



Practical Development of Information System in Business Context:
Inventory System for Kij Seree Inter Trading Co., Ltd.

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Submitted in Partial Fulfillment
of the Course BC 4500 280 Hour Training Program
Bachelor's Degree of Business Administration
in Business Computer Program
Assumption University

December 2002

Project Name: Practical Development of Information System in Business Context:
Inventory System for Kij Seree Inter Trading Co., Ltd.

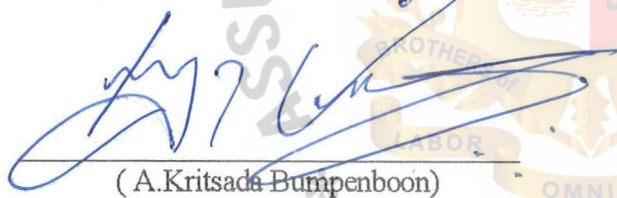
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The Department of Business Computer, ABAC School of Management has approved the
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documentation and program as a partial fulfillment of the requirements for the Bachelor's
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I. INTRODUCTION

1.1 Background of the Organization

Kij Seree Inter Trading Co., Ltd. was established in 1978. This Company is the importer and the retailer that sale about the tools iron Hardware for building and for worker for making the construction including hardware, hand tools, drills, hammers, threading taps, cutting wheel, etc. The main countries that this company import, there are from Germany, Japan, China, Taiwan, and India.

Since the company was established around 24 years ago, there was not quite high competition in this kind of business. But in the present, the competitors are increasing quickly because the construction in Thailand has high rate to build the building and they have high requirement about the tools for making the construction. That's why there are a lot of competition.

The company has about 40 workers. All of 40 workers will divided to the different part of the department in the company.

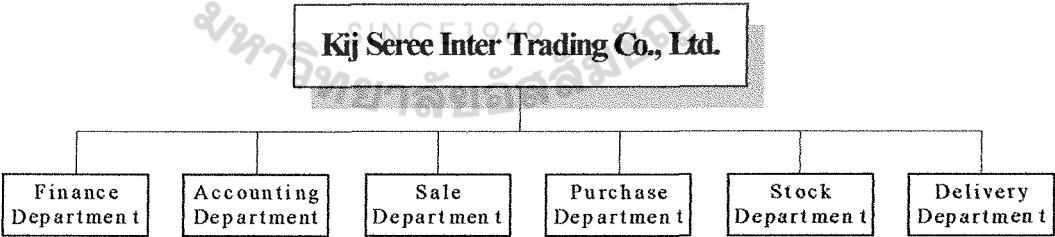


Figure 1-1 Organization Chart

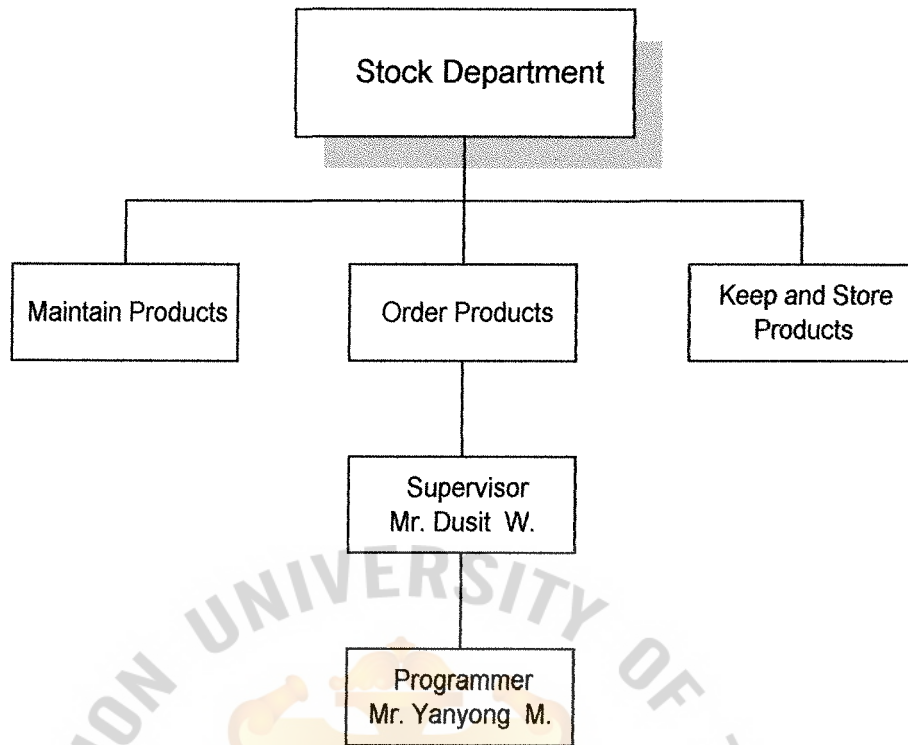


Figure 1-2 Department Chart

1.2 Objectives of the System

- (1) To study the existing system for the understanding on the current operation.
- (2) To analyze the causes of problems of the existing system.
- (3) To define user requirements that will help and solve current problems.
- (4) To improve the performance in terms of database management systems in order eliminate errors.
- (5) To implement an information system for quality management control and implement the system in the real working system.
- (6) To improve the inventory system of the company to be more flexible and convenience for user.
- (7) To increase the advantages and benefits for the company with using the new inventory system.

1.3 Scope of the System

- (1) Improvement of the new user interface that suitable for user in inputting and retrieval the information.
- (2) Increase the efficient the store document and retrieve the data in the inventory document by using the new inventory system.
- (3) Generation of effective reports to consume less operational time and cut off the error operation by using the new inventory system that differ from the existing system.
- (4) Preparation for documentation to be guide the workers in the system maintenance.
- (5) Identification for insufficient stock in the inventory system and let the user know about the stock available with alert from inventory system.
- (6) Development of the new inventory system that can order and purchase the products with customers and suppliers more efficiency.

1.4 Project Plan

I started to do the project on September, I studied the existing system in order to find out the problem of the existing system. Then, I had to identify the problem. I had to interview the users to get the requirement of the users need in the new system. Then, I can define the objectives and the scopes of the system. When I get all the users requirement, I can analyze and design the proposed the system. Then, I had to design the user interface and the report for the users requirement that can make the appropriate use for the users. After that when the program completed, the users would test the program whether the program perform the job. And then, I do the documentation for this proposed system.

No.	Task Name	September				October				November				December			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
	I. Analysis of the Existing System																
1.	Study the Existing System																
2.	Identify the Existing Problems																
3.	Existing Data Flow Diagram																
	II. Preliminary Investigation																
4.	Define the objectives and scope																
5.	Hardware Requirements																
6.	Software Requirements																
	III. Analysis and Design of the Proposed System																
7.	Entity-Relationship Diagram																
8.	Database Design																
9.	Data Flow Diagram																
10.	Process Specification																
11.	Data Dictionary																
12.	Interface Design																
13.	Report Design																
	IV. Implementation of the Proposed System																
14.	Coding																
15.	Testing																
16.	Documentation																

Figure 1-3 Project Plan for Kij Seree Inter Trading Inventory System

II. THE EXISTING SYSTEM

2.1 Background of Existing System

Generally, the information system of the company is operated manually. This company use LAN to connect all of information to be linked together. Information are kept in the both hard copy and soft copy format.

The inventory system of the company will control the number of products purchased and sold to suppliers and customers. In case return defect goods or products from customer, the company will change the new products to customer. When the products are sold, the worker will deduct the number of products sold from inventory document. On the other hand, the number of purchase that bought from suppliers will be added directly to the inventory document.

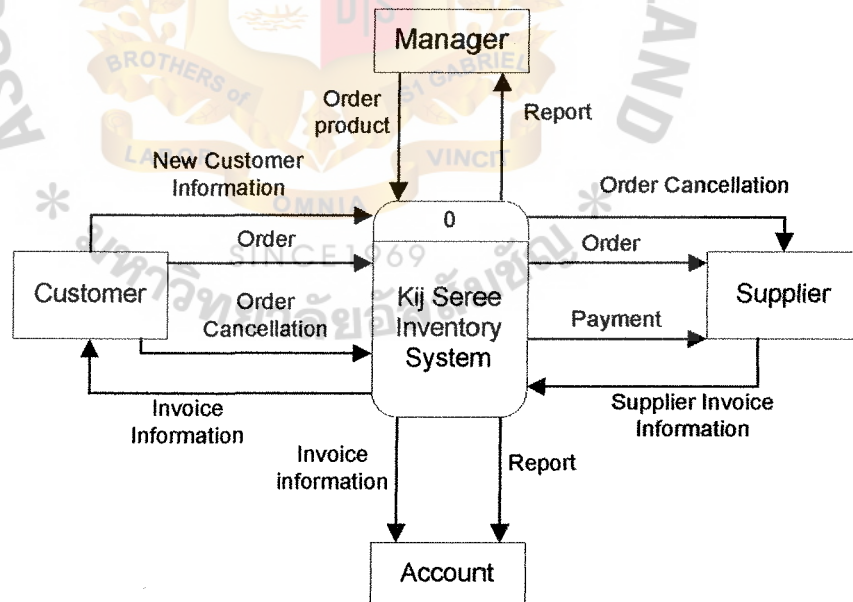


Figure 2-1 Context Diagram of Existing System

2.2 Problem Definition

(1) Inconsistency of Information

The existing system information of this company is the system that makes a lot of mistakes. The document of product that bought from the suppliers and sold to the customers will be kept record in the existing system for internal use. Some information might be duplicated with other information. It might lead to inconsistency of information in different department.

(2) Inefficient in Retrieval the Inventory Information

This is the problem that make the company difficult to search the information about the inventory. After sold and purchased the products to customers and suppliers, the company needs to retrieve the inventory information for checking the previous stock. The existing system would show some defect data to the users and the inefficient to retrieve data will be happened in the inventory document.

(3) Ineffective Inventory Management Control

In the existing system of the company, the managing in the inventory record is a time consuming word. The company have been encountered with the problem that may be caused by the staffs' mistakes for checking stock and mistakes in record the transactions. There is the inefficient system for the quantity ordered, stock and price per item as resulting in defect in financial resources.

III. THE PROPOSED SYSTEM

3.1 System Specification

(1) Hardware Requirements

Table 3-1 Hardware Requirements

HAREWARE	SPECIFICATION
CPU	Pantium 3 Intel EB 500 Mhz. Bus 133 Mhz.
RAM	Kingston SD RAM 256 Mb
Hard disk	IBM 7200 rpm 20 Gb. ATA 133 × 2

I recommend this hardware specific because this hardware is appropriate for the users and the price of this hardware is not more expensive according to the user requirement. It can help users to be process system more quickly.

(2) Software Requirements

Table 3-2 Software Requirements

SOFTWARE	SPECIFICATION
Operating System	Microsoft Windows 98
Application	1. Microsoft Office 2000 2. Visual Basic 6.0 3. McAfee Anti Virus 4. Crystal Report 8.50

I recommend this operating system because this operating system does not have any problem with other programs. This operating system can support many applications. The users can install the other programs that they want later. And I recommend this application because it is necessary for this proposed system.

3.2 System Design

(1) Data Flow Diagram

The system analyst needs to make use of the conceptual freedom afforded by data flow diagram (DFD), which graphically characterize data processes and flows in a business system. In their original state, data flow diagram depict the broadest possible overview of system inputs, processes, and outputs, which correspond to those the general system model (Kenneth E. Kendall & Julie E. Kendall 1999: 235)

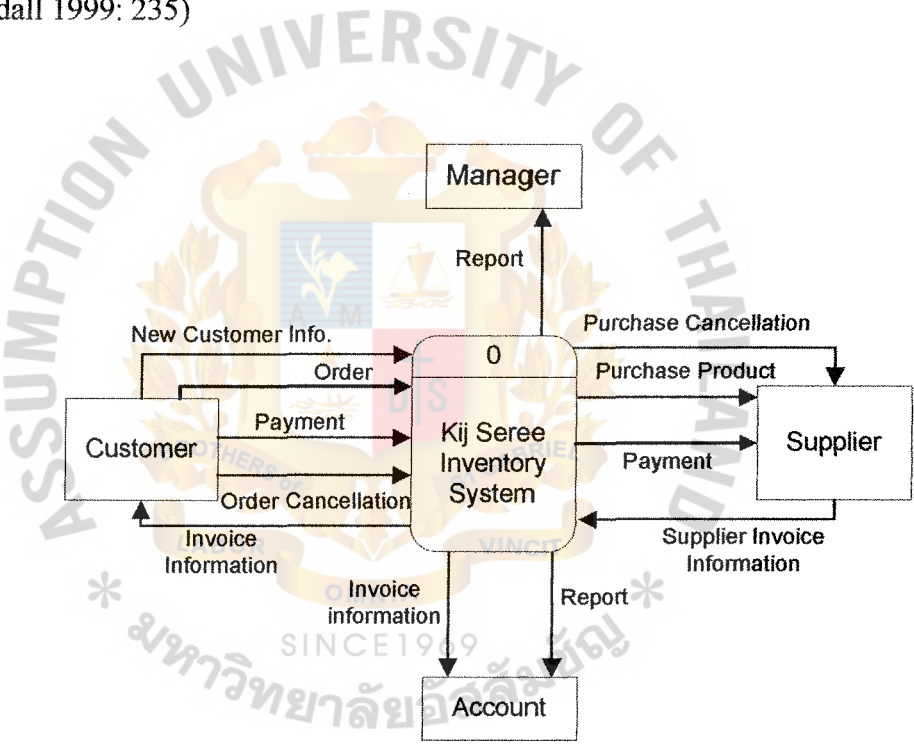


Figure 3-1 Context Diagram

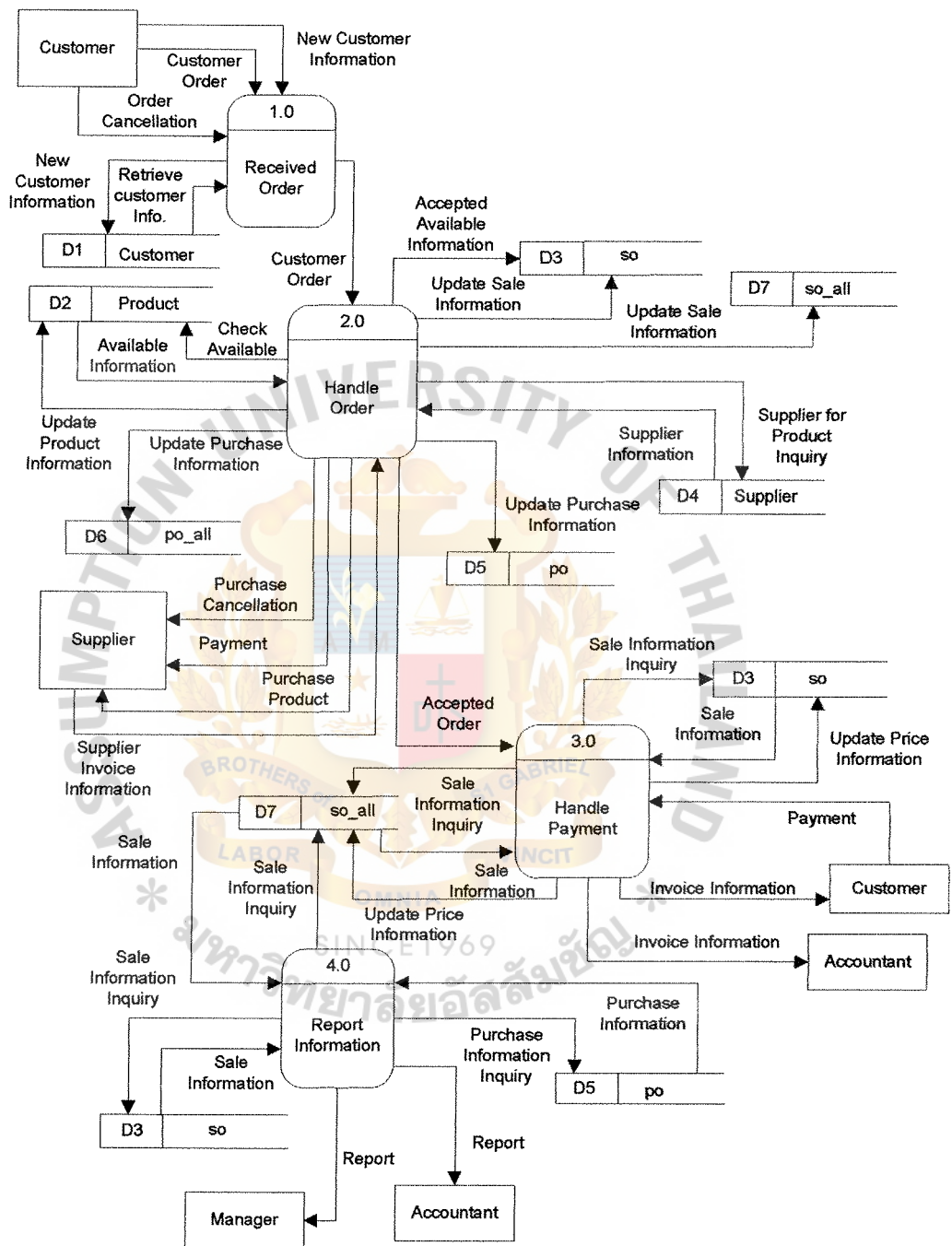


Figure 3-2 Data Flow Diagram – Level 0

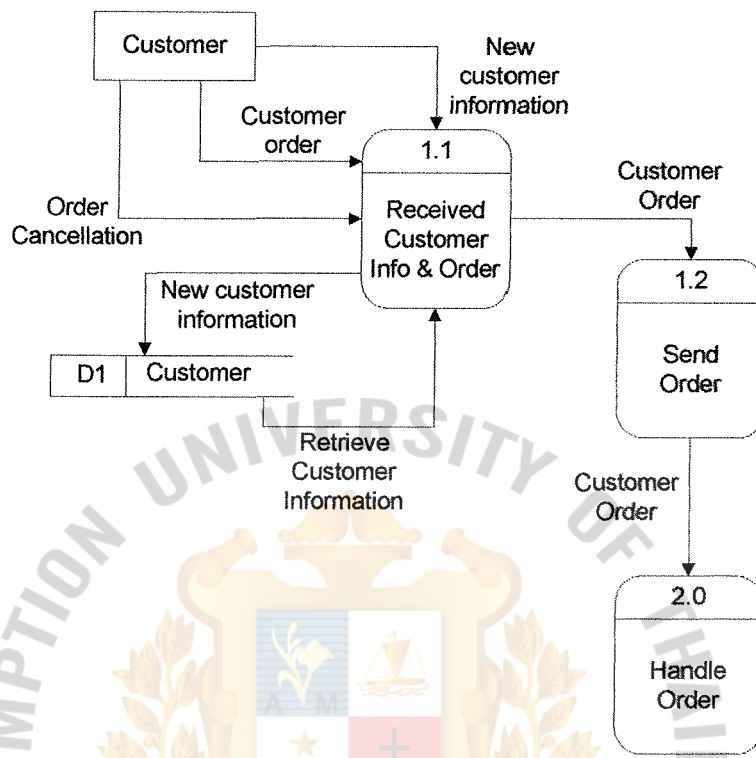


Figure 3-3 Data Flow Diagram – Level 1 for Process 1

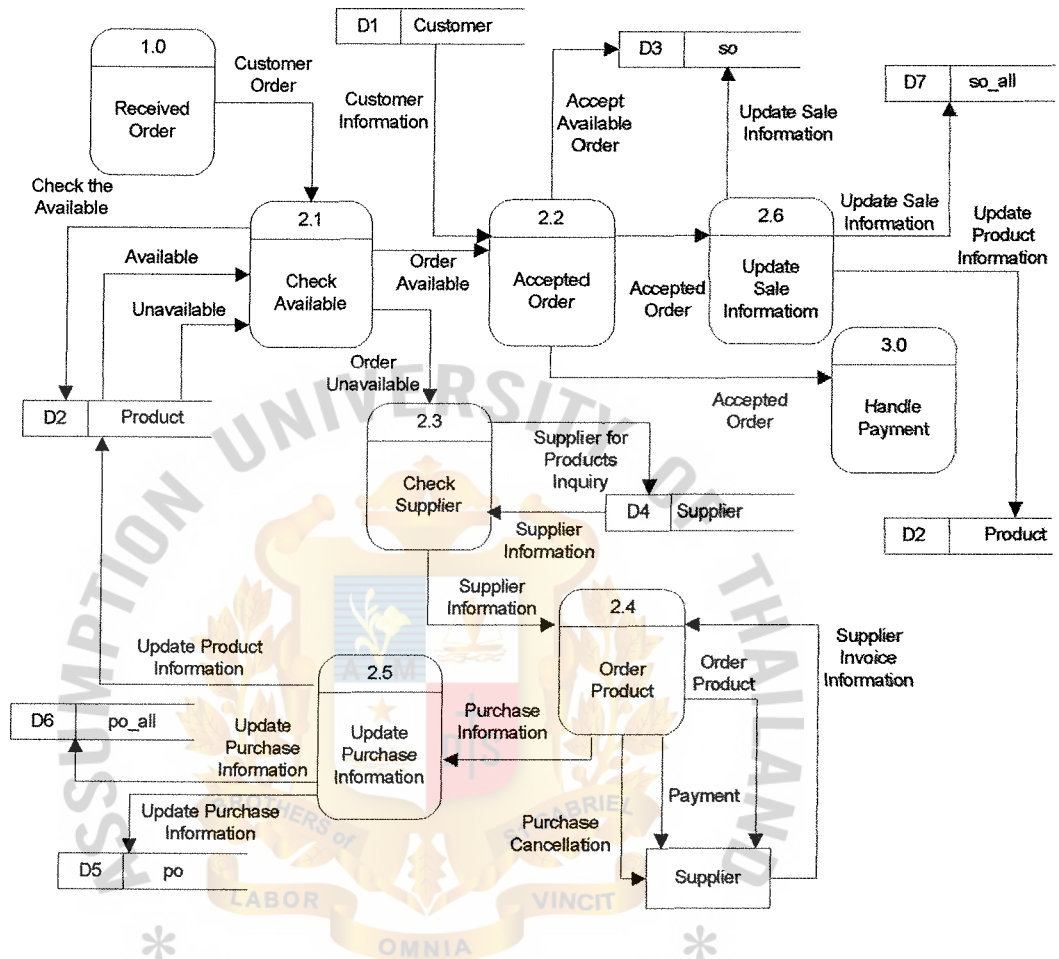


Figure 3-4 Data Flow Diagram – Level 1 for Process 2

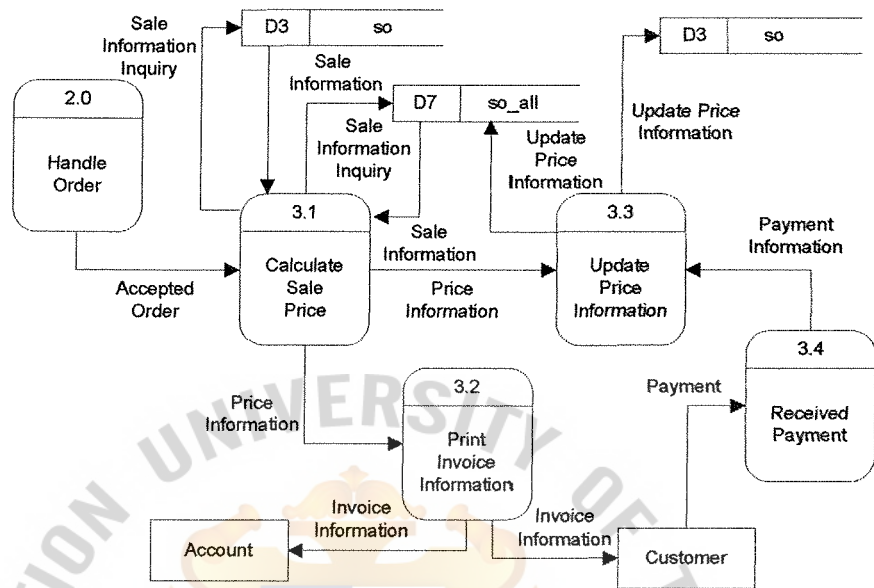


Figure 3-5 Data Flow Diagram – Level 1 for Process 3

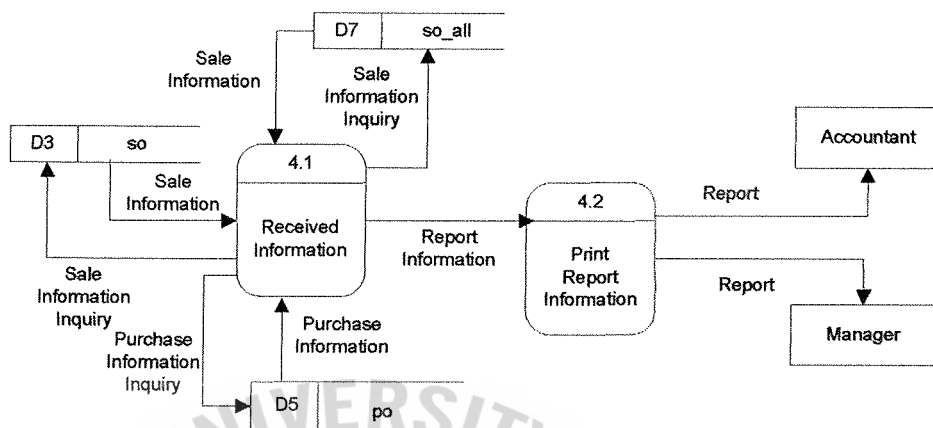


Figure 3-6 Data Flow Diagram – Level 1 for Process 4

(2) Entity-Relationship Diagram

The Entity-Relationship(ER) model is used to construct a conceptual data model. It is a logical representation of the structure of a database that is independent of the software used to implement the database. The relationships are associations between entities. There are three types of relationships, there are one-to-one, one-to-many, and many-to-many. Another type of entity is the attributive. Entity-Relationship Diagrams are often used by system designers to help model the file or database (Kendall, Kenneth & Julie 1999: 33-39, 608)

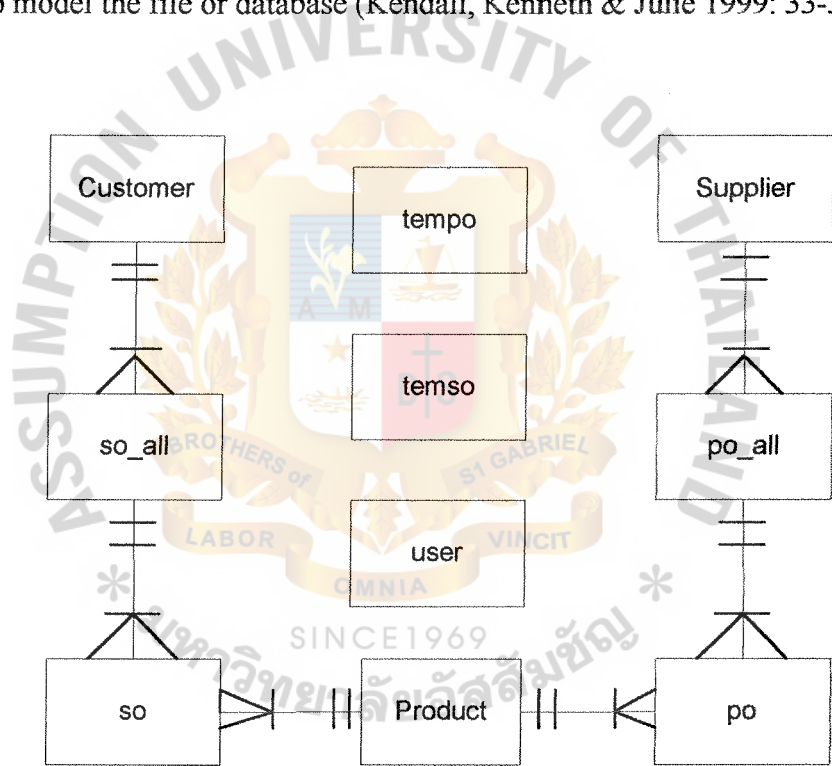


Figure 3-7 Entity-Relationship Diagram

- po table

This table collects the information about the purchasing between the company and the supplier. It collects about the cost, quantity, and supplier id in the po table. This table link between the product table and supplier table. See the po table in appendix A, Table A-4

- po_all table

This table collects the information about the total, date, net total, and supplier id that the company bought the products from the supplier. This table links between supplier table and po table. See the po_all table in appendix A, Table A-5

- so table

This table collects the information about the selling between the customers and the company. It collects the information about customer id, price, and quantity that have been sold to the customers. See the so table in appendix A, Table A-6

- so_all table

This table collects the information about the total, date, net total and customer id that the company sold the products to the customers. See the so_all table in appendix A, Table A-7

- user table

This table collects the information about the username, password, and priority of the users when users login into the system. See the uzer table in appendix A, Table A-8

(4) Process Specification

Process Specification, sometimes called minispecs. It creates for primitive processes on a data-flow diagram as well as for some higher-level processes that explode to a child diagram. Each derived element must have process logic to show how it is produced from the base elements or other previously created derived elements that are input to primitive process (Kenneth E. Kendall & Julie E. Kendall 1999: 341-342)

Table 3-3 Process Specification for Process 1.0

Process Name:	Received Order
Data In:	(1) New Customer Information (2) Customer Order (3) Order Cancellation (4) Retrieve Customer Information
Data Out:	(1) New Customer Information
Process:	(1) Get necessary customer data and assign new customer id and also check whether customer already exist in the database and also received the order cancellation from customers (2) Send the Customer order to handle and check the available on hand
Attachment:	(1) Customer (2) Data Store D1 (3) Process 2.0

Table 3-4 Process Specification for Process 1.1

Process Name:	Received Customer Information and Order
Data In:	(1) New Customer Information (2) Customer Order (3) Order Cancellation (4) Retrieve Customer Information
Data Out:	(1) New Customer Information
Process:	(1) Get necessary customer data and assign new customer id and also check whether customer already exist in the database and also received order cancellation from customers
Attachment:	(1) Customer (2) Data Store D1 (3) Process 1.2

Table 3-5 Process Specification for Process 1.2

Process Name:	Send Order
Data In:	(1) Customer Order
Data Out:	(1) Customer Order
Process:	(1) Send the customer order to handle and check the available on hand
Attachment:	(1) Process 1.1 (2) Process 2.0

Table 3-6 Process Specification for Process 2.0

Process Name:	Handle Order
Data In:	<ul style="list-style-type: none"> (1) Customer Order (2) Customer Information (3) Available Information (4) Supplier Invoice Information (5) Supplier Information
Data Out:	<ul style="list-style-type: none"> (1) Check Available (2) Accept Available Information (3) Purchase Cancellation (4) Supplier for product inquiry (5) Payment (6) Purchase Products (7) Update Purchase Information (8) Update Sale Information (9) Update Product Information (10) Accepted Order
Process:	<ul style="list-style-type: none"> (1) Check the available product on hand that prepare enough for customer orders (2) Check the supplier information to purchase the products in case that the products on hand are not enough for customer orders and also send sale information to calculate the price (3) Order the products from the supplier which are the product that are not enough in the stock

	<p>(4) Accept the customer in case that the products on hand are available and enough for the customer orders</p> <p>(5) Update the Purchase Information to prepare the report to other department</p> <p>(6) Update the Sale Information to prepare the report to other department</p>
Attachment:	<p>(1) Process 1.0</p> <p>(2) Data Store D1</p> <p>(3) Data Store D2</p> <p>(4) Data Store D6</p> <p>(5) Supplier</p> <p>(6) Data Store D3</p> <p>(7) Data Store D7</p> <p>(8) Data Store D4</p> <p>(9) Data Store D5</p> <p>(10) Process 3.0</p>

Table 3-7 Process Specification for Process 2.1

Process Name:	Check Available
Data In:	(1) Available (2) Customer Order (3) Unavailable
Data Out:	(1) Check the Available (2) Order Available (3) Order Unavailable
Process:	(1) Check the Available products on hand to prepare for customer orders (2) Identify the Order available and unavailable information to prepare the next step
Attachment:	(1) Process 1.0 (2) Process 2.2 (3) Process 2.3 (4) Data Store D2

Table 3-8 Process Specification for Process 2.2

Process Name:	Accepted Order
Data In:	(1) Order Available (2) Customer Information
Data Out:	(1) Accept Order (2) Accept Available Order
Process:	(1) Identify the Available product information to prepare to calculate price and update the sale information
Attachment:	(1) Data Store D3 (2) Data Store D1 (3) Process 2.1 (4) Process 2.6 (5) Process 3.0

Table 3-9 Process Specification for Process 2.3

Process Name:	Check Supplier
Data In:	(1) Order Unavailable (2) Supplier Information
Data Out:	(1) Supplier for Products Inquiry (2) Supplier Information
Process:	(1) Check the Supplier for preparing to order the products that are not enough for sell according the customer orders
Attachment:	(1) Process 2.1 (2) Process 2.4 (3) Data Store D4

Table 3-10 Process Specification for Process 2.4

Process Name:	Order Product
Data In:	(1) Supplier Information (2) Supplier Invoice Information
Data Out:	(1) Purchase Information (2) Purchase Cancellation (3) Payment (4) Order Product
Process:	(1) Order the Product that are not available for sale and also payment to supplier (2) Received the Product-In information and preparing to update in the database
Attachment:	(1) Process 2.3 (2) Process 2.5 (3) Supplier

Table 3-11 Process Specification for Process 2.5

Process Name:	Update Purchase Information
Data In:	(1) Purchase Information
Data Out:	(1) Update Product Information (2) Update Purchase Information
Process:	(1) Update the Product and Purchase Information into the database
Attachment:	(1) Process 2.4 (2) Data Store D2 (3) Data Store D5 (4) Data Store D6

Table 3-12 Process Specification for Process 2.6

Process Name:	Update Sale Information
Data In:	(1) Accepted Order
Data Out:	(1) Update Sale Information
Process:	(1) Update Sale Information in the database
Attachment:	(1) Data Store D3 (2) Data Store D7 (3) Process 2.2 (4) Process 3.0

Table 3-13 Process Specification for Process 3.0

Process Name:	Handle Payment
Data In:	<ul style="list-style-type: none"> (1) Accepted Order (2) Sale Information (3) Payment
Data Out:	<ul style="list-style-type: none"> (1) Sale Information Inquiry (2) Update Price Information (3) Invoice Information
Process:	<ul style="list-style-type: none"> (1) Calculate the price according the customer orders and receive payment from customers (2) Prepare the invoice information to Accountant and Customers (3) Update Price Information to prepare the invoice and report information
Attachment:	<ul style="list-style-type: none"> (1) Process 2.0 (2) Data Store D3 (3) Customer (4) Accountant (5) Data Store D7

Table 3-14 Process Specification for Process 3.1

Process Name:	Calculate Sale Price
Data In:	(1) Sale Information (2) Accept Order
Data Out:	(1) Sale Information Inquiry (2) Price Information
Process:	(1) Calculate the price according the customer orders and send the price information to prepare invoice information and update the price information
Attachment:	(1) Data Store D3 (2) Data Store D7 (3) Process 2.0 (4) Process 3.2 (5) Process 3.3

Table 3-15 Process Specification for Process 3.2

Process Name:	Print Invoice Information
Data In:	(1) Price Information
Data Out:	(1) Invoice Information
Process:	(1) Prepare Invoice Information to customer and accountant
Attachment:	(1) Process 3.1 (2) Accountant (3) Customer

Table 3-16 Process Specification for Process 3.3

Process Name:	Update Price Information
Data In:	(1) Payment Information (2) Price Information
Data Out:	(1) Update Price Information
Process:	(1) Update Price information into the database
Attachment:	(1) Process 3.1 (2) Process 3.4 (3) Data Store D3 (4) Data Store D7

Table 3-17 Process Specification for Process 3.4

Process Name:	Received Payment
Data In:	(1) Payment
Data Out:	(1) Payment Information
Process:	(1) Received Payment and prepare the information to update price information in the database
Attachment:	(1) Process 3.3 (2) Customer

Table 3-18 Process Specification for Process 4.0

Process Name:	Report Information
Data In:	(1) Sale Information (2) Purchase Information
Data Out:	(1) Sale Information Inquiry (2) Purchase Information Inquiry (3) Report
Process:	(1) Prepare and Print the report information to Accountant and Manager
Attachment:	(1) Data Store D3 (2) Data Store D5 (3) Data Store D7 (4) Manager (5) Accountant

Table 3-19 Process Specification for Process 4.1

Process Name:	Received Information
Data In:	(1) Sale Information (2) Purchase Information
Data Out:	(1) Sale Information Inquiry (2) Purchase Information Inquiry (3) Report Information
Process:	(1) Prepare the Report information for the next step to print out the information
Attachment:	(1) Data Store D3 (2) Data Store D5 (3) Data Store D7 (4) Process 4.2

Table 3-20 Process Specification for Process 4.2

Process Name:	Print Report Information
Data In:	(1) Report Information
Data Out:	(1) Report
Process:	(1) Print out the report information to Accountant and Manager
Attachment:	(1) Process 4.1 (2) Accountant (3) Manager

(5) Data Dictionary

Table 3-21 Data Dictionary of Kij Seree Inventory System

Field Name	Meaning
Accepted available information	Information of available products that enough for customer order
Accepted order	Accepted Order Information that confirm for selling enough for customers
Address	Address of customer or supplier
Available	Available Product on hand
Available information	Information that was checked in the available product on hand of the company's database
Cost	Cost of the product sold by the supplier to our company
Customer	The file contains all the record of information about the customer file
Customer id	Identification number of customer
Customer name	Customer's name
Customer order	Order that made from customer
Date	Date on which the product is received from supplier or Date on which customer place order to our company
Discount	Discount amount from purchase and sale that keep for company record
Fax	Fax number of customer or supplier
Invoice information	Invoice Information that print out and send to

	customer and account department
Min	Minimum stock that set for preparing which is not enough product to sale to customers
Net total	Net total amount from purchase and sale that keep for company record
New customer information	The new information of customer; such as id, name, address, telephone, and fax
Order cancellation	Cancellation order information that make from customer to company
Order id	Identification number of the sale order placed to our company by the customer
Payment	Payment information that occur from purchase product from supplier or sale product to customer
Po	The file contains record of information about purchase product from supplier; such as cost, quantity
Po all	The file contains record of information about purchase product from supplier; such as date, total
Price	Selling price of the product per item
Product	The file contains record of information about product file in the company
Product id	Identification number of product
Product name	Name of product
Product type	Type of the Product

Purchase cancellation	Cancellation purchase information that make from company to supplier
Purchase id	Identification number of the purchase order placed from our company by the supplier
Purchase information	The information of purchase product from supplier that would be used for keep in database record in the company
Purchase information inquiry	Request information about purchasing to prepare report to accountant and manager
Purchase order	Order the product that made from company to supplier
Quantity	Quantity of product ordered by customer or quantity of product purchased from supplier
Report	The report information in both purchase and sale process and print out send to accountant and manager
Retrieve Customer information	Information of customers that retrieve to make the customer's orders
Sale information	The information of sale product to customer that would be used for keep in database record in the company
Sale information inquiry	Request information about selling to prepare report to accountant, manager and prepare invoice to accountant and customer

So	The file contains of information about sale product to customer such as; price and quantity
So all	The file contains of information about sale product to customer such as; date and total
Supplier	The file contains all of information about supplier file in the company
Supplier for product inquiry	Request supplier information that used for purchasing product
Supplier id	Identification number of supplier
Supplier information	Information of supplier that used for purchasing product
Supplier invoice information	The invoice information about product that make from supplier to company
Supplier name	Name of supplier
Telephone	Telephone number of customer or supplier
Total	Total amount from sale and purchase that keep for company record
Update price information	Price information that would be recorded to the database in the company after sale and purchase
Update product information	Product information that would be recorded to the database in the company after sale and purchase
Update purchase Information	Purchase information that would be recorded to the database in the company after purchase
Update sale information	Sale information that would be recorded to the database in the company after sale

(6) Interface Design

The interface is the system for most users. It stands as the representation of the system, and, by reflection, your competence as a system analyst. The purpose of interface are first, to allow the users to access to the system in the way that is congruent with their individual needs. Second, to increase the speed of data entry and reduce errors. Third, to provide appropriate feedback to users from the systems. And Last, ergonomically sound principal of design for users interface and work spaces. (Kenneth E. Kendall & Julie E. Kendall 1999:663)

The system have many screens. Each screen provides the information that appropriate for the users to use. Each screen performs the different function and provides the user interface to facilitate users in inputting the information. First screen, is Main Menu. The users can select the function to use that users want to operate the system. There are many screens in the system such as:

- Login
- Main Menu (Inventory System)
- Customer
- Supplier
- Product
- Sale Order
- ProductIN Order
- Stock
- Add User
- Change User
- Report
- Search Customer

- Search Product
- Search Supplier
- Select Customer
- Select Order
- Select Supplier
- Select Product
- View Product
- View Supplier

See the Interface Design in Appendix B



(7) Report Design

Report Design is form of providing information to managers using a pre-specified format designed to provide managers with information on a regular basis. Information available when the manager demands it. (O'Brien 1999:456-459)

This system provides the report about invoice that will be shown to the customers and to keep the record to the company as well and another report is about the inventory information that will be printed to the Manager. About Invoice Report, it keeps the details of products ordered such as product name, quantity, price and total of customer's purchase orders. About the Inventory, it has the information about the remaining products such as product quantity.

See the Report Design in Appendix C

IV. SYSTEM IMPLEMENTATION

4.1 Overview of the System Implementation

The company will change from old system to new system as soon as the new system is operational. The new system will implemented with Direct Cutover. The reasons are first, now the old system of the company is operated manually. Then, the new system can be immediately operated. The Company does not use the efficient hardware and software to operate before and the old system is not be efficiency. Second, there will no be effect with the old system because the operation of the new system is difference from the old system. The new system will not relate to the old system. The company's working system will be totally changed from the previous time. Last, Direct Cutover method is usually is the least expensive changeover method because the IT group in the company has to maintain and operate only one system at a time.

4.2 Test Plan

Bottom-up testing methodology is applied for testing software. Bottom-up involves testing the modules at the lower levels in the hierarchy, and the working up the hierarchy of module until the final module is tested. The advantage of Bottom-up testing is that the test output may be easy to observe. Bottom-up testing is appropriate for object-oriented systems in that individual objects may be tested using their own test drivers. They are then integrated and the object collection is tested. The testing of this collections should focus on object interactions. Bottom-up testing, the users will test the low level of the system with testing detailed components. After the low level of component has been tested, its implemented and tested in the same way. The users will test the program according with the requirement. The users will test about the sale system and purchase order system those are the main system. About these 2 systems,

the users used to test and they wanted the quantity can be changed and adding more quantity while operate the sale and purchase order. Next Step, the users will check the sub-system such as Error-Detection, Input Verification, Message Box, and etc.



V. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

Nowadays, Information Technology is developing so fast. Especially, the technology of the computer. The Computer technology help to develop all the aspect of the job and office working to be more efficiency and effectiveness. As the new system that I develop the new system, it will help the company to be easier implement and improve their working system in the company. Users will operate and work with this system to be faster and reduce the cycling time of working. Users can retrieve the information from the database and take less time to do all jobs. This system will help the users to reduce the errors according the information, sale order, and purchase order. The system will inform the users when the users record or input wrong and redundant information. Moreover, users will not lost any information because all information will be recorded in the database. It can reduce the paper work because all information will be recorded in the computer, so information will not lost as paper work. The new design of the system, it provides the new user-interface to facilitate the users in input the information. It provides the appropriate controls that make the users to be easier to use the new interface. The system provides an effective and efficiency inventory management controls, the inventory level will be automated calculation. Users can use operate their job with the new system easily because each function can deal together. I hope that this new system will be useful for all users.

5.2 Recommendations

My Recommendation is the company should use the high technology to operate and implement the job. The company will get high benefit of using the new system. The company can save cost, time, and can provide the good service to the customers.

Moreover, the company should train the knowledge to the workers for operating their job with the new system.

From the recommendation of Manager, the company will expand the business in the future. Then, Manager thinks that the company should have the new system to operate in the business efficiency and effectively. Moreover, the company should operate the business with the high technology. The company can operate the job easily and have high performance.





APPENDIX A
DATABASE DESIGN

Table A-1 Customer Table

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key	Check	Key Type
1	CustomerID	varchar (10)	Y	Y		So all	C####	Primary Key
2	CustomerName	varchar (50)						Attribute
3	Address	varchar (100)						Attribute
4	Telephone	varchar (20)			Y			Attribute
5	Fax	varchar (10)					<area code, 7 digits>	Attribute

Table A-2 Supplier Table

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key	Check	Key Type
1	SupplierID	varchar (10)	Y	Y		Po all	S####	Primary Key
2	SupplierName	varchar (50)						Attribute
3	Address	varchar (100)						Attribute
4	Telephone	varchar (20)			Y			Attribute
5	Fax	Varchar (10)					<area code, 7 digits>	Attribute

Table A-3 Product Table

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key	Check	Key Type
1	ProductID	varchar (10)	Y	Y		So, Po	P####	Primary Key
2	ProductName	varchar (50)						Attribute
3	ProductType	varchar (10)						Attribute
4	Cost	varchar (50)					> 0	Attribute
5	Price	varchar (50)					> 0	Attribute
6	Available	varchar (10)			Y		>=0	Attribute
7	Min	varchar (10)			Y		>=0	Attribute

Table A-4 Po Table

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key	Check	Key Type
1	PurchaseID	varchar (10)	Y	Y			pur####	Primary Key
2	ProductID	varchar (10)	Y	Y			P####	Primary Key
3	Quantity	varchar (10)					> 0	Attribute
4	Cost	varchar (10)					> 0	Attribute

Table A-5 Po all Table

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key	Check	Key Type
1	PurchaseID	varchar (10)	Y	Y			pur####	Primary Key
2	SupplierID	varchar (10)	Y	Y			C####	Foreign Key
3	Date	date					>= current date	Attribute
4	Total	int ()					currency	Attribute
5	Discount	int ()			Y		currency	Attribute
6	Net Total	int ()					currency	Attribute

Table A-6 So Table

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key	Check	Key Type
1	OrderID	varchar (10)	Y	Y			ord####	Primary Key
2	ProductID	varchar (50)	Y	Y			P####	Primary Key
3	Quantity	varchar (10)					> 0	Attribute
4	Price	varchar (10)					> 0	Attribute

Table A-7 So all Table

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key	Check	Key Type
1	OrderID	varchar (10)	Y	Y			Ord####	Primary Key
2	CustomerID	varchar (50)	Y				P####	Foreign Key
3	Date	date					= current date	Attribute
4	Total	int ()					current	Attribute
5	Discount	int ()			Y		current	Attribute
6	Net Total	int ()					current	Attribute

Table A-8 User Table

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key	Check	Key Type
1	Username	varchar (10)	Y	Y				Primary Key
2	Password	varchar (10)						Attribute
3	Priority	int (1)					>0,<3	Attribute



APPENDIX B
INTERFACE DESIGN

The image shows a screenshot of a Windows-style login window. The title bar at the top is blue and contains the text 'Login' and standard window control buttons (minimize, maximize, close). The main area of the window has a light blue background and displays the company name 'Kij Seree Inter Trading Co., Ltd.' in a bold, black font. Below the company name, there are two input fields: one labeled 'username:' and another labeled 'password:'. At the bottom of the window, there are three buttons: 'Ok' with a green checkmark icon, 'Cancel' with a red 'X' icon, and 'Exit' with a blue icon showing a computer screen and a power button.

Figure B-1 Login Form

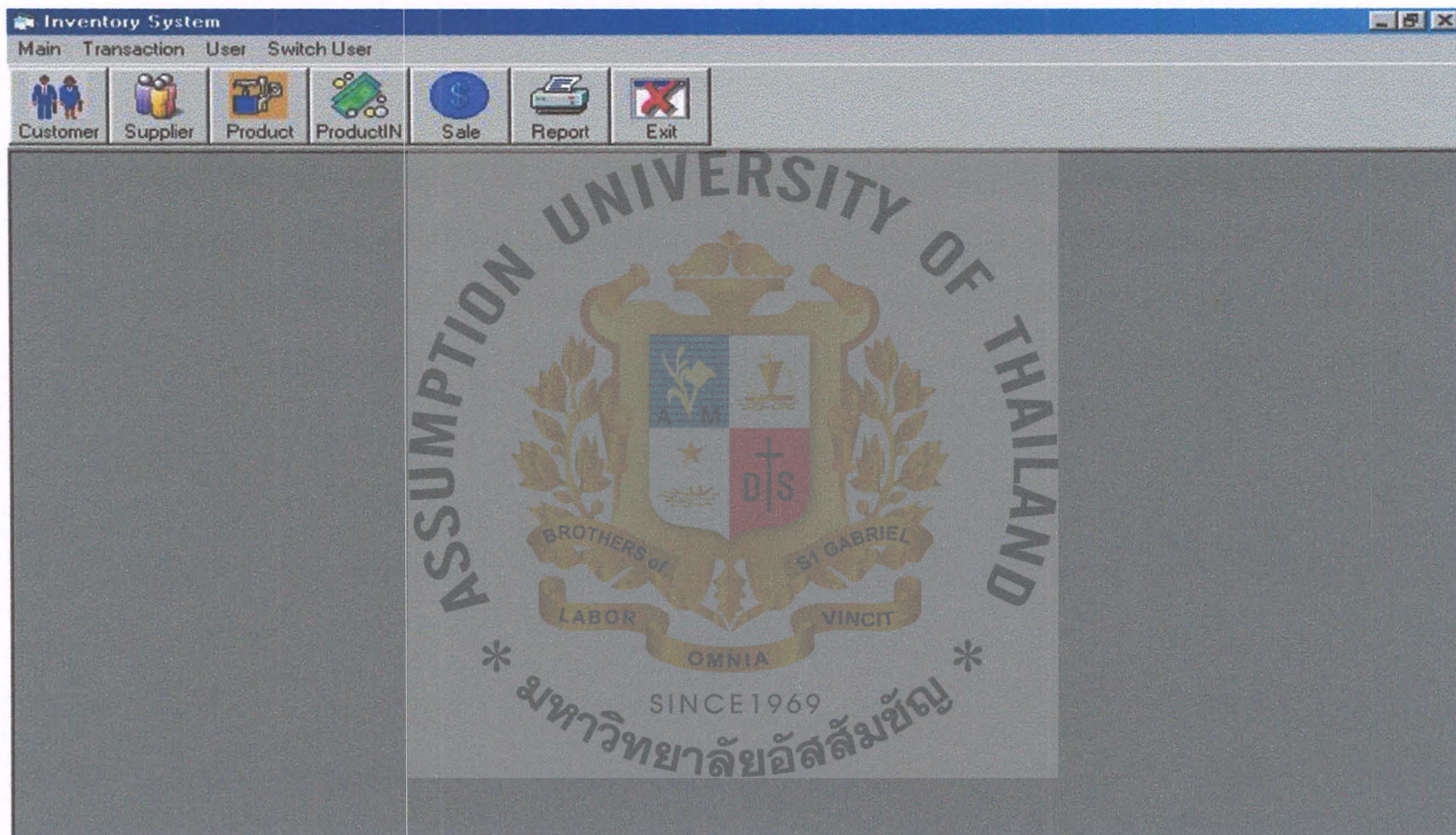


Figure B-2 Main Menu Form

Inventory System - [Customer]

Main Transaction User Switch User

Customer Supplier Product ProductIN Sale Report Exit

Customer





Record No: 1/6






Customer ID: c0001

Name: Anon Patwilboon

Address: 204/89 Charoenkrung Rd, Bangrak, Bangkok 10260

Telephone: 022918895 Fax: 022918896

Search Customer

Search Type: Select One








Figure B-3 Customer Form

Inventory System - [Supplier]

Main Transaction User Switch User

Customer Supplier Product ProductIN Sale Report Exit

Supplier





Record No: 1/5




Supplier Id: s0001 [View Product](#)



Name: Preeda Lertsaksereekul

Address: 123-125 Mangkorn Rd., Bangrak, Bangkok 10260

Telephone: 022242250 Fax: 022258859

Search Supplier

Select Search: Select One








Figure B-4 Supplier Form

Inventory System - [Product]

Main Transaction User Switch User

Customer Supplier Product ProductIN Sale Report Exit

Product

Record No: 1/29





Product ID: p0001 Supplier ID: s0001 View Supplier






Name: Angel Grinder

Type: large

Selling Price: 970 Cost: 880 Minimum Stock: 30

Available on: 60 hand

Search Product

Select Search: Select One








Figure B-5 Product Form

Inventory System - [Product IN]

Main Transaction User Switch User

Customer Supplier Product ProductIN Sale Report Exit

Product IN Details

Purchase_id: Date:

Supplier_id: Supplier_name:

Order Details

Product_id	Product_name	Cost	Quantity	Total
<input type="text" value="p0023"/>	<input type="text" value="Bearing Puller"/>	<input type="text" value="130"/>	<input type="text" value="10"/>	<input type="text" value="1300"/>
<input type="text" value="p0022"/>	<input type="text" value="Bearing Puller"/>	<input type="text" value="175"/>	<input type="text" value="10"/>	<input type="text" value="1750"/>

Discount (%)

Total: \$ 3,050.00

Discount: \$ 0.00

Net Total: \$ 3,050.00

New Order

Confirm

Delete

Close

Figure B-6 ProductIN Form

Inventory System - [Order]

Main Transaction User Switch User

Customer Supplier Product ProductIN Sale Report Exit

Sale Details

Order_id: Date: Time:

Customer_id: Customer_address:

Customer_name:

Order Information

Product_id	Product_name	Type	Price	Amount	Total
<input type="text" value="p0005"/>	<input type="text" value="Cut off Machine"/>	<input type="text" value="10"/>	<input type="text" value="2350"/>	<input type="text" value="23500"/>	<input type="text" value="23500"/>
<input type="text" value="p0022"/>	<input type="text" value="Bearing Puller"/>	<input type="text" value="10"/>	<input type="text" value="195"/>	<input type="text" value="1950"/>	<input type="text" value="1950"/>

Discount (%) :

Total: ₪ 25,450.00

Discount: ₪ 0.00

Net Total: ₪ 25,450

New Order Confirm Delete Close

Figure B-7 Sale Order Form

Inventory System - [Company Stock]

Main Transaction User Switch User

Customer Supplier Product ProductIN Sale Report Exit

Select Type

☒ All Record ☐ By Product ID

Inventory Information			
product id	product name	product type	available
p0001	Angel Grinder	large	60
p0002	Angel Grinder	small	70
p0003	Electronic Blower	large	20
p0004	Electronic Blower	small	50
p0005	Cut off Machine	large	100
p0006	Cut off Machine	medium	100
p0007	Cut off Machine	small	120
p0008	Circular Saw	large	100
p0009	Circular Saw	small	60

Close

Figure B-8 Stock Form

Inventory System - [User]

Main Transaction User Switch User

Customer Supplier Product ProductIN Sale Report Exit

Add User

Username:

Password:

Confirm Password:

Priority: ☒ Manager ☐ Staff

Figure B-9 Add User Form

Inventory System - [User]

Main Transaction User Switch User

Customer Supplier Product ProductIN Sale Report Exit

Change Password

Old Password:

New Password:

Confirm Password:

Figure B-10 Change Password Form

Inventory System - [Report]

Main Transaction User Switch User

Customer Supplier Product ProductIN Sale Report Exit

Show Report

Company Information

- ☐ Customer Report
- ☐ Supplier Report
- ☐ Product Report
- ☐ Inventory Report
- ☐ ProductIN Report
- ☐ Invoice Report
- ☐ Top Sale Report
- ☐ Daily Sale Report
- ☐ Month Sale Report
- ☐ Total Sale Report
- ☐ Customer's Sale Report
- ☒ Supplier's ProductIN Report

Supplier's ProductIN Details

☐ Supplier ID

Date: To



Figure B-11 Report Form

Inventory System - [Customer]

Main Transaction User Switch User

Customer Search

Search

Select ID: All ID ☒ Show All  Search  Close

cust_id	cust_name	cust_address	cust_tel	cust_fa
c0001	Amon Patwiboon	204/89 Charoenkrung Rd, Bangrak, Bangkok 10260	022918895	022918
c0002	Jakapong Premsilp	104/45-6 Sukhumvit 103, Prakhnong, Bangjak, Bangkok 10260	027410052 ext. 123	027410
c0003	Worapong Nopsee	605/42-3 Ladprow 102, Ladprow Rd, Bangkok, 10310	025144568	025144
c0004	Chotiwat Bunyatpattanasophon	20/89-90 Mangkorn rd., Jaroerkrung, Bangkok 10230	022242248	022242
c0005	Wikanda Boonthip	125 Ladprow Rd., Bangkok 10260	027122369 ext. 258	027127
c0006	Chanpen Rungruengkij	234-236 Sukhumvit 49 Bangjak Bangkok 10260	027889520	027889

Figure B-12 Search Customer Form

Inventory System - [Product]

Main Trans

Product Search

Search

Select Type:
Select one

Search

Close

	product id	product name	product type	cost	selling price	available	min
▶	p0001	Angel Grinder	large	880	970	60	30
	p0002	Angel Grinder	small	540	650	70	30
	p0003	Electronic Blower	large	600	700	10	30
	p0004	Electronic Blower	small	400	500	50	30
	p0005	Cut off Machine	large	2230	2350	100	40
	p0006	Cut off Machine	medium	1820	1950	90	60
	p0007	Cut off Machine	small	1200	1350	120	60
	p0008	Circular Saw	large	1240	1350	100	50
	p0009	Circular Saw	small	960	1050	60	30
	p0010	Electric Drill	one type	380	500	60	20
	p0011	Impact Drill	large	640	750	50	20
	p0012	Impact Drill	small	400	500	60	20
	p0013	Screw Driver (1 set)	large	90	110	100	50
	p0014	Screw Driver (1 set)	medium	80	95	70	40
	p0015	Screw Driver (1 set)	small	70	80	60	30
	p0016	Side Cutting Plier	large	90	100	150	50
	p0017	Side Cutting Plier	medium	70	85	100	50
	p0018	Side Cutting Plier	small	50	65	130	50
	p0019	Electronic Router	large	1450	1600	150	80
	p0020	Electronic Router	small	850	1000	120	50
	p0021	Bearing Puller	large	190	220	80	50
	p0022	Bearing Puller	medium	175	195	60	30
	p0023	Bearing Puller	small	130	150	80	30

Figure B-13 Search Product Form

Inventory System - [Supplier]

Main Transaction User Switch User

Supplier Search

Search

Select ID:

All ID

☒ Show All

Search

Close

supplier_id	supplier_name	supplier_address	supplier_tel	supp
s0001	Preeda Lertsaksereekul	123-125 Mangkorn Rd., Bangrak, Bangkok 10260	022242250	0222
s0002	Kanokwan Jainoppaklao	55-56 Rama 2 Rd., Samutsakorn, Bangkok 10220	028896578 ext. 123	0288
s0003	Kongsak Udomjaimatum	125/56-59 Bangkuntien, Bangkoe, Bangkok 10120	024428895-9	0244
s0004	Yasita Sangkharat	20-22 Thippawal villa, Sumrong, Bangkok 10360	026885986	0268
s0005	Jakapong Plemsin	204/88-89 Soi Punnavitee, Prakanong, Bangkok 10260	027889586 ext. 45	0278

Figure B-14 Search Supplier Form

Inventory System - [Order]

Main Transaction User Switch User

Customer Supplier P

Select Customer

cust_id	cust_name	cust_address
c0001	Arnon Patwiboon	204/89 Charoenkrung Rd, Bangrak, Bangkok 10260
c0002	Jakapong Premsilp	104/45-6 Sukhumvit 103, Prakhnong, Bangjak, Ban
c0003	Worapong Nopseree	605/42-3 Ladprow 102, Ladprow Rd, Bangkok, 10311
c0004	Chotiwat Bunyatpattanasophon	20/89-90 Mangkorn rd., Jaroenkrung, Bangkok 1023
c0005	Wikanda Boonthip	125 Ladprow Rd., Bangkok 10260
c0006	Chanpen Rungruengkij	234-236 Sukhumvit 49 Bangjak Bangkok 10260

Net Total: |

Order Information

Order_id:

Customer_id:

Customer_name:

Product_id:

product id

Discount (%): 0

New Order

Confirm

Delete

Close

Figure B-15 Select Customer Form

Inventory System - [Order]

Main Transaction User Switch User

Customer Supplier Product

Sale Details

Order_id: []

Customer_id: []

Customer_name: []

Order Information

Product_id: P []

product id

Discount (%) : 0

Select Order

product_id	product_name	product_type	selling_price
p0001	Angel Grinder	large	970
p0002	Angel Grinder	small	650
p0003	Electronic Blower	large	700
p0004	Electronic Blower	small	500
p0005	Cut off Machine	large	2350
p0006	Cut off Machine	medium	1950
p0007	Cut off Machine	small	1350
p0008	Circular Saw	large	1350
p0009	Circular Saw	small	1050
p0010	Electric Drill	one type	500
p0011	Impact Drill	large	750
p0012	Impact Drill	small	500
p0013	Screw Driver (1 set)	large	110
p0014	Screw Driver (1 set)	medium	95
p0015	Screw Driver (1 set)	small	80
p0016	Side Cutting Plier	large	100
p0017	Side Cutting Plier	medium	85
p0018	Side Cutting Plier	small	65
p0019	Electronic Router	large	1600
p0020	Electronic Router	small	1000
p0021	Bearing Puller	large	220
p0022	Bearing Puller	medium	195

New Order

Confirm

Delete

Close

Figure B-16 Select Order Form

Inventory System - [Product IN]

Main Transaction User Switch User

Customer Supplier Product

Select Supplier

supplier id	supplier name
s0001	Preeda Lertsaksereekul
s0002	Kanokwan Jainoppaklao
s0003	Kongsak Udomjaimatum
s0004	Yasita Sangkharat
s0005	Jakapong Plemsin

Product IN Detail:

Purchase_id: [pu]
Supplier_id: []

Order Details

Product_id: [P]
[]

product id

Discount (%) [0]

Net Total: []

New Order
Confirm
Delete
Close

Figure B-17 Select Supplier Form

Inventory System - [Product IN]

Main Transaction User Switch User

Customer Supplier Proc

Select Product

Product IN Detail

Purchase_id: [p0019]

Supplier_id: [s0001]

Order Details

Product_id: [p0019]

product_id	product_name	product_type	cost
p0019	Electronic Router	large	1450
p0020	Electronic Router	small	850
p0021	Bearing Puller	large	190
p0022	Bearing Puller	medium	175
p0023	Bearing Puller	small	130

Discount (%) [0]

Net Total: []

New Order

Confirm

Delete

Close

Figure B-18 Select Product Form

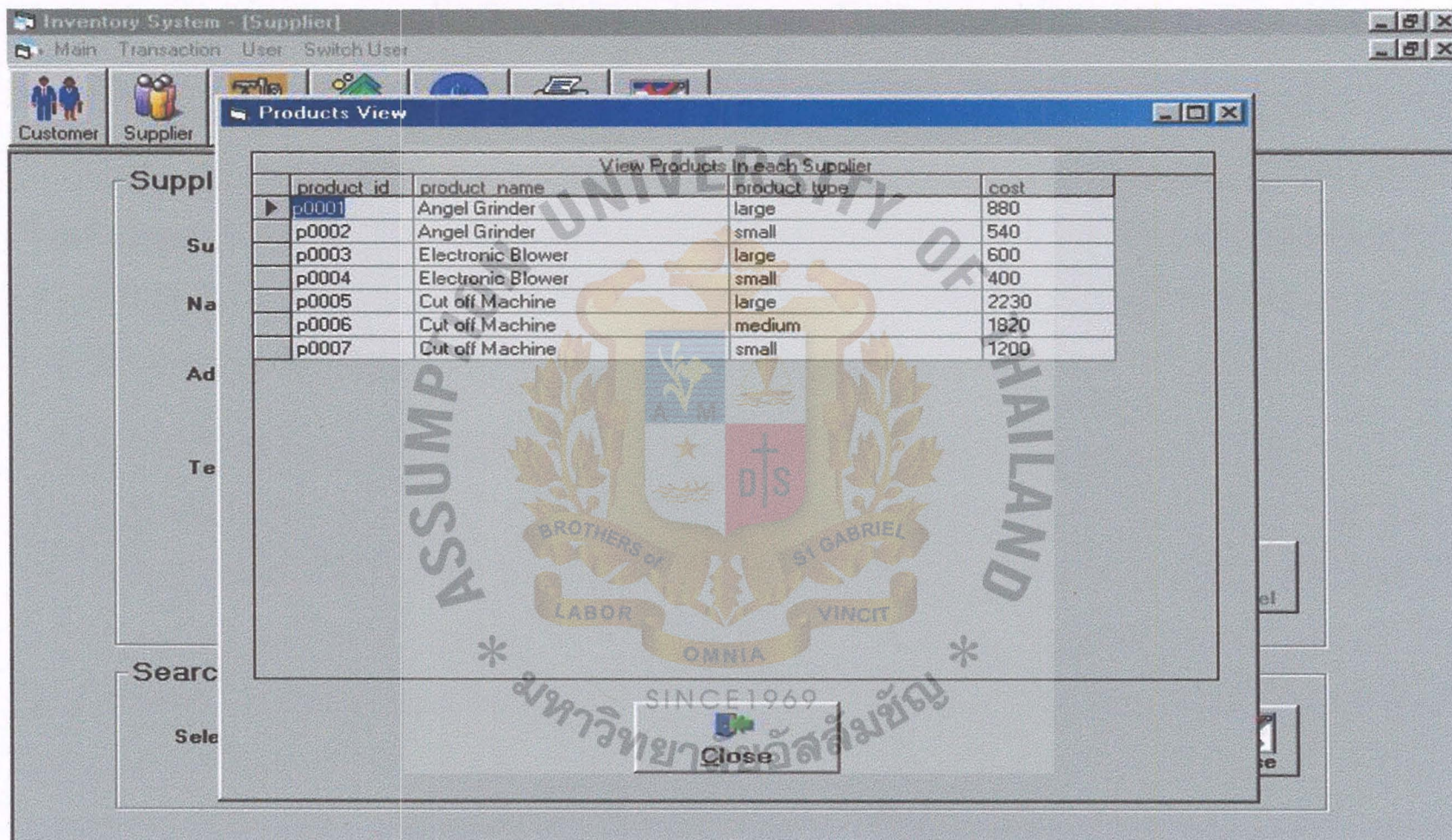


Figure B-19 View Product Form

Inventory System - [Product]

Main Transaction User Switch User

Customer Supplier Product ProductIN Sale Report Exit

Product

Record No: 1/29

Product ID: p0001 Supplier ID: s0001 View Supplier

View Supplier

Name:

Type:

supplier name	supplier address	supplier tel
Preeda Lertsakereekul	123-125 Mangkorn Rd., Bangrak, Bangkok 10260	022242250

Selling:

Available:

Close

Search Product

Select Search: Select One

Next Advanced Search Close

Figure B-20 View Supplier Form



Kij Seree Inter Trading Co., Ltd

Page No: 1

123/6-8 Soi Taladasthorntip
Ratchadaphisek Rd., Yannawa,
Bangkok 10120 Thailand

Printing Date: 26/11/02

Printing Time: 14:47:32

Customer Report

<u>Customer ID</u>	<u>Name</u>	<u>Address</u>	<u>Telephone</u>	<u>fax</u>
c0001	Arnon Patwiboon	204/89 Charoenkrung Rd, Bangrak, Bangkok 10260	022918895	022918896
c0002	Jakapong Premsilp	104/45-6 Sukhumvit 103, Prakhnong, Bangjak, Bangkok 10260	027410052 ext. 123	027410053
c0003	Worapong Nopseree	605/42-3 Ladprow 102, Ladprow Rd, Bangkok, 10310	025144568	025144569

Page 1 of 1

Figure C-1 Customer Report

Kij Seree Inter Trading Co., Ltd.

Page No: 1

123/6-8 Soi Taladasathornthip,
Ratchadaphisek Rd., Yannawa,
Bangkok 10120 Thailand

Printing Date: 26/11/02

Printing Time: 14:57:30

Supplier Report

Supplier ID	Name	Address	Telephone	fax
s0001	Preeda Lertsaksereekul	123-125 Mangkom Rd., Bangrak, Bangkok 10260	022242250	022258859
s0002	Kanokwan Jainoppaklao	55-56 Rama 2 Rd., Samutsakorn, Bangkok 10220	028896578 ext. 123	028859965
s0003	Kongsak Udomjaimatum	125/56-59 Bangkuntien, Bangkoe, Bangkok 10120	024428895-9	024855686

Figure C-2 Supplier Report

Kij Seree Inter Trading Co., Ltd.

123/6-8 Soi Taladsathorn
Ratchadaphisek Rd., Yanawa,
Bangkok 10120 Thailand

Page No: 1

Printing Date: 26/11/02

Printing Time: 15:00:26

Product Report

Product ID	Name	Type	Cost	Price
p0001	Angel Grinder	large	880	970
p0002	Angel Grinder	small	540	650
p0003	Electronic Blower	large	600	780
p0004	Electronic Blower	small	400	500
p0005	Cut off Machine	large	2,230	2,350
p0006	Cut off Machine	medium	1,820	1,950

Figure C-3 Product Report

Kij Seree Inter Trading Co., Ltd.

Page No: 1

123/6-8 Soi Taladsathorn
Ratchadaphisek Rd., Yanawa,
Bangkok 10120 Thailand

Inventory Report

Printing Date: 26/11/02
Printing Time: 15:01:48

Product ID	Name	Type	Available
p0001	Angel Grinder	large	60
p0002	Angel Grinder	small	70
p0003	Electronic Blower	large	20
p0004	Electronic Blower	small	50
p0005	Cut off Machine	large	100
p0006	Cut off Machine	medium	100
p0007	Cut off Machine	small	120
p0008	Circular Saw	large	100

Figure C-4 Inventory Report

Kij Seree Inter Trading Co., Ltd.

Page No: 1

123/6-8 Soi Taladsathomtip
Ratchadaphisek Rd., Yanawa,
Bangkok 10120 Thailand

Printing Date: 26/11/02
Printing Time: 15:34:44

ProductIN Report

date 24/11/02

Purchase ID	Supplier ID	Supplier Name	Product ID	Product Name	Type	Quantity	Cost	Total
pur0007	s0004	Yasita Sangkharat	p0022	Bearing Puller	medium	10	175	1,750.00
pur0008	s0003	Kongsak Udomjaimatum	p0018	Side Cutting Plier	small	10	50	500.00
pur0008	s0003	Kongsak Udomjaimatum	p0018	Side Cutting Plier	small	20	50	1,000.00
pur0009	s0003	Kongsak Udomjaimatum	p0017	Side Cutting Plier	medium	10	70	700.00
pur0010	s0005	Jakapong Plensin	p0029	Square Hollow Chise & Bit Set	small	10	320	3,200.00

Sub Total: 7,150.00

Grand Total: 7,150.00

Figure C-5 ProductIN Report

Kij Seree Inter Trading Co., Ltd.

Page No: 1

123/6-8 Soi Taladsathorn
Ratchadaphisek Rd., Yanawa,
Bangkok 10120 Thailand

Printing Date: 26/11/02

Printing Time: 15:37:56

Invoice Report

Date: 18/11/02

Order ID	Customer ID	Customer Name				
ord0004	c0005	Wikanda Boonthip				
	Product ID	Product Name	Type	Price	Quantity	Total
	p0008	Circular Saw	large	1,350	10	13,500.00

Sub Total: 13,500.00

Grand Total: 13,500.00

Figure C-6 Invoice Report

Kij Seree Inter Trading Co., Ltd.

Page No: 1

123/6-8 Soi Taladsathorn
Ratchadaphisek Rd., Yanawa,
Bangkok 10120 Thailand

Top Sale Report

Printing Date: 26/11/02
Printing Time: 15:39:57

Ended of Date: 24/11/02

Product ID	Product Name	Type	Price	Quantity
p0001	Angel Grinder	large	970	20
p0008	Circular Saw	large	1,350	20
p0014	Screw Driver (1 set)	medium	95	20
p0017	Side Cutting Plier	medium	85	10
p0028	Square Hollow Chise & Bit Set	medium	650	10

Figure C-7 Top Sale Report

Kij Seree Inter Trading Co., Ltd.

Page No: 1

123/6-8 Soi Taladsathorn
Ratchadaphisek Rd., Yanawa,
Bangkok 10120 Thailand

Daily Sale Report

Printing Date: 26/11/02

Printing Time: 15:42:50

Ended of Date: 24/11/02

Order ID	Customer ID	Customer Name	Product ID	Product Name	Type	Price	Quantity	Total
ord0009	c0001	Arnon Patwiboon	p0001	Angel Grinder	large	970	10	9700.00
ord0010	c0004	Chotiwat Bunyatpattanasophon	p0017	Side Cutting Plier	medium	85	10	850.00

Grand Total: 10,550.00

Figure C-8 Daily Sale Report

Kij Seree Inter Trading Co., Ltd.

Page No: 1

123/6-8 Soi Taladsathorn
Ratchadaphisek Rd., Yanawa,
Bangkok 10120 Thailand

Month Sale Report

Printing Date: 26/11/02

Printing Time: 15:45:49

Ended of Month: 11/02

Product ID	Product Name	Type	Price	Quantity	Total
p0001	Angel Grinder	large	970	20	19,400.00
p0003	Electronic Blower	large	700	2	1,400.00
p0004	Electronic Blower	small	500	10	5,000.00
p0006	Cut off Machine	medium	1,950	10	19,500.00
p0008	Circular Saw	large	1,350	50	67,500.00
p0009	Circular Saw	small	1,050	10	10,500.00
p0012	Impact Drill	small	500	10	5,000.00
p0014	Screw Driver (1 set)	medium	95	20	1,900.00

Figure C-9 Month Sale Report

Kij Seree Inter Trading Co., Ltd.

123/6-8 Soi Taladsathorn
Ratchadaphisek Rd., Yanawa,
Bangkok 10120 Thailand

Printing Date: 12/12/02
Printing Time: 22:26:37

Sale Details Customer Report

CustomerID: c0006
Customer Name: Chanpen Rungruengkij

OrderID	ProductID	Product Name	Date	Price	Quantity	Total
ord0002	p0012	Impact Drill	12/12/02	500	5	2,500
	p0010	Electric Drill	12/12/02	500	10	5,000
Net Total:						7,500.00

Figure C-11 Customer's Sale Report

Kij Seree Inter Trading Co., Ltd.

Page No: 1

123/6-8 Soi Taladsathorn
Ratchadaphisek Rd., Yanawa,
Bangkok 10120 Thailand

Printing Date: 12/12/02
Printing Time: 22:29:20

Supplier's ProductIN Report

SupplierID: s0004
Supplier Name: Yasita Sangkharat

PurchaseID	ProductID	Product Name	Date	Quantity	Cost	Total
pur0002	p0023	Bearing Puller	12/12/02	10	130	1,300
	p0019	Electronic Router	12/12/02	5	1,450	7,250

Net Total: 8,550.00

Figure C-12 Supplier's ProductIN Report

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