



# Online Inventory Management Using C#.NET

by

Ms. Thipsukhon Thinphangnga

A Final Report of the Three-Credit Course  
IC 6997 E-Commerce Practicum

Submitted in Partial Fulfillment  
of the Requirements for the Degree of  
Master of Science  
in Internet and E-Commerce Technology  
Assumption University

July 2003



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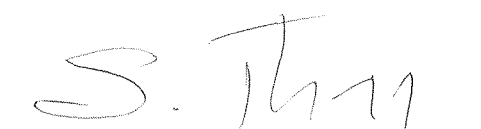
July 2003

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The Graduate School of Assumption University has approved this final report of the three-credit course, IC 6997 E-Commerce Practicum, submitted in partial fulfillment of the requirements for the degree of Master of Science in Internet and E-Commerce Technology.

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## ABSTRACT

Online Inventory Management is a web-based solution that is designed to give a clinic, complete control and with manage over the inventory of drugs and other items kept in storage and create reports to serve the staff of the clinic.

Traditionally, for clinic's inventories were managed manually. It included creating reports for controlling the product stocks. The ones who create these reports can easily to do mistakes as it is very difficult to record quantities for many products on a regular basis. The Online Inventory Management is mainly developed to solve these problems. The objective of this project is to decrease costs, making possible informed decisions and easy to manage and control inventory system.

This project involves searching for information through many resources, including books, journals and web sites. With the information collected, several analyses including SWOT analysis and Marketing Analysis were done in order to come up with the most appropriate marketing plan, as well as the System Design that is appropriate with the Database Structure. Furthermore, many web programming tools, especially Microsoft Visual Studio .NET by C# (main tool) were used to create a prototype of this online web-based system to show how those functions can attract users to do the processes.

Finally, Online Inventory Management is a good way to help users. As it is easy to use and user can produce their reports very easily, and save time and money by automating business processes and eliminating data entry duplications. Furthermore, the company would have more potential and higher efficiency with this project.

## ACKNOWLEDGEMENTS

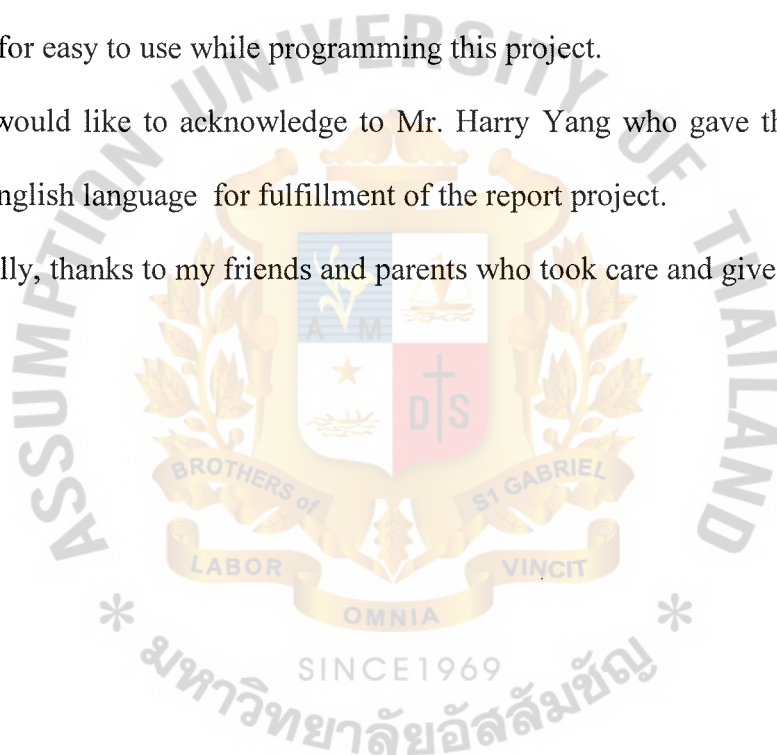
This project has been completed, I've been blessed with people who gave generously, their time and expertise to enhance my abilities. I would like to express my gratitude to several people who are responsible for important parts in this project.

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## TABLE OF CONTENTS

<u>Chapter</u>	<u>Page</u>
ABSTARCT	i
ACKNOWLEDGEMENTS	ii
LIST OF FIGURES	v
LIST OF TABLES	vii
I. INTRODUCTION	1
1.1 Introduction of the Project	1
1.2 Objectives of the Project	3
1.3 Scope of the Project	3
1.4 Benefits and Goal of the Project	4
II. EXISTING SYSTEM	5
2.1 Company Background	5
2.2 Current Problems	9
2.2 Existing Computer System	9
III. SITUATIONAL ANALYSIS	10
3.1 SWOT Analysis	10
3.2 Marketing Plan	12
3.3 Audience and Products Discussion	15
IV. THE PROPOSED SYSTEM	16
4.1 Web Concept	16
4.2 Create the Scenarios	16
4.3 Site Content	17

<u>Chapter</u>	<u>Page</u>
4.4 System Specification	18
4.5 System Design	20
4.6 Database Design	28
4.7 Web Interface Design	34
4.8 Cost and Benefit Analysis	44
4.9 Security and Control	46
V. PROJECT IMPLEMENTATION	49
5.1 Project Plan	49
5.2 Test Plan and Result	49
VI. DISCUSSION	51
VII. CONCLUSIONS AND RECOMMENDATIONS	53
7.1 Conclusions	53
7.2 Recommendations	54
APPENDIX A REPORT DESIGN	55
BIBLIOGRAPHY	59

## LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
4.1 Corporate Network Design	20
4.2 Context Diagram	22
4.3 Diagram 0	23
4.4 Diagram 3	24
4.5 Diagram 4	25
4.6 Diagram 6	26
4.7 E-R Diagram	27
4.8 SQL Database Structure	28
4.9 Stock_main Table	29
4.10 Stock_receive Table	28
4.11 Stock_opb Table	30
4.12 Invent Table	30
4.13 Service Table	31
4.14 Treatment Table	31
4.15 R_treat Table	32
4.16 Code_region Table	32
4.17 User_login Table	33
4.18 Doctor Table	33
4.19 Login Page	34
4.20 Main Menu Page	35
4.21 Add Items Page	36
4.22 Confirm Add Items Page	37



<u>Figure</u>	<u>Page</u>
4.23 Add Receipts Page	38
4.24 Confirm Add Receipts Page	39
4.25 Select Month and Year Page	40
4.26 Show Poducts Stock Report	41
4.27 Show Treatment Report Page	42
4.28 Show Daily Sales Report Page	43
4.29 Break-even Point	48
5.1 Project Plan	50



## LIST OF TABLES

<u>Table</u>	<u>Page</u>
4.1 Site Contents	18
4.2 Hardware Requirements	19
4.3 Software Requirements	20
4.4 Cost of Manpower of the New System	43
4.5 Cost of Hardware and Software of the Computerized System	43
4.6 Break-even Point Calculation	46
A.1 Product Stock Report	55
A.2 Treatment Report	56
A.3 Daily Sales Report	57



## I. INTRODUCTION

### 1.1 Introduction of the Project

ASP.NET is a set of technologies in the Microsoft .NET Framework for building Web applications and XML Web services. It is the next generation technology for Web application development and it takes the best from Active Server Pages (ASP). The result is a robust, scalable, and fast Web development experience that will give you great flexibility with little coding.

In order to complete the ASP.NET, we use the Visual Studio .NET. It is the comprehensive tool set for rapidly building and integrating XML Web services, Microsoft Windows-based applications, and Web solutions. It is certainly more productive than Notepad! Take advantage of all of the features outlined, and the many other features available to you within this great environment. It will be rewarded with a much more productive experience when creating your .NET applications. In fact, Security is an essential design element for this project. Information found here will help developers and administrators design and deploy secure .NET Framework applications. So you can build secure products for your customers or organizations.

Online Inventory management is the web-based online solution, so it needs to use Intranet. Intranet is a technology of choice for electronic businesses, as companies can connect their internal company transaction systems, enabling employees to take actions central to a company's operations. Intranet can help organizations create a richer, and more responsive information environment. Internal corporate applications based on Web page models can be made interactive using a variety of media, text, audio, and video tools. A principle use of intranet has been to create on-line repositories of information that can be updated as often as required. Made available via intranets, documents always can be up to date, eliminating paper, printing, and distribution costs.

Intranets are springing up in all the major functional areas of business, allowing an organization to manage more of its business processes electronically. There are intranet applications that have been developed for finance and accounting, human resources, sales and marketing, and inventory management. Inventory management is a back-office operation, especially in large or medium-sized companies. Inventory management solutions help in making decisions about how much to produce, how much inventory to stock, and how to best schedule shipments. It is the way that products and parts flow smoothly. In general if inventory levels are set too high, the cost of keeping inventories will be very large. If an inventory is too low, there is no sufficient protection, again resulting in high demand or slow delivery time and consequently revenues and customers may be lost. Thus, major attempts are made to properly control inventories using information technologies.

Healthcare providers are nowadays being forced to streamline operations through more efficient and cost effective office procedures. Automating these tasks results in time, material and labor savings, providing a positive return on investments. The Web Solutions's Inventory management is a web-based solution specially designed to allow a more efficient and effective control over the clinic's resources, time management and catering to a patient's requirements. It eliminates as many time-consuming tasks as possible, with features of inventory management of a clinic operation. And through this solution, it will be easy access of data for authorized persons anywhere in the world,

We, as the employees of Pan Beauty Care Co., Ltd. The leader in skincare and dermatological treatment, would like to propose using inventory management solutions in the organization.



## **1.2 Objectives of the Project**

- (1) Helps make informed decisions: Accurate real-time inventory and sales reporting provides instant access and sharing of information anytime, anywhere in the organization.
- (2) Decreases costs: Saves time and money by automating business processes and eliminating data entry duplications.
- (3) Easy to manage and control: To give the clinic complete control over the inventory of drugs and other items held in storage.

## **1.3 Scope of the Project**

- (1) Online Inventory management is a web intranet that can be used only inside the Pan Clinic Company to communicate with other clinic branches, to manage and control the inventory of products in the store.
- (2) Users who can use the Online Inventory management are clinic staff of each branch.
- (3) Before entering the site, users must enter usernames and passwords and choose the clinic branch first for security reasons.
- (4) This project provide only the product stock reports, the treatment reports and the daily sales reports.
- (5) The functions in this project including “Add Items”, “Add Receipts” and “Show reports”.
- (6) Before user create full reports, they must Add Items in their clinic stores first, then, if they receive products, they should add to receipts, and eventually create reports. For daily sales reports, there is no need to Add Items first, user only selects the needed report.

## **1.4 Benefits and Goal of the Project**

### **1.4.1 General Benefits for Using Project.**

- (1) It eliminates many time-consuming tasks. So the staff have more time to concentrate on more strategic activities rather than paper work, photocopying and envelope stuffing which had to be done earlier.
- (2) Improve management reporting and help in making decisions on how much to produce, how much inventories to stock, and how best to schedule shipments.
- (3) Reduces paper, printing, and distribution costs.
- (4) All products “in store” can be up to date, as it’s online.
- (5) It provides more security because It can be accessible by authorized people.
- (6) It can give more accurate information and can be easily produced.

### **1.4.2 Goals of the Project for Customers.**

- (1) Reducing the purchasing cycle time and costs.
- (2) Enhancing budgetary controls.
- (3) Provide more efficient response to customer requests for products, forecast new products, and build and deliver them as demand requires
- (4) Improving information management.
- (5) Eliminating administrative errors.

## II. EXISTING SYSTEM

### 2.1 Company Background

Pan Clinic (established 1979) is a unique innovation of the Biophile Group. It is unique as it combines the strength of a clinic and the pampering care of an aesthetic salon: Corrective, Protective and Cosmetic care. Clients receive expert medical attention as well as appropriate facial/body treatment from an array of available choices. Treating melasma (blemishes), (skin) aging and wrinkles, acne and freckles are its particular specialties.

Pan Clinic is a pioneer in dermatological cosmeceutical care, not only domestically but also internationally and has become a role model for the specialized type of services and care. Presently there are 57 branches nationwide serving more than 1,000,000 visitors per year. Pan Clinic has advanced and unique methods of treatment together with its systematic operations procedures, monitoring and analysis of inventory, financial accounts, etc. Branches of Pan Clinics are being established overseas in the form of franchises under the management of Pan International Clinic Co., Ltd.

#### 2.1.1 Organization Data

- |                  |   |                       |
|------------------|---|-----------------------|
| (1) Capital      | : | 10,000,000 Baht       |
| (2) Employee     | : | 200                   |
| (3) Office Space | : | 1,200 square meters.  |
| (4) Warehouse    | : | 3,500 square meters.  |
| (5) Annual Sales | : | USD 3.6 million(2002) |

#### 2.1.2 Financial References

Thai Farmer Bank (Rachdamri Branch)

### 2.1.3 Business Address

PAN BEAUTY CARE CO.,LTD.

888/49-50 PLOENCHIT ROAD LUMPINEE,

PATUMWAN BANGKOK 10330 THAILAND

Telephone Numbers : (662)2536891-9

Fax numbers : (662)2542376

### 2.1.4 Business Activity

The company separates its imports and distribution into 4 main groups:

- (1) Skincare & Cosmetics
- (2) Pharmaceuticals
- (3) Health Foods & Supplements
- (4) Beauty & Dermatological Services

The details is given hereunder for better understanding.

- (1) Skincare & Cosmetics

- (a) Pan EPO

Pan EPO group of products consist of EPO enriched cosmetics and skincare to enhance skin pliability and youthfulness. For example, Acnicare, Pan Vera, Pan Baby, Pan PM, Pan Sunscreen.

- (b) Elisees

Elisees group of products covers the entire spectrum of cosmetics and skincare items providing protection, remedy and improvement for various skin conditions. Elisees special and sophisticated formulation puts the Elisees group of products in league with for international branched products. For example, Elisees Anti



Aging Moisturizer, Elisees Anti Aging Whitener, Elisees SPF15 Facial Sun Protection Cream, etc.

(c) Momena

Momena group of Products consist of high quality cosmetics, skincare and beauty enhances, delicately formulated so as to be gentle to the skin and to delicately enhance complexion and beauty. For example, Momena UV Oil Releasing Cleansing Cream, Momena UV Soothing Lotion, Momena UV Moisturizing Day Cream SPF15.

(d) Imported Brands

Pan Beauty Care is proven and has been entrusted to represent prestigious international brands which include Pierre Cardin cosmetics and perfumes (France and Italy), NeoStrata (U.S.A.) AHA treatment to enhance skin conditions and appearances. And Dermablend (U.S.A.) corrective cosmetics to cover and conceal various types of skin imperfections.

(2) Pharmaceuticals

Pan Clinic's range of oral and topical pharmaceuticals include antibiotics, anti-pyretics, analgesics, anti-histamines, anti-fungus, steroids, etc. numbering 120 items spanning not only a comprehensive spectrum of dermatological related pharmaceuticals but also general pharmaceuticals.

(3) Health Foods & Supplements

Pan Clinic's range of health foods and supplements may be classified into 3 main categories:

(a) Slimming Products

A comprehensive range of slimming products which complement and enhance one another. These products are not stimulants or psychotropics, but are safe and natural substances. For example: Minus (Enhance Chitosan), Trimax and Iso-Diett

(b) General Health Foods and Supplements

For example: Evening Primrose Oil (EPO), Fish Oil, Lecithin plus Vitamin E, Evita, Natural Fibre and Intel-G

(c) Other Exclusive - Imedeen from Ferrosan A/S, Denmark

(4) Beauty & Dermatological Services

The expertise of Pan Clinic in treating blemishes (e.g. melasma), acne, aging, etc. with its specially developed techniques, medications and medical equipment have not only attracted a large domestic clientele (with its 56 clinics nationwide) but also an international clientele. In addition to receiving medical advice and treatment from a dermatologist, the following aesthetic treatment are available include the Facial Treatment and Body Treatment

2.1.5 Objectives of Company

Pan Clinic looks forward to future expansion with specific interest in expanding in exports and franchising. Having established itself as a leader in skincare and dermatological treatment, Pan Clinic is keen to enhance its position as a supplier of high quality products and to transfer its technology by forging relationships with overseas partners, providing a larger group of people with Pan Clinic's accumulated knowledge, technical expertise and specially the treatment and provision of skincare to those people

with the unique characteristics of the Asian skin. So on line business is one of the opportunities open to the organization.

## **2.2 Current Problems**

The major problems of exiting system are summarized as follows:

- (1) Needs more people to handle the work load, the expansion of the business leading to the increase in the company's expenditure eventually.
- (2) Reports are generated manually and the management have no time to wait.
- (3) Data entry duplication.
- (4) Some products are out of stock without notice.
- (5) Wrong items and expired products are delivered.

For these reasons, we need to develop a web-based solutions to serve the staff who work at clinic. The company expects to be more efficient at back-office management by implementing this program.

## **2.3 Existing Computer System**

The existing system is manual, computers will be used to produce the important documents. There are two computers in the company to process documents the Software in these two sets consist of Microsoft Windows and Microsoft Office.

- (1) The advantage of the existing system are as follows:
  - (a) The enabled system is an almost stable system.
  - (b) Enables in understanding the existing system.
- (2) The disadvantage of the existing system are as follows:
  - (a) Human errors.
  - (b) Redundancy of jobs.
  - (c) Lack of security.

Hence, the proposed system will be developed to perform tasks more effectively.

### III. SITUATIONAL ANALYSIS

We begin our analysis through a SWOT and move to a Competitive analysis.

#### 3.1 SWOT Analysis

This is a self-assessment framework for examining the Strengths and Weaknesses, Opportunities and Threats of the firm.

##### 3.1.1 Strengths

- (1) Use of the Intranet within the organization to communication with other departments. It supports usage of the Inventory Management Program.
- (2) The Online Inventory management provides the technology such as software/hardware and network to support the online site for all of Pan Clinic branches nationwide. For example, use of new languages for programming in c#.net , makes processing even faster.
- (3) The Online Inventory management is placed on security because it must login first before this site.
- (4) Online Inventory management is easy to use and to understand.
- (5) Pan Clinic are advanced and have unique methods of treatment together with systematic operating procedures, monitoring and analysis of inventory, financial accounts, etc.

##### 3.1.2 Weakness

- (1) The Online Inventory management supports usage only at the Pan Clinic branch.
- (2) Website interface is very attractive.
- (3) Many staff at the clinic don't know basic usage of computers. However, they would need to be trained before implementing the program.



- (4) Sometimes Servers at the center may be down, this may effect the clients.

The processes in the clinic may stop for a short period of time or more due to this.

### 3.1.3 Opportunities

- (1) The Systems of Rajdhevee Skin Clinic and Pan Clinic have been developed, with the objective of offering an opportunity to qualified applicants on capitalizing with the latest technology and a wealth of experience.
- (2) The items in the Online Inventory management of Pan Clinic, include the sole distributors of the prestigious Repechage Line of skin care products.
- (3) The Online Inventory management will have an English version for international organizations in future to serve franchises overseas of the Pan Clinic.

### 3.1.4 Threats

- (1) High Competition, there are 3-4 competitors competing in this market who are both offline and online, we can not obtain benefits by being a monopoly anymore.
- (2) Many conditions of the Revenue department stress laws to print receipts. Hence it 's not convenient for customers.
- (3) Some clinic, computers are not suitable to support number of customers.
- (4) Users may not trust the security in internet especially on payments.
- (5) Laws are not yet completely enacted to govern the online business.
- (6) For upcountry clinics, they will connect to the center by using telephone lines from the Telephone Companies, it always is a problem with telephone connections.

### 3.2 Marketing Plan

Our Marketing Strategies consist of the 4Ps.

#### 3.2.1 Product

##### Physical Product

Products are mainly drugs and other items in the clinic storage. With regards to the items provided in the Inventory Management Program, we decide to use the brand names for different products coming from different suppliers and to use a reorder point to control stock levels. All of items will be categorized for easy management.

The products are listed hereunder:

- (1) PDC
- (2) PDM
- (3) ORAL MED
- (4) REPECHAGE
- (5) NEOSTRATA
- (6) ELISEE
- (7) COUPON
- (8) Treatment Material for Pan Clinic
- (9) Treatment Material for Repechage

##### Business Model

The Online Inventory management is a web-based solution that is offer the flexibility to maintain our own inventory online is easy to customize specific components of the solution, and a minimal cost of the solution helping in easy decisions. The Online Inventory management design to give the clinic complete control over the inventory of drugs and other items held in storage, used by the staff at clinic. It is connected online through over all 56 branches in Thailand, and thus these branches

can be easily coordinator. In the Inventory Management Program, we have the headquarters at Bangkok that is responsible to receive inventory data and processes it to send the results back to the branches for creating reports.

#### Target Market

The Online Inventory management offers a web-based solution for the staff at the clinic, helping them to manage and control the inventory of drugs in storage, it also provides product's information which is up to date.

We emphasize on clinic staff to use the Online Inventory management at the counter of the clinic as the Online Inventory management creates inventory reports for them, instead of making report manually, that takes out their resources including time, personal and money. We think of opportunities to make work more efficient and reduce costs for the organization, hence, this main purpose of this program.

#### Features Available in the Web Site

Drugs and other items held in Store must be closely managed to ensure sufficient supply without excessive risk of becoming obsolescent. Several features are included in this part of the sub-module.

- (1) Login: This part of the Online Inventory management is exclusive to the internal staff of the clinic and is securely protected. The user must fill in their username, password and branch first. If it is correct, they can pass through the site. If it is not correct, it will give an alert message box to try again.
- (2) Add Items to Store: This feature allows for either existing products to be added to the inventory, or a new products to be introduced. products 's information such as name, classification, price and reorder point can also be added and/or modified at this point in time.

- (3) Add Receipts Items to store: This Part for adding quantity of receive exiting items in store. and if the opening balance lower than the reorder point, it will show remark to remind user.
- (4) Show Report: A report formation module, which allows summaries of all drugs and other items held in the store to be effortlessly created at a particular point by choosing month and year that you want first and then you can created report. This part provides Product Stock report for each category, Treatment Report and Daily Sale Report.

### 3.2.2 Price

In order to achieve our pricing objectives, the following strategies will be implemented. Since the Online Inventory management provides a minimal cost solution, this makes made it an easy decision. That strategy is “faster, better, cheaper” used in the world of e-business are perceived as a competitive advantage; as they simply the cost of doing business.

### 3.2.3 Place: Distribution Channel

We use the Online Inventory management as our distribution channel to deliver our messages and provide services to our clinic branches nationwide. We let staff access our site and directly use our services available online. They must enter usernames, passwords and choose their branch before entering the site for providing security.

### 3.2.4 Promotion

Since Pan clinic always has sales promotion campaigns for its products and services in short periods, they give discounts or free items to their customers in each clinic. They will allocate the time for each promotion, not over 1 month, as they want the customers to act immediately. So, the Online Inventory management should support the promotion and provide product information more quickly and easily. Its important



to convey the benefits of this project to customers, as most organizations are concerned with what profits they will make, benefits to their operations, we need to convince them on how the Online Inventory management could help them achieve their objectives.

With regards to promotional programs, the Online Inventory management will analyze the customer's buying decisions from purchase records. It creates both daily and monthly reports very easily. When we set up the sales promotions, the products could run out of stock because of high sales. The Online Inventory management has a reminder message for each product, so that when it reaches its reorder point. It can control the clinics inventory very well.

### **3.3 Audience and Products Discussion**

We have to emphasized to the clinic staff of each branch. Functions offered on the site must be simple and easy to use. Main emphasis is in Thailand since our target market is only in Thailand. However, we will also include an English version for international organizations in the future.

The design of the website should be user friendly with helpful functions to make the users experience good doing inventory management online. The site should also be make users trust in the professional reports which save time and eliminate data entry duplications.

This site manages product in the clinic store. Most of products are from Pan clinic's distributors and imports. However, price also has some effect as we are distribute products, and we can reduce costs as much as possible in order to increase profit margins. This site also controls products stocked in hand and makes sure that we will always have products available for sales.

## IV. THE PROPOSED SYSTEM

Details of web Development and Design into following sections:

### 4.1 Web Concept

Online Inventory management is a web-based solution that is designed to give the clinic, complete control over the inventory of drugs and other items held in storage. This is particularly important as many of these items may be perishable, and hence a close view on the expiration dates needs to be maintained. On the other hand, it is necessary that the clinic maintains sufficient levels of these items to service the patients' requirements. Consequently, a balance needs to be maintained to ensure sufficient stock levels without overstocking which would lead to loss. Online Inventory management provide easy-to-use management features including two module: first module is the Product stock report and the second module is the Daily sale and Treatment report. For each report we have three process including “Add Items” - allows for either existing drugs to be added to the inventory, “Add Receipts” – allow to add the quantity of receives exiting items at this point in time and “Show reports - A report formation module, which allows summaries on drugs, held in store to be very easy created.

### 4.2 Creating the Scenarios

The following is the scenario for the users to experience the site.

- (1) Firstly, the user can enter the site by filling a username, password and selecting a branch. If the username and password is not correct, it will display an alert message to the user to try again.
- (2) After the users get their username and password, they can enter the site. In the site, we divide products into several categories for easy selection, and for each category of products we have many functions such as Add Items, Add Receipts and Show Reports.

- (3) For the Product stock reports.
  - (a) Users must select the menu “Add Items” to be added in to their inventory. By adding at the reorder point.
  - (b) Select the menu “Add Receipts” adding quantity of received items in store. In this part, ser must also to fill an invoice number and date/month/year. If they don’t fill, it will show an error message and ask them to fill it.
  - (c) After adding receipt, next step is to select from the menu “Show Reports” and then select the month and year first, after that it will create a full report.
- (4) For the treatment reports.
  - (a) Users must select the menu “Add Items” to be added to their inventory first. By adding reorder point equal “0”.
  - (b) After adding items, the next step is to select from the menu “Show Reports” and then select the month and year first. After that it will create full report.
- (5) For the daily sales report, user only select menu “Show reports and then select day, month and year first. After that it will create a full report.
- (6) If users want to print out the reports, they can press the print button, and then the reports will be export into Acrobat format.

### 4.3 Site Content

This project provides main menu for users, the main menu is shown in Table 4.1.

Table.4.1. Site Contents.

Report Name	Add Items	Add Receives	Show Report
Pan clinic Product Stock Report			
- PDC	Add Items	Add Receipts	Show Reports
- PDM	Add Items	Add Receipts	Show Reports
- ORAL MED	Add Items	Add Receipts	Show Reports
- REPECHAGE	Add Items	Add Receipts	Show Reports
- NEOSTRATA	Add Items	Add Receipts	Show Reports
- ELISEE	Add Items	Add Receipts	Show Reports
- COUPON	Add Items	Add Receipts	Show Reports
Treatment Material Stock Report			
- Pan Clinic	Add Items	Add Receipts	Show Reports
- Repechage	Add Items	Add Receipts	Show Reports
Treatment Report	Add Items		Show Reports
Daily Sales Report			Show Reports

#### 4.4 System Specification

Since this business has some constraints that limits the desire and expectation from a computer. We must consider other factors as budget, maintenance etc. The proposed configuration is classified as follows:

##### 4.4.1 Hardware Requirements

This project needs the web server to serve through an intranet on which more than 50 users may simultaneously access data. The server could initially manage to fulfill multi-users on the Operating System. For instance, hardware requirement must contain

an efficient specification, so that the web-based program will continue to run smoothly.

The hardware configuration is shown in Table 4.2.

Table 4.2. Hardware Requirements.

Descriptions	Quantity
<p>Server:</p> <p>Model: HP Proliant DL 360 G3</p> <p>CPU: Pentium III 2.3 GHz</p> <p>Internal Memory: 1 GB</p> <p>Support Adapter: SCSI Adapter</p> <p>VGA: Support SVGA</p> <p>Hard Disk: 18 GB</p> <p>CDROM: 44X Internal</p> <p>Network Interface: Gigabit Ethernet NIC 10/100/1000</p> <p>Monitor: SVGA 15"</p>	3 Sets

#### 4.4.2 Software Requirements

For network operating system. Software requirement is based on the Intranet online performance issue & Security and easy use for administration. It is significantly to be defined on the lower Total Cost of Ownership. The overall Software requirements are shown in the Table 4.3.



Table 4.3. Software Requirements.

Software Requirements	Quantity
Microsoft Window 2000 Server	1
Microsoft SQL Server 7.0 Enterprise	1
Microsoft Visual Studio .NET	1
Adobe Photoshop 6.0	1

#### 4.4.3 Network Requirements

For the corporate network support the work flow of this program, since the headquarters has the Web Server, Database Server and Mail Server are connected by routers. For the Headquarters connect through Pan Clinic branches by using ISDN. That show in Figure 4.1.

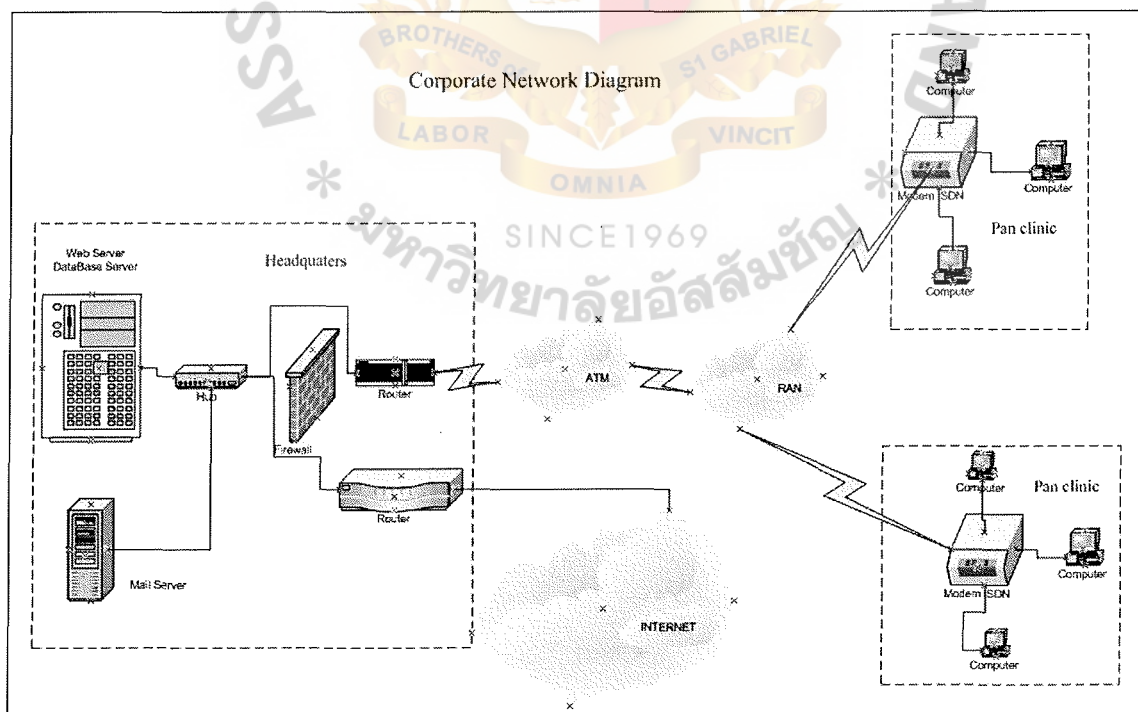
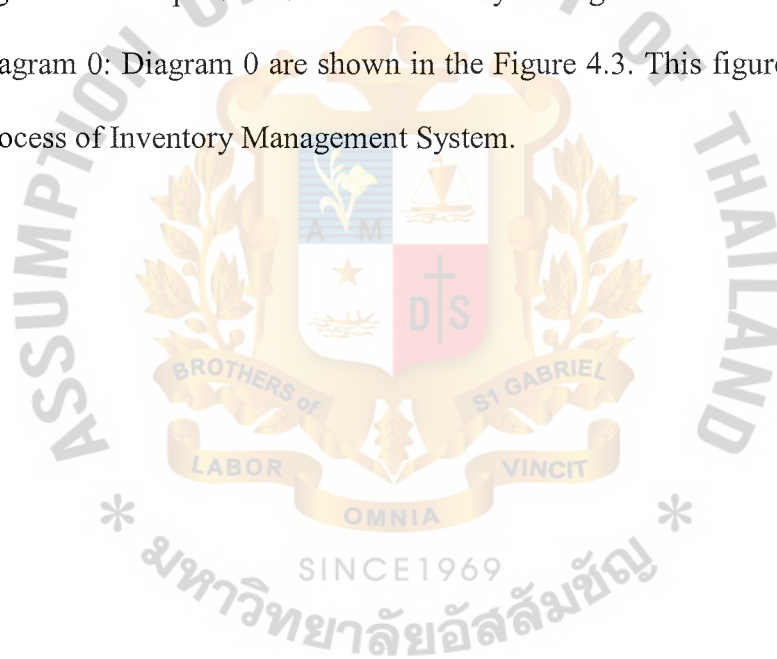


Figure 4.1. Corporate Network Diagram.

## 4.5 System Design

The system design is created to meet all user's requirements. The Online Inventory management was developed under a Client-Server architecture. The design phase expands and details and analyzes a phase by taking into consideration all technical implications and restricts. The purpose of the design is to specify a working solution that can be easily translated into programming code, such as a database, a users interface, communication devices and more.

- (1) Context Diagram: Context Diagram are shown in the Figure 4.2. This figure show all processes of the Inventory Management Online.
- (2) Diagram 0: Diagram 0 are shown in the Figure 4.3. This figure show details process of Inventory Management System.



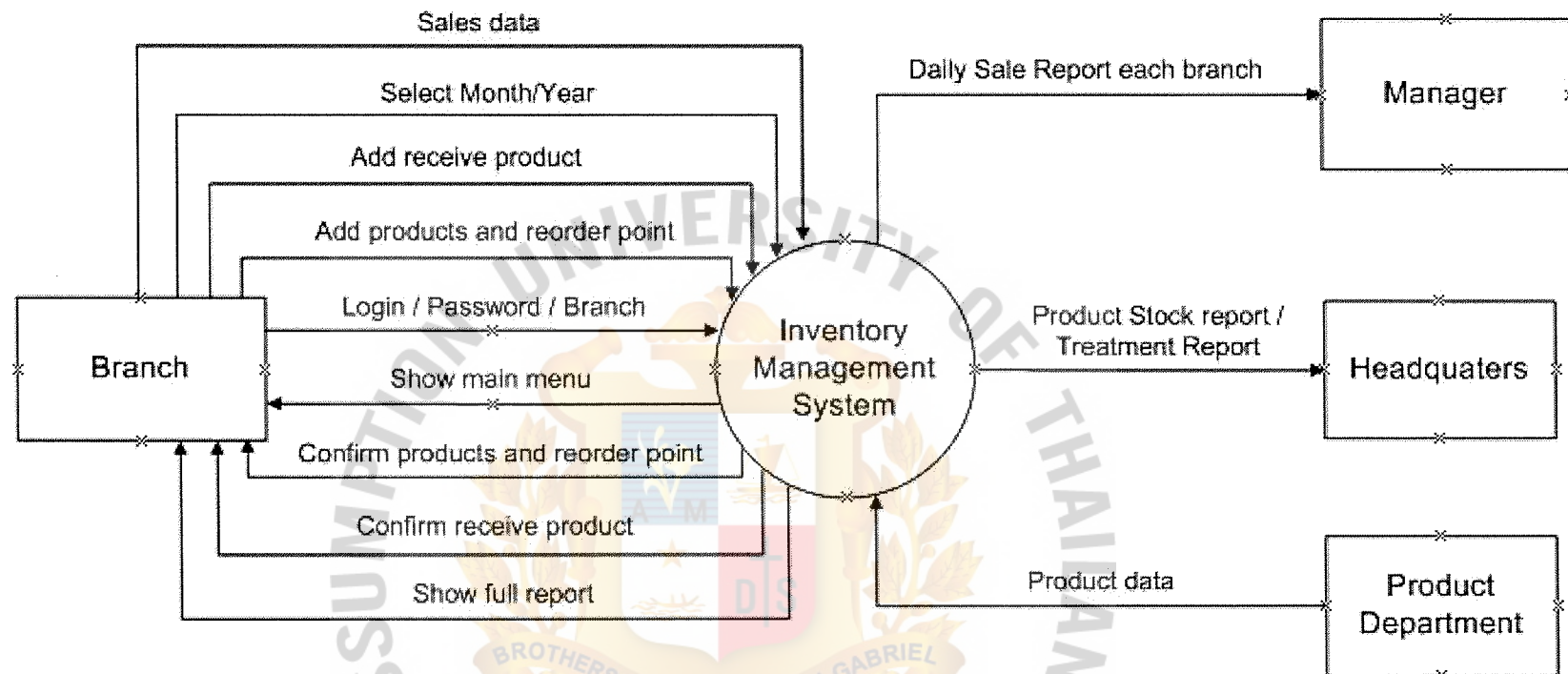


Figure 4.2. Context Diagram.

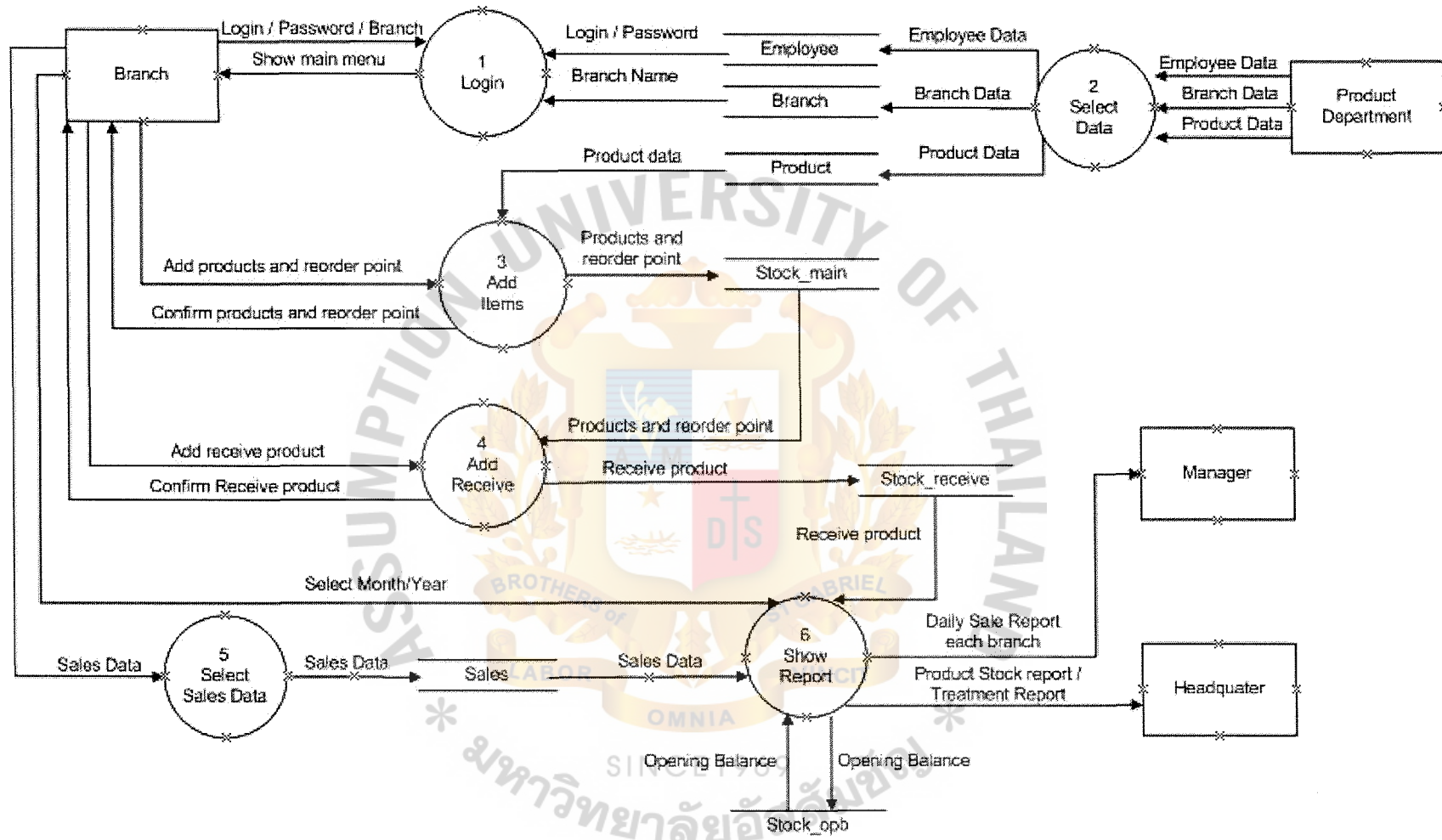
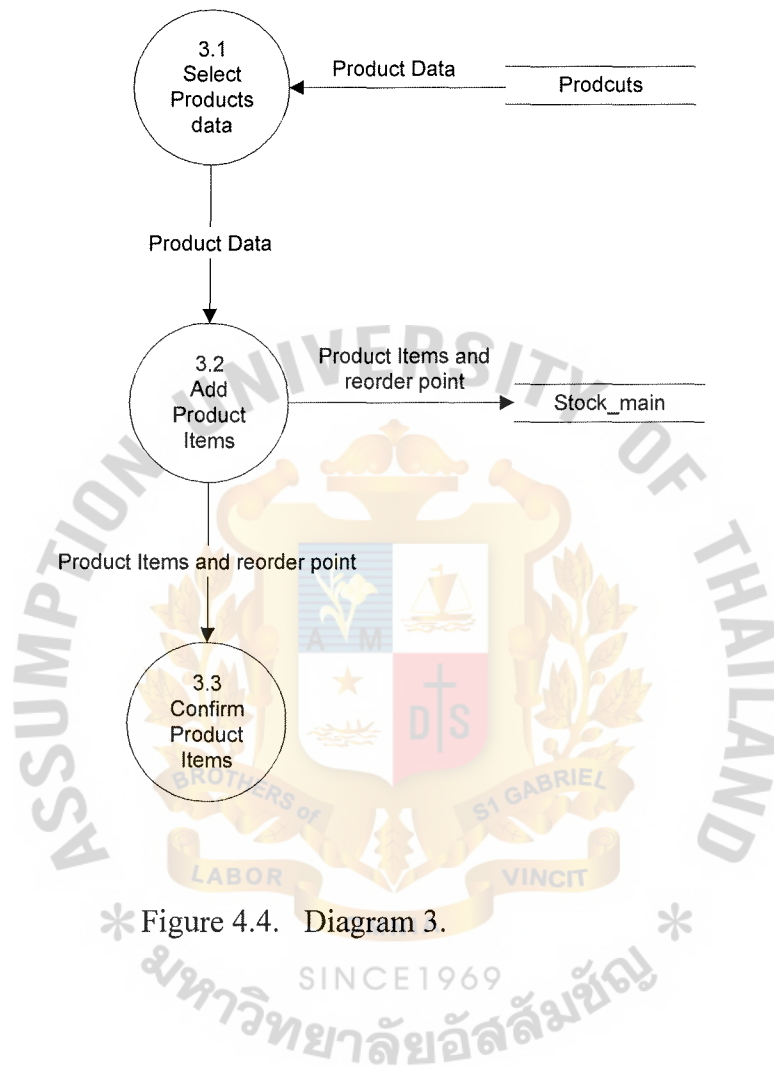


Figure 4.3. Diagram 0.

- (3) Diagram 3: Diagram 3 are shown in the Figure 4.4. This figure show details processes of add items process.



\* Figure 4.4. Diagram 3. \*





- (5) Diagram 6: Diagram 6 are shown in the Figure 4.6. This figure show details processes of show report process.

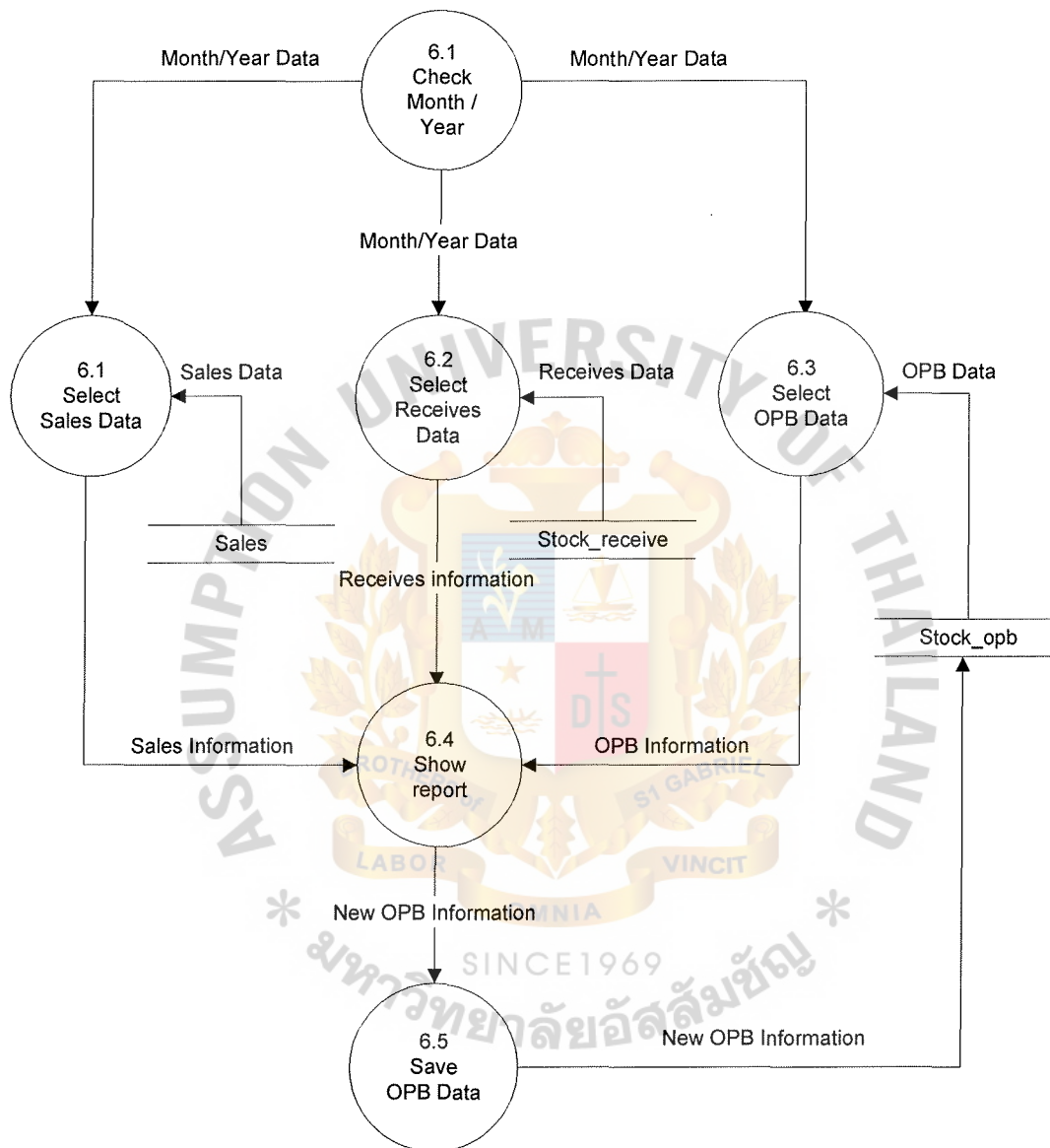


Figure 4.6. Diagram 6.

- (6) E-R Diagram: E-R Diagram are shown in the Figure 4.7. This figure show the relationship all of table in the database that use for this project.

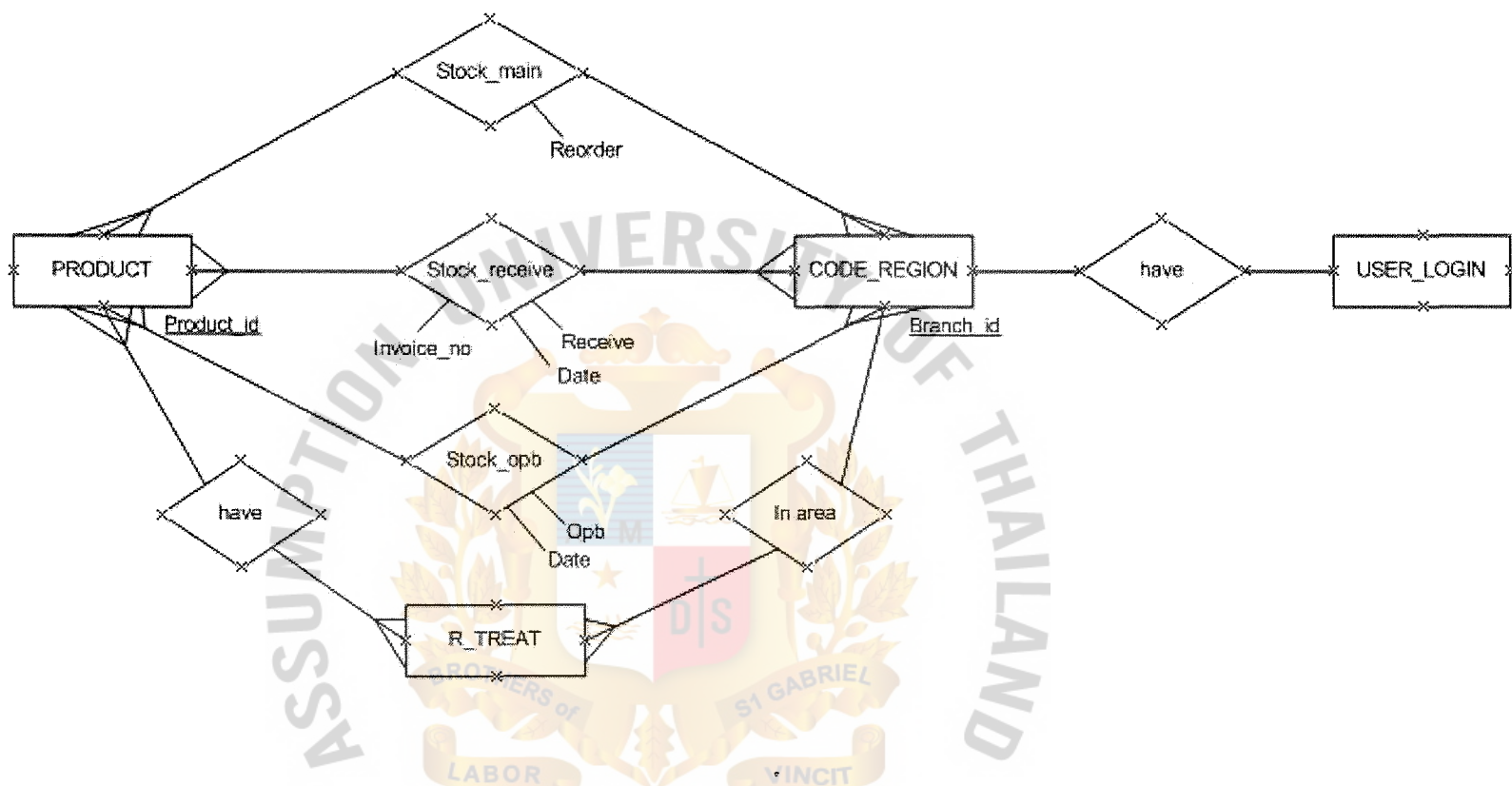
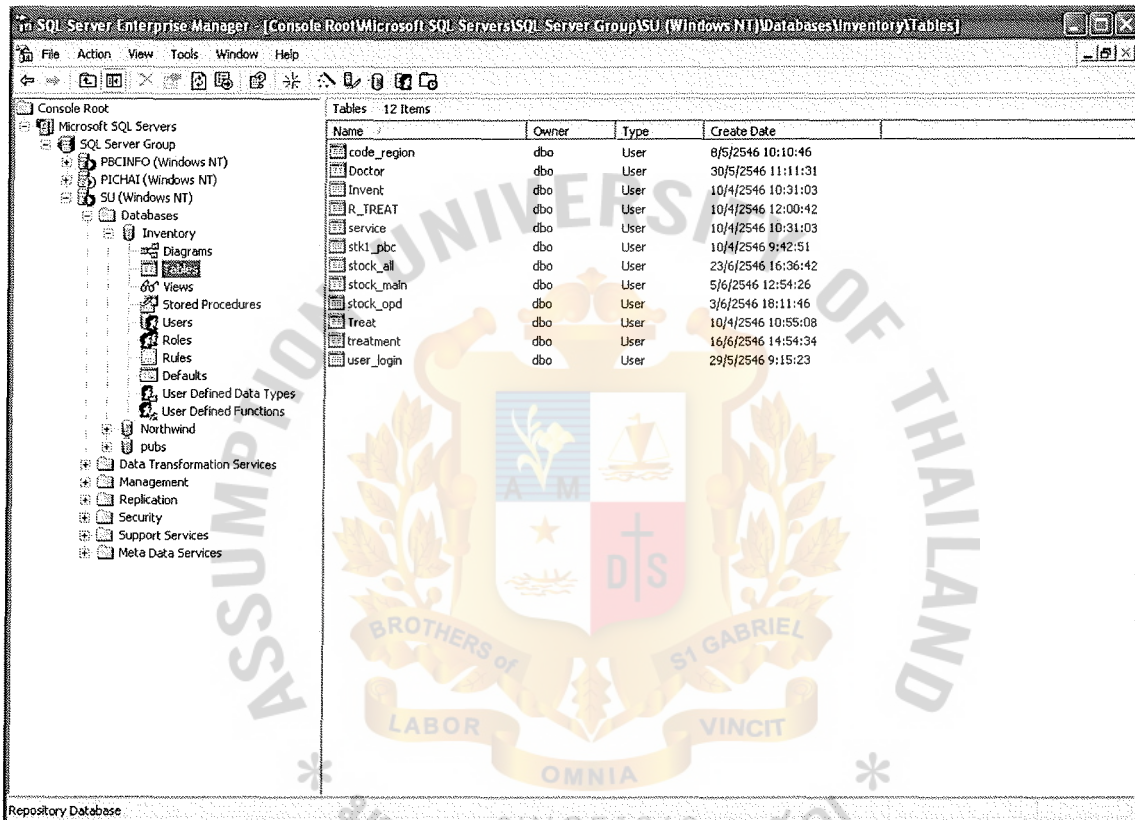


Figure 4.7. E-R Diagram.

## 4.6 Database Design

This project uses SQL Server to create the database for support, many information and complex tasks. The following figure shows the database structure of this project.



Name	Owner	Type	Create Date
code_region	dbo	User	8/5/2546 10:10:46
Doctor	dbo	User	30/5/2546 11:11:31
Invent	dbo	User	10/4/2546 10:31:03
R_TREAT	dbo	User	10/4/2546 12:00:42
service	dbo	User	10/4/2546 10:31:03
stk1_pbc	dbo	User	10/4/2546 9:42:51
stock_all	dbo	User	23/6/2546 16:36:42
stock_main	dbo	User	5/6/2546 12:54:26
stock_opd	dbo	User	3/6/2546 18:11:46
Treat	dbo	User	10/4/2546 10:55:08
treatment	dbo	User	16/6/2546 14:54:34
user_login	dbo	User	29/5/2546 9:15:23

Figure 4.8. SQL Database Structure.

The database structure of this project offers various tables:

- (1) Stock\_main Table: This table records the product items for each branch.

	Column Name	Data Type	Length	Allow Nulls
	stock_id	int	4	
	branch_id	nvarchar	10	
	barcode	nvarchar	10	
	name	nvarchar	255	
	category	nvarchar	255	✓
	Price	float	8	✓
	reorder	int	4	✓

Figure 4.9. Stock\_main Table.

- (2) Stock\_receive Table: This table records the quantity of received products/items for each branch.

	Column Name	Data Type	Length	Allow Nulls
	stock_id	int	4	
	branch_id	nvarchar	10	
	barcode	nvarchar	10	
	name	nvarchar	255	
	category	nvarchar	100	✓
	stock_date	nvarchar	10	
	receive	int	4	✓
	invoice_no	varchar	20	✓

Figure 4.10. Stock\_receive Table.



- (3) Stock\_opb Table: This table records the opening balance of products/items for each branch.

	Column Name	Data Type	Length	Allow Nulls
	stock_id	int	4	
	branch_id	nvarchar	10	
	barcode	nvarchar	10	
	name	nvarchar	255	
	category	nvarchar	50	✓
	syearmonth	char	7	✓
	opd	numeric	9	✓

Figure 4.11. Stock\_opb Table.

- (4) Invent Table: This table records the product information.

	Column Name	Data Type	Length	Allow Nulls
	BARCODE	nvarchar	7	✓
	NAME	nvarchar	45	✓
	PRICE	float	8	✓
	COST	float	8	✓
	CLASS	nvarchar	5	✓
	CLASS_N	nvarchar	45	✓
	CATEGORY	nvarchar	3	✓
	CATEGORY_N	nvarchar	45	✓
	BRAND	nvarchar	10	✓

Figure 4.12. Invent Table.

- (5) Service Table: This table records the service information.

	Column Name	Data Type	Length	Allow Nulls
	BARCODE	nvarchar	7	✓
	NAME	nvarchar	90	✓
	PRICE	float	8	✓
	COST	int	4	✓
	CLASS	nvarchar	5	✓
	CLASS_N	nvarchar	45	✓
	CATEGORY	nvarchar	3	✓
	CATEGORY_N	nvarchar	45	✓
	BRAND	nvarchar	10	✓
	SUPPLIER	nvarchar	40	✓
	VAT	bit	1	

Figure 4.13. Service Table.

- (6) Treatment Table: This table records the treatment information.

	Column Name	Data Type	Length	Allow Nulls
	BARCODE	nvarchar	7	✓
	NAME	nvarchar	90	✓
	PRICE	float	8	✓
	CLASS_N	nvarchar	45	✓
	CATEGORY	nvarchar	3	✓
	CATEGORY_N	nvarchar	45	✓
	BRAND	nvarchar	10	✓
	SUPPLIER	nvarchar	40	✓
	VAT	bit	1	

Figure 4.14. Treatment Table.

- (7) R\_treat Table: This table records the sales of products for each branch.

Column Name	Data Type	Length	Allow Nulls
OPD_DATE	nvarchar	50	✓
OPD_NUMBER	nvarchar	50	✓
QUEUE	nvarchar	50	✓
CODE_PRODUCT	nvarchar	50	✓
PRODUCT	nvarchar	50	✓
QUANTITY	numeric	9	✓
PRICE_UNIT	money	8	✓
DISCOUNT	numeric	9	✓
FREE	nvarchar	50	✓
MDISCOUNT	money	8	✓
MTOTAL	money	8	✓
BRAND	nvarchar	50	✓
TYPE	nvarchar	50	✓
CLASS	nvarchar	50	✓
ADD_PAY	money	8	✓
UPG	nvarchar	50	✓
B_TIME	nvarchar	50	✓
STATUS_D	nvarchar	50	✓
COU1	nvarchar	50	✓
COU2	nvarchar	50	✓
COU3	nvarchar	50	✓
SUBSTAN	nvarchar	50	✓
T_PAY	nvarchar	50	✓
NUM_COU	nvarchar	50	✓
T_PRO	nvarchar	50	✓
BILL_NO	nvarchar	50	✓

Figure 4.15. R\_treat Table.

- (8) Code\_region Table: This table records the branch of clinic information.

Column Name	Data Type	Length	Allow Nulls
Code_reg	nvarchar	2	
Code_char	nvarchar	50	✓
Name_clinic	nvarchar	50	✓
Last_mem	numeric	9	✓

Figure 4.16. Code\_region Table.

- (9) User\_login Table: This table records the username and password of each branch.

	Column Name	Data Type	Length	Allow Nulls
	user_name	nvarchar	50	
	password	nvarchar	50	✓
	code_reg	nvarchar	50	
	priority	nvarchar	50	✓

Figure 4.17. User\_login Table.

- (10) Doctor Table: This table records the username and password of doctors and staffs.

	Column Name	Data Type	Length	Allow Nulls
	username	nvarchar	10	
	passwd	nvarchar	10	
	title	nvarchar	50	✓
	name	nvarchar	50	✓
	surname	nvarchar	50	✓
	code	nvarchar	50	✓

Figure 4.18. Doctor Table.

## 4.7 Website Interfaces

### 4.7.1 Login Page

Firstly, the user can enter the site by filling a username, password and selecting a branch. If the username and password is not correct, it will give an alert message to the user for try again.

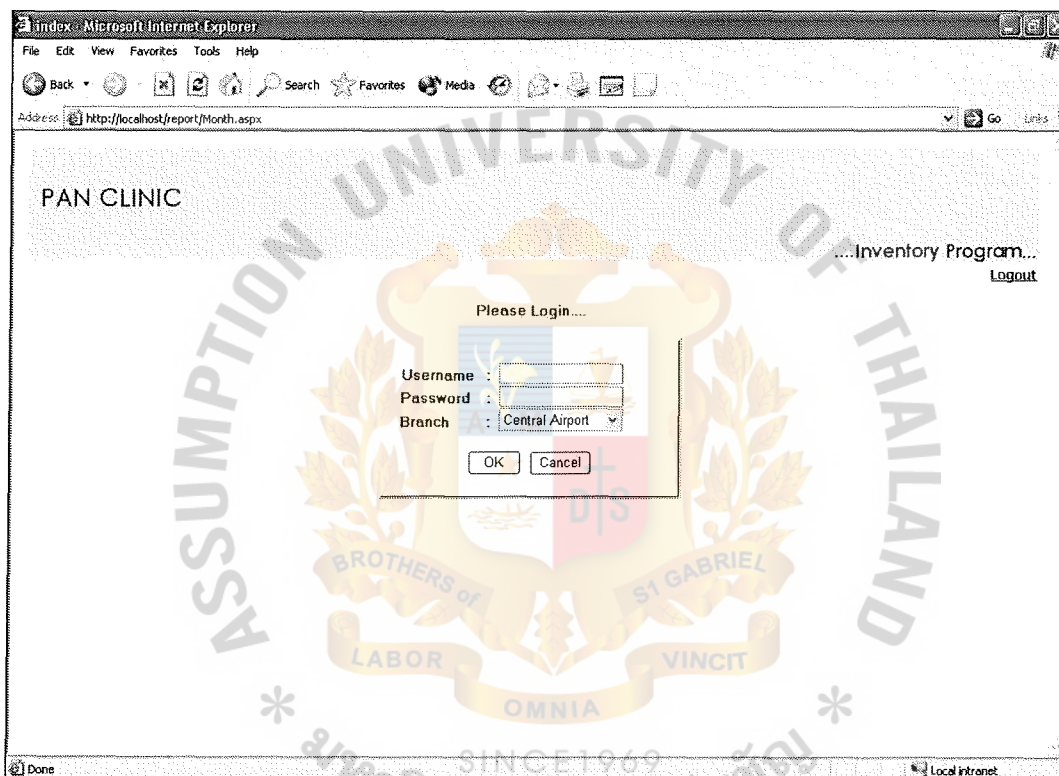


Figure 4.19. Login Page.



#### 4.7.2 Main Menu

After the user gets his/her username and password, he/she can enter the site. In the site, we divide products into several categories for easy selection, for each category, products have many functions such as Add Items, Add Receipts and Show Reports that as in the main menu.

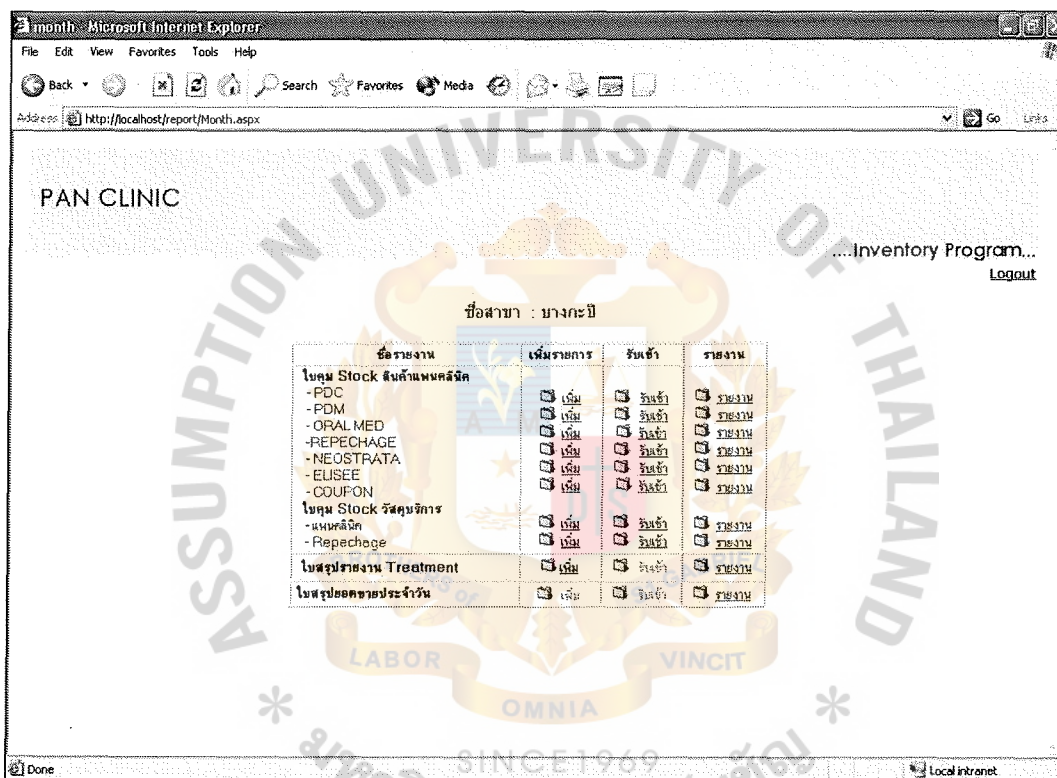


Figure 4.20. Main Menu Page.

### 4.7.3 Add Items

User must select menu “Add Items” to be added to their inventory first. By adding reorder point.

add - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Search Favorites Media Mail Print

Address: http://localhost/report/add.aspx?type=ORAL%20MED

PAN CLINIC

....Inventory Program...  
Main Menu | Logout

โปรแกรมจัดการสินค้าคงคลัง - เพิ่มรายการ  
หมวดสินค้า: ORAL MED สาขา: บางกะปิ รหัสผู้ใช้: su

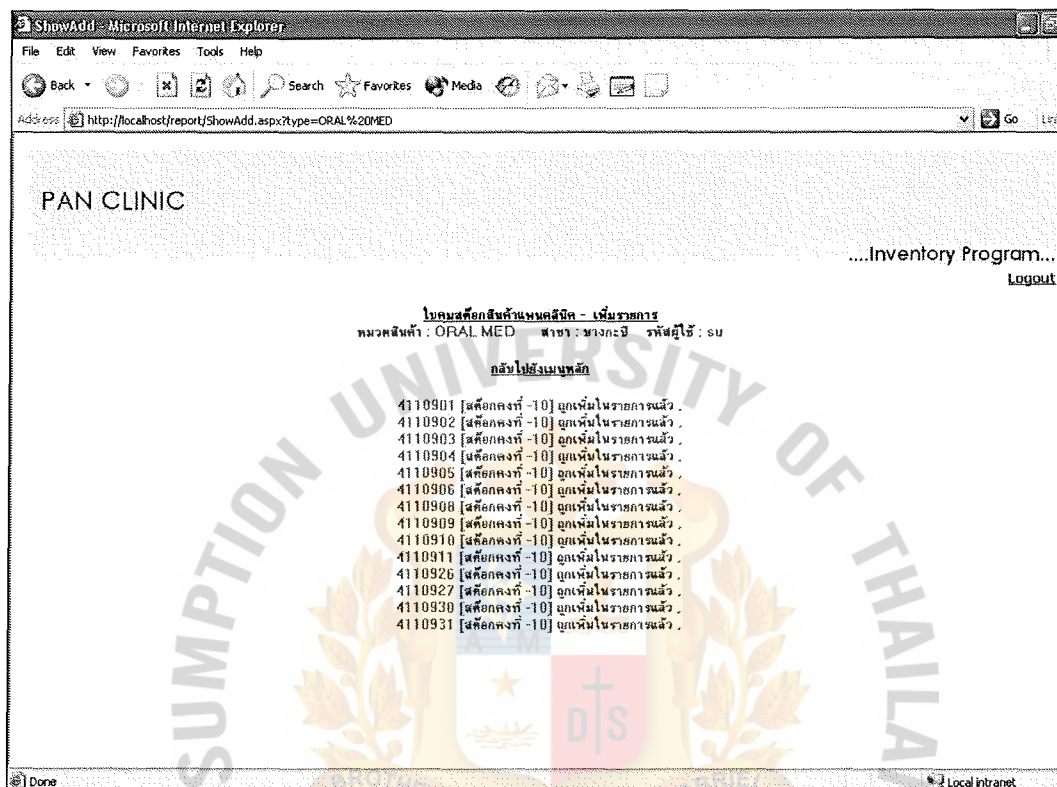
รหัส	ชื่อ	ราคา	สต็อก/คงเหลือ
4110901	TC 250 MG.(CAP)	3.5	
4110902	BAC 80 MG.(CAP)	3.5	
4110903	ERY 250 MG.(CAP)	7	
4110904	CHLO (TAB)	2.5	
4110905	EZC (CAP)	4	
4110906	ATA (TAB)	2	
4110908	CDM (TAB)	2	
4110909	KETO (TAB)	15	
4110910	PRED (TAB)	2.5	
4110911	AMOX 250 MG (CAP)	4.25	
4110926	AMOX 500 MG (CAP)	9	
4110927	SPIRO(ALD) 25 MG.(TAB)	5.5	
4110930	TCB 250 MG.(TAB)	3.5	
4110931	ROACCUTANE 10 MG. (TAB)	50	
4110932	ROACCUTANE 20 MG. (TAB)	90	
4110933	MB 5 MG.(TAB)	12	
4110934	BIOTIN 500 MG.(TAB)	5	
4110925	FT (TAB)	55	
4110936	CLOXA CILLIN 250 MG	3.25	
4110938	MX 500 MG. (1 CAP)	9	
4110941	ZYRTEC 10 MG.	25	
4110944	BIOTIN	450	

Save

Figure 4.21. Add Items Page.

#### 4.7.4 Confirm Add Items

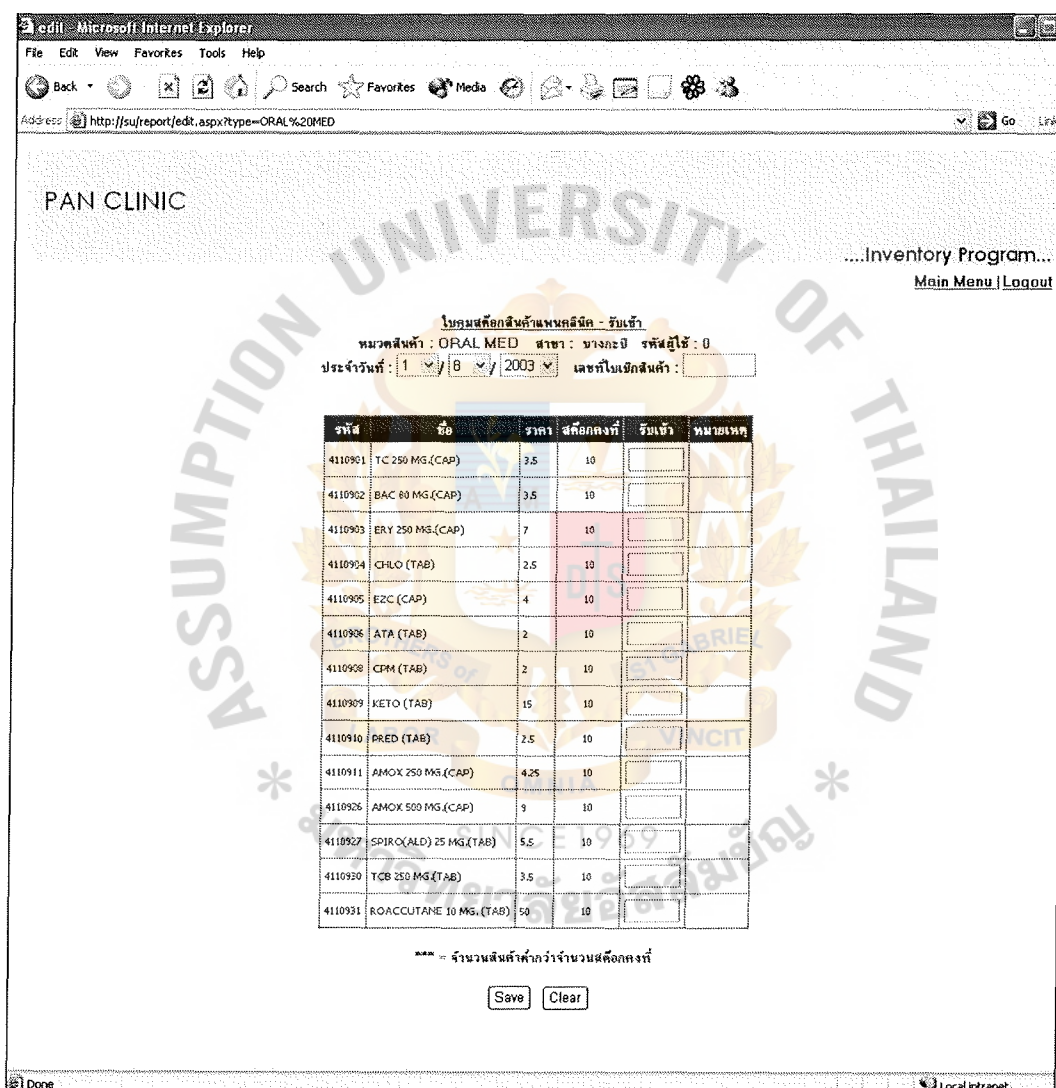
After the user adds items, it will show a confirmation of products that added.



\*Figure 4.22. Confirm Add Items Page.\*

#### 4.7.5 Add Receipts

Then select the menu “Add Receipts” adding quantity of received items in the store. In this part, users must also to fill the invoice number and date/month/year. If they don’t fill, it will show an error message and ask them to fill it.



PAN CLINIC

....Inventory Program...  
Main Menu | Logout

ใบกรมสต็อกสินค้าพณคลินิค - รับเข้า  
หมวดสินค้า : ORAL MED สาขา : บางกะปิ รหัสผู้ใช้ : 0  
ประจำวันที่ : 1 / 8 / 2003 เลขที่ใบสต็อกสินค้า :

รหัส	ชื่อ	ราคา	สต็อกคงที่	รับเข้า	หมายเหตุ
4110901	TC 250 MG.(CAP)	3.5	10		
4110902	BAC 60 MG.(CAP)	3.5	10		
4110903	ERY 250 MG.(CAP)	7	10		
4110904	CHLO (TAB)	2.5	10		
4110905	EZC (CAP)	4	10		
4110906	ATA (TAB)	2	10		
4110908	CPM (TAB)	2	10		
4110909	KETO (TAB)	15	10		
4110910	PRED (TAB)	2.5	10		
4110911	AMOX 250 MG (CAP)	4.25	10		
4110926	AMOX 500 MG (CAP)	9	10		
4110927	SPIRO(ALD) 25 MG.(TAB)	5.5	10		
4110930	TCB 250 MG.(TAB)	3.5	10		
4110931	ROACCUTANE 10 MG.(TAB)	50	10		

\*\*\* = จำนวนสินค้าคงที่จำนวนสต็อกคงที่

Save Clear

Figure 4.23. Add Receipts Page.

#### 4.7.6 Confirm Add Receipts

After user adds receipts, it will show a confirmation of received products that have been added.

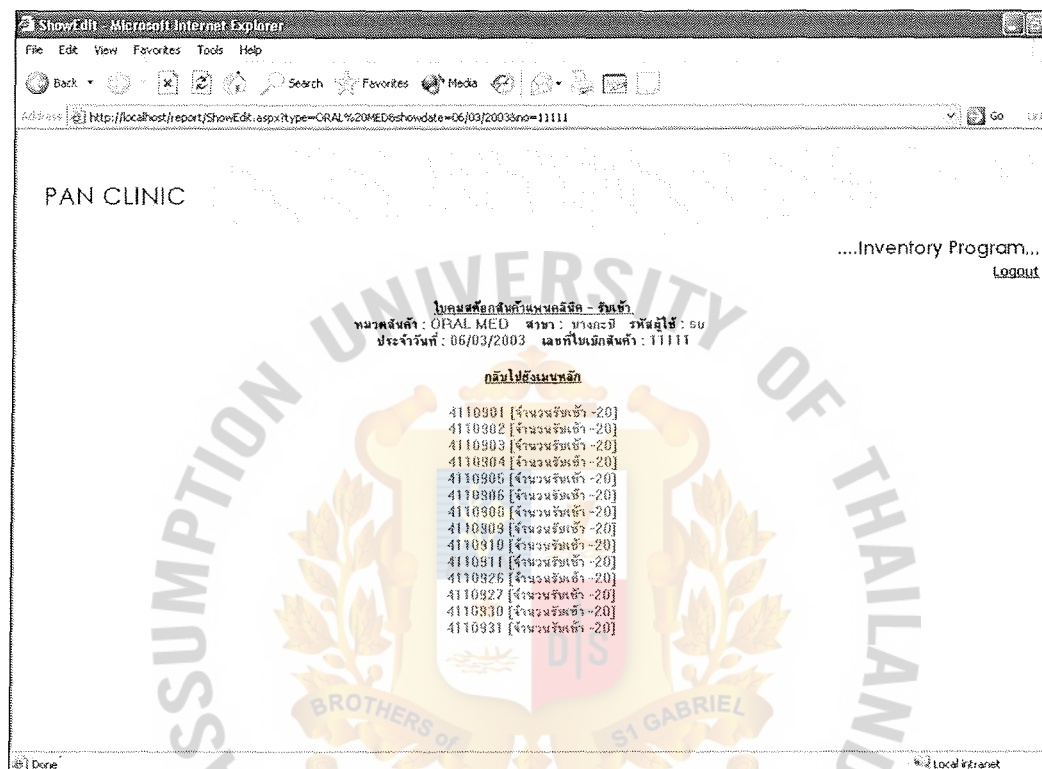


Figure 4.24. Confirm Add Receipts Page.



#### 4.7.7 Select Month and Year before Show Report

Select month and year first. After that it will created full report.

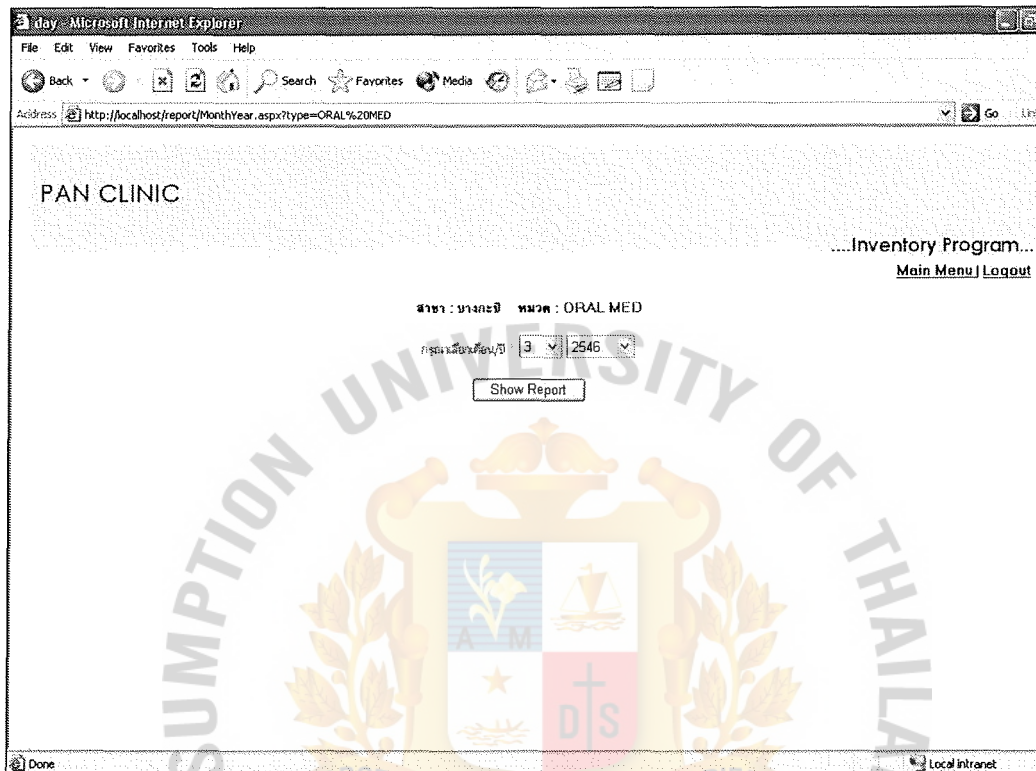


Figure 4.25. Select Month and Year Page.

#### 4.7.8 Shows Products Stock Report

This report show product stock for each category for one month.

Main Menu | Logout

ใบคุมสต็อกสินค้า แผนกคลินิกสาขา บางกะปิ เดือน มีนาคม พ.ศ. 2546

รหัส	ชื่อ	ราคา	สต็อกคงที่	คงเหลือ	01	02	03	04	05	06	07	ขาย	รับเข้า	เหลือ	08	09	10	11	12	13	14	ขาย	รับเข้า	เหลือ	15	16	17	18	19	20	ขาย	รับเข้า	เหลือ	22	23	24	25	26	27	28	29	30	31	ขาย	รับเข้า	เหลือ	รวมรับเข้า	รวมขาย	
4110901	TC 250 MG.(CAP)	3.5	10	1325	70	84	56	0	176	14	84	484	70	911	0	0	28	56	28	49	0	161	0	750	28	28	0	0	196	56	364	0	386	28	56	0	28	28	28	154	0	56	28	406	20	0	90	1415	
4110902	BAC 80 MG.(CAP)	3.5	10	90	56	0	0	0	0	0	0	56	70	104	0	0	28	0	0	0	0	28	0	76	0	28	12	0	0	0	68	0	8	0	0	0	28	0	0	0	0	28	20	0	90	180			
4110903	ERY 250 MG.(CAP)	7	10	168	0	0	14	0	32	0	2	48	70	190	28	0	28	0	28	14	0	98	0	92	0	14	0	0	28	0	42	0	50	14	0	0	28	14	0	0	14	0	70	20	0	90	258		
4110904	CHLO (TAB)	2.5	10	432	28	9	14	7	9	14	21	102	70	400	35	14	28	18	7	7	28	137	0	263	28	28	38	0	14	7	122	0	141	7	14	7	35	14	21	28	21	14	0	161	20	0	90	522	
4110905	EZC (CAP)	4	10	66	0	0	0	0	0	0	0	0	70	136	14	0	0	0	10	0	0	24	0	112	0	0	0	0	0	0	0	0	112	0	0	0	0	0	0	0	0	0	0	20	132	90	24		
4110906	ATA (TAB)	2	10	76	0	0	0	0	0	0	0	0	70	146	7	0	0	0	0	0	0	7	0	139	0	0	0	0	0	0	0	0	139	0	0	0	0	0	0	0	0	7	0	7	20	152	90	14	
4110908	CPM (TAB)	2	10	90	0	0	0	0	0	0	0	0	70	160	0	0	0	0	0	0	0	0	0	160	0	0	0	0	0	0	0	0	160	0	0	0	0	0	0	0	0	0	0	0	20	180	90	0	
4110909	KETO (TAB)	15	10	127	7	0	14	7	0	7	0	35	70	162	7	0	7	14	0	14	7	49	0	113	7	7	35	0	0	7	77	0	36	0	0	21	0	0	14	7	0	0	14	56	20	0	90	217	
4110910	PRED (TAB)	2.5	10	68	0	0	0	0	0	0	0	0	70	138	18	0	0	0	0	0	0	18	0	120	0	70	0	0	0	0	0	70	0	50	0	0	0	0	0	0	0	0	70	0	70	20	0	90	158
4110911	AMOX 250 MG.(CAP)	4.25	10	90	0	0	0	0	0	0	0	0	70	160	0	0	0	0	0	0	0	0	0	160	0	0	0	0	0	0	0	0	160	0	0	0	0	0	0	0	0	0	0	20	180	90	0		
4110926	AMOX 500 MG.(CAP)	9	10	183	0	0	0	0	0	56	0	56	70	197	0	0	28	21	28	0	0	77	0	120	0	56	0	0	0	0	0	84	0	36	0	28	0	0	0	0	0	0	28	0	56	20	0	90	273
4110927	SPIRO(ALD) 25 MG (TAB)	5.5	10	90	0	0	0	0	0	0	0	0	70	160	0	0	0	0	0	0	0	0	0	160	0	0	0	0	0	0	0	0	160	0	0	0	0	0	0	0	0	0	0	20	180	90	0		
4110930	TCB 250 MG.(TAB)	3.5	10	1002	28	28	28	0	0	168	0	252	70	820	56	56	28	0	0	70	56	266	0	554	28	56	168	0	0	84	343	0	211	28	0	28	0	0	35	28	56	0	56	231	20	0	90	1092	
4110931	ROACCUTANE 10 MG.(TAB)	50	10	647	15	28	11	31	7	25	3	120	70	597	15	53	11	119	13	24	9	244	0	353	0	68	7	0	3	0	120	0	233	4	40	6	19	2	57	11	3	104	7	253	20	0	90	737	

LABOR OMNIA VINCIT  
SINCE 1969  
มหาวิทยาลัยอัสสัมชัญ

Print

Figure 4.26. Show Products Stock Report.

#### 4.7.9 Shows Treatment Report

This report show all treatment items for one month.

showtreat - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites Media

Address http://localhost/report/showtreat.aspx?type=Treatment&mid=3&id=2546

Main Menu | Logout

ใบสรุปรายงาน Treatment แผนคลินิกสาขา บางกะปิ เดือน มีนาคม พ.ศ. 2546

รหัส	ชื่อ	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	รวม
0110001	FACIAL	0	0	0	1	2	0	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	0	0	9	
0110002	BEAUTY	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3	
0110003	PBT	3	4	1	3	4	4	6	2	2	1	5	4	7	2	4	2	0	2	0	0	1	4	3	1	4	4	6	5	5	6	97	
0120001	NAT (Member)	4	8	8	9	7	3	5	6	5	8	10	7	3	5	6	5	0	7	2	6	10	7	3	4	7	3	5	8	6	4	176	
0120002	NMT (Member)	6	22	6	8	9	11	4	17	14	10	10	13	14	11	14	16	0	8	14	14	10	14	7	16	8	17	9	10	21	11	366	
0120006	NAT	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	4	
0120007	NMT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	2	1	2	7	
0120008	PAN ACNE (SCAR) TREATMENT	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
0120009	PAN MELASMA TREATMENT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0130001	RET	8	17	9	9	7	8	11	11	9	9	14	8	9	24	8	14	0	6	6	7	31	6	8	15	4	10	11	30	5	11	334	

Print

Done Local intranet

Figure 4.27. Show Treatment Report Page.\*

#### 4.7.10 Show Daily Sales Report

This report show total sales of products for one day.

showsale - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Reload Home Search Favorites Media Print

Address http://localhost/report/showsale.aspx?brand=88C&cid=27&mid=38&id=2546 Go Links

Main Menu | Logout

ใบสรุปยอดขายประจำวัน

แผนกสินค้า สาขา บางกะปิ วันที่ 27/ 03/ 2003 บริษัท PBC Marketing

รหัสสินค้า	ชื่อสินค้า	ราคา/หน่วย	จำนวน	จำนวน	รวม	รวม
120116	NANTI(85) NEW ANTI COMEDONE SOAP	92	1	0	เงินสด	92
120130	NB8C(85) NEW PAN BABY CREAM SOAPLESS 85G.	92	2	0	เงินสด	92
120139	NAC5(8) NEW ACNICARES CREAM 8G.	58	4	0	เงินสด	58
120140	NACBIO(20) NEWACNIBIOGIN LOTION	107	2	0	เงินสด	107
120168	NEFS-D (30)	395	2	20	เงินสด	375
120170	NEUS-W (30)	495	1	25	เงินสด	470
3110215	WAX ฝักบัว 2ข้าง	250	1	0	เงินสด	250
4111112	PA3 500 MG. (CAP)	8	14	0	เงินสด	112
4111114	IMEDEEN TIME FORMULATION	2400	1	0	เงินสด	2400
4181705	RR18-CLEAR COMPLEXION DRYING LOTION	1300	2	65	เงินสด	1235
4320109	WILMA SCHUMANN THE LIPOSOME 15 ML	2000	1	0	เงินสด	2000
4320110	WILMA SCHUMANN O2 OXYGEN BLU 15 ML	2400	2	0	เงินสด	2400

Print

Done Local Intranet

Figure 4.28. Show Daily Sales Report Page.



#### 4.8 Cost and Benefit Analysis

Cost of the whole Web System including manpower cost, hardware cost, software cost, implementation cost and maintenance cost.

Table 4.4. Cost of Manpower of the New System, in Baht.

Description	Quantity	Monthly Cost	Total
1. Programmer	2	20,000	40,000
2. Network Administrator	1	20,000	20,000
3. Technician Support	5	8,000	40,000
4. Trainer	2	8,000	16,000
5. Employee at Central	2	8,000	13,000
6. Employee at branch	56	8,000	448,000
Total			577,000

Table 4.5. Cost of Hardware and Software of the Computerized System, in Baht.

Hardware / Software	Quantity	Price / Unit	Total
1. Computer	58	30,000	1,740,000
2. Server	3	120,000	360,000
3. Switch	1	78,000	78,000
4. Modem	56	11,300	632,800
5. Hub	2	4,500	9,000
6. Printer	56	16,500	924,000
7. Router	1	350,000	350,000
8. Network Attached Storage	1	48,200	48,200



Table 4.5. Cost of Hardware and Software of the Computerized System, in Baht  
(Continued).

Hardware / Software	Quantity	Price / Unit	Total
9. Internet Firewall	1	44,000	44,000
10. DDN : Digital data network service 512	1	55,500	55,500
11. Internet Network Service 512 k	1	101,000	101,000
12. Microsoft Visual Studio .NET	2	57,900	115,800
13. Microsoft SQL Server 7.0 Enterprise – 10 Clients	2	96,750	193,500
14. Microsoft Window 2000 Server – 10 Clients	3	49,500	148,500
15. Microsoft Window XP Professional	2	8,950	17,900
16. Microsoft Office 2000 Professional Edition	2	20,200	40,400
15. Adobe Photoshop Version 6.0	2	25,100	50,200
Total			4,908,800

#### Source of Income

Income will be generated from the pan clinic's customers who buy products and services. We expect 1.5% of 56 clinic branches of that can increase their income from existing. We calculate it, shown in Table 4.6. We think this is a realistic figure. With this expectation we will have ROI in 8 months as the Figure 4.28:

$$\begin{aligned}
 \text{Total of Investment} &= \text{Cost of Hardware / Software} + \text{Cost of Manpower} \\
 &= 4,908,800 + 577,000 \\
 &= 5,485,800
 \end{aligned}$$

Expect Return on Investment within 8 months so we need to generate an income. Since we expect customers increase 10% per month per clinic and each spend 1000.- baht. From the projected figure, it is possible figure.

We have Pan Clinic branches all over in Thailand, so we can provide products and services easily, and customers can purchase products more frequently as they want and create long term relations with them.

#### **4.9 Security and Control**

Security concern is very important for the Online System. Since, companies need to be connected to many branches and corporate system must also be extended outside the organization. So these system also must be closed to hacker and other intruders. Hence the major security concerns are:

##### **4.9.1 System Security and Control**

The web service will run on Windows NT environment. When a client has an access to the NT Server, remote user is given and access to local harddisk resource by creating share directories. So the users must be set for user right access on which permission control required a particular directory basis.

##### **4.9.2 Data Security and Control**

The database was designed to run on Microsoft SQL Server 7.0. The server has to be assigned UserID and corresponding Password to have the right to access database.

##### **4.9.3 Network Security**

The corporate network use firewall to prevent unauthorized users from accessing private network. The network is designed so that a firewall is placed on network connection between the organization and the Internet.

Table 4.6. Break-even Point Calculation.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Growth Rate (%)	5000	5600	6160	6776	7454	8199	9019	9921	10913	12004	13205	14525
Total Member (Baht)	56000	61600	67760	74536	81990	90189	99207	109128	120041	132045	145250	159775
Monthly Order (Baht)	56,000,000.00	61,600,000.00	67,760,000.00	74,536,000.00	81,989,600.00	90,188,560.00	99,207,416.00	109,128,157.60	120,040,973.36	132,045,070.70	145,249,577.77	159,774,535.54
Increase Income (Baht)	840,000.00	924,000.00	1,016,400.00	1,118,040.00	1,229,844.00	1,352,828.40	1,488,111.24	1,636,922.36	1,800,614.60	1,980,676.06	2,178,743.67	2,396,618.03
Accru Income (Baht)	840,000.00	1,764,000.00	2,780,400.00	3,898,440.00	5,128,284.00	6,481,112.40	7,969,223.64	9,606,146.00	11,406,760.60	13,387,436.66	15,566,180.33	17,962,798.36
Monthly Expense (Baht)	577,000.00	577,000.00	577,000.00	577,000.00	577,000.00	577,000.00	577,000.00	577,000.00	577,000.00	577,000.00	577,000.00	577,000.00
Accru Expense (Baht)	5,485,800.00	6,062,800.00	6,639,800.00	7,216,800.00	7,793,800.00	8,370,800.00	8,947,800.00	9,524,800.00	10,101,800.00	10,678,800.00	11,255,800.00	11,832,800.00



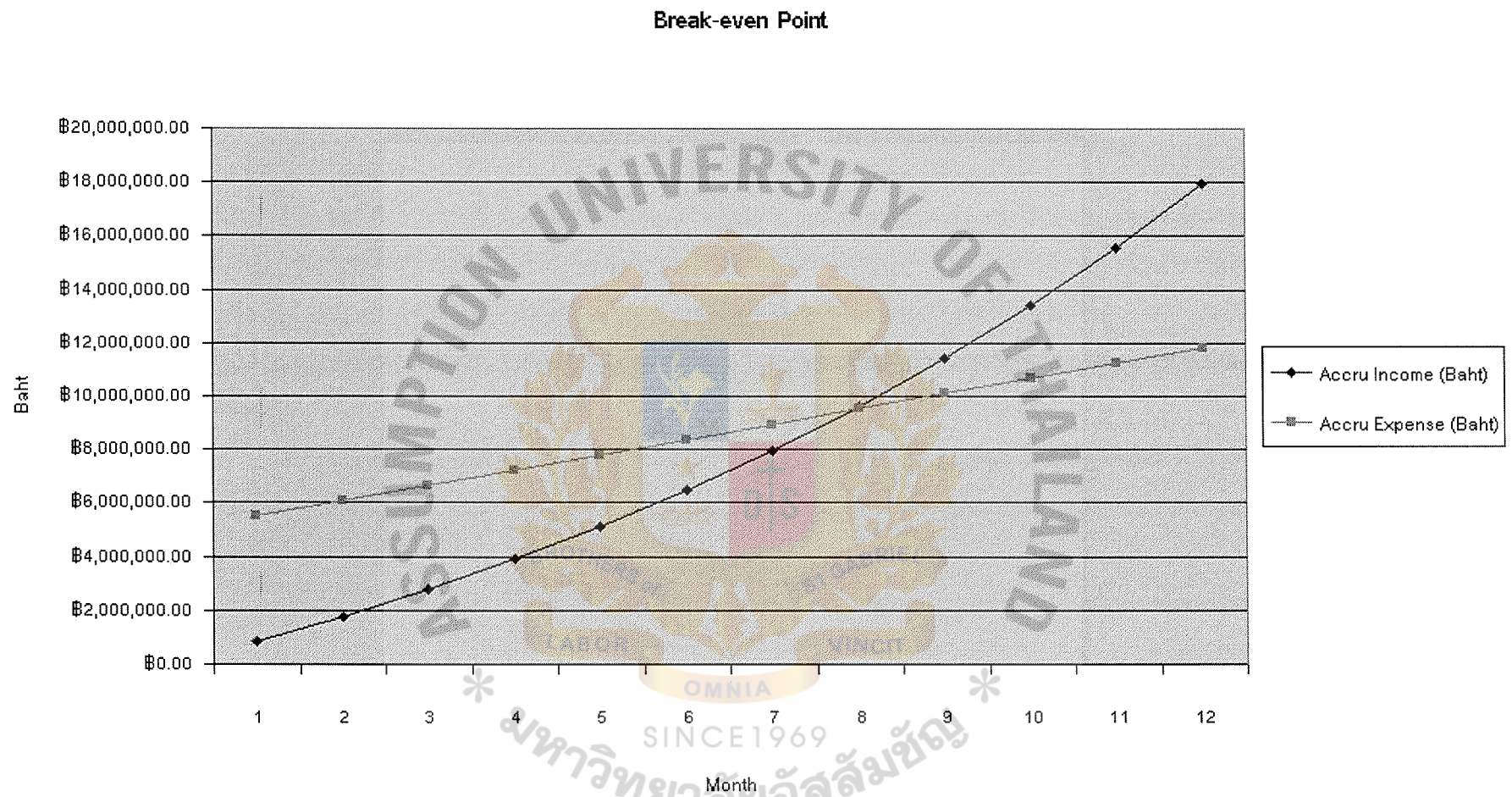


Figure 4.29. Break-even Point.

## **V. PROJECT IMPLEMENTATION**

### **5.1 Project Plan**

This Project was planned by including the processes is the Need Analyst, Pre Design, Project Approval, GUI & System Design, Programming, Testing Level 1, Testing Level 2, Adjustment, Documentation, and the finally Release and Implementation. This project follows the Gantt chart as shown in the Figure 4.1.

### **5.2 Test Plan and Result**

Testing of a specific program, subsystem and total for essential to quality assurance. System and interface testing is done before the program is actually used. The major issues, which should be considered are:

- (1) Testing individual programs were completed during completing the programming tasks by the development team, Program testing concentrates on the programs themselves in an attempt to make sure that each program works properly.
- (2) Data testing consists of running a program, which appears to be working correctly with the sample data.
- (3) Link testing tests the upstream and downstream feeds between different programs and program modules.
- (4) Module testing is the process of testing the individual module that makes up the work program.
- (5) User acceptance testing: it is the users' responsibility to put their own data to test if the system meets the requirements.
- (6) System testing ensures that all the programs that make up the new system work together.



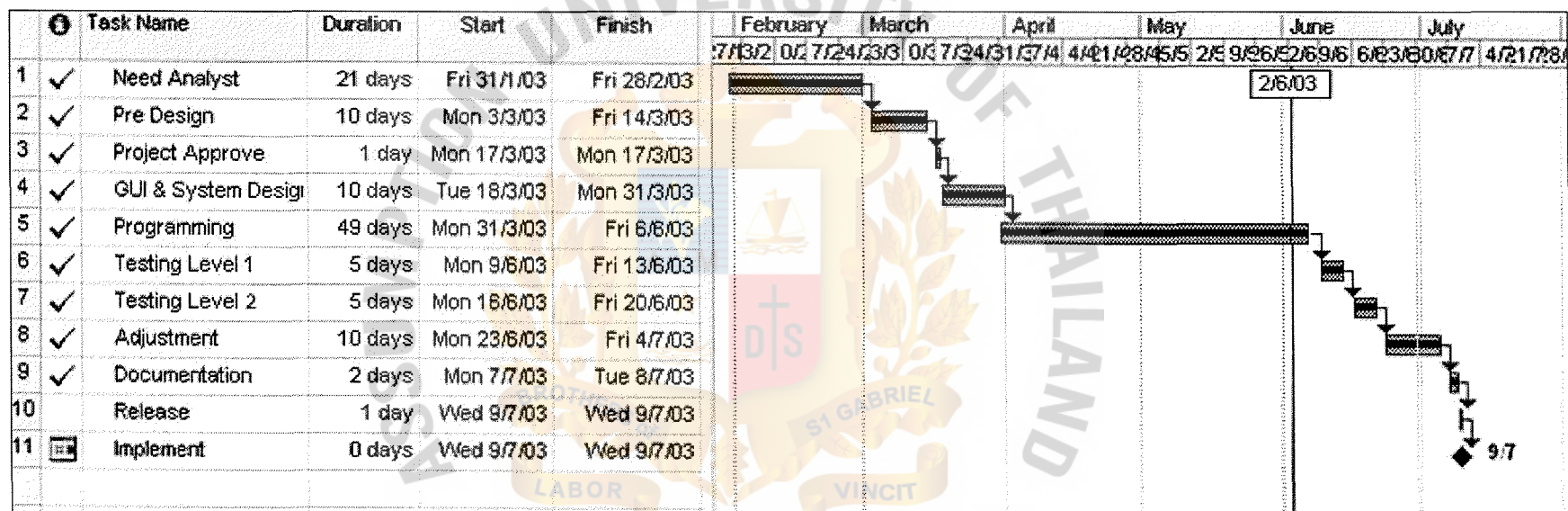


Figure 5.1. Project Plan.

## VI. DISCUSSION

The Online Inventory management is a web-based solution that is designed to give the clinic complete control to manage the inventory of drugs and other items held in storage and create reports to serve the staff at a clinic branch.

In past, the traditional way of managing Inventory at a clinic, was manual. They could can easily make to do mistakes as it was very complicated and difficult to record quantity for many products every day by themselves, they arises the purpose to create a good report. The Online Inventory management is developed to solve these problems. It is a good way to help users. As it is easy to use and users can create reports very easily. To save time and money by automating business processes and eliminating data entry duplications.

To implement this project in Pan clinic branch, it could be merged with the processes of Management Programs that include the Registration Program, Ordering program and Payment Program that one installed in the clinic already. After the Management Program processes and records data in the database, the Online Inventory management uses that data to process it and, the Online Inventory management will shows the full reports to the users.

The advantage of this project is that, it provides faster, reliable and higher security since it is developed by .NET technology, and it is easy to use and understand. Furthermore it helps a company in many ways such as decreasing costs, increasing profits, saving time and other things that can achieve company objectives. For the disadvantages, since the company uses an online system and has many branches to connect to the server at Headquarters, a bottleneck may occur at the server this is the reason that may effect the program to become slower or may not be available for a short period.

So this project can establish objectives of the Online Inventory management and also objectives of the company. that is, the flexibility to maintain its own inventory online, quickly and easily, customize specific components of the solution, and at a minimal cost.



## VII. CONCLUSIONS AND RECOMMENDATIONS

### 7.1 Conclusions

The Online Inventory management is established to offer flexibility to maintain inventory online, quickly and easily, customize specific components of the solution, and provide minimal cost solutions making it easy for decisions. The Online Inventory management is designed to give the clinic complete control over the inventory of drugs and other items held in storage, use to be by the staff at the clinic.

Many functions in this project including: Add Items, Add Receipts, Show Reports for each product category, such as product stock reports, treatment reports and daily sales reports. The Online Inventory management provides accurate real time inventory reports for better management. With regard to the prototype of the web site, user friendliness is also considered to be a major concern.

This project involves information acquired from many resources, including books, journals and web sites. Web programming tools, especially Microsoft Visual Studio .NET by C# are the main tools, that were used to create the prototype of this online web-based project and allow users to work efficiently. These technologies provide more faster, efficient and reliable online systems.

Many measurements are used to check if objectives can be achieved. Problem definition that refers to the traditional way of inventory management at the clinic and solutions will be defined to check if objectives not met.

Therefore, This project can solve the problems of the company. The result is a decrease in cost, making higher income for the company. Furthermore, the Online Inventory management is a good way to support many tasks and serve for users. So that the company will have more efficient and effective back office management system and fulfill the management's entire requirements in the company.

## 7.2 Recommendations

Further studies in this project, in the future could be developed including the following:

- (1) Cover all complex tasks in the clinic. So that manuals need not be used and time can be saved.
- (2) More emphasis could be laid on security (username and password).
- (3) Create an “English Version” of the program for oversea branches.
- (4) Link to other systems supporting back office jobs at the clinic using multi tasking.







รหัส	ชื่อ	ราคา	สต็อกคงมี	คงเหลือ	01	02	03	04	05	06	07	ขาย	รับเข้า	เหลือ	08	09	10	11	12	13	14	ขาย	รับเข้า	เหลือ	15	16	17	18	19	20	21	ขาย	รับเข้า	เหลือ	22	23	24	25	26	27	28	29	30	31	ขาย	รับเข้า	เหลือ	รวมขาย	รวมรับ
411090	TC 250 MG.(CAP)	4	10	1325	70	84	56	0	178	14	84	484	70	911	0	0	28	56	28	43	0	161	0	750	28	28	0	0	194	56	56	364	0	386	28	56	0	28	28	28	154	0	56	28	406	20	0	1415	90
411090	BAC 80 MG.(CAP)	4	10	90	56	0	0	0	0	0	0	56	70	104	0	0	28	0	0	0	0	28	0	76	0	28	12	0	0	28	0	68	0	8	0	0	0	28	0	0	0	0	0	28	20	0	180	90	
411090	ERY 250 MG.(CAP)	7	10	168	0	0	14	0	32	0	2	48	70	190	28	0	28	0	28	14	0	98	0	92	0	14	0	0	28	0	0	42	0	50	14	0	0	0	28	14	0	0	14	0	70	20	0	258	90
411090	CHLO (TAB)	3	10	432	28	9	14	7	9	14	21	102	70	400	35	14	28	18	7	7	28	137	0	263	28	28	38	0	14	7	7	122	0	141	7	14	7	35	14	21	28	21	14	0	161	20	0	522	90
411090	EZC (CAP)	4	10	66	0	0	0	0	0	0	0	0	70	136	14	0	0	0	10	0	0	24	0	112	0	0	0	0	0	0	0	0	112	0	0	0	0	0	0	0	0	0	0	0	20	132	24	90	
411090	ATA (TAB)	2	10	76	0	0	0	0	0	0	0	0	70	146	7	0	0	0	0	0	0	7	0	139	0	0	0	0	0	0	0	0	139	0	0	0	0	0	0	0	0	7	0	7	20	152	14	90	
411090	CPM (TAB)	2	10	90	0	0	0	0	0	0	0	0	70	160	0	0	0	0	0	0	0	0	160	0	0	0	0	0	0	0	0	0	160	0	0	0	0	0	0	0	0	0	0	0	20	180	0	90	
411090	KETO (TAB)	15	10	127	7	0	14	7	0	7	0	35	70	162	7	0	7	14	0	14	7	49	0	113	7	7	35	0	0	21	7	77	0	36	0	0	21	0	0	14	7	0	14	56	20	0	217	90	
411091	PRED (TAB)	3	10	68	0	0	0	0	0	0	0	0	70	138	18	0	0	0	0	0	0	18	0	120	0	70	0	0	0	0	0	70	0	50	0	0	0	0	0	0	0	0	70	0	70	20	0	158	90
411091	AMOX 250 MG.(CAP)	4	10	90	0	0	0	0	0	0	0	0	70	160	0	0	0	0	0	0	0	0	160	0	0	0	0	0	0	0	0	0	160	0	0	0	0	0	0	0	0	0	0	0	20	180	0	90	
411092	AMOX 500 MG.(CAP)	9	10	183	0	0	0	0	0	56	0	56	70	197	0	0	28	21	28	0	0	77	0	120	0	56	0	0	0	28	0	84	0	36	0	28	0	0	0	0	0	0	28	0	56	20	0	273	90
411092	SPIRO(ALD) 25 MG.	6	10	90	0	0	0	0	0	0	0	0	70	160	0	0	0	0	0	0	0	0	160	0	0	0	0	0	0	0	0	0	160	0	0	0	0	0	0	0	0	0	0	0	20	180	0	90	
411093	TCB 250 MG.(TAB)	4	10	1002	28	28	28	0	0	168	0	252	70	820	56	56	28	0	0	70	56	266	0	554	28	56	168	0	0	7	84	343	0	211	28	0	28	0	0	35	28	56	0	56	231	20	0	1092	90
411093	ROACUTANE 10 MG.	50	10	647	15	28	11	31	7	25	3	120	70	597	15	53	11	113	13	24	9	244	0	353	0	68	7	0	3	42	0	120	0	233	4	40	6	19	2	57	11	3	104	7	253	20	0	737	90

Figure A.1. Product Stock Report.



ใบสรายงาน Treatment แพนคลีนิดศึกษา บางกะปิ เดือน มีนาคม พ.ศ. 2546

barcode	name	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
0110001	FACIAL	0	0	0	1	2	0	0	0	1	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	0	0	9
0110002	BEAUTY	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3
0110003	PBT	3	4	1	3	4	4	6	2	2	1	5	4	7	2	2	4	2	0	2	0	0	1	4	3	1	4	4	6	5	5	6	97
0120001	NAT (Member)	4	8	8	9	7	3	5	6	5	8	10	7	3	5	5	6	5	0	7	2	6	10	7	3	4	7	3	5	8	6	4	176
0120002	NMT (Member)	8	22	8	8	9	11	4	17	14	10	10	13	14	18	11	14	16	0	8	14	14	10	14	7	16	8	17	9	10	21	11	366
0120006	NAT	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	4
0120007	NMT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	2	1	2	7
0120008	PAN ACNE (SCAR) TREATMENT	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
0120009	PAN MELASMA TREATMENT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0130001	RET	8	17	9	9	7	8	11	11	9	9	14	8	9	9	24	8	14	0	6	6	7	31	6	8	15	4	10	11	30	5	11	334
	Total	23	53	27	30	29	26	27	36	31	28	40	32	33	37	42	32	37	0	24	23	27	52	32	22	36	23	34	32	57	39	34	998

Figure A.2. Treatment Report.

ใบสรุปยอดขายประจำวัน						
สาขา	บางกะปิ	วันที่	27/03/2003	บริษัท	PBC Marketing	
รหัสสินค้า	ชื่อสินค้า	ราคา/หน่วย	จำนวน	ส่วนลด	ที่มา	จำนวนเงินสุทธิ(บาท)
120118	NANTI(85) NEW ANTI COMEDONE	92.00	1.00	.00	เงินสด	92.00
120130	NBBC(85)NEW PAN BABY CREAM	92.00	2.00	.00	เงินสด	92.00
120139	NAC5(8) NEW ACNICARE5 CREAM	58.00	4.00	.00	เงินสด	58.00
120140	NACBIO(20) NEWACNIBIOGIN	107.00	2.00	.00	เงินสด	107.00
120168	NEFS-D(30)	395.00	2.00	20.00	เงินสด	375.00
120170	NEUS-W (30)	495.00	1.00	25.00	เงินสด	470.00
3110215	WAX รักแร้ 2 ข้าง	250.00	1.00	.00	เงินสด	250.00
4111112	PA3 500 MG. (CAP)	8.00	14.00	.00	เงินสด	112.00
4111114	IMEDEEN TIME FORMULATION	2,400.00	1.00	.00	เงินสด	2,400.00
4181705	RR18-CLEAR COMPLEXION	1,300.00	2.00	65.00	เงินสด	1,235.00
4320109	WILMA SCHUMANN THE	2,000.00	1.00	.00	เงินสด	2,000.00
4320110	WILMA SCHUMANN O2 OXYGEN	2,400.00	2.00	.00	เงินสด	2,400.00
รวม				110.00		9,591.00
				หัวหน้าคลสิโก ( )		
				ผู้รับผิดชอบ ( )		

Figure A.3. Daily Sales Report.



## BIBLIOGRAPHY

1. Archer, Tom and Andrew Whitechapel. INSIDE C#. Washington: Microsoft Press, 2002.
2. Brown, Montague. Health Care Marketing Management. New York: An Aspen Publication, 1992.
3. Dennis, Alan. Networking In the Internet Age. New York: John Wiley & Sons, 2002.
4. Duthie, Andrew G. Microsoft ASP.NET Step by Step. Washington: Microsoft Press, 2002.
5. Dwyer, F. Robert and John F. Tanner. Business Marketing. Singapore: McGraw-Hill, 2002.
6. Laudon, Kenneth C. and Jane P. Laudon. Management Information System. New Jersey: Prentice Hall, 2002.
7. Riordan, Rebecca M. Microsoft ADO.NET Step by Step. Washington: Microsoft Press, 2002.
8. Silver, Edward A. Inventory Management and Production Planning and Scheduling. New York: John Wiley & Sons, 1998.
9. Turban, Efraim. Electronic Commerce 2002. New Jersey: Prentice Hall, 1999.

St. Gabriel's Library, Au



