Practical Development of Information System in Business Context:
Transaction Record System for Car-Inter Brite Co., Ltd.

Ms. Worakamol Tongsod

Project Name: Transaction Record System for Car-Inter Co., Ltd.

Intern: Ms. Worakamol Tongsod

Advisor: A. Piyabute Fuangkhon

Academic Year: 2003

The Department of Business Computer, ABAC School of Management has approved the aforementioned student's BC 4500 280-Hour Training Project, which includes complete documentation and program as a partial fulfillment of the requirements for the Bachelor's Degree of Business Administration in Business Computer

Advisory Committee:

_____
(A.Piyabute Fuangkhon)
Advisor

_____
(A.Patamate Darnphitsanupan)
Chairperson

_____
(A.Jitti Thongmuang)
Member

_____
(A.Yuvadee Sommai)
Member

March 2003

Practical Development of Information System in Business Context:
Transaction Record System for Car-Inter Brite Co., Ltd.

Advisor: A. Piyabute Fuangkhon

PROJECT WRITE-UP

Prepared by
Ms. Worakamol Tongsod

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

March, 2003

TABLE OF CONTENTS

LISTS OF FIGURES

LIST OF TABLES

I. INTRODUCTION

1.1 Background of the Organization

Car-Inter Brite Co., Ltd. Was established in 1993 as a car service provider for varnishing, washing cushion, preventing rust, and so on, and also acts as a retailer of spare parts for cars including insulator, rug, silver coat, and so on. Moreover, the company also provides repair and maintenance services.

The company is situated at 2351/22 Mahardthai Huamark Bangkapi Bangkok 10240. The company has about 15 workers to run the day-to-day business operations, customer services and manages in all departments.

Since the company was established around 8 years ago with manual operation for the whole process in the company, it is not efficient enough to handle with the day-to-day operation. At present, there are many competitors that are rapidly increasing. To handle with those competitors, the company business processes need to be more efficiency in order to gain competitive advantages.

There are 4 main departments in the company, operation, accounting, marketing, and stock departments. The transaction record system is the system to be developed under the operation department. This department provides services and products to customers. The following figures show the company's organization chart and department chart.

```
                          ┌──────────────────────────┐
                          │   Car-Inter Brite Co., Ltd. │
                          └──────────────────────────┘
                                        │
        ┌───────────────┬──────────────┴──────────────┬───────────────┐
┌───────────────┐ ┌───────────────┐ ┌───────────────┐ ┌───────────────┐
│   Operation    │ │    Account     │ │   Marketing    │ │     Stock      │
│   Department    │ │   Department    │ │   Department    │ │   Department    │
└───────────────┘ └───────────────┘ └───────────────┘ └───────────────┘
```
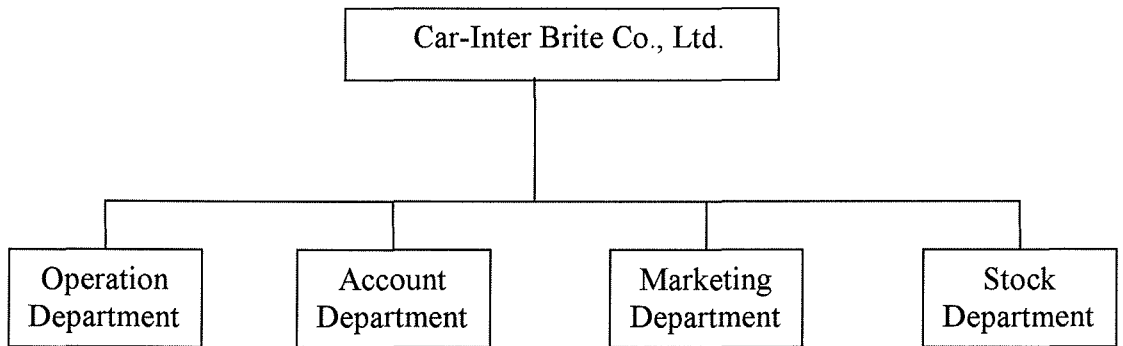
Figure 1-1   Organization Chart

```
                    ┌─────────────────────────┐
                    │  Operation Department   │
                    └─────────────────────────┘
                                 │
         ┌───────────────────────┼───────────────────────┐
┌──────────────────┐   ┌──────────────────┐   ┌──────────────────┐
│    Order for     │   │    Record of     │   │    Maintain      │
│Services and Products│ │   Transaction    │   │    Services      │
└──────────────────┘   └──────────────────┘   └──────────────────┘
                                 │
                       ┌──────────────────┐
                       │    Supervisor    │
                       │ Mrs. Nongnuch B. │
                       └──────────────────┘
                                 │
                       ┌──────────────────┐
                       │    Programmer    │
                       │ Ms. Worakamol T. │
                       └──────────────────┘
```
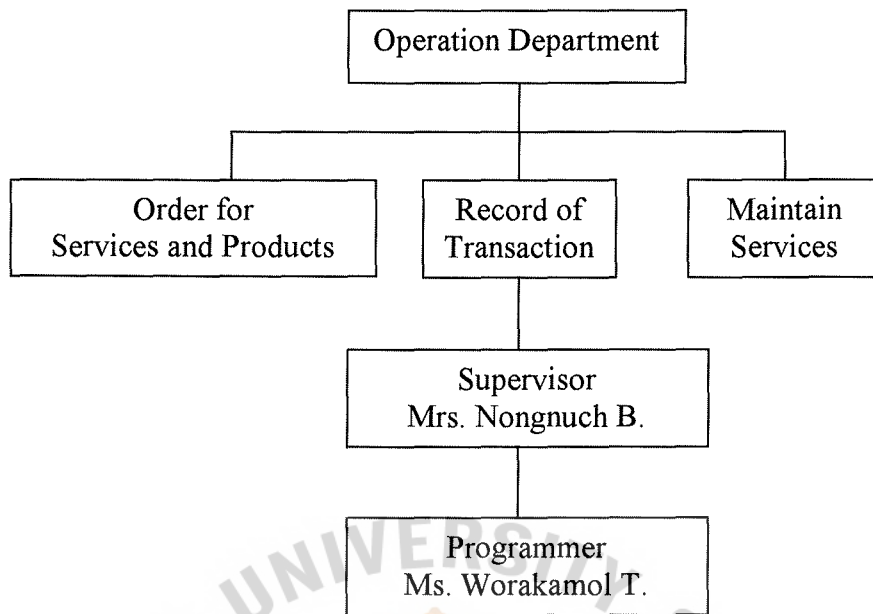
Figure 1-2   Department Chart

1.2 Objectives of the System

The objectives of the system are as follows:

(1) To study the existing system for understanding on the current business operation.

(2) To analyze the causes of problems of the existing system.

(3) To define user requirements that will support and solve current problems.

(4) To improve tasks performance by reducing operational time and eliminating errors.

(5) To make systematic documentation for future reference.

(6) To implement the system in the real working context.

1.3 Scope of the System

The followings are the scopes of the system:

(1) To collect and maintain information of customers, employees, services, and products.

(2) To keep record of day-to-day business transactions for services and products ordered.

(3) To generate customer remark for service guarantee to customer.

(4) To generate tailored and necessary transaction and management reports.

(5) To maintain product on hand of products sold to customer.

1.4 Project Plan

The tentative plan for this project: "Car-Inter Brite Co., Ltd. Transaction Record System" is exhibited in Figure 1-3

No.	Task Name	December				January				February				March			
		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 Transaction Record Sys

II. THE EXISTING SYSTEM

2.1 Background of Existing System

Currently, the information system of the company is operated manually. Each department collects its own information, which is in the form of paper-based and kept in cabinets.

The transaction record system of the company is now dealing with keeping records of services and products provided to customers. When services are ordered, the manager will manually keep record to the book of transaction only for the detail of the services for each customer, type of service, car license, service charge, etc. And also when the products are ordered by customers, the company will keep record in the book of transaction. Whenever the manager wants to check number of transaction for a specific period of time, she has to check from the book of transaction only.

Customer profiles of the existing and new comers are also checked in the book of transaction only. Moreover, the details of the products and service such as type of product/service, price, etc., provided by the company to customers are kept in the form of paper.
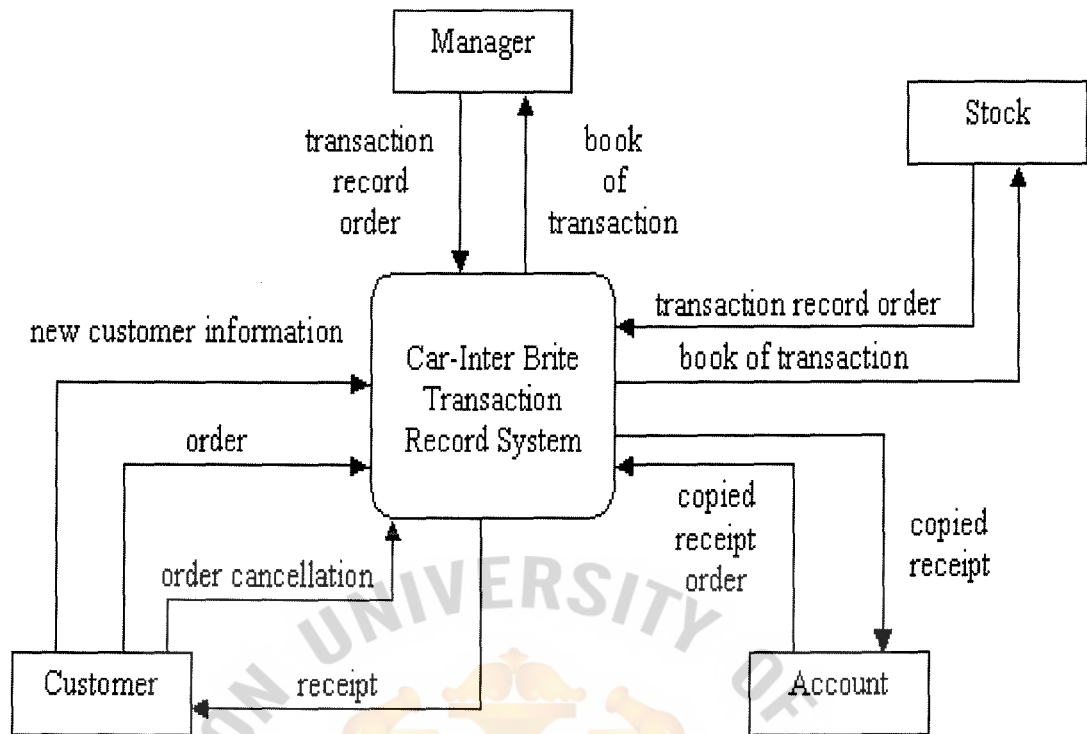
Figure 2-1   Context Diagram of Existing System

2.2 Problem Definition

(1) Ineffective Transaction Management Control

Managing the transaction of the company is a time consuming task as it is done manually. The book of transaction is the only one document that can refer to all business activities. That makes the company encounters with the problem of mismatching of some records for the actual income and what recorded in the book of transaction. This problem is caused by human errors in transaction recording.

According to this problem, it is inefficient for checking type of services, option that is selected for the requested service, products details, customer details, etc., which result in an inefficient use of the company resources.

(2) Difficulties in Retrieving Information

To retrieve information of all transactions is very difficult because the manual style of keeping transaction records will take a long time to search for a particular record with the large amount of documents.

Besides, the information of some transaction may be incorrect, which make confusion for users when searching information.

(3) Unavailable of Information

According to the fact that the company keeps transaction record in the book of transaction only. Whenever it is needed simultaneously by the manager, accountant, and stock department in responsible for checking everyday transaction, the problem of time wasting can be happened because one have to wait for another to finish his/her checking.

III. THE PROPOSED SYSTEM

3.1 System Specification

(1) Hardware Requirements

Table 3-1 Hardware Requirements

HARDWARE	SPECIFICATION
CPU	32 bits Intel Compatible Processor
RAM	128 MB
Hard disk	20 Gigabytes

Computer with CPU 32 bit Intel Compatible Processor (recommended). Using high performance CPU will generate the fast respond and suitable in handling the value information.

RAM 128 MB (minimum), higher ram is not necessary. The more storage of ram will allow you to operate any other application that may use together with the proposed program with no interrupted.

Hard disk with 20 Gigabytes (recommended) using a bigger storage could easily control the space of keeping the information.

(2) Software Requirements

Table 3-2 Software Requirements

SOFTWARE	SPECIFICATION
Operation System	Microsoft Window 32 bits Operating System

Microsoft Window 32 bits operation system can easily fit with the existing system of the company and that cost company not much.

3.2 System Design

(1) Data Flow Diagram
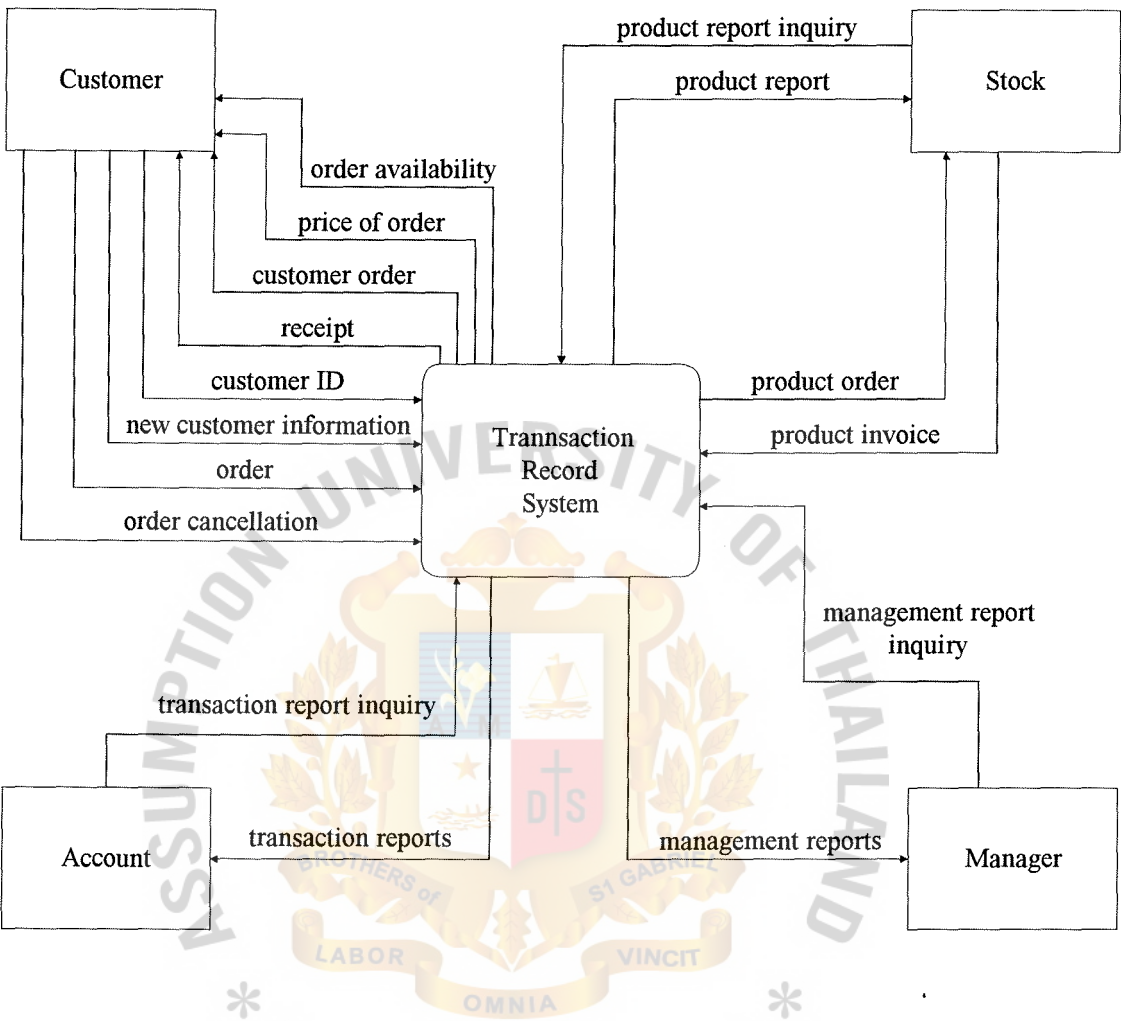
Figure 3-1 Context Diagram of Proposed System

Figure 3-2   Data Flow Diagram – Level 0

11
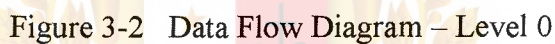
Figure 3-3   Data Flow Diagram – Level 1 for Process 1
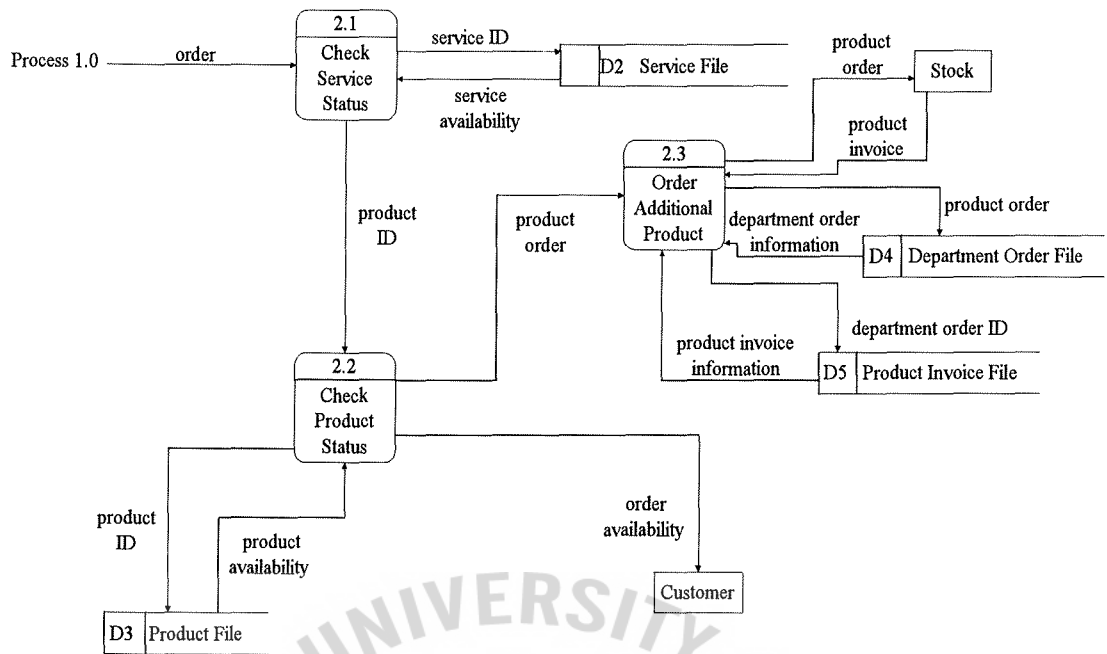
Figure 3-4   Data Flow Diagram – Level 1 for Process 2
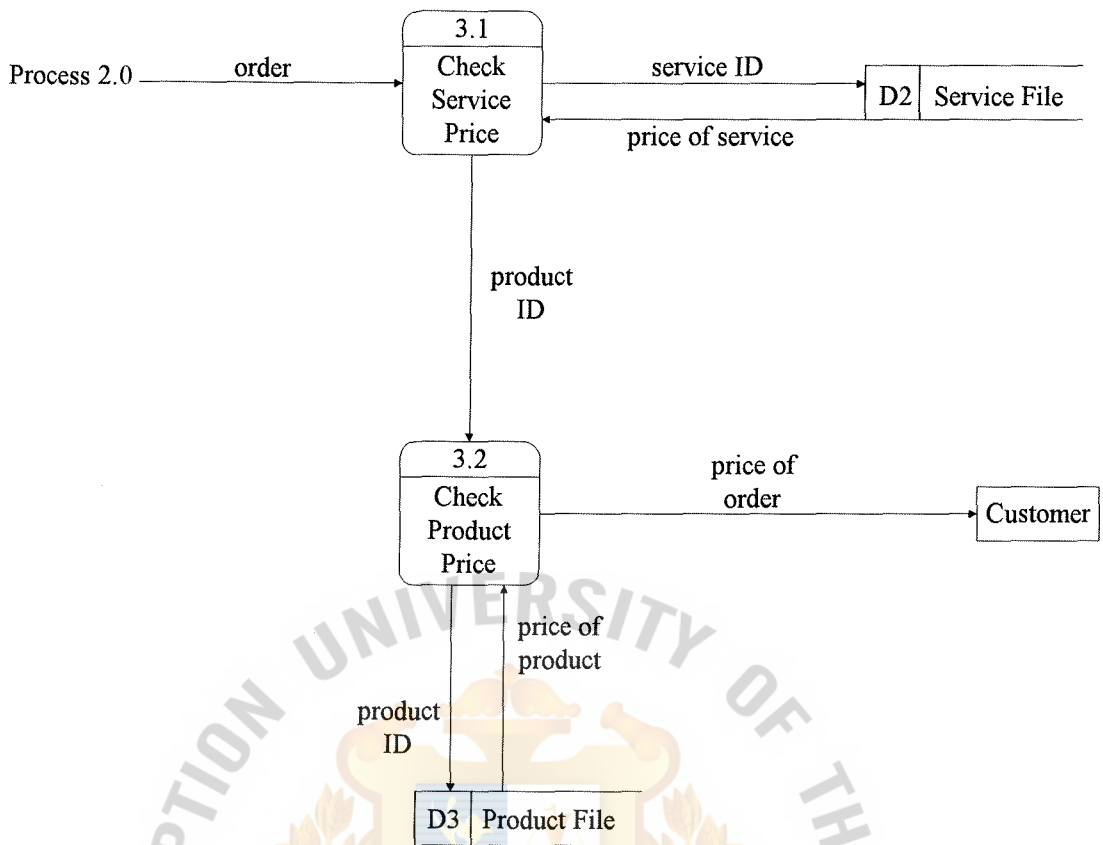
Figure 3-5   Data Flow Diagram – Level 1 for Process 3
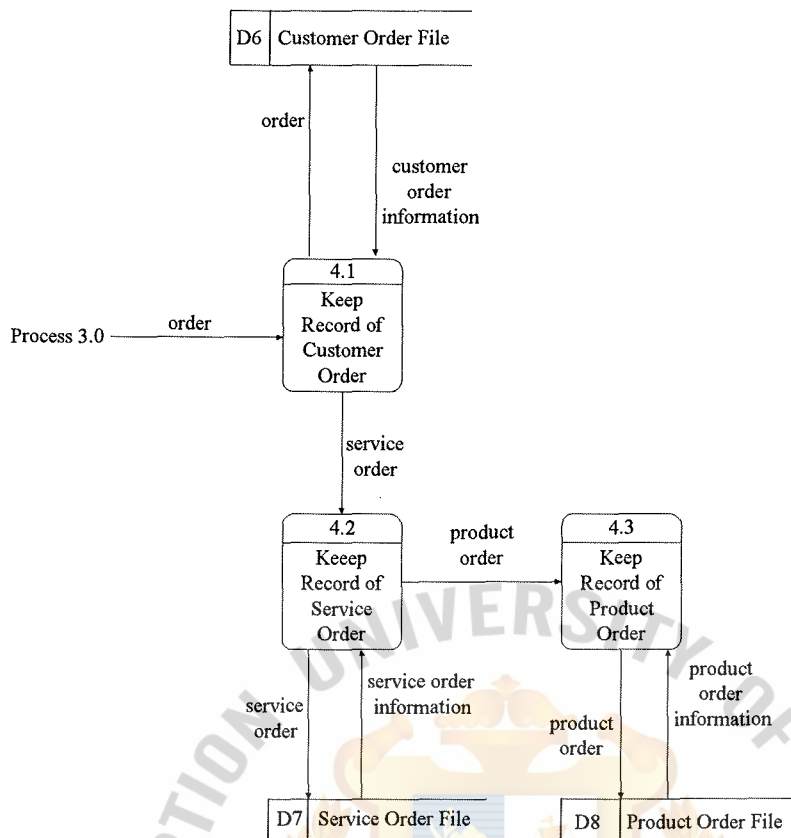
Figure 3-6   Data Flow Diagram – Level 1 for Process 4

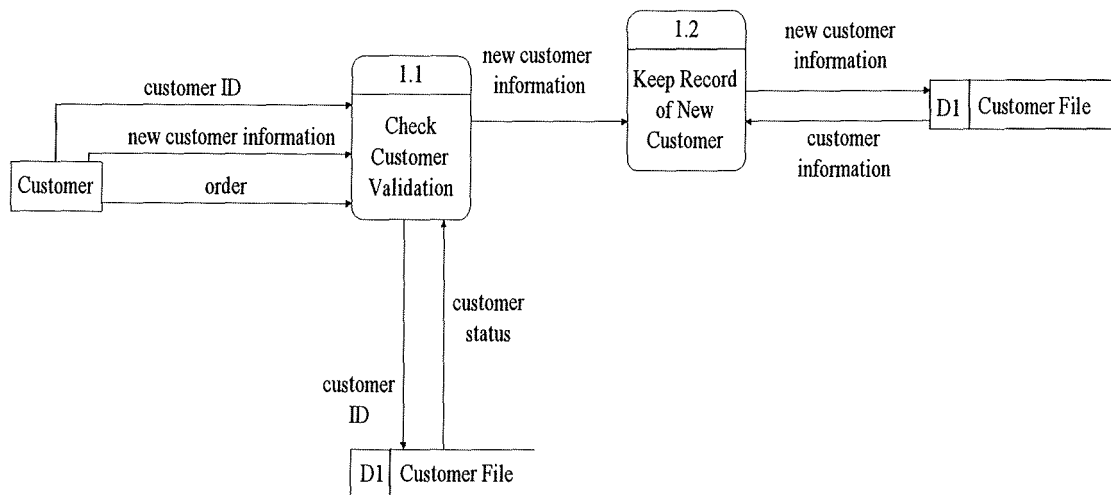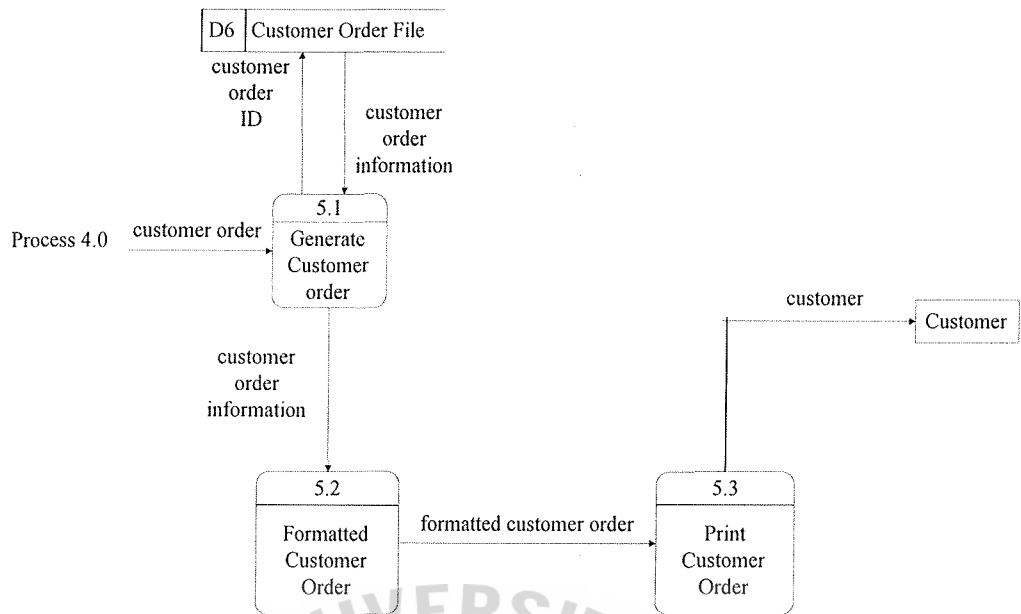Figure 3-7 Data Flow Diagram – Level 1 for Process 5
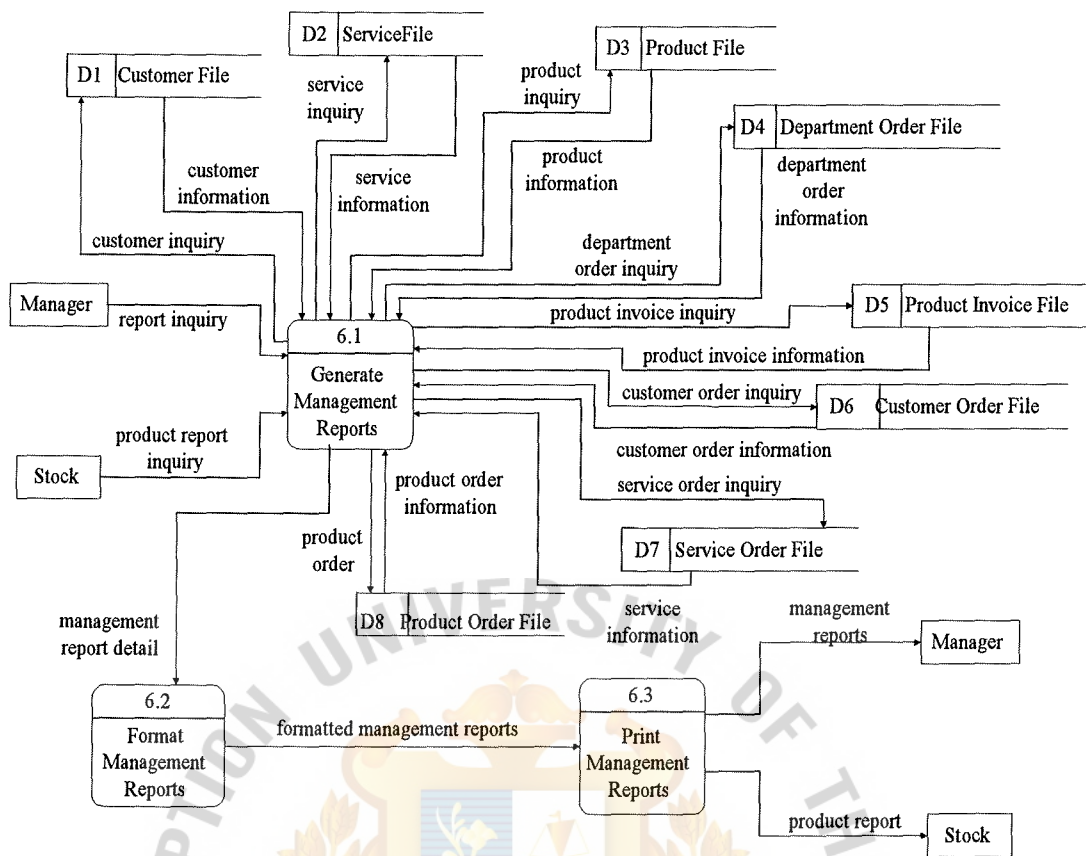
Figure 3-8 Data Flow Diagram – Level 1 for Process 6

(2)   Entity-Relationship Diagram
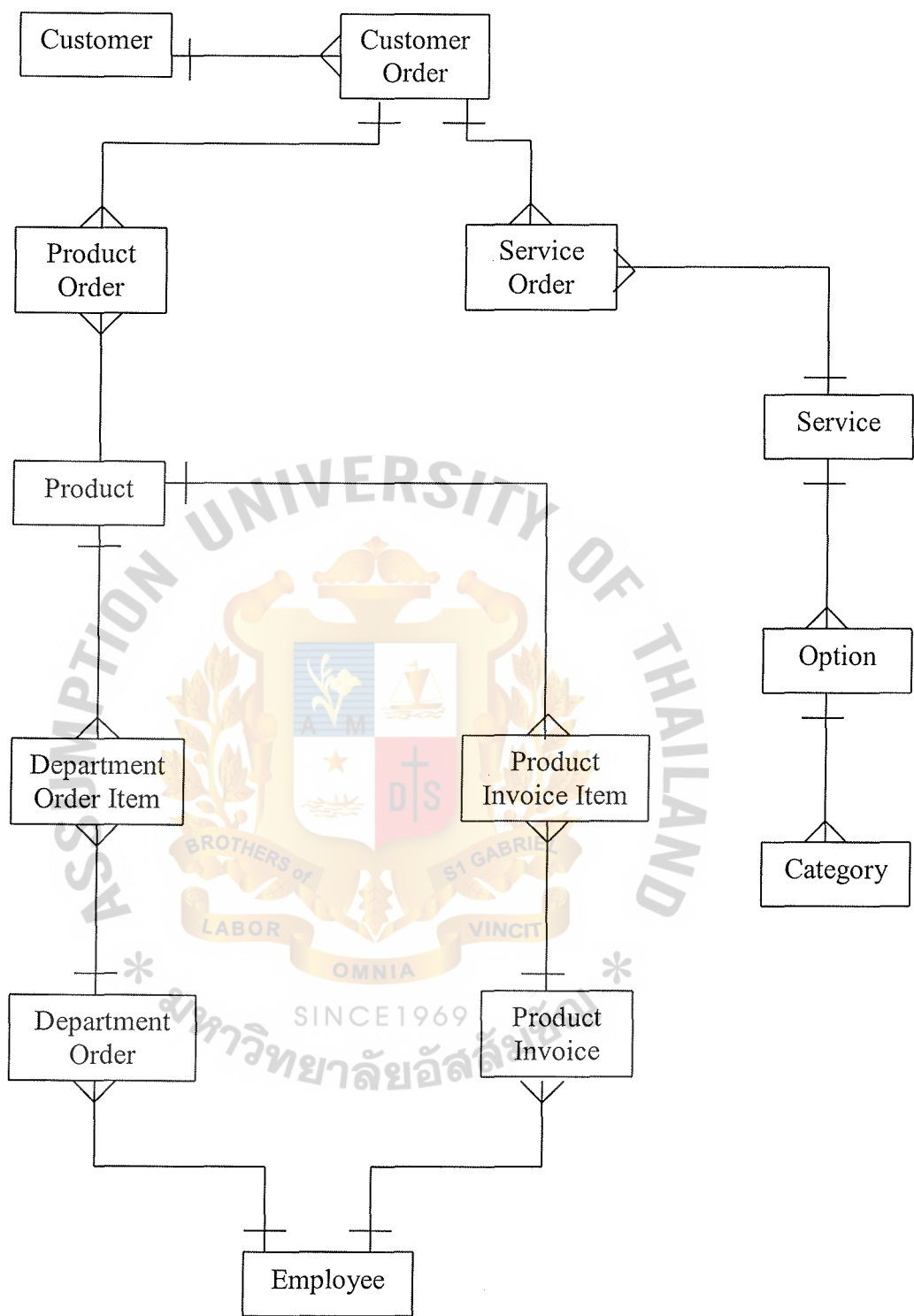
Figure 3-9   Entity-Relationship Diagram

(3)   Database Design

The Database Design is exhibited in Appendix A

Customer Table

Customer table keeps and maintains customer information, consists of customer ID, name, address, telephone number, e-mail, and last order date.

Customer

CusID	CusName	CusAddr	CusTel	CusMail	OdDate
030001	Mr.Somsa T.	888 Ekkachai 50	0-1898-8999	Som@yahoo.com	04/05/03
030002	Ms.Waya W.	69 Wachira Bldg	0-1663-3838	nancy_n@hotmail.com	13/03/03

Service Table

Service table keeps and maintains service information, consists of service ID, type ID, car type ID, guarantee, and price.

Service

SerID	TypeID	CarTypeID	Quarantee	Price
SV001	T001	CT005	0	250
SV002	T002	CT006	1	1,500

Product Table

Product table keeps and maintains product information, consists of product ID, product name, quantity, and price/unit.

Product

ProID	ProName	Quantity	Price/Unit	LowLevel
P001	Insulator	45	500	35
P002	Grand Cap	15	2,000	20

Department Order Table

Department order table keeps and maintains order for products to stock department, consists of department order ID, order date, employee ID, and status.

Department Order

DeptID	OrDate	EmID	Status
DOD0001	05/01/03	EM002	1
DOD0002	06/01/03	EM003	1

Product Invoice Table

Product invoice table keeps and maintains product invoice received from stock department, consists product invoice ID, product ID, quantity, and issued date.

Product Invoice

ProInID	ProID	Quantity	IssuDate
PI0005	P002	20	04/05/03
PI0008	P005	50	06/05/03

Customer Order Table

Customer order table keeps and maintains customer order for services and products, consists of customer order ID, customer ID, order date, total net, status, and employee ID.

Customer Order

CusID	CusID	OdDate	TtNet	EmpID
OD0001	030001	02/02/02	2,500	EM001
OD0002	030005	03/05/02	150	EM004

Service Order Table

Service order table keeps and maintains service order from customer order consists of service order ID, service ID, option ID, and category ID.

Service Order

SerOrID	SerID	OpID	CatID
SO0001	SV001	OP001	CT006
SO0005	SV002	OP003	CT007

Product Order Table

Service order table keeps and maintains product order from customer order, consists of product order ID, product ID, and quantity.

Product Order

ProOrID	ProID	Quantity
PO0001	P001	25
PO0002	P002	3

Employee Table

Employee table keeps and maintains employee information, consists of employee ID, name, address, telephone number, ID card number, name of system, password, right, and hire date.

Employee

EmID	EmName	EmAddr	EmTel	EmIDCard	SysName	passward	right	HiDate
EM001	Ms. Poo	36/5	0-9231-5501	poopecool @yahoo.com	Usr2	222	1	EM001
030002	Ms. Pe	35	0-2524-2264	nancy_wn @hotmail.com	Usr3	333	2	030002

Department Order Item Table

Department order item table keeps and maintains department order for product item to stock department, consists of department order item ID, item, product ID, and quantity.

Department Order Item

DeptOrItID	Item	ProID	Quantity
DOI0001	2	P002	15
DOI0002	1	P003	25

Product Invoice Item Table

Product invoice item table keeps and maintains product invoice for department order of product to stock department, consists product invoice item ID, product ID, and quantity.

Product Invoice Item

ProInItID	ProID	Quantity
PII0001	P001	2
PII0003	P010	1

Option Table

Option table keeps and maintains option information for a specified service, consists of option ID, name, description, and service ID.

Option

OpID	Name	Description	SerID
OP001	Van	For van only	SV001
OP002	Van	For van only	SV002

Category able

Category table keeps and maintains category information for a specified option, consists of category ID, name, price, and option ID.

Category

CatID	Name	Price	OPID
CT001	Black	2,510	OP001
OP002	Ordinary	2,220	OP002

(4)   Process Specification

Table 3-3   Process Specification for Process 1.0

Process Name:	Check Customer Status
Data In:	(1) Customer ID (2) New Customer Information (3) Order (4) Customer Information (5) Customer Status
Data Out:	(1) Customer ID (2) New Customer Information (3) Order
Process:	(1) Get customer ID and check whether customer already exist in the database (2) Get necessary customer data and assign new customer ID to new customer
Attachment:	(1) Customer (2) Data Store D1 (3) Process 2.0

Table 3-4   Process Specification for Process 1.1

Process Name:	Check Customer Validation
Data In:	(1) Customer ID (2) New Customer Information (3) Order (4) Customer Status
Data Out:	(1) Customer ID (2) New Customer Information
Process:	(1) Get customer ID and check whether customer already exist in the database
Attachment:	(1) Customer (2) Data Store D1 (3) Process 1.2

Table 3-5   Process Specification for Process 1.2

Process Name:	Keep Record of New Customer
Data In:	(1) New Customer Information (2) Customer Information
Data Out:	(1) New Customer Information
Process:	(1) Get necessary customer information to keep in database and assign customer ID to new customer
Attachment:	(1) Data Store D1 (2) Process 1.1

Table 3-6   Process Specification for Process 2.0

Process Name:	Check Availability of Service and Product
Data In:	(1) Order (2) Service Availability (3) Product Availability (4) Product Invoice (5) Department Order Information (6) Product Invoice Information
Data Out:	(1) Service ID (2) Product ID (3) Order Availability (4) Product Order (5) Department Order ID (6) Order
Process:	(1) Receive service order and check number of queue waiting for service (2) Receive product order and check whether there is enough product available to customer (3) Order additional products to stock department when lack of product on hand

26

Attachment:	(1)	Customer
	(2)	Stock
	(3)	Data Store D2
	(4)	Data Store D3
	(5)	Data Store D4
	(6)	Data Store D5
	(7)	Process 1.0
	(8)	Process 3.0

Table 3-7 Process Specification for Process 2.1

Process Name:	Check Service Status	
Data In:	(1)	Order
	(2)	Service Availability
Data Out:	(1)	Service ID
	(2)	Product ID
Process:	(1)	Receive service ID to check number of queue waiting for service
Attachment:	(1)	Data Store D2
	(2)	Process 2.2
	(3)	Process 1.0

27

Table 3-8   Process Specification for Process 2.2

Process Name:	Check Product Status
Data In:	(1) Product ID (2) Product Availability
Data Out:	(1) Product ID (2) Order Availability (3) Product Order
Process:	(1) Receive product ID to check number of product available to customer
Attachment:	(1) Customer (2) Data Store D3 (3) Process 2.1 (4) Process 2.3

28

Table 3-9   Process Specification for Process 2.3

Process Name:	Order Additional Product
Data In:	(1) Product Order (2) Product Invoice (3) Department Order Information (4) Product Invoice Information
Data Out:	(1) Product Order (2) Department Order ID
Process:	(1) Order addition product to stock department for sale to customer
Attachment:	(1) Stock (2) Data Store D4 (3) Data Store D5 (4) Process 2.2

29

Table 3-10   Process Specification for Process 3.0

Process Name:	Calculate Price of Service and Product
Data In:	(1) Order (2) Price of Service (3) Price of Product (4) Order Cancellation
Data Out:	(1) Service ID (2) Product ID (3) Price of Order (4) Order
Process:	(1) Receive service order and check service price (2) Receive product order and check product price
Attachment:	(1) Customer (2) Data Store D3 (3) Data Store D2 (4) Process 2.0 (5) Process 4.0

Table 3-11   Process Specification for Process 3.1

Process Name:	Check Service Price
Data In:	(1) Order (2) Price of Service
Data Out:	(1) Service ID (2) Product ID
Process:	(1) Receive service ID to check price of service ordered by customer
Attachment:	(1) Data Store D2 (2) Process 3.2 (3) Process 2.0

Table 3-12   Process Specification for Process 3.2

Process Name:	Check Product Price
Data In:	(1) Product ID (2) Price of Product
Data Out:	(1) Product ID (2) Price of Order
Process:	(1) Receive product ID to check price of product ordered by customer
Attachment:	(1) Customer (2) Data Store D3 (3) Process 3.1

31

Table 3-13   Process Specification for Process 4.0

Process Name:	Keep Record of Order
Data In:	(1) Order (2) Customer Order Information
Data Out:	(1) Order (2) Customer Order
Process:	(1) Get order detail to record in the database of customer order file (2) Generate order invoice to customer when service and product are ordered
Attachment:	(1) Customer (2) Data Store D6 (3) Process 3.0

Table 3-14   Process Specification for Process 4.1

Process Name:	Keep Record of Customer Order
Data In:	(1) Order (2) Customer Order Information
Data Out:	(1) Order (2) Service Order
Process:	(1) Receive customer order detail to record in customer order file
Attachment:	(1) Data Store D6 (2) Process 4.2 (3) Process 3.0

Table 3-15 Process Specification for Process 4.2

Process Name:	Keep Record of Service Order
Data In:	(1) Service Order (2) Service Order Information
	(1) Service Order (2) Product Order
Process:	(1) Receive service order detail to record in service order file
Attachment:	(1) Data Store D7 (2) Process 4.1 (3) Process 4.3

Table 3-16 Process Specification for Process 4.3

Process Name:	Keep Record of Product Order
Data In:	(1) Product Order (2) Product Order Information
Data Out:	(1) Product Order (2) Order
Process:	(1) Receive product order detail to record in product order file
Attachment:	(1) Data Store D8 (2) Process 4.2

33

Table 3-17 Process Specification for Process 5.0

Process Name:	Print Customer Order
Data In:	(1) Customer Order Information (2) Transaction Report Inquiry
Data Out:	(1) Customer Order ID (2) Customer Order (3) Transaction Reports
Process:	(1) Receive order invoice from customer to generate receipt to customer (2) Generate copied receipt to account department
Attachment:	(1) Customer (2) Account (3) Data Store D6 (4) Data Store D8

Table 3-18 Process Specification for Process 5.1

Process Name:	Generate Customer Order
Data In:	(1) Customer Order (2) Customer Order Information
Data Out:	(1) Customer Order ID (2) Customer Order Information
Process:	(1) Receive order invoice to print receipt to customer
Attachment:	(1) Data Store D6 (2) Process 5.2 (3) Process 4.0

Table 3-19 Process Specification for Process 5.2

Process Name:	Format Customer Order
Data In:	(1) Customer Order Information
Data Out:	(1) Formatted Customer Order
Process:	(1) Receive receipt detail to record in receipt file
Attachment:	(1) Process 5.1 (2) Process 5.3

Table 3-20 Process Specification for Process 5.3

Process Name:	Print Customer Order	
Data In:	(1)	Formatted Customer Order
Data Out:	(1)	Customer Order
Process:	(1)	Receive service receipt detail to record in service receipt file
Attachment:	(1)	Customer
	(2)	Process 5.2

Table 3-21 Process Specification for Process 6.0

Process Name:	Print Management Reports
Data In:	(1) Management Report Inquiry (2) Product Report Inquiry (3) Customer Information (4) Customer Order Information (5) Product Information (6) Department Order Information (7) Product Invoice Information (8) Service Information (9) Customer Order Information
Data Out:	(1) Customer Inquiry (2) Customer Order Inquiry (3) Product Inquiry (4) Department Order Inquiry (5) Product Invoice Inquiry (6) Service Inquiry (7) Product Report (8) Customer Order Inquiry (9) Management Reports
Process:	(1) Print management reports when ordered by manager and stock department

Attachment:	(1)	Manager
	(2)	Stock
	(3)	Data Store D1
	(4)	Data Store D2
	(5)	Data Store D3
	(6)	Data Store D4
	(7)	Data Store D5
	(8)	Data Store D6

Table 3-22 Process Specification for Process 6.1

Process Name:	Generate Management Reports
Data In:	(1) Report Inquiry (2) Product Report Inquiry (3) Customer Information (4) Service Information (5) Product Information (6) Department Order Information (7) Product Invoice Information (8) Customer Information (9) Service Order Information (10) Product Order Information
Data Out:	(1) Customer Inquiry (2) Service Inquiry (3) Product Inquiry (4) Department Order Inquiry (5) Product Invoice Inquiry (6) Customer Order Inquiry (7) Service Order Inquiry (8) Product Order Inquiry (9) Management report details
Process:	(1) Access databases to print management report to manager (2) Access product database to print product report to stock department

Attachment:	(1)	Manager
	(2)	Stock
	(3)	Data Store D1
	(4)	Data Store D2
	(5)	Data Store D3
	(6)	Data Store D4
	(7)	Data Store D5
	(8)	Data Store D6
	(9)	Data Store D7
	(10)	Data Store D8
	(11)	Process 6.2

Table 3-23 Process Specification for Process 6.2

Process Name:	Format Management Reports	
Data In:	(1)	Management Report Detail
Data Out:	(1)	Formatted Management reports
Process:	(1)	Organize management report detail to print out
Attachment:	(1)	Process 6.1
	(2)	Process 6.3

Table 3-24 Process Specification for Process 6.3

Process Name:	Print Management Reports
Data In:	(1)　Formatted Management Reports
Data Out:	(1)　Management Reports (2)　Product Report
Process:	(1)　Print formatted management reports to manager (2)　Print formatted product report to stock department
Attachment:	(1)　Manager (2)　Stock (3)　Process 6.2

(5) Data Dictionary

Table 3-25   Data Dictionary of Transaction Record System Database

Field Name	Meaning
Customer	Records of customer information
customer ID	Unique identification number assigned to each customer
customer information	Unique detail of each customer
customer inquiry	Inquiry of customer detail
customer order	Order of each customer order
customer order ID	Unique identification number assigned to each customer order
customer order information	Order detail of each customer order
customer order inquiry	Inquiry of customer order detail
customer status	Status of new or existing customer
department order	Order of department for product
department order ID	Unique identification number assigned to each department order
department order information	Order detail of each department order
department order inquiry	Inquiry of department order detail
formatted customer order	Form of formatted customer order
formatted management reports	Form of formatted management report
management reports	Management reports used by manager
management report details	Detail of management reports
management report inquiry	Inquiry of management report detail
new customer information	Detail of new customer

order	Customer order of service and product
order availability	Availability of service and product
order cancellation	Cancellation of customer order
price of order	Price of service and product order
price of product	Price of product order
price of service	Price of service order
product	Records of product information
product availability	Availability of product order
product ID	Unique identification number assigned to each product
product information	Detail of product
product inquiry	Inquiry of product detail
product invoice	Invoice of product order
product invoice information	Detail of product invoice
product invoice inquiry	Inquiry of product invoice detail
product order	Customer order of product
product order information	Detail of product order by customer
product report	Report of product details
product report inquiry	Inquiry of product report detail
report inquiry	Inquiry of management report detail
service	Records of service information
service availability	Availability of service order
service ID	Unique identification number assigned to each service
service information	Detail of service

service inquiry	Inquiry of service detail
service order	Customer order for service
service order information	Detail of service order by customer
transaction reports	Reports of day-to-day transaction
transaction report inquiry	Inquiry of transaction report detail

(6)   Interface Design

Interface Design is exhibited in Appendix B

Login Form

Login form is designed for the authorized persons to use the system. The administration and employees have their own passwords to access the system. Once the password is accepted, the system will automatically assign the user's name to the system. The benefit is to authenticate the person who can access to the system for each transaction.

Main Menu

Main menu is a user-friendly design with nice graphic. All menus are easy to understand and nothing to be confused on the main form. It consists of Master File, Transaction, Report, System/Security, Window, Help, and Exit. There are some shortcut menus on buttons that are used frequently. These buttons are provided for user convenience.

Product Form

Product form keeps and maintains product information that allows users to add, edit, and search for product. For adding, unique identification number of new product will be assigned automatically by the system, which can not be changed by the users. For editing, the users can edit all product information except product ID and quantity in order to prevent overloading of product information. For searching, the users can search for product by ID and name.

Service Form

Service form keeps and maintains service information that allows users to add, edit, and search for service. For adding, unique identification number of new service will be assigned automatically by the system, which can not be changed by the users. For editing, the users can edit all service information except service ID in order to prevent overloading of service information. For searching, the users can search for service by service type and car type.

Customer Form

Customer form keeps and maintains customer information that allows users to add, edit, and search for customer. For adding, unique identification number of new customer will be assigned automatically by the system, which can not be changed by the users. For editing, the users can edit all customer information except customer ID in order to prevent overloading of customer information. For searching, the users can search for customer by ID and name.

Employee Form

Employee form keeps and maintains employee information that allows users to add, edit, and search for employee. For adding, unique identification number of new employee will be assigned automatically by the system, which can not be changed by the users. For editing, the users can edit all employee information except employee ID and status in order to

prevent overloading of employee information. For searching, the users can search for employee by ID and name.

Customer Order Form

Customer order form allows users to input service and product order information from customer. The system can make the order to be cancelled when the order is unneeded by the customer. Customer order form also has its shortcut on customer form for quickly in use.

Department Order Form

Department order form lets the users input product information that has low quantity level on hand to order the product from stock department. This can prevent the problem of product emptiness when needed by customer.

Receive Product Form

The user only input the department order ID, then all information of product order will automatically appear to ask for confirmation of users to update number of product in product file.

Customer Order Summary Form

Customer order summary is the summary of customer order by emphasizing on date and product of order, which shows you for only selected date and product of order.

System/Security Form

System/security is used when the administrative and employees want to change their own passwords from the assigned password to the new one. The new password can be used when the administrative and employees log in to the system next time.

Window

Window is used to swap from one function to another function. All functions appear on window are the functions that are opened only.

About Program

About program states that the developer's name of the system.

Quit

Quit is used when the user want to end the system.

(7) Report Design

Report Design is exhibited in Appendix C

Report consists of all management reports: customer, employee, product, product quantity less low level, customer order summary, department order summary, and product top ten sale.

Customer

The report generates the important information of all customers such as unique identification code, address, telephone number, etc.

Product

The report shows the product list and its information provided by the company to the customers such as unique identification code, name, quantity, etc.

Employee

The report generates the important information of all employees such as unique identification code, address, and telephone number, etc.

Product quantity less than low level

The report is helpful for the system that warns the users about the products that are in low-level quantity. This function will make its report to view all products that enter the low-level quantity.

Customer Order Summary

The report will separate the product order detail by date of order and product for users to view among them. The report will show only the selected date and product of customer order.

Department Order Summary

The report will separate the department order detail for product by date of order and product for users to view among them. The report will show only the selected date and product of department order

Product Top Ten Sale

The report will show the uses with the best selling product in top ten ranges of the month and year, depending on the customer order.
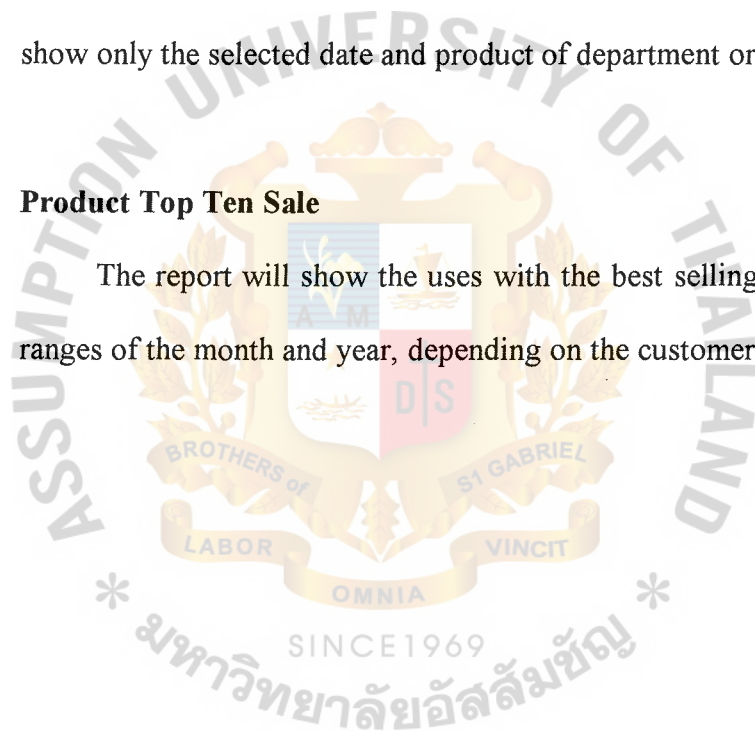
IV. SYSTEM IMPLEMENTATION

4.1 Overview of the System Implementation

The system will be installed to the company's computer and tested by the developer. There will be some training provided to the users who will use the system. All processes will be transferred from manual work to the computerized system, so the first launch of the system will apply only part of customer to observe the real performance of program.

Developer will gather information from the users both direct and indirect. The direct observation is to question the users about the system or let users comment. The indirect observation is to see the reaction of users when they are using the program whether they face the problem or whether they know how to use the system and how to fix the error by themselves. Direct and indirect observation can specify that if the users are satisfied with the new system. If the users are satisfied with the system, then the developer will transfer the whole manual work in to the computer system. If the users are dissatisfied or have any comment to the system, the developer will make an adjustment due to the demand from the users.

4.2 Test Plan

Unit test

Developer will test all functions in the system independently to make sure that every function works correctly. For examples: adding the number of product, adding the customer information, printing the report, and putting the incorrect number to see how the system can handle it.

Integration test

Developer will test the related functions in the system to make sure that every function can work correctly together. For examples: adding the new product information, then performing product updating, and then generate report.

System testing

Developer will test all the functions in the system as a whole, since the first step until the last step in the system. For examples: adding new product and new customer, then trying to order the product from the stock department and then selling to the customer to see whether the system working correctly.

User acceptance testing

Developer will let the user test the system independently to see whether the system can fit with the existing system. For examples: letting the user performs the function with the real information.

V.   CONCLUSIONS AND RECOMMENDATIONS

5.1   Conclusions

The proposed system that has been adapted to the existing system can eliminate problems that have been stated in problem definition.

Firstly, the ineffective transaction management control can be reduced and also can eliminate the problem of time consuming. The system also provides the signal of product quantity low level. Information is available all the time as needed when the users need it.

Secondly, the difficulties in retrieving information have been eliminated by the system storage that has been kept in the computer. Keeping the data in the storage makes it easy to search, retrieve, edit and store.

Thirdly, the system also eliminates the problem of misplacing of information by keeping all the information in one place that the users always have the updated information. The system can also eliminate the problem of duplication and inconsistency of information by having only one storage. That means all departments keep the information within one storage, so that if any change happens, the user will always get the newest data.

5.2   Recommendations

(1)   The system should have more abilities to join in the network in order to maximize the use of program and access the program from many places.

(2)   The system should be able to work with other system to expand the abilities and increase an opportunity in gain benefit and convenience to the customer.

(3)   System should be able to generate the information to the customer also to allow customer to select the information that they want to know in order to provide as much as possible to be easy for customer to make decision.

APPENDIX A
DATABASE DESIGN

Table A-1   Structure of Customer Table:

No.	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced
1	CusID	Int(10)	Y	Y		999999	PK	
2	CusName	Varchar(50)	Y			XXX		
3	CusAddress	Int(9)			Y			
4	CusTel	Int(9)			Y			
5	CusMail	Int(10)			Y			
6	LorDate	Int(10)	Y			DD-MM-YY		

Table A-2   Structure of Service Table:

No.	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced
1	SerID	Int(10)	Y	Y		XX999	PK	
2	TypeID	Int(10)	Y			XX999	FK	Category
3	CarTypeID	Inr(10)	Y			XX999	FK	Option
4	Quanrantee	Int(9)			Y			
5	Price	Int(10)			Y			

Table A-3   Structure of Product Table:

No.	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced
1	ProID	Int(10)	Y	Y		X999	PK	
2	ProName	Int(10)	Y					
3	Quantity	Int(10)						
4	Price/unit	Int(10)						
5	LowLevel	Int(5)						

Table A-4   Structure of Department OrderTable:

No.	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced
1	DeptID	Int(10)	Y	Y		XXX9999	PK	
2	OrDate	Int(10)	Y					
3	EMID	Int(5)						
4	Status	Int(5)						

Table A-5   Structure of Product Invoice Table:

No.	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced
1	ProInID	Int(10)	Y	Y			PK	
2	ProID	Int(10)	Y	Y			FK	Product
3	Quantity	Int(10)						
4	IssuDate	Int(10)	Y					

Table A-6   Structure of Customer Order Table:

No.	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced
1	COID	Int(10)	Y	Y		XX9999	PK	
2	OdDate	Varchar(15)	Y			DD-MM-YY		
3	CusID	Int(9)				999999	FK	Customer
4	EmpID	Int(9)				XX999	FK	Employee

Table A-7   Structure of Service Order Table:

No.	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced
1	SerOID	Int(10)	Y	Y		XX999	PK	
2	SVID	Varchar(50)	Y	Y		XX999	FK	Service
3	OpID	Int(9)	Y	Y		XX999	FK	Option
4	CatID	Int(9)	Y	Y		XX999	FK	Category

Table A-8   Structure of Product Order Table:

No.	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced
1	ProOrID	Int(10)	Y	Y		XX999	PK	
2	CatID	Int(10)	Y	Y		XX999	FK	Category
3	OpID	Int(9)			Y		FK	Option

Table A-9   Structure of Employee Table:

No.	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced
1	EmID	Int(10)	Y	Y		XX999	PK	
2	EmName	Varchar(50)	Y					
3	EmAddr	Int(9)			Y			
4	EmTel	Int(10)				99-9999999		
5	EmIDCard	Int(20)			Y			
6	SysName	Varchar(20)						
7	Password	Int(9)						
8	Right	Int(9)						
9	HiDate	Varchar(20)				DD-MM-YY		

Table A-10　Structure of Department Order Item Table:

No.	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced
1	DeptOrITID	Int(10)	Y	Y		XX999	PK	
2	Item	Varchar(50)	Y					
3	ProID	Int(9)			Y	XX999	FK	Product
4	Quantity	Int(10)						

Table A-11　Structure of Product Invoice Item Table:

No.	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced
1	ProInItID	Int(10)	Y	Y		XX999	PK	
2	ProID	Int(10)	Y	Int(10)		XX999	FK	Product
3	Quantity	Int(9)			Y			

Table A-12   Structure of Option Table:

No.	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced
1	OpID	Int(10)	Y	Y		XX999	PK	
2	Name	Varchar(50)	Y					
3	Description	Int(9)			Y			
4	SerID	Int(10)	Y	Y		XX999	FK	Service

Table A-13   Structure of Category Table:

No.	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced
1	CatID	Int(10)	Y	Y		XX999	PK	
2	Name	Varchar(50)	Y					
3	Price	Int(9)			Y			
4	OpID	Int(10)	Y	Y		XX999	FK	Option

APPENDIX B
INTERFACE DESIGN

Figure B-1   Login Form

Figure B-2   Main Menu

Product ID	Product Name	Quantity	price $/unit
P001	ที่กรองแดด	100	99.00
P002	พรมปูหน้าปัดรถยนต์	60	190.00
P003	ฟองน้ำเช็ดรถ	20	29.00
P004	น้ำยาเช็ดกระจก	130	49.00
P005	Grand Cab เบาะนั่ง	70	350.00
P006	ผ้าหุ้มเบาะ กะบะ แค็บ ดูหน้า	32	400.00
P007	Car Insulator แผ่นกันความร้อน ชนิดพีโฟม	40	500.00
P008	Car Insulator แผ่นกันความร้อน ชนิดยางสังเคราะห์	5	300.00
P009	Carpets Carmate ทรบชุด 5 ชิ้น	60	600.00
P010	CAR carpets	0	300.00

Total 10 Records

Record : 10/10

Figure B-3 Product Form

Figure B-4   Service Form

Figure B-5   Customer Form

Figure B-6   Employee Form

Figure B-7   Customer Order Form

Figure B-8   Deparment Order Form

Figure B-9   Receive Product Form

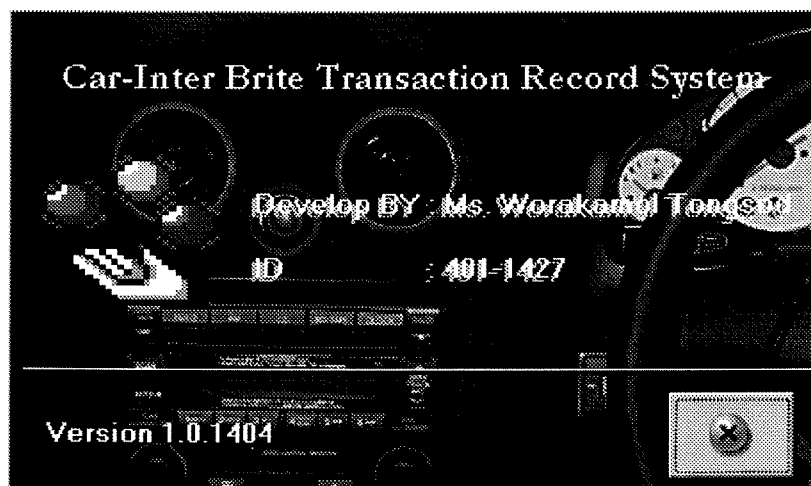Figure B-10   Customer Order Summary

Figure B-11   System/Security Form

Figure B-12   About Program Form
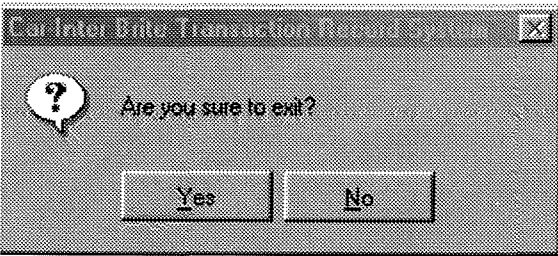
Figure B-13 Quit Form

APPENDIX C
REPORT DESIGN

Car-Inter Brite Co., Ltd.

Customer Report

Page 1 / 1

Print Date 14/03/2546

ID	Customer Name	Address	Tel	e - mail
010001	Mr. Oneanong Sifiworakarn	Doun Dee Enterprise 777 Issaraparp Rd Bangkok 10160	01 3331777	oneanong@hotmail.com
010002	Mrs. Twoanong Wichaiwit	Pitsanu Co., Ltd. 401 Charoenkrung Rd Bangruk Bangkok 10150	01 6244255	twoanong@yahoo.com
020001	Mr. Threeanong Suparp	Best Wish Co.,Ltd. 25 Ratchadapisak Dindang Bangkok 10320	01 6981999	Threeanong@yahoo.com
020002	Ms. Fourapa Thodsaniyom	Bin Chamee Enterprise 88 Rama 9 Rd. Bangkok Yai	02 5541223	fourman@yahoo.com
020003	Mr. Fivees Nopama	CoCo Co., Ltd. 78/8 Wipawadee Rd Bangkok 10202	02 5545885, 01 6698898	takefive@hotmail.com
020004	Ms. Sixana Pensoil	Jubjang Co.,Ltd. 888 Witsawa Rd Bangsue Bangkok 10230	01 6659556	666@yahoo.com
030001	Mr. Sevener Decomposer	Seatee Enterprise 333 Bangna Ville	0 9884 4848	kdk@hollland.com
030002	worakamol tongsod	38/79 Na Wung Mueng Phetchaburi 76000	09-2315501	poopecool@yahoo.com

Total 8 Records

Figure C-1   Custormer Report

Car-Inter Brite Co., Ltd.
Employee Report
Print Date 14/03/2546

ID	Employee Name	Address	Telelephone	IDCard Number
EM001	Mr.Apichat Mcintosh	41 Ladpraw Rd. Pangkapi Bangkok 18245	02-2543522	1234567890123
EM002	Ms.Sunaree Amornsiri	325 Petchkasem Rd. Bangkae Bangkok 16200	02-2578545	9876543210320
EM003	Mr.Somkid Samakkeewa	97 Nana Rd. Pomparb Bangkok 10100	02-4368165	1234567890123
EM004	Mr.Chokchai Scottey	578 Ratchada Rd. Huay Kwang Bankok 12500	02-3625198	9876543210321
EM005	Ms.Sudsoka Rungruengl	862 Praram 3 Rd. Nanglincee Bangkok 13200	02-2541687	1234567890123
EM006	Mr.Patrick Davin	400 Prayathai Rd. Prayathai Bangkok 15230	02-2337320	3298339382392
EM007	worakamol	rajabhat institute phetchaburi	095886321	125333314866
EM008	poope	125555	014555	55666874444

Total 8 Records

Figure C-2   Employee Report

Car-Inter Brite Co., Ltd.
Product Report
Print Date 14/03/2546

Product ID	Product Name	Quantity	Lowlevel	Price
P001	ที่กรองแดด	109	60	99.00
P002	พรมปูหน้าปัดรถยนต์	60	100	190.00
P003	ฟองน้ำเช็ดรถ	18	24	29.00
P004	น้ำยาเช็ดกระจก	138	50	49.00
P005	Grand Cab เบาะนั่ง	75	50	350.00
P006	ผ้าหุ้มเบาะ กะบะ แค็ป คู่หน้า	32	30	400.00
P007	Car Insulator แผ่นกันความร้อน ชนิดพีโฟม	45	30	500.00
P008	Car Insulator แผ่นกันความร้อน ชนิดยางสังเคราะห์	10	20	300.00
P009	Carpets Carmate ครบชุด 5 ชิ้น	59	50	600.00
P010	CAR carpets	0	30	300.00

Total   10   Records

Figure C-3   Product Report

Car-Inter Brite Co., Ltd.
Product Report
Print Date 14/03/2546

Page 1 OF 1

Product ID	Product Name	Quantity	Lowlevel	Price
P002	พรมปูหน้าปัดรถยนต์	60	100	190.00
P003	ฟองน้ำเช็ดรถ	18	24	29.00
P008	Car Insulator แผ่นกันความร้อน ชนิดยางสังเคราะห์	10	20	300.00
P010	CAR carpets	0	30	300.00

Total   4   Records

Figure C-4   Product Quantity Less Than Low Level

Car-Inter Brite Co., Ltd.
Customer Order By Date
Print Date 14/03/2546

Page 1 OF 2

Order Date 14/11/2545

No. Product / Service ID Description	Quantity	Price ฿/unit	Amount
Order Number : OD0001 Mr. Oneanong Sifiworakarn			
1 P002 พรมปูหน้าปัดรถยนต์	1	190.00	190.00
2 P003 ฟองน้ำเช็ดรถ	2	29.00	58.00
Order Number : OD0002 Mrs. Twoanong Wichaiwit			
1 P004 น้ำยาเช็ดกระจก	1	49.00	49.00
2 P001 ที่กรองแดด	1	99.00	99.00
		Total :	396.00

Order Date 23/11/2545

No. Product / Service ID Description	Quantity	Price ฿/unit	Amount
Order Number : OD0003 Ms. Sixana Pensoil			
1 P003 ฟองน้ำเช็ดรถ	1	29.00	29.00
2 P004 น้ำยาเช็ดกระจก	2	49.00	98.00
		Total :	127.00

Order Date 02/01/2546

Figure C-5   Customer Order Summary

BIBLIOGRAPHY

1. O'Brien J. A. **Management Information Systems: Managing Information Technology in the Internetworked Enterprise,** Fourth Edition. USA: McGraw Hill, 1999.

2. Opas iumsiriwong. **System Analysis and Design**. Bangkok: Se-education, 2001.

3. Boonkrasin, Krongkiat. General Manager, T&T Autosell and Service Co., Ltd.. Interview, 10 March 2002.

4. Kitti Pakdiwattanakul and Jamlong Kruusaha. **Database System.** Bangkok: Thaijaroenkarnpim Limited Partnership, 2544.

5. Rungtiwa Sirinararat. **Computer with Office: Database Management 1 – 2.** Bangkok: Se-Education, 2544.

6. Sajja Jaratrungrawiworn. **Manual for Visual Basic 6.0 Programming.** Bangkok: InfoPress, 2544.

7. Supachai Sompanich. **Database Creation with Visual Basic (Programmer).** Bangkok: InfoPress, 2545.

8. Somsak Srikajornkiat. **Teach Yourself – Visual Basic.** Bangkok: Bibliophile, 2542.

9. Piyapramote, Natt. **"Visual Basic Source Code."** Bangkok, 2002. [www.siamvb.net]