipped to the customer, the Shipping Agent will send the company the Air Way Bill No. of the shipment. The salesperson will enter this Air Way Bill No. into the system and it will finally generate the shipment confirmation letter automatically. This document will be sent to the customer in order to confirm the shipment.

Process 7. Generate Summaries

At the end of each month, the export department can print out the summaries of the monthly sales as follows:



- (1) Sales Summary sort by Customer
- (2) Sales Summary sort by Sales Executive
- (3) Sales Summary sort by Country
- (4) Sales Summary sort by Shipment Date
- (5) Sales Summary sort by Type of Product
- (6) Sales Summary sort by Type of Gold
- (7) Sales Summary sort by Type of Stones

#### Process 8. Generate Ad-Hoc Reports

At anytime of the month, the management can request Ad-Hoc reports which are up-to-date to the time required. These summaries include:

- (1) Customer List Report
- (2) Production Report
- (3) Product Report
- (4) Sales Summary sort by Customer
- (5) Sales Summary sort by Sales Executive
- (6) Sales Summary sort by Country
- (7) Sales Summary sort by Shipment Date
- (8) Sales Summary sort by Type of Product
- (9) Sales Summary sort by Type of Gold
- (10) Sales Summary sort by Type of Stones

#### 3.2.2 Data Dictionary

The Data dictionary defines each data and procedure in the data flow diagram.

Data dictionary is represented in Appendix E.

#### 3.2.3 Process Specification

The process specification provides a further description of element-level processes as shown in Appendix D.

#### 3.2.4 User Interface Design

The user interface designs are the design of the entire interface screens for the proposed system. The user interface design is represented in Appendix C.

#### 3.2.5 Output Reports

The output reports are the reports that are generated by the proposed system. The output reports are represented in Appendix C.

#### 3.2.6 File Layout

The design of files includes decisions about the nature and content of the files itself. It shows field name, type of field name, length of field name, and number of decimal of the field name. The file layout is represented in Appendix F.

### 3.3 Hardware and Software Requirements

The proposed specification consists of two parts that are hardware and software specifications.

#### 3.3.1 Hardware Specification

- (1) File server (1 set)
  - (a) CPU Intel Pentium III 750 Mhz
  - (b) SD RAM 128 MB Bus 100 Mhz
  - (c) Cache memory 512 MB
  - (d) Hard Disk 8.3 GB Seagate
  - (e) Medium Tower Case
  - (f) Disk Drive 1.44 MB
  - (g) CD ROM 40x

- (h) Monitor 15" Super VGA Color-digital
- (i) Keyboard 104 keys support Windows 95
- (2) Workstation (4 sets)
  - (a) CPU Intel Pentium III 500 Mhz
  - (b) RAM 64 MB
  - (c) Hard disk 3.2 GB seagate
  - (d) Mini Tower Case
  - (e) Disk Drive 1.44 MB
  - (f) CD ROM 32x
  - (g) Monitor 14" SVGA
  - (h) Keyboard 104 keys support Windows 95
- (3) Laser Printer HP 6P (4 sets)
- (4) UPS (Uninterruptible Power Supply) 1KVA 1 set
- (5) Network Peripheral
  - (a) UTP
  - (b) Lanbit Multi Switching (Hub) 12port
  - (c) Ethernet LAN card 10/100 Mbps.

### 3.3.2 Software Requirements

- (1) Network operation system
  - (a) Microsoft Windows NT Ver. 4.0
- (2) Operation system
  - (a) Microsoft Windows 98
- (3) System Development software
  - (a) Microsoft Access 97

(b) Microsoft Office 97

### 3.4 Network Specification

This network will be installed in the Export Department where the users work. The objective of network connection is sharing resources that are database or information, application programs, and hardware. This will allow multiple users to access resources at the same period of time. This system is designed by using Bus topology that uses Hub to be the center of the connecting workstations (see Figure 3.2).

The components of the network configuration are defined as follows:

- (1) Network Topology : Bus Topology
- (2) Interconnection : Hub 12 ports
- (3) Wiring and cable : UTP 4 pairs CAT-5
- (4) Server : PCs File Server

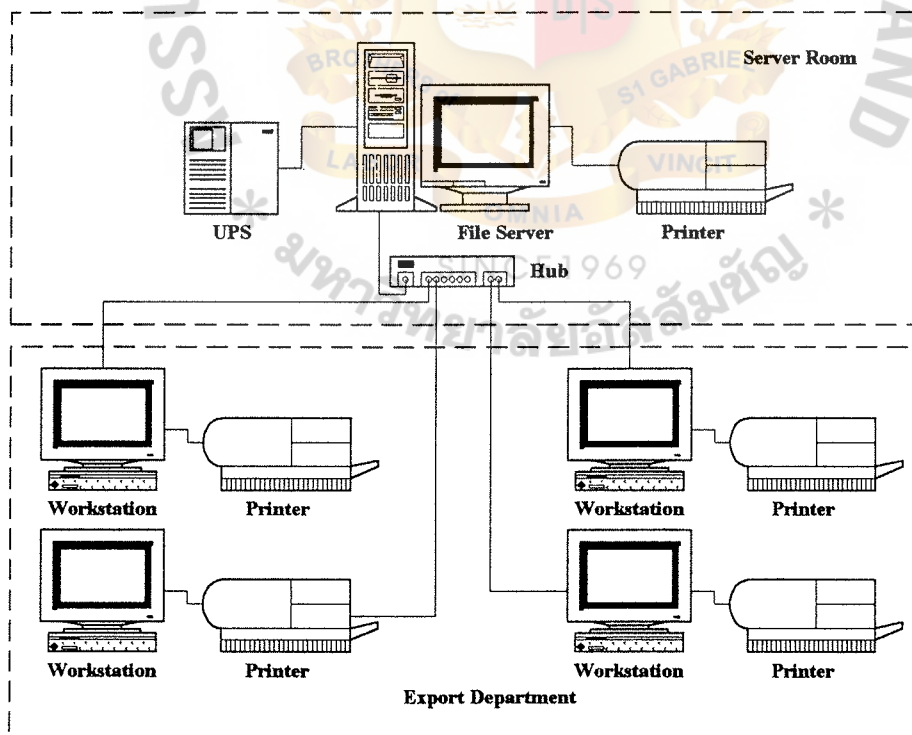


Figure 3.1. Network Configuration.



- (5) Workstation : Pcs
- (6) Network operation : Microsoft Windows NT
- (7) Network interface card

### 3.5 Security and Control

#### 3.5.1 User-Oriented Access Control

- (1) The user identifiers (ID) and passwords are assigned to authorized persons.  
When a user logs on, the system asks for both a user ID and a password.
- (2) The system allows a user to log on only if that user's ID is known to the system and if the user knows the password associated with the system with that ID.
- (3) The user ID and password can determine the privileges accorded to the user.  
A few users (such as manager and assistant manager) have supervisory or super user status that the system allows to read files and to perform functions such as price list modification and product name deletion.

#### 3.5.2 Physical Security

- (1) The failure of the main electricity supply causes interruption to the function of the computer facility or telecommunication network. UPS (Uninterruptible Power Supply) is used to supply power instead of the main electricity supply.
- (2) Special detectors combined with removal or extractor fans and filters in the computer room and surrounding area are installed in order to protect against smoke and gas.
- (3) The staff working in the computer room are not allowed to eat, drink or smoke. These actions can cause damage to the computer

### 3.5.3 Other Security

- (1) Staff have to back up the important information everyday in order to prevent the damage in the hard disk.
- (2) Data correction must be made immediately after recovering errors on report.
- (3) The historical and current data reports must be kept in categorized file for managerial planning.
- (4) A virus-checking program will be installed for scanning virus before running any program. Service information system will update the virus-checking program every month.

### 3.6 System Cost evaluation and comparison

#### 3.6.1 Cost Analysis

Basically there are two type of costs taken into consideration, which are tangible and intangible cost; Tangible costs are cost of hardware, software, other equipments, furniture, and employee salaries. In order to be more cost efficient, in the long run period, the final analysis will show how computer technologies increase profit as well as produce better performance.

#### 3.6.2 Benefit Analysis

In general, with the proposed system, the possibility of having data redundancy, data inconsistency, high labor cost will be eliminated. These benefits can be categorized as follows:

##### Intangible Benefits

- (1) Reduction of volume of paper produced and stationary usage
- (2) Reduction of human labour cost
- (3) Reduction of fringe benefits

Table 3.1. Cost of Current System, Baht.

Cost Items	Years				
	1	2	3	4	5
Cost of Labor	970,000	1,309,500	1,767,825	2,386,564	3,221,861
Stationary	50,000	65,000	84,500	109,850	142,805
Utilities	32,000	43,200	58,320	78,732	106,288
Total	1,052,000	1,417,700	1,910,645	2,575,146	3,470,954
Cumulative Cost	1,052,000	2,469,700	4,380,345	6,955,491	10,426,445

Table 3.2. Development Cost of the Proposed System, Baht.

Cost Items	Quantity	Price/Unit	Total Price
Software Development	1 Unit	200,000	200,000
Server computer	1 Unit	10,000	10,000
Desktop computer	4 Units	57,600	230,400
Printer	5 Units	8,000	40,000
UPS	1 Unit	4,800	4,800
HUB	1 Unit	7,000	7,000

Table 3.3. Cost of Proposed System, Baht.

Cost items	Years				
	1	2	3	4	5
Cost of Labor	1,100,000	1,210,000	1,331,000	1,464,100	1,610,510
Stationary	50,000	75,000	112,500	168,750	253,125
Utilities	40,000	60,000	90,000	135,000	202,500
Software Development	200,000	0	0	0	0
Cost of Hardware	58,440	58,440	58,440	58,440	58,440
Maintenance	0	20,000	20,000	20,000	20,000
Total	1,448,440	1,423,440	1,611,940	1,846,290	2,144,575
Cumulative Cost	1,448,440	2,871,880	4,483,820	6,330,110	8,474,685

- (4) Reduction of overtime cost Tangible benefits

#### Tangible Benefits

Tangible benefit of proposed system can be summarized as follows:

- (1) Improving customer goodwill.
- (2) Providing ad hoc reports for the management decision-making.
- (3) Reducing redundant process and data.
- (4) Reducing human error from doing documentation.
- (5) Providing better communication between manager and staff.
- (7) Other departments have better chance to develop their own new systems.
- (8) Future Cost Avoidance.

#### 3.6.4 Breakeven Analysis

The two curves in breakeven analysis shows the comparison of the existing system cost and the proposed system cost. Prior to the Breakeven Point, it shows that the accumulative costs of the proposed system is higher than the existing system. The intersection point of these two curves shows where the accumulative costs of the two systems are at the same level.

Furthermore, after the Breakeven Point, the graph shows that the accumulative costs of the proposed system continue to be lower than the existing system. It shows that the purposed system will be more cost efficient in the long run.

#### 3.6.5 Payback Period

The payback period method shows how and how long both the costs of running the existing system and the proposed system will be recovered. Discounted payback period is calculated based on the fact that a Baht earned today is more valuable than a Baht earned in the future.



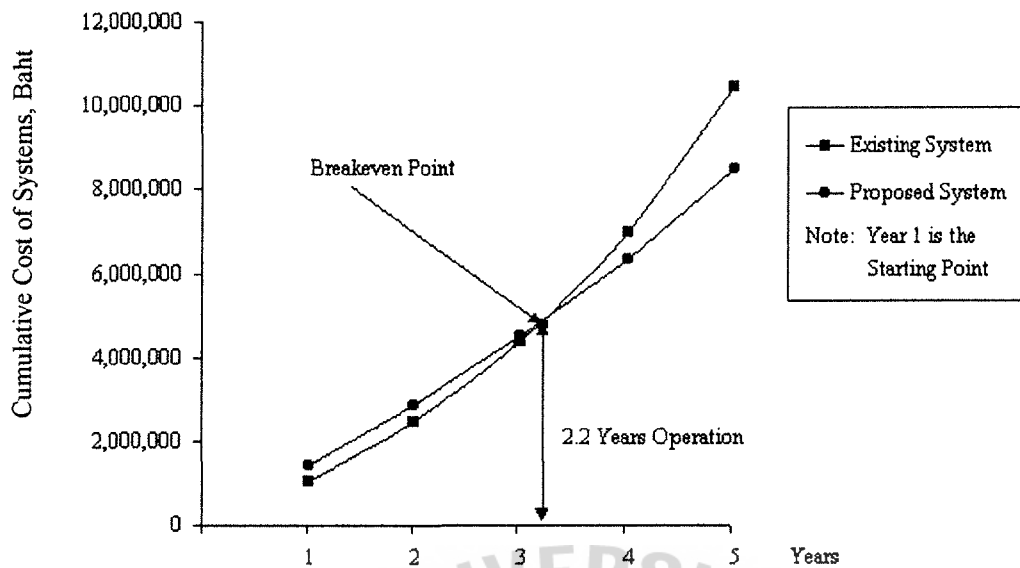


Figure 3.2. Breakeven Point

The present value formula is:  $1 / (1+i)^n$  where  $i$  represents the rate of interest, and  $n$  represents the number of years.

Payback period formula is:

Last year of negative cash flow difference + (Cumulative difference last negative year / Absolute value of cumulative difference)

$$= 3 + [(-103,475) / (-103,475 + 625,381)]$$

$$= 2.802 \text{ Years}$$

Table 3.4. Discounted Payback Matrix, Baht.

Cost items	Years				
	1	2	3	4	5
Current System	1,052,000	1,417,700	1,910,645	2,575,146	3,470,954
Proposed System	1,448,440	1,423,440	1,611,940	1,846,290	2,144,575
Difference	-396,440	-5,740	298,705	728,856	1,326,379
Cumulative Difference	-396,440	-402,180	-103,475	625,381	1,951,760
Discount Rate	0.91	0.83	0.75	0.68	0.62
Discount Difference	-360,760	-4,764	224,029	495,622	822,355
Cumulative Discount Difference	-360,760	-365,525	-141,496	354,126	1,176,481

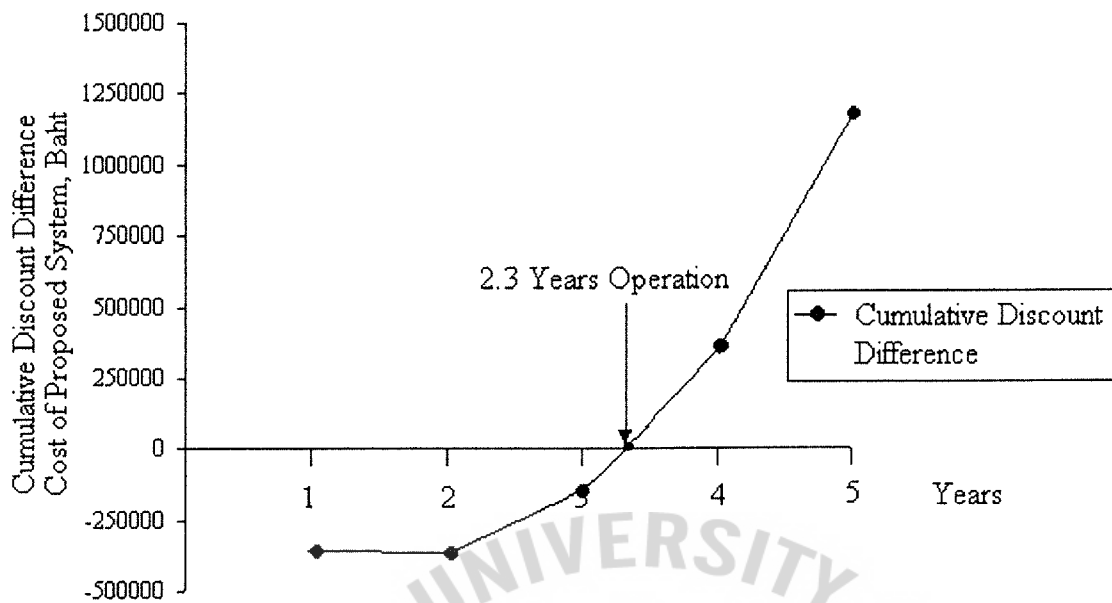


Figure 3.3. Cumulative Discount Difference Cost of Proposed System.

Discounted payback period formula is:

Last year of negative cash flow discount difference + (Cumulative discount difference last negative year / Absolute value of cumulative discount difference)

$$= 3 + [(-141,496) / (-141,496 + 354,126)]$$

$$= 2.334 \text{ Years}$$

Payback period for the project is 2.802 years and discounted payback period for the project is 2.334 years so it is feasible even if the value of the Baht is lower.

$$\text{Return on investment} = 1 / \text{Payback}$$

$$= 1 / 2.334$$

$$= 0.428 \%$$

From the above, the return on investment is 0.428 percent and the net present value (the sum of the discounted difference) is 1,176,481 Baht, which means all cost of development will be recovered.

## IV. PROJECT IMPLEMENTATION

### 4.1 Project Implementation Plan

System implementation is the construction of the new system and the delivery of that system into production (day-to-day operation). The purpose of the system implementation is to build and test a functional system that fulfills business and design requirements and to convert smoothly from the old system to the new system.

The system implementation consists of many activities defined as follows:

#### 4.1.1 Testing

##### (1) Network Testing

Test the new computer networks after we built the network according to the network design requirements.

This activity can be summarized as follows:

- (a) Review the network design requirements outlined in the technical design statement developed during system design.
- (b) Construct and then test new networks.
- (c) Revise network specifications for future reference.

##### (2) Database Testing

This task must immediately precede other programming activities because databases are the resources shared by the computer programs to be written.

This activity can be summarized as follows:

- (a) Review the technical design statement for database design requirements.

- (b) Locate production databases that may contain representative data for testing database tables. Otherwise, generate test data for database tables.
- (c) Build databases per design specifications.
- (d) Load tables with sample data.
- (e) Revise databases schema and store as necessary for future reference.

### (3) Program Testing

Program testing should be defined after the entire program has been written.

This activity can be summarized as follows:

- (a) Review the design specifications.
- (b) Formulate the project team and assign responsibilities.
- (c) Write and document programs and perform unit testing.
- (d) Conduct system testing to ensure all program work properly. If the program does not work correctly or the procedures produces unsatisfactory output, the programmer must debug or rewrite the programs and continue testing until they operate correctly and properly.
- (e) Update the project repository with revised program documentation for future referencing.
- (f) Place the new programs and reusable components in the software library.

#### 4.1.2 Training

Converting to a new system necessitates that system users be trained and provided



with documentation (user manuals) that guide them through using the new system. Group training (2-3 persons per group) is used because it is better to use our time and the first group of trainees (group of management team) can then train several other groups.

This activity can be summarized as follows:

- (1) Collect documentation that may prove useful in developing user documentation and training guides.
- (2) Write user documentation manuals that are easy to understand.
- (3) Review the training needs of the system users.
- (4) Schedule training sessions.
- (5) Conduct training sessions and distribute user documentation.

#### 4.1.3 Conversion

Conversion to the new system from the old system is the significant step. In this system, “parallel conversion” is used. Both the old and new systems are operated for some time. This is done to ensure that all major problems in the new system have been solved before the old system is discarded.

Parallel conversion minimizes the risk of major flaws in the new system causing irreparable harm to the business. Parallel conversion is suitable for the change from the manual system to the computerized system, although it increases the cost of running two systems over some period and consumes more time with double workload of employees. When the staff can run the new system smoothly and all major problems can be solved, the double workloads will be reduced.

## 4.2 Project Implementation Schedule

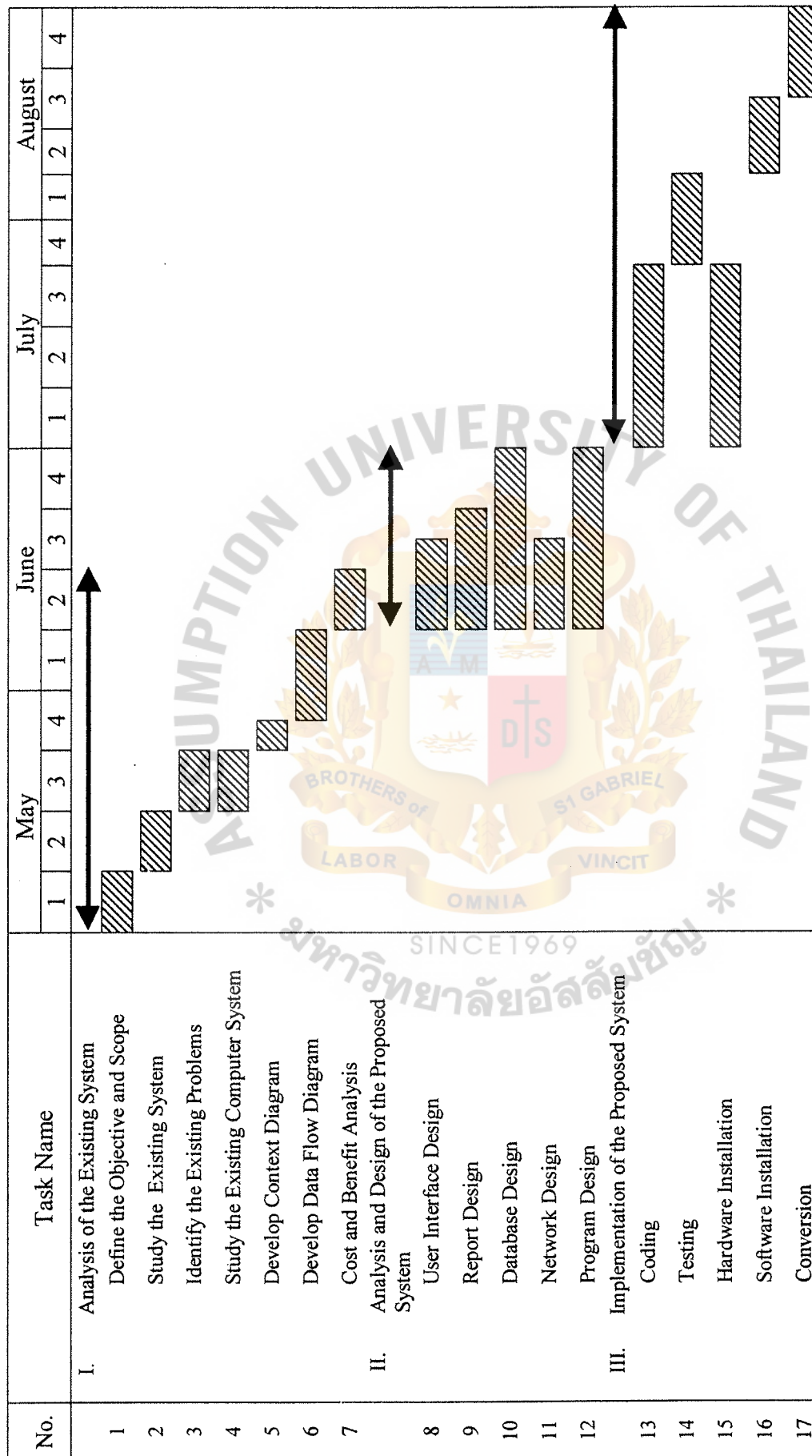


Figure 4.1. Project Plan of Electronic Document Handling System for A Wholesale Company.

## V. CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Conclusions

Emporium Jewelry Factory Co., Ltd. is an international company, which is a wholesaler and retailer of diamond jewelry. In order to compete in the increasing competitive market, the company realizes that two of the several options are to reduce internal costs i.e. production cost and management cost. and to reduce external costs i.e. increasing bargaining power toward suppliers.

However, one of the most practical ways is to engineer the existing system, which definitely will prevent the company from incurring unnecessary costs. The first department to be modified is the export department.

After the preliminary investigation of the current export document processing system, we found that procedures of this system are done manually by staff. The large amount of product types, product quantities and transactions cause the process of daily transactions to be busy and difficult in the manual system. It is even worse because each step of the procedures has to be done separately by each staff. Many times, problems occurred because of too much time spent in operation, or errors from staffs' operations. The problems occurring are, for instance of repetition of orders, taking too much time in checking estimated price of product, and so on. That would cause the problems of work inefficiency, and customer dissatisfaction.

Thus the new system has been proposed for solving all the defined problems. To do this, it requires automation of the system which is providing the database for order processing and product catalogue. The accomplishment of the system is to increase customer satisfaction and reduce costs of managing inventory in the long run by the time the company has expanded.

The system will be developed in-house by using Microsoft Access that is matured technology and easy to use. So it is guaranteed that the system implementation and support will be smoothly operated. The Database management system will bring in the Window NT server to be in use. It is not only functional but also worth investing in.

By all means, the advantages of the proposed system can be summarized as follows:

- (1) “Faster Document Processing” can lead to the “Better Performance in Other Area of Work”.
- (2) “Accurate Documentation” will obviously increase the “Trusty Level of Customer”.
- (3) “Real-time information (Ad-Hoc Report) will enable the “Better Decision of Management” which later will certainly increase the “Good Opportunity for Company Advancement”.
- (4) With the proposed system, the company will be going toward “Universal Standard (ISO9000)” which provides “Good Image of the Company” in the Long Run.
- (5) With the “Proposed Systematic & Standard System”, it will enhance the system to be easier and even more efficient to extend Development to Other Departments.

## **5.2 Degree of Achievement**

With the existing system, salesperson must retrieve data manually from the data storage and make all the documents manually by using computer as a kind of typewriter. There is a big possibility that human errors may occur for example, the mis-typed figures and mis-calculation of prices. So, it requires high skilled person to work with the existing system, whereas a lot of training are also needed. On the other hand, the

proposed system needs the data entry only at one time, and later it will automatically generate the next documents by adding only some fields of data. Moreover, since all the data is kept in the same form on the computer, it is much faster to do reports. Below is the comparison between the two systems:

Table 5.1. Table of System Parameter Comparisons.

Parameter	Existing System	Proposed System
Time to make "Proforma Invoice"	30 - 60 minutes	15 - 30 minutes
Time to make "Production Order"	30 - 60 minutes	5 - 10 minutes
Time to make "Invoice FOB"	30 - 60 minutes	5 - 10 minutes
Time to make "Invoice CIF"	30 - 60 minutes	5 - 10 minutes
Time to make "Freight & Insurance Request"	20 minutes	5 minutes
Time to make "Bank Statement Request"	20 minutes	5 minutes
Time to make "Packing & Shipping Instruction"	20 minutes	5 minutes
Time to make "Shipment Confirmation Letter"	20 minutes	5 minutes
Time to make "Sales Summary"	24 - 30 hours	10 - 15 minutes
Error in Documentation	Often	Rarely
Can other salesperson work for the absent one?	Impossible	Possible
Function of retrieving Ad-Hoc Report	No	Yes

### 5.3 Recommendations

Emporium Jewelry Factory Co., Ltd. Electronic Document Handling System will be developed to be one of the strategic methods of the company to gain competitive advantage over the competitors. This system will not only assist the company to save operation cost but also increase the capacity to carry transactions from suppliers. The system is created purposely to increase customer satisfaction. Such a system would help



the company to reduce paper work, processing time, and human labor.

Because the new system potentially changes employees' operation, most of the employees often resist the new system when it is introduced. In order to make the conversion easier, the management team should make users have positive attitudes to the new system.

The system should be developed to cover other departments of the company. Further systems would help the company to reduce many of the operation costs in the long run. By all means, the Electronic Document Handling System we developed here will be considered to be part of the future system.

Somehow, the company must generate more security system and more training programs. The project development team should open two sessions of training, one for management level and the other for the staff.

For the management level, the training will focus on the sales tracking and report generating. On the other hand, the training for the staff will focus on the data entry and transaction tasks.

Recommendations for future development have been summarized as follows:

- (1) The company should develop computerized systems for other Departments based on the proposed system of this particular department, i.e. using the same platform, so that the whole company will be computerized. As a consequence, the management will be able to conduct the administration more effectively and efficiently.
- (2) The company should try to develop "Mobile Office for Salesperson". With computerized system, it is very obvious that salesperson can even complete any business contracts and have the customer signed it at once.

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- (3) Interactive Web Page can be launched, if a completed computerized system becomes available. This is a very distinctive strength of the company who can offer, since the Customers around the world can place, confirm and check the order online from anywhere and at anytime.
- (4) With the completed and consistent database, created from computerized system, “Sales & Production Forecasting Program” can be developed in order to be one of the tools for managerial decision.





## APPENDIX A

### FLOW CHART OF EXISTING SYSTEM

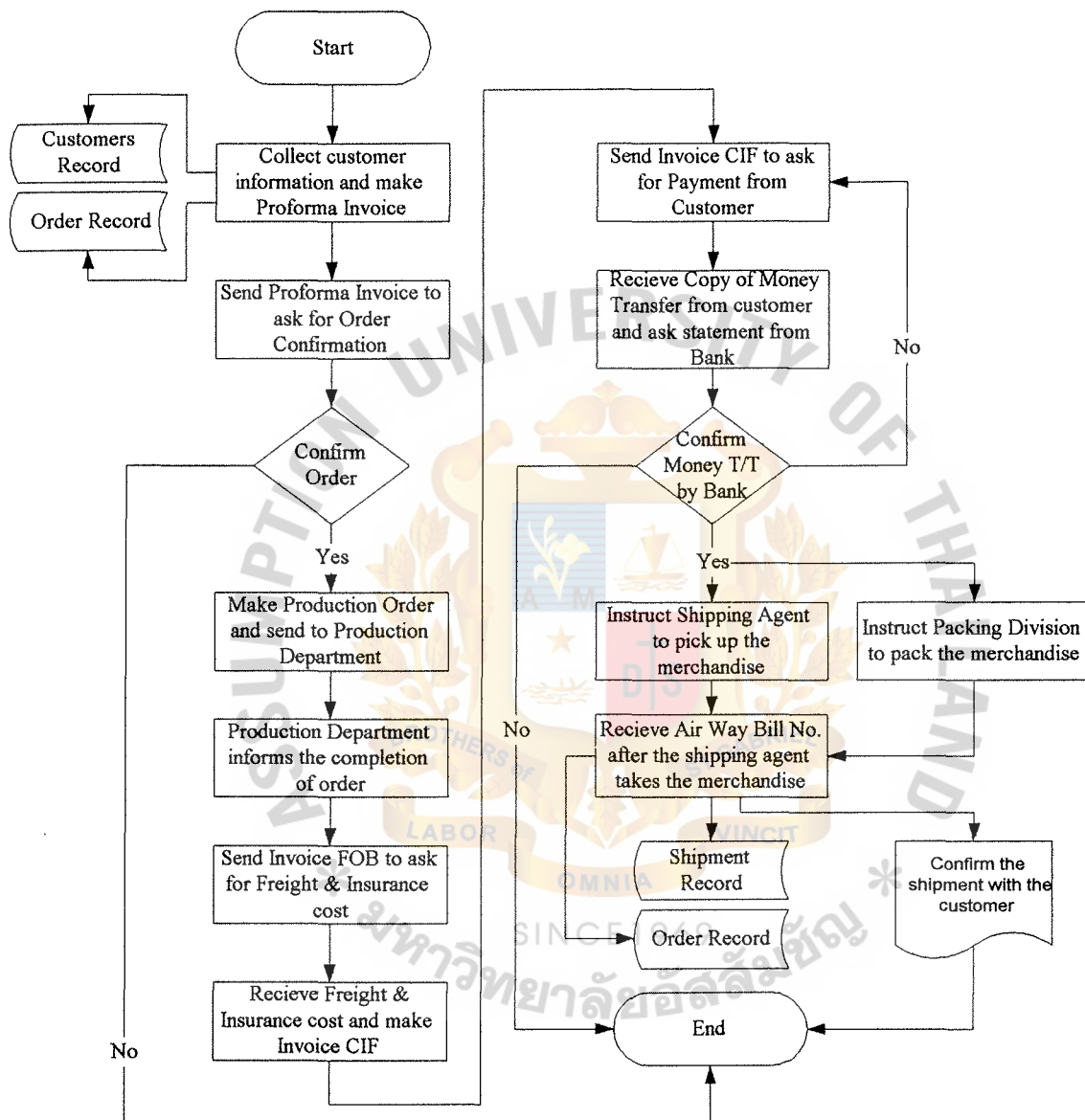


Figure A.1. Flow Chart of Existing System.

**APPENDIX B**  
**CONTEXT DIAGRAM AND DATA FLOW DIAGRAM**  
**OF PROPOSED SYSTEM**





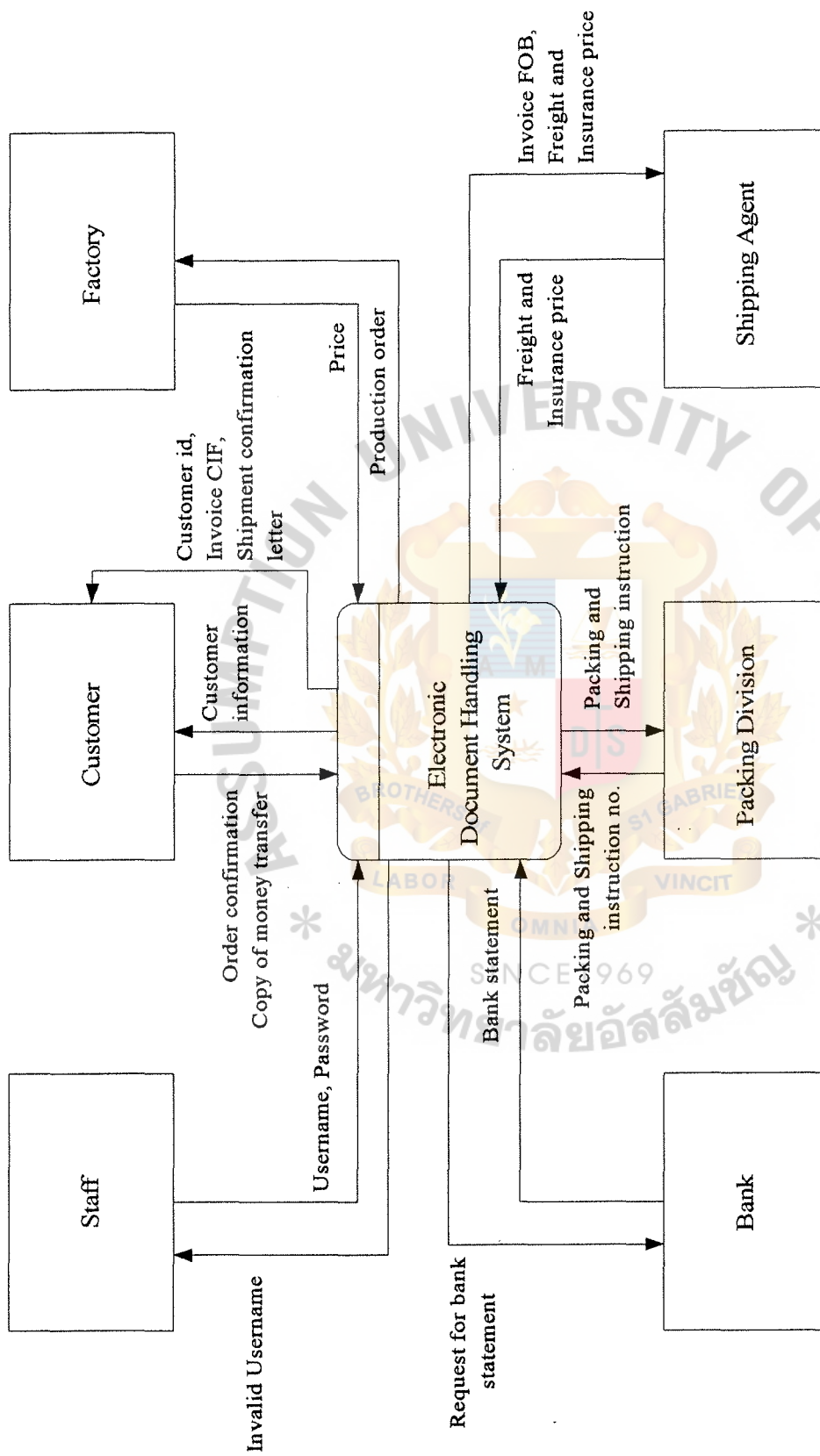


Figure B.1. Context Diagram of Purposed System.

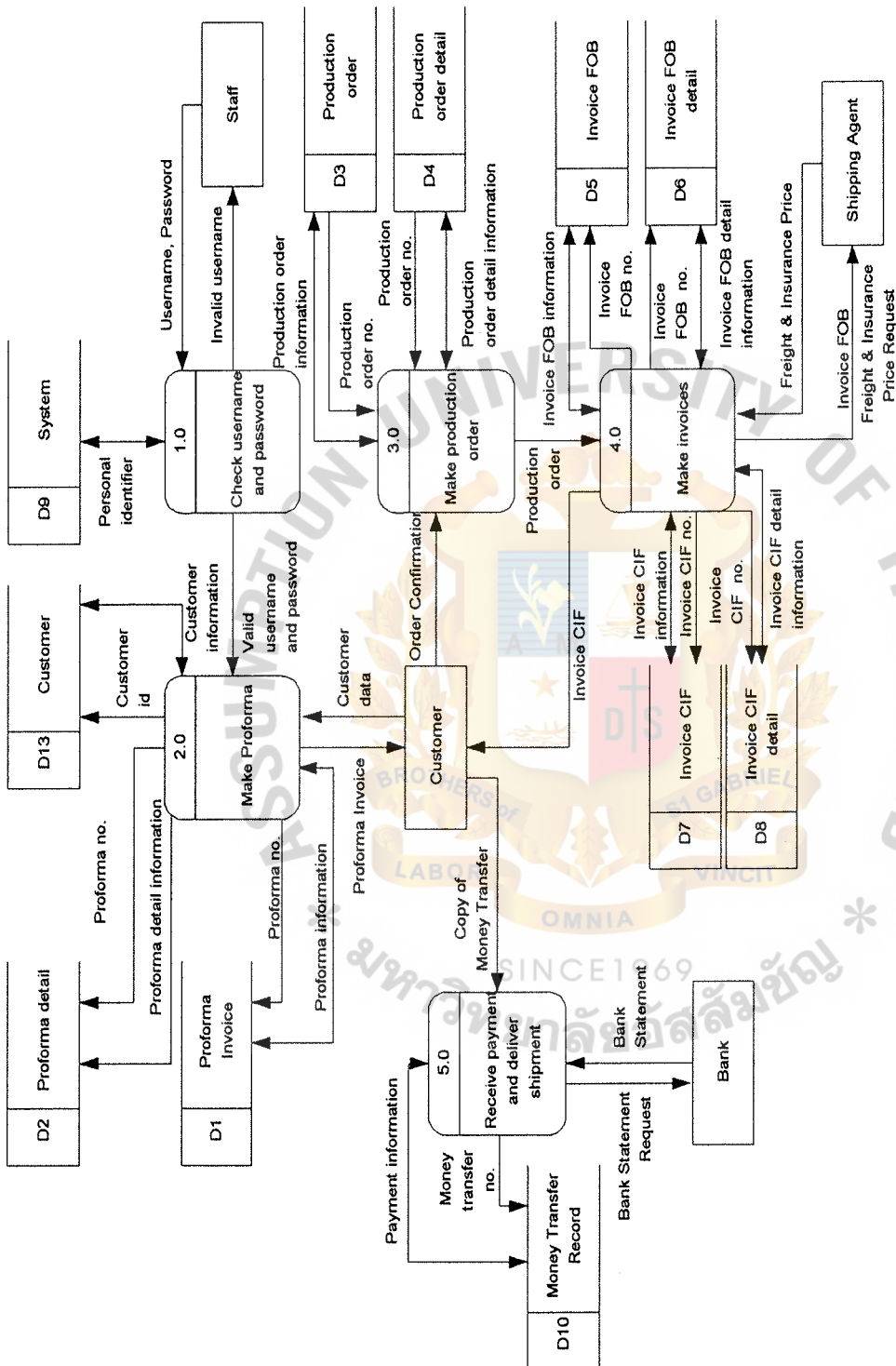


Figure B.2. Level 0 Data Flow Diagram of Purposed System.

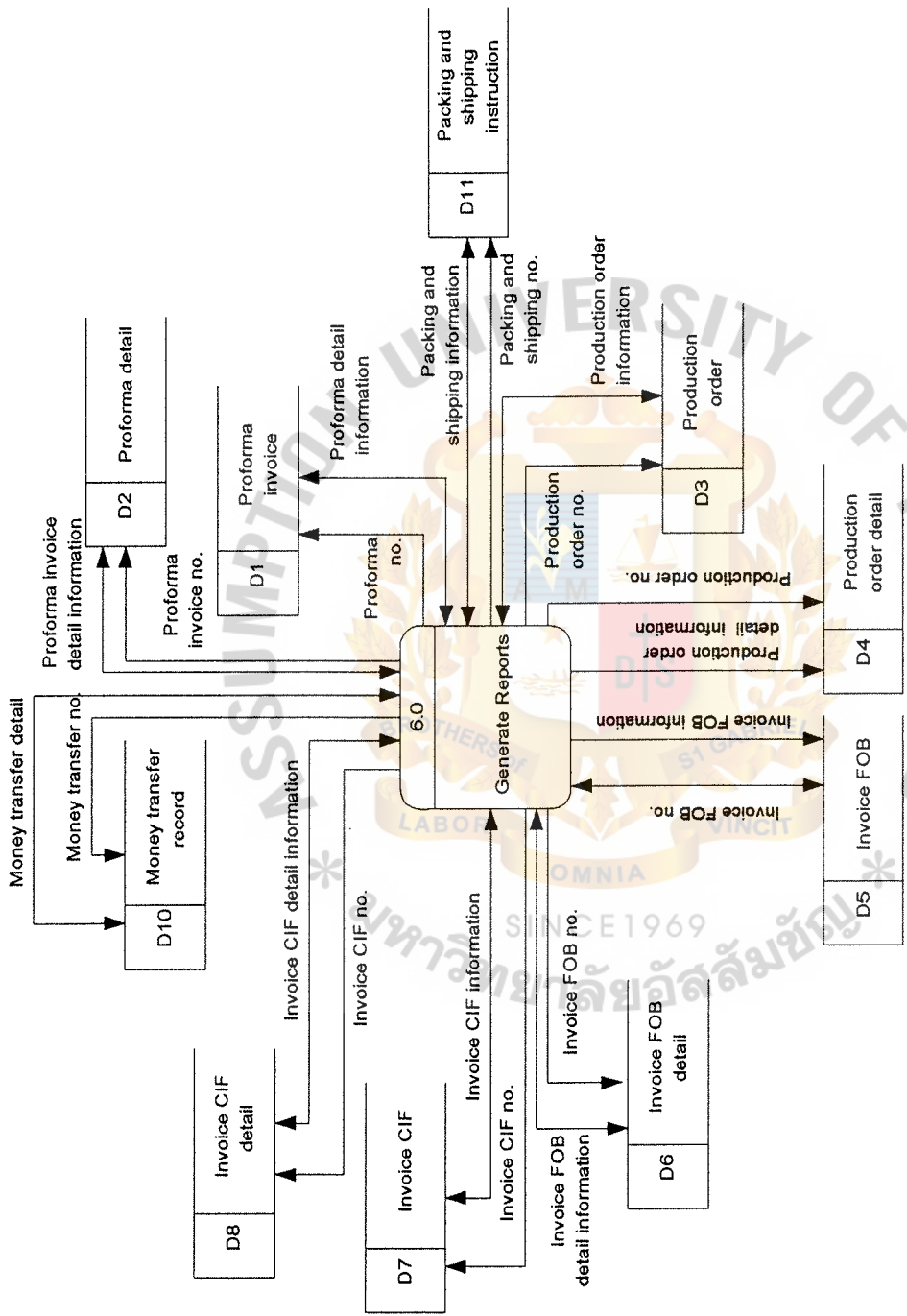


Figure B.3. Level 0 Data Flow Diagram of Purposed System (Continued).

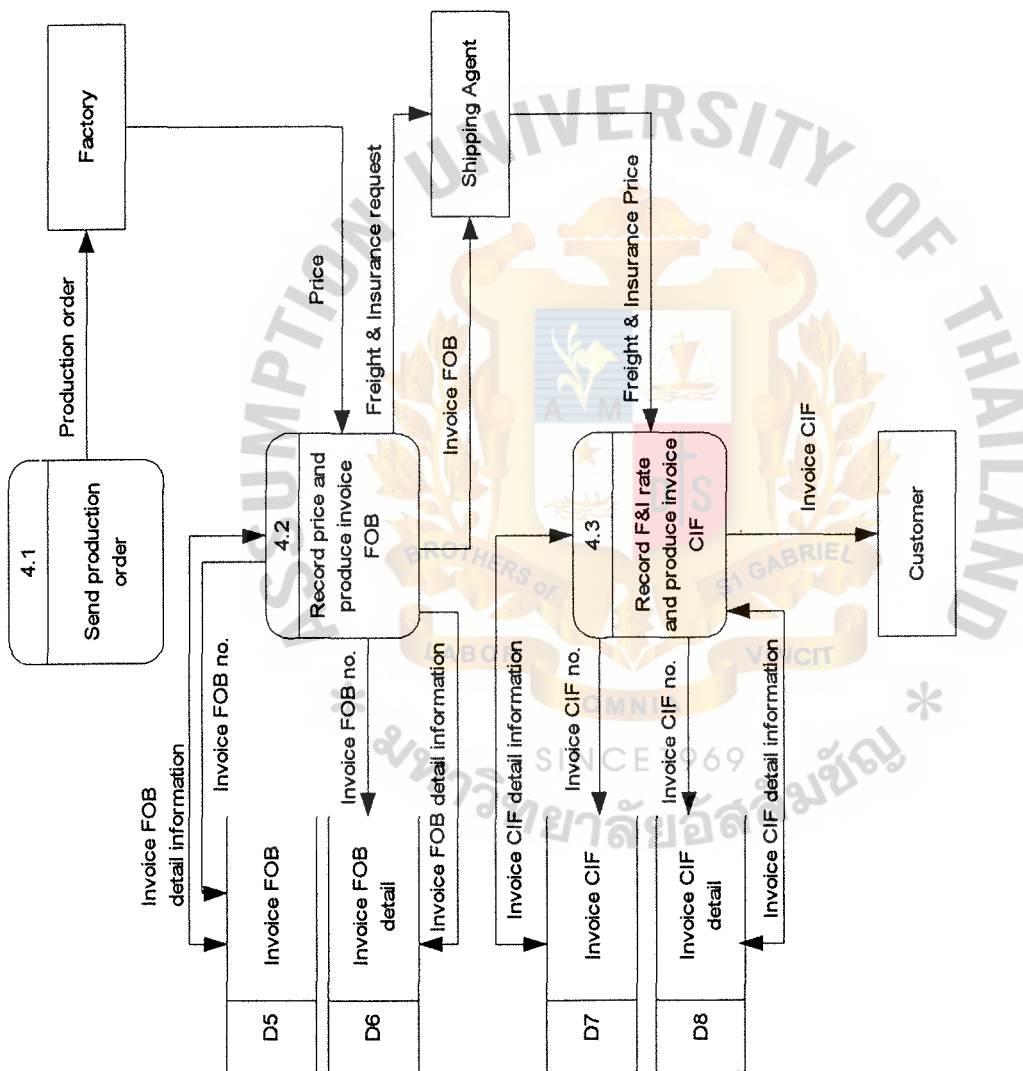


Figure B.4. Level 1 Data Flow Diagram of Process 4 Make Invoices.

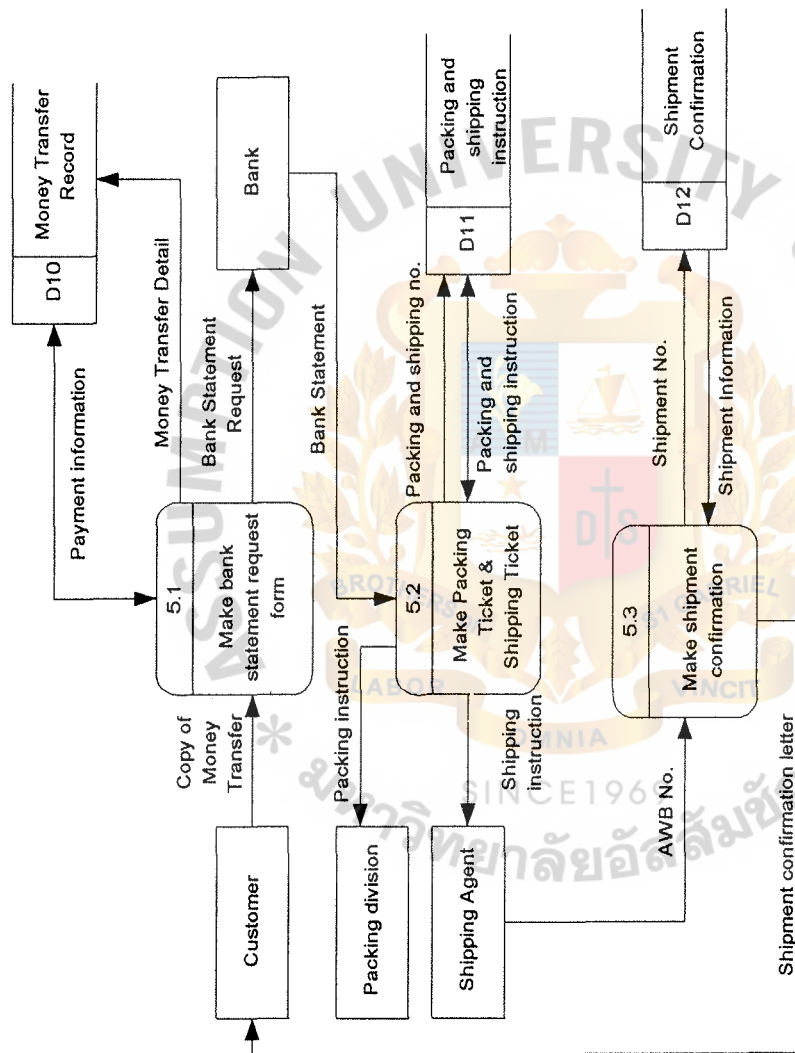


Figure B.5. Level 1 Data Flow Diagram of Process 5 Receive Payment and Deliver Shipment.





## APPENDIX C

### SCREEN DESIGN AND REPORT MANAGEMENT

# EMPORIUM JEWELLERY FACTORY CO.,LTD.

999 NEW ROAD, BANGRAK, BANGKOK 10500 THAILAND

TEL. (662) 2345000 FAX. (662) 2346000

## PROFORMA INVOICE

CUSTOMER ID: D115 PAGE NO. 1 OF 1  
CUSTOMER NAME: ROSS & SIMON JEWELRY PROFORMA INVOICE NO. P115-001  
CONTACT PERSON: MR. JOHN SIMON DATE: 05 Apr 2000  
ADDRESS: 15 W 47TH STREET, NY, NY 10036 SHIPMENT DATE: 15 May 2000  
COUNTRY: U.S.A. SHIPMENT PORT: NEW YORK, U.S.A.  
TEL. 1 212 221 2282 TERM OF PAYMENT: TELEX TRANSFER  
FAX. 1 212 221 2285 SALESPERSON: MR. SMITH  
STAMP: 18K RING SIZE: 56

Code	Quantity	Type of Gold	Type of Product	Type of Stone	Estimated Price/Unit ***	Total
DR1462	12	18K Y/G	RING	DIAMOND	1,550.00	18,600.00
DR2443	12	18K W/G	RING	DIAMOND + RUBY	925.00	11,100.00
BN3054	12	18K W/G	NECKLACE	DIAMOND + SAPPHIRE	5,500.00	66,000.00
ESTIMATED TOTAL F.O.B. (US\$) ***						95,700.00
(NINETY FIVE THOUSAND AND SEVEN HUNDRED U.S. DOLLAR)						

PLEASE SIGN BELOW TO CONFIRM THE ORDER.

\*\*\* NOTE THAT THE ACTUAL PRICE(S) MAY VARY DUE TO THE DIFFERENT WEIGHT OF FINAL PRODUCT(S).

BANK ACCOUNT: EMPORIUM JEWELRY FACTORY BANGKOK BANK PUBLIC CO.,LTD JEWELRY TRADE CENTER BRANCH A/C NO. 012-3-99999-8	CUSTOMER'S SIGNATURE	MANAGER'S SIGNATURE
--	----------------------	---------------------

Figure C.1. Proforma Invoice.

## EMPORIUM JEWELLERY FACTORY CO.,LTD.

999 SILOM ROAD, BANGRAK, BANGKOK 10500 THAILAND

TEL. (662) 2345000 FAX. (662) 2346000

### PRODUCTION ORDER

PRODUCTION ORDER NO. D115-001

PAGE NO. 1 OF 1

DATE: 05 Apr 2000

RING SIZE: 56

SHIPMENT DATE: 15 May 2000

STAMP: 18K

Code	Quantity	Type of Gold	Type of Product	Type of Stone	Estimated Price/Unit ***	Actual Price
DR1462	12	18K Y/G	RING	DIAMOND	1,550.00	
DR2443	12	18K W/G	RING	DIAMOND + RUBY	925.00	
BN3054	12	18K W/G	NECKLACE	DIAMOND + SAPPHIRE	5,500.00	

Note: After the merchandise(s) have been finished, please calculate the "actual price" of each product and return this to the Sales & Marketing Department.

To: Sales & Marketing Department

Please be informed that the production order, as mentioned above has been completed.

Moreover, the actual price(s) of each product(s) has also been re-calculated.

\_\_\_\_\_: Supervisor's Production Department

\_\_\_\_\_: Date

Figure C.2. Production Order.

**EMPORIUM JEWELLERY FACTORY CO.,LTD.****999 NEW ROAD, BANGRAK, BANGKOK 10500 THAILAND****TEL. (662) 2345000 FAX. (662) 2346000****INVOICE (F.O.B.)**

CUSTOMER ID: D115  
CUSTOMER NAME: ROSS & SIMON JEWELRY  
CONTACT PERSON: MR. JOHN SIMON  
ADDRESS: 15 W 47TH STREET, NY, NY 10036  
COUNTRY: U.S.A.  
TEL. 1 212 221 2282  
FAX. 1 212 221 2285  
STAMP: 18K

PAGE NO. 1 OF 1  
INVOICE NO. D115-001  
DATE: 05 May 2000  
SHIPMENT DATE: 15 May 2000  
SHIPMENT PORT: NEW YORK, U.S.A.  
TERM OF PAYMENT: TELEX TRANSFER  
SALESPERSON: MR. SMITH  
RING SIZE: 56

Code	Quantity	Type of Gold	Type of Product	Type of Stone	Price/Unit ***	Total
DR1462	12	18K Y/G	RING	DIAMOND	1,555.00	18,660.00
DR2443	12	18K W/G	RING	DIAMOND + RUBY	930.00	11,160.00
BN3054	12	18K W/G	NECKLACE	DIAMOND + SAPPHIRE	5,520.00	66,240.00
TOTAL F.O.B. (US\$) ***						96,060.00
(NINETY SIX THOUSAND AND SIXTY U.S. DOLLAR)						

PLEASE SIGN BELOW TO CONFIRM THE ORDER.

\*\*\* NOTE THAT THE PRICE MAY VARY FROM PERFORMA INVOICE DUE TO THE DIFFERENT WEIGHT OF FINAL PRODUCT.

BANK ACCOUNT: EMPORIUM JEWELRY FACTORY BANGKOK BANK PUBLIC CO.,LTD JEWELRY TRADE CENTER BRANCH A/C NO. 012-3-99999-8	CUSTOMER'S SIGNATURE	MANAGER'S SIGNATURE
--	----------------------	---------------------

AFTER RECEIVE THIS INVOICE, PLEASE TRANSFER THE AMOUNT TO OUR ACCOUNT MENTIONED ON THE LEFT BELOW.

Figure C.3. Invoice FOB.

**EMPORIUM JEWELLERY FACTORY CO.,LTD.**  
**999 NEW ROAD, BANGRAK, BANGKOK 10500 THAILAND**  
**TEL. (662) 2345000 FAX. (662) 2346000**

**REQUEST FORM: FRIEGHT & INSURANCE RATE**

TO: MALCA-AMIT CO.,LTD

ATTN: SHIPPING AGENT

PLEASE FIND THE ATTACHED INVOICE (F.O.B.) AND KINDLY CALCULATE THE \*FREIGHT & INSURANCE RATE OF SUCH THE INVOICE. AFTERWARD, PLEASE FILL UP THE FOLLOWING FORM AND FAX US AT (662) 2346000.

CUSTOMER ID: D115	PAGE NO. 1 OF 1
CUSTOMER NAME: ROSS & SIMON JEWELRY	INVOICE NO. D115-001
CONTACT PERSON: MR. JOHN SIMON	DATE: 05 May 2000
ADDRESS: 15 W 47TH STREET, NY, NY 10036	SHIPMENT DATE: 15 May 2000
COUNTRY: U.S.A.	SHIPMENT PORT: NEW YORK, U.S.A.
TEL. 1 212 221 2282	TERM OF PAYMENT: TELEX TRANSFER
FAX. 1 212 221 2285	SALESPERSON: MR. SMITH
STAMP: 18K	RING SIZE: 56

TOTAL F.O.B. (US\$)	96,060.00
FREIGHT	
INSURANCE	
TOTAL C.I.F. (US\$)	

MALCA-AMIT OFFICIER'S SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

AFTER COMPLETE THIS FORM, KINDLY FAX TO (662) 2346000 THANKS.

Figure C.4. Freight & Insurance Request Form.



**EMPORIUM JEWELLERY FACTORY CO.,LTD.****999 NEW ROAD, BANGRAK, BANGKOK 10500 THAILAND****TEL. (662) 2345000 FAX. (662) 2346000****INVOICE (C.I.F.)**

CUSTOMER ID:	D115	PAGE NO.	1 OF 1
CUSTOMER NAME:	ROSS & SIMON JEWELRY	INVOICE NO.	D115-001
CONTACT PERSON:	MR. JOHN SIMON	DATE:	05 May 2000
ADDRESS:	15 W 47TH STREET, NY, NY 10036	SHIPMENT DATE:	15 May 2000
COUNTRY:	U.S.A.	SHIPMENT PORT:	NEW YORK, U.S.A.
TEL.	1 212 221 2282	TERM OF PAYMENT:	TELEX TRANSFER
FAX.	1 212 221 2285	SALESPERSON:	MR. SMITH
STAMP:	18K	RING SIZE:	56

Code	Quantity	Type of Gold	Type of Product	Type of Stone	Price/Unit ***	Total
DR1462	12	18K Y/G	RING	DIAMOND	1,555.00	18,660.00
DR2443	12	18K W/G	RING	DIAMOND + RUBY	930.00	11,160.00
BN3054	12	18K W/G	NECKLACE	DIAMOND + SAPPHIRE	5,520.00	66,240.00
TOTAL F.O.B. (US\$) ***						96,060.00
FREIGHT						700.00
INSURANCE						240.00
TOTAL C.I.F. (US\$)						97,000.00
SINCE 1960 (NINETY SEVEN THOUSAND U.S. DOLLAR)						

PLEASE SIGN BELOW TO CONFIRM THE ORDER.

\*\*\* NOTE THAT THE PRICE(S) MAY VARY FROM PERFORMANCE INVOICE DUE TO THE DIFFERENT WEIGHT OF FINAL PRODUCT

BANK ACCOUNT: EMPORIUM JEWELRY FACTORY BANGKOK BANK PUBLIC CO.,LTD JEWELRY TRADE CENTER BRANCH A/C NO. 012-3-99999-8	CUSTOMER'S SIGNATURE	MANAGER'S SIGNATURE
--	----------------------	---------------------

AFTER RECEIVING THIS INVOICE, PLEASE TRANSFER THE AMOUNT TO OUR ACCOUNT MENTIONED ON THE LEFT BELOW.

Figure C.5. Invoice CIF.

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**EMPORIUM JEWELLERY FACTORY CO.,LTD.**  
**999 NEW ROAD, BANGRAK, BANGKOK 10500 THAILAND**  
**TEL. (662) 2345000 FAX. (662) 2346000**

**REQUEST FORM: BANK STATEMENT**

BANK STATEMENT REQUEST NO. BSR-05326 DATE: 10 May 2000

TO: BANGKOK BANK PUBLIC CO.,LTD.

ATTN: CORPORATE ACCOUNT EXECUTIVE, SECTION 5

PLEASE FAX US THE BANK STATEMENT CONFIRMING THE MONEY TRANSFER (IF ANY) TO OUR ACCOUNT  
ACCOUNTING TO THE AMOUNT AND DETAILS AS MENTIONED IN THE FOLLOWING INVOICE:-

CUSTOMER ID:	D115	PAGE NO.	1 OF 1
CUSTOMER NAME:	ROSS & SIMON JEWELRY	INVOICE NO.	D115-001
CONTACT PERSON:	MR. JOHN SIMON	INVOICE DATE:	05 May 2000
ADDRESS:	15 W 47TH STREET, NY, NY 10036	SHIPMENT DATE:	15 May 2000
COUNTRY:	U.S.A.	SHIPMENT PORT:	NEW YORK, U.S.A.
TEL.	1 212 221 2282	TERM OF PAYMENT:	TELEX TRANSFER
FAX.	1 212 221 2285	SALESPERSON:	MR. SMITH
STAMP:	18K	RING SIZE:	56
TOTAL C.I.F. (US\$)	97,000.00 (NINETY SEVEN THOUSAND U.S. DOLLAR)		

DATE OF MONEY TRANSFER:	09 May 2000
CORRESPONDING BANK:	CITY BANK (NEW YORK)
MONEY TRANSFER REF.NO.	CB - 66 - 0125846
AMOUNT (US\$):	97,000.00 (NINETY SEVEN THOUSAND U.S. DOLLAR)

BANK ACCOUNT:  
EMPORIUM JEWELRY FACTORY  
BANGKOK BANK PUBLIC CO.,LTD  
JEWELRY TRADE CENTER BRANCH  
A/C NO. 012-3-99999-8

DEAR SIR,

WE WOULD LIKE TO CONFIRM THAT THE AMOUNT MENTIONED ABOVE H.  
BEEN DEPOSITED TO YOUR ACCOUNT FOR THIS PARTICULAR INVOICE ALREAD

\_\_\_\_\_: BANGKOK BANK OFFICIER'S SIGNATURE

\_\_\_\_\_: DATE

AFTER COMPLETE THIS FORM, KINDLY FAX TO (662) 2346000 ALONG WITH THE BANK STATEMENT, THANK YOU.

Figure C.6. Bank Statement Request Form.

## EMPORIUM JEWELLERY FACTORY CO.,LTD.

(FOR INTERNAL USE ONLY)

### PACKING INSTRUCTION

PACKING INSTRUCTION NO. PST-053218

DATE: 12 May 2000

TO: PACKAGING DIVISION

ATTN: SUPERVISOR

YOU ARE NOW AUTHORIZED TO PACK THE MERCHANDISE(S) AND HAVE IT READY TO SHIP, AS MENTIONED THE FOLLOWING INVOICE.

CUSTOMER NAME:	ROSS & SIMON JEWELRY	INVOICE NO.	D115-001
CONTACT PERSON:	MR. JOHN SIMON	DATE:	05 May 2000
ADDRESS:	15 W 47TH STREET, NY, NY 10036	SHIPMENT DATE:	15 May 2000
COUNTRY:	U.S.A.	SHIPMENT PORT:	NEW YORK, U.S.A.
TEL.	1 212 221 2282	TERM OF PAYMENT:	TELEX TRANSFER
FAX.	1 212 221 2285	SALESPERSON:	MR. SMITH
STAMP:	18K	RING SIZE:	56

Code	Quantity	Type of Gold	Type of Product	Type of Stone	Price/Unit ***	Total
DR1462	12	18K Y/G	RING	DIAMOND	1,555.00	18,660.00
DR2443	12	18K W/G	RING	DIAMOND + RUBY	930.00	11,160.00
BN3054	12	18K W/G	NECKLACE	DIAMOND + SAPPHIRE	5,520.00	66,240.00

\_\_\_\_\_ ACKNOWLEDGED BY PACKAGING DIVISION SUPERVISOR

\_\_\_\_\_ DATE

Figure C.7. Packing Instruction.

# EMPORIUM JEWELLERY FACTORY CO.,LTD.

999 NEW ROAD, BANGRAK, BANGKOK 10500 THAILAND

TEL. (662) 2345000 FAX. (662) 2346000

## SHIPPING INSTRUCTION

SHIPPING INSTRUCTION NO. PST-053218

DATE:

12 May 2000

TO: MALCA-AMIT CO.,LTD

ATTN: SHIPPING AGENT

YOU ARE NOW AUTHORIZED TO SHIP THE MERCHANDISE(S) TO THE DESTINATION AS MENTIONED IN THE BELOW INVOICE, PLEASE SEND YOUR STAFF TO PICK UP THE PAZZLE, ONE DAY BEFORE THE SHIPMENT DATE, AT 16: PLEASE ALSO KINDLY LET US KNOW THE AWB.NO. WHERE SUCH THE SHIPMENT WILL BE DESINATED AS WELL. UPON THE RECEIVE OF THIS DOCUMENT PLEASE ACKNOWLEDGE AND FAX TO (662) 2346000, THANK YOU.

CUSTOMER NAME:	ROSS & SIMON JEWELRY	INVOICE NO.	D115-001
CONTACT PERSON:	MR. JOHN SIMON	DATE:	05 May 2000
ADDRESS:	15 W 47TH STREET, NY, NY 10036	SHIPMENT DATE:	15 May 2000
COUNTRY:	U.S.A.	SHIPMENT PORT:	NEW YORK, U.S.A.
TEL.	1 212 221 2282	TERM OF PAYMENT:	TELEX TRANSFER
FAX.	1 212 221 2285	SALESPERSON:	MR. SMITH
STAMP:	18K	RING SIZE:	56

Code	Quantity	Type of Gold	Type of Product	Type of Stone	Price/Unit ***	Total
DR1462	12	18K Y/G	RING	DIAMOND	1,555.00	18,660.00
DR2443	12	18K W/G	RING	DIAMOND + RUBY	930.00	11,160.00
BN3054	12	18K W/G	NECKLACE	DIAMOND + SAPPHIRE	5,520.00	66,240.00

ATTN: EXPORT OFFICIER OF EMPORIUM JEWELRY FACTORY CO.,LTD.

THE MERCHANDISE WILL BE SHIPPED TO THE DESTINATION UNDER THE AWB.NO.

\_\_\_\_\_ : ACKNOWDLEGED BY MALCA-AMIT SHIPPING AGENT

\_\_\_\_\_ : DATE

AFTER COMPLETE THIS FORM, KINDLY FAX TO (662) 2346000 THANKS.

Figure C.8. Shipping Instruction.

## EMPORIUM JEWELLERY FACTORY CO.,LTD.

999 NEW ROAD, BANGRAK, BANGKOK 10500 THAILAND

TEL. (662) 2345000 FAX. (662) 2346000

### SHIPMENT CONFIRMATION

TO:	ROSS & SIMON JEWELRY	DATE:	14 May 2000
ATTN:	MR. JOHN SIMON	TOTAL:	ONE PAGE
TEL.	1 212 221 2282	SHIPMENT CFM NO.	CFM115-005
FAX.	1 212 221 2285		

DEAR MR.JOHN SIMON,

FIRST OF ALL, WE ARE PLEASED TO INFORM YOU THAT THE ORDER YOU PLACED ON 5TH OF APRIL, 2000 HAS BEEN SHIPPED ALREADY, UNDER THE AWB NO. TG-10-03054-7. FURTHERMORE, PLEASE FIND THE BELOW DETAIL FOR YOUR REFERENCE AS WELL.

WE HOPE TO SERVE YOU AGAIN SOON.

THANKFULLY YOURS,

POL SOBHAKVICHITR

REGIONAL MANAGER

CUSTOMER ID:	D115	PAGE NO.	1 OF 1
CUSTOMER NAME:	ROSS & SIMON JEWELRY	INVOICE NO.	D115-001
CONTACT PERSON:	MR. JOHN SIMON	INVOICE DATE:	05 May 2000
ADDRESS:	15 W 47TH STREET, NY, NY 10036	SHIPMENT DATE:	15 May 2000
COUNTRY:	U.S.A.	SHIPMENT PORT:	NEW YORK, U.S.A.
TEL.	1 212 221 2282	TERM OF PAYMENT:	TELEX TRANSFER
FAX.	1 212 221 2285	SALESPERSON:	MR. SMITH
STAMP:	18K	RING SIZE:	56
TOTAL C.I.F. (US\$)	97,000.00 (NINETY SEVEN THOUSAND U.S. DOLLAR)		

THE SHIPMENT OF THE ABOVE INVOICE HAS BEEN SHIPPED VI/ AWB NO. TG-10-03054-7

LOOKING FORWARD TO SERVER YOU AGAIN, SOON.

Figure C.9. Shipment Confirmation.



**EMPORIUM JEWELLERY FACTORY CO.,LTD.**  
**999 SILOM ROAD, BANGRAK, BANGKOK 10500 THAILAND**  
**TEL. (662) 2345000 FAX. (662) 2346000**

SALES SUMMARY : SORT BY CUSTOMER							Date : 30 Apr 2000	
Customer No.	Customer Name	Country	Order No.	Order Date	Shipping Date	F.O.B. Total (US\$)	Total Pieces	Salesperson
D115	PETER DIAMOND	U.S.A.	D115-001	05 Apr 2000	15 May 2000	95,700	36	Mr. Smith
D116	JOHN JEWEL	U.S.A.	D116-007	06 Apr 2000	16 May 2000	196,424	69	Mr. Veera
D117	Hamoto Kanaba	Japan	D117-004	09 Apr 2000	19 May 2000	298,942	69	Mr. Veera
D118	Putin Swarovsky	Russia	D118-002	13 Apr 2000	23 May 2000	245,806	63	Mr. Smith
D119	Vivara Scarnim	Brazil	D119-008	22 Apr 2000	01 Jun 2000	401,034	81	Mr. Veera
D120	Lissa Rosa	Australia	D120-001	29 Apr 2000	08 Jun 2000	581,294	66	Mr. Pisit
Total						1,819,200	384	

Figure C.10. Sales Summary Sort by Customer.

**EMPORIUM JEWELLERY FACTORY CO.,LTD.**  
 999 SILOM ROAD, BANGRAK, BANGKOK 10500 THAILAND  
 TEL. (662) 2345000 FAX. (662) 2346000

**SALES SUMMARY : SORT BY SALESPERSON** Date : 30 Apr 2000

No.	Salesperson	Total Sales (US\$)	Customer No.	Customer Name	Country	Order No.	Shipping Date	F.O.B. Total (US\$)	Total Pieces
1	Mr. Pisit	581,294	D120	Lissa Rosa	Australia	D120-001	08 Jun 2000	581,294	66
2	Mr. Smith	341,506	D115	PETER DIAMOND	U.S.A.	D115-001	15 May 2000	95,700	36
			D118	Putin Swarovsky	Russia	D118-002	23 May 2000	245,806	63
3	Mr. Veera	896,400	D116	JOHN JEWEL	U.S.A.	D116-007	16 May 2000	196,424	69
			D117	Hamoto Kanaba	Japan	D117-004	19 May 2000	298,942	69
			D119	Vivara Scanim	Brazil	D119-008	01 Jun 2000	401,034	81
Total		1,819,200							

Figure C.11. Sales Summary Sort by Salesperson.

**EMPORIUM JEWELLERY FACTORY CO.,LTD.**  
 999 SILOM ROAD, BANGRAK, BANGKOK 10500 THAILAND  
 TEL. (662) 2345000 FAX. (662) 2346000

SALES SUMMARY : SORT BY COUNTRY										Date : 30 Apr 2000	
Country	Total Sales per Country (US\$)	Customer No.	Customer Name	Order No.	Order Date	Shipping Date	F.O.B. Total (US\$)	Total Pieces	Salesperson		
Australia	581,294	D120	Lissa Rosa	D120-001	29 Apr 2000	08 Jun 2000	581,294	66	Mr. Pisit		
Brazil	401,034	D119	Vivara Scanim	D119-008	22 Apr 2000	01 Jun. 2000	401,034	81	Mr. Veera		
Japan	298,942	D117	Hamoto Kanaba	D117-004	09 Apr 2000	19 May 2000	298,942	69	Mr. Veera		
Russia	245,806	D118	Putin Swarofsky	D118-002	13 Apr 2000	23 May 2000	245,806	63	Mr. Smith		
U.S.A.	292,124	D115	PETER DIAMOND	D115-001	05 Apr 2000	15 May 2000	95,700	36	Mr. Smith		
		D116	JOHN JEWEL	D116-007	06 Apr 2000	16 May 2000	196,424	69	Mr. Veera		

Figure C.12. Sales Summary Sort by Country.

**EMPORIUM JEWELLERY FACTORY CO.,LTD.**  
 999 SILOM ROAD, BANGRAK, BANGKOK 10500 THAILAND  
 TEL. (662) 2345000 FAX. (662) 2346000

Date : 30 Apr 2000

SALES SUMMARY : SORT BY SHIPMENT DATE

Shipping Date	Order Date	Customer No.	Customer Name	Country	Order No.	F.O.B. Total (US\$)	Total Pieces	Salerperson
15 May 2000	05 Apr 2000	D115	PETER DIAMOND	U.S.A.	D115-001	95,700	36	Mr. Smith
16 May 2000	06 Apr 2000	D116	JOHN JEWEL	U.S.A.	D116-007	196,424	69	Mr. Veera
19 May 2000	09 Apr 2000	D117	Hamoto Kanaba	Japan	D117-004	298,942	69	Mr. Veera
23 May 2000	13 Apr 2000	D118	Putin Swarofsky	Russia	D118-002	245,806	63	Mr. Smith
01 Jun 2000	22 Apr 2000	D119	Vivara Scanim	Brazil	D119-008	401,034	81	Mr. Veera
08 Jun 2000	29 Apr 2000	D120	Lissa Rosa	Australia	D120-001	581,294	66	Mr. Pisit

Figure C.13. Sales Summary Sort by Shipment Date.

**EMPORIUM JEWELLERY FACTORY CO.,LTD.**  
**999 SILOM ROAD, BANGRAK, BANGKOK 10500 THAILAND**  
**TEL. (662) 2345000 FAX. (662) 2346000**

**SALES SUMMARY : SORT BY TYPE OF PRODUCT**

Type of Product	No. of Piece(s)	Total (US\$)
RING	126	131,964
EARRINGS	78	184,669
NECKLACE	54	948,621
BRACELET	42	223,412
PENDENT	24	35,215
BROOCH	33	180,197
BANGLE	27	115,123
<b>TOTAL</b>	<b>384</b>	<b>1,819,200</b>

**SALES SUMMARY : SORT BY TYPE OF PRODUCT : DETAILS**

Type of Product	Product I.D.	Type of Gold	Type of Stone	Gold Weight (g.)	Stone Weight (Ct.)	Ordered Quantity	Estimated Price	Total (US\$)
RING	AR1462	18K Y/G	DIAMOND	6.2	2.8	12	1,550	18,600
RING	AR1470	18K Y/G	DIAMOND	5.6	2.5	3	938	2,814
RING	AR1485	14K W/G	DIAMOND + RUBY	6.2	2.8	6	1,039	6,231
RING	AR1508	14K Y/G	DIAMOND + SAPPHIRE	6.1	2.7	12	1,022	12,261
RING	AR1531	14K W/G	DIAMOND + EMERALD	6.5	2.9	3	1,083	3,250
RING	AR1554	18K W/G	DIAMOND + EMERALD	6.7	3.0	9	1,125	10,125
RING	AR1577	18K Y/G	DIAMOND + EMERALD	7.0	3.1	12	1,167	14,003
RING	AR1600	14K W/G	DIAMOND + RUBY	7.2	3.2	6	1,209	7,253
RING	AR1623	14K Y/G	DIAMOND + SAPPHIRE	7.5	3.4	3	1,251	3,752
RING	AR1646	14K W/G	DIAMOND	7.7	3.5	3	1,293	3,878
RING	AR1669	18K W/G	DIAMOND	3.5	1.6	6	586	3,518
RING	AR1692	18K Y/G	DIAMOND	2.3	1.0	12	379	4,545
RING	AR1715	14K W/G	DIAMOND	7.7	3.5	6	1,293	7,755
RING	AR1738	14K Y/G	DIAMOND + SAPPHIRE	6.1	2.7	6	1,022	6,131
RING	AR1761	14K W/G	DIAMOND + RUBY	6.5	2.9	6	1,083	6,499
RING	AR1784	18K W/G	DIAMOND + SAPPHIRE	6.7	3.0	6	1,125	6,750
RING	AR1807	18K Y/G	DIAMOND	7.0	3.1	3	1,167	3,501
RING	AR2443	18K W/G	DIAMOND + RUBY	6.7	3.0	12	925	11,100

Figure C.14. Sales Summary Sort by Type of Product.



**EMPORIUM JEWELLERY FACTORY CO.,LTD.**  
**999 SILOM ROAD, BANGRAK, BANGKOK 10500 THAILAND**  
**TEL. (662) 2345000 FAX. (662) 2346000**

**SALES SUMMARY : SORT BY TYPE OF GOLD**

Type of Gold	Gold Weight (g.)	Total (US\$)
14K W/G	551	774,073
14K Y/G	255	371,110
18K W/G	421	365,507
18K Y/G	284	308,511
<b>TOTAL</b>	<b>1,511</b>	<b>1,819,200</b>

**SALES SUMMARY : SORT BY TYPE OF GOLD: DETAILS**

Type of Product	Product I.D.	Type of Gold	Type of Stone	Gold Weight (g.)	Stone Weight (Ct.)	Ordered Quantity	Estimated Price	Total (US\$)
RING	AR1485	14K W/G	DIAMOND + RUBY	6.2	2.8	6	1,039	6,231
RING	AR1531	14K W/G	DIAMOND + EMERALD	6.5	2.9	3	1,083	3,250
RING	AR1600	14K W/G	DIAMOND + RUBY	7.2	3.2	6	1,209	7,253
RING	AR1646	14K W/G	DIAMOND	7.7	3.5	3	1,293	3,878
RING	AR1715	14K W/G	DIAMOND	7.7	3.5	6	1,293	7,755
RING	AR1761	14K W/G	DIAMOND + RUBY	6.5	2.9	6	1,083	6,499
EARRINGS	DE2443	14K W/G	DIAMOND	12.3	5.5	9	2,060	18,542
EARRINGS	DE2475	14K W/G	DIAMOND + RUBY	14.7	6.6	3	2,462	7,387
EARRINGS	DE2523	14K W/G	DIAMOND	18.3	8.2	6	3,065	18,392
EARRINGS	DE2555	14K W/G	DIAMOND + RUBY	14.5	6.5	12	2,429	29,145
EARRINGS	DE2603	14K W/G	DIAMOND	8.8	4.0	6	1,474	8,844
NECKLACE	GN3559	14K W/G	DIAMOND + RUBY	146.4	65.9	12	24,514	294,164
NECKLACE	GN3613	14K W/G	DIAMOND	112.9	50.8	9	18,911	170,197
BRACELET	HB3523	14K W/G	DIAMOND + RUBY	26.5	11.9	12	4,439	53,265
BRACELET	HB3586	14K W/G	DIAMOND	36.1	16.2	6	6,047	36,281
PENDENT	MP3583	14K W/G	DIAMOND + RUBY	9.7	4.4	6	1,621	9,728
BROOCH	TB3476	14K W/G	DIAMOND	25.4	11.4	6	4,255	25,527
BROOCH	TB3528	14K W/G	DIAMOND + RUBY	32.0	14.4	3	5,360	16,080
BANGLE	YB3586	14K W/G	DIAMOND	26.3	11.8	3	4,405	13,216
BANGLE	YB3620	14K W/G	DIAMOND + RUBY	25.5	11.5	9	4,271	38,441

Figure C.15. Sales Summary Sort by Type of Gold.

**EMPORIUM JEWELLERY FACTORY CO.,LTD.**  
**999 SILOM ROAD, BANGRAK, BANGKOK 10500 THAILAND**  
**TEL. (662) 2346000 FAX. (662) 2348000**

**SALES SUMMARY : SORT BY TYPE OF STONE**

Type of Stone	No. of Piece(s)	Total (US\$)
DIAMOND	138	600,656
DIAMOND + EMERALD	24	27,378
DIAMOND + RUBY	87	479,293
DIAMOND + SAPPHIRE	135	711,873
<b>TOTAL</b>	<b>384</b>	<b>1,819,200</b>

**SALES SUMMARY : SORT BY TYPE OF STONE: DETAILS**

Type of Product	Product I.D.	Type of Gold	Type of Stone	Gold Weight (g.)	Stone Weight (Ct.)	Ordered Quantity	Estimated Price	Total (US\$)
RING	AR1462	18K Y/G	DIAMOND	6.2	2.8	12	1,550	18,600
RING	AR1470	18K Y/G	DIAMOND	5.6	2.5	3	938	2,814
RING	AR1646	14K W/G	DIAMOND	7.7	3.5	3	1,293	3,878
RING	AR1669	18K W/G	DIAMOND	3.5	1.6	6	586	3,518
RING	AR1692	18K Y/G	DIAMOND	2.3	1.0	12	379	4,545
RING	AR1715	14K W/G	DIAMOND	7.7	3.5	6	1,293	7,755
RING	AR1807	18K Y/G	DIAMOND	7.0	3.1	3	1,167	3,501
EARRINGS	DE2443	14K W/G	DIAMOND	12.3	5.5	9	2,060	18,542
EARRINGS	DE2507	18K Y/G	DIAMOND	17.1	7.7	6	2,864	17,186
EARRINGS	DE2523	14K W/G	DIAMOND	18.3	8.2	6	3,065	18,392
EARRINGS	DE2587	18K Y/G	DIAMOND	10.7	4.8	6	1,792	10,754
EARRINGS	DE2603	14K W/G	DIAMOND	8.8	4.0	6	1,474	8,844
NECKLACE	GN3595	18K Y/G	DIAMOND	124.1	55.8	6	20,778	124,670
NECKLACE	GN3613	14K W/G	DIAMOND	112.9	50.8	9	18,911	170,197
BRACELET	HB3565	18K Y/G	DIAMOND	32.9	14.8	6	5,511	33,065
BRACELET	HB3586	14K W/G	DIAMOND	36.1	16.2	6	6,047	36,281
PENDENT	MP3629	18K Y/G	DIAMOND	7.8	3.5	12	1,313	15,758
BROOCH	TB3476	14K W/G	DIAMOND	25.4	11.4	6	4,255	25,527
BROOCH	TB3580	18K Y/G	DIAMOND	38.6	17.4	6	6,466	38,793
BANGLE	YB3586	14K W/G	DIAMOND	26.3	11.8	3	4,405	13,216
BANGLE	YB3654	18K Y/G	DIAMOND	24.7	11.1	6	4,137	24,824

Figure C.16. Sales Summary Sort by Type of Stones.

**EMPORIUM JEWELLERY FACTORY CO.,LTD.**  
**999 SILOM ROAD, BANGRAK, BANGKOK 10500 THAILAND**  
**TEL. (662) 2345000 FAX. (662) 2346000**

**DATABASE : PRODUCT : RING**

Product I.D.	Type of Product	Type of Gold	Type of Stone	Gold Weight (g.)	Stone Weight (Ct.)	Estimated Price
AR0001	RING	18K Y/G	DIAMOND	6.2	2.8	1,094
AR0002	RING	18K Y/G	DIAMOND	5.6	2.5	988
AR0003	RING	14K W/G	DIAMOND + RUBY	6.2	2.8	1,094
AR0004	RING	14K Y/G	DIAMOND + SAPPHIRE	6.1	2.7	1,077
AR0005	RING	14K W/G	DIAMOND + EMERALD	6.5	2.9	1,141
AR0006	RING	18K W/G	DIAMOND + EMERALD	6.7	3.0	1,185
AR0007	RING	18K Y/G	DIAMOND + EMERALD	7.0	3.1	1,230
AR0008	RING	14K W/G	DIAMOND + RUBY	7.2	3.2	1,274
AR0009	RING	14K Y/G	DIAMOND + SAPPHIRE	7.5	3.4	1,318
AR0010	RING	14K W/G	DIAMOND	7.7	3.5	1,362
AR0011	RING	18K W/G	DIAMOND	6.2	2.8	1,094
AR0012	RING	18K Y/G	DIAMOND	5.6	2.5	988
AR0013	RING	14K W/G	DIAMOND	6.2	2.8	1,094
AR0014	RING	14K Y/G	DIAMOND + SAPPHIRE	6.1	2.7	1,077
AR0015	RING	14K W/G	DIAMOND + RUBY	6.5	2.9	1,141
AR0016	RING	18K W/G	DIAMOND + SAPPHIRE	6.7	3.0	1,185
AR0017	RING	18K Y/G	DIAMOND	7.0	3.1	1,230
AR0018	RING	18K W/G	DIAMOND + RUBY	7.2	3.2	1,274
AR0019	RING	14K W/G	DIAMOND	7.5	3.4	1,318
AR0020	RING	14K Y/G	DIAMOND + SAPPHIRE	7.7	3.5	1,362
AR0021	RING	14K W/G	DIAMOND + RUBY	6.1	2.7	1,077
AR0022	RING	18K W/G	DIAMOND + SAPPHIRE	6.5	2.9	1,141
AR0023	RING	18K Y/G	DIAMOND	6.7	3.0	1,185
AR0024	RING	14K W/G	DIAMOND	7.0	3.1	1,230
AR0025	RING	14K Y/G	DIAMOND + SAPPHIRE	7.2	3.2	1,274
AR0026	RING	14K W/G	DIAMOND + RUBY	7.5	3.4	1,318
AR0027	RING	18K W/G	DIAMOND + SAPPHIRE	7.7	3.5	1,362
AR0028	RING	18K Y/G	DIAMOND	6.2	2.8	1,094
AR0029	RING	14K W/G	DIAMOND	5.6	2.5	988
AR0030	RING	18K W/G	DIAMOND + SAPPHIRE	6.2	2.8	1,094

Figure C.17. Product Database.

**EMPORIUM JEWELLERY FACTORY CO.,LTD.**  
**999 SILOM ROAD, BANGRAK, BANGKOK 10500 THAILAND**  
**TEL. (662) 2345000 FAX. (662) 2346000**

**DATABASE : CUSTOMER**

Customer ID	Company Name	Contact Person	Address 1	Address 2	City	Zip	Country	Tel	Fax	Term of Payment	Discount	First Contact Date	Remark
D101	First Gold Jewelry	Mr.Robert Romeo	15 West 47th St.	5th Avenue	New York	10036	U.S.A.	1 212 357 1592	1 212 357 1654	Cash	0%	02/14/98	JA-New York
D102	Oro Plata	Mr.Stafano Ivi	496 Venizia Av.	Dis. De Gari	Milan	15-LK56	Italy	39 04 2586 123539	04 2586 1236	Cash	0%	04/05/98	JA-New York
D103	Hoffy Jewlery	Mr.Bob Nearburg	25e Tony Ct.	Main Channel	Zurich	DD895D	Switzerland	44 35 128 6541	44 35 128 6542	Cash	0%	05/25/98	JA-New York
D104	Gemma Ltd.	Mr.Damino Charco	95-8/5 Air Av.	Dis. De Mamoya	Venice	25-VE35	Italy	39 51 4284 159239	51 4284 1593	Cash	10%	07/14/98	JA-New York
D105	Super Gold Jewelry	Mr.Jacob Mara	815 The Planet	Center Road	Miami	30215	U.S.A.	1 305 654 8974	1 305 654 7520	Cash	15%	09/02/98	JCK-Las Vegas
D106	Best Diamond	Mr.Rolf Louis	38 Washington St.	Rushmount Av.	Michigan	75896	U.S.A.	1 755 357 1591	1 755 357 1592	D/P 30	0%	10/22/98	JCK-Las Vegas
D107	Seculus	Mr.Seculus Mimi	Rae 25 Yor Rd.	Sao park Street	Sao-Paolo	55-14235	Brazil	55 1 532 1475	55 1 532 1485	Cash	0%	12/11/98	JCK-Las Vegas
D108	Gold River	Mr.Gold Yedha	95 4th Lane	Zone Colon	Panama City	P35-2581	Panama	64 1 234 234	64 1 234 235	T/T	0%	01/30/99	Vicenza, Italy
D109	Mon Diamonde	Mr.Francis Tosse	583 Rau Road	Chononnole Dt.	Paris	5W9578	France	33 1 0215 2354	33 1 0219 6548	Cash	10%	03/21/99	Vicenza, Italy

Figure C.18. Customer Database.

EMPORIUM JEWELLERY FACTORY CO.,LTD.  
 999 SILOM ROAD, BANGRAK, BANGKOK 10500 THAILAND  
 TEL. (662) 2345000 FAX. (662) 2346000

DATABASE : SALESPERSON

Salesperson ID	Name
S101	Mr.Smith
S102	Mr.Lek
S103	Mr.Nabier
S104	Mr.Gideon
S105	Mr.Barry
S106	Mr.Pasit
S107	Mr.Veera
S108	Ms.Sandra
S109	Ms.Wacha
S110	Mr.Sandib

Figure C.19. Salesperson Database.



# St. Gabriel's Library

**PROFORMA INVOICE**

Proforma Invoice ID

Date

Customer ID

Shipment Date

Shipment Port

Stamp

Ring Size

Code	Quantity	Type of Gold	Type of Product	Type of Stone	Estimated Price	Total
DR1462	12	18K Y/G	RING	DIAMOND	1,550	18,600
DR2443	12	18K W/G	RING	DIAMOND+RUBY	925	11,100
BN3054	12	18K W/G	NECKLACE	DIAMOND+SAPP	5,500	66,000

Estimated Total F.O.B.

Figure C.20. Input Screen: Proforma Invoice.

## PRODUCTION ORDER

Production Order ID

Proforma Invoice ID

Date

Customer ID

Shipment Date

Shipment Port

Stamp

Ring Size

Code	Quantity	Type of Gold	Type of Product	Type of Stone	Estimated Price	Actual Price
DR1462	12	18K Y/G	RING	DIAMOND	1,550	
DR2443	12	18K W/G	RNG	DIAMOND+RUBY	925	
BN3054	12	18K W/G	NECKLACE	DIAMOND+SAPP	5,500	

Figure C.21. Production Order.

**INVOICE (F.O.B.)**

Invoice F.O.B. ID

Production Order ID

Date

Customer ID

Shipment Date

Shipment Port

Stamp

Ring Size

Code	Quantity	Type of Gold	Type of Product	Type of Stone	Price	Total
DR1462	12	18K Y/G	RING	DIAMOND	1,555	18,660
DR2443	12	18K W/G	RING	DIAMOND+RUBY	930	11,160
BN3054	12	18K W/G	NECKLACE	DIAMOND+SAPP	5,520	66,240

NEW
FIND
SAVE
PRINT

PRINT "REQUEST of FREIGHT and INSURANCE"
EXIT

Total F.O.B. \$96,060

Figure C.22. Invoice (F.O.B.).

INVOICE (C.I.F)						
Invoice C.I.F. ID		D115-001		Shipment Date		15 May 2000
Invoice F.O.B. ID		D115-001		Shipment Port		New York, U.S.A.
Date		5 May 2000		Stamp		18K
Customer ID		D115		Ring Size		56

Code	Quantity	Type of Gold	Type of Product	Type of Stone	Price	Total
DR1462	12	18K Y/G	RING	DIAMOND	1,555	18,660
DR2443	12	18K W/G	RING	DIAMOND+RUBY	930	11,160
BN3054	12	18K W/G	NECKLACE	DIAMOND+SAPP	5,520	66,240

<div style="display: flex; justify-content: space-around;"> <span>NEW</span> <span>FIND</span> <span>SAVE</span> </div>		<div style="display: flex; justify-content: space-around;"> <span>PRINT</span> <span>EXIT</span> </div>		Total F.O.B.    \$96,060		Freight    \$700
				Insurance    \$240		
				Total C.I.F.    \$97,000		

Figure C.23. Invoice (C.I.F.).

REQUEST FORM : BANK STATEMENT	
Money Transfer ID	BSR-05326
Date	10 May 2000
<div> <div> <b>Money Transfer Information from Customer</b> </div> <div> <b>Invoice Information</b> </div> </div>	
Date of Payment	09 May 2000
Bank of Customer	City Bank New York
Amount (US\$)	97,000
Remark	SWIFT No: BBLTH
Invoice (C.I.F.) ID	D115-001
Date	05 May 2000
Customer ID	D115
Total F.O.B.	US\$ 96,060
Freight	US\$ 700
Insurance	US\$ 240
Total C.I.F.	US\$ 97,000
<div> <div>NEW</div> <div>FIND</div> <div>SAVE</div> <div>PRINT</div> <div>EXIT</div> </div>	

Figure C.24. Bank Statement Request Form.



<b>PACKING and SHIPPING INSTRUCTION</b>	
Packing and Shipping Instruction ID	PST-053218
Date	12 May 2000
<b>Statement Request Information</b>	
Money Transfer ID	BSR-05326
<input checked="" type="checkbox"/> Confirm Payment by Bank	
<b>Invoice Information</b>	<b>Payment Slip Information from Customer</b>
Invoice (C.I.F.) No.	D115-001
Date	05 May 2000
Customer ID	D115
Total F.O.B.	US\$ 96,060
Freight	US\$ 700
Insurance	US\$ 240
Total C.I.F.	US\$ 97,00
Customer ID	
Date of Payment	
Bank of Customer	
Amount (US\$)	
Money Order Ref.No.	
Remark	
SWIFT No. BBLTH	
<div style="display: flex; justify-content: space-around; margin-top: 10px;"> <span>NEW</span> <span>FIND</span> <span>SAVE</span> <span>PRINT "Packing Instruction"</span> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <span>EXIT</span> <span>PRINT "Shipping Instruction"</span> </div>	

Figure C.25. Packing and Shipping Instruction.

SHIPMENT CONFIRMATION																											
Shipment Confirmation ID	CFM-115-005																										
Date	14 May 2000																										
Packing and Shipping Information																											
Packing and Shipping Instruction ID	BSR-05326																										
<input checked="" type="checkbox"/> Confirm Payment by Shipping Agent	Air Way Bill No. TG-10-03054-7																										
<b>Invoice Information</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Invoice (C.I.F.) ID</td><td>D115-001</td></tr> <tr><td>Date</td><td>05 May 2000</td></tr> <tr><td>Customer ID</td><td>D115</td></tr> <tr><td>Total F.O.B.</td><td>US\$ 96,060</td></tr> <tr><td>Freight</td><td>US\$ 700</td></tr> <tr><td>Insurance</td><td>US\$ 240</td></tr> <tr><td>Total C.I.F.</td><td>US\$ 97,000</td></tr> </table>	Invoice (C.I.F.) ID	D115-001	Date	05 May 2000	Customer ID	D115	Total F.O.B.	US\$ 96,060	Freight	US\$ 700	Insurance	US\$ 240	Total C.I.F.	US\$ 97,000	<b>Payment Slip Information from Customer</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Customer ID</td><td>D115</td></tr> <tr><td>Date of Payment</td><td>09 May 2000</td></tr> <tr><td>Bank of Customer</td><td>City Bank - New York</td></tr> <tr><td>Amount (US\$)</td><td>97,000</td></tr> <tr><td>Money Order Ref.No.</td><td>CB-66-0125846</td></tr> <tr><td>Remark</td><td>SWIFT No. BBLTH</td></tr> </table>	Customer ID	D115	Date of Payment	09 May 2000	Bank of Customer	City Bank - New York	Amount (US\$)	97,000	Money Order Ref.No.	CB-66-0125846	Remark	SWIFT No. BBLTH
Invoice (C.I.F.) ID	D115-001																										
Date	05 May 2000																										
Customer ID	D115																										
Total F.O.B.	US\$ 96,060																										
Freight	US\$ 700																										
Insurance	US\$ 240																										
Total C.I.F.	US\$ 97,000																										
Customer ID	D115																										
Date of Payment	09 May 2000																										
Bank of Customer	City Bank - New York																										
Amount (US\$)	97,000																										
Money Order Ref.No.	CB-66-0125846																										
Remark	SWIFT No. BBLTH																										
<div style="display: flex; justify-content: space-around; margin-top: 10px;"> <span style="border: 1px solid black; padding: 2px 10px;">NEW</span> <span style="border: 1px solid black; padding: 2px 10px;">FIND</span> <span style="border: 1px solid black; padding: 2px 10px;">SAVE</span> <span style="border: 1px solid black; padding: 2px 10px;">PRINT</span> <span style="border: 1px solid black; padding: 2px 10px;">EXIT</span> </div>																											

Figure C.26. Shipment Confirmation.

PRODUCT DATABASE

Product ID	AR1462
Product Type	RING
Type of Gold	18K White Gold
Type of Stone	Diamond
Weight of Gold	6.2 grams.
Weight of Stone	2.8 carat
Estimated Price	US\$ 1,550.00
Remark	Italian Style

NEW

FIND

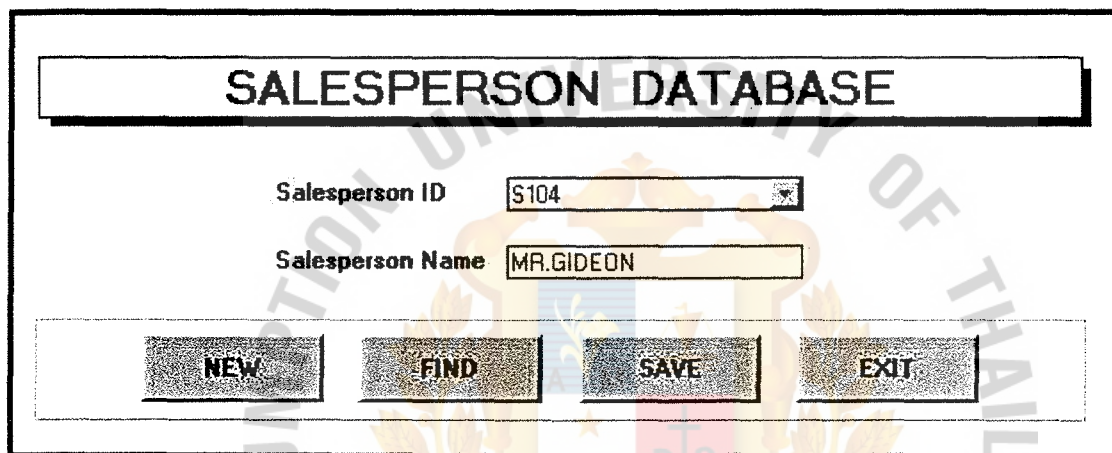
SAVE

EXIT

Figure C.27. Product Database.

CUSTOMER DATABASE			
Customer ID	D115		
Company Name	ROSS & SIMON JEWELRY	Tel	1 212 221 2282
Contact Person	MR. JOHN SIMON	Fax	1 212 221 2285
Address 1	15 W 47TH STREET	Term of Payment	T/T
Address 2	5TH AVENUE, NY	Discount	0 %
City	NEW YORK	First Contact Date	15 May 1999
Country	U.S.A.	Remarks	First met at Vicenza Fair, Italy.
Zip	10036		
<div><div>NEW</div><div>FIND</div><div>SAVE</div><div>EXIT</div></div>			

Figure C.28. Customer Database.



The image shows a graphical user interface for a 'SALESPERSON DATABASE'. At the top, the title 'SALESPERSON DATABASE' is centered in a bold, black, sans-serif font. Below the title, there are two input fields. The first is labeled 'Salesperson ID' and contains the text 'S104'. The second is labeled 'Salesperson Name' and contains the text 'MR.GIDEON'. At the bottom of the interface, there are four buttons arranged horizontally: 'NEW', 'FIND', 'SAVE', and 'EXIT'. Each button has a textured, grey appearance. The entire interface is enclosed in a black rectangular border. A large, faint watermark of a university seal is visible in the background, featuring a crest with a crown and the text 'ASSISTANT UNIVERSITY OF THAILAND' and 'มหาวิทยาลัยอัสสัมชัญ'.

**SALESPERSON DATABASE**

Salesperson ID

Salesperson Name

**NEW** **FIND** **SAVE** **EXIT**

Figure C.29. Salesperson Database.



LOGIN TO THE SYSTEM

User ID

pol

User Password

XXXXXX

Login

Exit Program

Figure C.30. Login Screen.

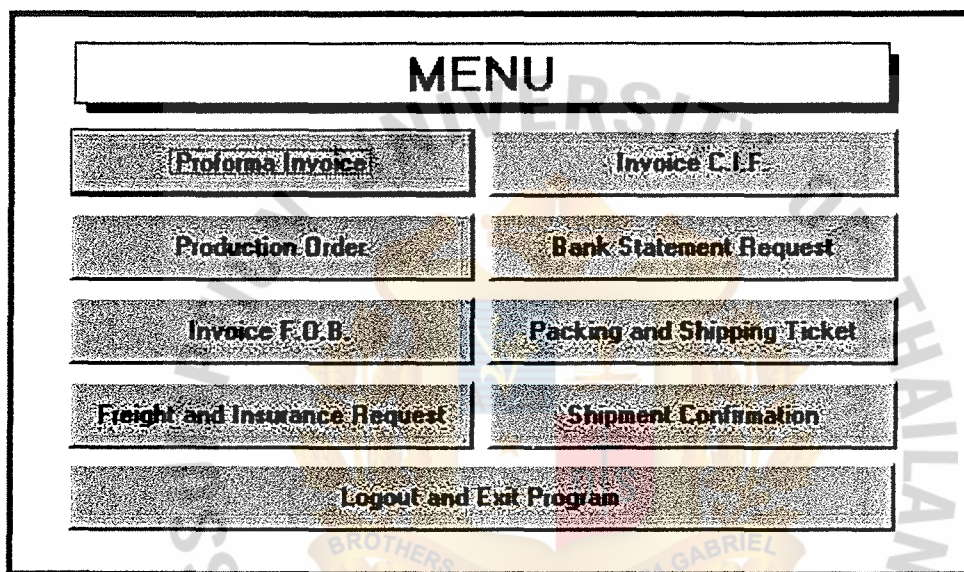


Figure C.31. Menu of the System.

SUMMARY MENU

Select the report(s) that you need and press PRINT.

☒ Product List

☒ Customer List

☒ Salesperson List

Option

Number of copies :

☒ Sales Summary sort by Customer

☒ Sales Summary sort by Country

☒ Sales Summary sort by Salesperson

☒ Sales Summary sort by Type of Product

☒ Sales Summary sort by Type of Gold

☒ Sales Summary sort by Type of Stone

Print

Exit

Figure C.32. Summary Report Menu.

**APPENDIX D**  
**PROCESS SPECIFICATION AND STRUCTURE CHART**



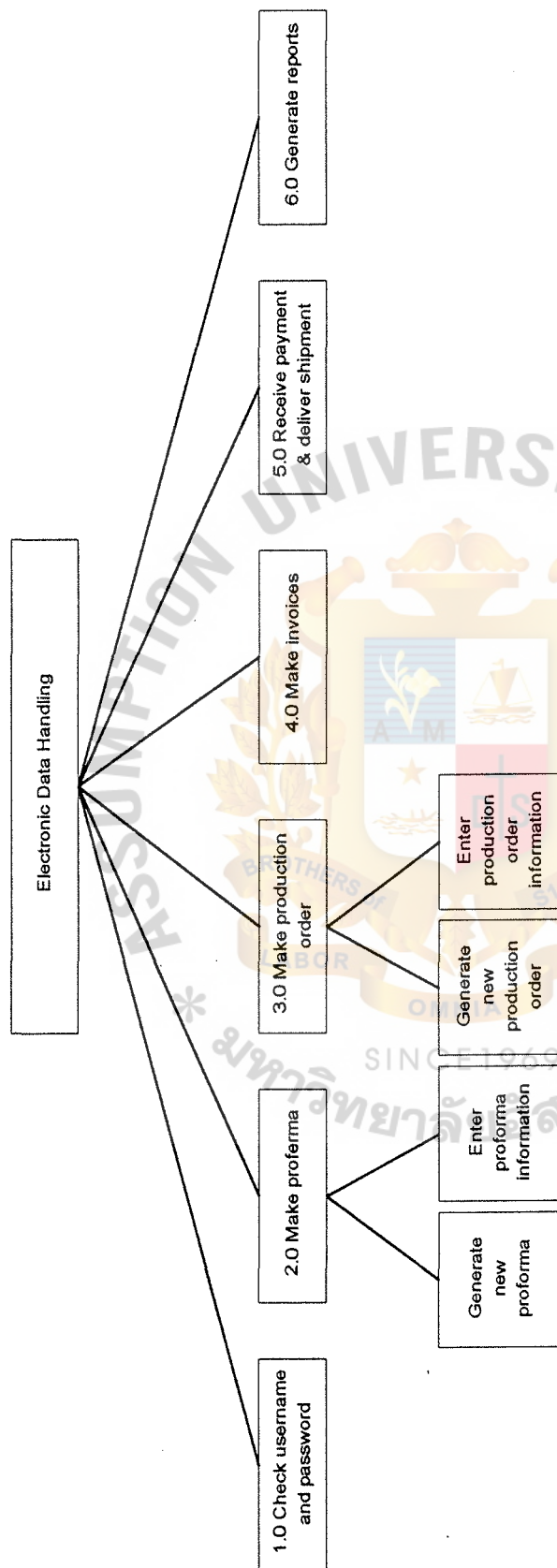


Figure D.1. Structure Chart of Proposed System.



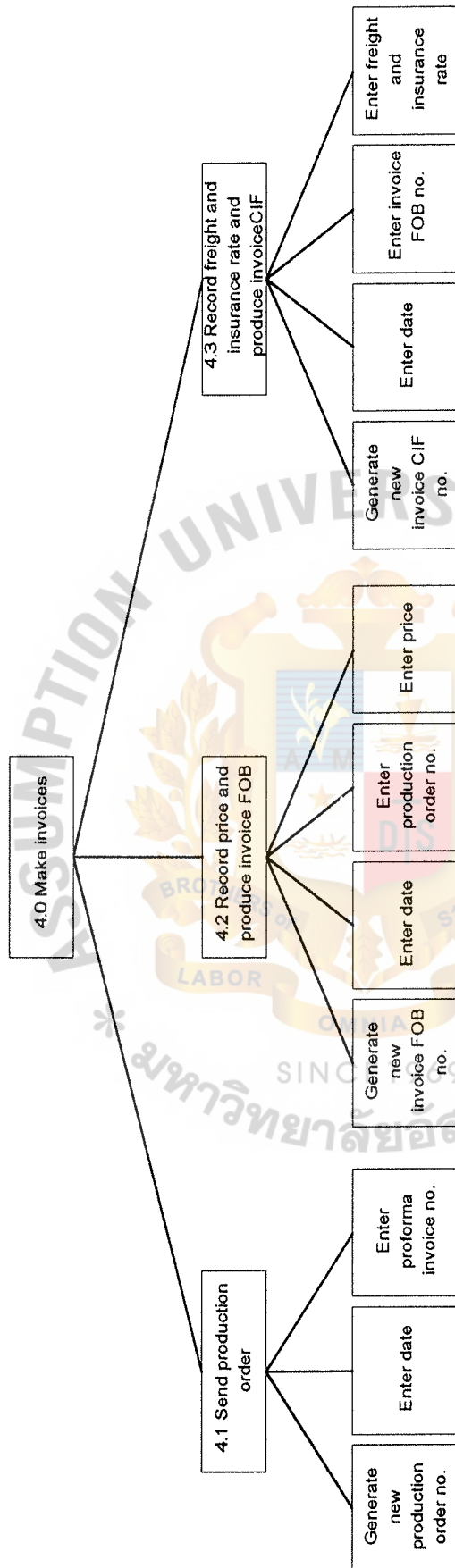


Figure D.2. Structure Chart of Process 4 Make Invoices.

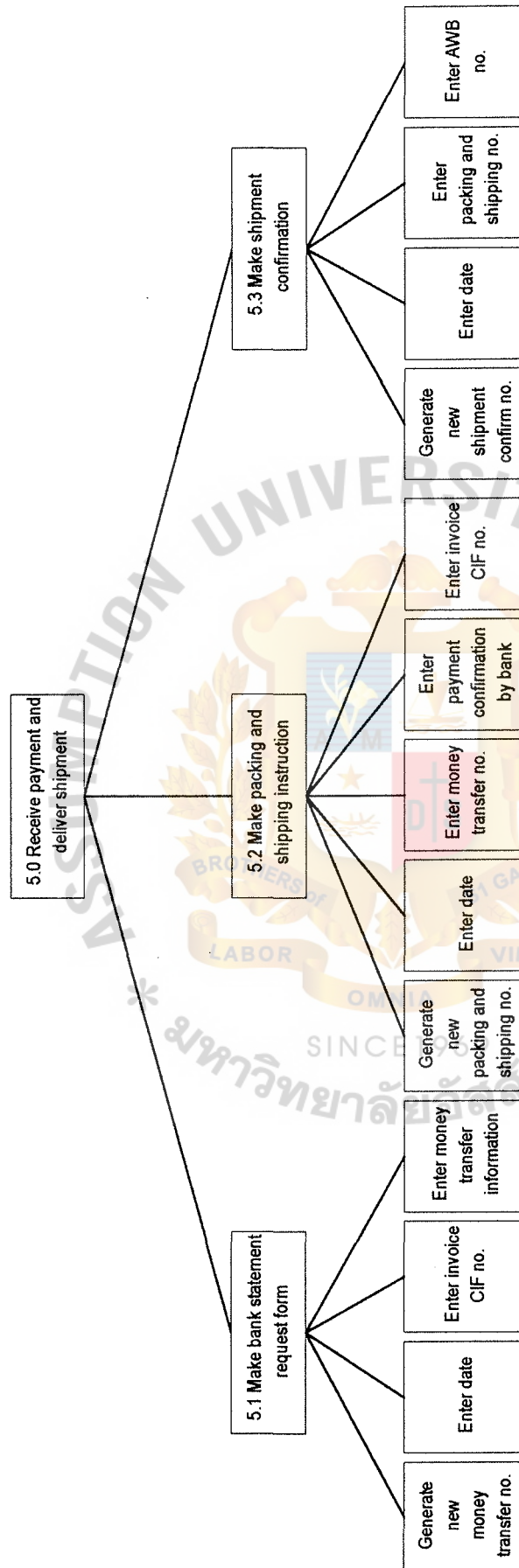


Figure D.3. Structure Chart of Process 5 Receive Payment and Deliver Shipment.

Table D.1. Process 1 Check Username and Password.

Name	Check username and password
Description	System checks username and password with personal identifier from system.mdw
Input	User login Personal identifier
Output	Invalid user Valid username
Process logic	Users enter username and password. Then check "Personal identifier" from "system.mdw". If "username" and "password" and "personal identifier ID" is true, then "Valid username", else "Invalid user".

Table D.2. Process 2 Generate Proforma Invoice.

Name	Generate proforma invoice
Description	Collect all information about customer and order
Input	Proforma Invoice No., Date, Page No., Customer ID, Customer Name, Contact Person, Address1, Address2, Zip, Country, Tel, Fax, Stamp, Ring Size, Shipment Date, Shipment Port, Term of Payment, Salesperson, Proforma Detail, Estimated Total (FOB)
Output	Proforma invoice
Process logic	<p>Open "Proforma invoice" file Open "Proforma invoice detail" file Read "Proforma invoice information" from "Proforma invoice" file Close "Proforma invoice" file</p> <p>Open "Proforma invoice" file Open "Proforma invoice detail" file Add new "Proforma invoice information" Save information in "Proforma invoice" and "Proforma invoice detail" file</p> <p>Open "Proforma invoice" file Open "Proforma invoice detail" file Update "Proforma invoice information" Save information in "Proforma invoice" and "Proforma invoice detail" file</p> <p>Open "Proforma invoice" file Open "Proforma invoice detail" file Delete "Proforma invoice information" Save information in "Proforma invoice" and "Proforma invoice detail" file</p>

Table D.3. Process 3 Make Production Order.

Name	Make production order
Description	Collect all information from purchase order supplied by customer and then create production order with reference to the customer no.
Input	Production Order No., Date, Page No., Customer ID, Customer Name, Contact Person, Address1, Address2, Zip, Country, Tel, Fax, Stamp, Ring Size, Shipment Date, Shipment Port, Term of Payment, Salesperson, Production Order Detail
Output	Production order
Process logic	<p>Open "Production order" file Open "Production order detail" file  Read "Production order information" from "Production order" file  Close "Production order" file</p> <p>Open "Production order" file Open "Production order detail" file  Add new "Production order information"  Save information in "Production order" and "Production order detail" file</p> <p>Open "Production order" file Open "Production order detail" file  Update "Production order information"  Save information in "Production order" and "Production order detail" file</p> <p>Open "Production order" file Open "Production order detail" file  Delete "Production order information"  Save information in "Production order" and "Production order detail" file</p>

Table D.4. Process 4.1 Make Production Order.

Name	Make production order
Description	Send production order to the factory and later on will receive the actual price of the products
Input	Production order
Output	Production order to Factory
Process logic	Send production order to Factory manually

Table D.5. Process 4.2 Record Price and Produce Invoice FOB.

Name	Record price and produce invoice FOB
Description	Take information from production order with the new actual price and make it as a invoice FOB Request Freight and Insurance rate
Input	Invoice FOB No., Date, Page No., Customer ID, Customer Name, Contact Person, Address1, Address2, Zip, Country, Tel, Fax, Stamp, Ring Size, Shipment Date, Shipment Port, Term of Payment, Salesperson, Invoice FOB Detail, Total (FOB)
Output	Invoice FOB
Process logic	<p>Open "Invoice FOB" file Open "Invoice FOB detail" file Read "Invoice FOB information" from "Invoice FOB" file Close "Invoice FOB" file</p> <p>Open "Invoice FOB" file Open "Invoice FOB detail" file Add new "Invoice FOB information" Add new "Freight &amp; Insurance Request" Save information in "Invoice FOB" and "Invoice FOB detail" file</p> <p>Open "Invoice FOB" file Open "Invoice FOB detail" file Update "Invoice FOB information" Save information in "Invoice FOB" and "Invoice FOB detail" file</p> <p>Open "Invoice FOB" file Open "Invoice FOB detail" file Delete "Invoice FOB information" Save information in "Invoice FOB" and "Invoice FOB detail" file</p>



Table D.6. Process 4.3 Record F&I Rate and Produce Invoice CIF.

Name	Record Freight & Insurance rate and produce invoice CIF
Description	Collect all information about customer
Input	Invoice CIF No., Date, Page No., Customer ID, Customer Name, Contact Person, Address1, Address2, Zip, Country, Tel, Fax, Stamp, Ring Size, Shipment Date, Shipment Port, Term of Payment, Salesperson, Invoice CIF Detail, Freight, Insurance, Total (CIF)
Output	Invoice CIF
Process logic	<p>Open "Invoice CIF" file  Open "Invoice CIF detail" file  Open "Freight &amp; Insurance Rate" file  Read "Invoice CIF information" from "Invoice CIF" file  Close "Invoice CIF" file</p> <p>Open "Invoice CIF" file  Open "Invoice CIF detail" file  Open "Freight &amp; Insurance Rate" file  Add new "Invoice CIF information"  Save information in "Invoice CIF" and "Invoice CIF detail" file</p> <p>Open "Invoice CIF" file  Open "Invoice CIF detail" file  Open "Freight &amp; Insurance Rate" file  Update "Invoice CIF information"  Save information in "Invoice CIF" and "Invoice CIF detail" file</p> <p>Open "Invoice CIF" file  Open "Invoice CIF detail" file  Open "Freight &amp; Insurance Rate" file  Delete "Invoice CIF information"  Save information in "Invoice CIF" and "Invoice CIF detail" file</p>

Table D.7. Process 5.1 Make Bank Statement Request Form.

Name	Make bank statement request form
Description	Refer to the invoice CIF, the company will request payment from the customer. Eventually, the customer will transfer money to the account of the company and submit the copy of money transfer to the company. In order to verify such the copy of the money transfer, the company will makes a bank statement request and will receive the bank statement in return.
Input	Money Transfer No., Date of Payment, Bank of Customer, Amount, Invoice CIF, Customer name
Output	Bank statement
Process logic	<p>Open "Money Transfer Record" file  Read "Money Transfer Record information" from "Money Transfer Record" file  Close "Money Transfer Record" file</p> <p>Open "Money Transfer Record" file  Add new "Money Transfer Record information"  Save information in "Money Transfer Record" and "Money Transfer Record detail" file</p> <p>Open "Money Transfer Record" file  Update "Money Transfer Record information"  Save information in "Money Transfer Record" and "Money Transfer Record detail" file</p> <p>Open "Money Transfer Record" file  Delete "Money Transfer Record information"  Save information in "Money Transfer Record" and "Money Transfer Record detail" file</p>

Table D.8. Process 5.2 Make Packing and Shipping Instruction.

Name	Make Packing and Shipping Instruction
Description	After receive the bank statement confirming the payment, the export department will instruct the packing division to pack the merchandises and also instruct the shipping agent to ship the goods to the customer.
Input	Packing & Shipping No., Invoice CIF No., Invoice CIF detail
Output	Packing Instruction Shipping Instruction
Process logic	<p>Open "Packing and Shipping Instruction" file  Read "Packing and Shipping Instruction information" from  "Packing and Shipping Instruction" file  Close "Packing and Shipping Instruction" file</p> <p>Open "Packing and Shipping Instruction" file  Add new "Packing and Shipping Instruction information"  Save information in "Packing and Shipping Instruction" and  "Packing and Shipping Instruction detail" file</p> <p>Open "Packing and Shipping Instruction" file  Update "Packing and Shipping Instruction information"  Save information in "Packing and Shipping Instruction" and  "Packing and Shipping Instruction detail" file</p> <p>Open "Packing and Shipping Instruction" file  Delete "Packing and Shipping Instruction information"  Save information in "Packing and Shipping Instruction" and  "Packing and Shipping Instruction detail" file</p>

Table D.9. Process 5.3 Make Shipment Confirmation.

Name	Make shipment confirmation
Description	After the shipment of the goods, the company will confirm the shipment via shipment confirmation letter.
Input	AWB No., Invoice CIF No.
Output	Shipment confirmation
Process logic	<p>Open "Shipment Confirmation" file  Read "Shipment Confirmation information" from "Shipment Confirmation" file  Close "Shipment Confirmation" file</p> <p>Open "Shipment Confirmation" file  Add new "Shipment Confirmation information"  Save information in "Shipment Confirmation" and "Shipment Confirmation detail" file</p> <p>Open "Shipment Confirmation" file  Update "Shipment Confirmation information"  Save information in "Shipment Confirmation" and "Shipment Confirmation detail" file</p> <p>Open "Shipment Confirmation" file  Delete "Shipment Confirmation information"  Save information in "Shipment Confirmation" and "Shipment Confirmation detail" file</p>



**APPENDIX E**  
**DATA DICTIONARY**



Table E.1. Data Dictionary.

Object Name	Type	Description
AWB No.	DF	*character*
Bank Statement	DF	*Money Transfer No. + Date of Payment + Bank of Customer + Amount + Invoice CIF + Customer name* Money Transfer No. = *character* Date of Payment = *digit* Bank of Customer = *character* Amount = *digit* Invoice CIF = *character* Customer name = *character*
Bank Statement Request	DF	*Bank Statement Request No. + Money Transfer No. + Date of Payment + Bank of Customer + Amount + Invoice CIF + Customer name* Bank Statement Request No. = *character* Money Transfer No. = *character* Date of Payment = *digit* Bank of Customer = *character* Amount = *digit* Invoice CIF = *character* Customer name = *character*
Copy of Money Transfer	DF	*Money Transfer No. + Date of Payment + Bank of Customer + Amount + Invoice CIF + Customer name* Money Transfer No. = *character* Date of Payment = *digit* Bank of Customer = *character* Amount = *digit* Invoice CIF = *character* Customer name = *character*
Customer ID	DF	*character*
Customer Information	DF	* Customer ID + Customer Name + Contact Person + Address1 + Address2 + Zip + Country + Tel + Fax* Customer ID = *character* Customer Name = *character* Contact Person = *character* Address1 = *character* Address2 = *character* Zip = *character* Country = *character* Tel = *character* Fax = *character*

Table E.1. Data Dictionary (Continued).

Object Name	Type	Description
D1 Proforma Invoice	DS	<p>*Proforma Invoice No. + Date + Page No. + Customer ID + Customer Name + Contact Person + Address1 + Address2 + Zip + Country + Tel + Fax + Stamp + Ring Size + Shipment Date + Shipment Port + Term of Payment + Salesperson + Proforma Detail + Estimated Total (FOB)*</p> <p>Proforma Invoice No. = *character*</p> <p>Date = *digit*</p> <p>Page No. = *character*</p> <p>Customer ID = *character*</p> <p>Customer Name = *character*</p> <p>Contact Person = *character*</p> <p>Address1 = *character*</p> <p>Address2 = *character*</p> <p>Zip = *character*</p> <p>Country = *character*</p> <p>Tel = *character*</p> <p>Fax = *character*</p> <p>Stamp = *character*</p> <p>Ring Size = *character*</p> <p>Shipment Date = *character*</p> <p>Shipment Port = *character*</p> <p>Term of Payment = *character*</p> <p>Salesperson = *character*</p> <p>Estimated Total (FOB) = *digit*</p>
D2 Proforma Detail	DS	<p>*Code + Quantity + Type of Gold + Type of Product + Type of Stone + Estimated Price*</p> <p>Code = *character*</p> <p>Quantity = *digit*</p> <p>Type of Gold = *character*</p> <p>Type of Product = *character*</p> <p>Type of Stone = *character*</p> <p>Estimated Price = *digit*</p>

Table E.1. Data Dictionary (Continued).

Object Name	Type	Description
D3 Production Order	DS	<p>*Production Order No. + Date + Page No. + Customer ID + Customer Name + Contact Person + Address1 + Address2 + Zip + Country + Tel + Fax + Stamp + Ring Size + Shipment Date + Shipment Port + Term of Payment + Salesperson + Production Order Detail*</p> <p>Production Order No. = *character*</p> <p>Date = *digit*</p> <p>Page No. = *character*</p> <p>Customer ID = *character*</p> <p>Customer Name = *character*</p> <p>Contact Person = *character*</p> <p>Address1 = *character*</p> <p>Address2 = *character*</p> <p>Zip = *character*</p> <p>Country = *character*</p> <p>Tel = *character*</p> <p>Fax = *character*</p> <p>Stamp = *character*</p> <p>Ring Size = *character*</p> <p>Shipment Date = *character*</p> <p>Shipment Port = *character*</p> <p>Term of Payment = *character*</p> <p>Salesperson = *character*</p>
D4 Production Order Detail	DS	<p>*Code + Quantity + Type of Gold + Type of Product + Type of Stone + Estimated Price*</p> <p>Code = *character*</p> <p>Quantity = *digit*</p> <p>Type of Gold = *character*</p> <p>Type of Product = *character*</p> <p>Type of Stone = *character*</p> <p>Estimated Price = *digit*</p>

Table E.1. Data Dictionary (Continued).

Object Name	Type	Description
D5 Invoice FOB	DS	<p>*Invoice FOB No. + Date + Page No. + Customer ID + Customer Name + Contact Person + Address1 + Address2 + Zip + Country + Tel + Fax + Stamp + Ring Size + Shipment Date + Shipment Port + Term of Payment + Salesperson + Invoice FOB Detail + Total (FOB)*</p> <p>Invoice FOB No. = *character*</p> <p>Date = *digit*</p> <p>Page No. = *character*</p> <p>Customer ID = *character*</p> <p>Customer Name = *character*</p> <p>Contact Person = *character*</p> <p>Address1 = *character*</p> <p>Address2 = *character*</p> <p>Zip = *character*</p> <p>Country = *character*</p> <p>Tel = *character*</p> <p>Fax = *character*</p> <p>Stamp = *character*</p> <p>Ring Size = *character*</p> <p>Shipment Date = *character*</p> <p>Shipment Port = *character*</p> <p>Term of Payment = *character*</p> <p>Salesperson = *character*</p> <p>Estimated Total = *digit*</p>
D6 Invoice FOB Detail	DS	<p>*Code + Quantity + Type of Gold + Type of Product + Type of Stone + Price*</p> <p>Code = *character*</p> <p>Quantity = *digit*</p> <p>Type of Gold = *character*</p> <p>Type of Product = *character*</p> <p>Type of Stone = *character*</p> <p>Price = *digit*</p>

# St. Gabriel's Library

Table E.1. Data Dictionary (Continued).

Object Name	Type	Description
D7 Invoice CIF	DS	<p>*Invoice CIF No. + Date + Page No. + Customer ID + Customer Name + Contact Person + Address1 + Address2 + Zip + Country + Tel + Fax + Stamp + Ring Size + Shipment Date + Shipment Port + Term of Payment + Salesperson + Invoice CIF Detail + Freight + Insurance + Total (CIF)*</p> <p>Invoice CIF No. = *character*</p> <p>Date = *digit*</p> <p>Page No. = *character*</p> <p>Customer ID = *character*</p> <p>Customer Name = *character*</p> <p>Contact Person = *character*</p> <p>Address1 = *character*</p> <p>Address2 = *character*</p> <p>Zip = *character*</p> <p>Country = *character*</p> <p>Tel = *character*</p> <p>Fax = *character*</p> <p>Stamp = *character*</p> <p>Ring Size = *character*</p> <p>Shipment Date = *character*</p> <p>Shipment Port = *character*</p> <p>Term of Payment = *character*</p> <p>Salesperson = *character*</p> <p>Freight = *digit*</p> <p>Insurance = *digit*</p> <p>Total = *digit*</p>
D8 Invoice CIF Detail	DS	<p>*Code + Quantity + Type of Gold + Type of Product + Type of Stone + Price*</p> <p>Code = *character*</p> <p>Quantity = *digit*</p> <p>Type of Gold = *character*</p> <p>Type of Product = *character*</p> <p>Type of Stone = *character*</p> <p>Price = *digit*</p>
D9 System	DS	*character+digit*



Table E.1. Data Dictionary (Continued).

Object Name	Type	Description
D10 Money Transfer Record	DS	*Money Transfer No. + Date of Payment + Bank of Customer + Amount + Invoice CIF + Customer name* Money Transfer No. = *character* Date of Payment = *digit* Bank of Customer = *character* Amount = *digit* Invoice CIF = *character* Customer name = *character*
D11 Packing & Shipping Instruction	DS	* Packing & Shipping No. + Invoice CIF No. + Invoice CIF detail* Packing & Shipping No. = *digit*
D12 Shipment Confirmation	DS	* AWB No. + Invoice CIF No.*
D13 Customer	DS	* Customer ID + Customer Name + Contact Person + Address1 + Address2 + Zip + Country + Tel + Fax* Customer ID = *character* Customer Name = *character* Contact Person = *character* Address1 = *character* Address2 = *character* Zip = *character* Country = *character* Tel = *character* Fax = *character*
Freight & Insurance Price	DF	* Freight & Insurance Request No. + Freight Cost + Insurance Cost* Freight & Insurance Request No. = *character* Freight Cost = *digit* Insurance Cost = *digit*
Freight & Insurance Request	DF	*Freight & Insurance Request No. + Invoice CIF information* Freight & Insurance Request No. = *digit*

Table E.1. Data Dictionary (Continued).

Object Name	Type	Description
Invalid username	DF	*character*
Invalid username and password	DF	*character*
Invoice CIF	DF	*Invoice CIF No. + Date + Page No. + Customer ID + Customer Name + Contact Person + Address1 + Address2 + Zip + Country + Tel + Fax + Stamp + Ring Size + Shipment Date + Shipment Port + Term of Payment + Salesperson + Invoice CIF Detail + Freight + Insurance + Total (CIF)* Invoice CIF No. = *character* Date = *digit* Page No. = *character* Customer ID = *character* Customer Name = *character* Contact Person = *character* Address1 = *character* Address2 = *character* Zip = *character* Country = *character* Tel = *character* Fax = *character* Stamp = *character* Ring Size = *character* Shipment Date = *character* Shipment Port = *character* Term of Payment = *character* Salesperson = *character* Freight = *digit* Insurance = *digit* Total = *digit*
Invoice CIF Detail	DF	*Code + Quantity + Type of Gold + Type of Product + Type of Stone + Price* Code = *character* Quantity = *digit* Type of Gold = *character* Type of Product = *character* Type of Stone = *character* Price = *digit*

Table E.1. Data Dictionary (Continued).

Object Name	Type	Description
Invoice FOB	DF	<p>*Invoice FOB No. + Date + Page No. + Customer ID + Customer Name + Contact Person + Address1 + Address2 + Zip + Country + Tel + Fax + Stamp + Ring Size + Shipment Date + Shipment Port + Term of Payment + Salesperson + Invoice FOB Detail + Total (FOB)*</p> <p>Invoice FOB No. = *character*</p> <p>Date = *digit*</p> <p>Page No. = *character*</p> <p>Customer ID = *character*</p> <p>Customer Name = *character*</p> <p>Contact Person = *character*</p> <p>Address1 = *character*</p> <p>Address2 = *character*</p> <p>Zip = *character*</p> <p>Country = *character*</p> <p>Tel = *character*</p> <p>Fax = *character*</p> <p>Stamp = *character*</p> <p>Ring Size = *character*</p> <p>Shipment Date = *character*</p> <p>Shipment Port = *character*</p> <p>Term of Payment = *character*</p> <p>Salesperson = *character*</p> <p>Estimated Total = *digit*</p>
Invoice FOB Detail	DF	<p>*Code + Quantity + Type of Gold + Type of Product + Type of Stone + Price*</p> <p>Code = *character*</p> <p>Quantity = *digit*</p> <p>Type of Gold = *character*</p> <p>Type of Product = *character*</p> <p>Type of Stone = *character*</p> <p>Price = *digit*</p>
Money Transfer Detail	DF	<p>*Money Transfer No. + Date of Payment + Bank of Customer + Amount + Invoice CIF + Customer name*</p> <p>Money Transfer No. = *character*</p> <p>Date of Payment = *digit*</p> <p>Bank of Customer = *character*</p> <p>Amount = *digit*</p> <p>Invoice CIF = *character*</p> <p>Customer name = *character*</p>

Table E.1. Data Dictionary (Continued).

Object Name	Type	Description
Money Transfer No.	DF	*digit*
Order Confirmation	DF	*Proforma No. + Confirmation of Order* Confirmation of Order = *yes/no*
Packing & Shipping Information	DF	* Packing & Shipping No. + Invoice CIF No. + Invoice CIF detail* Packing & Shipping No. = *digit*
Packing & Shipping Instruction	DF	* Packing & Shipping No. + Invoice CIF No. + Invoice CIF detail* Packing & Shipping No. = *digit*
Packing & Shipping No.	DF	*digit*
Packing Instruction	DF	* Packing & Shipping No. + Invoice CIF No. + Invoice CIF detail* Packing & Shipping No. = *digit*
Password	DF	*character*
Payment Information	DF	*Money Transfer No. + Date of Payment + Bank of Customer + Amount + Invoice CIF + Customer name* Money Transfer No. = *character* Date of Payment = *digit* Bank of Customer = *character* Amount = *digit* Invoice CIF = *character* Customer name = *character*
Personal Identifier	DF	*username. + password* username = *character* password = *character*
Price	DF	*digit*

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Table E.1. Data Dictionary (Continued).

Object Name	Type	Description
Production Order	DF	*Production Order No. + Date + Page No. + Customer ID + Customer Name + Contact Person + Address1 + Address2 + Zip + Country + Tel + Fax + Stamp + Ring Size + Shipment Date + Shipment Port + Term of Payment + Salesperson + Production Order Detail* Production Order No. = *character* Date = *digit* Page No. = *character* Customer ID = *character* Customer Name = *character* Contact Person = *character* Address1 = *character* Address2 = *character* Zip = *character* Country = *character* Tel = *character* Fax = *character* Stamp = *character* Ring Size = *character* Shipment Date = *character* Shipment Port = *character* Term of Payment = *character* Salesperson = *character*
Production Order Detail	DF	*Code + Quantity + Type of Gold + Type of Product + Type of Stone + Estimated Price* Code = *character* Quantity = *digit* Type of Gold = *character* Type of Product = *character* Type of Stone = *character* Estimated Price = *digit*
Proforma Detail	DF	*Code + Quantity + Type of Gold + Type of Product + Type of Stone + Estimated Price* Code = *character* Quantity = *digit* Type of Gold = *character* Type of Product = *character* Type of Stone = *character* Estimated Price = *digit*



Table E.1. Data Dictionary (Continued).

Object Name	Type	Description
Proforma Invoice	DF	<p>*Proforma Invoice No. + Date + Page No. + Customer ID + Customer Name + Contact Person + Address1 + Address2 + Zip + Country + Tel + Fax + Stamp + Ring Size + Shipment Date + Shipment Port + Term of Payment + Salesperson + Proforma Detail + Estimated Total (FOB)*</p> <p>Proforma Invoice No. = *character*</p> <p>Date = *digit*</p> <p>Page No. = *character*</p> <p>Customer ID = *character*</p> <p>Customer Name = *character*</p> <p>Contact Person = *character*</p> <p>Address1 = *character*</p> <p>Address2 = *character*</p> <p>Zip = *character*</p> <p>Country = *character*</p> <p>Tel = *character*</p> <p>Fax = *character*</p> <p>Stamp = *character*</p> <p>Ring Size = *character*</p> <p>Shipment Date = *character*</p> <p>Shipment Port = *character*</p> <p>Term of Payment = *character*</p> <p>Salesperson = *character*</p> <p>Estimated Total (FOB) = *digit*</p>
Shipping Information	DF	<p>* Packing &amp; Shipping No. + Invoice CIF No. + Invoice CIF detail*</p> <p>Packing &amp; Shipping No. = *digit*</p>
Shipping Instruction	DF	<p>* Packing &amp; Shipping No. + Invoice CIF No. + Invoice CIF detail*</p> <p>Packing &amp; Shipping No. = *digit*</p>
Username	DF	*character*



**APPENDIX F**  
**DATABASE DESIGN**

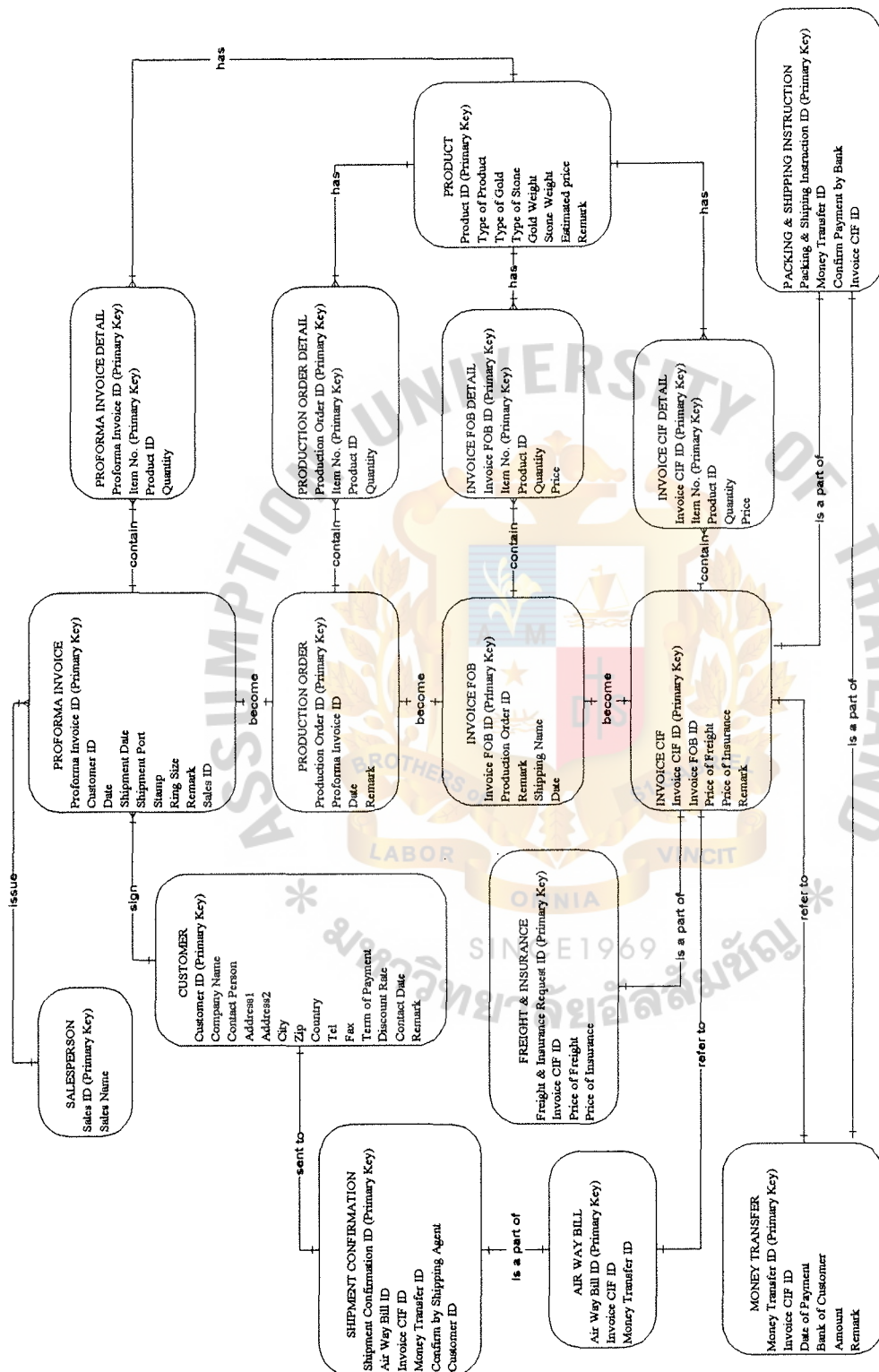


Figure F.1. Entity Relationship Diagram of Proposed System.

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Table F.1. Customer.

Key	Field name	Type	Length	Description
PK	Customer ID	Text	10	Customer number
	Company Name	Text	50	Company Name
	Contact Person	Text	50	Contact Person
	Address1	Text	50	Address of the customer, part 1
	Address2	Text	50	Address of the customer, part 2
	City	Text	50	City
	Zip	Text	15	Zip code
	Country	Text	20	Country of customer
	Tel	Text	15	Telephone
	Fax	Text	15	Fax machine number
	Term of Payment	Text	15	Term of Payment
	Discount Rate	Number	9	Discount rate given to the customer
	Contact Date	Date	8	First contact with customer
	Remark	Text	50	Note

Table F.2. Product.

Key	Field name	Type	Length	Description
PK	Product ID	Text	10	Product number
	Type of Product	Text	15	Type of Product
	Type of Gold	Text	15	Type of Gold
	Type of Stone	Text	15	Type of Stone
	Gold Weight	Number	7	Gold weight of the product
	Stone Weight	Number	7	Stone weight of the product
	Estimated price	Number	9	Average price of product that is used to quote at the time the order is placed.
	Remark	Text	50	Note

Table F.3. Salesperson.

Key	Field name	Type	Length	Description
PK	Sales ID	Text	10	Sales number
	Sales Name	Text	50	Name of salesperson

Table F.4. Proforma Invoice.

Key	Field name	Type	Length	Description
PK	Proforma Invoice ID	Text	10	Proforma Invoice number
FK	Customer ID	Text	10	Customer number
	Date	Date	8	Date of Proforma Invoice
	Shipment Date	Date	8	Expected shipment date
	Shipment Port	Text	50	Shipment Port
	Stamp	Text	5	Type of Stamp on product
	Ring Size	Text	2	Ring Size
	Remark	Text	50	Note
FK	Sales ID	Text	10	Sales number

Table F.5. Proforma Invoice Detail.

Key	Field name	Type	Length	Description
PK	Proforma Invoice ID	Text	10	Proforma Invoice number
PK	Item No.	Long	3	Item number
FK	Product ID	Text	10	Product number
	Quantity	Number	5	Quantity of product order



Table F.6. Production Order.

Key	Field name	Type	Length	Description
PK	Production Order ID	Text	10	Production Order number
FK	Proforma Invoice ID	Text	10	Proforma Invoice number
	Date	Date	8	Date of Production Order
	Remark	Text	50	Note

Table F.7. Production Order Detail.

Key	Field name	Type	Length	Description
PK	Production Order ID	Text	10	Production Order number
PK	Item No.	Long	3	Item number
FK	Product ID	Text	10	Product number
	Quantity	Number	5	Quantity of product order

Table F.8. Invoice FOB.

Key	Field name	Type	Length	Description
PK	Invoice FOB ID	Text	10	Invoice FOB number
FK	Production Order ID	Text	10	Production Order number
	Remark	Text	50	Note
	Shipping Name	Text	50	Shipping Name
	Date	Date	8	Date of Invoice FOB

Table F.9. Invoice FOB Detail.

Key	Field name	Type	Length	Description
PK	Invoice FOB ID	Text	10	Invoice FOB number
PK	Item No.	Long	3	Item number
FK	Product ID	Text	10	Product number
	Quantity	Number	5	Quantity of product order
	Price	Number	9	Actual Price of the product, calculated after the production is completed.

Table F.10. Invoice CIF.

Key	Field name	Type	Length	Description
PK	Invoice CIF ID	Text	10	Invoice CIF number
FK	Invoice FOB ID	Text	10	Invoice FOB number
	Price of Freight	Number	9	Price of Freight
	Price of Insurance	Number	9	Price of Insurance
	Remark	Text	50	Note

Table F.11. Invoice CIF Detail.

Key	Field name	Type	Length	Description
PK	Invoice CIF ID	Text	10	Invoice CIF number
PK	Item No.	Long	3	Item number
FK	Product ID	Text	10	Product number
	Quantity	Number	5	Quantity of product order
	Price	Number	9	Actual Price of the product, calculated after the production is completed.

Table F.12. Freight & Insurance.

Key	Field name	Type	Length	Description
PK	Freight & Insurance Request ID	Text	10	Freight & Insurance Request number
FK	Invoice CIF ID	Text	10	Invoice CIF number
	Price of Freight	Number	9	Price of Freight
	Price of Insurance	Number	9	Price of Insurance

Table F.13. Money Transfer.

Key	Field name	Type	Length	Description
PK	Money Transfer ID	Text	10	Money Transfer number
FK	Invoice CIF ID	Text	10	Invoice CIF number
	Date of Payment	Date	8	Date of Payment
	Bank of Customer	Text	50	Bank of Customer
	Amount	Number	9	Amount of the transferred money
	Remark	Text	50	Note

Table F.14. Packing & Shipping Instruction.

Key	Field name	Type	Length	Description
PK	Packing & Shipping Instruction ID	Text	10	Packing & Shipping Instruction number
FK	Money Transfer ID	Text	10	Money Transfer number
	Confirm Payment by Bank	Yes/No	1	Confirm Payment by Bank
FK	Invoice CIF ID	Text	10	Invoice CIF number

Table F.15. Air Way Bill.

Key	Field name	Type	Length	Description
PK	Air Way Bill ID	Text	10	Air Way Bill Number
FK	Invoice CIF ID	Text	10	Invoice CIF number
FK	Money Transfer ID	Text	10	Money Transfer number

Table F.16. Shipment Confirmation.

Key	Field name	Type	Length	Description
PK	Shipment Confirmation ID	Text	10	Shipment Confirmation number
FK	Air Way Bill ID	Text	10	Air Way Bill Number
FK	Invoice CIF ID	Text	10	Invoice CIF number
FK	Money Transfer ID	Text	10	Money Transfer number
	Confirm by Shipping Agent	Yes/No	1	Confirm by Shipping Agent
FK	Customer ID	Text	10	Customer number

## BIBLIOGRAPHY

1. Date, C.J. An Introduction to Database System, 6<sup>th</sup> Edition. New York, Addison Wesley, 1995.
2. FitzGerald, Jerry A. and Andra FitzGerald. Fundamentals of System Analysis. New York, John Wiley & Sons, Inc., 1987.
3. Kendall, Kenneth E. and Julie E. Kendall. System Analysis and Design, 2<sup>nd</sup> Edition. Englewood Cliff, N.J., Prentice Hall, Inc., 1992.
4. Laudon Kenneth C. and Jane P. Laudon. Management Information Systems 5<sup>th</sup> Edition. Englewood Cliff, N.J., Prentice Hall, Inc., 1996.
5. Long, Larry. Management Information System. Englewood Cliff, N.J., Prentice-Hall, 1989.
6. Page-Jones, Meilir. The Practical Guide to Structured System Design, 2<sup>nd</sup> Edition. Englewood Cliff, N.J., Yourdon Press, 1988.
7. Senn, Jame A. Analysis & Design of Information Systems, New York, McGraw-Hill, 1989.
8. Viescas, John L. Running Microsoft Access 97 for Windows. Redmond, Washignton, Microsoft Corporation, 1998.
9. Whitten, Jeffrey L. and Lonnie D. Bentley. Systems Analysis and Design Methods, 4<sup>th</sup> Edition. New York, McGraw-Hill Companies, Inc., 1998.
10. Yourdon, Edward. Modern Structured Analysis. Englewood Cliff, N.J., Prentice-Hall, 1989.

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