



**SALES AND SERVICE SYSTEM  
FOR AN AIR-CONDITIONING COMPANY**

By

**MR. WUTTHIPHONG EKTHANIPRONG**

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

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

April, 1997

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by

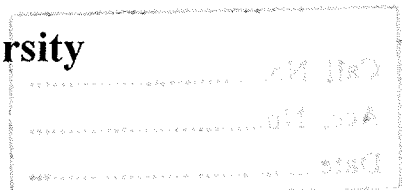
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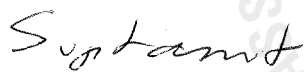


Project Title : Sales And Service System for  
An Air-Conditioning Company  
Name : Mr. Wutthiphong Ekthaniphong  
Project Advisor : Assoc.Prof. Dr. Suphamit Chittayasothorn  
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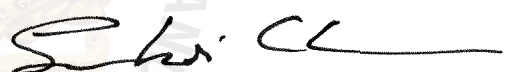
The Graduate School of Assumption University had approved this final report of the three-credit course, CS 6998 System Development Project , submitted in partial fulfillment of the requirements for the degree of Master of Science in Computer Information Systems.

Approval Committee :



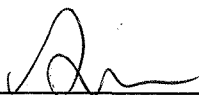
(Assoc.Prof.Dr. Suphamit Chittayasothorn)

Advisor



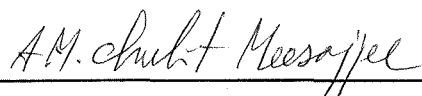
(Prof. Dr. Srisakdi Charmonman)

Member



(Dr. Sudhiporn Patumtaewapibal)

Member



(Air Marshal Dr. Chulit Meesajjee)

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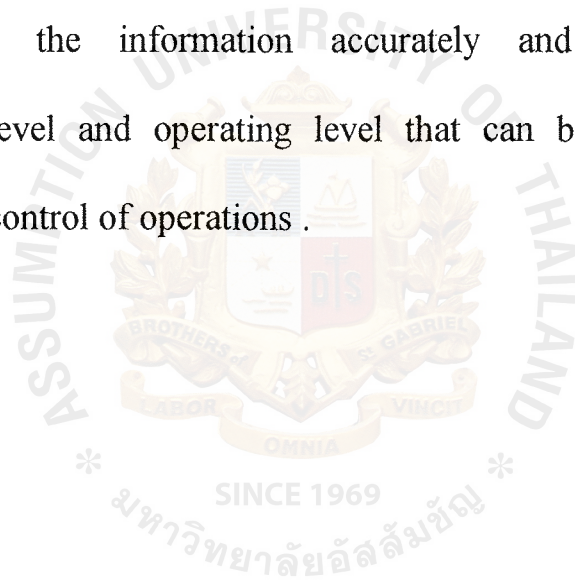
Member

April 1998



## ABSTRACT

The project of “Sales and Service System for an Air-conditioning Company” involves of the sales operation system and service maintenance system. The purpose of this project is to convert the current manual system to the computerized system that can help company to operate effectively and manage their resources efficiency . This project also provides the information accurately and consistently for management level and operating level that can be used in making decisions and control of operations .



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## TABLE OF CONTENTS

<u>Chapter</u>	<u>Page</u>
ABSTRACT	i
ACKNOWLEDGMENTS	ii
LIST OF FIGURES	v
LIST OF TABLES	viii
 <b>I. INTRODUCTION</b>	
1.1 Background of the Project	1
1.2 Objectives	3
1.3 Scope	4
 <b>II. EXISTING SYSTEM</b>	
2.1 Background of the Organization	5
2.2 Existing Business Functions	7
2.3 Current Problems	9
2.4 Existing System Overview	10
 <b>III. PROPOSED SYSTEM</b>	
3.1 User Requirements	14
3.2 Systems Design	15
3.3 Hardware and Software Requirements	19
3.4 Security and Controls	22
3.5 Cost / Benefits Analysis	24

<b><u>Figure</u></b>	<b><u>Page</u></b>
G-7 Order Main Menu	105
G-8 Service Main Menu	106
G-9 Add / Edit Employee Screen	107
G-10 MIS Main Menu	108
G-11 Add Customer Screen	109
G-12 Edit Customer Screen	110
G-13 Search Customer Screen	111
G-14 View Customer Screen	112
G-15 Add Customer's Product Screen	113
G-16 Edit Customer's Product Screen	114
G-17 View Customer's Product Screen	115
G-18 Add Product Screen	116
G-19 Edit Product Screen	117
G-20 View Product Screen	118
G-21 Update Product Price Screen	119
G-22 Update Product Stock Screen	120
G-23 Add Supplier Screen	121
G-24 Edit Supplier Screen	122
G-25 Product Selection Screen	123
G-26 Add Order Screen	124
G-27 Update Order Screen	125
G-28 View Order Screen	126
G-29 View Customer's Order Screen	127
G-30 Check Due Date Screen	128
G-31 Update Service Contract Screen	129
G-32 Service Contract Expire Screen	130
G-33 Service Job Order Screen	131

## LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
2-1 Organization Chart	6
2-2 Context Diagram of Existing System	12
2-3 Data Flow Diagram of Existing System	13
3-1 Context Diagram of Proposed System	17
3-2 Data Flow Diagram of Proposed System	18
3-3 Network Diagram	21
3-4 Break-even Analysis	27
A-1 Level 0 of Proposed System	36
A-2 Level 1 of Process 2.0 Create Order	37
A-3 Level 1 of Process 3.0 Assign Job	38
A-4 Level 2 of Process 3.4 Produce Service Job Order	39
A-5 Level 1 of Process 4.0 Collect Payment	40
E-1 Structure Chart of Proposed System	80
E-2 Structure Chart of Process 2.0 Create Order	81
E-3 Structure Chart of Process 3.0 Assign Job	82
E-4 Structure Chart of Process 4.0 Collect Payment	83
E-5 Structure Chart of Process 5.0 Produce Report	84
F-1 Entity-Relationship Diagram of Proposed System	86
F-2 Relational Database Schema	87
G-1 System Screen	99
G-2 Log On Screen	100
G-3 Main Menu of System	101
G-4 Customer Main Menu	102
G-5 Customer's Product Main Menu	103
G-6 Product Main Menu	104



<b><u>Figure</u></b>	<b><u>Page</u></b>
G-7 Order Main Menu	105
G-8 Service Main Menu	106
G-9 Add / Edit Employee Screen	107
G-10 MIS Main Menu	108
G-11 Add Customer Screen	109
G-12 Edit Customer Screen	110
G-13 Search Customer Screen	111
G-14 View Customer Screen	112
G-15 Add Customer's Product Screen	113
G-16 Edit Customer's Product Screen	114
G-17 View Customer's Product Screen	115
G-18 Add Product Screen	116
G-19 Edit Product Screen	117
G-20 View Product Screen	118
G-21 Update Product Price Screen	119
G-22 Update Product Stock Screen	120
G-23 Add Supplier Screen	121
G-24 Edit Supplier Screen	122
G-25 Product Selection Screen	123
G-26 Add Order Screen	124
G-27 Update Order Screen	125
G-28 View Order Screen	126
G-29 View Customer's Order Screen	127
G-30 Check Due Date Screen	128
G-31 Update Service Contract Screen	129
G-32 Service Contract Expire Screen	130
G-33 Service Job Order Screen	131

<b><u>Figure</u></b>	<b><u>Page</u></b>
<b>G-34</b> Service Job Update Screen	132
<b>G-35</b> Service Job View Screen	133
<b>G-36</b> Sales Volume (Unit) Screen	134
<b>G-37</b> Sales Volume (Baht) Screen	135
<b>H-1</b> Invoice	137
<b>H-2</b> Receipt	138
<b>H-3</b> Service Card	139
<b>H-4</b> Installation Job Order	140
<b>H-5</b> Service Job Order	141
<b>H-6</b> Service Contract Expire Report	142
<b>H-7</b> Account Receivable List	143
<b>H-8</b> Inventory Report	144
<b>H-9</b> Monthly Sales Report	145
<b>H-10</b> Sales Report by Quarter 1 and 2	146
<b>H-11</b> Sales Report by Quarter 3 and 4	147
<b>H-12</b> Yearly Sales Report	148
<b>H-13</b> Best Product Sold Report	149
<b>H-14</b> Monthly Invoice Report	150
<b>H-15</b> Employee Yearly Sales Report	151

## LIST OF TABLES

<u>Table</u>	<u>Page</u>
3-1 Break-even Analysis	26
4-1 Project Plan (Gantt Chart)	30
F-1 Customer File	89
F-2 Cust_Product File	90
F-3 Serv_Contract File	91
F-4 Order File	92
F-5 Order_Item File	93
F-6 Product File	94
F-7 Supplier File	95
F-8 Employee File	96
F-9 Serv_Job File	97

# **I. INTRODUCTION**

## **1.1 Background of the Project**

Nowadays , every company has to compete with the others in order to survive in the business world .They compete in offering the best product and service that will satisfy the need of their customers. At the same time , they also manage their cost to be as low as possible and use their resources efficiency and effectively in order to make competitive advantages to their businesses .

The computerized system is becoming an important key in running business today. It is a tool that will be used to achieve the goal of the company . It is taken important roles on operating some complicated processes and platitudinous jobs instead of manual systems that consume more resources of the organization to implement those processes . The computer can help users in calculation , managing database , providing analytical reports to support of the management's decision making and etc. Therefore the computerized system can help the company to operate business effectively and to manage resources efficiency with lower operating costs .

Information derivation is important for any kinds of business since it means comparative advantage. The sales operation is an

important operation of business . This operation is so complicated because it is composed of many sub-processes , data , documents , financial transactions and dealing with customers directly . These operation is the source of many important information such as customer information , sales information , financial information and etc. The management level will need these information to help in analysis the business condition in order to plan proper strategies and make some important decisions .

The manual sales operation consumes more resources of company and mistakes may be occurred because it has to deal with many transactions and documents . The problems of data inconsistency and integrity will also be occurred . That will cause the information be inaccurate and valueless .



## 1.2 Objectives

The objectives of the project are as follows :

1. To analyze the existing system of Sales and Service system.
2. To study problems occurred in the existing system.
3. To design the new computerized system of Sales and Service system.
4. To develop the new computerized system which can reduce manual work and prepare reports to cover major aspects and satisfy the requirements of users and management level .
5. To increase the efficiency in service given to customers.
6. To reduce the routine work and processing time of the employee.
7. To reduce data redundancy and maintain data consistency and integrity .

### 1.3 Scope

This project will focus on Sales and Service system of the current system which is a manual system . The proposed system will cover on areas as follows :

- Database of customer
- Database of customer's air-conditioner
- Database of service contract
- Database of service job
- Database of order
- Database of order item
- Database of product
- Database of supplier
- Database of employee
- Generating customer billing statement
- Generating report to help employee in operating
- Generating report to management level
- Estimate cost of implementation for this project

## **II. EXISTING SYSTEM**

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

Pollachet Engineering Co.,Ltd. is a company that runs business about sale and provide service maintenance for an air-conditioner product. The company has founded on October 27 ,1984. Nowadays , it has operated for 13 years. There are 8 employees and 10 technicians .

The company is a dealer of Carrier (Thailand) Company . The main product sale is the air-conditioner under Carrier brand . It also sells other brands such as Mitsubishi , Sharp , Sapphire and etc.

Today, there are about 200 customers and 800 air-conditioner units served by the company in Bangkok and circumference . The customers are mostly habitats .

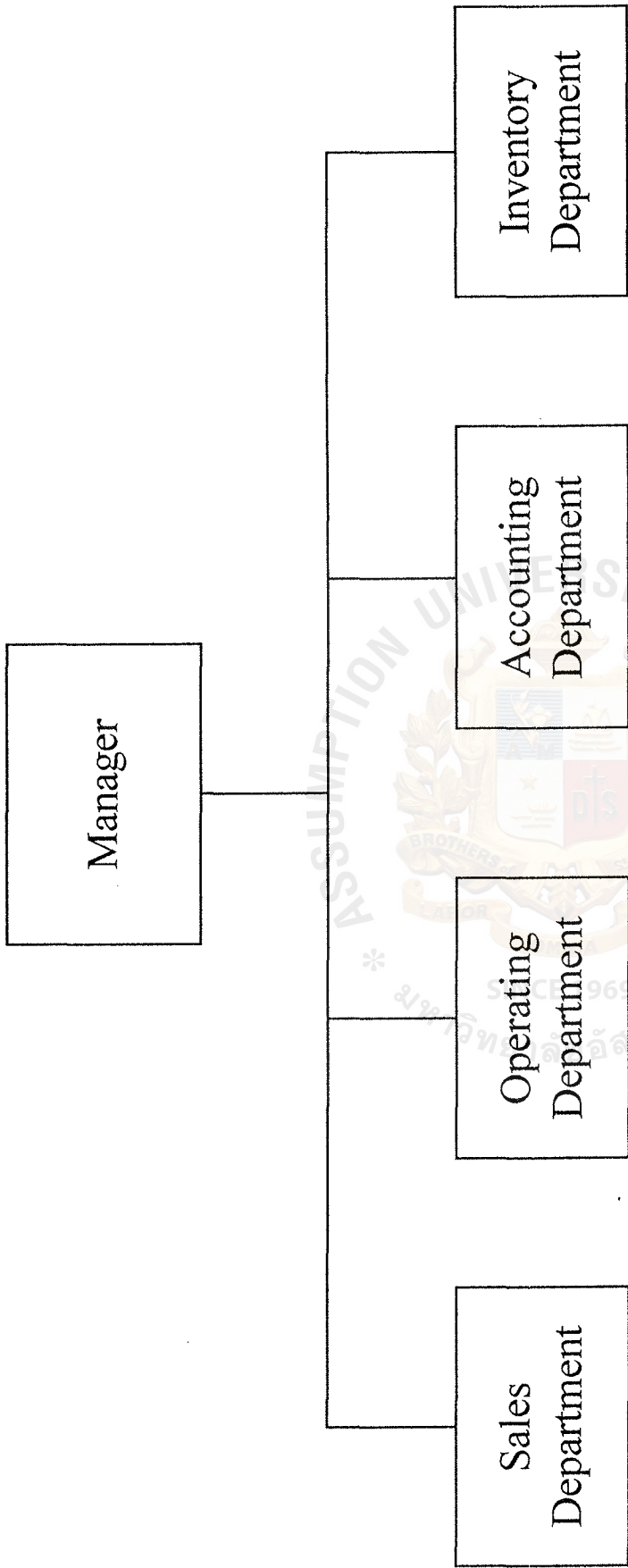


Figure 2-1 : Organization Chart

## **2.2 Existing Business Functions**

The function of each department of Pollachet Engineering Company can be described and illustrated as following :

### **1). Sales Department**

- Sell air-conditioner unit and service package to customer
- Plan the marketing strategy to push the sales volume
- Operate the sales operation
- Receive the service request from customer
- Coordinate activities with the customer and other departments

### **2). Accounting Department**

- Management the account receivable
- Generating the financial documents
- Financial control of the cash flow
- Generating the sales report to the manager
- Control the usage of the company's budget

### **3). Inventory Department**

- Supply the product and spare parts
- Control the inventory of the product and spare parts
- Control the usage of spare parts
- Control the capital of the inventory



#### **4). Operating Department**

- Management of the technician team
- Perform the installation job
- Perform the service maintenance job
- Provide solutions for the product operation problems



## 2.3 Current Problems

The current manual system for sales and service system of the company is highly paper-oriented and labor intensive. There are some problems are as follows :

### 1). Time consumption of access data

Information is in the form of paper. The employees have the problem of difficulties in access for required data .

### 2). Data Redundancy

Data redundancy can occur because of unconnected among department. Some transaction may be operate more than one time by different officer because the data can not be shared and retrieved on timely basis .

### 3). Data Inaccuracy

Most serious problem of manual operation has mistake made by officer (human error). High workload and limitation of time can cause of data inaccuracy which effect to management decision making and company profit .

### 4). Limitation of resources

It can not support and serve the growth rate of the customer service as increase with the limit of employees .

## **2.4 Existing System Overview**

The existing system of Sales and Service system involves of 5 processes as follows :

### **Process 1. Receive Customer Order**

The sales officers will receive the information of customers and their orders for air-conditioners from the sales representatives . Then the sales officers will prepare the order list by specific model and quantity of order. The order list will be passed to the second and the third process . The service card that passed to the third process with the order list will be prepared after the sales officers have received the ordered product information from the second process . ( The service card is a card that has the detail of customer's product such as model , product serial number , and the timely period of service maintenance . )

### **Process 2. Prepare Product for Delivery**

For this process , the order list will inform the inventory department officers to prepare product according to the order list . They will check product available and record the product serial number in order to prepare the product delivery statement . The ordered product information will send back the first process . The ordered product and the product delivery statement will be supplied to the fourth process .

**Process 3. Assign job**

The assign job process will prepare the job order list to inform the operating department about the installation product for customer.

For service job order , the sales officers will check the time schedule and customer information to inform the operating department to provide service maintenance for customers.

**Process 4. Operate Job**

The technicians will delivery and install products to customers . The product delivery statement will be signed by the customer and a copy one will be passed to the fifth process .

**Process 5. Collect Payment**

After the accounting officers have received a copy of product delivery statement , they will prepare the invoice statement and send to the customer with a copy of the product delivery statement . When the invoice is due , the accounting officers will prepare the receipt statement to collect payment from the customer.

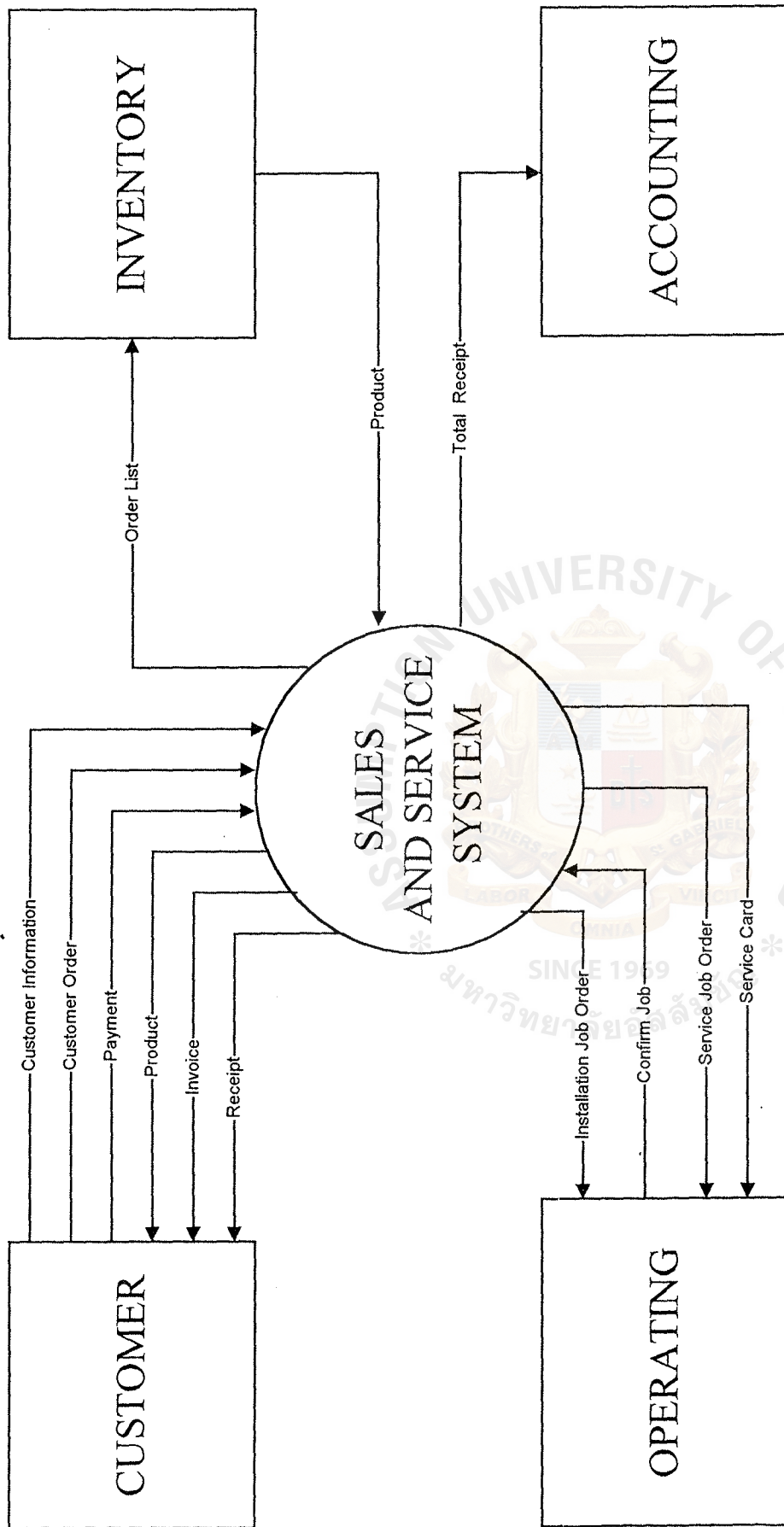


Figure 2-2 : Context Diagram of Existing System



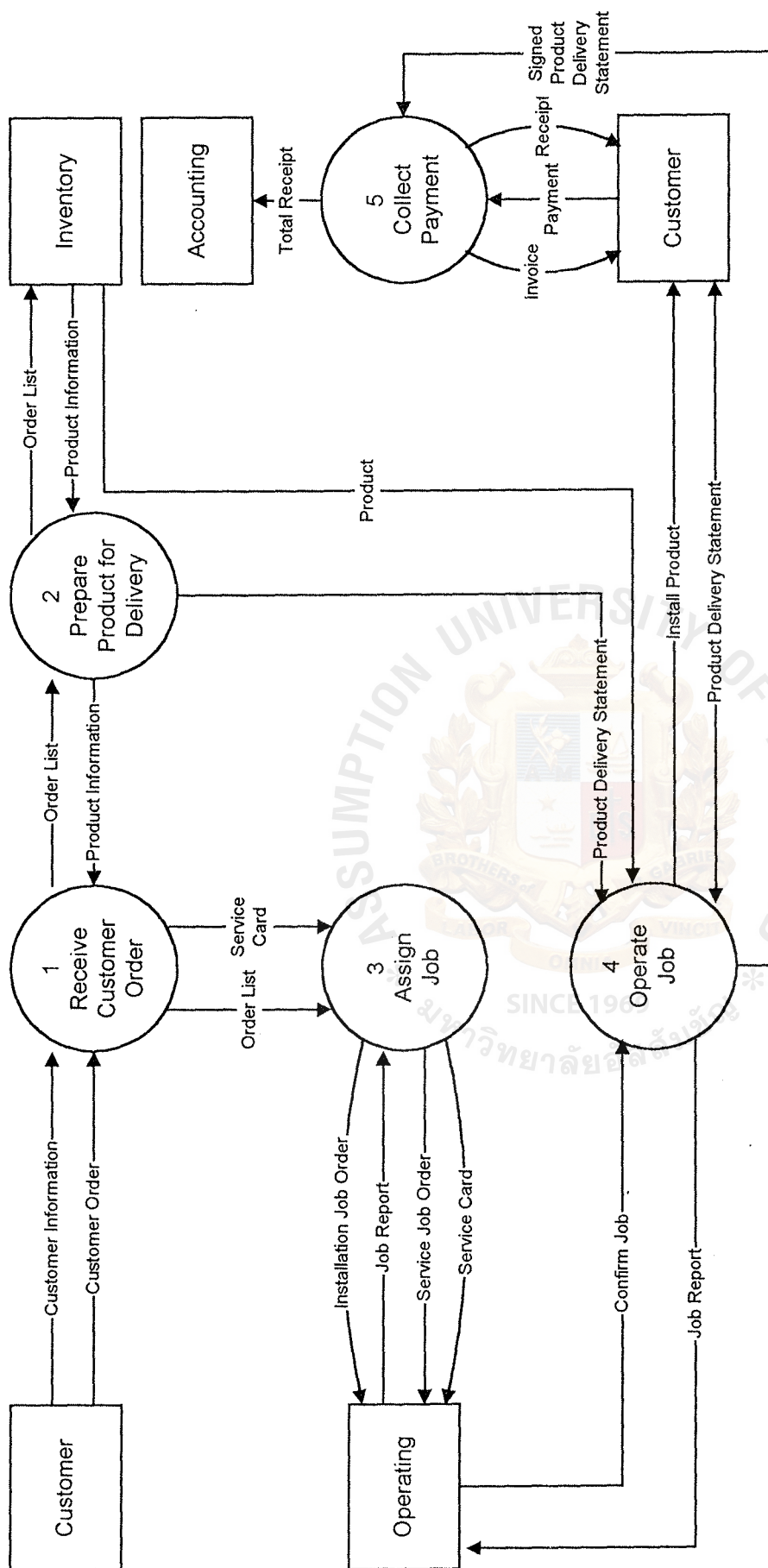


Figure 2-3 : Data Flow Diagram of Existing System (Level 0)

### **III. PROPOSED SYSTEM**

#### **3.1 User Requirements**

From the analysis of existing system about operations and problems found , the major points need to be concern are data accuracy , consistency and no control of overall operations. The new system covers both the major processes of sales and service operations and additional requirements which are as follows :

- 1). Perform the right procedures properly and produce accurate results.
- 2). Provide user friendly interface and method of interaction .
- 3). All data can be controlled and able to access upon request .
- 4). Application is easy to use , implement and simple deal with maintenance .
- 5). Provide necessary information and report to the management .
- 6). To increase effective and efficiency of each work process .
- 7). Maintain the consistency and integrity of the data .
- 8). To reduce the data redundancy .
- 9). To reduce time and increase an accuracy of operation .
- 10).Reduce work flow and no work duplication still exists in the work processes .

## **3.2 System Design**

The proposed system is designed to meet the user requirement and solve the current problems . It includes of 5 processes as follows :

### **Process 1. Add Customer Record**

The new customer information will be appended to the customer record and then it will be used in other processes .

### **Process 2. Create Order**

In this process , the customer will be checked for the customer identification number and to check the correctness of the information . The product item of customer's order will be check available in the inventory before creating order record . Then the sales officers will append a new order record and print invoice . The original invoice will be passed to the third process and a copy one will be passed to the inventory department for preparing the product to delivery .

### **Process 3. Assign Job**

For this process , the detail of ordered product will be appended to the customer's product records by using the information from the inventory department . The service contract record will also be appended for a new product usually for 1 year . After appending the data , the sales officers will print the installation job order and service card . The

installation job order will be sent to the operating department . On the appointment date , the technician will delivery and install the ordered product to the customer . The customer will receive the invoice at the same time of delivery products . A copy one of the signed invoice will be sent to the accounting department .

For service maintenance , the operating department will request service job order according to the schedule on each day . The customer's product record will be retrieved to check the service contract and print the service job order . The service job order and service cards will be sent to the operating department . After the technicians have performed the service job , they will return the service cards for updating the service job record .

#### **Process 4. Collect Payment**

The accounting officers will print the account receivable report to check the due date of payment . If the invoice is due , they will call to customer and confirm for payment . The receipt will be printed and sent to the customer after collecting the payment.

#### **Process 5. Produce Report**

The data of order will be summary for monthly and yearly in order to prepare the sales report for the management level.

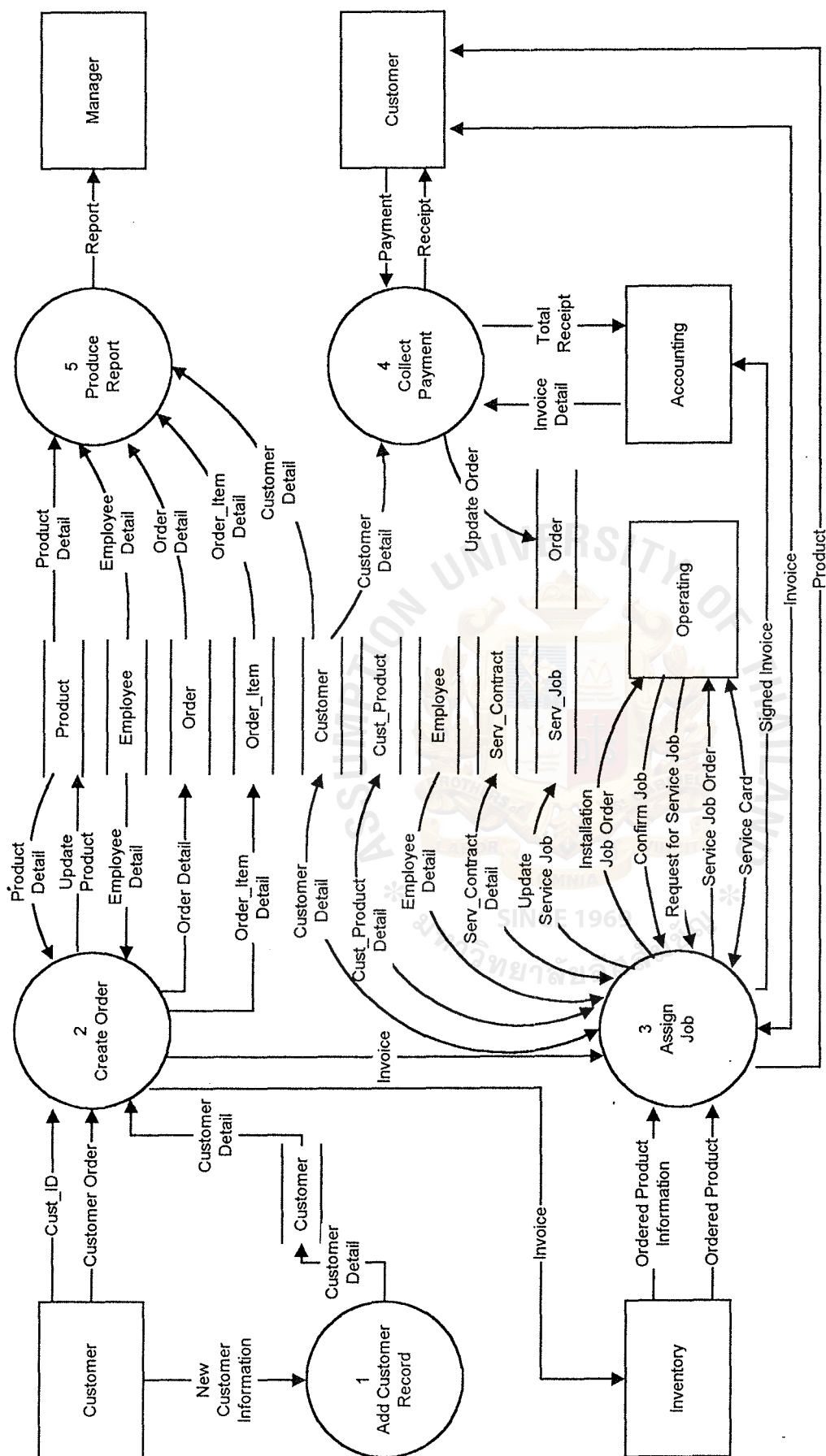


Figure 3-2 : Data Flow Diagram of Proposed System (Level 0)



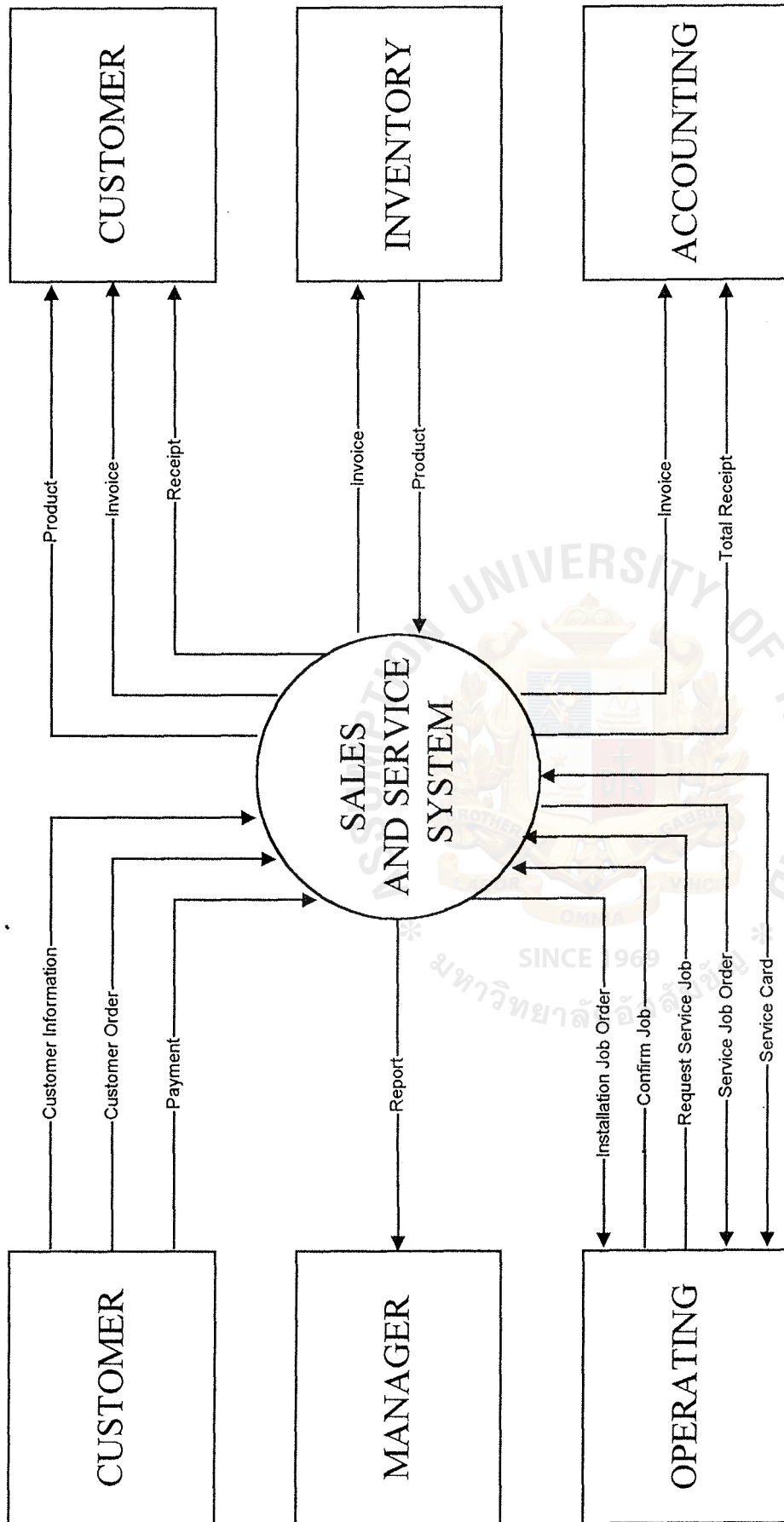


Figure 3-1 : Context Diagram of Proposed System

### 3.3 Hardware and Software Requirements

#### 3.3.1 Hardware Requirements

For implement the proposed system , the hardware requirements are as follows :

1).Server unit 1 unit

Processor : Pentium 200 MHz. with MMX.

Memory : 512 KB. Cache and 64 MB. RAM

Storage device : 2.1 GB. Hard disk

1.44 MB. Floppy disk drive

CD-ROM drive

Display monitor : SVGA Display

2).Client unit 2 units

Processor : Pentium 166 MHz. with MMX.

Memory : 512 KB. Cache and 32 MB. RAM

Storage device : 2.1 GB. Hard disk

1.44 MB. Floppy drive

Display monitor : SVGA Display

3).HUB 1 unit

Ethernet (10 Base T ) TPO 4 Ports

- |  |           |
|--|-----------|
| 4).LAN Card                                  | 3 units   |
| Ethernet LAN card ( 10 Base T ) 10 MBPS.     |           |
| 5).LAN Cable                                 | 20 meters |
| Unshield twisted pairs with RJ 45 connectors |           |
| 6).Printer                                   | 1 unit    |
| Dot Matrix 24 pins , A4                      |           |

### 3.3.2 Software Requirements

The software requirements for implement this project are as following :

- |  |        |
|--|--------|
| 1. Microsoft Windows NT Server 4.0 Thai enable | 1 set  |
| 2. Microsoft Office 97 pro Thai edition        | 2 sets |

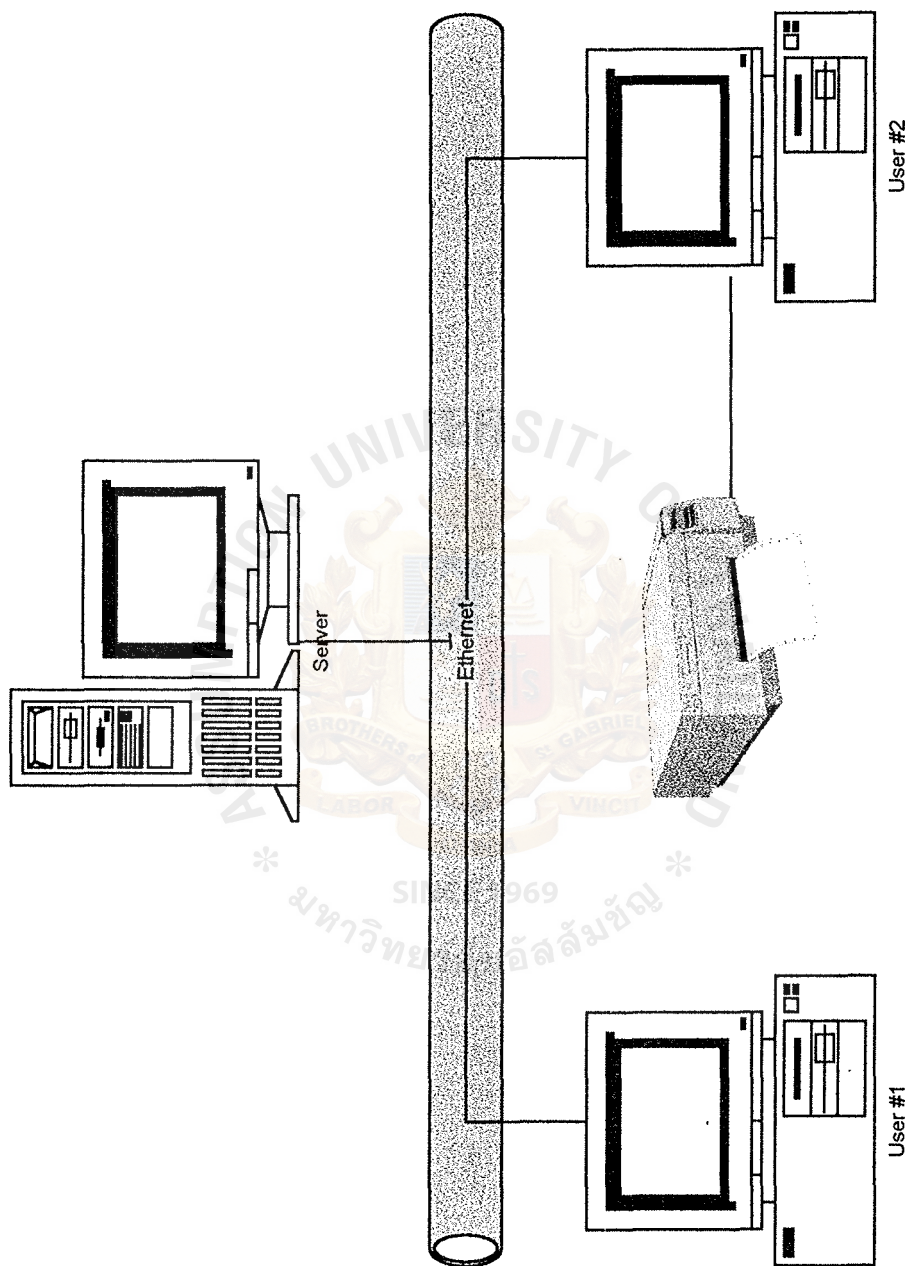


Figure 3-3 : Network Diagram

### 3.4 Security and Controls

For the security of the Sales and Service system can be generated in the points as follows :

#### 1). Hardware Security

It includes controlling physical access to the hardware as well as to the system . All of computers will be set the machine passwords that force the users to enter the password of each computer when turning on the machine . The door of room housing computer hardware will be locked on after working period and restricted on visitor access to during working period .

#### 2). Software Security

Software security goes hand-in-hand with hardware security . Software security protects systems and application programs from unauthorized access or modification.

#### 3). User Security

The users who will log-in to the program are forced to input their user name and password . Each user name will be limited authorization to deal with process according to the responsibility of user .

#### 4). Data backup

The all data files of Sales and Service system will be made a backup usually in a period of time in order to prevent the file error . The backup media must keep in the safe place when the system has some problems , data lost for example , the data can be restored from the backup files.



### 3.5 Cost / Benefit Analysis

#### 3.5.1 Cost Analysis

Unit : Baht

##### System Start-Up Costs

###### Development

Systems analysis and requirements determination	8,000
Systems Design	10,000
Development and implementation	15,000

###### Equipment purchase

PC. for Server	45,000
2 sets of PC. for client @ 37,500 Baht	75,000
HUB 4 ports	3,000
3 sets of Ethernet LAN card @ 1,600 Baht	4,800
LAN Cable with connector 20 m.@ 30 Baht	600
dot-matrix printer	6,000
Windows NT Server 4.0	24,000
2 sets of Microsoft Office 97 Pro @ 22,500 Baht	45,000

###### *Total Start-Up Costs*

236,400

##### System Operating Costs

Program maintenance	30,000
Computer stationery expense	4,000

###### *Total Operating Costs*

34,000

##### System Benefits

Savings on additional personnel not needed	104,000
Operating savings	
Stationary expense	3,000
Reduced accounts receivable balances (minimum)	20,000

###### *Total Tangibles Benefits*

127,000



## PayBack Periods

This tool is a criterion that frequently used to judge the profitability of a system. It is defined as the number of years required to accumulate earnings sufficient to cover its costs.

$$P = I / ((1-T) * R)$$

where P = Payback period

I = Investment

T = Corporate Tax Rate in Percent ( 30 %)

R = Average Annual Return on investment

where R = Total saving amount - Annual Operating Cost

Total saving amount = 127,000 Baht

Annual operating cost = 4,000 Baht

R = 123,000 Baht

This system has investment cost ( P ) of 236,400 Baht then the

PayBack Periods will be :

$$\begin{aligned}\text{PayBack Period} &= 236,400 / ((1-0.3) * 123,000) \\ &= 2.7 \text{ years}\end{aligned}$$

### Break-even Analysis

The comparison between the cost of investment and the benefits will be shown in Table 3-1 : Benefits Comparison and the graph of Break-even Analysis also shown in Figure 3-4 .

Table 3-1 : Break-even Analysis

Yr.	Cumulative Cost	Cumulative Benefits	Net Cumulative Difference
0	236,400	0	(236,400)
1	270,400	127,000	(143,400)
2	304,400	254,000	(50,400)
3	338,400	381,000	42,600
4	372,400	508,000	135,600
5	406,400	635,000	228,600

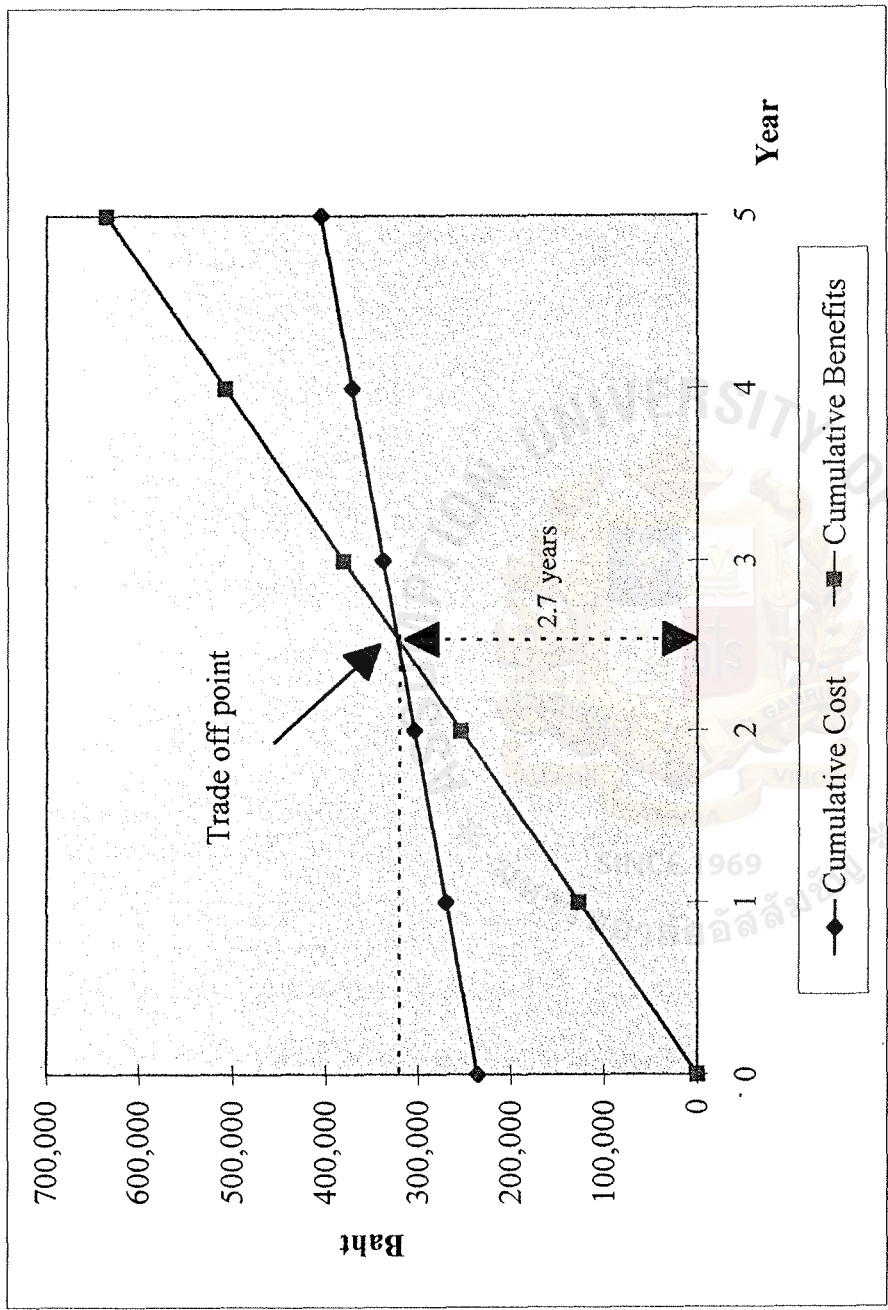


Figure 3-4 : Break-even Analysis

### 3.5.2 Benefit Analysis

The proposed system will provide the benefits to the company with tangible and intangible benefit.

The tangible benefits of the proposed system are as follows :

- 1). Avoid the need to hire additional employee
- 2). Reduce the stationary expense such as paper , typewriter ink cartridge and etc.
- 3). Decrease the account receivable

The intangible benefits of the proposed system are as follows :

- 1). The work flow will not be redundant.
- 2). Increase level of control and performance in operation.
- 3). Convenience in access the data
- 4). Increase of data consistency and integrity
- 5). Improve quality in control of account receivable

## **IV. PROJECT IMPLEMENTATION**

### **4.1 Overview of Project Implementation Schedule**

The project implementation of Sales and Service System can be divide into 3 main parts : -

#### **1). Training**

The users must be instructed in how to operate the equipment and instructed in troubleshooting the system , determining whether a problem that arises is caused by the equipment or software .

#### **2). Conversion**

The converting from the current system to the proposed system will be conducted in parallel . The user will continue to operate the old system in the accustomed manner but they also begin using the new system .

#### **3). Data and file preparation**

With the current system is a manual system , so it will have to prepare the data and systems master files in the initial state .During conversion , all records which are created to the new files must be verify accuracy .

Table 4-1 : Project Plan ( Gantt Chart )

Activities	Dec.				Jan.				Feb.				Mar.			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b><u>System Analysis :</u></b>																
- Identify the area under study	X	X														
- Context Diagram of the Existing system			X	X												
- Develop the DFD of the Existing system				X												
<b><u>Detail Analysis and Design</u></b>																
- Define new system requirements				X	X											
- Develop the DFD of the new system				X	X											
- Identify of the contents of the data store						X	X									
- Data dictionary							X	X								
- Data store								X	X							
- Structure Chart									X	X						
- Screen interface ( input , output )										X	X					
<b><u>Implementation</u></b>																
- Pseudocode										X	X					
- Screen layout										X	X					
- Report layout											X	X				
- Data conversion											X	X	X			
- Testing												X	X			
- Training													X	X		
- Acceptance test															X	X
- Production															X	X
- Documentation										X	X	X	X	X	X	X

## 4.2 Test Plan and Results

The test plan for the proposed system will consists of

### 1). System testing

System testing is to ensures that the system performs as promised in the user requirements.

### 2). Program testing

Program testing ensures that all of the various modules within the program function properly while executing the whole program .

The programmers probably will create some test data for testing the individual programs , but now test data must be created for all possible real-life situations. The programmers, system analysts , and user department representatives should now get together. They should create test data that contain both valid and invalid data , test normal processing routines, test error routines , check lists ,test variations using different input and output formats , test the addition and deletion of records to files , test the files storage and retrieval algorithms , insert data will cause problems , and finally prepare just plain ridiculous out-of -scale data.

### 3). Unit testing

Unit testing is used to remove errors ,both syntactical and logical , from a single module or unit of a program .



## **V. CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Conclusions**

In the situation of business today , the competitions become so serious . The effective and efficiency ways of management have to be applied to use in the company . As the Sales and Service system of Pollachet Engineering Company , the manual current system can not serve for the growth of number of customers in the future with effectively and efficiency . The proposed system can help the company operation with effectively , efficiency and accuracy through the design and development by using computerized system . The proposed system of the Sales and Service system will provide both of tangible and intangible benefits . The system design also meets the user requirements and covers the solution of current problems .

The proposed system will pay for itself within slightly over 2 years , while providing better control over orders , transactions , inventories and service for customers . These system also provides better management information in a timely manner . Finally , the proposed system will be the pilot project that will be proved for the reasonable in investment with the benefits of efficiency and better information management in the company.

## 5.2 Recommendations

The project of “ Sales and Service System ” has only focused on the sales and service maintenance operation of the company . The other manual operations can be selected to develop to computerized systems such as the repairing service operation and operation of spare parts inventory . Those operations can be merged with the proposed system for a complete system .

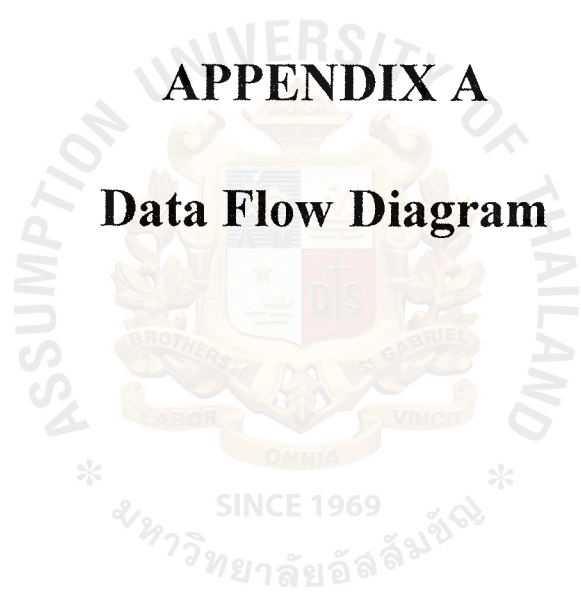
For the repairing service system will provide the repairing profiles of customers' air-conditioners which recorded in the database instead of papers . The users can access a record of repairing profiles of customers conveniently that will know the past of inoperative problems , technicians who respond for solving that problems . The technicians will use this information for helping in analysis the cause of problems and will provide service for customers as promptly . For the spare parts inventory system will provide the information about the spare parts usage records of each technician that will help the company to control and manage the level of spare parts inventory effectively .

The link of those 2 systems with the proposed system will help the company to operate business effectively and efficiency . The systems will also provide valuable information support for the management level in making decisions .

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**APPENDIX A**  
**Data Flow Diagram**



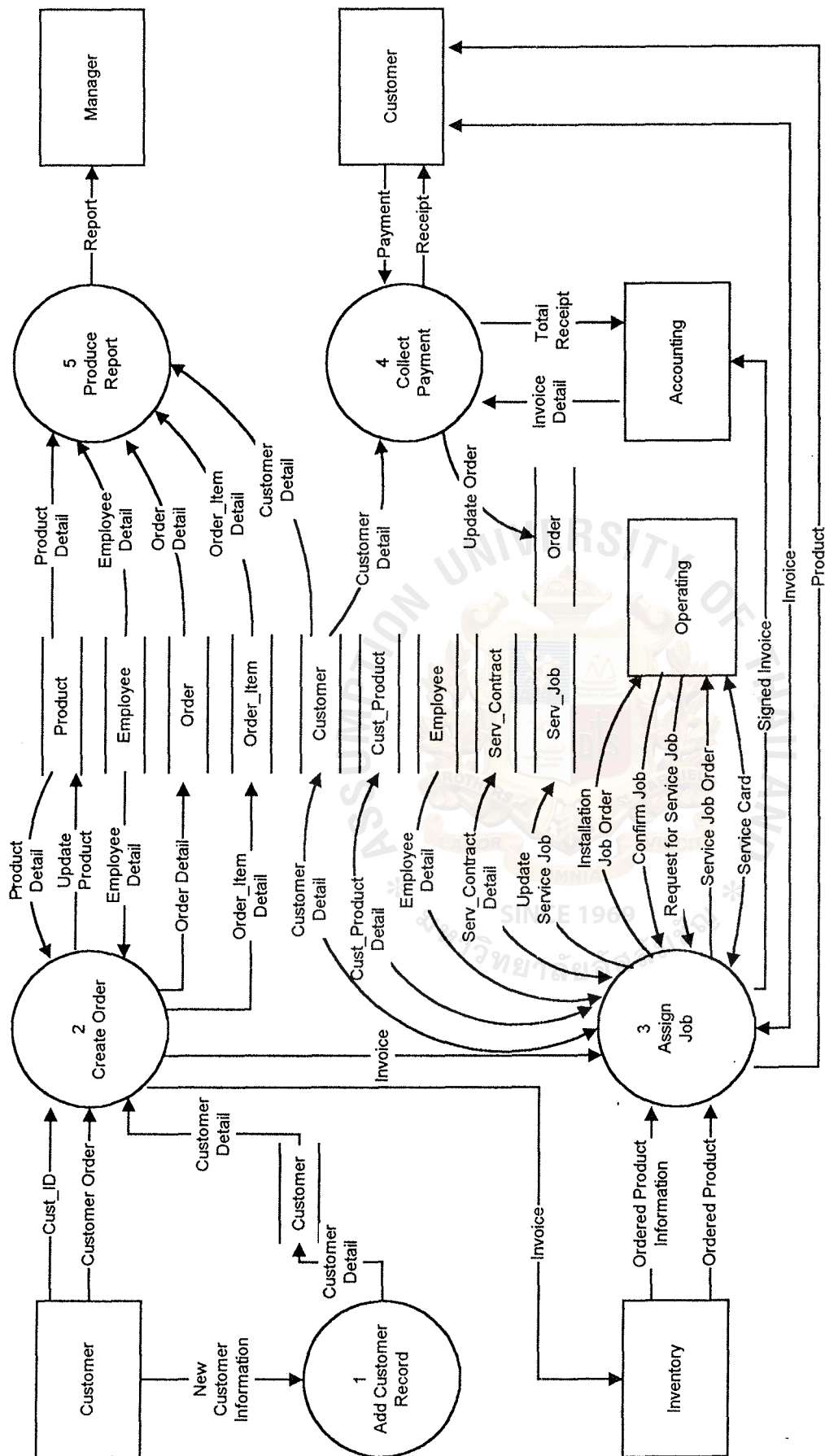


Figure A-1 : Level 0 of Proposed System

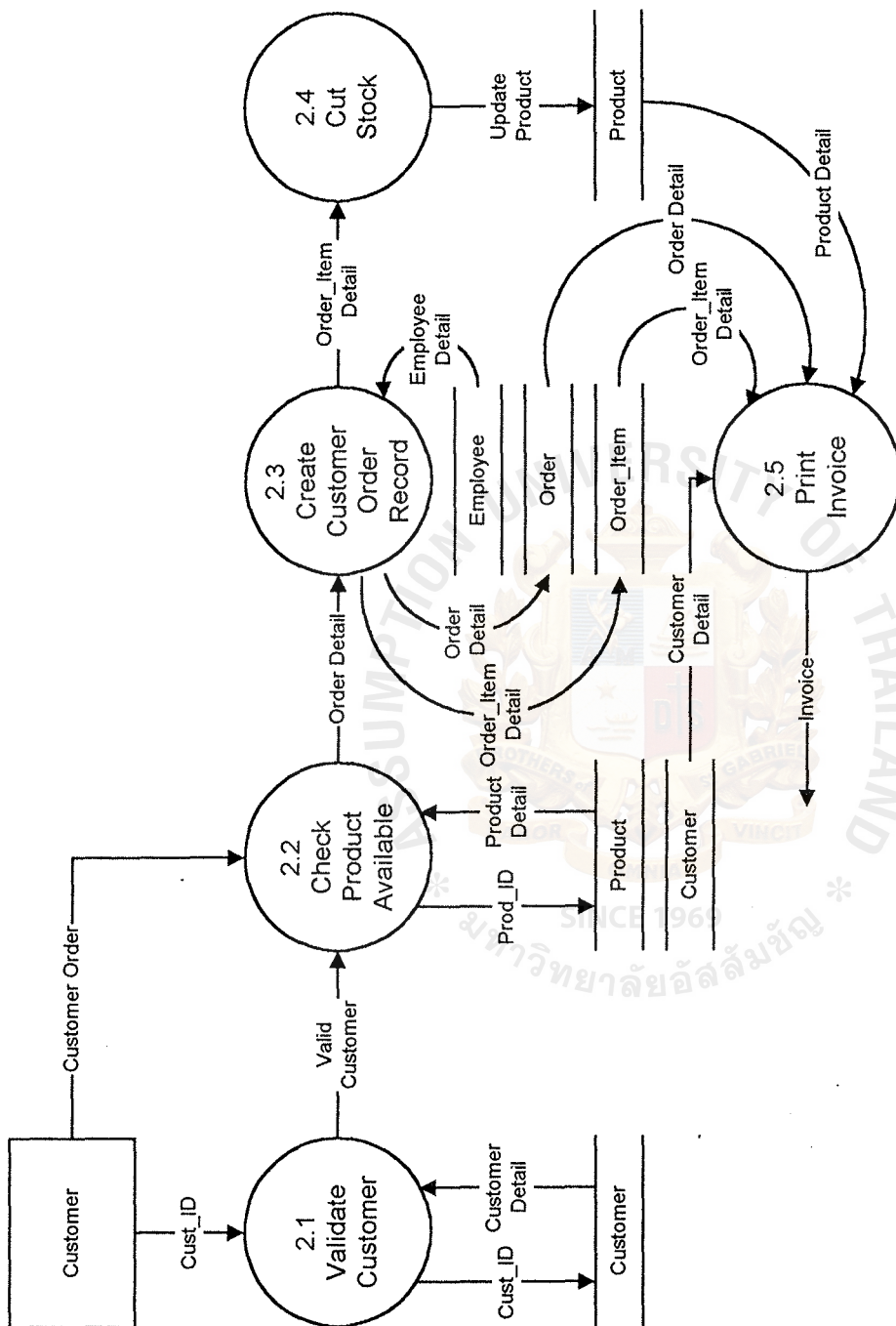


Figure A-2 : Level 1 of Process 2.0 Create Order

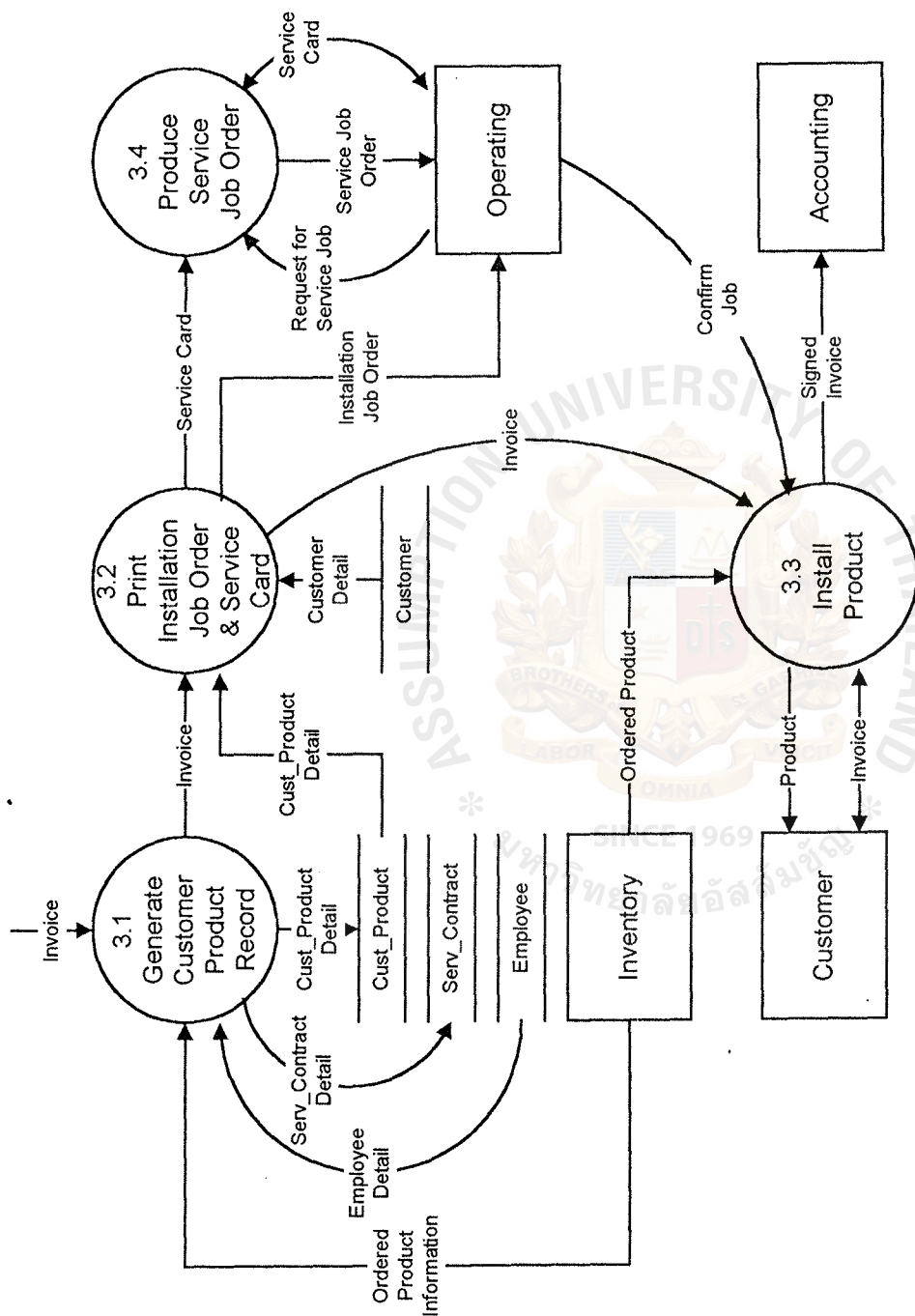


Figure A-3 : Level 1 of Process 3.0 Assign Job



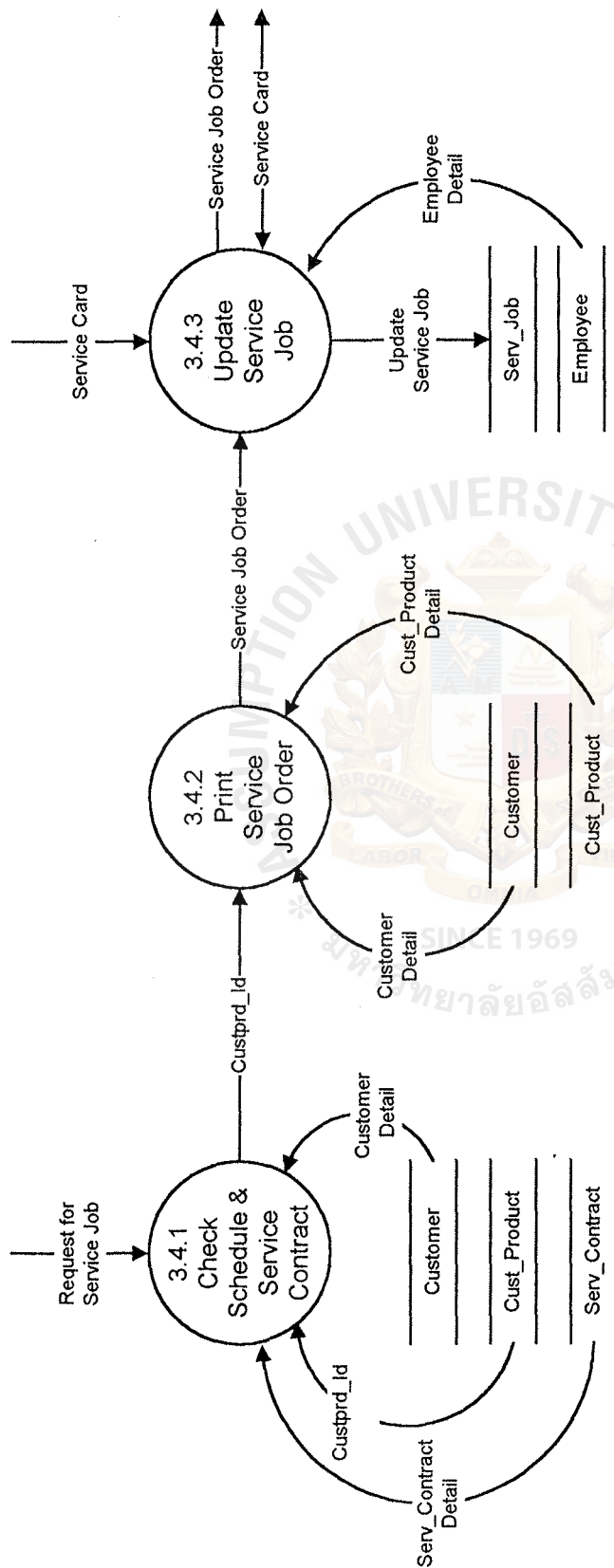


Figure A-4 : Level 2 of Process 3.4 Produce Service Job Order

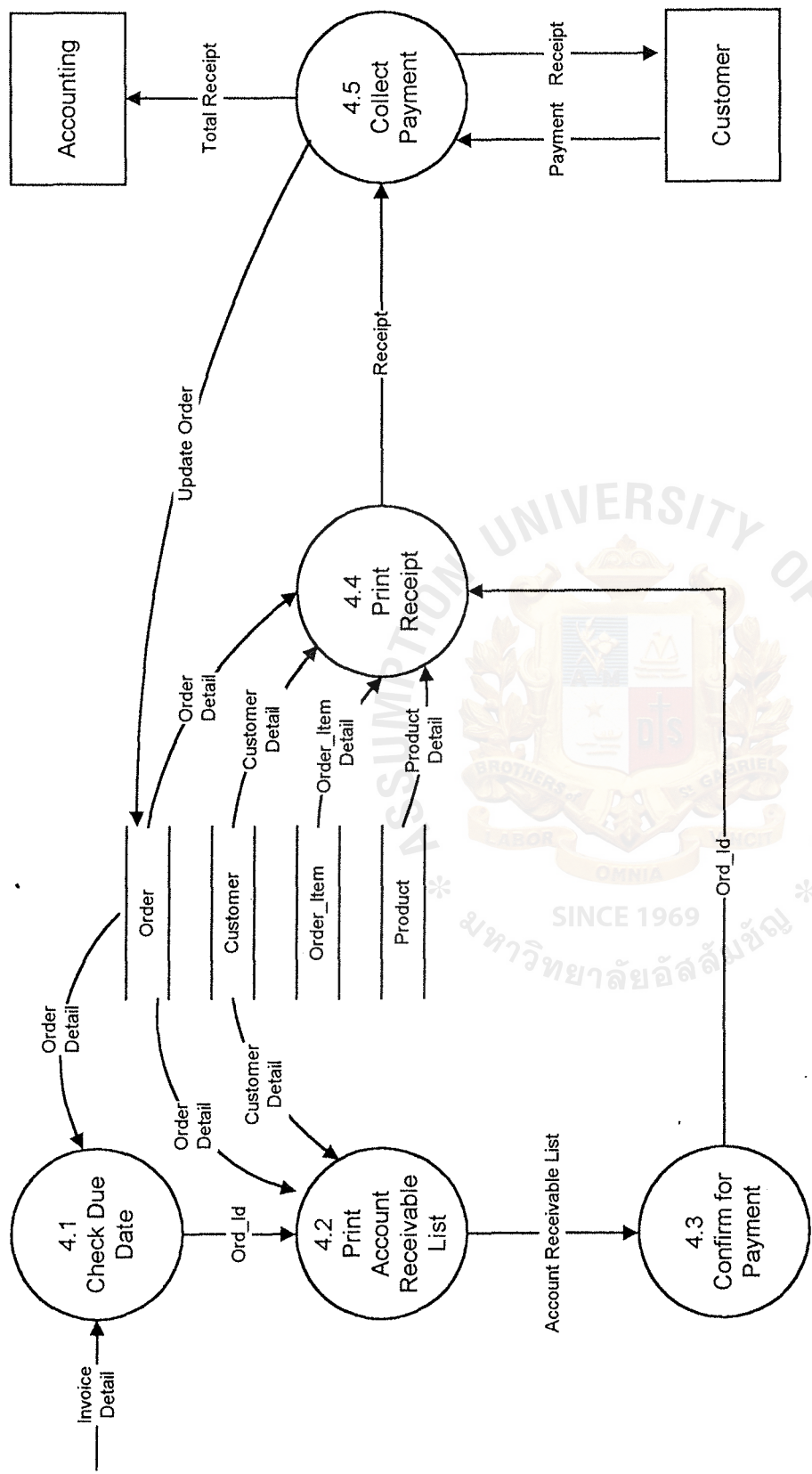
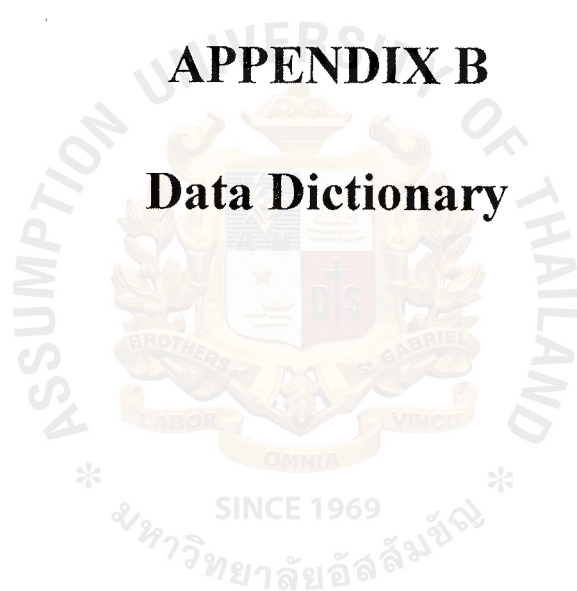


Figure A-5 : Level 1 of Process 4.0 Collect Payment

## **APPENDIX B**

### **Data Dictionary**



## DATA DICTIONARY

Confirm Job	=	*The responsible from the operating department to inform that when the technicians will operate the ordered job*
Cust_Id	=	*The identification number of customer*
Cust_Product	=	*The file that contains the data of customer's product*  @custprd_id + @cust_id + prod_id + custprd_empid + custprd_place+ custprd_fanmodel + custprd_fanserial + custprd_conmodel + custprd_conserial + custprd_instdate
<b>Cust_Product Detail</b>	=	{ Cust_Product }
Cust_Schid	=	*The schedule code for service maintenance*
Customer	=	*The file that contains the information of customers*  @cust_id + cust_type + cust_schid + cust_prefix + cust_name + cust_surname + cust_company + cust_address1 + cust_address2 + cust_province + cust_zipcode + cust_phone1 + cust_phone2 + cust_fax  * + cust_mobile + date_rec *
<b>Customer Detail</b>	=	{ Customer }
Customer Order	=	*The order information of customer*
Employee	=	*The file that contains the information of employees*  @emp_id + emp_type + emp_prefix + emp_name + emp_surname + emp_address1 + emp_address_2 + emp_province + emp_zipcode + emp_phone + emp_daterec
<b>Employee Detail</b>	=	{ Employee }
Installation Job Order	=	*The job order to installation product (air-conditioner) for a customer*
Invoice	=	*The invoice statement*
Ord_Id	=	*The identification number of order*

Order = \*The file that contains the data of order transaction\*

@ord\_id + cust\_id + emp\_id + ord\_date + ord\_custpo +  
ord\_tcost + ord\_tamt + orrd\_term + ord\_prnstatus +  
ord\_datepaid + ord\_paidstatus

**Order Detail** = { Order }

Order\_Item = \*The file that contains the detail of product order\*

@ord\_id + @prod\_id + orde\_qty + orde\_cost +  
orde\_disc + orde\_price + orde\_usefor

**Order\_Item Detail** = { Order\_Item }

Prod\_Id = \*The identification number of product\*

Product = \*The file that contains the product information\*

@prod\_id + sup\_id + prod\_cate + prod\_model + prod\_btu  
+ prod\_desp + prod\_brand + prod\_cost + prod\_price  
+ prod\_stock + prod\_prdate

**Product Detail** = { Product }

Ordered Product Information = \*Specific information of ordered product of customer\*

Request for service job = \*The request of the operating department for the list of  
customers in timely service maintenance schedule\*

Serv\_Contract = \*The file that contains the service contract information\*

@custprd\_id + @serv\_id + serv\_startdate + serv\_enddate

**Serv\_Contract Detail** = { Serv\_Contract }

Serv\_Job = \*The file that contains the service job information\*

@serv\_id + @servj\_time + servj\_empid + servj\_date +  
servj\_remark

Service Job Order = \*The job order to providing service maintenance  
for customers according to the time schedule\*

Supplier = \*The file that contains the information of supplier\*  
@sup\_id + sup\_name + sup\_address1 + sup\_address2  
+ sup\_province + sup\_phone1 + sup\_phone2 + sup\_fax

Update Order = \*The information to update the order file\*

Update Product = \*The information to update the product file\*

Update Service Job = \*The information to update the serv\_job file\*



## APPENDIX C

### Process Description





**PROCESS 1.0 : Add Customer Record**

**DESCRIPTION :**    Append a new customer information  
                                 to customer record  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**INPUT :**    New customer information  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**OUTPUT :**    Customer Detail  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

<b>PROCESS 2.1 : Validate Customer</b>	
<b>DESCRIPTION :</b>	<div>To validate a customer with the data in the customer file.</div> <div></div> <div></div> <div></div>
<b>INPUT :</b>	<div>Customer identification number</div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div>
<b>OUTPUT :</b>	<div>Detail of a valid customer</div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div>

<b>PROCESS 2.2 : Check Product Available</b>	
<b>DESCRIPTION :</b>	<u>To check the availability of ordered product</u> <u>in the stock .</u>    
<b>INPUT :</b>	<u>Customer's order</u> <u>Valid customer</u>         
<b>OUTPUT :</b>	<u>Order detail</u>            

### PROCESS 2.3 : Create Customer Order Record

**DESCRIPTION :** Add a new order record to the order file

---

---

---

---

**INPUT :** Order detail

Employee detail

---

---

---

---

---

**OUTPUT :** Order Item detail

---

---

---

---

---

---

### PROCESS 2.4 : Cut Stock

**DESCRIPTION :** To update the quantity of product in the product file .

**INPUT** : Order Item detail

**OUTPUT :** Update product

## PROCESS 2.5 : Print Invoice

**DESCRIPTION :** To print invoice of customer's order

---

---

---

---

---

**INPUT :** Customer detail

Product detail

Order detail

Order Item detail

---

---

---

---

**OUTPUT :** Invoice

---

---

---

---

---

---

---

<b>PROCESS 3.1 : Add Customer's Product Record</b>	
<b>DESCRIPTION :</b>	<u>To append a customer' product record to</u>
	<u>the Cust Product file.</u>
	<u> </u>
	<u> </u>
<b>INPUT :</b>	<u>Ordered product information</u>
	<u>Invoice</u>
	<u>Employee detail</u>
	<u> </u>
	<u> </u>
	<u> </u>
	<u> </u>
<b>OUTPUT :</b>	<u>Cust Product detail</u>
	<u>Invoice</u>
	<u>Serv_Contract detail</u>
	<u> </u>
	<u> </u>
	<u> </u>
	<u> </u>



**PROCESS 3.2 : Print Installation Job Order and  
Service Card**

**DESCRIPTION :** To print an installation job order and  
a service card for the ordered product .

**INPUT :** Cust Product detail  
Customer detail  
Invoice

**OUTPUT :** Installation job order  
Service card

### PROCESS 3.3 : Install Product

**DESCRIPTION :**    To delivery and install a product to  
                                 a customer .

**INPUT**                **:**    Invoice  
                                 Product  
                                 Confirm job

**OUTPUT**            **:**    Product  
                                 Signed invoice

### PROCESS 3.4.1 : Check Schedule and Service Contract

**DESCRIPTION :**    Check service maintenance schedule and  
                              the existing of service contract for  
                              customers' products .

**INPUT**                :    Request for service job  
                                  Serv\_Contract detail  
                                  Custprd\_Id  
                                  Cust\_Schid

**OUTPUT**            :    Custprd\_Id



### PROCESS 3.4.3 : Update Service Job

**DESCRIPTION :**    To update service job record in the  
                                 serv\_job file

**INPUT**                :    Service Card  
                                 Service Job Order  
                                 Employee Detail

**OUTPUT**            :    Service job order  
                                 Service Card  
                                 Update service job

**PROCESS 4.1 : Check Due Date**

**DESCRIPTION :**    Check the due of invoice  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**INPUT :**    Signed invoice  
              Order detail  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**OUTPUT :**    Ord Id  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**PROCESS 4.2 : Print Account Receivable List**

**DESCRIPTION :** To print account receivable list

**INPUT :** Ord\_Id  
Order detail  
Customer detail

**OUTPUT :** Account receivable list



**PROCESS 4.3 : Confirm for Payment**

**DESCRIPTION :**    To confirm the payment of due invoice  
                                 with customers.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**INPUT :**            Account receivable list  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**OUTPUT :**        Ord Id  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

<b>PROCESS 4.4 : Print Receipt</b>	
<b>DESCRIPTION :</b>	<u>To print an receipt for the paid invoice</u>       
<b>INPUT :</b>	<u>Ord_Id</u> <u>Order detail</u> <u>Customer detail</u>       
<b>OUTPUT :</b>	<u>Receipt</u>                

**PROCESS 4.5 : Collect Payment**

**DESCRIPTION :** To collect payment from the customer

**INPUT :** Receipt  
Payment

**OUTPUT :** Total receipt

<b>PROCESS 5.0 : Produce Report</b>	
<b>DESCRIPTION :</b>	<u>To produce report for the manager</u>       
<b>INPUT :</b>	<u>Customer detail</u> <u>Order detail</u> <u>Order Item detail</u> <u>Product detail</u> <u>Employee detail</u>    
<b>OUTPUT :</b>	<u>Report</u>          

## **APPENDIX D**

### **Process Specification**



## PROCESS 1.0 : Add New Customer Record

BEGIN

REPEAT UNTIL no more new customer record

cust\_id = next available cust\_id

GET customer detail

APPEND customer detail to customer record

DISPLAY cust\_id , cust\_name , cust\_surname ,

cust\_company , cust\_address1 , cust\_address2 ,

cust\_province , cust\_zipcode

END



## PROCESS 2.1 : Validate Customer

BEGIN

REPEAT UNTIL no customer to order

FIND customer in CUSTOMER with cust\_id = cust\_id

IF record can be found

DISPLAY cust\_id , cust\_name , cust\_surname ,

cust\_company

DISPLAY “ Valid customer ”

ELSE

DISPLAY “ Record can not be found.”

DISPLAY “ Please add new customer”

EXIT

ENDIF\*

END

## PROCESS 2.2 : Check Product Available

BEGIN

DO WHILE there are more order items in order detail

    GET order detail

    FIND order detail in PRODUCT with prod\_id = prod\_id

    READ product record

    IF prod\_qty < order quantity

        DISPLAY “ The stock is not enough for this order. ”

        EXIT

    ELSE

        DISPLAY prod\_id , prod\_model , prod\_qty

    ENDIF

ENDDO

END



### PROCESS 2.3 : Create Customer Order Record

BEGIN

IF in stocks are enough for order items in order detail

DO WHILE there are more order items in order detail

ord\_id = next available order number

GET order detail

READ employee detail

APPEND order detail to order record

APPEND order detail to order\_item record

ENDDO

ENDIF

END

## PROCESS 2.4 : Cut Stock

BEGIN

FIND product in PRODUCT with prod\_id = prod\_id

READ order\_item record

SUBTRACT prod\_qty with orde\_qty

APPEND prod\_qty to product record

DISPLAY prod\_id , prod\_model , prod\_qty

END



## PROCESS 2.5 : Print Invoice

BEGIN

FIND ord\_id in ORDER with ord\_id = ord\_id

READ order record

READ order\_item record

READ customer record

READ product record

PRINT invoice

END



### **PROCESS 3.1 : Create Customer Product Record**

BEGIN

REPEAT UNTIL no more new customer's product

FIND customer in CUSTOMER with cust\_id = cust\_id

DISPLAY cust\_id , cust\_name , cust\_surname ,

cust\_company

custprd\_id = next available customer product number

GET cust\_product detail

READ employee record

APPEND cust\_product detail to cust\_product record

serv\_id = next available service contract number

GET serv\_contract detail

APPEND serv\_contract detail to serv\_contract record

END

### PROCESS 3.2 : Print Installation Job Order and Service Card

BEGIN

DISPLAY “Please enter the customer’s product number to print”

GET custprd\_id

FIND cust\_product in CUST\_PRODUCT

with custprd\_id = custprd\_id

IF custprd\_id can be found

READ cust\_product record

READ customer record

READ product record

READ serv\_contract record

PRINT service card

PRINT installation job order

ELSE

DISPLAY “This customer product number is invalid.”

EXIT

ENDIF

END

### PROCESS 3.4.1 : Check Schedule and Service Contract

BEGIN

GET request for service job

REPEAT UNTIL no more customer

FIND customer in CUSTOMER

with cust\_schid = cust\_schid

IF cust\_schid can be found

READ customer record

READ cust\_product record

READ serv\_contract

IF serv\_enddate < current date

DISPLAY cust\_id , custprd\_id

ELSE

DISPLAY “ There is no customer found. ”

EXIT

ENDIF

ENDIF

END

### **PROCESS 3.4.2 : Print Service Job Order**

BEGIN

REPEAT UNTIL no more custprd\_id

GET custprd\_id

FIND cust\_product record in CUST\_PRODUCT

with custprd\_id = custprd\_id

IF custprd\_id can be found

READ cust\_product record

READ customer record

DISPLAY cust\_id , cust\_name , cust\_surname ,

cust\_company , cust\_address1 , cust\_address2 ,

cust\_province , cust\_phone1 , cust\_schid ,

custprd\_id , custprd\_model , custprd\_place

ELSE

DISPLAY “ This record can not be found .”

ENDIF

PRINT service job order

END

### PROCESS 3.4.3 : Update Service Job

BEGIN

REPEAT UNTIL no more service card

GET serv\_job detail

FIND serv\_job record in SERV\_JOB

with serv\_id = serv\_id

IF serv\_id can be found

READ employee record

APPEND serv\_job detail to serv\_job record

ELSE

DISPLAY “ This record can not be found .”

ENDIF

END



## PROCESS 4.1 : Check Due Date

BEGIN

GET current date

REPEAT UNTIL no more order record to check due date

READ order record

IF ord\_paidstatus = "no"

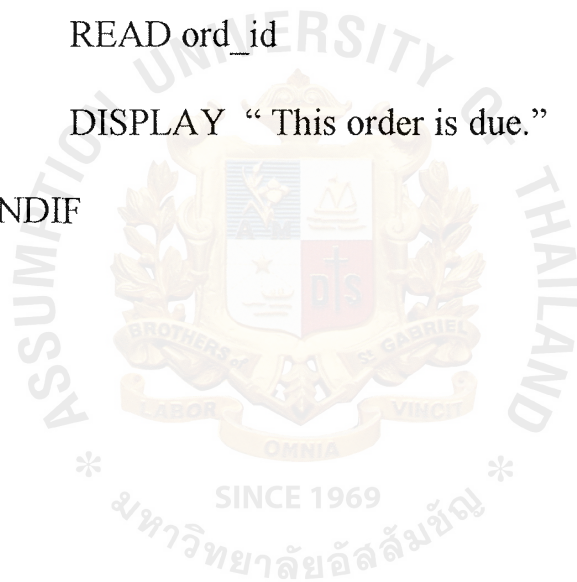
and current date  $\geq$  ord\_date+ord\_term

READ ord\_id

DISPLAY " This order is due."

ENDIF

END



## PROCESS 4.2 : Print Account Receivable List

BEGIN

REPEAT UNTIL no more checked order

GET ord\_id

FIND order detail in ORDER with ord\_id = ord\_id

IF ord\_id can be found

READ order record

READ order\_item record

READ customer record

DISPLAY ord\_id , cust\_id , cust\_name ,  
cust\_surname , cust\_company

ELSE

DISPLAY “ No more printing ”

ENDIF

PRINT account receivable list

END

#### **PROCESS 4.4 : Print Receipt**

BEGIN

REPEAT UNTIL no more order to print

GET ord\_id

FIND order detail in ORDER with ord\_id = ord\_id

IF ord\_id can be found

    READ order record

    READ order\_item record

    READ customer record

    READ product record

ELSE

    DISPLAY “ Order number is invalid. ”

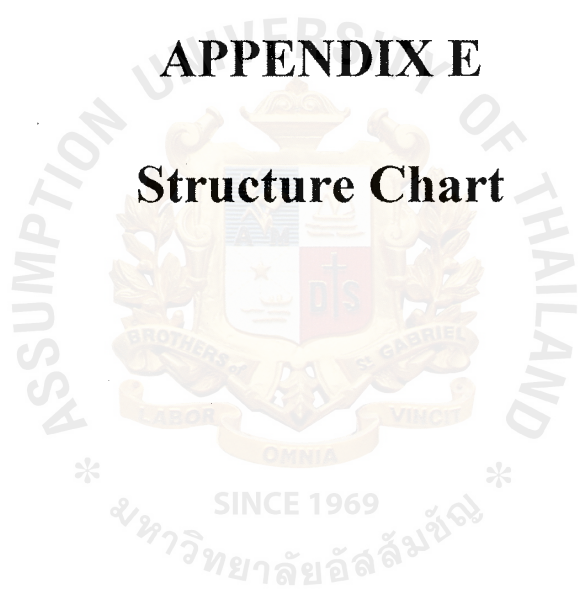
ENDIF

PRINT receipt

END

# APPENDIX E

## Structure Chart



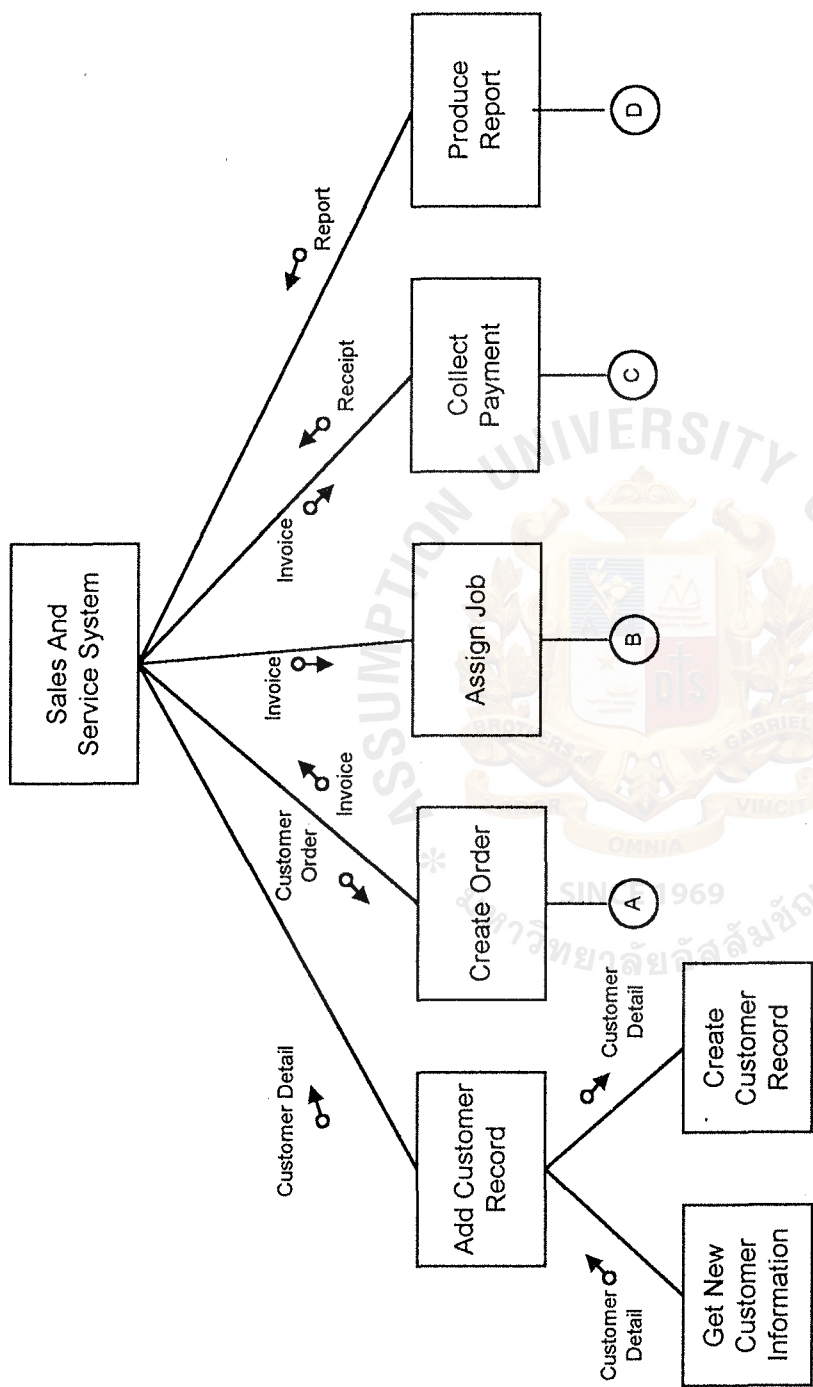


Figure E-1 : Structure Chart of Proposed System

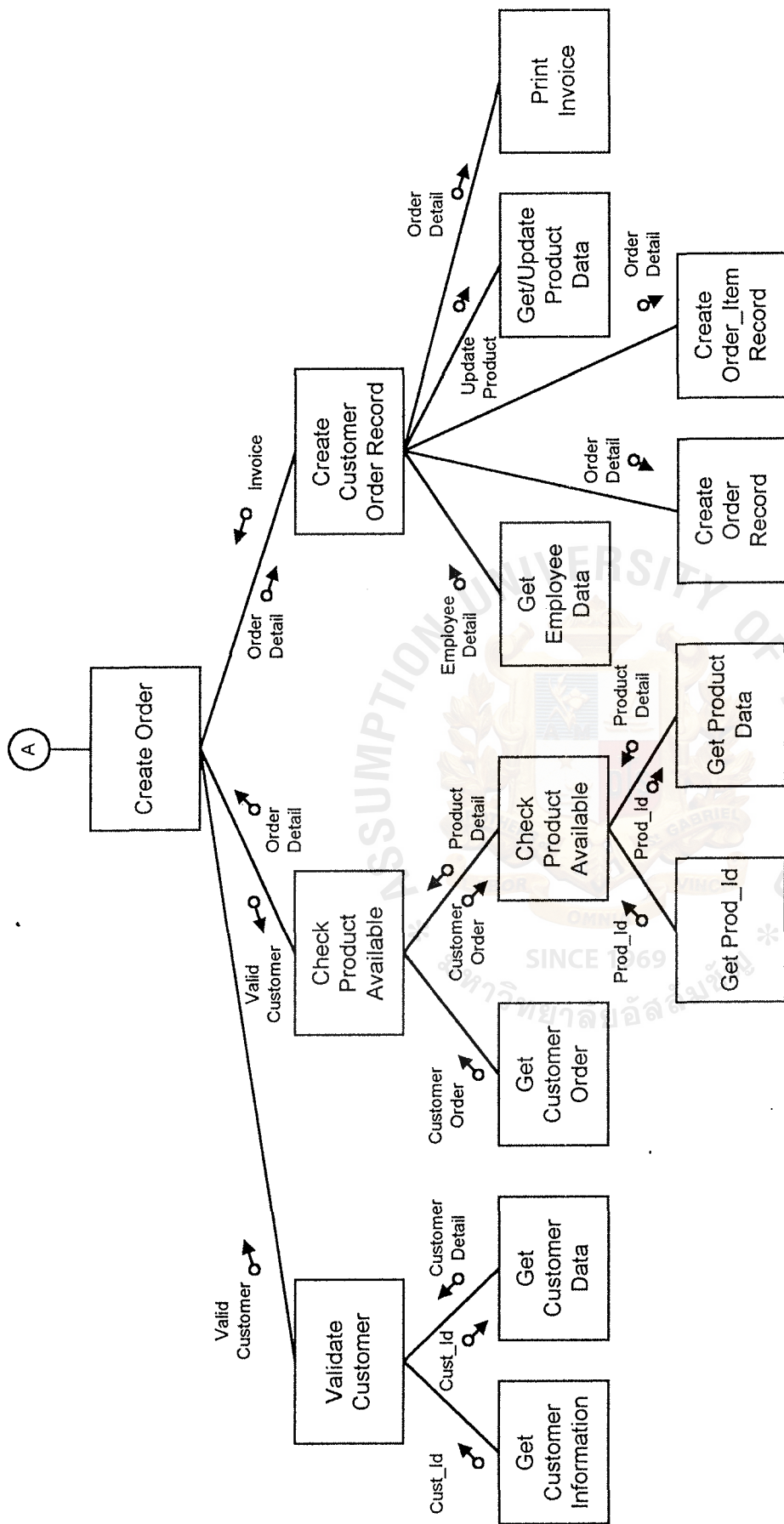


Figure E-2 : Structure Chart of Process 2.0 Create Order

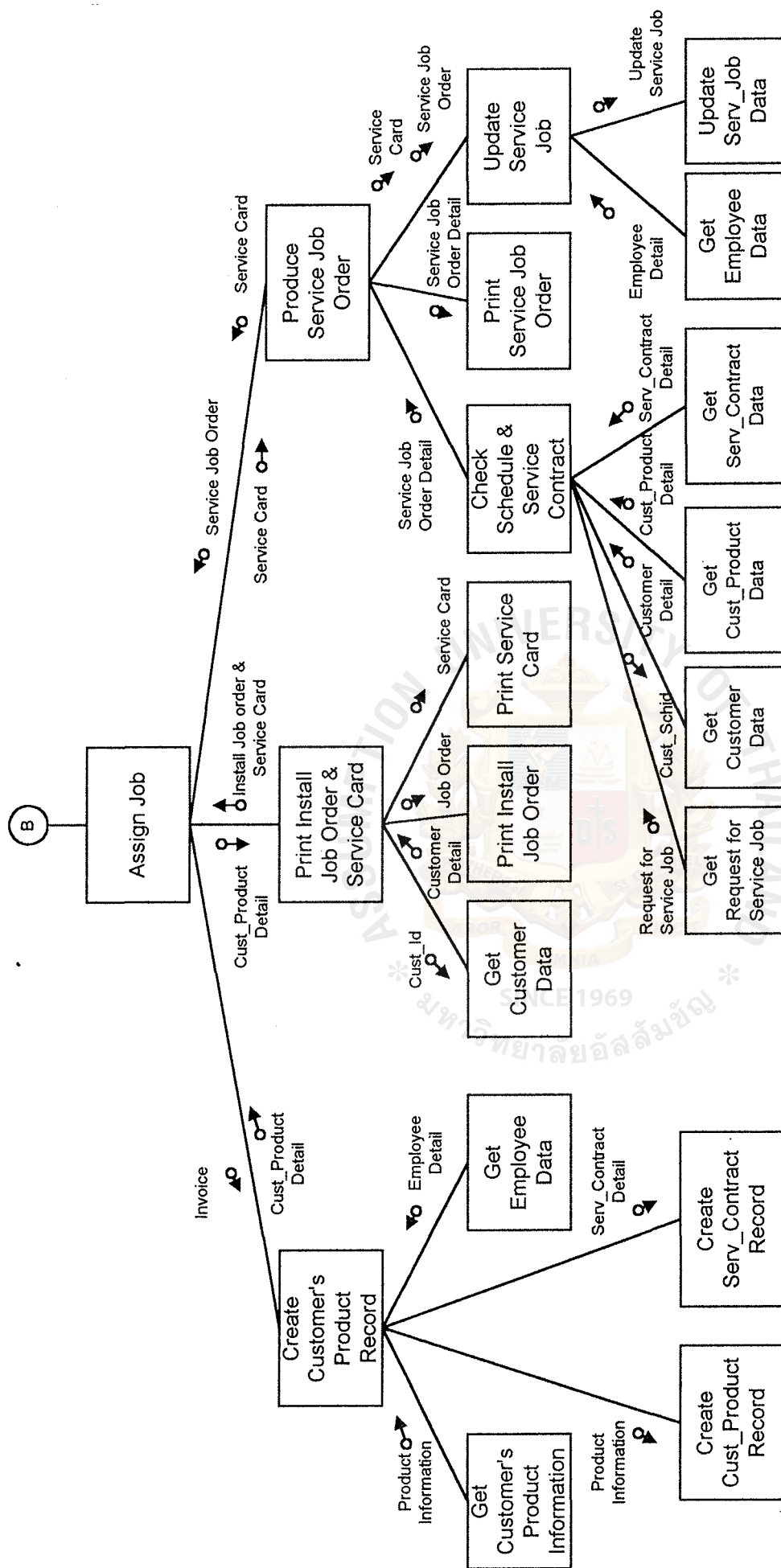


Figure E-3 : Structure Chart of Process 3.0 Assign Job

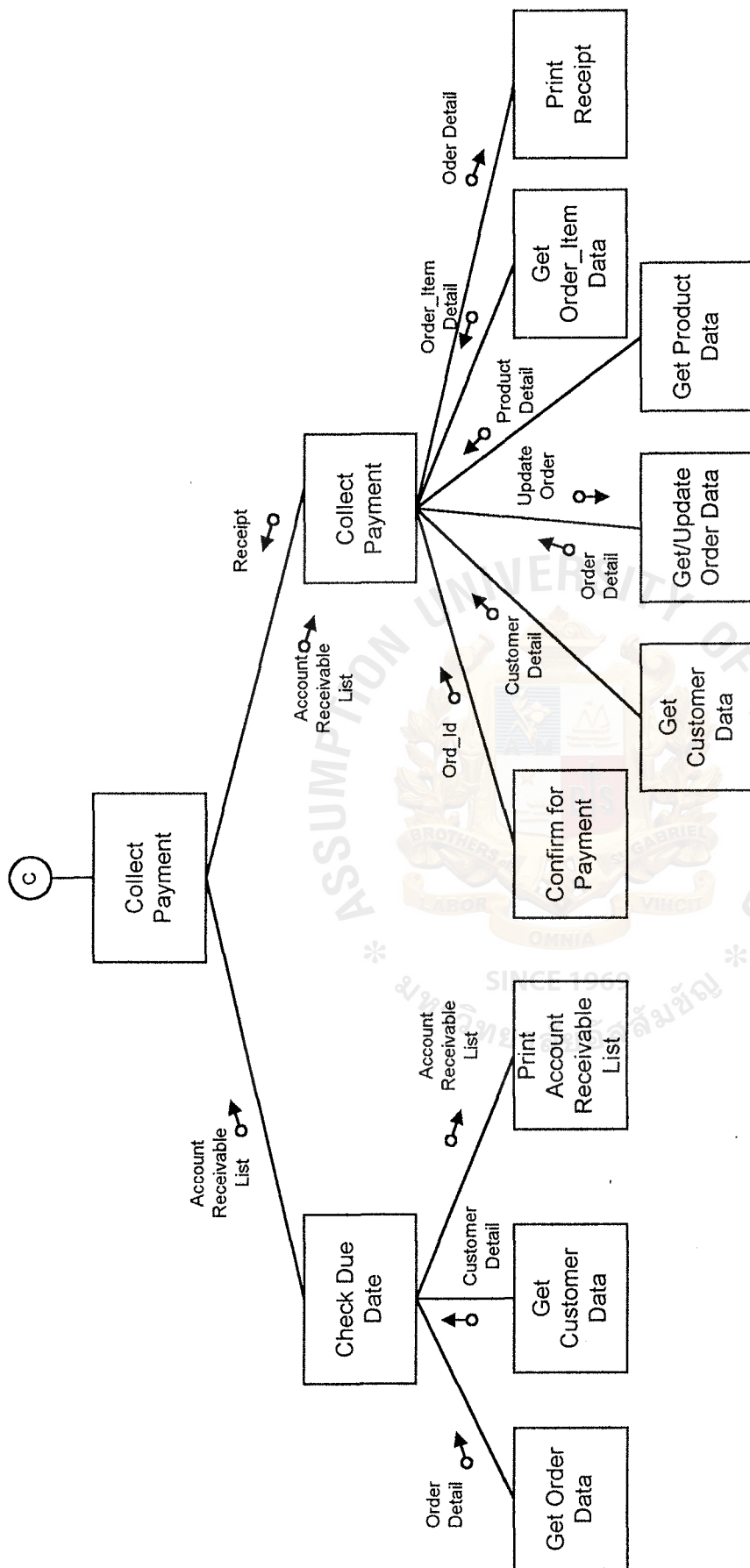


Figure E-4 : Structure Chart of Process 4.0 Collect Payment



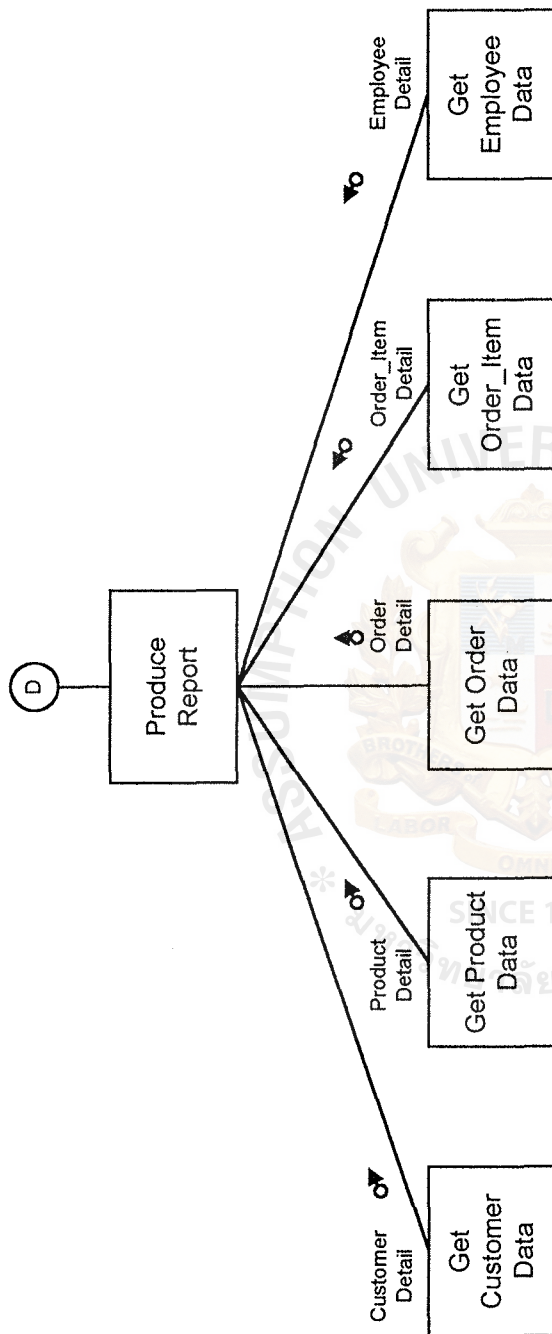
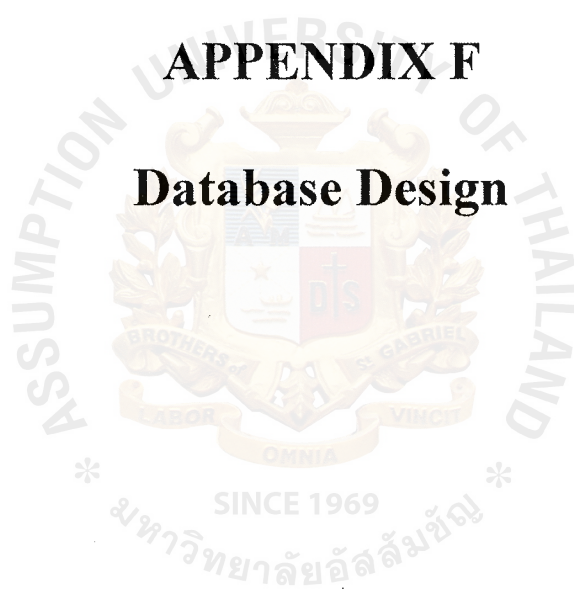


Figure E-5 : Structure Chart of Process 5.0 Produce Report

# APPENDIX F

## Database Design



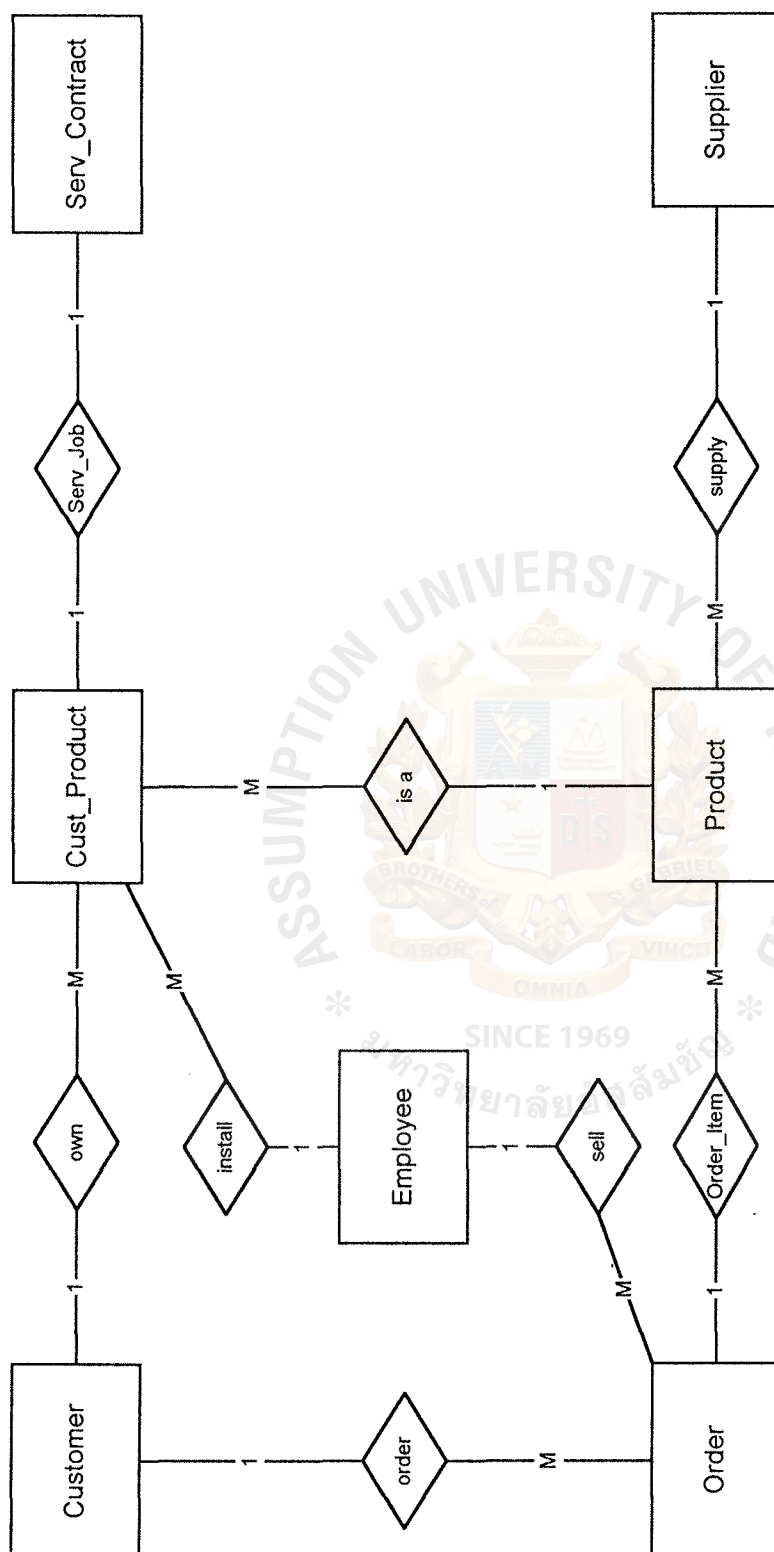


Figure F-1 : Entity-Relationship Diagram of Proposed System

### CUSTOMER

CUST_ID	CUST_TYPE	CUST_SCHID	CUST_PREFIX	CUST_NAME	CUST_SURNAME	CUST_COMPANY
CUST_ADDRESS1	CUST_ADDRESS2	CUST_PROVINCE	CUST_ZIPCODE	CUST_PHONE1	CUST_PHONE2	CUST_FAX

CUST_MOBILE	DATE_REC
-------------	----------

### CUST\_PRODUCT

CUSTPRD_ID	CUST_ID	PROD_ID	CUSTPRD_EMPID	CUSTPRD_PLACE	CUSTPRD_FANMODEL	CUSTPRD_FANSERIAL
------------	---------	---------	---------------	---------------	------------------	-------------------

CUSTPRD_CONMODEL	CUSTPRD_CONSERIAL	CUSTPRD_INSTDATE
------------------	-------------------	------------------

### SERV\_CONTRACT

CUSTPRD_ID	SERV_ID	SERV_STARTDATE	SERV_ENDDATE
------------	---------	----------------	--------------

### SERV\_JOB

SERV_ID	SERVJ_TIME	SERVJ_EMPID	SERVJ_DATE	SERVJ_REMARK
---------	------------	-------------	------------	--------------

### ORDER\_ITEM

ORD_ID	PROD_ID	ORDE_QTY	ORDE_COST	ORDE_DISC	ORDE_PRICE	ORDE_USEFOR
--------	---------	----------	-----------	-----------	------------	-------------

Figure F-2 : Relational Database Schema

## ORDER

ORD_ID	CUST_ID	EMP_ID	ORD_DATE	ORD_INSDATE	ORD_CUSTPO	ORD_TCost
ORD_TAMT	ORD_TAX	ORD_TERM	ORD_PRNSTATUS	ORD_DATEPAID	ORD_PAIDSTATUS	

## PRODUCT

PROD_ID	SUP_ID	PROD_CATE	PROD_MODEL	PROD_DESP	PROD_BTU	PROD_BRAND
PROD_COST	PROD_PRICE	PROD_STOCK	PROD_PRDATE			

## SUPPLIER

SUP_ID	SUP_NAME	SUP_ADDRESS1	SUP_ADDRESS2	SUP_PROVINCE	SUP_ZIPCODE	SUP_PHONE1
SUP_PHONE2	SUP_FAX					

## EMPLOYEE

EMP_ID	EMP_TYPE	EMP_PREFIX	EMP_NAME	EMP_SURNAME	EMP_ADDRESS1	EMP_ADDRESS2
EMP_PROVINCE	EMP_ZIPCODE	EMP_PHONE	EMP_DATAREC			

Figure F-2 (cont.) : Relational Database Schema

Table F-1 : Customer File

No.	Field	Description	Type	Length
1	CUST_ID	Customer identification number	Alphanumeric	7
2	CUST_TYPE	Type of a customer	Character	2
3	CUST_SCHID	Schedule code for service maintenance	Alphanumeric	7
4	CUST_PREFIX	Prefix of customer's name	Character	15
5	CUST_NAME	Name of a customer	Character	20
6	CUST_SURNAME	Surname of a customer	Character	20
7	CUST_COMPANY	Customer 's Company name	Character	50
8	CUST_ADDRESS1	Address line 1 of a customer	Character	50
9	CUST_ADDRESS2	Address line 2 of a customer	Character	50
10	CUST_PROVINCE	Province of customer's address	Character	20
11	CUST_ZIPCODE	Zip code of customer's address	Character	5
12	CUST_PHONE1	Telephone number 1 of a customer	Character	10
13	CUST_PHONE2	Telephone number 2 of a customer	Character	10
14	CUST_FAX	Facsimile number of a customer	Character	7
15	CUST_MOBILE	Mobile phone number of a customer	Character	12
16	CUST_DATEREC	Date of record	Character	6

Table F-2 : Cust\_Product File

No.	Field	Description	Type	Length
1	CUSTPRD_ID	Customer's product identification number	Alphanumeric	7
2	CUST_ID	Customer identification number	Alphanumeric	7
3	PROD_ID	Product identification number	Alphanumeric	7
4	CUSTPRD_EMPID	Technician identification number	Alphanumeric	7
5	CUSTPRD_PLACE	Installation place of customer's product	Character	50
6	CUSTPRD_FANMODEL	Fancoil model	Alphanumeric	15
7	CUSTPRD_FANSERIAL	Fancoil serial number	Alphanumeric	15
8	CUSTPRD_CONMODEL	Condensing model	Alphanumeric	15
9	CUSTPRD_CONSERIAL	Condensing serial number	Alphanumeric	15
10	CUSTPRD_INSTDATE	Date of installation	Character	6

Table F-3 : Serv\_Contract File

No.	Field	Description	Type	Length
1	CUSTPRD_ID	Customer's product identification number	Alphanumeric	7
2	SERV_ID	Service contract identification number	Alphanumeric	7
3	SERV_STARTDATE	Start date of service contract	Character	6
4	SERV_ENDDATE	Expire date of service contract	Character	6





Table F-4 : Order File

No.	Field	Description	Type	Length
1	ORD_ID	Order Identification number	Alphanumeric	7
2	CUST_ID	Customer identification number	Alphanumeric	7
3	EMP_ID	Employee identification number	Alphanumeric	7
4	ORD_DATE	Date of order	Character	6
5	ORD_INSDATE	Date of install or delivery product	Character	6
6	ORD_CUSTPO	Customer's purchase order number	Alphanumeric	15
7	ORD_TCost	Total cost of an order	Number	9 (2)
8	ORD_TAMT	Total amount of an order	Number	9 (2)
9	ORD_TAX	Value Added Tax rate	Number	2 (0)
10	ORD_TERM	Credit term of an order	Number	2 (0)
11	ORD_PRNSTATUS	Printing status of an order	Character	1
12	ORD_DATEPAID	Date of payment for an order	Character	6
13	ORD_PAIDSTATUS	Payment status for an order	Character	1

Table F-5 : Order\_Item File

No.	Field	Description	Type	Length
1	ORD_ID	Order number	Alphanumeric	7
2	PROD_ID	Product identification number	Alphanumeric	7
3	ORDE_QTY	Quantity of product	Number	4 (0)
4	ORDE_COST	Cost per unit of product	Number	9 (2)
5	ORDE_DISC	Discount of product	Number	2 (0)
6	ORDE_PRICE	Selling price per unit of product	Number	9 (2)
7	ORDE_USEFOR	Purpose of product usage	Character	20

Table F-6 : Product File

No.	Field	Description	Type	Length
1	PROD_ID	Product identification number	Alphanumeric	7
2	SUP_ID	Supplier identification number	Alphanumeric	7
3	PROD_CATE	Category of a product	Character	20
4	PROD_MODEL	Product Model	Alphanumeric	20
5	PROD_DESP	Description of a product	Character	70
6	PROD_BTU	Capacity of a product	Number	9 (0)
7	PROD_BRAND	Brand name of a product	Character	20
8	PROD_COST	Cost per unit of a product	Number	9 (2)
9	PROD_PRICE	Selling price per unit of a product	Number	9 (2)
10	PROD_STOCK	Quantity of a product in stock	Number	4 (0)
11	PROD_PRDATE	Date of update cost and selling price	Character	6

Table F-7 : Supplier File

No.	Field	Description	Type	Length
1	SUP_ID	Supplier identification number	Alphanumeric	7
2	SUP_NAME	Name of supplier	Character	50
3	SUP_ADDRESS1	Address line 1 of supplier	Character	50
4	SUP_ADDRESS2	Address line 2 of supplier	Character	50
5	SUP_PROVINCE	Province of supplier 's address	Character	20
6	SUP_ZIPCODE	Zip code of supplier 's address	Character	5
7	SUP_PHONE1	Telephone number 1 of supplier	Character	10
8	SUP_PHONE2	Telephone number 2 of supplier	Character	10
9	SUP_FAX	Facsimile number of supplier	Character	7

Table F-8 : Employee File

No.	Field	Description	Type	Length
1	EMP_ID	Employee identification number	Alphanumeric	7
2	EMP_TYPE	Type of a employee	Character	2
3	EMP_PREFIX	Prefix of employee's name	Character	15
4	EMP_NAME	Name of a employee	Character	20
5	EMP_SURNAME	Surname of a employee	Character	20
6	EMP_ADDRESS1	Address line 1 of a employee	Character	50
9	EMP_ADDRESS2	Address line 2 of a employee	Character	50
10	EMP_PROVINCE	Province of employee's address	Character	20
11	EMP_ZIPCODE	Zip code of employee's address	Character	5
12	EMP_PHONE	Telephone number of employee	Character	10
13	EMP_DATEREC	Date of record	Character	6

Table F-9 : Serv\_Job File

No.	Field	Description	Type	Length
1	SERV_ID	Service contract identification number	Alphanumeric	7
2	SERVJ_TIME	Time of Service job	Number	2 (0)
3	SERVJ_EMPID	Technician identification number	Alphanumeric	7
4	SERVJ_DATE	Date of performing service job	Character	6
5	SERVJ_REMARK	Details of remark	Character	50



## **APPENDIX G**

### **Screen Layout**



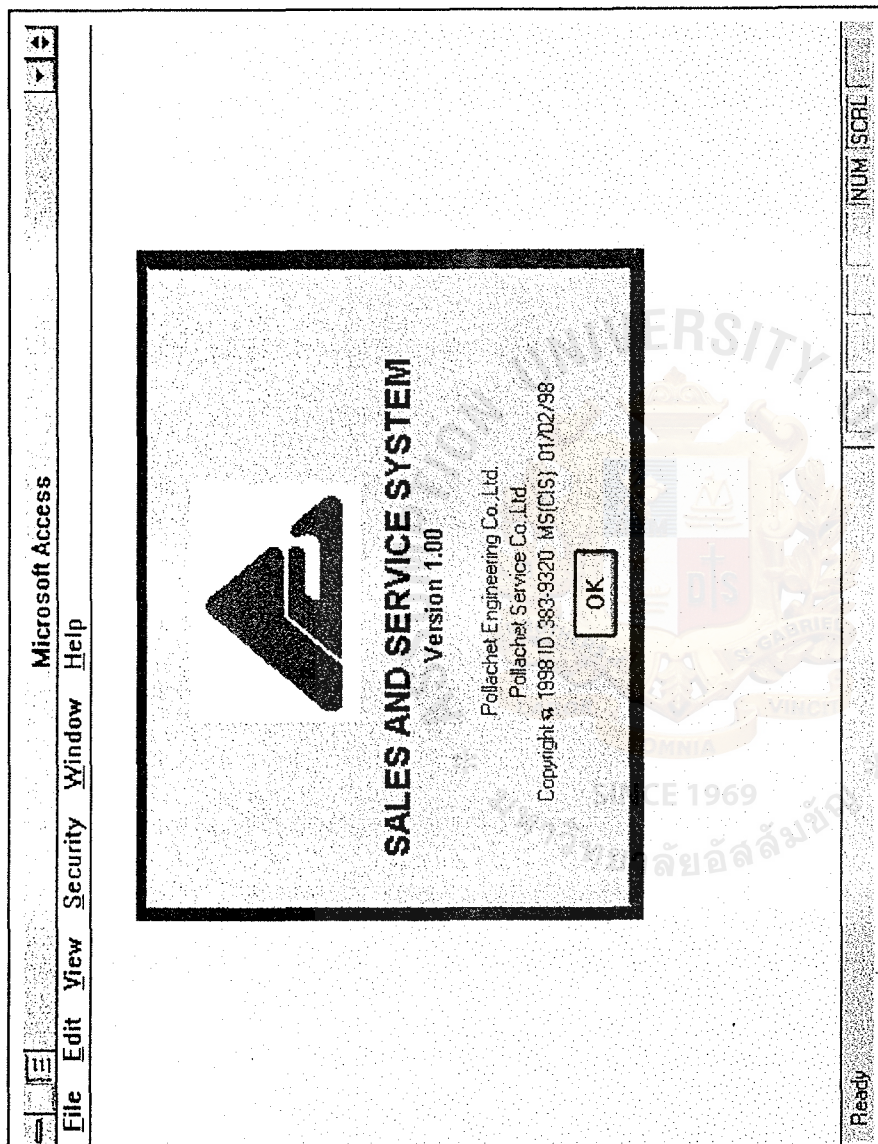


Figure G-1 : System Screen



Microsoft Access - [Form: Log On]

FileEditViewRecordsWindowHelp

Sales And Service System

LOG ON

USER NAME :  
multihipe

PASSWORD :  
\*\*\*\*\*

ENTER

CANCEL

Database

NUM

Figure G-2 : Log On Screen

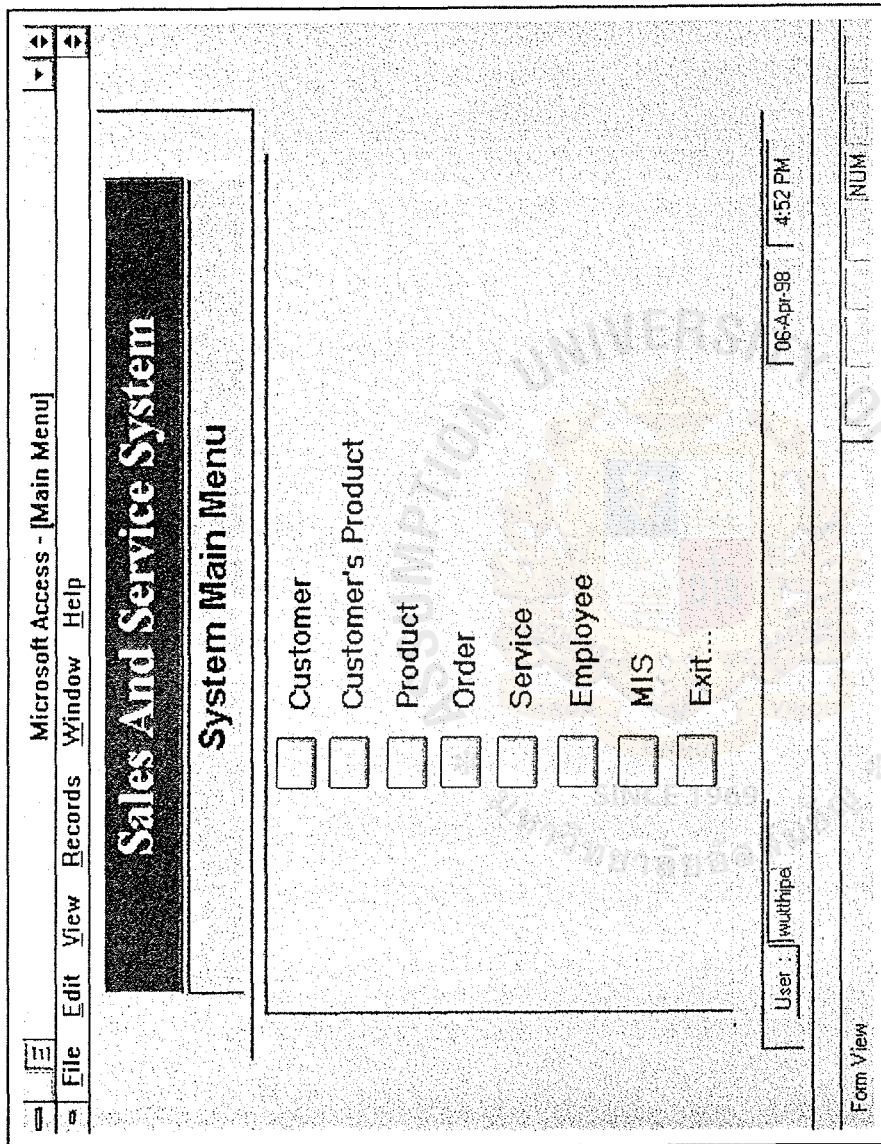


Figure G-3 Main Menu of System

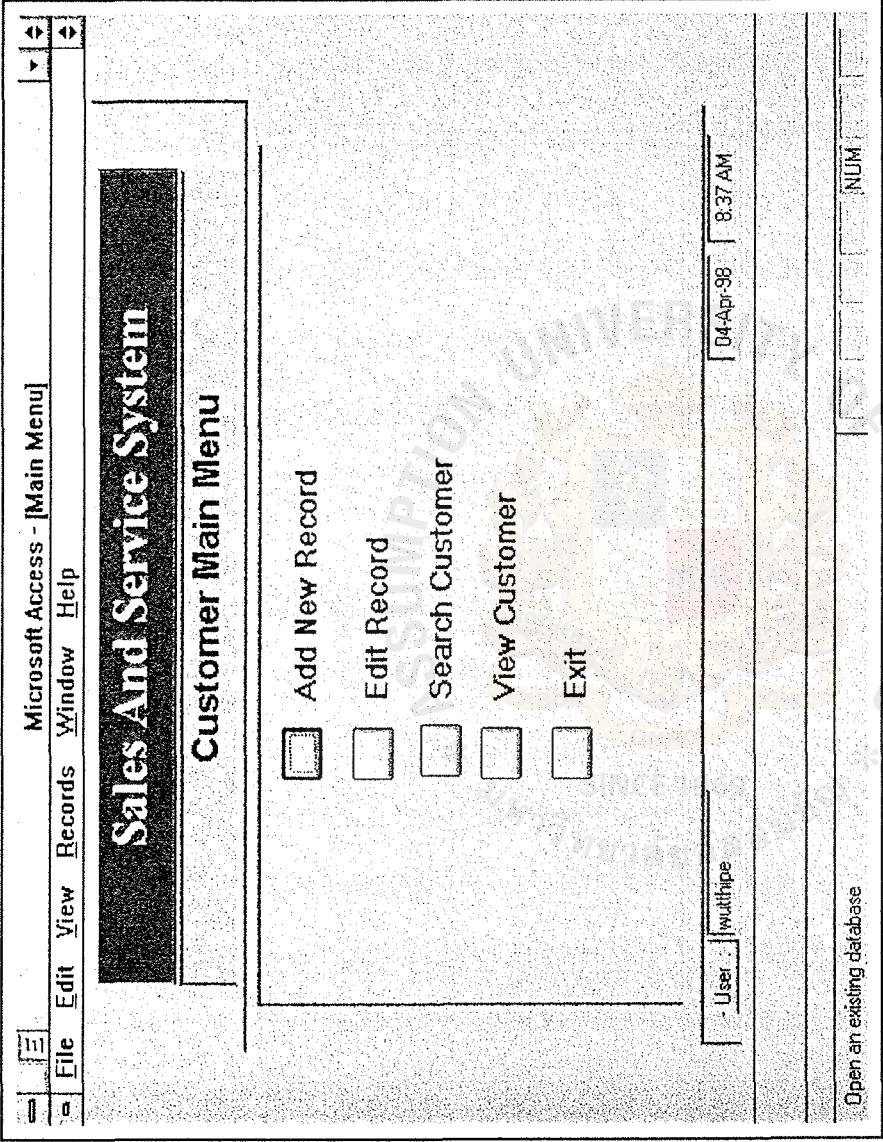


Figure G-4 : Customer Main Menu

Microsoft Access - [Main Menu]

File

Edit

View

Records

Window

Help

Sales And Service System

Customer's Product Main Menu

☐ Add New Record

☐ Edit Record

☐ View Record

☐ Exit...

User : multiple

04-Apr-98

8:45 AM

Form View

NUM

Figure G-5 : Customer's Product Main Menu



Microsoft Access - [Main Menu]

File

Edit

View

Records

Window

Help

Sales And Service System

Product Main Menu

☐ Add New Record

☐ Edit Product Record

☐ View Product

☐ Update Price

☐ Update Stock

☐ Add New Supplier

☐ Edit Supplier Record

☐ Exit

User : jwuthipe

04-Apr-98 8:56 AM

Form View

NUM

Figure G-6 : Product Main Menu

Microsoft Access - [Main Menu]

File Edit View Records Window Help

# Sales And Service System

## Order Main Menu

- ☐ Product Selection
- ☐ Add Order
- ☐ Update Order
- ☐ View Order
- ☐ View Customer's Order
- ☐ Check Due Date
- ☐ Exit...

User: [multihipe] [04-Apr-98] [9:09 AM]

Form View

NUM

Figure G-7 : Order Main Menu

Microsoft Access - [Main Menu]

File Edit View Records Window Help

# Sales And Service System

## Service Main Menu

- ☐ Update Service Contract
- ☐ Service Contract Expire
- ☐ Service Job Order
- ☐ Update Service Job
- ☐ View Service Job
- ☐ Exit...

User : wutthipe 10-Apr-98 1:33 AM

Display the form in Form view NUM SCRL

Figure G-8 : Service Main Menu

Microsoft Access - [Employee]


File Edit View Records Window Help

01/05/1998

Add / Edit Record

EMPLOYEE

Pollachet Engineering Co. Ltd. Sales And Service System Ver.1.00



Employee ID: EM000021 Type: IT1

Name: Mr. Phongpisut Ekthaniphong

Address: 17 Soi 8, Charoenakorn Rd.

Address: Khlongsan,

Province: Bangkok Zip Code: 10600

Telephone: 437-4908

Record Date: 06/04/1998

Add Delete Cancel Exit...

Record: 2 of 4 NUM

Form View

Figure G-9 : Add / Edit Employee Screen



Microsoft Access - [Main Menu]

File Edit View Records Window Help

# Sales And Service System

## MIS Main Menu

- ☐ Sales Volume ( Unit )
- ☐ Sales Volume ( Baht )
- ☐ Print Sales Report
- ☐ Print Top Product Best Sold
- ☐ Exit...

User : wuthipe 10-Apr-98 1:36 AM

Display the form in Form view NUM SCRL

Figure G-10 : MIS Main Menu


Microsoft Access - [Customer]		04/04/1998	
File	Edit	View	Records Window Help
		<b>Add New Record</b> <b>CUSTOMER</b>	
Pollachet Engineering Co., Ltd. Sales And Service System Ver. 1.00			
Customer ID:	CS00011	Type:	HQ
Name:	Mr. Kunawut	Schedule ID:	FRW3
Company:			
Address:	65/3 Moo 2 Sanambinnam Rd.		
Address:	Thasai, Muang District		
Province:	Northaburi	Zip Code:	11000
Telephone:	588-4428	Telephone:	539-4609
Fax Number:		Mobile:	
		Record Date:	
<input type="button" value="Add Record"/>		<input type="button" value="Cancel"/>	
<input type="button" value="Exit..."/>			
Record: 11 of 14 Display the document as it will look when printed			

Figure G-11 : Add Customer Screen



Microsoft Access - [Customer]									
File	Edit	View	Records	Window	Help				
		Edit Record :		[04/04/1998]					
		CUSTOMER							
Pollachet Engineering Co., Ltd. Sales And Service System Ver.1.00									
		Please Select Customer ID :		[CS00001]					
Customer ID :	[CS00011]	Type :	[HO]	Schedule ID :	[FR-W3]				
Name :	[Mr.]	[*]	[Kunawut]	Yodmalai					
Company :									
Address :	[65/3 Moo 2 Sanambinnam Rd.]								
Address :	[Thasai, Muang District]								
Province :	[Nonthaburi]	[*]	Zip Code :	[11000]					
Telephone :	[588-4428-]		Telephone :	[539-4609-]					
Fax Number :			Mobile :						
<div> <div>Update</div> <div>Delete</div> <div>Cancel</div> <div>Exit...</div> </div>									
Form View									

Figure G-12 : Edit Customer Screen

Microsoft Access - [Customer Search]

File Edit View Records Window Help

04/04/1998



Search Record :  
CUSTOMER

Pollachet Engineering Co., Ltd. Sales And Service System Ver.1.00

Phone Number : 439-3706-8

Search...

Reset

Exit

Name : Mr. Wutthiphong Ekthaniphong

Company : Pollachet Engineering Co., Ltd.

Address : 17 Charoenmakorn Rd. Soi.8

Province : Bangkok

Telephone : 43937068

Mobile : (01) 499-5955

Cust.Id.: 0000002

Schedule : WE-W2

10600

Fax : 437-0280

01/12/1997

Database

NUM

Figure G-13 : Search Customer Screen




Microsoft Access - [Customer View]

File Edit View Records Window Help

04/04/1998

View Record

CUSTOMER



Pollachet Engineering Co., Ltd. Sales And Service System Ver.1.00

Service Maintenance Schedule : TU-WM

Customer 2 Record (s)

Name / Company	Contact Information	
0000007 Ms. Ammaraporn Sanphuang	<div> <div>Add :</div> <div>722/95 Ratchada Terrace Soi Patholyothin 24 Patholyothin</div> </div> <div> <div>Tel :</div> <div>9395295 27300412</div> </div> <div> <div>Fax :</div> <div>9395297</div> </div> <div> <div>Mobile :</div> <div></div> </div>	
0000008 Mr. Amornsak Sitikanont	<div> <div>Add :</div> <div>437/188 Soi Patholyothin 50 Klongtanon Bangkokhen B.</div> </div> <div> <div>Tel :</div> <div>5522618</div> </div> <div> <div>Fax :</div> <div></div> </div> <div> <div>Mobile :</div> <div></div> </div>	

Database

ABAC  
GRADUATE SCHOOL LIBRARY


Figure G-14 : View Customer Screen

Microsoft Access - [Customer's Air Main Form]									
File Edit View Records Window Help									
<div style="text-align: right;">06/04/1998</div>									
<b>ADD NEW RECORD :</b> <b>CUSTOMER'S PRODUCT</b>									
Pollachet Engineering Co., Ltd. Sales And Service System Ver. 1.00									
Cust ID : CS00014		AIR Code : PD0489							
Customer : Mr. Theerapol Atornuemwala		Address : 128 DongMuang Rd.							
Company :		Thungsi-gun							
Telephone : 5688562		Bangkok 10350							
Air Conditioner Profile :									
Product ID : AR00001		Item Desp. : Hi Wall , Wireless Remote & Air Purifier							
Model : 42JND10/38RS010		Brand : Carrier		BTU. : 10000					
Technician : EM00002		Mr. Phongpisut Ekthamphon							
Install Date : 01/01/1998		Install Place : FL#3							
Fancoil Model : AS01B		Fancoil Serial No. : 159537C							
Condensing Model : CEL01B		Cond. Serial No. : 159556							
Service Contract : SC0290		Start Date : 30/05/1997		End Date : 30/04/1998					
<div style="display: flex; justify-content: space-between;"> <span>Add Record</span> <span>Print Card</span> <span>Print Job</span> <span>Cancel</span> <span>Exit...</span> </div>									
<div style="display: flex; justify-content: space-between;"> <span>Record: 3 of 3</span> <span>Form View</span> </div>									

Figure G-15 : Add Customer's Product Screen


Microsoft Access - [Customer's Air Update]		06/04/1998	
File	Edit	View	Records Window Help



## CUSTOMER'S PRODUCT

Pollachet Engineering Co., Ltd. Sales And Service System Ver.1.00

<b>Customer :</b> CS90006  Mr. Chaichanit Tikamponvarokat <b>Company :</b> Graphic Corner Co., Ltd.	
<b>Address :</b> 106/15 Thimit Rd. Samphanthawong Bangkok 10100	
<b>Tel :</b> 2336527 , <b>Fax :</b> 2336528 <b>Mobile :</b>	

<b>Air Conditioner Profile :</b>		<b>Customer's Product Id.:</b> PD0148										
<b>Product :</b> AR0003    Hi Wall , Wireless Remote & Air Purifier	<b>Brand :</b> Carrier	<b>BTU. :</b> 18000										
<table border="1" style="width: 100%;"> <tr> <td> <b>Technician :</b> EM00002    Mr. Phongpisut Ekhamphong         </td> <td> <b>Fancoil Serial No. :</b> 92032286         </td> </tr> <tr> <td> <b>Install Date :</b> 02/05/1997    Mother's Bed Room         </td> <td> <b>Cond. Serial No. :</b> 92032237         </td> </tr> <tr> <td> <b>Fancoil Model :</b> MS17JC         </td> <td> <b>End Date :</b> 02/05/1998         </td> </tr> <tr> <td> <b>Condensing Model :</b> MU17JC         </td> <td> </td> </tr> <tr> <td> <b>Service Contract :</b> SC0240         </td> <td> </td> </tr> </table>			<b>Technician :</b> EM00002    Mr. Phongpisut Ekhamphong	<b>Fancoil Serial No. :</b> 92032286	<b>Install Date :</b> 02/05/1997    Mother's Bed Room	<b>Cond. Serial No. :</b> 92032237	<b>Fancoil Model :</b> MS17JC	<b>End Date :</b> 02/05/1998	<b>Condensing Model :</b> MU17JC		<b>Service Contract :</b> SC0240	
<b>Technician :</b> EM00002    Mr. Phongpisut Ekhamphong	<b>Fancoil Serial No. :</b> 92032286											
<b>Install Date :</b> 02/05/1997    Mother's Bed Room	<b>Cond. Serial No. :</b> 92032237											
<b>Fancoil Model :</b> MS17JC	<b>End Date :</b> 02/05/1998											
<b>Condensing Model :</b> MU17JC												
<b>Service Contract :</b> SC0240												

<b>Record:</b> 1 of 1	<input type="button" value="Update"/> <input type="button" value="Delete"/> <input type="button" value="Cancel"/> <input type="button" value="Exit..."/>
-----------------------	--

Form View	FLTR	NUM
-----------	------	-----


Figure G-16 : Edit Customer's Product Screen

Microsoft Access - [Customer's Air View]

File Edit View Records Window Help

04/04/1998

View Record :



CUSTOMER'S PRODUCT

Pollachet Engineering Co., Ltd. Sales And Service System Ver. 1.00

Customer ID. : 00000007

Print...

Exit

Profiles :

Name. : Ms. Ammaraporn Sanphuang

Company. :

Address. : 722/95 Ratchada Terrace Soi Pahlolyothin 24 Pahlolyothin Rd. Jatujak Bangkok 10900

Phone No. : 9395295 , 27300412 Fax : 9395297 Mobile :

TU-W1

Carrier		Fancoil		Condensing		Capacity		Install	
Model		Model	Serial No.	Model	Serial No.	BTU		Date	
42JBX004/36RS012		42JB004EER	FN42004	36RS012EE	CN36012	12000		01/01/1996	
42JBX008/36RS024		42JBX008	FN42008	36RS024	CN36024	24000		02/03/1996	

Database

NUM SCRL

Figure G-17 : View Customer's Product Screen



Figure G-18: Add Product Screen


Microsoft Access - [Product]

File Edit View Records Window Help

04/04/1998

Edit Record

PRODUCT



Pollachet Engineering Co., Ltd. Sales And Service System Ver.1.00

Product ID :	AP-0004	Supplier ID :	SA0001
Category :	Air-Conditioner		
Model :	42JBX004/38RS012	BTU :	12000
Description :	Split Type Wireless Remote & Air Purifier		
Brand :	Carrier		
Unit Cost :	฿21,900.00	Unit Price :	฿26,800.00
Stock :	2	Effective on :	15/01/1998

Please Select Product ID To Edit

AP0004

Update

Delete

Cancel

Exit..

Form View

FLTR

NUM SCRL

Figure G-19 : Edit Product Screen




Microsoft Access - [Product]

File Edit View Records Window Help

04/04/1998

Update Price

PRODUCT



Pollachet Engineering Co., Ltd. Sales And Service System Ver. 1.00

Select Brand to Update : 

Carrier

CATEGORY : Air-Conditioner

Product ID : AR-0001

Description : Hi Wall Wireless Remote & Air Purifier

Model : 42JN010/38RS010

BTU : 10000

Unit Cost : ฿23,980.00

Unit Price : ฿25,500.00

Effective on : 15/01/1998

Update

Cancel

Exit...

Record 1 of 7

Open or close the property sheet for the selected item

FLTR INUM SCRL

Figure G-21 : Update Product Price Screen




Microsoft Access - [Product Update Stock]

File Edit View Records Window Help

10/04/1998

Update Stock

PRODUCT



Pollachet Engineering Co., Ltd. Sales And Service System Ver. 1.00

Select Brand to Update :

Code Id.	Model	Description	Stock
AR-0001	42JN010/38RS010	Hi Wall , Wireless Remote & Air Purifier	4
AR-0002	42JN012/38RS012	Hi Wall , Wireless Remote & Air Purifier	4
AR-0003	42JN018/38RS018	Hi Wall , Wireless Remote & Air Purifier	1
AR-0004	42JBX004/38RS012	Split Type , Wireless Remote & Air Purifier	2
AR-0005	42JBX006/38RS018	Split Type , Wireless Remote & Air Purifier	1

Record: 1 of 7

Update

Cancel

Exit...

Back Color


NUM

Figure G-22 : Update Product Stock Screen

Microsoft Access - [Supplier]

FileEditViewRecordsWindowHelp

04/04/1998



Add New Record

SUPPLIER

Pollachet Engineering Co., Ltd. Sales And Service System Ver. 1.00

Supplier ID :SF-0001

Company :Carrier (Thailand) Limited

Address :239/2 Sarasin Rd.  
Lumpini Phatumwan

Province :Bangkok

Zipcode :10330

Telephone :254-5270-9

Fax :257-9292

Add Record

Cancel

Exit...

Record 1 of 3

Form View

NUM

Figure G-23 : Add Supplier Screen


Microsoft Access - [Supplier]		04/04/1998	
File	Edit	View	Records Window Help
		Edit Record	
		SUPPLIER	
Pollachet Engineering Co., Ltd. Sales And Service System Ver.1.00			
Supplier No.	AR-0002		
Company	Kanyong Watana Co., Ltd.		
Address	28 Krungthep Kreetha Rd.		
	Huamaik Bangkokpi		
Province	Bangkok		
Zip Code	10240		
Telephone	731-6841-	Telephone	731-6901-
		Fax	379-4759
Enter Supplier ID		AR0002	
Update	Delete	Cancel	Exit...
Open an existing database			

Figure G-24 : Edit Supplier Screen


Microsoft Access - [Product Select]

File Edit View Records Window Help

10/04/1998

Product Selection :

Order



Pollachet Engineering Co., Ltd. Sales And Service System Ver. 1.00

Select BTU : 12000

Code No	Model	Description	Price	Sc.
AR0002	Carrier	42JN012/38RS012 Hi Wall Wireless Remote & Air Purifier	29,500	4
AR0004	Carrier	42JBX004/38RS012 Split Type Wireless Remote & Air Purifier	26,800	2
AR0007	Carrier	42JB004EER/38RS012E Split Type Wireless Remote & Air Purifier	28,000	2

Print

Order..

Exit..

Save the current object

NUM

Figure G-25 : Product Selection Screen






Microsoft Access - [Order Update Main Form]

File Edit View Records Window Help

06/04/1998

Update Record

ORDER



Pollachet Engineering Co., Ltd. Sales And Service System Ver. 1.00

INV ID. : 41/012

Customer : CS00008

Company :

Address : 437/188 Soi Phatthayothin 50 Klongtanon Bangkok

Bangkok 10220

Salesperson : Mr. Chaiyasak Ekthanphong

Mr. Amornsak Sitikanont

INV. Date : 05/03/1998

Due Date : 04/04/1998

Print Status : ☐

Date Paid:

ID. NO.	Item	Price / Unit	Qty	Disc.	Amount	Use For
AF00005	Air-Conditioner	\$33,400.00	1	0%	\$33,400	DINNING ROOM
AF00007	Air-Conditioner	\$28,000.00	1	0%	\$28,000	BED ROOM
Order Item Total :					\$61,400	

Amount : \$61,400.00

VAT. 10 % :

\$6,140.00

Total Amount : \$67,540.00

Record: 1 of 3

Print Receipt

Exit

Form View

NUM

Figure G-27 : Update Order Screen

Microsoft Access - [Form: Order Review]

File

Edit

View

Records

Window

Help

10/04/1998

[Print]

Exit

View Order :  
ORDER

Pollachet Engineering Co., Ltd. Sales And Service System Ver. 1.00

Order No. : 41/014

Order Date : 18/03/1998

Install Date : 20/03/1998

Salesperson : Mr. Chaiyasak Ekhaniphong

Customer : CS00010

Company : Mrs. Katesuda Suwannoy

Amount : \$51,000.00

Cost : \$47,960.00

Total Income : \$3,040.00

Due Date : 17/04/1998

Order No. : 41/013

Order Date : 10/03/1998

Install Date : 10/03/1998

Salesperson : Mr. Chaiyasak Ekhaniphong

Customer : CS00011

Company : Mr. Kunawut Yodmalai

Amount : \$39,900.00

Cost : \$37,300.00

Total Income : \$2,600.00

Due Date : 09/04/1998

Order No. : 41/012

Order Date : 05/03/1998

Install Date : 06/03/1998

Record: 1 of 3

Form View

NUM

Figure G-28 : View Order Screen





Microsoft Access - [Order due date]				
<b>F</b>	<b>E</b>	<b>V</b>	<b>R</b>	<b>H</b>
File	Edit	View	Records	Window Help
<b>Check Order Due Date :      Order</b>				
Pollachet Engineering Co., Ltd. Sales And Service System Ver.1.00				
<b>Order No.</b>	<b>Date of Order</b>	<b>Due Date</b>	<b>Customer ID.</b>	<b>Total Amount</b>
[41/012]	05/03/1998	04/04/1998	CS00008	\$61,400.00
[41/013]	10/03/1998	09/04/1998	CS00011	\$39,900.00
[41/014]	18/03/1998	17/04/1998	CS00010	\$51,000.00
*				
Table Datasheet				
Print ...			Exit	

Figure G-30 : Check Due Date Screen


Figure G-31 : Update Service Contract Screen

Microsoft Access - [Order due date]

File Edit View Records Window Help

04/04/1998

Service Contract Expire : Service



Pollachet Engineering Co., Ltd. Sales And Service System Ver.1.00

Air No.	Cust ID	Item Description	Start Date	End Date
PD0152	CS000002	Carrier 42JBX004/38RS012	03/05/1997	03/04/1998
PD0148	CS000006	Carrier 42JN018/38RS018	02/06/1997	02/05/1998
PD0489	CS000014	Carrier 42JN010/38RS010	30/05/1997	30/04/1998
*				

Form View

Print ...

Exit

CAPS NUM SCRL

Figure G-32 : Service Contract Expire Screen

Microsoft Access - [Service Job]

File Edit View Records Window Help

10/04/1998

Job Order :  
Service Job

Pollachet Engineering Co.,Ltd. Sales And Service System Ver.1.00

Select Schedule Id : TU-WI

Air Id.: 00000001

Installation Place: Bed Room Fl.3

Carrier	Fancoil	Condensing	Capacity	Install
Model	Model	Serial No.	BTU	Date
42JBX004/38RS012	42JB004EER FN42004	38RS012EE CN38012	12000	01/01/1996

Owner :

Customer : 00000007 Ms. Ammaraporn Sanphuang Company :

Address : 722/95 Ratchada Terrace Soi Paholyothin 24 Paholyothin Rd. Jatujak Bangkok 10900

Tel : 9395295 , 27300412 Fax : 9395297 Mobile :

Record: 1 of 2

Print... Cancel Exit...

Form View

FLTR NUM

Figure G-33 : Service Job Order Screen



Microsoft Access - [Service Job Record]

File Edit View Records Window Help

10/04/1998

Update Record

Service Job

Pollachet Engineering Co., Ltd. Sales And Service System Ver.1.00

Air No. : P00152

Installation Place: Dining Room

Installed by : Mr. Sanun Sitsum

Carrier

Model

AS012

Fancoil

Model

CEL012

Serial No.

182568

Condensing

Model

129050707

Capacity

BTU

12000

Install

Date

03/08/1997

Owner :

Start Date: 03/05/1997

End Date: 03/04/1998

Customer :

CS000005

Company : ABC Construction Co., Ltd.

Address :

81/12 Soi Charoenjai Ekamai Rd. Bangkok Bangkok 10240

Tel. :

5110360 , Fax: Mobile:

No.	Employee	Date	Remark
1	EM00004 Mr. Samand Piyarom	03/05/1997	
2	EM00002 Mr. Phongpisut Ekthaniphong	10/06/1997	
3	EM00004 Mr. Samand Piyarom	05/07/1997	

Create a graph to display data

Update

Cancel

Exit...

NUM

Figure G-34 : Service Job Update Screen

Microsoft Access - [Service Job Record]									
File Edit View Records Window Help									
<div style="text-align: right;">10/04/1998</div>									
View Record : Service Job									
Pollachet Engineering Co.,Ltd. Sales And Service System Ver.1.00									
Air No. : PD0152    Installation Place: Dining Room    Installed by : Mr. Sarun Sitsum									
Carrier		Fancoil		Condensing		Capacity		Install	
Model	Serial No.	Model	Serial No.	Model	Serial No.	BTU		Date	
42IBX004/38RS012	AS012	182568	CEL012	129050707		12000		03/08/1997	
Owner :		Start Date:		End Date:					
		03/05/1997		03/04/1998					
Customer :		Ms. Bencharat Chayutai		Company :		ABC Construction Co.,Ltd.			
Address :		81/12 Soi Charoenjai Ekamai Rd. Bangkok 10240							
Tel. :		5110360 , Fax : Mobile :							
No.	Employee	Date	Remark						
1	EM00004	03/05/1997							
2	EM00002	10/06/1997							
3	EM00004	05/07/1997							
Print    Exit...									
Form View									

Figure G-35 : Service Job View Screen

Microsoft Access - [Sales Volume (Unit)]

File Edit View Records Window Help

04/04/1998

Sales Volume (Unit)

MIS

Pollachet Engineering Co.,Ltd. Sales And Service System Ver.1.00

1997 Sales By Month And Quarter

Product Id.: AF0003

Model : 42JN018/38RS018

1st Qtr.			2nd Qtr.			3rd Qtr.			4th Qtr.		
Jan:	3		Apr:	4		Jul:	1		Oct:	2	
Feb:	3		May:	3		Aug:	2		Nov:	2	
Mar:	4		Jun:	0		Sep:	1		Dec:	3	
Qtr Total:	10			6			4			6	
						Total :			27		

Record: 3 of 24

Form View

NUM SCRL

Figure G-36 : Sales Volume (Unit) Screen

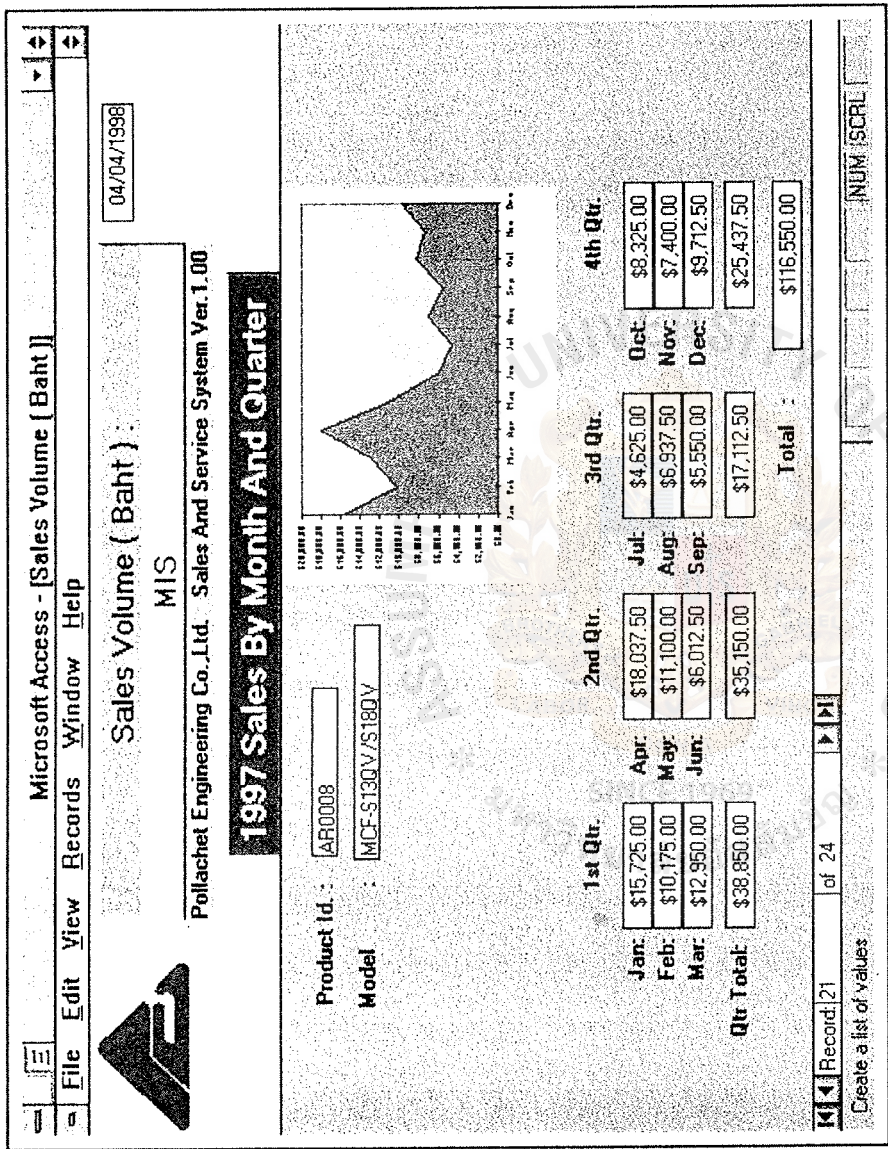


Figure G-37 : Sales Volume ( Baht ) Screen



## APPENDIX H

### System Output





11 04 09388

## POLLACHET ENGINEERING CO., LTD.

17 Soi Charoennakorn 8 , Charoennakorn Rd. , Khlongsan Bangkok 10600

TEL. 437-4908 , 439-3706-8 FAX 437-0280

TAX ID 3101320638

### INVOICE

**CUSTOMER :**

Mr. Amornsak Sittikanont

437/188 Soi Pharholyothin 50 Klongtanon

Bangkhen

Bangkok 10220

**INVOICE NO. : 41/012**

**DATE : 05/03/1998**

**Customer P/O :**

CODE NO.	ITEM	UNIT PRICE	QTY.	DISC.	AMOUNT
AR0005	42JBX006/38RS018	฿33,400	1	0%	฿33,400.00
AR0007	42JB004EER/38RS012EE	฿28,000	1	0%	฿28,000.00

**AMOUNT : ฿33,400.00**

**VAT 10 % : ฿3,340.00**

**TOTAL AMOUNT : ฿36,740.00**

TERM OF PAYMENT WITHIN **30 DAYS.**

RECEIPT .....  
\* มหาวิทยาลัยอัสสัมชัญ \*  
SINCE 1969  
มหาวิทยาลัยอัสสัมชัญ

MANAGER .....

Figure H-1 : Invoice



11 04 09388

## POLLACHET ENGINEERING CO., LTD.

17 Soi Charoennakorn 8 , Charoennakorn Rd. , Khlongsan Bangkok 10600

TEL. 437-4908 , 439-3706-8 FAX 437-0280

TAX ID 3101320638

### RECEIPT

**CUSTOMER :**

Mrs. Katesuda Suvannoy

118/508 PST.Condovill Tower

Nonchree Rd. Yannawa

Bangkok 10120

**RECEIPT NO. : 41/014**

**DATE : 18/03/1998**

**Customer P/O :**

CODE NO.	ITEM	UNIT PRICE	QTY.	DISC.	AMOUNT
AR0001	42JN010/38RS010	฿25,500	2	0%	฿51,000.00

**AMOUNT : ฿51,000.00**

**VAT 10 % : ฿5,100.00**

**TOTAL AMOUNT : ฿56,100.00**

**TYPE OF PAYMENT :**

☐

CASH

☐

CHEQUE OF BANK .....BRANCH.....

CHEQUE NUMBER .....DATE.....

**RECEIVER : .....**

**MANAGER : .....**

**REMARK :**

THIS RECEIPT WILL BECOME VALID ONLY WHEN THE CHEQUE(S) SPECIFIED ABOVE IS(ARE) HONORED.

Figure H-2 : Receipt



## POLLACHET ENGINEERING CO., LTD.

17 Soi Charoennakorn 8 , Charoennakorn Rd. , Khlongsan Bangkok 10600

TEL. 437-4908 , 439-3706-8 FAX 437-0280

### SERVICE CARD

Schedule ID.:  
TH-W2

CUST.ID. : CS00006

AIR-ID.NO. :

NAME : Mr. Chaicharit Tikampomvarokat

PD0148

COMPANY : Graphic Corner Co.,Ltd.

ADDRESS : 106/15 Thimit Rd. Samphantawong

Service ID : SC0240

Bangkok 10100

START DATE : 02/06/1997

TEL. : 2336527 ,

EXPIRE DATE : 02/05/1998

INSTALLED PLACE : Mother's Bed Room

BRAND : Carrier

MODEL : 42JN018/38RS018 < Hi Wall , Wireless Remote & Air Purifier >

FANCOIL MODEL : MS17JC

FANCOIL SERL.NO. : 92032286

CONDENS. MODEL : MU17JC

CONDENS. SERL.NO. : 92032237

CAPACITY : 18000 BTU.

INSTALLED DATE : 02/05/1997

NO.	DATE	TECHNICIAN	CUSTOMER	REMARK
1	JUN.97			
2	JUL.97			
3	AUG.97			
4	SEP.97			
5	OCT.97			
6	NOV.97			
7	DEC.97			
8	JAN.98			
9	FEB.98			
10	MAR.98			
11	APR.98			
12	MAY.98			

Figure H-3 : Service Card





## POLLACHET ENGINEERING CO., LTD.

17 Soi Charoennakorn 8 , Charoennakorn Rd. , Khlongsan Bangkok 10600

TEL. 437-4908 , 439-3706-8 FAX 437-0280

### INSTALLATION JOB ORDER

TO : Operating Department Manager

DATE : 24-Jun-98

FROM : Marketing Department Manager

#### CUSOMER' S INFORMATION

CUST.ID. : CS00014

INVOICE NO. : 41/014

NAME : Mr. Theerapol Aronruemwatana

COMPANY :

ADDRESS : 128 DongMuang Rd. Thungsigun  
Bangkok 10350

TEL. : 5688562 ,

#### PRODUCT' S INFORMATION

AIR-CONDR ID. : PD0489

BRAND : Carrier

CAPACITY : 10000 BTU.

MODEL : 42JN010/38RS010 < Hi Wall , Wireless Remote & Air Purifier >

FANCOIL MODEL : AS018

FANCOIL SERL.NO. : 159537C

CONDENS. MODEL : CEL018

CONDENS. SERL.NO. : 159556

INSTALLED PLACE : FL#3

TOTAL UNIT : 1

Figure H-4 : Installation Job Order



POLLACHET ENGINEERING CO., LTD.

SERVICE JOB ORDER

DATE : 24/06/1998

TH-W1

AIR-ID.NO.		CUSTOMER INFORMATION		INSTALLATION PLACE	
PD0152	CS000005	Ms. Bencharat Chayutai	ABC Construction Co.,Ltd.	Tel. 5110360 ,	Dinning Room
PD0148	CS000006	Mr. Chaicharit Tikampornvarokat	Graphic Corner Co.,Ltd.	Tel. 2336527 ,	Mother's Bed Room
0000002	00000007	Ms. Ammaraporn Sanphuang		Tel. 9395295 ,27300412	Dinning Room
0000001	00000007	Ms. Ammaraporn Sanphuang		Tel. 9395295 ,27300412	Bed Room Fl.3
PD0489	CS000014	Mr. Theerapol Aronruemwatana		Tel. 5688562 ,	FL#3

Figure H-5 : Service Job Order



POLLACHET ENGINEERING CO., LTD.

SERVICE CONTRACT EXPIRE REPORT

DATE : 27/06/1998

CUST PRD.	ServCon. ID.	START DATE	EXPIRE DATE	CUSTOMER INFORMATION		
PD0148	SC0240	02/06/1997	02/05/1998	CS00006	Mr. Chaichart Tikampornvarokat	Graphic Corner Co.,Ltd.
PD0152	SC0013	03/05/1997	03/04/1998	CS00005	Ms. Bencharat Chayutai	ABC Construction Co.,Ltd.
PD0489	SC0290	30/05/1997	30/04/1998	CS00014	Mr. Theerapol Aronruemwatana	
						Tel. 2336527 , , Fax :2336528
						Tel. 5110360 , , Fax :
						Tel. 5688562 , , Fax :

Figure H-6 : Service Contract Expire Report



POLLACHET ENGINEERING CO., LTD.

ACCOUNT RECEIVABLE LIST

DATE : 27/06/1998

INVOICE NO.	INV.Date	Due Date	CODE NO.	NAME	Company	Telephone	TOTAL AMOUNT	Credit Term
41/012	05/03/1998	04/04/1998	CS00008	Mr. Amornsak Sittikanont		5522618,	฿61,400.00	30
41/013	10/03/1998	09/04/1998	CS00011	Mr. Kunawut Yodmalai		5884428, 5394609	฿39,900.00	30
41/014	18/03/1998	17/04/1998	CS00010	Mrs. Katesuda Suvannoy		6813261, 9277293	฿51,000.00	30

Figure H-7 : Account Receivable List



POLLACHET ENGINEERING CO., LTD.

INVENTORY REPORT

DATE : 24/06/1998

CATEGORY : Air-Conditioner

PRODUCT ID.	BRAND	MODEL	DESCRIPTION	UNIT IN HAND
AR0008	Mitsubishi	MCF-S13QV/S18QV	Split Type , Wireless Remote (1 feel control)	2
AR0007	Carrier	42JB004EER/38RS012EE	Split Type , Wireless Remote & Air Purifier (#5)	2
AR0006	Carrier	42JBX008/38RS024	Split Type , Wireless Remote & Air Purifier	2
AR0005	Carrier	42JBX006/38RS018	Split Type , Wireless Remote & Air Purifier	1
AR0003	Carrier	42JN018/38RS018	Hi Wall , Wireless Remote & Air Purifier	1
AR0002	Carrier	42JN012/38RS012	Hi Wall , Wireless Remote & Air Purifier	4
AR0001	Carrier	42JN010/38RS010	Hi Wall , Wireless Remote & Air Purifier	4
AR0004	Carrier	42JBX004/38RS012	Split Type , Wireless Remote & Air Purifier	2
TOTAL STOCK				18

Figure H-8 : Inventory Report



POLLACHET ENGINEERING CO. , LTD.

Monthly Sale of March ,1998

Category : Air-conditioner

2/4/98

Brand : CARRIER

Unit : Baht

Model	Quantity	Sales Amount	Cost Amount	Net Income
42JN010/38RS010	2	51,000	47,960	3,040
42JN012/38RS012	3	88,500	83,160	5,340
42JN018/38RS018	1	41,200	39,050	2,150
42JBX004/38RS012	1	26,800	21,900	4,900
42JBX006/38RS018	2	66,800	62,260	4,540
42JBX008/38RS024	0	0	0	0
42JB004EER/38RS012EE	0	0	0	0
GRAND TOTAL	9	274,300	254,330	19,970

Figure H-9 : Monthly Sales Report



POLLACHET ENGINEERING CO., LTD.

Sales Report  
for the period of Jan. - Jun. 1997

Category : Air-conditioner

Brand : CARRIER

Model	JAN.		FEB.		MAR.		QUARTER 1		APR.		MAY		JUN		QUARTER 2		TOTAL HALF 1	
	Qty.Sold	Amount	Qty.Sold	Amount	Qty.Sold	Amount	Qty.Sold	Amount	Qty.Sold	Amount	Qty.Sold	Amount	Qty.Sold	Amount	Qty.Sold	Amount	Qty.Sold	Amount
42JN010/38RS010	0	0	1	1,520	2	3,040	3	4,560	2	3,040	1	1,520	1	1,520	4	6,080	7	10,640
42JN012/38RS012	0	0	1	1,780	1	1,780	2	3,560	1	1,780	0	0	2	3,560	3	5,340	5	8,900
42JN018/38RS018	2	4,300	0	0	2	4,300	4	8,600	2	4,300	1	2,150	0	0	3	6,450	7	15,050
42JBX004/38RS012	0	0	2	9,800	1	4,900	3	14,700	4	19,600	0	0	0	0	4	19,600	7	34,300
42JBX006/38RS018	2	4,540	5	11,350	2	4,540	9	20,430	2	4,540	0	0	0	0	2	4,540	11	24,970
42JBX008/38RS024	1	2,610	1	2,610	1	2,610	3	7,830	3	7,830	1	2,610	1	2,610	5	13,050	8	20,880
42JB004EER/38RS012EE	2	3,420	0	0	1	1,710	3	5,130	1	1,710	1	1,710	2	3,420	4	6,840	7	11,970
GRAND TOTAL	7	14,870	10	27,060	10	22,880	27	64,810	15	42,800	4	7,990	6	11,110	25	61,900	52	126,710

Figure H-10 : Sales Report by Quarter 1 and Quarter 2





POLLACHET ENGINEERING CO., LTD.

Sales Report  
for the period of Jul. - Dec. 1997

Category : Air-conditioner

Brand : CARRIER

Model	JUL.		AUG.		SEP.		QUARTER 3		OCT.		NOV.		DEC.		QUARTER 4		TOTAL HALF 2	
	Qty.Sold	Amount	Qty.Sold	Amount	Qty.Sold	Amount	Qty.Sold	Amount	Qty.Sold	Amount	Qty.Sold	Amount	Qty.Sold	Amount	Qty.Sold	Amount	Qty.Sold	Amount
42JN010/38RS010	1	1,520	0	0	1	1,520	2	3,040	2	3,040	2	3,040	3	4,560	7	10,640	9	13,680
42JN012/38RS012	1	1,780	0	0	1	1,780	2	3,560	0	0	0	0	1	1,780	1	1,780	3	5,340
42JN018/38RS018	0	0	1	2,150	2	4,300	3	6,450	1	2,150	0	0	2	4,300	3	6,450	6	12,900
42JBX004/38RS012	2	9,800	0	0	1	4,900	3	14,700	1	4,900	1	4,900	0	0	2	9,800	5	24,500
42JBX006/38RS018	1	2,270	3	6,810	2	4,540	6	13,620	1	2,270	0	0	1	2,270	2	4,540	8	18,160
42JBX008/38RS024	1	2,610	1	2,610	1	2,610	3	7,830	2	5,220	1	2,610	3	7,830	6	15,660	9	23,490
42JB004EER/38RS012EE	1	1,710	0	0	1	1,710	2	3,420	1	1,710	3	5,130	2	3,420	6	10,260	8	13,680
GRAND TOTAL	7	19,690	5	11,570	9	21,360	21	52,620	8	19,290	7	15,680	12	24,160	27	59,130	48	111,750

Figure H-11 : Sales Report by Quarter 3 and Quarter 4



POLLACHET ENGINEERING CO., LTD.

Sales Report  
for Year 1997

Category : Air-conditioner

Brand : CARRIER

Model	QUARTER 1		QUARTER 2		QUARTER 3		QUARTER 4		YEAR	
	Qty.Sold	Amount	Qty.Sold	Amount	Qty.Sold	Amount	Qty.Sold	Amount	Qty.Sold	Amount
42JN010/38RS010	3	4,560	4	6,080	2	3,040	7	10,640	16	24,320
42JN012/38RS012	2	3,560	3	5,340	2	3,560	1	1,780	8	14,240
42JN018/38RS018	4	8,600	3	6,450	3	6,450	3	6,450	13	27,950
42JBX004/38RS012	3	14,700	4	19,600	3	14,700	2	9,800	12	58,800
42JBX006/38RS018	9	20,430	2	4,540	6	13,620	2	4,540	19	43,130
42JBX008/38RS024	3	7,830	5	13,050	3	7,830	6	15,660	17	44,370
42JB004EER/38RS012EE	3	5,130	4	6,840	2	3,420	6	10,260	15	25,650
GRAND TOTAL	27	64,810	25	61,900	21	52,620	27	59,130	100	238,460

Figure H-12 : Yearly Sales Report



POLLACHET ENGINEERING CO., LTD.

---

**Best Product Sold for 1997**

Category : Air-conditioner

Brand : CARRIER

Order	Model	Quantity	Sales Amount
1	42JBX006/38RS018	19	43,130
2	42JBX008/38RS024	17	44,370
3	42JN010/38RS010	16	24,320
4	42JB004EER/38RS012EE	15	25,650
5	42JN018/38RS018	13	27,950

Figure H-13 : Best Product Sold



POLLACHET ENGINEERING CO. , LTD.

Monthly Invoice Report of January ,1998

Unit : Baht

Invoice No.	Item Qty.	Sales Representative	Sales Amount	Cost Amount	Net Income
001/41	2	Mr. Chaiyasak Ekthaniphong	51,000	44,000	7,000
002/41	1	Ms. Pornpen Sopornkul	29,500	27,720	1,780
003/41	1	Mr. Surin Pomsuk	41,200	39,050	2,150
004/41	1	Ms. Pornpen Sopornkul	22,000	21,900	100
005/41	2	Mr. Chaiyasak Ekthaniphong	71,200	58,000	13,200
TOTAL	7		214,900	190,670	24,230

Figure H-14 : Monthly Invoice Report



POLLACHET ENGINEERING CO., LTD.

Employee Sales Report for 1997

Unit : Baht

Employee Name	Order	Sales Amount	Cost Amount	Net Sales
Mr. Chaiyasak Ekthaniphong	20	731,600	530,000	201,600
Mr. Surin Pomsuk	15	538,500	415,800	122,700
Mrs. Varanuch Piriyawat	13	552,630	462,800	89,830
Ms. Pornpen Sopornkul	7	199,500	154,000	45,500
GRAND TOTAL	55	2,022,230	1,562,600	459,630

Figure H-15 : Employee Yearly Sales Report

ABAC  
GRADUATE SCHOOL LIBRARY



